Billings and Pompeys Pillar National Monument

Resource Management Plan and Environmental Impact Statement

Chapter 1: Purpose and Need for Action

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1 Purpose and Need

1.1 Introduction and Background

Chapter 1 contains background information on the planning process and sets the stage for the information that is presented in the rest of the document. There are seven main sections in Chapter 1. They are:

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In accordance with the Federal Land Policy and Management Act of 1976 (FLPMA), the Bureau of Land Management (BLM) is responsible for management of public lands and its resources based on the principles of multiple use and sustained yield. Management direction is provided by land use plans, which determine appropriate multiple uses, allocate resources, develop strategies to manage and protect resources, and establish systems to monitor and evaluate the status of resources and effectiveness of management. Land use plans are intended to guide management, allowing continuing uses of public land over extended time periods.

This Proposed Resource Management Plan (RMP) and Final Environmental Impact Statement (EIS) will provide direction for the future management of public lands and resources administered by the Bureau of Land Management (BLM), Billings Field Office and Pompeys Pillar National Monument. The planning area is located in south central Montana and includes 434,154 surface acres of public land and 889,479 acres of federal mineral estate in Big Horn, Carbon, Golden Valley, Musselshell, Stillwater, Sweet Grass, Wheatland, and Yellowstone counties in Montana. The Billings Field Office also administers 4,298 acres of public land in Big Horn County, Wyoming (see Table 1-1) as part of the Pryor Mountain Wild Horse Range. The RMP/EIS will also address management for the 51 acres of public land designated as Pompeys Pillar National Monument (PPNM). Collectively, the lands that BLM administers (surface and mineral estate) are considered the "decision area."

1.1.1 Historical Overview

In 1946, the U.S. Grazing Service merged with the General Land Office to form the BLM. The foundation for the BLM dates back to the Land Ordinance of 1785, which established the public domain and led to the creation of the General Land Office. The Northwest Ordinance of 1787 instituted the survey and settlement of lands ceded from the 13 colonies to the federal government and lands later acquired by the government from other countries. While the Nation's westward expansion progressed and the land base expanded, the settlement of western lands was encouraged through the enactment of a variety of laws, including the Homestead acts and the Mining Law of 1872. Over time, the luring of pioneers to settle the west became less necessary and the commercial value of these lands increased. A variety of statutes established to manage mineral, timber, or livestock foraging activities on public lands followed. For example, the Mineral Leasing Act of 1920 allowed leasing, exploration, and production of selected commodities, such as coal, oil, gas, and sodium, on public lands. Another example is the Taylor Grazing Act of 1934, which provided for management of the public rangelands.

After passage of the Federal Land Policy and Management Act of 1976 (FLPMA), BLM-administered lands were managed according to the principles of multiple use and sustained yield. Since 1976, the BLM has managed for multiple use and to balance increasing and competing demands for resources on public lands.

1.1.2 Land Ownership within the Billings Field Office Planning Area

As defined by Section 103(e) of FLPMA, "…public lands mean any land and interest in land owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management…" The U.S. Department of the Interior (USDOI) BLM Billings Field Office is responsible for managing the public lands in Big Horn, Carbon, Golden Valley, Musselshell, Stillwater, Sweet Grass, Wheatland, and Yellowstone counties, Montana as well as 4,298 acres of public land in Big Horn County, Wyoming. County governments have land use planning responsibility for the private lands located within their jurisdictions.

Except for Carbon County, most of the public land in the planning area is in scattered tracts intermingled with state and private lands. Throughout the planning area, there are also intermingled mineral ownerships, as well as federal minerals under privately owned surface, usually referred to as split-estate land. The scattered surface land pattern and varied mineral ownerships, along with split-estate lands, strongly impact management options. Appendix G provides details regarding split estate lands and the BLM's administrative responsibilities for managing the federal minerals.

The Billings Field Office is located in the south central portion of Montana and covers a total of approximately 10.8 million surface acres of federal, state, tribal, and private lands in eight counties (Figure 1). Of the total area, the Billings Field Office has surface management responsibility for approximately 434,154 acres (about four percent of the planning area) of BLM administered public land (herein referred to as public land) (Figure 2). The Billings Field Office also has administrative responsibility for approximately 889,479 acres of federal mineral estate (Figure 3). The Billings and Pompeys Pillar National Monument RMP decision area also includes administration of approximately 4,298 acres of public land of the Pryor Mountain Wild Horse Range (PMWHR) in Big Horn County, Wyoming (BLM MOU-MT931-6901) (Appendix Q) and Pompeys Pillar National Monument (51 acres).

In this document, the term "planning area" applies to all lands within the nine-county area, regardless of surface ownership (Figure 1). Table 1-1 summarizes the surface land ownership and federal mineral estate within the planning area. Collectively, the lands that BLM administers (surface and mineral estate) are considered the "decision area." RMP decisions apply only to BLM-administered public lands and resources, with the exception being Bureau of Reclamation lands where the oil and gas is under federal jurisdiction then the oil and gas decisions made in this RMP/EIS do apply. It is important to note that the BLM may only make decisions that affect public lands and resources, but it is responsible for collaborative planning with the public and adjacent jurisdictions so as to consider the impacts of its actions on all resources in the region.

Table 1-1 Land Ownership – Billings Planning Area

County	Ownership (In Acres)			
	BLM Public Lands (in Planning Area)	**BLM Federal Mineral Estate** (in Planning Area)		**Other Surface Owners** (Private, State, Other Federal)
Big Horn, MT	7	1.015		2,572,759
Big Horn, WY[a]	4,298	4,298		0
Carbon	220,556	341,380		1,319,729
Golden Valley	7,943	44,360		755,843
Musselshell	101,247	226,885		1,197,198
Stillwater	5,504	58,359		1,154,905
Sweet Grass	15,893	75,229		1,191,450
Wheatland	1,333	21,433		913,802
Yellowstone	77,540	116,517		1,695,307
TOTAL	434,321	889,479		10,803,310

Note: [a] Billings Field Office has administrative authority for 4,298 acres of public land located in Wyoming as part of the Pryor Mountain Wild Horse Range.

1.1.3 Description of the Billings Field Office Planning Area

The planning area is bisected by several major rivers: the Bighorn, Yellowstone, Musselshell, Clark's Fork of the Yellowstone, Stillwater, and Boulder, and includes portions of several mountain ranges: Little Snowy, Snowy, Belt, Crazy, Absaroka, Beartooth, Bull, and Pryor mountains. Except for several contiguous blocks of land in Carbon and Musselshell counties, most of the BLM public lands in the planning area are scattered tracts intermingled with private and state lands. Lands managed by the Billings Field Office include public domain (lands which have never left federal ownership), acquired lands and/or mineral interests (lands which left federal ownership and were later purchased under the Bankhead-Jones Act, exchanged for, donated, or purchased) and federal mineral estate (subsurface) lands beneath private or state lands or lands administered by other federal agencies (Figure 2 and Figure 3). The RMP will not make decisions for the surface or mineral estates of private or state-owned lands and minerals. The RMP, however, will provide stipulations for split estate situations involving federal oil and gas (O&G) overlain by private or state-owned surface.

Figure 1: Billings Field Office Planning Area Map

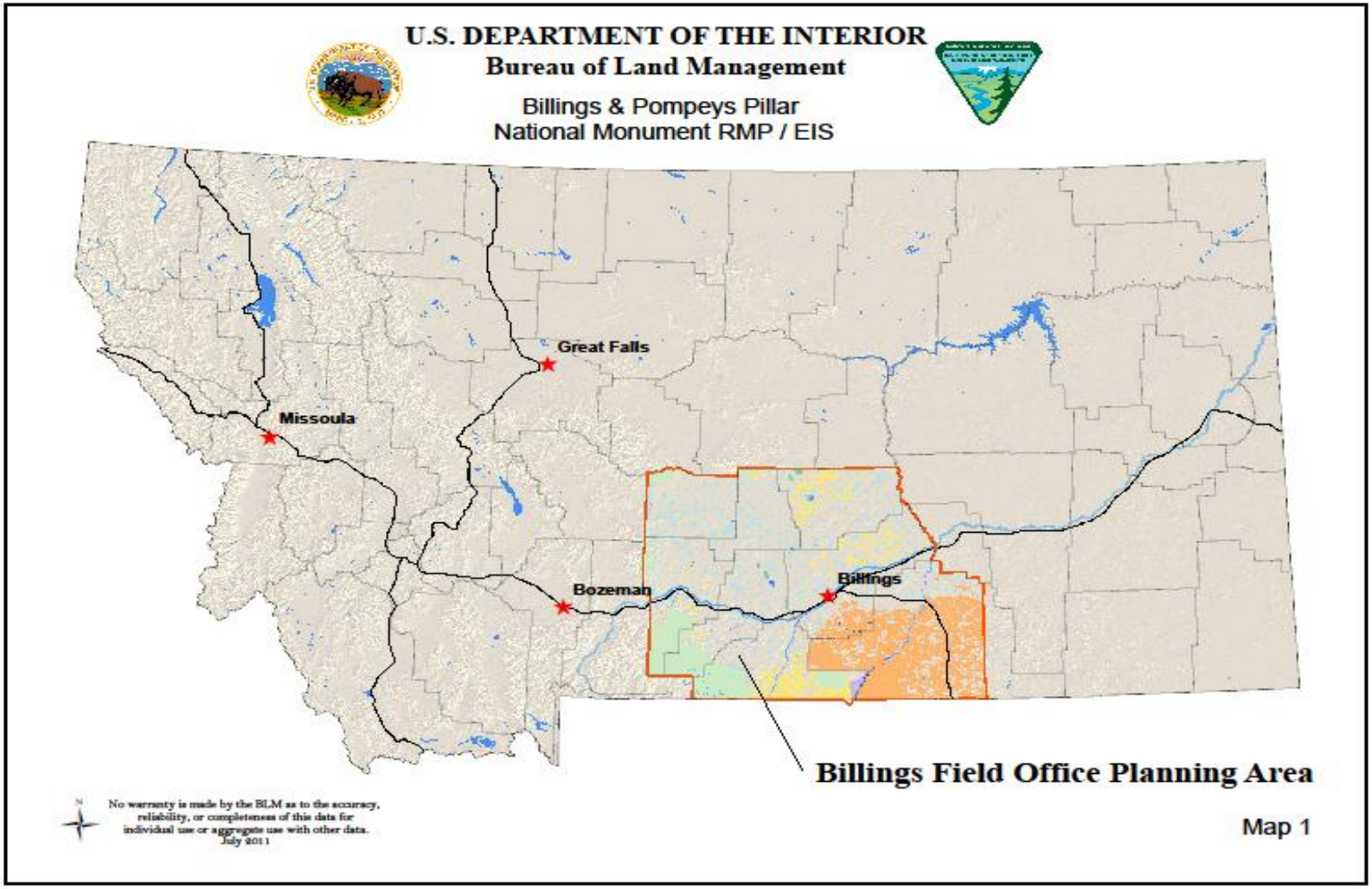

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Figure 2: Public Lands within the Billings Field Office Planning Area

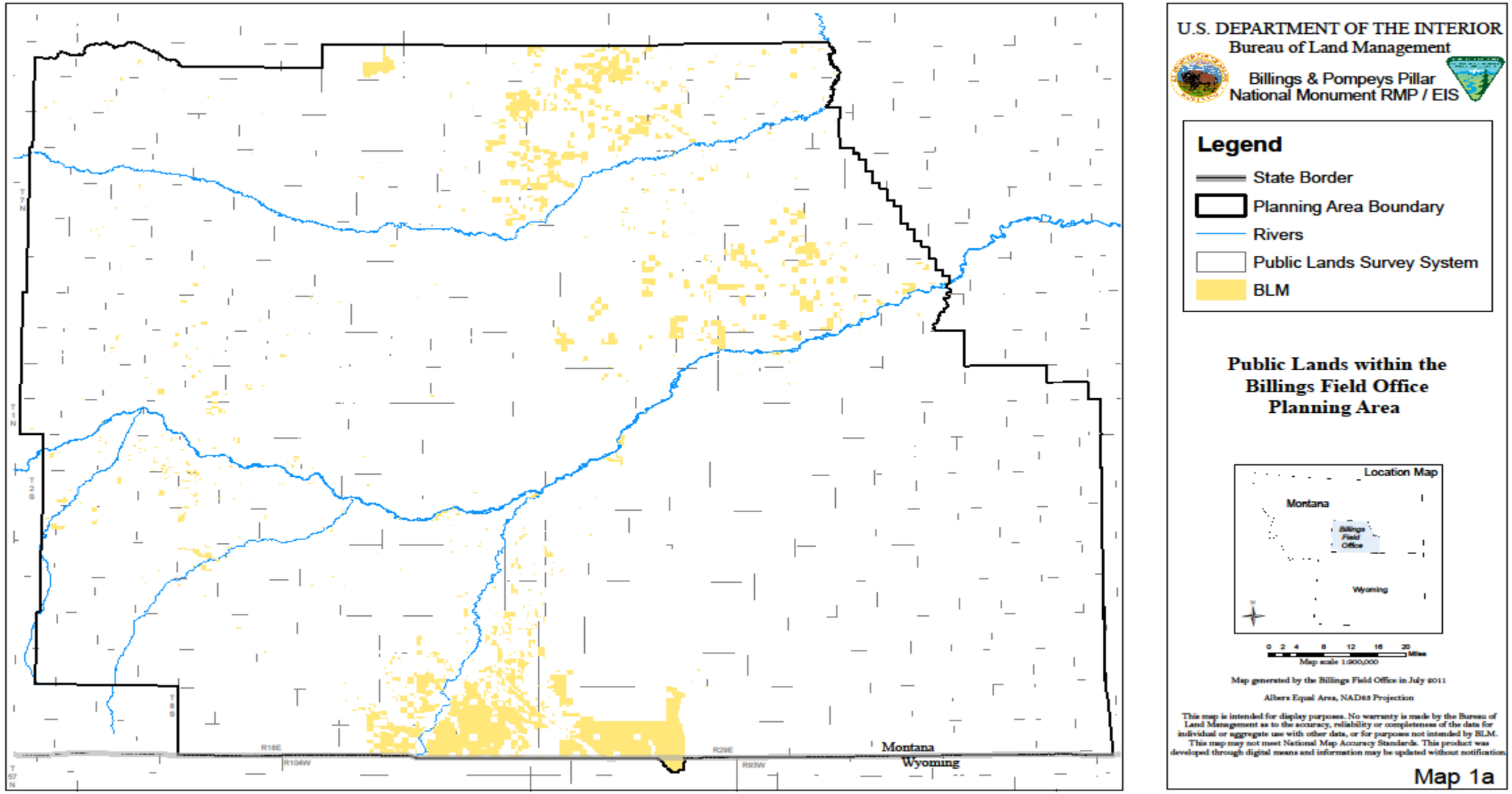


Figure 3: BLM Federal Minerals within the Billings Field Office Planning Area

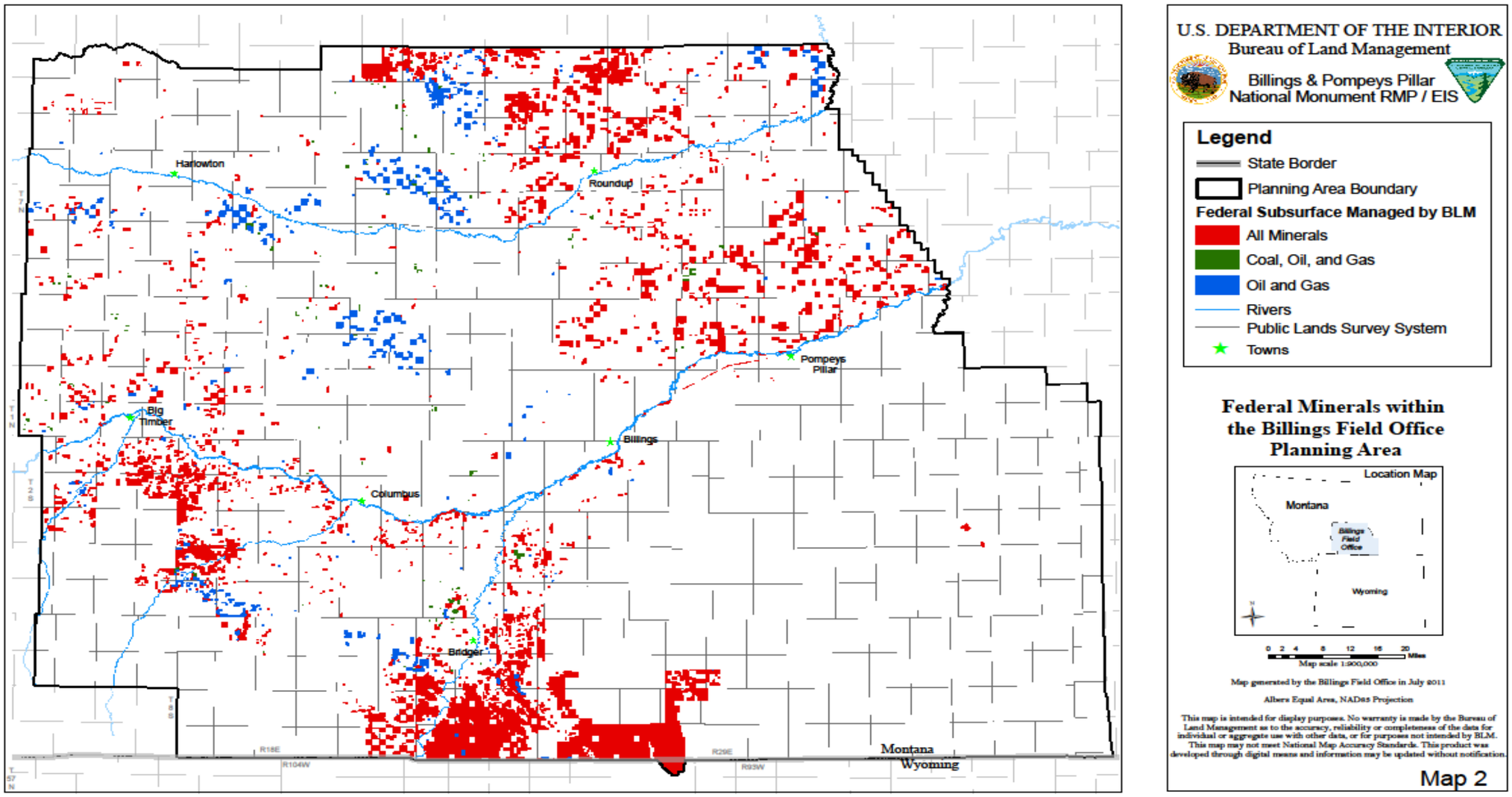
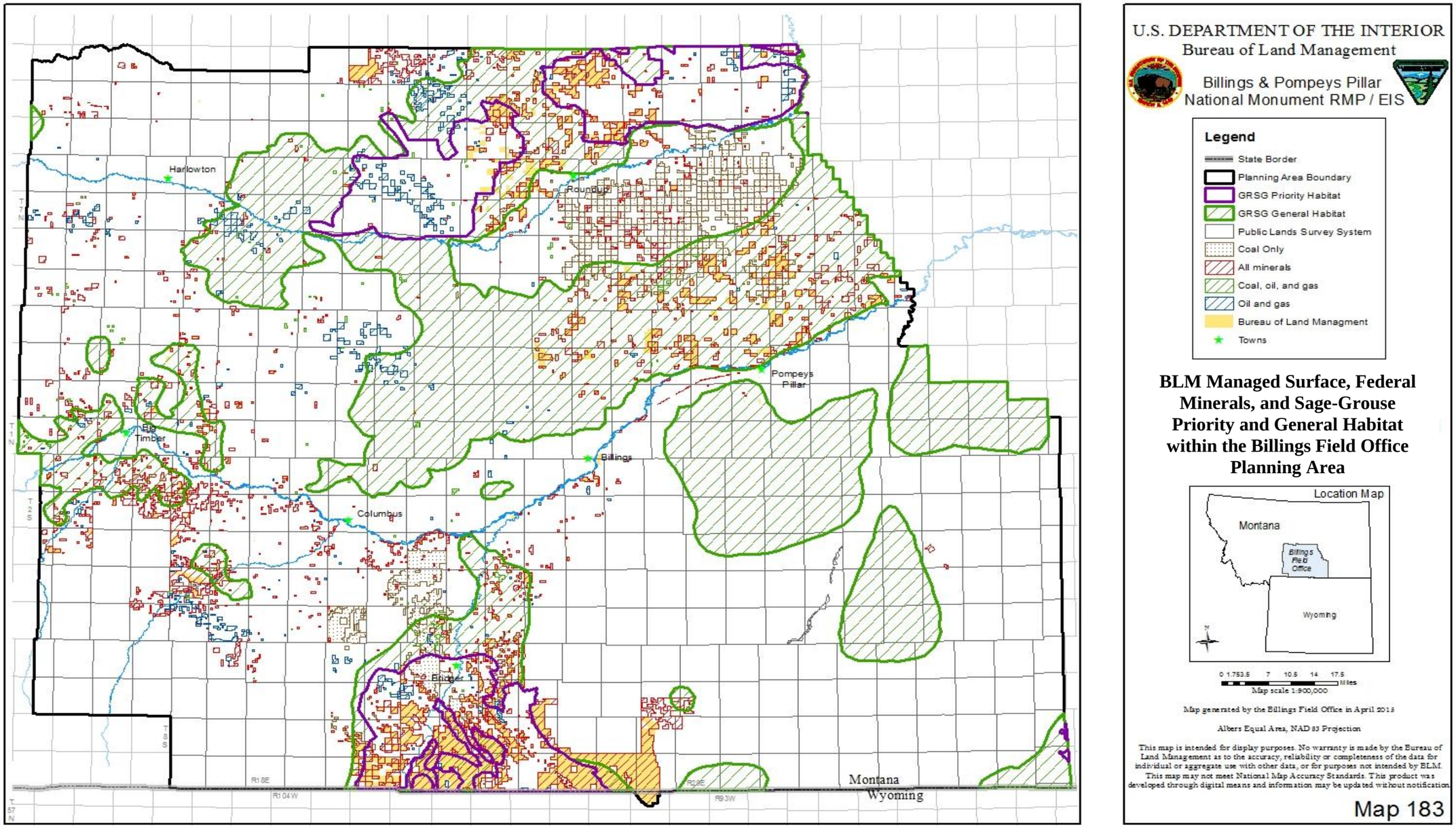


Figure 4: BLM Surface, BLM Federal Minerals and GRSG Priority and General Habitat within the Billings Field Office Planning Area



1.2 Purpose and Need for the Resource Management Plan Revision

Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] 1502.13) require the purpose and need of an environmental impact statement (EIS) to "briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives." The purpose and need section of this RMP/EIS provides a context and framework for establishing and evaluating the reasonable range of alternatives described in Chapter 2.

1.2.1 Purpose

Section 102 of FLPMA sets forth the policy for periodically projecting the present and future use of public lands and their resources using the land use planning process. Sections 201 and 202 of FLPMA establish the BLM's land use planning requirements. BLM Handbook H-1601-1, *Land Use Planning Handbook*, provides guidance for implementing the BLM land use planning requirements established by Sections 201 and 202 of FLPMA and the regulations in 43 CFR 1600.

The purpose, or goal, of the land use plan is to provide a comprehensive framework for the BLM's management of the public lands within the planning area, and to ensure these public lands are managed in accordance with FLPMA and the principles of multiple use and sustained yield. The purpose of this plan revision is to consolidate the existing land use plans and their amendments, and to reevaluate, with public involvement, existing conditions, resources, and uses and reconsider the mix of resource allocations and management decisions that are designed to balance uses with the protection of resources pursuant to FLPMA and other applicable law. This resource management plan (RMP) revision will address the growing needs of the planning area and result in selection of a management strategy that best achieves a combination of the following:

- Employ a community-based planning approach to collaborate with federal, state, and local cooperating agencies.
- Resolve multiple use conflicts or issues between resource values and resource uses. The resulting RMP will establish consolidated guidance and updated goals, objectives, and management actions for the public lands in the Billings Field Office. The RMP will be comprehensive in nature and will address issues that have been identified through agency, interagency, and public scoping efforts.
- Establish goals and objectives (desired outcomes) for management of resources and resource uses within the approximately 434,321 surface/mineral estate acres and an additional 889,479 acres of federal mineral estate (underlying private or state surface) administered by the BLM Billings Field Office in accordance with the principles of multiple use and sustained yield.
- Identify land use plan decisions to guide future land management actions and subsequent site-specific implementation decisions.

- Identify management actions and allowable uses anticipated to achieve the established goals and objectives and reach desired outcomes.
- Provide comprehensive management direction by making land use decisions for all appropriate resources and resource uses administered by the Billings Field Office.
- Provide for compliance with applicable tribal, federal, and state laws, standards, implementation plans, and BLM policies and regulations.
- Recognize the nation's needs for domestic sources of minerals, food, timber, and fiber, and incorporate requirements of the Energy Policy and Conservation Act (EPCA) Reauthorization of 2000.
- Retain flexibility to adapt to new and emerging issues and opportunities and to provide for adjustments to decisions over time based on new information and monitoring.
- Strive to be compatible with existing plans and policies of adjacent local, state, tribal, and federal agencies and be consistent with federal law, regulations, and BLM policy.
- Incorporate appropriate management actions and practices to conserve Greater Sage-grouse and its habitats on BLM managed land.

1.2.2 Need for Revising the Existing Plan

Currently, lands within the Billings Field Office decision area, including Pompeys Pillar National Monument, are managed according to the 1984 Billings Resource Area RMP, as amended.

The BLM identified the need to revise this land use plan through a formal plan evaluation completed in 2009. Since completion of the 1984 RMP, considerable changes have occurred within the decision area. Heightened public awareness, increased public demand for use of the lands, and increases in conflict between competing resource values and land uses continue to challenge the BLM's management goals and objectives. The Billings Field Office is facing a wide variety of issues affecting local communities, regional, and state interests, and the health of the public lands. This, along with emerging issues and changing circumstances, resulted in the need to revise the existing plans. Given the nature of the issues that face the Billings Field Office and their overlap among federal, tribal, state, and local jurisdictions, the Billings Field Office will revise the existing land use plan, as amended, into one planning document – the Billings and Pompeys Pillar National Monument RMP/EIS. This plan revision is a combined effort that addresses both the Billings Field Office and the Pompeys Pillar National monument in a consolidated RMP and associated EIS. This document refers to the combined Billings and PPNM planning areas as the Planning Area and is referenced throughout the document as the Billings and Pompeys Pillar National Monument DRMP/EIS.

There are a number of new issues (such as new Endangered Species Act listings), higher levels of controversy around existing issues, and new (unforeseen) public land uses and concerns that have arisen over the years which the BLM intends to address through this revision. These and other select examples of new data, new and revised policies, and emerging issues and changing circumstances demonstrate the need to revise the existing plans.

The March 4, 2010 decision by the U.S. Fish and Wildlife Service that the greater sage-grouse warranted listing but was precluded [Endangered and Threatened Wildlife and Plants; 12-Month Findings for Petitions to list the Greater Sage-Grouse *(Centrocercus urophasianus*) as Threatened or Endangered] set in motion the most comprehensive land-use planning initiative in the BLM's history.

In 2011, the BLM began updating land-use plans across the West so as to ensure not only the long-term viability of the greater sage-grouse on public lands and the continued economic vitality of the West. This has been a complex and demanding process involving collaboration with an unprecedented number of stakeholders, including Governors, State Fish and Game agencies, the U.S. Fish and Wildlife Service and many others. The BLM's mandate of multiple use and sustained yield has required us to balance the full range of resource uses on public lands, including the conservation of crucial wildlife habitat. As we have worked through this process, public land managers throughout the BLM have made difficult resource management decisions.

These documents provide key guidance that will enable the BLM to finalize land use plans that will contribute to the conservation of the Greater Sage-Grouse and other sagebrush associated species across the West. The guidance outlines a suite of tools, such as disturbance limits in key habitats, net conservation gain, and mitigation approaches, which will help us to reach this goal. These mechanisms will work in concert to conserve sage-grouse habitat so that we can achieve our twin goals of thriving Greater Sage-Grouse populations and robust Western economies.

Greater Sage-grouse Conservation Objectives: Priority Areas for Conservation (PAC) and how they correlate with Priority and General Habitat Management Areas

In 2012, the Director of the U.S. Fish and Wildlife Service (USFWS) asked the Conservation Objectives Team (COT), consisting of state and USFWS representatives, to produce recommendations regarding the degree to which the threats need to be reduced or ameliorated to conserve greater sage-grouse (GRSG) so that it would no longer be in danger of extinction or likely to become in danger of extinction in the foreseeable future. The COT Report (USFWS 2013a) provides objectives based upon the best scientific and commercial data available at the time of its release. The BLM/FS planning decisions analyzed in the LUP/EISs are intended to ameliorate threats identified in the COT report and to reverse the trends in habitat condition. The COT Report can be viewed online at the following address:

http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/COT/COT-Report-with-Dear-Interested-Reader-Letter.pdf

The highest level objective in the COT Report is identified as meeting the objectives of Western Association of Fish and Wildlife Agencies' (WAFWA) 2006 GRSG Comprehensive Strategy of "reversing negative population trends and achieving a neutral or positive population trend."

The COT Report provides a WAFWA Management Zone and Population Risk Assessment. The report identifies localized threats from sagebrush elimination, fire, conifer encroachment, weed and annual grass invasion, mining, free-roaming wild horses and burros, urbanization, and widespread threats from energy development, infrastructure, grazing, and recreation (USFWS 2013a, p. 18).

Key areas across the landscape that are considered "necessary to maintain redundant, representative, and resilient populations" are identified within the COT Report. The USFWS in concert with the respective state wildlife management agencies identified these key areas as Priority Areas for Conservation (PACs).

Within the Billings Field Office Planning Area boundaries, the PACs consist of a total 4,050,227 acres, regardless of land ownership. Under the Proposed Plan, the PACs are comprised of 158,926 surface acres of PHMA managed by the BLM, 113,816 surface acres of GHMA managed by the BLM, and 78,927 surface acres of Restoration habitat managed by the BLM (Figure 4).

Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review:
On November 21, 2014 the USGS published "Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review" (USGS 2014). The USGS review provided a compilation and summary of published scientific studies that evaluate the influence of anthropogenic activities and infrastructure on GRSG populations. The BLM has reviewed this information and examined how lek buffer-distances were addressed through land use allocations and other management actions in the Draft Billings and Pompeys Pillar National Monument RMP/EIS. Based on this review, in undertaking BLM management actions, and consistent with valid and existing rights and applicable law in authorizing third party actions, the BLM will apply the lek buffer-distances in the USGS Report "Conservation Buffer Distance Estimates for Greater Sage Grouse-A Review (Open File Report 2014-1239)" in both GHMA and PHMA as detailed in Appendix AA (section G).

This RMP revision incorporates specific management actions and conservation measures to conserve Greater sage-grouse and its habitats on BLM land.

1.3 Planning Process

The process for the development, approval, maintenance, and amendment or revision of RMPs was initiated under the authority of Section 202(f) of FLPMA and Section 202(c) of the National Environmental Policy Act (NEPA). The process is guided by BLM planning regulations in 43 CFR 1600 and CEQ regulations in 40 CFR 1500.

The hierarchy of documents that BLM decision-makers consider for planning and project implementation is:

- Land Use Plans. The highest level of decision-making specific to land use is the resource management plan (RMP). RMPs generally make land allocations and provide goals and objectives for managing specific areas of land. They provide the framework for managing all natural resources under BLM authority for the planning area. Plan decisions are based on a public NEPA disclosure process, usually an EIS.

- Activity Plans. Mid-level decisions are provided in activity plans. These plans contain more detailed management decisions than do RMPs. Activity plans address management of specific programs or areas. Examples include allotment management plans, recreation area management plans, and habitat management plans. An activity plan usually selects and applies best management practices to meet land use plan objectives. Decisions that cover major (often geographically widespread) proposals lead to coordinated activity plans that cover all programs in an integrated manner.

- Project Plans. The BLM analyzes individual projects proposed in a specific location for localized or site-specific effects. For example, the BLM would evaluate a range improvement proposal with a site-specific environmental analysis including NEPA, Endangered Species Act (ESA) consultation, and National Historic Preservation Act (NHPA) consultation.

All management direction or actions developed as part of the BLM planning process are subject to valid rights and must meet the objectives of the BLM's multiple use management mandate and responsibilities (FLPMA Section 202[c] and [e]). Valid rights include all valid leases, permits, patents, rights-of-way (ROW), or other land use rights or authorizations existing on the date of the approval of FLPMA.

The FLPMA requires the BLM to use land use plans as tools by which "present and future use is projected" (43 U.S.C. 1701 (a)(2)). The act's implementing regulations for planning, 43 CFR Part 1600, state that land use plans are a preliminary step in the overall process of managing public lands, "designed to guide and control future management actions and the development of subsequent, more detailed and limited scope plans for resources and uses" (43 CFR Part 1601.0-2). Public participation and input are important components of land use planning.

Revision of existing land use plans is a major federal action for the BLM. The National Environmental Policy Act (NEPA) of 1969, as amended, requires federal agencies to prepare an EIS for major federal actions (USDI Departmental Manual Part 516 Chapter 11.4A(1)); thus, this EIS accompanies the revision of the existing plans. This RMP/EIS analyzes the impacts of four alternative scenarios for management of the public lands and resources within the planning area, including the No Action Alternative. The No Action Alternative reflects current management. The NEPA requires analysis of a No Action Alternative.

1.3.1 Nine-Step Planning Process

The BLM uses a nine-step planning process (see Figure 5) when developing and revising RMPs, as required by 43 CFR 1600 and planning program guidance in the BLM Land Use Planning Handbook H-1601-1. The planning process is designed to help the BLM identify the uses of BLM-administered lands desired by the public and to consider these uses to the extent

they are consistent with the laws established by Congress and the policies of the executive branch of the federal government.

The planning process is issue-driven (Step 1). The plan revision process is undertaken to resolve management issues and problems as well as to take advantage of management opportunities. The BLM utilized the public scoping process to identify planning issues to direct (drive) the revision of the existing plans. The scoping process was also used to introduce the public to preliminary planning criteria, which set limits to the scope of the RMP revision (Step 2).

As appropriate, the BLM used existing data from a variety of sources and collected new data as necessary to address planning issues and to fill data gaps identified during public scoping (Step 3). Using these data, the planning issues, and the planning criteria, the BLM conducted an Analysis of the Management Situation (AMS) (Step 4) to describe current management and identify management opportunities for addressing the planning issues. Current management reflects management under the existing plans and management that would continue through selection of the No Action Alternative. The existing affected environment is summarized from the AMS into Chapter 3 of the RMP/EIS. The AMS is included as part of the Administrative Record for this plan and is available in the Billings Field Office and on the Billings Field Office's planning website (http://on.doi.gov/1EJBdaE).

Results of the first four steps of the planning process clarified the purpose and need and identified key planning issues that need to be addressed in the RMP. Key planning issues reflect the focus of the RMP revision and are described in more detail in the Planning Issues section of this RMP/EIS.

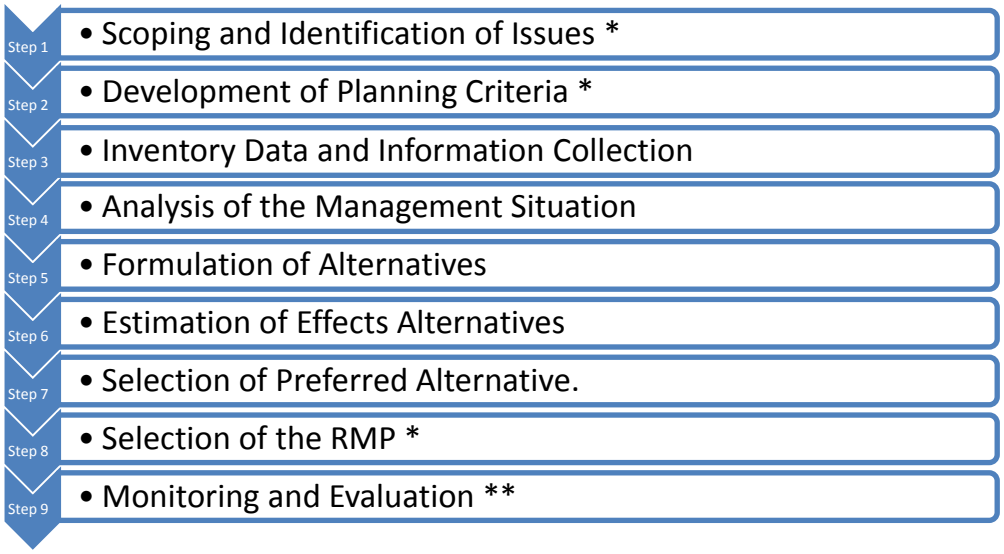
Alternatives constitute a range of management actions which are anticipated to achieve identified goals or objectives. During alternative formulation (Step 5), the BLM Billings Field Office collaborated with cooperating agencies to identify goals and objectives (desired outcomes) for resources and resource uses in the planning area.

These desired outcomes addressed the key planning issues, were constrained by the planning criteria, and incorporated the management opportunities identified by the BLM. Details of the alternatives were developed through the identification of management actions and allowable uses anticipated to achieve the goals and objectives. The alternatives represent a reasonable range for managing resources and resource uses within the planning area under the multiple use and sustained yield mandate of FLPMA. Chapter 2 of this document describes and summarizes the alternatives.

This RMP/EIS also includes an analysis of the impacts of each alternative in Chapter 4 (Step 6). With input from cooperating agencies and BLM specialists, and in consideration of planning issues, planning criteria, and the impacts of the alternatives, the BLM has identified a Proposed Alternative (Alternative D) from among the four alternatives (Step 7). This is documented in the RMP/EIS, which will be distributed to the public for review and comment (also Step 7).

Step 8 of the land use planning process will occur following receipt and consideration of public comments on the RMP/EIS. In preparing the Proposed RMP/Final EIS, the BLM has considered all comments received during the public comment period. In developing the Proposed RMP/Final EIS, the Montana BLM State Director, who is the decision maker for this plan revision, has the authority and discretion to select an alternative in its entirety or to combine components of the various alternatives presented to prioritize differing resources and/or uses consistent with the multiple use and sustained yield mandate. Because these are combined planning efforts, upon issuance of the Billings and PPNM Proposed RMP and Final EIS, and subsequent reviews and resolution of protests, if any, two separate Records of Decision (RODs) will be issued. The regulations at 43 CFR Part 1610 provide, prior to the approval of the proposed RMP, a 60-day period for the governor of Montana for "consistency review" and a 30-day period to protest the Proposed RMP to the BLM Director for "any person who participated in the planning process and has an interest which is or may be adversely affected by the approval" of the Proposed RMP/Final EIS. Step 9, Monitoring and Evaluation, occurs after a Record of Decision (ROD) is issued and the Approved RMP is being implemented.

Figure 5 Nine Step Planning Process



Source: 43 CFR 1610.4
Note: * Public participation is invited throughout the planning process, but is formally requested at these steps.
** The RMP will be revised as necessary based on monitoring and evaluation findings, new data, new or revised policy, and changes in circumstances consistent with applicable laws and regulations.

1.4 Decision Framework

As stated in the previous section, identifying the planning issues and developing planning criteria are the first steps in defining the scope of the RMP revision. The planning issues and criteria provide the framework in which planning decisions are made. Planning decisions refer to what is established or determined by the approved RMP. The RMP provides guidance for planning decisions according to the following categories:

- Physical, Biological, and Cultural/Heritage Resources
- Resource Uses and Support
- Special Designations

In the context of these categories, management strategies were developed to provide viable options for addressing planning issues. The management strategies provide the building blocks from which general management scenarios and the more detailed resource management alternatives were developed. The resource management alternatives reflect a reasonable range of management options that fall within limits set by the planning criteria. The planning issues and planning criteria used to revise the existing plans are described in the following sections.

1.4.1 Planning Issues

The BLM conducted an early and open scoping process to determine the scope, or range, of issues to be addressed in this RMP/EIS. Scoping identifies the affected public and agency concerns, defines the relevant issues and alternatives that will be examined in detail in the RMP/EIS, and eliminates those issues that are not significant. The BLM's Handbook H-1601-1 *Land Use Planning Handbook* defines planning issues as "disputes or controversies about existing and potential land and resource allocations, levels of resource use, production, and related management practices."

Public scoping was designed to meet the public involvement requirements of FLPMA and NEPA. This cooperative process included soliciting input from interested state and local governments, tribal governments, other federal agencies and organizations, and individuals, to identify the scope of issues to be addressed in the plan and to assist in the formulation of reasonable alternatives. The scoping process was an excellent method for opening dialogue between the BLM and the general public about management of the public lands and for identifying the concerns of those who have an interest in the area.

As part of the scoping process, the BLM also requested that the public submit nominations for potential areas of critical environmental concern (ACECs) and nominations of rivers for potential inclusion in the National Wild and Scenic Rivers System (NWSRS).

The scoping period for the Billings and Pompeys Pillar National Monument RMP began on May 15, 2008 with publication of the Notice of Intent (NOI) in the Federal Register, and ended on August 22, 2008. Scoping also included open-house meetings in seven communities (Pompeys Pillar National Monument, Billings, Bridger, Red Lodge, Big Timber, and Roundup, Montana, and Lovell, Wyoming). In addition, the BLM issued news releases to notify the public regarding the scoping period and the planning process and to invite the public to provide written comments. The Billings Field Office received written comments via email, fax, and regular mail. Comments obtained from the public during the scoping period were used to define the relevant issues that would be addressed by a reasonable range of alternatives.

For the Billings and Pompeys Pillar National Monument RMP/EIS planning process, scoping comments received were placed in one of three categories:

- Issues to be resolved in the RMP/EIS

- Issues addressed through other policy or administrative action (and therefore not addressed in the RMP/EIS)
- Issues eliminated from detailed analysis because they are beyond the scope of the RMP/EIS

Some important issues to be addressed in the RMP were identified by the public and other agencies during the scoping process. The Billings and Pompeys Pillar National Monument RMP/EIS Scoping Report (available for review on the RMP planning web page at http://on.doi.gov/1EJBdaE) summarizes the scoping process.

The issues identified in the Scoping Report fall into one of 10 broad categories. Other resource and use issues are identified in the BLM Planning Handbook (H-1601-1). All of these issues were considered in developing the alternatives brought forward in this RMP/EIS.

1.4.1.1 Travel Management Planning

Travel management and access is addressed at two levels in this document. Proposed travel management is described both at the land-use planning level (allocating open, closed, and limited area designations) as well as at the Field Office level (specific route designations) as part of the RMP decision to be made. In addition, there are eleven Travel Management Areas (TMA) for which site-specific management by individual travel routes is proposed by alternative. Site-specific travel plan decisions for each of these eleven areas will be made separately from the RMP level decisions as implementation level decisions.

Four public meetings were held over a one-week period in June 2009. These public meetings were held in the population centers nearest the eleven travel management areas: Lovell, Wyoming: Cottonwood and Pryor Mountain TMAs; Bridger, Montana: Cottonwood, Grove Creek, Warren, and Pryor Mountain TMAs; Roundup, Montana: Horsethief and Gage Dome/Colony Road TMAs; and Billings, Montana: Acton, Cottonwood, Grove Creek, Mill Creek/Bundy, Pryor Mountain, Shepherd Ah-Nei, South Hills, and Tin Can Hill TMAs. To advertise the meetings, BLM sent a newsletter to all people on its mailing list and advertised the meetings on its public website. In addition, BLM sent a press release to the appropriate newspapers, radio stations, and television stations announcing the meetings.

The participants at the public meetings were asked to provide written comments on the proposals for consideration in the travel management process. Meeting participants reviewed maps and information related to the proposed eleven TMAs. (See Appendix O for Travel Management Route Designation Process and Implementation-Level Plans)

1.4.1.2 Issues to be Addressed in the Billings and Pompeys Pillar National Monument RMP/EIS

Those planning issues determined to be within the scope of the EIS are used to develop one or more of the alternatives or are addressed in other parts of the EIS. For example, as planning issues were refined, the BLM collaborated with cooperating agencies to develop a reasonable range of alternatives designed to address and (or) resolve key planning issues, such as what areas, if any, contain unique or sensitive resources requiring special management. A reasonable

range of alternatives provides various scenarios for how the BLM and cooperating agencies can address this and other key planning issues, including the management of resources and resource uses in the decision area. In other words, key planning issues serve as the rationale for alternative development. The key planning issues identified for developing alternatives in this EIS are listed below:

Issue 1: How can the public lands be managed to provide desired plant communities?

A healthy cover of perennial vegetation stabilizes the soil, increases infiltration of precipitation, reduces runoff, provides clean water to adjacent streams, and minimizes noxious weed invasion. Some resource uses (e.g., grazing, mineral development, OHV use, and recreation) can affect the natural function and condition of plant communities. Plant communities can also be altered and affected by fire, invasive species, and natural disasters (e.g., floods and drought). All factors mentioned that may affect rangeland, forest, and riparian vegetation will be addressed in the RMP.

Issue 2: How can public lands be managed to maintain or improve wildlife and fisheries habitats and control invasive species?

Where public land ownership patterns are highly fragmented protection and/or improvement of fish and wildlife habitats is more challenging. The key to maintaining fish and wildlife habitats is diverse, healthy vegetation and plant communities and good water quality, stream channel, and riparian conditions. The RMP will identify the range (current and potential) of wildlife habitat as well as habitat conditions in the decision area.

Issue 3: How can public lands be managed to conserve and recover threatened, endangered, proposed, and sensitive species, including Greater Sage-grouse?

The majority of the animal species considered sensitive by Montana/Dakotas BLM are found in habitats within the planning area. Many of these species are associated with grassland and sagebrush habitats, and the decision area contains a portion of their global breeding range.

The RMP will identify reasonable strategies to conserve and recover special status species in the decision area in consultation with the U.S. Fish and Wildlife Service as required under the Endangered Species Act and Bureau Special Status Species policy. Special status species include species listed, proposed for listing, or candidate species under the Endangered Species Act and sensitive species identified by the BLM (Appendix H).

In March 2010, the U.S. Fish and Wildlife Service (USFWS) determined that the greater sage-grouse warranted protection under the Endangered Species (ESA), but that listing the species was precluded by the need to address other, higher-priority species first (75 FR 13910, March 23, 2010). One reason for the USFWS decision was an identified need for "improved regulatory mechanisms" to ensure species conservation. The principal regulatory mechanisms for BLM are Resource Management Plans (RMPs), therefore, the BLM is using this opportunity to develop long-term and effective management for the species on the BLM lands (WO IM 2012-044).

Issue 4: What public lands will be available for commercial activities and how will those activities be managed while protecting the integrity of other resources.

A wide variety of commercial activities are conducted on BLM-managed lands in the planning area. Some of the primary uses are: oil and gas development, coal mining, livestock grazing, rights-of-way and land use authorizations, commercial recreation permits, locatable/saleable minerals, and forest product removal, and community wildfire protection plans. The potential for wind power development is also present. The RMP will identify areas available for commercial activities and how those activities will be managed to protect resource values.

Issue 5: How should recreation activities be managed in response to public demand while protecting natural and cultural resource values and provide for visitor safety?

Recreation use in the decision area continues to increase. With this popularity has come a demand for a greater variety and availability of recreation opportunities such as motorized and non-motorized trails (including equestrian trails), climbing, mountain biking, hiking, and camping. With the number of visitors growing, resource and user conflicts are becoming more common. Recreational use needs to be managed, including identifying special recreation management areas (SRMAs) where management attention is needed to highlight important recreational opportunities or deal with problems such as conflicts between users or impacts on other resources. The RMP should assist the BLM in providing access to the public lands and to ensure quality environmentally responsible outdoor recreational opportunities, experiences, and benefits for the growing number of public land users.

Issue 6: How will conflicts between motorized and non-motorized uses be resolved and how will effects to resources from motorized use be addressed?

Use of the public lands in south central Montana (for recreation, commercial uses, and general enjoyment) has grown in popularity in recent years. With this popularity has come a demand for greater variety and availability of access opportunities, including off-highway vehicle (OHV) use. With the number of visitors growing, resource and user conflicts are becoming more common. Motorized use needs to be managed, including identifying areas to be restricted or closed for the protection of other resource values.

Major considerations in alternative development and estimation of the effects for travel and access management in the RMP will include: public and administrative access needs, road densities, recreational activities, and resource values.

Issue 7: What areas should be designated for special management (e.g., ACECs and Wild and Scenic Rivers) and how should these areas be managed?

FLPMA and BLM policy require the BLM to give priority to designation and protection of ACECs during the land use planning process. The Wild and Scenic River (WSR) Act directs federal agencies to consider the potential for including watercourses into the National Wild and Scenic Rivers System during the land use planning process. The alternatives analyzed in this RMP/EIS include a range of management prescriptions for managing the existing and potential ACECs, as well as for managing the eligible rivers as suitable WSRs.

As part of the Billings and Pompeys Pillar National Monument RMP/EIS development, evaluations were conducted to address whether certain places in the decision area

qualified/remained qualified for special designation to protect unique or significant values. Subject to valid existing rights, the RMP will avoid approval of proposed actions that could degrade the values of potential special designations.

Issue 8: How will local social and economic conditions be addressed?

Through this RMP/EIS, the BLM will identify how management of various resources and BLM authorized activities in the decision area will affect economic and social conditions.

Issue 9: How will the cultural and historic values at Pompeys Pillar National Monument be protected?

The cultural and historic values and associated viewshed at Pompeys Pillar NM (if it is within the decision area) will be preserved through management actions developed in this RMP for Pompeys Pillar National Monument. Pompeys Pillar National Monument (51 acres) was designated a national monument for the purpose of protecting ethnographic, historic, and archaeological values associated with Pompeys Pillar.

Issue 10: How will recreation and visitor services at Pompeys Pillar National Monument be managed?

Pompeys Pillar National Monument and ACEC will be managed to provide for interpretation, use, and enjoyment while protecting the significant resource values, providing for user safety, and maximizing socio-economic benefits.

1.4.1.3 Issues Considered But Not Further Analyzed

1.4.1.3.1 Master Leasing Plans

During the preparation of the Billings and Pompeys Pillar National Monument RMP revision, the BLM issued Washington Office Instruction Memorandum (IM) 2010-117 which introduced the Master Leasing Plan (MLP) concept as part of the BLM Oil and Leasing Reform. The MLP process entails analyzing likely development scenarios and varying levels of protective design features and/or mitigation measures in a defined area with greater detail (i.e., at a finer scale) than a traditional RMP allocation analysis, but at a less site-specific level than a development plan that has been fully defined by an operator. While preparation of some MLPs may result in land use plan-level decisions, some may result in implementation-level decisions.

No externally generated MLP proposals were received for the Billings Field Office. After an internal review by BLM staff, the need to address or consider an MLP within the Billings Field Office was determined not to meet the criteria. The following provides a brief overview of the findings of the review criteria. For a more detailed review of the MLP criteria and considerations, a full report can be reviewed at:
http://www.blm.gov/style/medialib/blm/mt/blm_programs/energy/oil_and_gas/leasing/leasing_reform.Par.58748.File.dat/MLPAssessments.pdf

There is not a majority of federal mineral estate within the planning area (only 4% percent of the area is BLM federal mineral estate). In addition, there is not a substantial portion of the federal mineral estate that is currently leased (57 percent). The Billings Field Office is

considered to have mostly moderate to low occurrence potential based on the updated Reasonably Foreseeable Development (RFD) scenario prepared for the Proposed Billings and Pompeys Pillar National Monument RMP/EIS. There is scattered oil production throughout the southern portion of the area, as well as some production in the northeast corner of the area. This production is in older fields with all of the wells being drilled prior to 2000. Since the area only contains 4 percent federal mineral estate, and since there is no new discovery, an MLP analysis is not warranted at this time.

Based on the reasons described above and the range of alternatives considered to address the planning issues and resource values identified, in relationship to oil and gas leasing and development, an MLP proposal is not analyzed further in this RMP.

1.4.1.3.2 Non-Energy Leasable Minerals

Non-energy leasable minerals, such as phosphate, sodium, potassium , sulphur, trona, or gilsonite are not present in the decision area. As non-energy leasables are not present, no allocations are made by alternative nor are they discussed or analyzed further in this document.

1.4.1.4 Issues Addressed Through Policy or Administrative Action

Policy or administrative actions include those actions that are implemented by the BLM because they are standard operating procedure, because federal law requires them, or because they are BLM policy. Administrative actions do not require a planning decision to implement. They are, therefore, issues that are eliminated from detailed analysis in this planning effort. The following issues can be addressed by policy or administrative actions:

- Compliance with existing laws and policies (e.g., FLPMA, NEPA, Endangered Species Act, American Antiquities Act, Clean Air Act, Clean Water Act, National Historic Preservation Act [NHPA], etc.).
- The allocation of forage between livestock and wildlife, and the application of specific management practices on allotments within the Billings Field Office is provided for through the application of Montana's Standards for Rangeland Health, Guidelines for Livestock Grazing Management, and supporting monitoring data. When monitoring and inventory data indicate a need, changes to the allocation of forage for livestock and wildlife are made after coordination with permittees, the Montana Fish, Wildlife, and Parks, and other affected interests in order to assure that resource objectives are met. Livestock grazing management practices may also be adjusted to assure that grazing practices are compatible with other uses of the public lands. These allocation and management adjustments are implementation decisions according to the BLM's Land Use Planning Handbook (H-1601-1), and are done on an allotment or other site-specific basis.
- Education, enforcement/prosecution, vandalism, and volunteer coordination.

- Assist in resolving, to the extent possible, inconsistencies between federal and non-federal agency plans, and to be consistent with state and local plans to the maximum extent, consistent with federal law and the purposes of FLPMA.
- Management of cultural resources, which includes up-to-date inventories, non-disclosure of sensitive sites, proposal of cultural sites for the National Register of Historic Places (NRHP), and Native American consultation.
- Management of the Billings Field Office's four existing WSAs (approximately 28,631 acres) follows BLM Manual 6330 – Management of BLM Wilderness Study Areas until such time as Congress acts upon the recommendations. The BLM is statutorily required under 43 U.S.C. 1782(c) to manage these areas to protect their suitability for Congressional designation into the National Wilderness Preservation System unless and until Congress either designates an area as wilderness or releases it from further consideration. The BLM's discretion to make planning decisions on management of WSAs is limited to designating WSAs as visual resource management (VRM) Class I and determining if the WSAs will be limited or closed to OHV use.
- Completion of inventory of riparian and wetland areas and the use of monitoring and mitigation to help protect these resources.
- Recreation management improvements, including a comprehensive sign system and maps.
- Administration of existing mineral leases, permits, and other authorized uses.
- Administration of valid existing rights.
- Monitoring wildlife and biodiversity.
- Monitoring air quality.
- Mitigation measures for site-specific projects.
- Noxious weed control.
- Eligibility standards for specially designated areas.
- Protection of threatened, endangered, or sensitive species.
- Coordination with local, state, and federal agencies.
- Cooperation with user groups.

1.4.1.5 Issues beyond the Scope of the RMP

Issues beyond the scope of the RMP process include all issues not related to decisions that would occur as a result of the planning process. They include decisions that are not under the jurisdiction of the Billings Field Office or are beyond the capability of the BLM to resolve as part of the planning process. Issues identified in this category include:

- Settlement of RS 2477 claims. The State of Montana and the Counties of Big Horn, Carbon, Golden Valley, Musselshell, Stillwater, Sweet Grass, Wheatland, and Yellowstone and the State of Wyoming and Big Horn County may hold valid existing highway rights-of-way across public lands in the planning area pursuant to Revised Statute (RS) 2477, Act of July 26, 1866, chapter 262, § 8, 14 Stat. 251, 253, *codified at* 43 USC § 932. This RMP does not adjudicate, analyze, or otherwise determine the validity of claimed RS 2477 rights-of-way. Nothing in this RMP extinguishes any valid right-of-way, or alters in any way the legal rights the State of Montana and the Counties of Big Horn, Carbon, Golden Valley, Musselshell, Stillwater, Sweet Grass, Wheatland, and Yellowstone and the State of Wyoming and Big Horn County have to assert and protect RS 2477 rights, and to challenge in federal court or other appropriate venue any use restrictions imposed by the RMP that they believe are inconsistent with their rights. If a claimed right-of-way is recognized by the BLM through an administrative determination, or a right-of-way is determined to be valid by a court of law, any use restriction imposed by this RMP shall no longer apply to it.

- New proposals for WSAs or wilderness. Any individual, organization, or agency can submit potential wilderness designation lands to Congress for designation. Only Congress can designate WSAs, established under Section 603 of FLPMA, as wilderness or release WSAs for other uses.

- Expansion of the Pryor Mountain Wild Horse Range beyond the Herd Area. Wild horses can only be managed on areas of public lands where they were known to exist in 1971, at the time of the passage of the Wild Free-Roaming Horses and Burros Act (herd areas and territories). Under section 1339 "Limitation of Authority" the Wild Free-Roaming Horses and Burros Act of 1971 states "*Nothing in this Act shall be construed to authorize the Secretary to relocate wild free-roaming horses or burros to areas of the public lands where they do not presently exist*". Until a change in the law allows for expansion of the Pryor Mountain Wild Horse Range onto additional Forest Service and BLM lands that are outside of the Herd Area and Territory, the agencies have a legal obligation to follow the law to the greatest extent possible. Horses were in the Pryor Mountains historically, but by 1968 they were largely limited to the 1968 designated range due to the Forest Service/BLM boundary fence. Though there is much supposition as to the extent of wild horses in 1971, comprehensive agency inventories, assessments, and public involvement (Hall, 1972 and BLM/USFS, 1974) provided the basis for Herd Area and Territory boundaries per the 1971 Act. Subsequent land use planning efforts in 1984 (BLM) and 1987 (USFS) validated the same areas as being wild horse herd management area and territory, respectively.

- Activities and uses beyond the jurisdiction of the BLM.

- Changing existing laws, policies, and regulations.

- Availability of funding and personnel for managing programs.

1.4.2 Planning Criteria

BLM planning regulations (43 CFR 1610) require the preparation of planning criteria as preliminary to the development of all RMPs. Planning criteria are the standards, rules, and guidelines that help to guide the planning process. These criteria influence all aspects of the planning process, including inventory and data collection, developing issues to address, formulating alternatives, estimating impacts, and selecting the Preferred Alternative. In conjunction with the planning issues, planning criteria ensure that the planning process is focused and incorporates appropriate analyses. Planning criteria are developed from appropriate laws, regulations, and policies as well as from public participation and coordination with cooperating agencies, other federal agencies, state and local governments, and American Indian tribes.

Planning criteria used in the development of this RMP are:

- The RMP will recognize the existence of valid existing rights
- The RMP will comply with applicable laws, regulations, executive orders, and BLM supplemental program guidance
- Planning decisions will cover BLM-administered public lands, including split-estate lands where the federal government has retained the sub-surface mineral estate
- Planning decisions will use and observe the principles of multiple use and sustained yield set forth in FLPMA and other applicable law (43 United States Code [USC] 1701 (c)(1))
- The BLM will use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences (43 USC 1701 (c)(2))
- Areas potentially suitable for ACEC or other special designations will be identified and, where appropriate, brought forward for analysis in the EIS (43 USC 1701 (c)(3))
- The BLM will rely, to the extent it is available, on the inventory of public lands, their resources, and other values (43 USC 1701 (c)(4))
- The BLM will consider present and potential uses of the public lands (43 USC 1701 (c)(5))
- The BLM will consider the relative scarcity of the values involved and the availability of alternative means (including recycling) and sites for the realization of those values (43 USC 1701 (c)(6))
- The BLM will consider the relationship between short-term uses of the human environment and the maintenance and enhancement of long-term productivity

- Decisions in the RMP will comply with applicable pollution control laws, including state and Federal air, water, noise, or other pollution standards or implementation plans (43 USC 1701 (c) (8))
- To the extent consistent with the laws governing the administration of the public lands (FLPMA 202 b(9)), BLM will be consistent with existing officially approved or adopted resource plans, policies, or programs of other federal agencies, state agencies, American Indian tribes, and local governments that may be affected (43 CFR 1610.3-1 (c) (9))
- The National Greater Sage-Grouse Habitat Conservation Strategy (BLM 2004a) requires that impacts to sagebrush habitat and sagebrush-dependent wildlife species (including greater sage-grouse) be analyzed and considered in BLM land use planning efforts for the public lands with sage-grouse/sagebrush habitats.
- The BLM will utilize the Western Association of Fish and Wildlife Agencies (WAFWA) Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats (Connelly, et al. 2004), and any other appropriate resources, to identify greater sage-grouse habitat requirements and best management practices.

1.4.3 Land Use Planning Decision Levels

The BLM planning process has been organized into different decision levels that progress from the very general to the very specific. Such organization is called a step-down process, which is presented below. Decisions at each step build on the previous steps so that in the end, specific management actions are consistent with the overall BLM mission. Not all steps are the subject of the Billings and Pompeys Pillar National Monument RMP/EIS. The higher-level steps for national, state, and Field Office –wide decisions previously have been established. Annotations in the following outline identify where in the document each step in the outline is presented.

- **Planning Criteria –** Section 1.4.2
- **Scoping Issues** – Section 1.4.1.2
- **Goals and Objectives** for each Resource Program – Section 2.6
- **Management Actions** for each Resource Program – Section 2.6

1.4.3.1 Types of Decisions

The BLM administers programs to manage public resources at the national, state, and local levels. BLM management of public lands is based on a network of decisions made at each of the administration levels. There are two general types of decisions contained in the RMP/EIS; land use plan and implementation. Both are subject to the requirements of NEPA.

Land use plan decisions provide general guidance for future site-specific management activities within a defined framework.

Implementation decisions are characterized by having project or activity level detail, a narrow focus, and actions specific to a unique location during a specified time period.

1.4.3.1.1 Land Use Plan Decisions

This RMP provides general management guidance for management actions. These actions conform to national laws, agency policies, and BLM-wide or statewide plans that are currently approved.

Travel management and access is addressed at two levels in this document: (1) RMP level decisions, such as identification of Travel Management Areas (TMA) and the designation of areas as 'open,' 'closed,' or 'limited' to motorized vehicle use; and (2) site-specific motorized travel route designations within TMAs which are implementation-level decisions.

The Billings and Pompeys Pillar National Monument RMP addresses a range of alternatives for establishing Travel Management Areas. Specific management objectives were defined for each TMA, consistent with the overall desired outcomes for travel management. Within these TMAs, a range of alternatives to address route-specific designations were proposed by alternative, and addressed in this document. However these route-specific designations would be implementation-level decisions. Upon finalization of the RMP, the decision for each of the TMAs will be considered to be separate decisions. Travel management outside of the 11 TMAs would continue to be limited to existing roads and trails and in accordance with the RMP Record of Decision (ROD).

1.4.3.1.2 Implementation Level Decisions

Actions that need a level of analysis beyond that contained in the RMP/EIS would undergo their own NEPA review before they could be implemented. These actions would be in conformance with the Approved RMP and would be tiered to the NEPA analysis contained in the Proposed RMP/Final EIS. As per BLM Handbook H-8342-1 and Travel and Transportation Manual 1626 Section 1626, site specific analyses would be conducted for each of the eleven Travel Management Plans.

1.5 Consistency with Other Programs, Plans, and Policies

According to one of the regulations implementing FLPMA (43 CFR 1610), BLM RMPs and amendments must be consistent, to the extent practical, with officially approved or adopted resource-related plans of other federal, state, local and tribal governments so long as the guidance and RMPs are also consistent. The BLM RMPs must also be consistent with the purposes, policies, and programs of FLPMA and other federal laws and regulations related to public lands, including federal and state pollution control laws (see 43 CFR 1610.3-2 [a]). If these other entities do not have officially approved or adopted resource-related plans, then the BLM RMPs must, to the extent practical, be consistent with those entities' officially approved and adopted resource-related policies and programs. This consistency will be accomplished through incorporating the policies, programs, and provisions of public land laws and regulations and federal and state pollution control laws (see 43 CFR 1610.3-2 [b]).

Before the BLM state director approves RMP decisions, the Montana governor has 60 days to identify inconsistencies between the proposed plan and state plans and programs and to provide written comments to the BLM state director. The BLM and the state may mutually agree on a shorter review period. If the governor does not respond within this period, it is assumed that the

proposed RMP decisions are consistent. If the governor recommends changes in the proposed plan or amendment that were not raised during the public participation process, the state director shall provide the public with an opportunity to comment on the recommendations (see 43 CFR 1610.3-2 [e]). This public comment opportunity will be offered for 30 days and may coincide with the 30-day comment period for the notice of significant change. If the state director does not accept the governor's recommendations, the governor has 30 days to appeal in writing to the BLM director (see 43 CFR 1610.3-2[e]).

Plans formulated by federal, state, local, and tribal governments that relate to management of lands and resources have been reviewed for consistency as the Billings and Pompeys Pillar National Monument RMP/EIS has been developed.

The BLM is aware that there are specific state laws and local plans relevant to aspects of public land management that are discrete from, and independent of, federal law. However, BLM is bound by federal law. As a consequence, there may be inconsistencies that cannot be reconciled. The FLPMA and its implementing regulations require that BLM's land use plans be consistent with officially-approved state and local plans only if those plans are consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands. Where officially-approved state and local plans or policies and programs conflict with the purposes, policies, and programs of federal law applicable to public lands, there will be an inconsistency that cannot be resolved. With respect to officially-approved state and local policies and programs (as opposed to plans), this consistency provision only applies to the maximum extent practical. While county and federal planning processes, under FLPMA, are required to as integrated and consistent as practical, the federal agency planning process is not bound by or subject to state or county plans, planning processes, policies, or planning stipulations.

1.5.1 County Plans

The planning area encompasses approximately 434,154 BLM-administered surface acres located in portions of Big Horn, County, Montana, and all of Carbon, Golden, Musselshell, Stillwater, Sweet Grass, Wheatland and Yellowstone counties. Additionally, there are about 4,298 acres administered by the Billings Field Office in Big Horn County, Wyoming. There are also approximately 889,497 subsurface acres of mineral estate administered by the Billings Field Office in the planning area.

The BLM completed a consistency review of existing county Land Use Plans (LUP). The following county plans or growth plans/policies that were reviewed in either draft or final form at the time this report was being prepared include:

- Carbon County Montana Growth Policy (2003)
- Red Lodge Growth Policy (2008)
- Park County (1998)
- Cody Comprehensive Plan (1997)
- Stillwater County Growth Policy (2007)
- Columbus Area Growth Policy (2005)

- Sweet Grass County Growth Policy (2008)
- Big Timber Growth Policy (2008)
- Big Horn County, Wyoming, Community Assessment
- Yellowstone County Growth Policy – combined with Billings (Draft 2008)
- Laurel Growth Management Plan (2004)

Other community assessments and plans were reviewed to capture local/regional concerns and for consistency purposes, including the Yellowstone Business Partnership Seasonality Project (Billings-Cody subregion). County wildfire protection plans that address hazardous fuels and fire suppression were also reviewed and are consistent with the BLM local and national fire plans.

1.5.2 State Plans

A number of planning documents, strategies, or policies that guide management activities affect public lands. Many of the plans directly impact or otherwise affect BLM-administered public lands, agreements, or other partnership involvement opportunities. In addition to BLM's cooperating agency relationship with several state agencies (see Cooperating Agencies section below), ongoing coordination and communication will take place to ensure consistency, as appropriate. A list of state plans most pertinent to the decision area is below. BLM resource specialists reviewed many of these plans and determined that to the extent possible, they are consistent with current management of BLM public lands.

- Air Pollution State Implementation Plan (MT Department of Environmental Quality [MTDEQ])
- Montana's Comprehensive Fish and Wildlife Conservation Strategy Statewide Habitat Plan (MT Fish, Wildlife, and Parks [MTFWP], 1994)
- Management plan and conservation strategies for greater sage-grouse in Montana (MT Greater Sage-Grouse Working Group, 2004)
- Montana Statewide Elk Management Plan (2004)
- Conservation Plan for Black-tailed and White-tailed Prairie Dogs in Montana (MT Prairie Dog Working Group, 2002)
- Montana Bald Eagle Management Plan. 2nd ed. (MT Bald Eagle Working Group, 1994)
- Montana Gray Wolf Conservation and Management Plan (MTFWP, 2003)
- Conservation Plan for Grizzly Bear in Montana (MTFWP, 2001)
- Montana Fish, Wildlife & Parks Endangered Wildlife Program
- Memorandum of Understanding and Conservation Agreement for West slope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana (MTFWP, 2007)

- Management of Mountain Lions in Montana (MTFWP, 1996)
- Montana Nonpoint Source Management Plan (MTDEQ 2007)
- Montana Tourism and Recreation Strategic Plan (2008)
- The Montana Weed Management Plan (Montana Noxious Weed Summit Advisory Council Weed Management Task Force, May 2008)
- The Montana Weed Management Plan (Duncan 2005)
- Boulder River Watershed Total Maximum Daily Loads (MDEQ 2009)
- Salinity TMDL for Sage Creek, Montana (MDEQ 2002)
- Lower Musselshell TMDL Planning Area Decision Document (MDEQ 2001)
- The Governor of the State of Montana issued Executive Order 10-2014 which created the Montana Sage Grouse Oversight Team (MSGOT) and the Montana Sage Grouse Habitat Conservation Program. The executive order outlines a number of conservation strategies for state agencies to follow for land uses and activities in sage-grouse habitat in addition to establishing the MSGOT and habitat conservation program. The State conservation efforts are complimentary to the conservation measures proposed in the BLM land use plans and when combined will provide conservation efforts across land ownership boundaries.

1.5.3 Other Federal Agency Plans

- Custer National Forest Land and Resource Management Plan (Forest Plan), Final Environmental Impact Statement (FEIS), and Record of Decision (ROD) (1987), as amended
- Gallatin National Forest Land and Resource Management Plan (Forest Plan), Final Environmental Impact Statement (FEIS), and Record of Decision (ROD) (1987), as amended
- U.S. Army Corps of Engineers – Yellowstone River Corridor Comprehensive Study http://nris.mt.gov/yellowstone
- Crow Indian Reservation Natural, Socio-Economic and Cultural Resources Assessment and Conditions Report (2002) http://www.deq.mt.gov/CoalBedMethane/FinalEIS/CrowNarrative.pdf
- Northern Cheyenne Tribe and Its Reservation (2002)
- U.S. Department of Interior National Park Service, Lewis and Clark National Historic Trail Comprehensive Plan for Management and Use (1982) http://www.nps.gov/lecl/parkmgmt/index.htm

- U.S. Department of Agriculture Forest Service, Nez Perce National Historic Trail Comprehensive Management Plan (1990) http://www.fs.usda.gov/main/npnht/landmanagement

1.5.4 Other Related Plans

FLPMA requires that the BLM, when developing or revising land use plans, shall—

> *…to the extent consistent with the laws governing the administration of the public lands, coordinate the land use inventory, planning, and management of activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located…and assure that consideration is given to those State, local and tribal land use plans for public lands [and] assist in resolving, to the extent practical, inconsistencies between Federal and non-Federal Government plans…*(43 U.S.C. S 1712 (c) (9))

The BLM must keep apprised of the many ongoing programs, plans, and policies that are being implemented in the planning area by other federal, state, local, and tribal governments. The BLM will seek to be consistent with or complementary to other management actions whenever possible.

A number of plans have been developed by the BLM that relate to or otherwise govern management in the decision area. Some of these plans amended the Billings RMP while others, though they have not been formally adopted through the land use planning process, are considered by BLM when implementation level planning is conducted or other specific actions are analyzed. These major plans and other major management guidance are listed below and provide a perspective of the many management considerations pertinent to the Decision Area.

1.5.4.1 Land Use Plans and Amendments

- Billings Resource Management Plan (1984)
- Wilderness EIS for the Billings Resource Area (1988)
- Pryor Mountain Herd Management Area Plan (activity plan and amendment) (1992)
- Miles City District Oil and Gas RMP Amendment/EIS (1994)
- Pompeys Pillar Environmental Assessment/Amendment (1996)
- Standards for Rangeland Health and Guidelines for Livestock Grazing for Montana, North Dakota, and South Dakota Record of Decision (USDI-BLM 1997)
- Areas of Critical Environmental Concern Environmental Assessment and Amendment of the Billings, Powder River, and South Dakota RMPs (1999)

- Pompeys Pillar Interpretative Center Environmental Assessment and Amendment (2002)
- Sundance Lodge and Four Dances Environmental Assessment/Amendment (2002)
- Off-Highway Vehicle Record of Decision and Plan Amendment for Montana, North Dakota, and Portions of South Dakota (USDI-BLM 2003)
- Fire/Fuels Management Plan Environmental Assessment/Plan Amendment for Montana and the Dakotas (USDI-BLM 2003)
- Montana Final Statewide Oil and Gas EIS and Amendment for Powder River and Billings RMPs (2003)
- Supplement to the Montana Statewide Oil and Gas EIS and Amendment of the Powder River and Billings RMPs (2008)

1.5.4.2 Other National, Statewide, and Field Office Plans

- Vegetation Treatment on BLM Lands in Thirteen Western States (USDI-BLM 1991)
- Amendment for Wind Energy Development for BLM Lands in the Western United States (2005)
- Climate Change Supplementary Information Report: Montana, North Dakota, and South Dakota Bureau of Land Management (2010)
- Vegetation Treatments Using Herbicides on BLM Lands in Seventeen Western States (USDI-BLM 2007)
- Geothermal Leasing in the Western United States Final EIS (2008)
- Montana Statewide Wilderness Study Report (USDI-BLM 1991)
- National Fire Plan and 2001 Federal Fire Policy
- Draft National BLM Sage Grouse Habitat Conservation Strategy (USDI-BLM 2003)
- Interim Bull Trout Habitat Conservation Strategy and Implementation (USDI-BLM 1996)
- BLM Butte Resource Management Plan and Environmental Impact Statement and Record of Decision (2009)
  http://www.blm.gov/mt/st/en/fo/butte_field_office/rmp/rod.html
- BLM Miles City RMP/EIS revision (2015)
  http://www.blm.gov/mt/st/en/fo/miles_city_field_office/rmp.html

- BLM HiLine RMP/EIS revision (2015)
  http://www.blm.gov/mt/st/en/fo/malta_field_office/rmp.html
- BLM Lewistown RMP/EIS amendment (2015)
  https://www.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=36877&dctmId=0b0003e8805c9d29
- BLM South Dakota RMP/EIS revision (2015)
  http://www.blm.gov/mt/st/en/fo/south_dakota_field/rmp.html
- BLM North Dakota RMP amendment (2015)
  https://www.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=36811&dctmId=0b0003e8805be23a
- BLM Bighorn Basin RMP/EIS revision (2015)
  http://www.blm.gov/wy/st/en/programs/Planning/rmps/bighorn/docs.html

1.5.4.3 Related Plans and Policies

- Canada Lynx Conservation Assessment and Strategy (Ruediger *et al*. 2000)
- Montana Bald Eagle Management Plan (USBOR 1994)
- Pacific Bald Eagle Recovery Plan (USFWS 1986)
- National Sage-Grouse Habitat Conservation Strategy (BLM 2004a)
- Management Plan and Conservation Strategies for Sage-Grouse in Montana – Final. The Management Plan and Conservation Strategies for Sage-Grouse in Montana (MSGWG 2005) is designed to provide biological information, identify information gaps, and facilitate data collection required for future resource management decisions. It establishes a process to achieve sage-grouse management objectives and provides a framework to guide local management efforts. Regional or local groups will adapt the statewide plan to develop and implement strategies in respective geographic areas that will improve or maintain the sagebrush steppe and reduce or mitigate factors that may further reduce habitats or populations.
- While energy development has been identified as the primary threat to the greater sage-grouse within its eastern range, this area is not immune to the threat of wildfire. Within the Rocky Mountain Region wildfire was identified by the Conservation Objectives Team Final Report (2013) as a present and widespread threat in seven of thirteen priority areas of conservation (PACs) and as a present but localized threat in the remaining PACs. While fire is a naturally occurring disturbance in the sagebrush steppe, the incursion of non-native annual grasses is facilitating an increase in mean fire frequency which can preclude the opportunity for sagebrush to become re-established. As such the RMP includes requirements (referred to as Greater Sage-grouse Wildfire and Invasive Species Habitat Assessment in appendices in Draft documents) that landscape scale Fire

and Invasives Assessments be completed and updated regularly to more accurately define specific areas to be treated to address threats to sagebrush steppe habitat. Within the Rocky Mountain region, assessments have not yet been completed but will be scheduled based on the need to identify and address potential threats. Additionally, the Secretary of Interior issued Secretarial Order 3336 on January 5, 2015 which establishes the protection, conservation and restoration of "the health of the sagebrush-steppe ecosystem and, in particular, greater sage-grouse habitat, while maintaining safe and efficient operations as a critical fire management priority for the Department". The Secretarial Order will result in a final report of activities to be implemented prior to the 2016 Western fire season. This will include prioritization and allocation of fire resources and the integration of emerging science, enhancing existing tools to implement the Resource Management Plan and improve our ability to protect sagebrush-steppe from damaging wildfires.

- Memorandum of Understanding Among the US Department of Agriculture, US Department of the Interior, and US Environmental Protection Agency, Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the National Environmental Policy Act Process (2011).

1.6 Consultation and Coordination

This section describes specific actions taken by the BLM to consult and coordinate with American Indian tribes, government agencies, and interest groups, and to involve the interested public during preparation of the RMP/EIS.

A Notice of Intent (NOI) published in the *Federal Register* (FR) on May 15, 2008 formally announced the intent of the BLM to revise the existing plans and prepare the associated EIS.

Publication of the NOI initiated the scoping process and invited participation of affected and interested agencies, organizations, and the general public in determining the scope and issues to be addressed by alternatives and analyzed in the EIS. Additional detail regarding actions taken by the BLM to involve the public and consult and coordinate with American Indian tribes, government agencies, and interest groups is provided in Chapter 5.

1.6.1 Consultation with American Indian Tribes

Consultation with American Indian tribes is part of the NEPA scoping process and a requirement of FLPMA. RMPs must address consistency with tribal plans and protection of treaty rights and must observe specific planning coordination authorities, including complying with relevant portions of the National Historic Preservation Act, American Indian Religious Freedom Act, Executive Order 13007 (*Indian Sacred Sites*), and Executive Order 12898 (*Environmental Justice*). In developing the Billings and Pompeys Pillar National Monument RMP/EIS, BLM representatives offered to meet with representatives of sixteen American Indian tribes to inform them of the planning process and solicit information on potential issues and concerns. None of the tribes responded to the offers. These same tribes were also invited to become cooperating agencies on the Billings and Pompeys Pillar National Monument

RMP/EIS. The Northern Cheyenne tribe became a cooperating agency. Tribal consultation is still ongoing. American Indian tribes and organizations invited to become cooperating agencies to date include:

- Arapahoe
- Assiniboine and Gros Ventre (Ft. Belknap)
- Assiniboine and Sioux (Ft. Peck)
- Blackfeet
- Chippewa Cree (Rocky Boy)
- Crow
- Lower Brule
- Northern Cheyenne
- Oglala Sioux
- Rosebud Sioux
- Standing Rock Sioux
- Three Affiliated Tribes (Mandan, Hidatsa, and Arikara Nations)
- Turtle Mountain Band of Chippewa

A more detailed discussion of consultation with American Indian tribes can be found in Chapter 5 of this RMP/EIS.

1.6.2 Cooperating Agencies

CEQ requirements contained in 40 CFR 1501.6 and 1508.5 implement the NEPA mandate that federal agencies responsible for preparing NEPA analysis and documentation do so "in cooperation with state and local governments" and other agencies with jurisdiction by law or special expertise (42 USC 4331(a), 4332(2)). In support of this mandate, the BLM invited local, county, state, and tribal agencies to participate as cooperating agencies in the development of the Billings and Pompeys Pillar National Monument RMP/EIS. Cooperating agency status offers the opportunity for interested agencies to assume additional roles and responsibilities beyond the collaborative planning processes of attending public meetings and reviewing and commenting on plan documents. Fifteen agencies accepted the invitations to become formal cooperating agencies in developing the RMP and signed cooperating agency agreements:

- Big Horn County, Wyoming
- Bureau of Indian Affairs
- Bureau of Reclamation
- Carbon County, Montana
- Department of Natural Resources and Conservation Northeastern Land Office
- Department of Natural Resources and Conservation Southern Land Office
- Golden Valley County, Montana

- Montana Association of Conservation Districts
- Montana Fish, Wildlife, and Parks
- Montana State Historic Preservation Office
- Musselshell County, Montana
- Musselshell Planning Project
- Northern Cheyenne Tribe
- Wheatland County, Montana
- Yellowstone County, Montana

Other state and federal agencies, participated as part of the review process, but were not formal cooperating agencies: Wyoming Fish and Game Department, Wyoming State Historic Preservation Office, NPS Bighorn Canyon NRA, USFS Custer National Forest, and U.S. Fish and Wildlife Service (USFWS).

1.6.3 Consultation with USFWS

The Endangered Species Act (ESA) directs all Federal agencies to work to conserve endangered and threatened species and to use their authorities to further the purposes of the Act. Section 7 of the Act, called "Interagency Cooperation," is the mechanism by which Federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any listed species.

In 2008, the BLM and USFWS signed and implemented a Consultation Agreement for the RMP revision for the Billings Field Office (BLM and USFWS 2008). That document defined the respective roles and responsibilities of the two agencies and addressed the Section 7 consultation process to be followed for listed, proposed, or candidate species and their habitat located within the respective planning areas. As part of the implementation of this agreement, the Billings Field Office has consulted with USFWS throughout development of the RMP/EIS. The Billings Field Office will continue consultation with the USFWS through completion of the final biological assessment (BA) and Proposed RMP/Final EIS.

The BLM sent a letter to the USFWS concerning Section 7 consultation, presenting the approach for consultation, including the process of Programmatic Species-Specific Section 7 consultations on Montana BLM RMPs. The USFWS provided a species list to the Billings Field Office for evaluating BLM Section 7 responsibilities. A draft biological assessment analyzing potential impacts to these species has been prepared and informally submitted to the USFWS for comment. The BLM has incorporated into the RMP/EIS a list of species-specific conservation measures common to all alternatives that will serve to provide management direction for habitat of listed species (Appendix H). These measures were developed as a result of a statewide programmatic Section 7 consultation effort on existing land use plans.

Section 7 consultation has previously occurred for the oil and gas lease sale program within the Billings Field Office. A set of lease notices, developed as part of that consultation, have been incorporated into this RMP/EIS, as standard requirements common to all alternatives (see Appendix B).

Formal Section 7 consultation will proceed with the BLM's submission of a final biological assessment prepared for the Proposed RMP/Final EIS. The USFWS will respond with a biological opinion that will be included in the administrative record. The BLM will consider application of all measures suggested by the USFWS.

1.7 Policy

No proclamations or legislative designations that would influence decisions or constrain the alternatives have been issued within the decision area.

Implementing the RMP begins when the Montana BLM State Director signs the ROD for the RMP. Implementation of the decisions in the RMP would be tied to the BLM budgeting process. An implementation schedule would be developed, providing for the systematic accomplishment of decisions in the approved RMP.

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Billings and Pompeys Pillar National Monument

Resource Management Plan and Environmental Impact Statement

Chapter 2: Resource Management Alternatives

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2 Description of Alternatives

2.1 Introduction

Chapter 2 begins with material describing the development of alternatives and then moves to the presentation of the management actions for resources, resource uses, and resource management programs. Information is presented in the same sequence in Chapters 3 and 4 for each of the topic areas. Several of the categories contain subsections that focus on particular aspects of a resource program.

This chapter contains alternatives that describe different approaches to the management of public lands and resources in the planning area. Each alternative represents a complete and reasonable set of goals and management actions to guide future management of BLM-administered public lands and resources in the planning area.

This chapter describes and compares four alternatives for managing BLM-administered lands and their resources within the Billings Field Office (BiFO) and Pompeys Pillar National Monument (PPNM). These alternatives are identified as Alternative A, Alternative B, Alternative C, and Alternative D (Proposed). The No Action Alternative (Alternative A) represents the continuation of current management direction and proposes no new plan or management actions. This alternative is required by Council on Environmental Quality regulations and provides a baseline for comparison of the other alternatives (Council on Environmental Quality 1981). The BLM Billings Field Office developed the action alternatives (B, C, and D) by considering issues and concerns raised during the public scoping period and through planning criteria and guidance applicable to management of resources and resource uses. The three action alternatives (B, C, and D) describe proposed changes to current management as well as the existing management that would be carried forward into future management. The alternatives constitute a range of management actions that set forth different priorities and measures to emphasize certain uses or resource values under the multiple use sustained yield mandate to achieve the identified desired outcomes (goals and objectives) for each resource. These alternatives provide a range of choices for resolving the planning issues identified in Chapter 1.0.

Evaluation of a reasonable range of alternatives is required by the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) Part 1502.14), as well as by BLM planning regulations. As required in the CEQ regulations, the reasonable range must include a "no action" alternative (CEQ 1981, Question 3.A) which is the continuation of current management under the Billings Resource Area Resource Management Plan (RMP) and Record of Decision (ROD) (1984), as amended.

The BLM Billings Field Office recognizes that social, economic, and environmental issues cross land ownership jurisdictions and that extensive cooperation is needed to actively address issues of mutual concern. To the extent possible, these alternatives were developed utilizing input from public scoping comments, cooperating agencies, and the Eastern Montana Resource Advisory Council (RAC).

This chapter is organized into the following sections:

- **2.2 Developing the Range of Alternatives** – describes the process and key concepts used to develop the range of alternatives considered in detail
- **2.3 Key Components of the Alternatives –** briefly describes each of the key components of the alternatives, including a description of desired outcomes, management actions, adaptive management, mitigation guidelines and land health standards
- **2.4 Alternatives Considered but Not Analyzed in Detail** – describes alternatives that were considered, but dismissed from detailed analysis
- **2.5 Summary of the Alternatives –** a brief summary of each alternative is presented in this section (Table 2.5 and Table 2.6)
- **2.6 Alternatives Considered in Detail** – includes an overview of each alternative considered in detail by program, as well as a comprehensive discussion of the various management actions and allocations for each alternative considered in detail in a tabular format (Table 2.10, Table 2.11, Table 2.12, and Table 2.13)
- **2.7 Summary of Environmental Consequences by Alternative** – describes the impacts of the alternatives and includes tabular comparison of impacts for the alternatives considered in detail (Table 2.14 and Table 2.15)

2.2 Developing the Range of Alternatives

The alternatives described in this chapter represent varying approaches to addressing and resolving key planning issues (see Chapter 1) and to managing resources and resource uses in the planning area. Each alternative comprises two categories of land use planning decisions: (1) desired outcomes (goals and objectives) and (2) allowable uses and management actions that are anticipated to achieve desired outcomes. These two categories are discussed below.

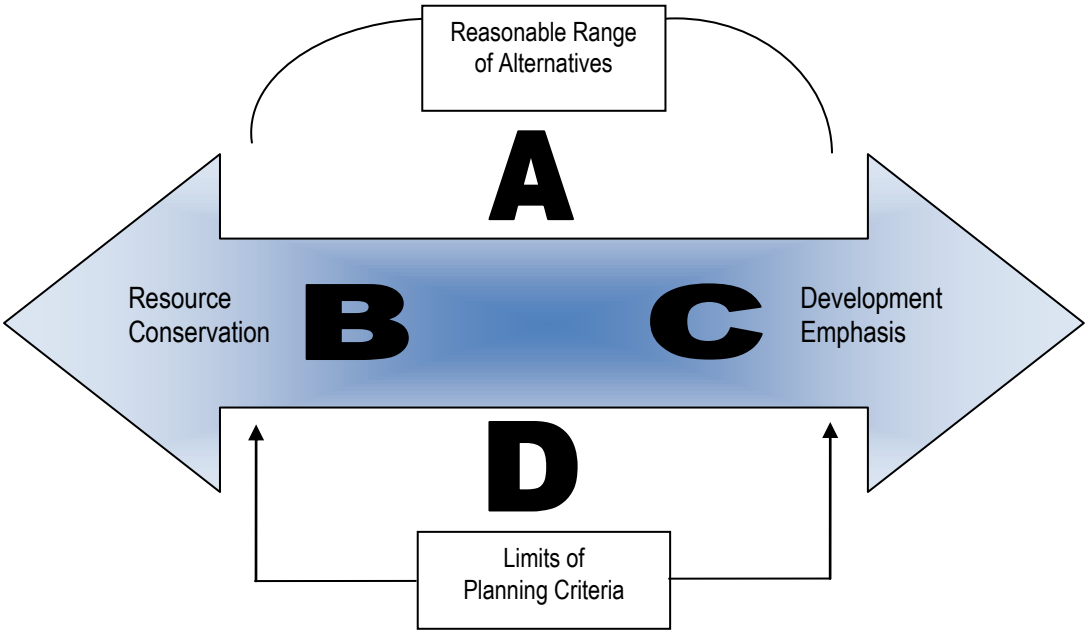
The BLM complied with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality (CEQ) implementing regulations at 40 Code of Federal Regulations (CFR) 1500 in the development of alternatives for this RMP/EIS, including seeking public input and analyzing reasonable alternatives. Where necessary to meet the planning criteria, to address issues and comments from cooperating agencies and the public, or to provide a reasonable range of alternatives, the alternatives include management options for the planning area that would modify or amend decisions made in the 1984 Billings RMP and ROD, as amended. Some decisions from the 1984 Billings RMP and ROD are acceptable and reasonable; in these instances, there is limited need to develop alternative management prescriptions. In some cases, management prescriptions are the same across all alternatives or may reflect only a decision to implement or not implement an action. All alternatives would comply with state and federal laws, regulations, and policies, and standards, and implement actions originating from laws, regulations, and policies.

Public input received during the scoping process was considered to ensure that all issues and concerns would be addressed, as appropriate, in developing the alternatives. Comments received during and after the formal scoping period cover a wide range of issues. The scoping process and its results, as well as opportunities for future public and agency involvement, are summarized in Chapter 5. The development of alternatives was initiated with compiling and analyzing Alternative A (No Action). Alternatives B, C, and D (Proposed) were then developed and analyzed.

Many of the decisions from the existing Billings RMP have been implemented. In some cases, implementation of these decisions established valid existing rights or other obligations that are important considerations in preparing the revised Billings and Pompeys Pillar National Monument RMP/EIS. For example, some oil and gas resources in the planning area are leased and some rights-of-way have been approved. The presence of these valid existing rights influences, and sometimes limits management choices. Specific to the oil and gas program, the alternatives in this RMP/EIS address the availability and allocation of lands for future oil and gas leasing, potential lease stipulations and additional mitigation to be considered and applied during the Application for Permit to Drill (APD) process. Mitigation measures and BMPs identified in this RMP/EIS would be applied to the APDs for new leases and could be applied to APDs from existing leases through subsequent implementation-level planning processes.

The BLM manages public lands and resource values in accordance with the principles of multiple use and sustained yield. Given these principles and the inherent conflicting nature of resource conservation and resource development, alternative formulation occurs within the limits of planning criteria that address the needs of present and future generations, while remaining flexible for periodic adjustments. This approach resulted in a reasonable range of alternatives that vary by their emphasis on allowable uses and management actions that affect conservation and development. For example, restrictions on oil and gas development in and around occupied Greater Sage-Grouse leks may exclude or constrain one land use (i.e. oil and gas development) to protect another (i.e. special status species – wildlife). Of course, not all resources or resource uses are mutually exclusive, but rarely do actions beneficial to one resource benefit all of the other resources and resource uses that the BLM must manage. The multitude of resources within the planning area coupled with the requirement to manage for multiple use and sustained yield requires developing alternatives across a continuous spectrum from resource conservation to resource development. For example, Alternative B places more emphasis on resource conservation, whereas Alternative C places more emphasis on resource development. The remaining alternatives (A and D) fall in between B and C on the continuous spectrum, as shown in Figure 2-1.

Figure 2-1 Reasonable Range of Alternatives for the Billings and Pompeys Pillar National Monument RMP/EIS



2.2.1 Alternative Formulation

Once developed, the BLM analyzed the alternatives to determine their impacts on the environment and the degree to which each alternative met the desired outcomes (goals and objectives) identified for that resource or resource use. Based on the impacts analysis of these alternatives, along with knowledge of specific issues raised throughout the planning process, input from cooperating agencies and BLM resource specialists, consideration of planning criteria, and potential resolution of resource conflicts, the BLM has identified Alternative D as the Proposed Alternative. Each alternative provides a different emphasis for managing public lands and resources within the planning area, and each alternative represents a complete and reasonable RMP that (1) meets the purpose and need described in Chapter 1; (2) responds to environmental, operational, and economic concerns raised by the public, agencies, businesses, and other special interest groups during the scoping process; and (3) addresses potential environmental issues identified during review of the proposed management actions

The BLM selected the Proposed Alternative based on the following selection criteria:

1) Satisfy statutory requirements
2) Reflect the best combination of decisions to achieve the BLM goals and policies
3) Represent the best solution to the purpose and need
4) Provide the best approach to addressing key planning issues
5) Consider cooperating agencies and BLM specialists' recommendations

All of the alternatives presented in this document have been analyzed by a BLM interdisciplinary team. Alternative D was identified in the Draft RMP and Environmental Impact Statement (EIS) as the Preferred Alternative. Based on comments received during the public comment period on the Draft RMP/EIS and additional internal review, the BLM revised the Preferred Alternative. As modified, Alternative D is presented as the Proposed Alternative and Proposed RMP in the Final EIS.

Upon completion of this process, the Decisions Comment to All Alternatives combined with the Proposed Alternative selected by the State Director (either Alternative D or any of the other alternatives, or a combination thereof) will form the management plan for the Billings Field Office and Pompeys Pillar National Monument.

2.3 Key Components of the Alternatives

Alternatives described in this chapter represent approaches to addressing key planning issues (see Chapter 1) and to managing resources and resource uses in the planning area. Each alternative comprises two categories of land use planning decisions: (1) desired outcomes (goals and objectives) and (2) allowable uses and management actions.

2.3.1 Desired Outcomes (Goals and Objectives)

Goals and objectives provide overarching direction for BLM actions in meeting the agency's legal, regulatory, policy, and strategic requirements. Goals are broad statements of desired outcomes, but generally are not measurable. Objectives are more specific statements of a desired outcome that may include a measurable component. Objectives generally are anticipated to achieve the stated goals.

2.3.2 Allowable Uses and Management Actions

Allowable uses and management actions comprise the second category of land use planning decisions and are anticipated to achieve the desired outcomes (goals and objectives). Alternatives were refined to address planning issues, resolve resource conflicts, improve consistency, and ensure resource-specific decisions for the following categories in the RMP revision process (see Table 2.7):

1) Physical, Biological and Cultural/Heritage Resources
2) Resource Uses and Support
3) Special Designations

Management actions are proactive measures or limitations intended to guide BLM activities in the planning area. Three types of management actions are included in the alternatives. The first is *management actions common to all alternatives*, which will apply regardless of what alternative is selected. The second is *management common to action alternatives*, which will apply to alternatives B, C, and D regardless of which alternative is selected. The third is *management actions by alternative*, which represent the choice(s) considered across alternatives.

Allowable uses identify where land uses are allowed, restricted, or prohibited on all BLM-administered surface and Federal mineral estate in the planning area. Alternatives may include specific land use restrictions to meet goals and objectives and may exclude certain land uses to protect resource values. For example, alternatives considered for this RMP revision prohibit surface occupancy (i.e., no surface occupancy [NSO]) by oil and gas development within occupied Greater Sage-Grouse leks and associated buffers. Because the alternatives identify whether particular land uses are allowed, restricted, or prohibited, allowable uses often include a spatial component (e.g., map) to display the variances between alternatives.

The third type of management action, management actions by alternative, represents the range of choices considered across alternative. An example of this type of management actions is to restore riparian habitat to address issues of water quality and/or fish and wildlife habitat. In this example, the acreage or mileage of riparian habitat to restore may vary by alternative, whereas the action (restore riparian habitat) is retained for all alternatives.

It is important to note that the RMP is strategic in nature, and, while it provides an overarching vision for managing resources in the planning area, it also allows management flexibility in light of changing priorities, information, and circumstances. This management flexibility can be called adaptive management.

2.3.3 Bureau of Land Management Policy and Administrative Actions

The BLM has policy guidance already established under various instruction memoranda and information bulletins from both the Washington and Montana State Offices. Policies are generally issued and/or updated based on new science, research, and technology. For example, one policy is that "to reduce the risk of collisions, avoid the use of guy wires for turbine or MET tower supports. All existing guy wires should be marked with recommended bird deterrent devices (WO IM-2010-022)." While many of these policies are included as management actions where appropriate or included in supplementary information in some appendices, there are numerous policies that apply to the Billings Field Office and all cannot be described here in their entirety. For more information on BLM policies applicable to land use planning, refer to BLM Handbook H-1601-1, Land Use Planning Handbook (2005) and the information bulletins and instruction memorandums available on BLM websites for the Washington and Montana State Offices
http://www.blm.gov/wo/st/en/prog/planning/planning_overview/guidance.html

Administrative actions are the day-to-day activities required to serve the public and to provide optimum management of the Billings Field Office's resources. These actions are allowable by regulation and do not require authorization within an RMP, but may require site-specific analysis under NEPA. For example, in day-to-day management of the Billings Field Office, BLM is responsible for law enforcement activities that need not be authorized under the RMP. Additionally, BLM may authorize or restrict access in certain areas in emergency situations (with proper notification requirements) or coordinate with other agencies and organizations, such as Montana Fish, Wildlife, and Parks, for specific activities that may not require site-specific NEPA documentation efforts. These or other administrative actions would be conducted in the BiFO, sometimes in partnership with other landowners, agencies or organizations. The degree to which these actions are carried out depends upon BLM policies,

available personnel, funding levels and further environmental analysis and decisions, as appropriate.

2.3.4 Summary of Changes between Draft RMP/EIS and the Proposed RMP/Final EIS

The Draft RMP/EIS was published in March 2013, and the public comment period closed in June 2013. The BLM received 771 comment letters/emails of which 463 letters/emails contained substantive comments. From those letters/emails, a total of 890 individual comments were received which touched on a wide range of issues. While many of the comments supported the Proposed Alternative in the Draft RMP/EIS, commenters also identified areas where the document could be improved. The B&PPNM RMP interdisciplinary team carefully evaluated these comments (Chapter 5). The Proposed RMP/Final EIS contains a number of changes made in response to comments. A summary of the changes follow. The changes made in the Proposed RMP/Final EIS prompted by comments do not require a supplemental EIS because they do not include or raise any issues that were outside of the range of alternatives presented and analyzed in the Draft RMP/EIS.

As a result of public comments, the best science, cooperating agency coordination, and internal review of the Draft RMP/EIS, the BLM has developed the Proposed RMP/Final EIS for managing BLM-administered public lands. The Proposed RMP/Final EIS focusses on addressing public comments, while continuing to meet the BLM's legal and regulatory mandates. The Proposed RMP/Final EIS is a variation of the Preferred Alternative (D) and is within the range of alternatives analyzed in the DRMP/EIS.

Changes made to the Proposed RMP/Final EIS from the Preferred Alternative (D) in the Draft RMP/EIS are the following:

Air Resources and Climate Change: Additional background information was added to the Proposed RMP regarding emissions of greenhouse gases (GHG) and national actions to reduce GHGs. The goals were revised for air quality and air quality-related values, and objectives were added for reducing air pollutant and GHG emissions from BLM-authorized activities.

Fluid Minerals: Additional background information was added to the Proposed RMP regarding hydraulic fracturing (fracking). New oil and gas lease stipulations were added for Air Quality, Sensitive Soils and Rock Outcrops, and Source Water Protection. To provide consistency between Montana/Dakotas BLM land use plan revisions, many of the fluid mineral lease stipulations for wildlife have been revised (Appendix C).

Wilderness Characteristics: Based on citizen-submitted information an additional area (Bear Creek area) was evaluated for wilderness characteristics. It is proposed to be managed for its wilderness characteristics under Alternative B only. Also between Draft and Final, the inventory of the islands in the Clark's Fork and Yellowstone Rivers was completed. The acreages (total acres reviewed, acres containing wilderness character, and acres with non-wilderness character) have been updated accordingly (Appendix K).

Trails and Travel Management: The Travel and Transportation section of the RMP and the Travel Management Plan (Appendix O) have been revised to bring these sections into compliance with recent Manual and Policy changes made since the planning effort began. A field office wide non-motorized travel system comprising approximately 75 miles on 52 individual routes was developed in Chapter 2 and included in the Chapter 4 impact analysis, as well as in the stand-alone Travel Plan (Appendix O).

A total of 17 individual route changes were made in the Travel Management Areas (TMAs) between Draft and Final. After all changes, a total of two routes with four miles were found to be county maintained and approximately 3.3 cumulative miles were changed from an open to motorized use to a limited or closed to motorized use category.

Additional information from public comments was received on routes outside of the TMAs as well. These will be included in the route inventory to begin in FY 2015.

The Chapter 2 language regarding landing airplanes and helicopters on landlocked BLM managed surface has been modified, but does not alter the Chapter 4 analysis.

Chapter 2 language regarding snowmobile use has been modified but does not alter the Chapter 4 analysis.

The No Action Alternative (Alternative A) for the South Hills Travel Management Area has been selected as the Proposed Alternative.

Wild and Scenic Rivers: The Wild and Scenic River Suitability Report has been included in Appendix R.

Visual Resources: The Visual Resource Inventory has been updated and included in the document. Neither the Chapter 2 alternatives or Chapter 4 impact analysis have been affected by this update.

Areas of Critical Environmental Concern: One new ACEC (Steamboat Butte) proposal was received during the public comment period. It has been evaluated and met the Relevance criteria, but not the Importance criteria (Appendix E). Based on the 2014 VRM inventory and the Alternative D ACEC management prescriptions, several ACECs VRM classes are now Class II. The Chapter 4 impact analysis has not been affected by this update.

Solid Leasables – Coal: Chapter 3 has been updated with current information and maps as has Appendix M.

Federal Mineral Estate: The federal mineral estate acreage identified in Chapter 1 of the Draft RMP/EIS identified all the federal mineral estate within the Billings Field Office boundaries (1,839,782 acres), USFS, USFWS, BOR and BLM. This acreage as been corrected to only the BLM administered federal mineral estate (889,479 acres). This acreage change has not affected impact analysis in any way as only the BLM administered federal mineral estate acreage was used during impact analysis.

Wildlife – Greater Sage-Grouse: When the Billings Field Office began the RMP revision process in 2008, all BLM managed surface within GRSG priority habitat and general habitat received a detailed and thorough review to ensure each parcel of land contained sage-grouse habitat. Those lands not containing habitat of any kind, although within the GRSG general habitat boundaries, was not identified and not analyzed as GRSG general habitat in the Draft RMP. However between draft and final, the Billings Field Office modified the boundaries to the GRSG GHMAs to match those the National Operations Center was using. The result was all BLM managed surface within the GRSG Priority Areas for Conservation (PAC) regardless of habitat condition, vegetation cover, or development has been incorporated into GRSG Priority Habitat Management Areas and General Habitat Management Areas. As a result, the GRSG GHMA in Alternative D has increased in acreage. Management actions and effected acreages within Fluid Minerals, Realty, Cadastral Survey, and Lands (ROWs), Renewable Energy have been modified as a result of the GRSG habitat management modification.

Allocations for PHMA and GHMA – allocations in the PRMP/FEIS provide more opportunities for uses in GHMA, while still maintaining conservation management by establishing screening criteria for project/activity review in GRSG habitat.

The USGS Buffer Study – Included in a management action to incorporate the lek buffer-distances identified in the USGS report titled *Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review: USGS Open File Report 2014-1239* (Mainer et al. 2014) during the NEPA analysis at the implementation stage. Although the buffer report was not available at the time of the DEIS release, applying these buffers was addressed in the DEIS and is qualitatively within the spectrum of alternatives analyzed. Specifically Alternative B identified and analyzed allocation restrictions such as closure to fluid minerals, recommendations for locatable mineral withdrawal, and restrictions on Renewable Energy development. Accordingly, the management decision to require lek buffers for development within certain habitat types is within the range of alternatives analyzed.

Adaptive management – Identification of hard and soft adaptive management triggers for population and habitat and identified appropriate management responses. Chapter 2 of the DEIS identified that the BLM would further develop the adaptive management approach by identifying hard and soft triggers and responses. All of the adaptive management hard trigger responses were analyzed within the range of alternatives. For example, if a hard trigger is reached in GHMA, and GHMA would be managed as open to saleable minerals in the Proposed Plan, the response would be to manage it as closed to saleable minerals. This closure was analyzed under Alternative B in the Draft EIS.

Monitoring and Disturbance – The monitoring framework was further refined in the FEIS, and further clarification as to how disturbance cap calculations would be measured were developed for the FEIS. During the public comment period, BLM received comments on how monitoring and disturbance cap calculations would occur at implementation. The DEIS outlined the major components of the monitoring strategy, as well as provided a table portraying a list of anthropogenic disturbances that would count against the disturbance cap. A BLM Disturbance and Monitoring Sub-team further enhanced the two sections of Appendix AA (Sections B and C) in the FEIS.

Mitigation Strategy; Net Conservation Gain – The net conservation gain strategy is in response to the overall landscape goal which is to enhance, conserve, and restore GRSG and its habitat. All of the Action Alternatives provided management actions to meet the landscape-scale goal.

The intent of the Proposed Plan is to provide a net conservation gain to the species. To do so, in undertaking BLM management actions, and, consistent with valid existing rights and applicable law, in authorizing third party actions that result in habitat loss and degradation within priority habitat (core population areas and core population connectivity corridors), the BLM would require and ensure mitigation that provides a net conservation gain to the species including accounting for any uncertainty associated with the effectiveness of such mitigation. This would be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions.

WAWFA Management Zone Cumulative Effects Analysis on GRSG – A quantitative cumulative effects analysis for GRSG was included in the FEIS. This analysis was completed to analyze the effects of management actions on GRSG at the biologically significant scale which was determined to be at the WAWFA Management Zone. The DEIS, in Chapter 4, included a qualitative analysis and identified that a quantitative analysis would be completed for the FEIS at the WAWFA Management Zone.

NEPA requires agencies to prepare a supplement to the Draft EIS if 1) the agency makes substantial changes in the proposed action that are relevant to environmental concerns; or 2) if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. A supplement is not necessary if a newly formulated alternative is a minor variation of one of the alternatives and is qualitatively within the spectrum of alternatives analyzed in the Draft EIS.

The Proposed RMP revision includes components of the alternatives analyzed in the Draft EIS. Taken together, these components present a suite of management decisions that present a minor variation of the preferred alternative identified in the Draft RMP/EIS and are qualitatively within the spectrum of alternatives analyzed.

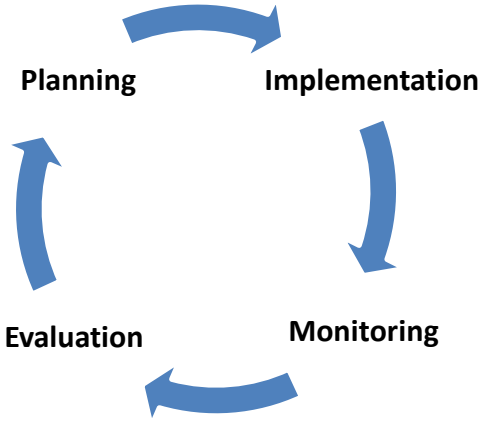
As such, the BLM had determined that the Proposed RMP/Final EIS is a minor variation of the preferred alternative and that the impacts of the Proposed RMP/Final EIS would not affect the human environment in a substantial manner or to a significant extent not already considered in the EIS. The impacts disclosed in the Proposed RMP/Final EIS are similar or identical to those described in the Draft RMP/EIS.

2.3.5 Adaptive Management

The Department of the Interior Office of Environmental Policy and Compliance issued ESM03 6, which provides initial guidance to all agencies on the implementation of adaptive management practices for NEPA compliance. The Interior Department Manual 516 DM 4.16 defines adaptive management as "a system of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes and, if not, facilitating management change that would best ensure that outcomes are met or re-evaluate the outcomes."

This Proposed RMP/EIS recommends an adaptive management strategy. This adaptive management process is flexible and generally involves four phases: planning, implementation, monitoring, and evaluation (see Figure 2-2).

Figure 2-2 Adaptive Management Strategy Phases



Adaptive management is a formal, systematic, and rigorous approach to learning from the results of management actions, accommodating change and improving management. It involves synthesizing existing knowledge, exploring alternative actions, and making explicit forecasts about their results. Management actions and monitoring programs are carefully designed to generate reliable feedback and clarify the reasons underlying results. Actions and objectives are then adjusted based on this feedback and improved understanding to continue to try to achieve the desired outcomes. In addition, decisions, actions and results are carefully documented and communicated to others so that knowledge gained through experience is passed on rather than lost when individuals move or leave the organization.

As the BLM obtains new information, it is able to evaluate monitoring data and other resource information to periodically refine and update desired outcomes (goals and objectives), management actions, and allowable uses. This allows continual refinement and improvement of management prescriptions and practices.

Land use plan level decisions would not be immediately adaptable. These include goals, objectives, special designations, and allocations. Plan amendments would be required to change these decisions. Implementation or activity level decisions could be adapted as conditions are studied and monitored. Future activity level plans would follow NEPA procedures and involve the public. Some resource management plan-level decisions would not be immediately adaptable.

The BLM will review monitoring results on a periodic basis, and any management objectives or actions that may need to be changed or adjusted will be open to public review and comment before decisions are made through an environmental review process. Appendix X provides more information on implementation and monitoring. Appendix AA (sections A and B) provides specific guidance for monitoring sage-grouse and sagebrush habitats, which will allow for adjustments to plan decisions, based on the described adaptive management approach.

Through implementation an adaptive management approach may also be used for specific activities in the planning area, if appropriate, consistent with Secretarial Order 3270 (Adaptive Management). Adaptive management would require activity level planning, environmental review, and public involvement.

Planning, implementing, monitoring, evaluating, and adjusting as necessary through planning, are the four steps of Adaptive Management. Planning involves a great amount of time and resources to identify issues and management opportunities to address those issues. During the planning process, the scope of the issue is identified and management goals, objectives and actions are defined to address the issues. Once the planning process is completed, decisions are implemented, monitored, and evaluated over a period of time to determine if goals are being met and if management actions are achieving the desired objective or standard. Results of monitoring are documented and communicated to appropriate parties, and management objectives and actions are modified, if necessary, based on results.

All proposed actions in the future must conform to the Billings and Pompeys Pillar National Monument RMP and Record of Decision when completed (43 CFR 1601.0-5(b)). Proposed actions on or affecting BLM land must also be reviewed for National Environmental Policy Act (NEPA) compliance. Proposed actions fall into one of five categories: (1) actions that are exempt from NEPA; (2) actions that are categorically excluded; (3) actions that are covered by an existing NEPA environmental document; (4) actions that require preparation of an environmental assessment (EA) to determine if an environmental impact statement (EIS) is needed; or (5) actions that require preparation of an EIS. The NEPA procedural, documentation, and public involvement requirements are different for each category. However, all proposed actions must be in conformance with the approved resource management plan. For additional information, please refer to BLM Handbook H-1790-1 available at most BLM offices or on the BLM website at: http://www.blm.gov/pgdata/etc/medialib/blm/ak/aktest/planning/planning_general.Par.2116.File.dat/Handbook.NEPA.H-1790-1.2k8.01.30[1].pdf.

2.3.5.1 Adaptive Management and GRSG

If the BLM finds that the State of Montana is implementing a GRSG Habitat Conservation Program that is effectively conserving the GRSG, the BLM will review the management goals and objectives to determine if they are being met and whether amendment of the BLM plan is appropriate to achieve consistent and effective conservation and GRSG management across all lands regardless of ownership. In making amendments to this plan, the BLM will coordinate with the USFWS as BLM continues to meet its objective of conserving, enhancing and restoring GRSG habitat by reducing, minimizing or eliminating threats to that habitat.

2.3.6 Best Management Practices

Best management practices for all resources may be found in Appendix B and Greater Sage-Grouse best management practices may be found in Appendix AA (section F). Best management practices are management actions that have been developed by agency, industry, scientific, and/or working groups as methods for mitigating environmental impacts associated with certain kinds of activity.

Best management practices would be implemented at the discretion of the Authorized Officer on a project specific basis, depending on the specific characteristics of the project area and the types of disturbance being proposed. They may not be appropriate to implement in all cases. It has been assumed for impact analysis that best management practices would be implemented wherever appropriate.

Throughout the planning area, BLM-authorized activities associated with all resource and all resource use programs would be subject to impact mitigation/minimization guidelines and best management practices (BMPs) found in Appendices B and AB (note: refer to Appendix D – Fluid Minerals for operating standards specific to oil and gas leasing and developing).

The purpose of the BMPs is to (1) reserve for the BLM the right to modify the operations of surface-disturbing and/or disruptive activities as part of the statutory requirements for environmental protection, and (2) inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered public lands. Operating standards are given as acceptable methods for mitigating anticipated effects and achieving the desired plan outcomes but are not prescribed as the only method for achieving the outcomes.

Mitigation of surface-disturbing or disruptive activities would be applied where needed to minimize impacts and could be applied consistent with the oil and gas stipulations outlined in the Fluid Minerals section of Chapter 2. Mitigation measures would be applied on a case-by-case basis during activity level planning if an evaluation of the project area indicates the presence of important wildlife species seasonal wildlife habitat or other resource concern. Exceptions may be granted by the authorized officer if an environmental review demonstrates that effects could be mitigated to an acceptable level, habitat for the species is not present in the area, or portions of the area can be occupied without affecting a particular species. Exceptions may also be granted where the short-term effects are mitigated by the long-term benefits (e.g., prescribed fire or forest health treatments).

The mitigation would be requirements, procedures, management practices or design features that the BLM, through issuance of the record of decision would adopt as operational requirements. The BLM may add additional site-specific restrictions as deemed necessary by further environmental analysis and as developed through consultation with other federal, state, and local regulatory and resource agencies.

2.3.6.1 Mitigation Measures and Conservation Actions for Surface Disturbing and Disruptive Activities

Mitigation measures and conservation actions are Best Management Practices (BMPs), operating procedures, or design features that have been developed to avoid, minimize, rectify, reduce, or compensate for potentially significant adverse environmental impacts associated with surface disturbing or disruptive activities which many impact a variety of resource values (including, but not limited to: soils, riparian and wetlands, cultural and paleontological resources, rangelands and shrublands, special status plants, wildlife habitat, fisheries habitat, etc.).

For the purposes of applying mitigation measures, surface disturbing and disruptive activities are defined as follows:

Surface-Disturbing Activities: The physical disturbance or removal of land surface and vegetation. Some examples of surface-disturbing activities include, but are not limited to, construction of roads, well pads, pipelines, power lines, reservoirs, facilities, recreation sites, and mining. Vegetation renovation treatments that involve soil penetration and/or substantial mechanical damage to plants (plowing, chiseling, chopping, etc.) are also surface-disturbing activities.

Disruptive Activities: Those uses and activities that are likely to alter the behavior of, displace, or cause excessive stress to wildlife populations occurring at a specific location and/or time. In this context, disruptive activity(ies) refers to those actions that alter behavior or cause the displacement of wildlife such that reproductive success is negatively affected, or the physiological ability to cope with environmental stress is compromised. This term does not apply to the physical disturbance of the land surface, vegetation, or features. Examples of disruptive activities may include fence construction, noise, vehicle traffic, or other human presence regardless of the activity. The term is used in conjunction with protecting wildlife during crucial life stages (for example, breeding, nesting, birthing, etc.), although it could apply to any resource value. This definition is not intended to prohibit all activities or authorized uses.

For example, emergency activities (fire suppression, search and rescue, etc.), or rangeland monitoring, routine maintenance associated with an approved authorization, dispersed recreational activities (hunting, hiking, etc.), and livestock grazing are not considered surface-disturbing or disruptive activities.

Mitigation measures for all resources are included in Appendix B (Best Management Practices for all resources /resource uses) and Appendix AA (Section F) includes the Greater Sage-Grouse Mitigation Measures and Conservation Actions. The BLM may add additional mitigation measures as deemed necessary by further environmental analysis and as developed through consultation with other federal, state, and local regulatory and resource agencies.

The BLM will apply appropriate mitigation measures and conservation actions to BLM authorized activities to avoid, minimize, rectify, reduce, or compensate for impacts if an evaluation of the project area indicates the presence of important wildlife species, seasonal wildlife habitat, or other resource concerns. The sequence of mitigation action will be:

Step 1. Avoid - Adverse impacts to resources of concern are to be avoided and no action shall be permitted if there is a practicable alternative with less adverse impact.

Step 2. Minimize - If impacts to resources of concern cannot be avoided, appropriate and practicable steps to minimize adverse impacts must be taken.

Step 3. Compensate - Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain. The amount and quality of compensatory mitigation may not substitute for avoiding and minimizing impacts.

Even after avoiding and minimizing impacts, projects that will cause adverse impacts to resources typically require some type of compensatory mitigation. Compensatory mitigation refers to the restoration, establishment, enhancement, or in certain circumstances preservation of resources for the purpose of offsetting unavoidable adverse impacts. The BLM will determine the appropriate form and amount of compensatory mitigation required. Methods of compensatory mitigation include restoration, establishment, enhancement and preservation.

- Restoration: Re-establishment or rehabilitation of a resource with the goal of returning natural or historic functions and characteristics to a currently degraded area. Restoration may result in a gain in function or acres, or both.
- Establishment (Creation): The development of a resource where that resource did not previously exist through manipulation of the physical, chemical and/or biological characteristics of the site. Successful establishment results in a net gain in acres and function.
- Enhancement: Activities conducted within existing resource that heighten, intensify, or improve one or more functions. Enhancement is often undertaken for a specific purpose such as to improve water quality, flood water retention or wildlife habitat. Enhancement results in a gain in function, but does not result in a net gain in acres.
- Conservation: The permanent protection of ecologically important resources through the implementation of appropriate legal and physical mechanisms (i.e. conservation easements, title transfers). Preservation may include protection of areas adjacent to resource location as necessary to ensure protection or enhancement of the ecosystem. Preservation does not result in a net gain of acres and may only be used in certain circumstances, including when the resources to be preserved contribute significantly to ecological sustainability.

There are times when mitigating project impacts through onsite mitigation alone, may not be possible or sufficient to adequately mitigate impacts and achieve resource objectives. In these cases, it may be appropriate to consider offsite mitigation as a feature of one or more of the alternatives in the impact analysis. Offsite mitigation is generally appropriate when the authorized officer determines that impacts cannot be mitigated to an acceptable level onsite and it is expected that the land use authorization as submitted would not be consistent with the BLM's resource objectives. BLM may expressly condition its approval of an action on the applicant's commitment to take actions, and the BLM may, if necessary, seek appropriate enforcement action to ensure the terms of the contract are met (BLM Instruction Memorandum No. 2012-043).

Because of site-specific circumstances, some mitigation measures and conservation actions may not apply to some activities (e.g., a resource or conflict is not present on a given site) and/or may require slight variations from what is described in this appendix (AA, sections E & F). Proposed variations will be addressed as site specific mitigation applied in the permitting process. All variations in mitigation measures and conservation actions will require appropriate

analysis and disclosure as part of activity authorization. It is anticipated that variations in the mitigation measures and conservation actions will be approved in very limited circumstances and only in coordination with state wildlife management agencies. Mitigation measures and conservation actions selected for implementation will be identified in the Record of Decision (ROD) or Decision Record (DR) for those activities. The proponent must implement those identified mitigations because they are commitments made as part of the BLM decision. Because these decisions create a clear obligation for the BLM to ensure any proposed mitigation adopted in the environmental review process is performed, there is assurance that mitigation will lead to a reduction of environmental impacts in the implementation stage and include binding mechanisms for enforcement (CEQ Memorandum for Heads of Federal Departments and Agencies 2011). The determination of adequate application of the mitigation measures and conservation actions for specific projects will remain with the BLM's Authorized Officer.

2.3.7 Land Health Standards

Resources and Resource use programs would meet or move toward meeting the following standards to the extent practicable:

1) Uplands are in proper functioning condition

2) Riparian areas and wetlands are in proper functioning condition

3) Water quality meets federal and Montana state standards

4) Air quality meets Montana state standards

5) Habitats are provided for healthy, productive, and diverse native plant and animal populations and communities. Habitats are improved or maintained for specials status species (federally threatened, endangered, candidate or Montana species of special concern).

These standards, originally described as rangeland health standards (USDI BLM 1997), would be applied to BLM authorized activities as "Land Health Standards." Detailed descriptions of the characteristics associated with these standards can be found in Appendix I.

2.3.8 Activity Plans

Program specific "activity plans," such as habitat management plans or watershed restoration strategies, have been written over the years to apply a more focused approach to achieving land use planning goals. Activity plans provide direction for more site-specific actions. NEPA analysis is required for site-specific implementation actions. Program specific "activity plans" would be tiered to this document and are part of the implementation of this RMP/EIS (Appendix X).

2.3.9 Monitoring

The BLM planning regulations (43 Code of Federal Regulations 1610.4-9) call for the monitoring of resource management plans on a continual basis with formal evaluation done at periodic intervals. The Billings and Pompeys Pillar National Monument RMP/EIS would be monitored on a continual basis. Plan evaluations would occur on 5 year intervals. Management actions arising from activity plan decisions would be evaluated to ensure consistency with the Approved RMP objectives (Appendix X).

2.3.10 Greater Sage-Grouse Habitat Management

In August 2011, the BLM convened the Sage-Grouse National Technical Team (NTT), which brought together resource specialists and scientists from the BLM, state fish and wildlife agencies, the USFWS, the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), and the U.S. Geological Survey. The NTT developed a series of science-based conservation measures to be considered and analyzed through the land use planning process.

On December 9, 2011, a Notice of Availability was published in the Federal Register to initiate the BLM and U.S. Forest Service Greater Sage-Grouse Planning Strategy across ten western states, including California, Oregon, Nevada, Idaho, Utah, and Southwest Montana in the Great Basin Region and Northwest Colorado, Wyoming, Montana, South Dakota, and North Dakota in the Rocky Mountain Region. This EIS is one of fifteen separate EISs analyzing incorporation of specific conservation measures across the range of the Greater Sage-Grouse, consistent with BLM policy.

The BLM Washington Office (WO) issued a National Greater Sage-Grouse Planning Strategy on December 27, 2011. WO Instruction Memorandum (IM) 2012-044 provides direction to the BLM on how to consider the NTT conservation measures in the land use planning process. The WO IM requires that the appropriate and applicable conservation measures in the NTT report be analyzed in at least one alternative in the land use planning EIS and that a "hard look" be given to the conservation measures, as applicable to local ecological site variability. Alternatives B and D in the Billings and Pompeys Pillar National Monument Proposed RMP/Final EIS contain conservation measures identified in the NTT report and incorporate the national strategy (WO IM 2012-044).

2.3.10.1 BLM Programs for Addressing Greater Sage-Grouse Threats

In 2013, the USFWS released their Conservation Objectives Team (COT) Report, which delineates reasonable objectives, based upon the best scientific and commercial data available at the time of its release, for the conservation and survival of Greater Sage-Grouse. The report also identified present and widespread and localized threats facing the Greater Sage-Grouse and their habitat in specific populations across the west. The ranges of management actions for managing Greater Sage-Grouse habitat analyzed in this EIS are directed toward responding to these threats.

The direction for managing GRSG habitat in this document is focused on responding to the threats identified by the USFWS in its 2010 warranted but precluded finding on listing the GRSG, as well as its Conservation Objectives Team (COT) Report. The USFWS threats do not necessarily align with BLM or Forest Service resource program areas, and are often integrated into several different resource program areas. Table 2.1 , USFWS and COT Report Identified Threats to Greater Sage-Grouse and Their Habitat and Applicable BLM Program Areas, provides a cross-walk between the USFWS listing decision and COT-identified threats and the BLM program areas addressing these threats, with references to specific sections of the Proposed Plan to show how those threats were addressed in the BLM's land use plan.

On November 21, 2014 the USGS published "Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review" (USGS 2014). The USGS review provided a compilation and summary of published scientific studies that evaluate the influence of anthropogenic activities and infrastructure on GRSG populations. The BLM has reviewed this information and examined how lek buffer-distances were addressed through land use allocations and other management actions in the Draft Billings and Pompeys Pillar National Monument RMP/EIS. Based on this review, in undertaking BLM management actions, and consistent with valid and existing rights and applicable law in authorizing third party actions, the BLM will apply the lek buffer-distances in the USGS Report "Conservation Buffer Distance Estimates for Greater Sage Grouse-A Review (Open File Report 2014-1239)" in both GHMA and PHMA as detailed in Appendix AA (section G).

Table 2.1 Identified Threats to Greater Sage-Grouse and Their Habitat and Applicable BLM Proposed Plan Resource Program Areas Addressing These Threats

Identified Threats to Greater Sage-Grouse and Their Habitat, and Applicable BLM Proposed Plan Resource Program Areas Addressing these Threats		
USFWS-Identified Threats to Greater Sage-Grouse and Its Habitat (2010 warranted but precluded finding)	***COT Report-Identified Threats to Greater Sage-Grouse and Its Habitat (2013)***	***Applicable BLM Proposed Plan Resource Program Addressing Threat***
Wildland Fire	Fire	Fire Ecology and Management (Section 2.3.10.4.6)
Invasive Species	Nonnative, Invasive Plants Species	Vegetation – Invasive Species and Noxious Weeds (Section 2.3.10.4.3) Vegetation – Rangeland and Shrubland (Section 2.3.10.4.4)
Oil and Gas *(for wind/solar see Infrastructure)*	Energy Development	Realty, Cadastral Survey, and Lands – Rights-of-Way, Leases, and Permits (Section 2.3.10.4.12) Energy and Mineral Resources - Fluid Minerals (see Section 2.3.10.4.8) Energy and Mineral Resources – Coal (Section 2.3.10.4.7) Wildlife Habitat and Special Status Species (Section 2.3.10.4.5)
Prescribed Fire	Sagebrush Removal	Vegetation - Rangeland and Shrubland (Section 2.3.10.4.4) Fire Ecology and Management (Section 2.3.10.4.6)
Grazing	Grazing	Livestock Grazing (Section 2.3.8.1.3..14) Vegetation – Rangeland and Shrubland (Section 2.3.10.4.4) Vegetation – Riparian and Wetland (Section 2.3.10.4.2)
See *Grazing Management (above)*	Range Management Structures	Livestock Grazing (Section 2.3.10.4.14)
Conifer Encroachment	Pinyon and/or Juniper Expansion	Fire Ecology and Management (Section 2.3.10.4.6) Vegetation – Forests and Woodlands (Section 2.3.10.4.1)
Agriculture and Urbanization	Agricultural Conversion and Ex-Urban Development	Realty, Cadastral Survey, and Lands – Land Tenure and Access (Section 2.3.10.4.11)
Hard Rock Mining	Mining	Realty, Cadastral Survey, and Lands – Withdrawals (Section 2.3.10.4.13) Energy and Mineral Resources – Locatable Minerals (Section 2.3.10.4.9) Energy and Mineral Resources – Mineral Materials (2.3.10.4.10)
See Infrastructure, Roads	Recreation	Recreation and Visitor Services (Section 2.3.10.4.15) Trails and Travel Management (Section 2.3.10.4.16)
Infrastructure - Power lines/ pipelines - Roads - Communication sites - Railroads Range improvements (see below)	Infrastructure	Realty, Cadastral Survey, and Lands - Rights-of-Way, Permits, and Leases (Section 2.3.10.4.12) Trails and Travel Management (Section 2.3.10.4.16) Renewable Energy (Section 2.3.10.4.17)
Infrastructure – Range Improvements	Range Management Structures	Livestock Grazing (Section 2.3.10.4.14)
Water Developments	No similar threat identified	All applicable programs

Climate Change	No similar threat identified	*There is no BLM resource program in the proposed plan addressing this threat.*
Weather	No similar threat identified	*There is no BLM resource program in the proposed plan addressing this threat.*
Predation	No similar threat identified	All applicable programs
Disease	No similar threat identified	All applicable programs
Hunting	No similar threat identified	*There is no BLM resource program in the proposed plan addressing this threat.*
Contaminants	No similar threat identified	Public Health and Safety (see Public Safety section)

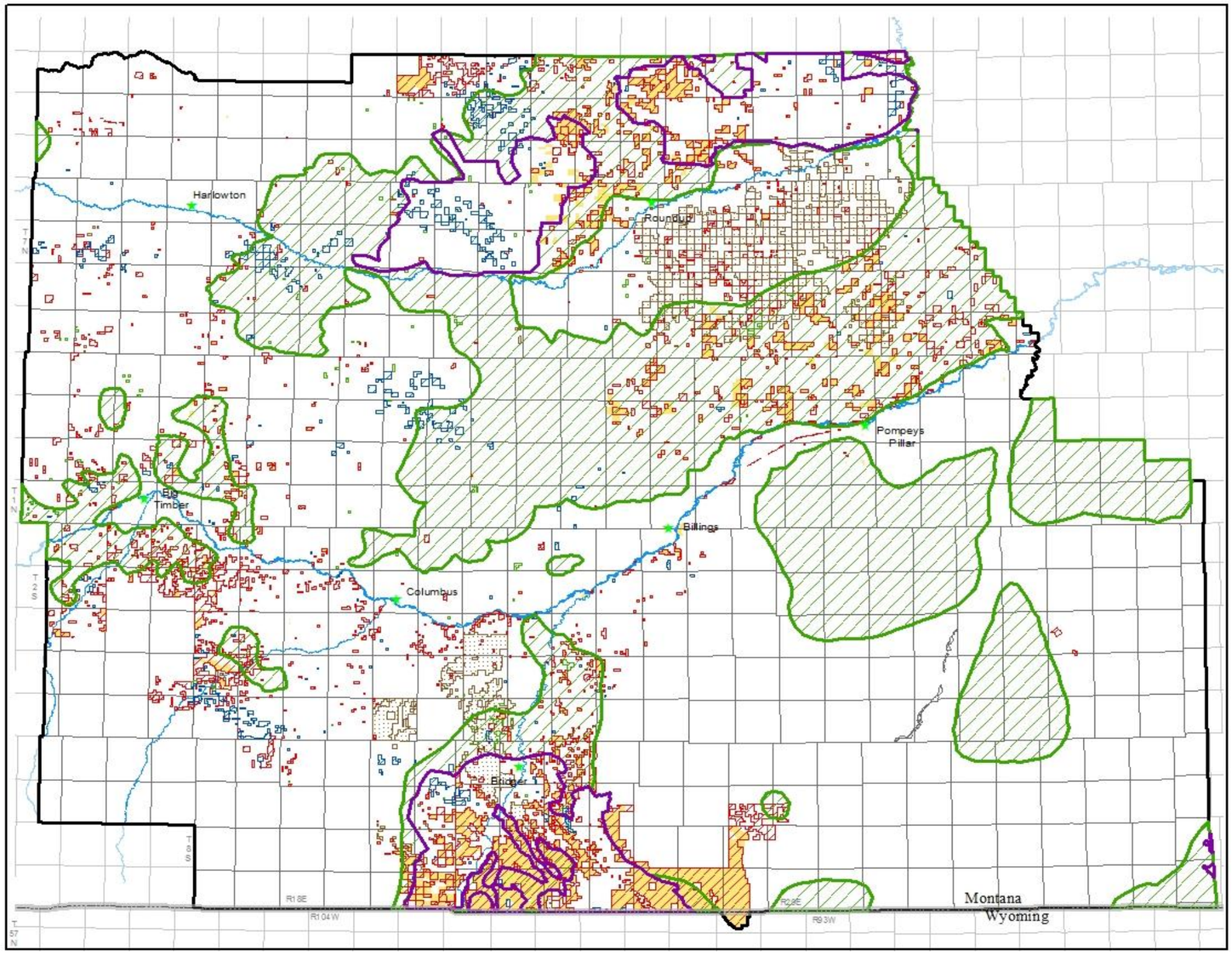
Source: USFWS 2010, 2013

2.3.10.2 Range of Alternatives for Greater Sage-Grouse Management

The action alternatives (Alternatives B, C, and D) offer a range of management approaches to maintain or increase Greater Sage-Grouse abundance and distribution of Greater Sage-Grouse by conserving, enhancing, or restoring the sagebrush ecosystem upon which Greater Sage-Grouse populations depend in collaboration with other conservation partners (Figure 2-3). The relative emphasis given to particular resources and resource uses differs as well, including allowable uses, restoration measures, and specific direction pertaining to individual resource programs. When resources or resource uses are mandated by law or are not tied to planning issues, there are typically few or no distinctions between alternatives.

The meaningful differences among the alternatives are described in Table 2.10 through Table 2.13 – Detailed Tables of Alternatives. This section also provides a complete description of the goals, objectives, and management actions for each alternative. In some instances, varying levels of management of Priority Habitat Management Areas (PHMA) and General Habitat Management Areas (GHMA) overlap a single area, or polygon, due to management prescriptions from different resource programs. In instances where varying levels of management prescriptions overlap a single polygon, the stricter of the management prescriptions would apply.

Figure 2-3: BLM Managed Surface, Federal Mineral Estate, and Sage-Grouse Habitat Management Areas within the Billings Field Office Planning Area



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

Billings & Pompeys Pillar National Monument RMP / EIS

Legend

- State Border
- Planning Area Boundary
- GRSG PHMA
- GRSG GHMA
- Public Lands Survey System
- Coal Only
- All minerals
- Coal, oil, and gas
- Oil and gas
- Bureau of Land Managment
- Towns

BLM Managed Surface, Federal Minerals, and Sage-Grouse Habitat Management Areas within the Billings Field Office Planning Area

0 1.753.5 7 10.5 14 17.5 Miles
Map scale 1:900,000

Map generated by the Billings Field Office in April 2015

Albers Equal Area, NAD 83 Projection

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Table 2.2 Comparative Summary of Allocation Decisions of the Draft Alternatives and Proposed Plan (Proposed Alternative) for Greater Sage-Grouse Management (Acres)

Resources/ Resource Uses	*Alternative A (Current Mgmt)*	*Alternative B*	*Alternative C*	*Alternative D (Proposed)*
Fluid Mineral Leasing	**PH** Closed: 816 NSO: 9,203 CSU: 10,860 Timing: 150,341 Standard: 53,886 **GH** Closed: 0 NSO: 0 CSU: 0 Timing: 0 Standard: 0	**PHMA** Closed: 217,682 NSO: 193,490 CSU: 0 Timing: 0 Standard: 138 **GHMA** Closed: 12,930 NSO: 62,922 CSU: 84,515 Timing: 10,162 Standard: 132	**PHMA** Closed: 40 NSO: 34,950 CSU: 192,690 Timing: 0 Standard: 0 **GHMA** Closed: 1,810 NSO: 18,891 CSU: 32,967 Timing: 58,681 Standard: 58,171	**PHMA** Closed: 4,361 NSO: 218,075 CSU: 2,617 Timing: 345 Standard: 0 **GHMA** Closed: 13,343 NSO: 154,273 CSU: 122,032 Timing: 10,063 Standard: 25,306
Wind and Solar ROWs	**PH** Exclusion: 2,808 Avoidance: 877 Open: 158,720 **GH** Exclusion: 7,843 Avoidance: 16,370 Open: 150,433	**PHMA** Exclusion: 164,994 Avoidance: 240 Open: 9 **GHMA** Exclusion: 176,683 Avoidance: 547 Open: 16	**PHMA** Exclusion: 15,433 Avoidance:149,795 Open: 10 **GHMA** Exclusion: 22,085 Avoidance: 154,949 Open: 215	**PHMA** Exclusion:165,054 Avoidance: 0 Open: 0 **GHMA** Exclusion: 24,615 Avoidance: 119,034 Open: 273
Corridors	**PH** Open: 1,579 **GHMA** Open: 0	**PHMA** Open: 1,579 **GHMA** Open: 0	**PHMA** Open: 10,953 **GHMA** Open: 2,838	**PHMA** Open: 4,230 **GHMA** Open: 268
Rights-of-Way	**PH** Exclusion: 1,856 Avoidance: 877 Open: 162,425 **GH** Exclusion: 5,088 Avoidance: 16,471 Open: 155,601	**PHMA** Exclusion: 152,302 Avoidance: 12,687 Open: 166 **GHMA** Exclusion:14,813 Avoidance: 133,756 Open: 28,592	**PHMA** Exclusion: 811 Avoidance: 163,476 Open: 956 **GHMA** Exclusion: 6,393 Avoidance: 119,919 Open: 50,939	**PHMA** Exclusion: 1,360 Avoidance: 163,796 Open: 248 **GHMA** Exclusion: 9,037 Avoidance: 167,000 Open: 26,770
Mineral Material Sales and Permits	**PH** Open: 161,193 Closed: 1,617 **GH** Open: 223,071 Closed: 5,112	**PHMA** Open: 223,182 Closed: 223,792 **GHMA** Open: 322,005 Closed: 107,258	**PHMA** Open: 10,974 Closed: 216,333 **GHMA** Open: 322,005 Closed: 7,385	**PHMA** Open: 10,957 Closed: 216,350 **GHMA** Open: 307,704 Closed: 21,689
Locatable Minerals	**PH** Open: 161,142 Closed: 543 **GH** Open: 223,469 Closed: 1,305	**PHMA** Open: 9,411 Closed: 217,895 **GHMA** Open: 303,370 Closed: 29,025	**PHMA** Open: 161,235 Closed: 1,120 **GHMA** Open: 227,180 Closed: 1,413	**PHMA** Open: 160,534 Closed: 2,138 **GHMA** Open: 218,208 Closed: 6,621

2.3.10.3 Development of the Proposed Plan for Greater Sage-Grouse Habitat Management

In developing the Proposed Plan for GRSG management, the BLM made modifications to the Proposed Alternative identified in the Draft LUP/EIS. The modifications are based on public

comments received on the Draft LUP/EIS, internal BLM review, new information and best available science, the need for clarification in the plans, and ongoing coordination with stakeholders across the range of the GRSG. As a result, the Proposed Plan provides consistent GRSG habitat management across the range, prioritizes development outside of GRSG habitat, and focuses on a landscape-scale approach to conserving GRSG habitat.

The BLM modified the Proposed Alternative, identified as Alternative D as presented in the Draft LUP/EIS, which is now considered the proposed plan for managing BLM-administered lands within the Billings Field Office planning area.

Since release of the Draft LUP/EIS, the BLM has continued to work closely with a broad range of governmental partners, including Governors, State Fish and Game agencies, the USFWS, Indian tribes, county commissioners and many others. Through this cooperation, the BLM has developed a Proposed Plan that takes into account state, Tribal, and local strategies in accordance with applicable law and contributes to the long-term conservation of the GRSG. The BLM also received many substantive public comments on the Draft LUP (Chapter 5), which greatly informed the BLM's development of the Proposed Plan for GRSG management.

The BLM's Proposed Plan considers documents related to the conservation of GRSG that have been released since the publication of the draft LUP/EIS. For example, this Proposed Plan considers the USFWS' October 27, 2014 memorandum "Greater Sage-Grouse: Additional Recommendations to Refine Land Use Allocations in Highly Important Landscapes" (Appendix AA) and the USGS's November 21, 2014 report "Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review" (USGS 2014). The BLM also updated the Proposed Plan to reflect new GRSG state conservation strategies, including recent State Executive Orders.

The BLM has refined the Proposed Plan to provide a layered management approach that offers the highest level of protection for GRSG in the most valuable habitat. Land use allocations in the Proposed Plan would limit or eliminate new surface disturbance in PHMA, while minimizing disturbance in GHMA. In addition to establishing protective land use allocations, the Proposed Plan for GRSG management would implement a suite of management tools such as disturbance limits (see Section 2.3.10.6), GRSG habitat objectives and monitoring (see Table 2.3 and Section 2.3.10.7), mitigation approaches (see Section 2.3.10.8), adaptive management triggers and responses (see Section 2.3.10.5), and lek buffer-distances (see Appendix AA (Section G)) throughout the range. These overlapping and reinforcing conservation measures will work in concert to improve GRSG habitat condition and provide clarity and consistency on how the BLM will manage activities in GRSG habitat.

2.3.10.4 BLM Proposed Plan for Greater Sage-Grouse Habitat Management

Many of the proposed plan goals, objectives, management actions and allowable uses identified in this section originate from the specific BLM resource/program areas and have been determined to be applicable to the proposed management of Greater Sage-Grouse habitat. The information presented below is the same as that presented in the Current Management and Alternatives section of Chapter 2 and has simply been consolidated here to depict how the agency proposes to manage Greater Sage-Grouse habitat.

Throughout the planning area, BLM-authorized activities associated with all resources and all resource use programs would be subject to impact mitigation/minimization guidelines and best management practices (BMPs) found in Appendix B.

2.3.10.4.1 Vegetation – Forests and Woodlands

Actions

- Remove conifers encroaching into sagebrush habitats. Prioritize treatments closest to occupied sage-grouse habitats and near occupied leks, and where juniper encroachment is phase 1 or phase 2. Use of site-specific analysis and principles like those included in the FIAT report (Chambers et. al., 2014) and other ongoing modeling efforts to address conifer encroachment would help refine the location for specific priority areas to be treated.

2.3.10.4.2 Vegetation – Riparian

Actions

- Manage riparian communities to meet Standards for Rangeland Health (Standard 2) to ensure riparian areas and wetlands are in Proper Functioning Condition (PFC).
- Riparian areas would be monitored on a prioritized basis. High priority areas would include:
    - Riparian areas adjacent to fish bearing waters.
    - Riparian areas with existing cottonwood galleries or potential cottonwood gallery habitat
    - Riparian areas within Greater Sage-Grouse Priority Habitat

2.3.10.4.3 Vegetation – Invasive Species and Noxious Weeds

The actions specific to the management of invasive and noxious weeds are listed below, by alternative. These "Action Alternatives" would primarily protect people, water, fish, wildlife, special status species and their habitats, prevent the introduction and spread of invasive and noxious weeds. Some actions associated with other resources (soils, water, fish and wildlife etc.) benefit the management of invasive and noxious weed program by limiting activities that would reduce soil and vegetation disturbance and reduce the spread and introduction of invasive and noxious weeds.

Goals and Objectives

- Use Integrated Pest Management to make progress towards a healthy plant community, while meeting multiple land use objectives and meeting Standards for Rangeland Health (Standards 1, 2, and 5).

Actions

- Noxious and invasive weed control would not occur within ½ mile of nesting and brood rearing areas for special status species during the nesting and brood rearing season

2.3.10.4.4 Vegetation – Rangeland and Shrubland

Goals and Objectives

- Maintain, improve, enhance, or restore habitat to facilitate the conservation, recovery, and maintenance of populations of native and desirable nonnative plant and animal species.
- Promote recovery and restoration of sagebrush communities after wildfire events.

Actions

- Manage rangelands to meet health standards consistent with the Standards for Rangeland Health (Standards 1 and 5) and Guidelines for Livestock Grazing Management and apply appropriate guidelines where not meeting the standards.
- Identify priority treatment areas for conifer encroachment, including big game winter range, WUIs, current and historic sagebrush habitat, forest meadows and bighorn sheep habitat.
- Within Greater Sage-Grouse Priority Habitat Areas, only treatments that conserve, enhance, or restore Greater Sage-Grouse habitat would be allowed. Treatment methods, including prescribed burning and mechanical treatments would be used to eliminate conifer encroachment and stimulate vegetative re-growth in grassland/shrub land habitats; and to reduce fuels, thin under-stories, recycle nutrients, and create small openings in forested vegetation types.
- A target of eight percent of crested wheatgrass acres (approximately 2,378 acres) would be converted to native sagebrush/grassland over the life of the plan.
- Preferred treatment areas would be areas that are not currently being used in a grazing system to provide early spring grazing and reduce grazing pressure from other areas within a grazing allotment.
    - Priority treatment areas would be in Greater Sage-Grouse PHMAs, RAs, and GHMAs.
- In all Priority Habitat Management Areas, the desired condition is to maintain a minimum of 70% of lands capable of producing sagebrush with 10 to 30% sagebrush canopy cover. The attributes necessary to sustain these habitats are described in Interpreting Indicators of Rangeland Health (BLM Tech Ref 1734-6).*****

2.3.10.4.5 Wildlife Habitat and Special Status Species

Sagebrush, native grasslands, seasonal or crucial wildlife ranges, special status species habitat, fisheries, cottonwood galleries, and riparian/wetlands would be priority habitats. All wildlife habitats would be managed to meet Rangeland Health Standards (Standards 1 and 5). BLM is responsible for managing habitats, whereas state and federal wildlife management agencies (e.g., MT FWP, USFWS) oversee management of wildlife species. BLM would coordinate with and support the conservation plans of those agencies on BLM administered lands. Priority wildlife species for management are described in Chapter 3.

In 2010, the U.S. Fish and Wildlife Service determined that the Greater Sage-Grouse is a Candidate species and Warranted, but precluded, by other priorities, for listing under the Endangered Species Act. In 2009, the MT/DAKs BLM delineated three types of Greater Sage-Grouse habitat areas as part of the planning process (Map 23):

- Greater Sage-Grouse Habitat - Priority Habitat Management Areas (PHMAs),

- Greater Sage-Grouse Habitat - Restoration areas (RAs), and
- Greater Sage-Grouse Habitat -– General Habitat Management Areas (GHMA)

Each area would have varying degrees of management in order to achieve the goals or objectives for each Greater Sage-Grouse habitat area. The Greater Sage-Grouse habitat delineations may be modified as needed as local site conditions change or as new information becomes available. Refer to the Glossary for definitions of the three Greater Sage-Grouse habitat areas, Appendix AA (section F) for mitigation measures and conservation actions for Greater Sage-Grouse habitat, and Appendix AA (section A) for monitoring of Greater Sage-Grouse and Sagebrush Habitats.

Goals and Objectives

- Manage for net conservation gain and connectivity of habitats on BLM-administered lands. The necessary habitat would be present to maintain, enhance, or restore T & E, special status, and priority native species populations. Sagebrush, native grasslands, seasonal or crucial wildlife ranges, special status species habitat, fisheries, cottonwood galleries, and riparian/wetlands would be priorities.
- Manage all BLM actions or authorized activities to sustain wildlife populations and their habitats and to avoid contributing to the listing of or jeopardizing the continued existence or recovery of special status species and their habitats.
- Manage or restore habitat on BLM-administered lands within the planning area to facilitate the conservation, recovery, and maintenance of populations of native, desirable non-native, and special status species consistent with appropriate local, state, and federal management plans.
- Manage habitats to support MT FWP in the attainment of objectives and well-distributed, healthy populations of wildlife species consistent with the MT FWP's Strategic Habitat Plan, Montana's Comprehensive Fish and Wildlife Conservation Strategy, and strategic population plans, and to achieve the stated purpose of designated State of Montana Wildlife Management Areas.
- Provide for the long-term conservation, enhancement, and restoration of the sagebrush steppe/mixed-grass prairie complex in a manner that supports sustainable Greater Sage-Grouse populations and a healthy diversity and abundance of wildlife species.
- These habitat objectives in Table 2.3 summarize the characteristics that research has found represent the seasonal habitat needs for Greater Sage-Grouse. The specific seasonal components identified in Table 2.3 were adjusted based on local science and monitoring data to define the range of characteristics used in this subregion. Thus, the habitat objectives provide the broad vegetative conditions we strive to obtain across the landscape that indicate the seasonal habitats used by sage-grouse. These habitat indicators are consistent with the rangeland health indicators used by the BLM.
- The habitat objectives will be part of the sage-grouse habitat assessment to be used during land health evaluations (Monitoring Framework, Appendix AA, section B). These habitat objectives are not obtainable on every acre within the designated GRSG habitat management areas. Therefore, the determination on whether the objectives have been met will be based on the specific site's ecological ability to meet the desired condition identified in the table.

- All BLM use authorizations will contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives. If monitoring data show the habitat objectives have not been met nor progress being made towards meeting them, there will be an evaluation and a determination made as to the cause. If it is determined that the authorized use is a cause, the use will be adjusted by the response specified in the instrument that authorized the use.
- This information should not be viewed as providing standards by which to judge the overall quality of sagebrush habitats. Instead, these sage-grouse habitat characteristics should be used as one tool for assessing habitats and guiding management actions. There is a tendency to review each indicator and its suitability category independently, but site suitability is determined by the relationship among the several indicator values in each matrix and the relative abundance of habitat types across the landscape. It is important to understand that the desired conditions described for these habitat types are based on average plant productivity and structural data and expert opinion relative to sage-grouse use of a subset of sagebrush communities and they may not apply to all sagebrush communities in the planning area variation (Davies et al. 2006). These measures also do not account for inter-annual climate variation (Davies et al. 2006). Individual indicator values do not define site suitability and overall site suitability descriptions require an interpretation of the relationships between the indicators and other factors. Professional expertise and judgment are required. Measurement of these objectives will follow the steps described in Appendix AA.
- As described above, the identified habitat objectives are averages and will vary based on the individual ecological sites and their potential. Ecological sites are the basic component of a land-type classification system that describes ecological potential and ecosystem dynamics of land areas. All land/land use types are identified within the ecological site system, including rangeland, pasture, and forest land. An ecological site is defined as a distinctive kind of land with specific soil and physical characteristics that differ from other kinds of land in its ability to produce a distinctive kind and amount of vegetation and its ability to respond similarly to management actions and natural disturbances. Lands are classified considering discrete physical and biotic factors. Physical factors include soils, climate, hydrology, geology, and physiographic features. Biotic factors include plant species occurrence, plant community compositions, annual biomass production, wildlife-vegetation interactions, and other factors. Ecological dynamics, primarily disturbance regimes, such as grazing; fire; drought; management actions; and all resulting interactions are also a primary factor of ecological sites. Information and data pertaining to a particular ecological site is organized into a reference document known as an ESD. ESDs function as a primary repository of ecological knowledge regarding an ecological site. ESDs are maintained on the NRCS Ecological Site Information System (ESIS), which is the repository for information associated with ESDs and the collection of all site data (https://esis.sc.egov.usda.gov/Welcome/pgESDWelcome.aspx). The ESD can help interpret if a site's potential is less than or greater than the identified habitat objectives.
- In addition to the references identified in the following table, the Conservation Plans developed for each of the Wyoming Local Sage-Grouse Working Groups will be consulted to identify specific habitat objectives appropriate for site-specific conditions. The Conservation Plans, updated in March 2014, are available on the Wyoming Game

and Fish Department (WGFD) website at: https://wgfd.wyo.gov/web2011/wildlife-1000817.aspx.

- All BLM use authorizations would contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives. If monitoring data show the habitat objectives have not been met nor progress being made towards meeting them, there would be an evaluation and a determination made as to the cause. If it is determined that the authorized use is a cause, the use would be adjusted by the response specified in the instrument that authorized the use.

Table 2.3 Billings Field Office Greater Sage-Grouse Habitat Objectives

ATTRIBUTE	INDICATORS	DESIRED CONDITION	REFERENCE
Breeding, Nesting, and Early Brood-Rearing (Seasonal Use Period: March 1 – June 15)			
Lek Security	Proximity of trees	.65– Km2 (.388 miles) avoidance of coniferous habitats	Doherty, K.E. 2008. *Sage-grouse and Energy Development: Integrating Science with Conservation Planning to Reduce Impacts*. (Doctoral dissertation, the University of Montana (Missoula). Available at: http://etd.lib.umt.edu/theses/available/etd-03262009-132629/unrestricted/doherty.pdf
	Collision Risks	Fences and other structures that pose a high collision risk are absent or mitigated with visual markers within 1.25 miles of leks active within 5 years.	Connelly et al. 2000 Stevens 2011 *Sage-Grouse Habitat Assessment Framework, Multi-scale Habitat Assessment Tool* (unpublished report). August 2010. BLM, Idaho State Office. Boise.
	Proximity of sagebrush to leks	Adjacent protective sagebrush cover within 100 m (328 ft.) of an active lek	*Sage-Grouse Habitat Assessment Framework, Multi-scale Habitat Assessment Tool* (unpublished report). August 2010. BLM, Idaho State Office. Boise.
Cover	% of seasonal habitat meeting desired conditions	80% of the nesting habitat within 3.1 miles of sage-grouse leks meets the recommended vegetation characteristics, where appropriate (relative to ecological site potential, etc.)	Knick, S.T. and J.W. Connelly, 2011. *Greater Sage-grouse, Ecology and Conservation of a Landscape Species and its Habitats*. Studies in Avian Biology No. 38. A Publication of the Cooper Ornithological Society, University of California Press. Berkeley. pp. 1–9. Stiver, S. J., E. T. Rinkes, D. E. Naugle, 2010. *Sage-Grouse Habitat Assessment Framework.* U.S. Bureau of Land Management, Idaho State Office, Boise, Idaho.
	Sagebrush canopy cover	5-25%	Herman – Brunson, K.M. 2007. Swanson, C.C. 2009. Doherty, K.E., Naugle, D.E., Walker, B.L. 2010 Hagen, C.A., Connelly, J.W., Schroedeer,

ATTRIBUTE	INDICATORS	DESIRED CONDITION	REFERENCE
			M.A. 2007 Doherty, K.E., Beck, J.L., Naugle, D.E. 2011. USDA, NRCS, Montana, Ecological Site Descriptions. Accessed January 28, 2014. Foster, M.A, Ensign, J.T., Davis, W.N., Tribby, D.C. 2014. Wright, P and Wegner, D. 2008 Lane , V.R. 2005
	Sagebrush height	6-31 inches (15-50cm)	Schroeder et al. 1999. Swanson, C.C. 2009. Holloran, M.J., Heath, B.J., Lyon, A.G. 2005. Doherty, K.E., Beck, J.L., Naugle, D.E. 2011 USDA, NRCS, Montana, Ecological Site Descriptions. Accessed January 28, 2014. Lane , V.R. 2005
	Predominant sagebrush shape	Predominately spreading shape	Stiver, S. J., E. T. Rinkes, D. E. Naugle, 2010.
	Perennial grass cover	≥10%	Doherty, K.E., Beck, J.L., Naugle, D.E. 2011. USDA, NRCS, Montana, Ecological Site Descriptions. Accessed January 28, 2014. Holloran, M.J., Heath, B.J., Lyon, A.G. 2005 Doherty, K.E., Naugle, D.E., Walker, B.L. 2010 Hagen, C.A., Connelly, J.W., Schroedeer, M.A 2007 Lane, V.R. 2005
	Perennial grass and forb height	Adequate nest cover based on ecological site potential and seasonal precipitation; 4.4-11.3 inches (11.4-29 cm)	K.E. Doherty, K.E. Naugle, J.D. Tack, B.L.Walker, J.M.Graham and J.L. Beck. 2014
	Perennial forb canopy cover	≥3%	Doherty, K.E., Beck, J.L., Naugle, D.E. 2011. USDA, NRCS, Montana, Ecological Site Descriptions. Accessed January 28, 2014. Holloran, M.J., Heath, B.J., Lyon, A.G. 2005. Doherty, K.E., Naugle, D.E., Walker, B.L. 2010. Hagen, C.A., Connelly, J.W., Schroedeer, M.A. 2007
Brood-Rearing/Summer [1] (Seasonal Use Period: June 16 – October 31)			
Cover	% of Seasonal habitat meeting desired condition	>40% of the brood-rearing/summer habitat meets recommended brood habitat	Stiver, S. J., E. T. Rinkes, D. E. Naugle, 2010.

ATTRIBUTE	INDICATORS	DESIRED CONDITION	REFERENCE
		characteristics where appropriate, relative to site potential and seasonal precipitation.	
	Sagebrush canopy cover	5-25%	Herman – Brunson, K.M. 2007. Swanson, C.C. 2009. Doherty, K.E., Naugle, D.E., Walker, B.L. 2010 Doherty, K.E., Beck, J.L., Naugle, D.E. 2011. USDA, NRCS, Montana, Ecological Site Descriptions. Accessed January 28, 2014. Foster, M.A., Ensign, J.T., Davis, W.N., Tribby, D.C., 2014. Lane , V.R. 2005
	Sagebrush height	6-31 inches (15-50cm)	Schroeder et al. 1999 Holloran, M.J., Heath, B.J., Lyon, A.G. 2005 Doherty, K.E., Beck, J.L., Naugle, D.E. 2011. USDA, NRCS, Montana, Ecological Site Descriptions. Accessed January 28, 2014. Lane , V.R. 2005
	Perennial grass and forb canopy cover	≥10%	Doherty, K.E., Beck, J.L., Naugle, D.E. 2011. Holloran, M.J., Heath, B.J., Lyon, A.G. 2005. Doherty, K.E., Naugle, D.E., Walker, B.L. 2010 Hagen, C.A., Connelly, J.W., Schroedeer, M.A. 2007 USDA, NRCS, Montana, Ecological Site Descriptions. Accessed January 28, 2014.
	Riparian areas/mesic meadows	Proper Functioning Condition	BLM, 1997c. Prichard, D., F. Berg, S. Leonard, M. Manning, W. Hagenbuck, R. Krapf, C. Noble, J. Staats, and R. Leinard. 1999. Prichard, D., 1998
	Upland and riparian perennial forb availability	Preferred forbs are common with several preferred species present.	Stiver, S. J., E. T. Rinkes, D. E. Naugle, 2010 Doherty, K.E., Beck, J.L., Naugle, D.E. 2011. USDA, NRCS, Montana, Ecological Site Descriptions. Accessed January 28, 2014.
Winter [1] (Seasonal Use Period: November 1 – February 28)			
Cover and Food	% of seasonal habitat meeting desired conditions	>80% of wintering habitat meets winter habitat characteristics where appropriate (relative to ecological site, etc.).	Stiver, S. J., E. T. Rinkes, D. E. Naugle, 2010.

ATTRIBUTE	INDICATORS	DESIRED CONDITION	REFERENCE
	Sagebrush canopy cover	≥10%	Schroeder et al. 1999. Swanson, C.C. 2009. Foster, M.A, Ensign, J.T., Davis, W.N., Tribby, D.C. 2014.
	Sagebrush height	≥25cm	Connelly et al. 2000

Actions

- Assist in the restoration, reintroduction, augmentation, or re-establishment of T & E, special status, and priority species and other populations and (or) habitats in coordination with other agencies.
- Identify distribution, key habitat areas, and special management needs for development of management plans and conservation measures, consistent with restoration, conservation and recovery plans for threatened, endangered, and other special status species. Priority habitats are riparian/ wetland areas, native grasslands, sagebrush steppe, conifer forests, and seasonal ranges supporting life cycle requirements for wildlife (i.e., winter, breeding, parturition, etc.).
- Fences identified as barriers to wildlife movement on BLM-administered lands would be modified or removed to accommodate wildlife passage, unless the fences were built specifically to keep native ungulates out of an area. Fences would also be placed and marked, or modified, to reduce wildlife collisions or entanglements.
- Conditions of Approval (COAs) would be applied to all Applications for Permit to Drill (APDs) for Special Status Species.
- Utilize appropriate offsite compensatory mitigation to reduce impacts to wildlife habitat. This would be necessary if (1) all onsite mitigation has been accomplished and adverse effects have not been mitigated; or (2) if onsite mitigation is not feasible. Off – site mitigation would be applied as close to the affected area as possible and for the same or similar impacted species or habitats.
- Areas that would be targeted for conversion from crested wheatgrass to native sagebrush/grasslands would be areas that have high wildlife habitat potential, particularly for Greater Sage-Grouse, big game, and other sagebrush obligate species, and are currently monocultures with little vegetation diversity.
- Mitigation of surface-disturbing or disrupting activities (including operations and maintenance associated with fluid mineral development) would be applied where needed to minimize impacts of human activities on important seasonal wildlife habitats, consistent with the wildlife stipulations outlined in the Wildlife / Special Status Species and Fluid Minerals sections of Chapter 2. Mitigation measures would be applied during activity level planning if an on-site evaluation of the project area indicates the presence of important wildlife species.
- Exceptions may be granted by the authorized officer, if an environmental review demonstrates that effects could be mitigated to an acceptable level, habitat for the species is not present in the area, or portions of the area can be occupied without affecting a particular species. Exceptions may also be granted where the short-term effects are mitigated by the long-term benefits (e.g., prescribed fire, wildlife monitoring, or forest health treatments).

- As defined in the Glossary, surface-disturbing and disruptive activities would not prohibit all activities or authorized uses. For example, emergency activities (e.g., fire suppression, search and rescue), rangeland monitoring, routine maintenance associated with an approved authorization, dispersed recreational activities (e.g., hunting, hiking), and livestock grazing are not considered surface-disturbing or disruptive activities.
- Surface occupancy and use is prohibited (NSO) in crucial winter range (antelope, elk, moose, bighorn sheep, mule deer, whitetail deer, and greater sage-grouse).
- Timing restrictions would be used in special status species habitat. Surface disturbing and disruptive activities that impact special status species habitats during their seasons of use, particularly during critical life cycles would be avoided or minimized.
- Lease Notice: Oil and gas surface occupancy and use is subject to the following operating constraints:
- The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM approved activity that would contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM would not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

Greater Sage-Grouse:

- Surface occupancy and use is prohibited within Greater sage-grouse crucial winter range (NSO).
- The BLM would apply appropriate mitigation measures and conservation actions to BLM authorized activities to avoid, minimize, rectify, reduce, or compensate for impacts if an evaluation of the project area indicates the presence of important wildlife species, seasonal wildlife habitat, or other resource concern.
- In all sage-grouse habitat, in undertaking BLM management actions, and consistent with valid existing rights and applicable law, in authorizing third-party actions that result in habitat loss and degradation, the BLM would require and ensure mitigation that provides a net conservation gain to the species including accounting for any uncertainty associated with the effectiveness of such mitigation. This would be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. Actions which result in habitat loss and degradation" include those identified as threats which contribute to Greater Sage-Grouse disturbance as identified by the U.S. Fish and Wildlife Service in its 2010 listing decision (75 FR 13910) and shown in Table 2 in the attached Monitoring Framework (Appendix AA, section B).
- If the 3% anthropogenic disturbance cap is exceeded on lands (regardless of land ownership) within GRSG PHMAs in any given Biologically Significant Unit, then no further discrete anthropogenic disturbances (subject to applicable laws and regulations, such as the 1872 hard rock mining law, valid existing rights, etc.) would be permitted

by BLM within GRSG PHMAs in any given Biologically Significant Unit until the disturbance has been reduced to less than the cap.

- If the 3% anthropogenic disturbance cap is exceeded on lands (regardless of land ownership) or if anthropogenic disturbance and habitat loss associated with conversion to agricultural tillage or fire exceed 5% within a project analysis area in PHMAs, then no further discrete anthropogenic disturbances (subject to applicable laws and regulations, such as the 1872 Mining Law, valid existing rights, etc.) would be permitted by BLM within PHMA in a project analysis area until the disturbance has been reduced to less than the cap. If the BLM determines that the State of Montana has adopted a GRSG Habitat Conservation Program that contains comparable components to those found in the State of Wyoming's Core Area Strategy including an all lands approach for calculating anthropogenic disturbances, a clear methodology for measuring the density of operations, and a fully operational Density Disturbance Calculation Tool, the 3% disturbance cap would be converted to a 5% cap for all sources of habitat alteration within a project analysis area.
- Subject to applicable laws and regulations and valid existing rights, if the average density of one energy and mining facility per 640 acres (the density cap) is exceeded on all lands (regardless of land ownership) in the Priority Habitat Management Area within a proposed project analysis area, then no further disturbance from energy or mining facilities would be permitted by BLM: (1) until disturbance in the proposed project analysis area has been reduced to maintain the limit under the cap; or (2) unless the energy or mining facility is co-located into an existing disturbed area.
- In undertaking BLM management actions, and consistent with valid and existing rights and applicable law in authorizing third-party actions, the BLM would apply the lek buffer-distances identified in the USGS Report Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review (Open File Report 2014-1239) in accordance with Appendix AA (section G).

GRSG PHMA: to maintain or improve Greater Sage-Grouse populations by maintaining Greater Sage-Grouse habitat in good condition.

- Establish Greater Sage-Grouse PHMAs (158,926 acres of BLM-administered lands and 60,569 acres of federal minerals). These PHMAs are generally consistent with MTFWP Greater Sage-Grouse core area designations, with the exception of one small area in southern Carbon County near Elk Basin Oil field (Map 23).
- Open to fluid mineral leasing and development (including geophysical exploration).
- To protect Greater Sage-grouse, a priority species for management, surface occupancy and use would be prohibited within Greater Sage-Grouse Priority Habitat Management Areas (NSO).
- Exclusion area for renewable and solar energy exploration and facility development.
- Avoidance area for major and minor ROWs.
- However ROWs would only be allowed in GRSG PHMAs where habitat functionality would be maintained.
- In all Priority Habitat Management Areas, the desired condition is to maintain a minimum of 70% of lands capable of producing sagebrush with 10 to 30% sagebrush canopy cover. The attributes necessary to sustain these habitats are described in Interpreting Indicators of Rangeland Health (BLM Tech Ref 1734-6).*

- In undertaking BLM management actions, and consistent with valid and existing rights and applicable law in authorizing third-party actions, the BLM would apply the lek buffer-distances identified in the USGS Report Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review (Open File Report 2014-1239) in accordance with Appendix AA (section G).
- No waivers or modifications to a fluid mineral lease no-surface-occupancy stipulation would be granted. The Authorized Officer may grant an exception to a fluid mineral lease no-surface-occupancy stipulation only where the proposed action:
    i. Would not have direct, indirect, or cumulative effects on GRSG or its habitat; or,
    ii. Is proposed to be undertaken as an alternative to a similar action occurring on a nearby parcel, and would provide a clear conservation gain to GRSG.
- Exceptions based on conservation gain (ii) may only be considered in (a) PHMAs of mixed ownership where federal minerals underlie less than fifty percent of the total surface, or (b) areas of the public lands where the proposed exception is an alternative to an action occurring on a nearby parcel subject to a valid Federal fluid mineral lease existing as of the date of this RMP revision. Exceptions based on conservation gain must also include measures, such as enforceable institutional controls and buffers, sufficient to allow the BLM to conclude that such benefits would endure for the duration of the proposed action's impacts.
- Any exceptions to this lease stipulation may be approved by the Authorized Officer only with the concurrence of the State Director. The Authorized Officer may not grant an exception unless the applicable state wildlife agency, the USFWS, and the BLM unanimously find that the proposed action satisfies (i) or (ii). Such finding shall initially be made by a team of one field biologist or other GRSG expert from each respective agency. In the event the initial finding is not unanimous, the finding may be elevated to the appropriate BLM State Director, USFWS State Ecological Services Director, and state wildlife agency head for final resolution. In the event their finding is not unanimous, the exception would not be granted. Approved exceptions would be made publically available at least quarterly.

GRSG Restoration Areas: In these areas, BLM would manage habitat so that Greater Sage-Grouse populations can be restored over the long-term. BLM would strive to restore historical Greater Sage-Grouse habitat functionality, or at a minimum, have no net loss of Greater Sage-Grouse habitat, to support Greater Sage-Grouse populations.

- Establish RAs (78,927 acres of BLM-administered lands and 22,951 acres of federal mineral estate). These areas would include one small polygon of core habitat in Carbon County near Elk Basin Oil Field, as well as other areas (Map 23).
- Surface occupancy and use for oil and gas exploration and development would be prohibited within 0.6 miles of Greater Sage-Grouse leks (NSO).
- Surface use for oil and gas exploration and development would be prohibited from March 1 to June 15 in Greater Sage-Grouse nesting habitat within 3 miles of a lek (TL).
- Surface occupancy and use for oil and gas exploration and development would be subject to the following special operating constraints that would maintain Greater Sage-Grouse habitat: surface disturbance density and mitigation plan (CSU).

- Geophysical exploration would be allowed on existing roads and trails with surface use prohibited from March 1 to June 15 within 4 miles of a lek (TL).
- GRSG Restoration Areas outside of Elk Basin would be avoidance areas for renewable and solar energy exploration, development and facilities with approved mitigation.
- The Elk Basin GRSG Restoration Area would be an avoidance area for renewable and solar energy exploration, development and facilities with approved mitigation.
- Avoidance area for major and minor ROWs.
- However ROWs would only be allowed in GRSG RAs where habitat functionality would be maintained.

GRSG GHMA: BLM would maintain habitat for viable Greater Sage-Grouse populations to promote movement and genetic diversity. Maintain, restore or enhance Greater Sage-Grouse habitat and connectivity between sagebrush habitats, with emphasis on those habitats occupied by Greater Sage-Grouse.

- Establish General Habitat Management Areas (113,816 acres of BLM-administered lands and 57,420 acres of federal mineral estate). These areas include a 3 mile buffer around Greater Sage-Grouse leks, outside of the PHMA and RA areas (Map 23).
- Surface occupancy and use for oil and gas exploration and development would be prohibited within 0.6 miles of the perimeter of Greater Sage-Grouse leks (NSO).
- To protect nesting Greater Sage-grouse, surface occupancy and use within 2 miles of a lek may be restricted or prohibited. Prior to such activities, a plan to mitigate impacts to nesting Greater Sage-grouse and Greater Sage-grouse nesting habitat would be prepared by the proponent and implemented upon approval by the authorized officer (CSU).
- Geophysical exploration would be allowed on existing roads and trails with surface use prohibited from March 1 to June 15 within 3 miles of a lek (TL).
- Avoidance area for renewable and solar energy exploration, development and facilities with approved mitigation.
- GRSG GHMAs would be avoidance areas for major ROWs.
- GRSG GHMAs would be open to minor ROWs.
    - Utilities and similar facilities would be located adjacent to other facilities where practical and only when habitat can be maintained.
- In undertaking BLM management actions, and consistent with valid and existing rights and applicable law in authorizing third-party actions, the BLM would apply the lek buffer-distances identified in the USGS Report Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review (Open File Report 2014-1239) in accordance with Appendix AA (section G).

2.3.10.4.6 Fire Ecology and Management

Goals and Objectives

- Manage wildfire and fuels for the protection of public health, safety, property, and resource values
- Maintain desired mix of seral stages within vegetation communities, including desert shrublands, forest and woodlands, grasslands, mountain shrublands, sagebrush (all sub-species), riparian/wetlands and aspen.

- Utilize an integrated management technique unless otherwise restricted (defined as prescribed fire, mechanical, chemical, or biological, followed by desired reseeding) to reduce fuels to protect high priority areas or resource values.

Actions

- Fuels treatments would be designed to protect or improve resource values
- Due to resource management constraints and considerations (i.e. Greater Sage-Grouse habitat, other identified T&E issues and culturally sensitive areas), there are approximately 14,000 acres available for restoring natural Fire Regime Condition Classes in Musselshell, Stillwater, Carbon, and Sweet Grass Counties
- If prescribed fire is used in Greater Sage-Grouse habitat, the NEPA analysis for the Burn Plan would address:
    - why alternative techniques were not selected as a viable options;
    - how Greater Sage-Grouse goals and objectives would be met by its use;
    - how the COT Report objectives would be addressed and met;
    - a risk assessment to address how potential threats to Greater Sage-Grouse habitat would be minimized.

  a) Prescribed fire as a vegetation or fuels treatment shall only be considered after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Prescribed fire could be used to meet specific fuels objectives that would protect Greater Sage-Grouse habitat in PHMAs (e.g., creation of fuel breaks that would disrupt the fuel continuity across the landscape in stands where annual invasive grasses are a minor component in the understory, burning slash piles from conifer reduction treatments, used as a component with other treatment methods to combat annual grasses and restore native plant communities).

  b) Prescribed fire in known winter range shall only be considered after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Any prescribed fire in winter habitat would need to be designed to strategically reduce wildfire risk around and/or in the winter range and designed to protect winter range habitat quality."
- Heavy equipment would not be used to construct fire lines in crucial winter range, habitat of candidate or special status species, riparian/wetlands or in areas of cultural resource sensitivity or other designated areas (e.g., ACECs, WSAs). Exceptions would be permitted for protection of human life, property and/or to protect resource values from further loss due to unwanted/unplanned natural or human caused wildland fires.
- Cultural Resource Specialists, Wildlife Biologists, or Resource Advisors would be consulted for locations of identified areas before use of or anticipated use of heavy equipment.
- If heavy equipment is used, rehabilitation work on lines would begin immediately after containment.
- Heavy equipment could be used in a WSA only if the exceptions in the non-impairment standards are met.
- Prescribed fire would be allowed on up to 5 percent of the percent of BLM administered acres within the planning area to achieve measurable landscape level objectives from (1) other resources, including, but not limited to, forestry, wildlife, range, vegetation, and watershed; (2) the reduction of hazardous fuels; and (3) the introduction of fire into fire-adapted ecosystems.

- Within Greater Sage-Grouse PHMAs and RAs, only treatments that conserve, enhance, or restore Greater Sage-Grouse habitat would be allowed.
- Treatment methods, including prescribed burning and mechanical treatments would be used to eliminate conifer encroachment and stimulate vegetative re-growth in grassland/shrub land habitats; and to reduce fuels, thin under-stories, recycle nutrients, and create small openings in forested vegetation types.
- A fire risk assessment would be completed for implementation of prescribed fire in relation to GRSG goals and objectives.
- When prescribed fire is used for vegetation treatments, the burn plan would clearly indicate how COT objectives would be addressed and met by use of prescribed fire and why alternative techniques for vegetation treatment were not selected.

2.3.10.4.7 Energy and Mineral Resources – Coal

Actions

- Terms and conditions would be applied to mining activities to meet land health standards for uplands, riparian areas and wetlands, water quality, air quality, and native plant and animal species (see BMPs in Appendix B and Greater Sage-Grouse Appendix AA).
- Within Greater Sage-Grouse PHMAs (Map 178) (including the Alternative B Greater Sage-Grouse Habitat ACEC) and RAs solid mineral leasing (coal) would only be allowed with the following lease stipulations:
    - Mining may only occur via sub-surface methods
    - All mine related appurtenant facilities would be placed outside of the Priority Habitat Areas
- Remainder of Planning Area: Process lease by application (LBAs) for new coal leases by applying the coal screening process to the application. The coal screening process results would determine which lands may be available for further consideration for coal leasing and development. Appropriate NEPA analysis would be required prior to leasing. The existing RMP (BLM 1984) coal-screening management decisions are current and relevant to the application area. (See Appendix M)
- At the time an application for a new coal lease or lease modification is submitted to the BLM, the BLM would determine whether the lease application area is "unsuitable" for all or certain coal mining methods pursuant to 43 CFR 3461.5. PHMA is essential habitat for maintaining GRSG for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).

2.3.10.4.8 Energy and Mineral Resources – Fluid Minerals

Goals and Objectives

Priority would be given to leasing and development of fluid mineral resources, including geothermal, outside of PHMA and GHMA. When analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMA and GHMA, and subject to applicable stipulations for the conservation of Greater Sage-Grouse, priority would be given to development in non-habitat areas first and then in the least suitable habitat for

Greater Sage-Grouse (Map 171). The implementation of these priorities would be subject to valid existing rights and any applicable law or regulation, including, but not limited to, 30 U.S.C. 226(p) and 43 C.F.R. 3162.3-1(h).

Where a proposed fluid mineral development project on an existing lease could adversely affect GRSG populations or habitat, the BLM would work with the lessees, operators, or other project proponents to avoid, reduce and mitigate adverse impacts to the extent compatible with lessees' rights to drill and produce fluid mineral resources. The BLM would work with the lessee, operator, or project proponent in developing an APD for the lease to avoid and minimize impacts to sage-grouse or its habitat and would ensure that the best information about the GRSG and its habitat informs and helps to guide development of such Federal leases.

Actions

- Where the federal government owns the mineral estate in PHMAs and GHMAs, and the surface is in non-federal ownership, apply the same stipulations, COAs, and/or conservation measures and RDFs applied if the mineral estate is developed on BLM-administered lands in that management area, to the maximum extent permissible under existing authorities, and in coordination with the landowner.
- Where the federal government owns the surface and the mineral estate is in non-federal ownership in PHMA and GHMA, apply appropriate surface use COAs, stipulations, and mineral RDFs through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.

2.3.10.4.9 Energy and Mineral Resources – Locatable Minerals

The BLM goals and objectives for energy and mineral resources (locatable minerals) is to allow the development of minerals in a manner that prevents degradation of sensitive resources and landscapes. The management actions below identify varying degrees of proposed development by identifying public lands that would be unavailable for locatable mineral development. (Map 174)

Actions

- Terms and conditions would be applied to mining activities (within the constraints of the mining law) to meet land health standards for uplands, riparian and wetlands, water quality, air quality, and native plant and animal species (see Appendices H and AA) for Greater Sage-Grouse specific measures). Note: All withdrawal actions (including mineral withdrawals) are processed in the Realty, Cadastral Survey, and Lands program.

2.3.10.4.10 Energy and Mineral Resources – Mineral Materials (Saleable)

Provide land-use opportunities contributing to economic benefits and meet local infrastructure needs while protecting or minimizing adverse impacts to other resources and resource uses.

Actions

The following areas are closed to mineral material disposals (281,597 acres) (Maps 65 & 179):

- Four Dances ACEC
- Petroglyph Canyon ACEC
- Pompeys Pillar NM and ACEC
- Pryor Foothills RNA/ACEC
- Stark Site ACEC
- Weatherman Draw ACEC
- Lands with wilderness characteristics
- Big Horn Tack-On WSA
- Burnt Timber Canyon WSA
- Pryor Mountain WSA
- Twin Coulee WSA. (If Twin Coulee WSA is released from further consideration, the area may be open to mineral material disposals.)
- Greater Sage-Grouse PHMAs - closed to new salable minerals sales; existing permits would be renewed with no increase in the permitted boundary. However, these areas remain "open" to free use permits and the expansion of existing active pits, only if the following criteria are met:
    - the activity is within the BSU and project area disturbance cap;
    - the activity is subject to the provisions set forth in the mitigation framework [Appendix AA, sections E and F];
    - all applicable required design features are applied; and [if applicable] the activity is permissible under the specific sub-regional screening criteria
- Shepherd Ah-Nei Recreation Area
- Acton Recreation Area
- Asparagus Point

2.3.10.4.11 Realty, Cadastral Survey, and Lands – Land Tenure Adjustment and Access

The goals and objectives of land tenure adjustment and access would be to retain public lands with high resource values in public ownership, as well as provide for adjustments in land ownership to consolidate public land holdings, acquire lands with high public resource values, and meet public and community needs. All proposed land ownership adjustment actions would be considered at project specific environmental reviews.

Actions

- Lands classified as priority habitat and general habitat (or habitat classification appropriate for the sub-region) for Greater Sage-Grouse would be retained in federal management unless: (1) the agency can demonstrate that disposal of the lands would provide a net conservation gain to the Greater Sage-Grouse or (2) the agency can demonstrate that the disposal of the lands would have no direct or indirect adverse impact on conservation of the Greater Sage-Grouse. (Map 172)
- Manage 353,829 acres in Category II (which includes GRSG habitat)- Retention/Limited Land Ownership Adjustment (no land disposals through direct sale). Land exchanges would be considered

2.3.10.4.12 Realty, Cadastral Survey, and Lands – Rights-of-Way, Leases, and Permits

The BLM goals for the management of Rights-of-Way (ROW), leases, and permits within the Billings Field Office are to protect resources while meeting transportation and ROW needs in the planning area. To accomplish this, the Billings Field Office proposes to implement a variety of management activities that allow to various land actions or authorizations, with a range of restrictions based on resource concerns to help meet the goals and objectives of other resources.

Actions

- Avoidance area for major and minor ROWs. (Maps 175, 176)
    - However ROWs would only be allowed in GRSG PHMAs where habitat functionality would be maintained.
- Avoidance area for major and minor ROWs. (Maps 175, 176)
    - However ROWs would only be allowed in GRSG RAs where habitat functionality would be maintained.
- GRSG GHMAs would be avoidance areas for major ROWs.
- GRSG GHMAs would be open to minor ROWs.
    - Utilities and similar facilities would be located adjacent to other facilities where practical and only when habitat can be maintained.
- Silver Tip Road in Carbon County would be designated as a ROW corridor (1,750 feet on either side of the center line of Silver Tip Road). This corridor would have a total width of 3,500 feet and 6 miles in length on public land, with the exception of the portion of this corridor occurring in the Elk Basin GRSG Restoration Area which would be 1,320 feet on either side of the center line of Silver Tip Road (total width of 2,640 feet) (Map 78 and 177).
- ROW avoidance areas would include 378,958 acres (Map 71):
    - Castle Butte ACEC
    - East Pryor ACEC
    - Four Dances ACEC
    - Grove Creek ACEC Pompeys Pillar ACEC (Zone C - restricts ROW to a 500’ wide path paralleling the southern boundary of the public lands along Highway 312)
    - Pryor Foothills RNA/ACEC
    - Stark Site ACEC Weatherman Draw (expansion area)
    - Cave and karst areas would be managed as ROW avoidance areas.
    - L&CNHT and NPNHT corridors would managed as ROW avoidance areas
    - Asparagus Point, Steamboat Butte, portion of Acton, portion of Shepherd Ah-Nei, Bad Canyon, East and Red Pryor Mountains
    - Hoskins Basin Archeological District, Demi-John Flat Archeological District, Beartooth Mountain Front (2 mile strip bordering the eastern boundary of the Custer National Forest)
    - WSR eligible segments
    - Big Horn Sheep Winter Range
    - Big Game Winter Range
    - Greater Sage-Grouse GHMA

- Greater Sage-Grouse PHMAs and RAs would remain avoidance areas. However ROWs would only be allowed in Greater Sage-Grouse PHMAs and RAs where habitat functionality would be maintained.

2.3.10.4.13 Realty, Cadastral Survey, and Lands – Withdrawals

Actions

- Withdrawal proposals would be evaluated at the project level and would not be approved unless the land management is consistent with maintaining and protecting BLM resource values (see BMP (Appendix B) and GRSG (Appendix AA) Appendices as appropriate).

2.3.10.4.14 Livestock Grazing

Provide opportunities for livestock grazing as a part of multiple-use in a manner that meets and/or exceeds rangeland health standards.

Actions

- In areas of resource conflicts, installation of structural range improvements would only be considered where grazing practices (change in season of use, reduction of AUMs, increased rest, etc.) are unable to resolve the resource concern. Structural range improvements could be considered where necessary to facilitate the change in grazing management practices. Existing range improvements would be evaluated and modified to address impacts on wildlife populations (e.g. Greater Sage-Grouse/fence conflicts).
- All allotments wholly located in Greater Sage-Grouse PHMAs would be considered for retirement, where the base property owner relinquishes their preference.
- Site specific Greater Sage-Grouse habitat and management objectives would be developed for BLM land within Greater Sage-Grouse Priority Habitat Management Areas. These objectives would be incorporated into the respective allotment management plans or livestock grazing permits as appropriate. (Map 173)
- The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within PHMAs would include specific management thresholds based on GRSG Habitat Objectives Table (Table 2.3) and Land Health Standards (43 CFR 4180.2) and one or more defined responses that would allow the authorizing officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis.
- Priority Allotments for monitoring and evaluation would be allotments which:
  - Are not meeting standards for rangeland health
  - Contain special status species habitat (including Greater Sage-Grouse PHMAs / RAs)
  - Contain impaired streams
  - Contain non-functional or functioning at risk downward trend riparian areas.
  - Contain invasive plant species.
  - Allotments that have established and implemented management plans during the life of the plan.
- The BLM would prioritize (1) the review of grazing permits/leases, in particular to determine if modification is necessary prior to renewal, and (2) the processing of

grazing permits/leases in PHMAs. In setting workload priorities, precedence would be given to existing permits/leases in these areas not meeting Land Health Standards, with focus on those containing riparian areas, including wet meadows. The BLM may use other criteria for prioritization to respond to urgent natural resource concerns (ex., fire) and legal obligations.

- The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within PHMAs would include specific management thresholds based on GRSG Habitat Objectives Table (Table 2.3) and Land Health Standards (43 CFR 4180.2) and ecological site potential, and one or more defined responses that would allow the authorizing officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis.
- Allotments within PHMAs, and focusing on those containing riparian areas, including wet meadows, would be prioritized for field checks to help ensure compliance with the terms and conditions of the grazing permits. Field checks could include monitoring for actual use, utilization, and use supervision.
- At the time a permittee or lessee voluntarily relinquishes a permit or lease, the BLM would consider whether the public lands where that permitted use was authorized should remain available for livestock grazing or be used for other resource management objectives, such as reserve common allotments or fire breaks.

2.3.10.4.15 Recreation and Visitor Services

Actions

- In PHMA, do not construct new recreation facilities (e.g., campgrounds, trails, trailheads, staging areas) unless the development would have a net conservation gain to GRSG habitat (such as concentrating recreation, diverting use away from critical areas, etc.), or unless the development is required for visitor health and safety or resource protection
- The BLM would issue special recreation use permits as appropriate for commercial, competitive, and special events subject to guidelines in BLM Handbook 2930, resource capabilities, social conflict concerns, professional qualifications, public safety, and public needs. SRPs would only be allowed in priority habitat if they are consistent with the goals and objectives for that habitat or species.

2.3.10.4.16 Trails and Travel Management

Actions

- Site specific travel planning within Greater Sage-Grouse PHMAs would be completed within a five (5) year period after the ROD is signed where it hasn't already been completed as part of this plan.
- In PHMA and GHMA, temporary closures would be considered in accordance with 43 CFR subpart 8364 (Closures and Restrictions); 43 CFR subpart 8351 (Designated National Area); 43 CFR subpart 6320 (Use of Wilderness Areas, Prohibited Acts, and Penalties); 43 CFR subpart 8341 (Conditions of Use).
- Temporary closure or restriction orders under these authorities are enacted at the discretion of the authorized officer to resolve management conflicts and protect persons,

property, and public lands and resources. Where an authorized officer determines that off-highway vehicles are causing or would cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. (43 CFR 8341.2) A closure or restriction order should be considered only after other management strategies and alternatives have been explored. The duration of temporary closure or restriction orders should be limited to 24 months or less; however, certain situations may require longer closures and/or iterative temporary closures. This may include closure of routes or areas.

Gage Dome/Colony Road TMA:
Management Objectives: reduce road density to minimize impacts to Greater Sage-Grouse habitat and other resource values. Manage the TMA to provide recreational opportunities and access while protecting Greater Sage-Grouse habitat
Cottonwood/Weatherman Draw TMA:
This area would be delineated into three sub-regions to address varying resource issues, access and recreational opportunities.
Sub-Region I - Weatherman Draw/Castle Coulee. Management objectives: protect cultural values and resources within the ACEC. Minimize impacts to cultural values, fragile and erosive soils and other resources within the sub-region
Sub-Region II - Hollenbeck. Management objectives: provide recreational opportunities with emphasis on minimizing impacts to Greater Sage-Grouse habitat, fragile and erosive soils, and other resource values
Sub-Region III - Silver Tip. Management objectives: provide for motorized recreational opportunities with emphasis on minimizing impacts to fragile and erosive soils, and other resource values
Warren TMA:
TMA Management Objectives: to provide recreational opportunities with emphasis on protecting key Greater Sage-Grouse habitat while minimizing impacts to other resources values. Maintain current level of access.
Grove Creek TMA:
Management Objectives: to minimize impacts to geologic and visual resources, special status plants, and cultural and wildlife values, including Greater Sage-Grouse, while providing casual, non-commercial public recreational access.

2.3.10.4.17 Renewable Energy (Wind/Solar)

Actions
Manage 231,755 acres as exclusion areas (closed) to renewable energy authorizations, including:

- WSAs*
    - Big Horn Tack-On WSA
    - Burnt Timber Canyon WSA
    - Pryor Mountain WSA

    - Twin Coulee WSA
        - *If released by an Act of Congress, lands within WSA boundaries would remain closed.
- National Historic Trails
    - Nez Perce NHT
    - Lewis & Clark NHT
- Pompeys Pillar NM
- ACECs
    - Bridger Fossil Area ACEC
    - Castle Butte ACEC
    - East Pryor ACEC
    - Four Dances ACEC
    - Grove Creek ACEC
    - Meeteetse Spires ACEC
    - Petroglyph Canyon ACEC
    - Pompeys Pillar ACEC
    - Pryor Foothills RNA ACEC
    - Stark Site ACEC
    - Weatherman Draw ACEC
- Wild and Scenic River Eligible/Suitable Segments
- Lands with wilderness characteristics
- Pryor Mountain Wild Horse Range (PMWHR)
- Cultural Sites
    - Steamboat Butte
    - Bruder-Janich Site
    - Paul Duke Site
    - Demi-John Flat NR District
    - Bighorn Mouth North Cliffs Rock Art Site
    - Hoskins Basin Archaeological District
- VRM Class I areas
- Greater Sage-Grouse PHMAs
- Elk Basin GRSG Restoration Area

Manage 200,278 acres as avoidance areas for renewable energy authorizations, subject to special stipulations and mitigation beyond standard stipulations and BMPs applied through site-specific analysis.

Special stipulations and mitigation include provisions such as timing limitations, controlled surface use, and other constraints/restrictions consistent with fluid minerals stipulations that would be applied to protect the following particular resources/habitats:

- Greater Sage-Grouse GHMAs
- Greater Sage-Grouse Restoration Areas outside of Elk Basin
- Bald/Golden Eagles
- Ferruginous Hawks
- Greater Sage-Grouse Winter Range

- Big Game Winter Range
- Big Game Parturition
- Bighorn Sheep Habitat
- Sharp-tailed grouse
- Peregrine Falcon
- Mountain Plover
- Raptor Nests
- Other avoidance areas include:
- Asparagus Point, Steamboat Butte, Portion of Acton, Portion of Shepherd Ah-Nei, Bad Canyon, East and Red Pryor Mountains,
- Cave and Karst areas
- VRM Class II areas
- Within ¼ mile of riparian areas and wetlands, designated 100 year flood plains and on water bodies and streams, unless activities are not in conflict with desired outcomes.
- Surface disturbance on slopes >30%, soils with low reclamation potential, and highly erodible characteristics would be avoided whenever possible. If disturbance could not be avoided an approved mitigation and reclamation plan would be required prior to activities taking place.
- Timing limitations apply to development of facilities, but not to operation or maintenance.

2.3.10.5 Adaptive Management Strategy for Greater Sage-Grouse Habitat Management

Adaptive Management is a decision process that promotes flexible resource management decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps with adjusting resource management directions as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a 'trial and error' process, but rather emphasizes learning while doing. Adaptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits. On February 1, 2008, the DOI published its Adaptive Management Implementation Policy (522 DM 1). The adaptive management strategy presented within this EIS complies with this policy and direction.

In relation to the BLM's National Greater Sage-grouse Planning Strategy, adaptive management would help identify if sage-grouse conservation measures presented in this EIS contain the needed level of certainty for effectiveness. Principles of adaptive management would be incorporated into the conservation measures in the plan to ameliorate threats to a species, thereby increasing the likelihood that the conservation measure and plan would be effective in reducing threats to that species. The following provides the BLM adaptive management strategy for the Billings and Pompeys Pillar National Monument Proposed RMP and Final EIS.

Adaptive Management and Monitoring
This EIS contains a monitoring framework plan (Appendix AA (section A) that includes an effectiveness monitoring component. The agencies intend to use the data collected from the effectiveness monitoring to identify any changes in habitat conditions related to the goals and objectives of the plan and other range-wide conservation strategies (U.S. Department of the Interior 2004; Stiver et al. 2006; U.S. Fish and Wildlife Service 2013). The information collected through the Monitoring Framework Plan outlined in Appendix AA would be used by the BLM to determine when adaptive management hard and soft triggers (discussed below) are met. The GRSG adaptive management plan provides regulatory assurance that a means of addressing and responding to unintended negative impacts to greater sage-grouse and its habitat before consequences become severe or irreversible.

2.3.10.6 Montana Greater Sage-Grouse Adaptive Management Plan

The Greater Sage-Grouse adaptive management plan provides regulatory assurance that unintended negative impacts to Greater Sage-Grouse habitat would be addressed before consequences become severe or irreversible. This adaptive management plan:

- utilizes science based soft and hard adaptive management triggers, and
- addresses multiple scales of data

Adaptive Management Triggers
Adaptive management triggers are essential for identifying when potential management changes are needed in order to continue meeting Greater Sage-Grouse conservation objectives. The BLM would use soft and hard triggers.

A Biologically Significant Unit (BSU) is the summary of all the Priority Habitat Management Areas within a Greater Sage-Grouse population as delineated in the COT report. The BSU for Management Zone 1 (MZ1) are those PHMAs in the northern half of the Billings Field Office (see map 184). The BSU for Management Zone 2 (MZ2) are those PHMAs in the southern half of the Billings Field Office (Carbon County) (see map 184).

Soft Triggers:
Soft triggers are indicators that management or specific activities may not be achieving the intended results of conservation action. The soft trigger is any negative deviation from normal trends in habitat or population in any given year, or if observed across two to three consecutive years. Metrics include, but are not limited to, annual lek counts, wing counts, aerial surveys, habitat monitoring, and DDCT evaluations. BLM field offices, local Montana Fish, Wildlife and Parks (FWP) offices, and sage-grouse working groups would evaluate the metrics. The purpose of these strategies is to address localized Greater Sage-Grouse population and habitat changes by providing the framework in which management would change if monitoring identifies negative population and habitat anomalies.

Each major project (EIS level) would include adaptive management strategies in support of the population management objectives for Greater Sage-Grouse set by the State of Montana, and would be consistent with this Greater Sage-Grouse Adaptive Management Plan. These adaptive

management strategies would be developed in partnership with the State of Montana, project proponents, partners, and stakeholders, incorporating the best available science.

Soft Triggers Response:
Soft triggers require immediate monitoring and surveillance to determine causal factors and may require curtailment of activities in the short- or long-term, as allowed by law. The project level adaptive management strategies would identify appropriate responses where the project's activities are identified as the causal factor. The management agency (BLM and/or FS) and the adaptive management group would implement an appropriate response strategy to address causal factors not addressed by specific project adaptive management strategies, not attributable to a specific project, or to make adjustments at a larger regional or state-wide level.

Hard Triggers:
Hard triggers are indicators that management is not achieving desired conservation results. Hard triggers would be considered an indicator that the species is not responding to conservation actions, or that a larger-scale impact is having a negative effect.

Hard triggers are focused on three metrics: 1) number of active leks, 2) acres of available habitat, and 3) population trends based on annual lek counts.

Within the context of normal population variables, hard triggers shall be determined to take effect when two of the three metrics exceeds 60% of normal variability for the area under management in a single year, or when any of the three metrics exceeds 40% of normal variability for a three year time period within a five-year range of analysis. A minimum of three years is used to determine trends, with a five- year period preferred to allow determination of three actual time periods (Y1-2-3, Y2-3-4, Y3-4-5). Baseline population estimates are established by pre-disturbance surveys, reference surveys and account for regional and statewide trends in population levels. Population count data in Montana are maintained by Montana Fish, Wildlife, and Parks (FWP). Estimates of population are determined based upon survey protocols determined by FWP, and are implemented consistently throughout the state. Population counts are tracked for individual leks and are then summarized for each Priority Habitat Management Area (PHMA).

Hard Trigger Response:
Hard triggers represent a threshold indicating that immediate action is necessary to stop a severe deviation from GRSG conservation objectives set forth in the BLM plans. As such, the Proposed Plan Amendment/Final EIS includes a "hard-wired" plan-level response; that is, it provides that, upon reaching the trigger, a more restrictive alternative, or an appropriate component of a more restrictive alternative analyzed in the EIS would be implemented without further action by the BLM. Specific "hard-wired" changes in management are identified in Table 2.4 Specific Management Responses In addition to the specific changes identified in Table 2.4 , the BLM would review available and pertinent data, in coordination with GRSG biologists and managers from multiple agencies including the FWS, NRCS, and the State of Montana, to determine the causal factor(s) and implement a corrective strategy. The corrective strategy would include the changes identified in Table 2.4 , and could also include the need to amend or revise the RMP to address the situation and modify management accordingly.

Following the NPT Adaptive Management Guidance and Sideboards, when a hard trigger is hit in a BSU, the designated response will be put in place in that BSU. Triggers and responses have been developed with local, state, and USFWS experts.

When a hard trigger is hit in a BSU, including those that cross state lines, the WAFWA Management Zone Greater Sage-Grouse Conservation Team would convene to determine the causal factor, put project level responses in place, as appropriate and discuss further appropriate actions to be applied. The team will also investigate the status of the hard triggers in other BSUs within the PAC and will invoke the appropriate plan response (BSU for this Proposed RMP/Final EIS is the total of all the PHMA within a GRSG population as delineated in the COT report). Adoption of any further actions at the plan level may require initiating a plan amendment process.

Table 2.4 Specific Management Responses

Program	Adaptive Management Response[1]
Sage-Grouse Management	Areas within and adjacent to PHMA where a hard trigger has been reached would be the top priority for regional mitigation habitat restoration and fuels reduction treatments.
Vegetation Management	PHMA would be the top priority for regional mitigation, habitat restoration and fuels reduction treatments.
Wildland Fire Management	Reassess GRSG habitat needs to determine if priorities for at risk habitats, fuels management areas, preparedness, suppression and restoration have changed.
Livestock Grazing	For areas not achieving the GRSG habitat objectives due to grazing, apply adjustments to livestock grazing to achieve objectives.
Rights of Way – Existing Corridors	Retain the corridors as mapped, but limit the size of new lines within the corridors to same as existing structures, or not larger than 138kV.
Wind Energy Development	No change from Proposed Plan.
Industrial Solar	No change from Proposed Plan.
Comprehensive Travel and Transportation Management	If travel management planning has not been completed within GRSG habitat, PHMA areas where the hard trigger was met would be the highest priority for future travel management planning efforts. If travel management has been completed within GRSG habitat in the PHMA where the hard trigger was met, re-evaluate designated routes to determine their effects on GRSG. If routes are found to be causing population-level impacts, revise their designation status to reduce the effect.
Fluid Minerals	No change from Proposed Plan.
Locatable Minerals	No change from Proposed Plan.
Salable Minerals	No change from Proposed Plan.
Nonenergy Leasable Minerals	No change from Proposed Plan.

In addition to implementing the hard wired plan-level response, in the event that new scientific information becomes available demonstrating that the hard wired response would be insufficient to stop a severe deviation from sage grouse conservation objectives set forth in the BLM plans, the BLM would immediately implement a formal directive to protect GRSG and its habitat and to ensure that conservation options are not foreclosed. To the extent that it is supported scientifically, this formal directive would be drawn from the range of alternatives analyzed in the RMP Revision.

2.3.10.7 Monitoring for the Greater Sage-grouse Habitat Management

BLM's planning regulations, specifically 43 CFR 1610.4-9, require that land use plans establish intervals and standards for monitoring based on the sensitivity of the resource decisions. Land use plan monitoring is the process of tracking the implementation of land use plan decisions (implementation monitoring) and collecting data/information necessary to evaluate the effectiveness of land use plan decisions (effectiveness monitoring). For GRSG, these types of monitoring are also described in the criteria found in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (50 CFR Vol. 68, No. 60). One of the Policy for Evaluation of Conservation Efforts When Making Listing Decisions criteria evaluates whether provisions for monitoring and reporting progress on implementation (based on compliance with the implementation schedule) and effectiveness (based on evaluation of quantifiable parameters) of the conservation effort are provided.

A guiding principle in the BLM National Sage-grouse Conservation Strategy (US Department of the Interior 2004) is that "the Bureau is committed to sage-grouse and sagebrush conservation and would continue to adjust and adapt our National Sage-grouse Strategy as new information, science, and monitoring results evaluate effectiveness over time." In keeping with the WAFWA Sage-grouse Comprehensive Conservation Strategy (Stiver et al. 2006) and the Greater Sage-grouse Conservation Objectives: Final Report (USFWS 2013), the BLM and Forest Service would monitor implementation and effectiveness of conservation measures in GRSG habitats.

On March 5, 2010, USFWS' 12-Month Findings for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered were posted as a Federal Register notice (75 Federal Register 13910-14014, March 23, 2010). This notice stated:

"…the information collected by BLM could not be used to make broad generalizations about the status of rangelands and management actions. There was a lack of consistency across the range in how questions were interpreted and answered for the data call, which limited our ability to use the results to understand habitat conditions for sage-grouse on BLM lands."

Standardization of monitoring methods and implementation of a defensible monitoring approach (within and across jurisdictions) would resolve this situation. The BLM, Forest Service, and other conservation partners use the resulting information to guide implementation of conservation activities.

Monitoring strategies for GRSG habitat and populations must be collaborative, as habitat occurs across jurisdictional boundaries (52 percent on BLM-administered lands, 31 percent on private lands, 8 percent on National Forest System lands, 5 percent on state lands, 4 percent on tribal and other federal lands) (75 Federal Register 13910, March 23, 2010), and state fish and wildlife agencies have primary responsibility for population level wildlife management, including population monitoring. Therefore, population efforts would continue to be conducted in partnership with state fish and wildlife agencies. The BLM and Forest Service have finalized a monitoring framework, which can be found in Appendix AA (section B). This framework describes the process that the BLM and Forest Service would use to monitor implementation and effectiveness of RMP/LUP decisions. The monitoring framework includes methods, data

standards, and intervals of monitoring at broad and mid scales; consistent indicators to measure and metric descriptions for each of the scales; analysis and reporting methods; and the incorporation of monitoring results into adaptive management. The need for fine-scale and site-specific habitat monitoring may vary by area depending on existing conditions, habitat variability, threats, and land health. Indicators at the fine and site scales would be consistent with the Habitat Assessment Framework; however, the values for the indicators could be adjusted for regional conditions.

More specifically, the framework discusses how the BLM and Forest Service would monitor and track implementation and effectiveness of planning decisions (e.g., tracking of waivers, modifications, site-level actions). The two agencies would monitor the effectiveness of RMP/LUP decisions in meeting management and conservation objectives. Effectiveness monitoring would include monitoring disturbance in habitats, as well as landscape habitat attributes. To monitor habitats, the BLM and Forest Service would measure and track attributes of occupied habitat, priority habitat, and general habitat at the broad scale, and attributes of habitat availability, patch size, connectivity, linkage/connectivity habitat, edge effect, and anthropogenic disturbances at the mid-scale. Disturbance monitoring would measure and track changes in the amount of sagebrush in the landscape and changes in the anthropogenic footprint, including change energy development density. The framework also includes methodology for analysis and reporting for field offices, states, ranger districts, BLM districts, National Forests, and Forest regions, including geospatial and tabular data for disturbance mapping (e.g., geospatial footprint of new permitted disturbances) and management actions effectiveness.

The monitoring data would provide the indicator estimates for adaptive management. The BLM would adjust management decisions through an adaptive management process.

2.3.10.8 Regional Mitigation for the Greater Sage-grouse Habitat Management

Consistent with the proposed plan's goal outlined in [Table 2.10 through Table 2.13], the intent of the Billings and Pompeys Pillar National Monument Proposed RMP and Final EIS is to provide a net conservation gain to the species. To do so, in undertaking BLM management actions, and, consistent with valid existing rights and applicable law, in authorizing third party actions that result in habitat loss and degradation, the BLM would require and ensure mitigation that provides a net conservation gain to the species including accounting for any uncertainty associated with the effectiveness of such mitigation. Actions which result in habitat loss and degradation" include those identified as threats which contribute to Greater Sage-Grouse disturbance as identified by the U.S. Fish and Wildlife Service in its 2010 listing decision (75 FR 13910) and shown in Table 2 in the attached Monitoring Framework (Appendix AA, section B). This would be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. This is also consistent with BLM Manual 6840 – Special Status Species Management, Section .02B, which states "to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of the need for listing of these species under the ESA."

Mitigation

Mitigation Standards: In undertaking BLM management actions, and, consistent with valid existing rights and applicable law, in authorizing third party actions that result in habitat loss and degradation, the BLM would require and ensure mitigation that provides a net conservation gain to the species including accounting for any uncertainty associated with the effectiveness of such mitigation. Actions which result in habitat loss and degradation" include those identified as threats which contribute to Greater Sage-Grouse disturbance as identified by the U.S. Fish and Wildlife Service in its 2010 listing decision (75 FR 13910) and shown in Table 2 in the attached Monitoring Framework (Appendix AA, section B). This would be achieved by avoiding, minimizing, and applying compensatory mitigation for impacts by applying beneficial mitigation actions. Mitigation would follow the regulations from the White House Council on Environmental Quality (CEQ) (40 CFR 1508.20; e.g. avoid, minimize, and compensate), hereafter referred to as the mitigation hierarchy. If impacts from BLM management actions and authorized third party actions that result in habitat loss and degradation remain after applying avoidance and minimization measures (i.e. residual impacts), then compensatory mitigation projects would be used to provide a net conservation gain to the species. Any compensatory mitigation would be durable, timely, and in addition to that which would have resulted without the compensatory mitigation (see the concepts of durability, timeliness, and additionality as described further in Appendix AA, section D).

Greater Sage-Grouse Conservation Team

The BLM would establish a WAFWA Management Zone Greater Sage-Grouse Conservation Team (hereafter, Team) to help guide the conservation of greater sage-grouse, within 90 days of the issuance of the Record of Decision. This Team would develop a WAFWA Management Zone Regional Mitigation Strategy (hereafter, Regional Mitigation Strategy). The Team would also compile and report on monitoring data (including data on habitat condition, population trends, and mitigation effectiveness) from States across the WAFWA Management Zone (see Monitoring section). Subsequently, the Team would use these data to either modify the appropriate Regional Mitigation Strategy or recommend adaptive management actions (see Adaptive Management section).

The BLM would invite governmental and Tribal partners to participate in this Team, including the State Wildlife Agency and U.S. Fish and Wildlife Service, in compliance with the exemptions provided for committees defined in the Federal Advisory Committee Act and the regulations that implement that act. The BLM would strive for a collaborative and unified approach between Federal agencies (e.g. FWS, BLM, and USFS), Tribal governments, state and local government(s), and other stakeholders for greater sage-grouse conservation. The Team would provide advice, and would not make any decisions that impact Federal lands. The BLM would remain responsible for making decisions that affect Federal lands.

Developing a Regional Mitigation Strategy

The Team would develop a Regional Mitigation Strategy to inform the mitigation components of NEPA analyses for BLM management actions and third party actions that result in habitat loss and degradation. The Strategy would be developed within one year of the issuance of the Record of Decision. The BLM's Regional Mitigation Manual MS-1794 would serve as a framework for developing the Regional Mitigation Strategy. The Regional Mitigation Strategy

would be applicable to the States/Field Offices/Forests within the WAFWA Management Zone's boundaries.

Regional mitigation is a landscape-scale approach to mitigating impacts to resources. This involves anticipating future mitigation needs and strategically identifying mitigation sites and measures that can provide a net conservation gain to the species. The Regional Mitigation Strategy developed by the Team would elaborate on the components identified above (i.e. avoidance, minimization, and compensation; additionality, timeliness, and durability) and further explained in Appendix AA (section E).

In the time period before the Strategy is developed, BLM would consider regional conditions, trends, and sites, to the greatest extent possible, when applying the mitigation hierarchy and would ensure that mitigation is consistent with the standards set forth in the first paragraph of this section.

Incorporating the Regional Mitigation Strategy into NEPA Analyses
The BLM would include the avoidance, minimization, and compensatory recommendations from the Regional Mitigation Strategy in one or more of the NEPA analysis' alternatives for BLM management actions and third party actions that result in habitat loss and degradation and the appropriate mitigation actions would be carried forward into the decision.

Implementing a Compensatory Mitigation Program
Consistent with the principles identified above, the BLM need to ensure that compensatory mitigation is strategically implemented to provide a net conservation gain to the species, as identified in the Regional Mitigation Strategy. In order to align with existing compensatory mitigation efforts, this compensatory mitigation program would be implemented at a State-level (as opposed to a WAFWA Management Zone, a Field Office, or a Forest), in collaboration with our partners (e.g. Federal, Tribal, and State agencies).

To ensure transparent and effective management of the compensatory mitigation funds, the BLM would enter into a contract or agreement with a third-party to help manage the State-level compensatory mitigation funds, within one year of the issuance of the Record of Decision. The selection of the third-party compensatory mitigation administrator would conform to all relevant laws, regulations, and policies. The BLM would remain responsible for making decisions that affect Federal lands.

2.4 Alternatives Considered But Not Analyzed in Detail

The following alternative(s) were considered, but not carried forward for detailed analysis because (1) they would not fulfill requirements of the Federal Land Policy and Management Act (FLPMA) or other existing laws or regulations, (2) they did not meet the purpose and need, (3) they were already part of an existing plan, policy, or administrative function, or (4) they did not fall within the limits of the planning criteria. The FLPMA requires the BLM to manage the public lands and resources in accordance with the principles of multiple use and sustained yield, including recognizing the Nation's needs for domestic sources of minerals, food, timber, and fiber. Moreover, the BLM is required by law to recognize existing valid rights on public

lands and manage public lands in accordance with existing laws (see Appendix A), including but not limited to, the General Mining Law of 1872 and the Mining and Minerals Policy Act of 1970.

2.4.1 Eliminate Livestock Grazing from BLM public lands

An alternative that proposes to make the entire Billings Field Office unavailable for grazing would not meet the purpose and need of this RMP/EIS. The NEPA requires that agencies study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources. No issues or conflicts have been identified during this land use planning effort that requires the complete elimination of grazing within the planning area for their resolution and, in the absence of such conflicts, such an alternative would be inconsistent with the multiple-use policy objectives of the planning area. Where appropriate, removal of livestock and adjustments to livestock use has been incorporated in this planning effort. Because the BLM has considerable discretion through its grazing regulations to determine and adjust stocking levels, seasons-of-use, and grazing management activities, and to allocate forage to uses of the public lands in an RMP, the analysis of an alternative to entirely eliminate grazing is not needed. Additional consideration for not fully analyzing a No Grazing Alternative is described below.

A majority of the Billings RMP planning area is located in the northern portion of the Great Plains Ecoregion (U.S. Environmental Protection Agency 2010) and the rangelands in the planning area are classified as mixed-grass prairie. The rangelands of the Great Plains have a long evolutionary history of grazing and grazing is accepted by grassland ecologists as a keystone process of the grassland ecosystem (Fuhlendorf and Engle 2001, Milchunas et al. 1988, Knapp et al. 1999). There is also agreement among many scientists and natural resource managers that some level of grazing disturbance is necessary to assure the ecological integrity of the mixed-grass prairie ecosystem (Grasslands National Park Management Plan 2001).

From 1956 through 1972, the BLM conducted a classification of public lands to estimate the amount of available forage within these planning areas. These are typically referred to as the "Missouri River Basin Surveys". From this effort, multiple sub-basin reports were generated, which provided the carrying capacities by Animal Unit Months (AUMs) for all BLM lands at the time of survey.

The measurement of the available forage for livestock grazing was conducted by trained professionals and involved intensive vegetation sampling (clipping, weighing, and ocular estimation). The BLM, in cooperation with grazing advisory boards, used the information to make adjustments to the AUMs allocated to a grazing permit. This cooperative effort resulted in implementation of appropriate changes to grazing permits in the planning areas. These changes were implemented in a timely manner and completed prior to 1975.

These historical grazing allocations were included in the 1984 RMP and are carried forward in the current analysis. Validation of the historical forage allocations occurs on a periodic basis which coincides with the renewal of each ten year grazing permit. This periodic review has resulted in the suspension of 7,746 AUMs, from a total permitted use of 62,619 AUMs (12.3%

reduction). This periodic review has also resulted in the site specific environmental analysis of a "No Grazing" alternative on 106 allotments.

Resource conditions on the BLM-administered public lands in the planning area, including range vegetation, watershed, and wildlife habitat, do not warrant prohibition of livestock grazing throughout the planning area. Of the 370 allotments managed by the Billings Field Office, 83.5% of the allotments that have been assessed (309,658 acres) meet the Standards for Rangeland Health (see Table 3-17) and 9.1% of the allotments assessed (41,153 acres) are making significant progress towards meeting the Standards for Rangeland Health. Only 11 allotments (3,835 acres total) are not meeting Standards for Rangeland Health or are not making significant progress towards meeting these Standards. Of the 11 allotments that are not currently meeting the Standards (with livestock having been determined as the causal factor for nine of the allotments), changes to the grazing systems have already been implemented on eight allotments. Of the remaining three allotments, substandard conditions are a result of factors other than livestock grazing on two and the lease on the third allotment has expired and the permittee has yet to apply for renewal. Further reduction or elimination of livestock grazing could become necessary in specific situations where livestock grazing causes or contributes to conflicts with the protection and/or management of other resource values or uses. Such determinations would be made during site-specific activity planning and associated environmental analysis (106 site-specific environmental analyses completed to date). These determinations would be based on several factors, including monitoring studies, current range management science, input from livestock operators and the interested public, and the ability of particular allotments to meet the Standards for Rangeland Health. Acres not available for permitted livestock use for the life of the plan range from 37,408 acres (Alt A), 38,373 acres (Alt B), 28,622 acres (Alt C), to 28,387 acres (Alt D).

In accordance with BLM's Land Use Planning Handbook and BLM IM No. 2012-169, BLM considered a range of alternatives with respect to both areas that are available or unavailable for livestock grazing and the amount of forage allocated to livestock on an area-wide basis. The analysis considers a range of alternatives necessary to address unresolved conflicts among available resources and includes a meaningful reduction in livestock grazing across the alternatives, both through reduction in areas available to livestock grazing and forage allocation.

The BLM developed a range of alternatives that sharply defines the issues and provides a clear basis for choice among options by the decision-maker. The BLM analyzed closing a range of 33,334 to 135,645 acres to sheep and goat grazing and closing a range of 28,387 to 38,373 acres to all livestock grazing, where the BLM identified unresolved conflicts concerning various uses of available resources such as between livestock grazing and recreation, ACECs, Wilderness Study Areas, and Pryor Mountain Wild Horse Range.

Suitable measures, which could include reduction or elimination of livestock grazing, are provided for in this RMP/EIS, which could become necessary in specific situations where livestock grazing causes or contributes to conflicts with the protection and/or management of other resource values or uses. Such determinations would be (and have been) made during site-specific activity planning or permit renewal and their associated environmental review (106 completed to date, whereby a 'no grazing' alternative has been analyzed). These

determinations would be based on several factors, including monitoring studies, review of current range management science, input from livestock operators and interested parties, and ability to meet the Standards for Rangeland Health and Guidelines for Livestock Grazing Management.

Livestock grazing is and has been an important use of the public lands in the planning area for many years, and is a continuing government program. The CEQ guidelines for compliance with NEPA require that agencies analyze the "No Action Alternative" in all EISs (40 CFR 1502.14(d)). For the purposes of this NEPA analysis, the "no action alternative" is to continue the status quo, which includes livestock grazing. For this reason and those stated above, a no grazing alternative for the entire planning area was dismissed from detailed consideration in this RMP/EIS.

The scattered pattern of land ownership in the planning area would require extensive fencing to eliminate livestock use from public lands. In some cases, maintenance of fences along public property boundaries would be very difficult due to steep terrain features. Additionally, the extensive fencing would create many new barriers for wildlife movements increasing habitat fragmentation.

Finally, the alternatives analyzed in detail do include various considerations for eliminating or maximizing individual resource values or uses in specific areas where conflicts exist. For these reasons, the BiFO dismissed a no grazing alternative for the entire planning area from further consideration in this RMP/EIS.

2.4.2 OHV Rock Crawl Area Proposed in Petroglyph Canyon

An OHV Rock Crawl Area in Petroglyph Canyon ACEC was proposed during the 2009 travel management meetings. This proposal is not being analyzed in the Billings and Pompeys Pillar National Monument RMP/EIS under any alternative for the following reasons:

1) It would not be compatible with the current ACEC designation. The 1999 ACEC Amendment Record of Decision states that the Petroglyph Canyon area (240 acres) would be closed to OHV use.

2) The rock art is fragile and vibrations from vehicles can cause rock spalling (causing irreversible damage the rock art). The dust caused by OHVs (or other vehicles) can build up on the petroglyphs and cause erosion damage as dust gets incorporated into the petroglyph and causes the rock art to fade.

3) The resource damage related to vehicle use in a sensitive area such as Petroglyph Canyon includes long-lasting vehicle scars upon the land, loss of soils and vegetation, gullying, deflation of cultural deposits, deplacement and damage to artifacts and geologic features, and others.

4) In addition, motorized public access directly to a cultural site (including rock art sites such as this) leads to a higher potential for vandalism and destruction of the cultural resource. In addition, the staging area required for the rock crawl area

(driving off the existing road into the canyon) would create visual scars, damage to the fragile soil resources and could lead to a proliferation of user-created routes in the area.

2.4.3 Steamboat Butte ACEC Proposal

During the 90-day public comment period on the Draft Billings and Pompeys Pillar National Monument RMP/EIS, a comment was received proposing Steamboat Butte as an Area of Critical Environmental Concern for cultural values.

Steamboat Butte was considered as an ACEC during the 1998 ACEC amendment, but either did not meet relevance or importance or did not need special management and as a result was not analyzed as part of the 1998 ACEC amendment. In the Fall of 2013, Steamboat Butte was reevaluated for relevance and importance. It met relevance, but not importance and as a result is not recommended to be considered for ACEC nomination (see Appendix E).

2.4.4 Sykes Ridge ACEC Proposal

During the 2008 public scoping for the Billings and Pompeys Pillar National Monument RMP/EIS, a proposal was received for an area of critical environmental concern (ACEC) on Sykes Ridge for special status plants.

As proposed the Sykes Ridge ACEC area was determined to be located entirely within the existing East Pryor ACEC and within the Pryor Mountain Wild Horse Range. In addition, portions of the proposed Sykes Ridge ACEC were determined to be located within a WSA. After careful review and consideration, it was determined no new special management was needed to protect special status plants on Sykes Ridge. (See Appendix E for rationale and evaluation of this nomination).

2.4.5 Conservation Groups Alternative

During the range-wide scoping effort for Greater Sage-Grouse, several conservation organizations submitted scoping comments and proposed management actions and alternatives for Greater Sage-Grouse conservation (referred to here as the Conservation Groups Alternative). In summary, the primary intent of these proposed alternatives and management actions was to: (1) add additional measures (beyond those conservation measures identified in the National Technical Team (NTT) report (disseminated by BLM WO-IM-2012-044) in order to maintain and increase Greater Sage-Grouse abundance and, (2) designate two additional habitat types – Greater Sage-Grouse Areas of Critical Environmental Concern (ACECs) and "restoration" habitat areas.

These proposed actions and alternatives submitted by these organizations were determined to be substantially similar to those actions and habitat areas considered within the range of alternatives in this DRMP/EIS. As described in the Wildlife and Special Status Species section in Chapter 2, this DRMP/EIS delineates three types of Greater Sage-Grouse habitat areas as part of the planning process (refer to maps/sections here), including: Greater Sage-Grouse Habitat - Priority Habitat Management Areas (PHMAs), Greater Sage-Grouse Habitat -

Restoration Areas (RAs), and Greater Sage-Grouse Habitat – General Habitat Management Areas (GHMAs). Varying degrees of management is considered and analyzed as part of the range of alternatives within each of these habitat delineations in this DRMP/EIS in order to achieve the goals or objectives for each Greater Sage-Grouse habitat area, as well as address the conservation measures and management practices to conserve Greater Sage-Grouse consistent with the NTT report. Additionally, this DRMP/EIS includes Mitigation Measures and Conservation Actions for Greater Sage-Grouse (Appendix AA, section F). The appendix identifies best practices, design features and proactive management activities to conserve Greater Sage-Grouse that would be applied during project specific activities through subsequent environmental review and analysis.

Specific to the organization's proposed alternative to designate Greater Sage-Grouse ACECs and 'restoration' areas, this DRMP/EIS does include, within the range of alternatives for detailed study, a Greater Sage-Grouse ACEC (Alternative B) and restoration areas for Greater Sage-Grouse. Table 2.5 provides a summary of the range of acreages for priority, general, and restoration habitat for Greater Sage-Grouse and Table 2.10 provides a summary of the range of alternatives for Greater Sage-Grouse (e.g., allowable uses, constraints, etc.). This range of alternatives is adequate to compare impacts to Greater Sage-Grouse from different conservation measures as well as the size of habitat classifications.

In summary, the additional alternatives and actions proposed through the Conservation Groups Alternative were considered but eliminated from detailed study from this RMP revision because the range of alternatives adequately addresses conservation measures for Greater Sage-Grouse. For example, the alternatives range from open to fluid mineral leasing and right-of-way development, to a no-lease stipulation for new oil and gas development and exclusion areas for rights-of-way

2.5 Summary of Alternatives Considered in Detail

This section summarizes the four alternatives (A through D) considered in the EIS in detail. A description of the alternatives considered requires (1) a narrative to describe *what* decisions each alternative will establish and (2) maps to show *where* each decision will occur. With 167 maps and multiple special designations, resource uses, and management actions for more than 30 individual resources and resource uses, an exhaustive narrative description of each alternative would result in a lengthy and potentially confusing chapter. To reduce the length and avoid confusion, only select meaningful differences (those with the most potential to affect resources) among alternatives are summarized in this section.

Combined with the appendices and maps, Table 2.5 and Table 2.6 highlight the meaningful differences among the alternatives relative to what they establish and where they occur. Following these tables, a narrative description of each alternative is provided under the following headings

- Overview of the Alternative
- Physical, Biological and Cultural/Heritage Resources
- Resource Uses and Support

- Special Designations

Other than *Overview of the Alternative*, the above headings reflect categories through which program specific guidance for land use planning decisions must be applied (BLM 2005 – LUP Handbook). Table 2.5 summarizes meaningful differences (typically relative to acres) among alternatives for the first two categories: Physical, Biological and Cultural/Heritage Resources and Resource Uses and Support. Table 2.6 summarizes meaningful differences (typically relative to designation and acres) among alternatives for Special Designations. Viewed in conjunction with the narrative for each alternative, Table 2.5 and Table 2.6 highlight *what* meaningful decisions each alternative will establish. A complete description of all decisions proposed for each alternative, as well as a description of goals and objectives are included in Table 2.10 through Table 2.13.

Decisions made by this RMP revision are anticipated to be subsequently implemented. Restrictions on resource uses (e.g., closed to leasing) apply to the life of the RMP, unless changed through an RMP amendment and public involvement. The timing and degree of implementation will depend on available budget, staffing, and agency priorities (see Appendix X). Actions taken or authorized by the BLM during RMP implementation would comply with standard practices and best management practices (BMPs; Appendix B). Therefore, these practices and guidelines are considered part of each alternative.

Table 2.5 Comparative Summary of Proposed Land Use Decisions for Physical, Biological, and Cultural/Heritage Resources and Resource Uses by Alternative

Topic	Acreage Type	Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Physical, Biological, and Cultural/Heritage Resources					
Sensitive Soils and Rock Outcrops (acres of surface disturbance restrictions)	BLM Administered Surface	33,908	47,795	16,782	169,719
Forests and Woodlands (# of available acres for potential treatment, based on slope restrictions)	BLM Administered Surface	20,806 (68% of forested lands)	18,375 (60% of forested lands)	24,443 (79% of forested lands)	18,375 (60% of forested lands)
Rangelands (acres crested wheatgrass treated over life of the plan)	BLM Administered Surface	160	4,459	1,486	2,378
Riparian and Floodplains (acres surface disturbance restricted)	BLM Administered Surface	10,114	24,373	6,666	7,563
Riparian (miles of high priority recovery area)	BLM Administered Surface	0	189	13	51
Invasive Species and Noxious Weed Treated (acres treated per year)	BLM Administered Surface	366 to 5,548	200 to 800	1,500 to 3,000	400 to 2,000

Table 2.5 Comparative Summary of Proposed Land Use Decisions for Physical, Biological, and Cultural/Heritage Resources and Resource Uses by Alternative

Topic	Acreage Type	Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Greater Sage-Grouse General Habitat Management Areas	BLM Administered Surface	0	78,575 acres		113,816 acres
	BLM Administered Federal Mineral Estate	0	116,452 acres		57,420 acres
Greater Sage-Grouse Priority Habitat Management Areas	BLM Administered Surface	0	154,452 acres		158,926 acres
	BLM Administered Federal Mineral Estate	0	191,543 acres		60,569 acres
Greater Sage-Grouse Restoration Areas	BLM Administered Surface	0	45,555 acres		78,927 acres
	BLM Administered Federal Mineral Estate	0	63,437 acres		22,951 acres
Fisheries (acres surface disturbance restrictions)	BLM Administered Surface	0	15,693 *	806 **	2,068 **
Wild Horses: Herd Management Area (acres)	BLM Administered Surface	24,595	23,204	28,622	27,094
	Total Acres All Surface Ownerships (BLM, USFS, NPS and private) within the Herd Area	37,494	31,153	44,855	39,944
Cultural Sites (acres of restrictions on surface development on or near)	BLM Administered Surface	4,847	11,384	5,407	14,988
Visual Resource Management Class I (acres)	BLM Administered Surface	VRI Class A 56,700	56,700	29, 714	29,714
Visual Resource Management Class II (acres)	BLM Administered Surface	VRI Class B 13,507	14,377	26,569	55,883
Visual Resource Management Class III (acres)	BLM Administered Surface	VRI Class B/C 391,113	362,905	378,751	349,441

Table 2.5 Comparative Summary of Proposed Land Use Decisions for Physical, Biological, and Cultural/Heritage Resources and Resource Uses by Alternative

Topic	Acreage Type	Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Visual Resource Management Class IV (acres)	BLM Administered Surface	VRI Class C 816	0	0	0
Wildfire to meet resource objectives (# acres in a 10year period)	BLM Administered Surface	0	52,548	0	62,937
Fuels Treatment (prescribed fire and non-prescribed fire) (# acres in a 10-yr period)	BLM Administered Surface	6,280	21,700		
Lands with Wilderness Characteristics (# tracts /acres)	BLM Administered Surface	1,925 acres	13 tracts 27,507 acres	4 tracts 3,379 acres	9 tracts 13,653 acres
Resource Uses and Support					
Fluid Minerals (acres available NSO)	BLM Administered Federal Mineral Estate	34,145	196,033	70,980	420,126
Fluid Minerals (acres available TL)	BLM Administered Federal Mineral Estate	543,078	15,875	134,016	17,116
Fluid Minerals (acres available CSU)	BLM Administered Federal Mineral Estate	81,883	406,720	371,306	398,452
Fluid Minerals (acres available standard lease terms)	BLM Administered Federal Mineral Estate	237,336	41,103	319,133	44,142
Fluid Minerals (acres unavailable non-discretionary)	BLM Administered Federal Mineral Estate	28,681	28,681	28,681	28,681
Fluid Minerals (acres unavailable discretionary)	BLM Administered Federal Mineral Estate	32,419	272,226	37,768	31,678
Coal Leasing (acres closed)	BLM Administered Federal Mineral Estate	26,131	290,048	264,450	225,655
Locatable Minerals (acres closed and recommend for withdrawal)	BLM Administered Federal Mineral Estate	39,709 (1,855 currently withdrawn)	291,151	48,623	62,059

Table 2.5 Comparative Summary of Proposed Land Use Decisions for Physical, Biological, and Cultural/Heritage Resources and Resource Uses by Alternative

Topic	Acreage Type	Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Mineral Materials (acres closed)	BLM Administered Federal Mineral Estate	44,588	343,749	261,260	281,597
Forest and Woodlands (average # acres for sale of forest products)	BLM Administered Surface	42 acres per year	67 acres per year	112 acres per year	89 acres per year
Land Tenure: Disposal – Category III (acres available)	BLM Administered Surface	7,529 acres (with 2,088 acres identified for further study)	50	4,223	264
Land Tenure: Retention – Category I (acres)	BLM Administered Surface	26,616 acres (no Category I or II)	68,300	108,184	83,507
Land Tenure: Retention – Category II (acres)	BLM Administered Surface		365,804	321,747	357,140
ROW Exclusion Areas (acres)	BLM Administered Surface	44,014	211,384	39,491	48,258
ROW Avoidance Areas (acres)	BLM Administered Surface	24,203	185,607	355,601	378,958
ROW Corridors (# corridors/acres)	BLM Administered Surface	1 / 1,579 acres	1 / 1,579 acres	2 / 13,832 acres	2 / 4,511 acres
Renewable Energy (# acres open and percent open)	BLM Administered Surface	361,514 acres (83% open) Wind Potential: H: 50,135 M: 132,040 L: 178,916 (WY – 423 acres)	0 acres Wind Potential: H: 0 M: 0 L: 0	21,349 acres (5% open) Wind Potential: H: 757 M: 10,750 L: 9,842	1,512 acres (0.4% open) Wind Potential: H: 360 M: 502 L: 650
Renewable Energy (# acres closed and percent closed)	BLM Administered Surface	47,496 acres (11% closed) Wind Potential: H: 12,372 M: 6,350 L: 26,271 (WY – 2,503 acres)	345,491 acres (80% closed) Wind Potential: H: 53,537 M: 111,742 L: 179,530 (WY – 4,242 acres)	82,019 acres (19% closed) Wind Potential: H: 19,960 M: 15,358 L: 46,421 (WY – 3,822 acres)	231,755 acres (53 % closed) Wind Potential: H: 38,559 M: 74,464 L: 118,952 (WY – 3,822 acres)
Renewable Energy (# acres avoidance and percent avoidance)	BLM Administered Surface	25,141 acres (6% avoidance) Wind Potential: H:1,040 M: 7,677 L: 15,055 (WY – 1,372 acres)	85,461 acres (20% avoidance) Wind Potential: H: 10,690 M: 34,202 L: 40,513 (WY – 56 acres)	326,722 acres (75% avoidance) Wind Potential: H: 42,830 M: 119,570 L: 163,846 (WY – 476 acres)	200,278 acres (46% avoidance) Wind Potential: H: 7,149 M: 17,600 L: 175,529 (WY – 476 acres)
Livestock Grazing (total acres available)	BLM Administered Surface	434,154 acres			

Table 2.5 Comparative Summary of Proposed Land Use Decisions for Physical, Biological, and Cultural/Heritage Resources and Resource Uses by Alternative

Topic	Acreage Type	Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Livestock Grazing (total acres permitted)	BLM Administered Surface	387,057	386,092	386,822	387,057
Isolated parcels not included within grazing allotments	BLM Administered Surface	9,522 acres			
Livestock Grazing (total acres closed to permitted livestock use for the life of the plan)	BLM Administered Surface	37,408	38,373	28,622	28,387
Livestock Grazing (total acres available for prescriptive use of livestock grazing)	BLM Administered Surface	0	0	9,021	9,021
SRMAs (# SRMAs/acres)	BLM Administered Surface	2 SRMAs 1,171 acres	6 SRMAs 90,783 acres	11 SRMAs 147,181 acres	9 SRMAs 110,862 acres
Four Dances Natural Area ACEC SRMA	BLM Administered Surface	784 acres	784 acres	784 acres	784 acres
Sundance Lodge Recreation Area SRMA	BLM Administered Surface	387 acres	387 acres	387 acres	387 acres
Acton SRMA	BLM Administered Surface	0	3,697 acres	3,697 acres	3,697 acres
Asparagus Point SRMA	BLM Administered Surface	0	0	158 acres	158 acres
Bundy Island SRMA	BLM Administered Surface	0	98 acres	0	0
Horsethief TMA SRMA	BLM Administered Surface	0	0	12,261 acres	12,261 acres
Mill Creek/Bundy TMA SRMA	BLM Administered Surface	0	0	34,239 acres	0
Pryor Mountain TMA SRMA	BLM Administered Surface	0	81,277 acres	81,277 acres	81,277 acres
17-Mile SRMA	BLM Administered Surface	0	0	2,080 acres	0
Shepherd Ah-Nei SRMA	BLM Administered Surface	0	4,680 acres	4,680 acres	4,680 acres

Table 2.5 Comparative Summary of Proposed Land Use Decisions for Physical, Biological, and Cultural/Heritage Resources and Resource Uses by Alternative

Topic	Acreage Type	Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
South Hills TMA SRMA	BLM Administered Surface	0	0	1,357 acres	1,357 acres
Yellowstone River Corridor SRMA	BLM Administered Surface	0	0	6,311 acres	6,311 acres
ERMAs (# ERMAs/acres)	BLM Administered Surface	7 ERMAs 105,460 acres	5 ERMAs 7,668 acres	0 ERMAs	2 ERMAs 36,319 acres
Shepherd Ah-Nei ERMA	BLM Administered Surface	4,680 acres	0	0	0
Acton Recreation Area ERMA	BLM Administered Surface	3,697 acres	0	0	0
South Hills TMA ERMA	BLM Administered Surface	1,357 acres	1,357 acres	0	0
Pryor Mountain TMA ERMA	BLM Administered Surface	81,227 acres	0	0	0
Horsethief TMA ERMA	BLM Administered Surface	12,261 acres	12,261 acres	0	0
17 Mile ERMA	BLM Administered Surface	2,080 acres	2,080 acres	0	2,080 acres
Asparagus Point ERMA	BLM Administered Surface	158 acres	158 acres	0	0
Yellowstone River Corridor ERMA	BLM Administered Surface	0	6,213 acres	0	0
Mill Creek Area ERMA	BLM Administered Surface	0	0	0	34,239 acres
Non-Designated areas (public lands not identified as SRMAs or ERMAs)	BLM Administered Surface	All lands not designated as SRMAs would be managed as ERMAs (327,518 acres)	327,421 acres	288,495 acres	322,418 acres
Acres Open to Target Shooting	BLM Administered Surface	422,185	400,045	410,105	402,568
Acres Closed to Target Shooting	BLM Administered Surface	11,348	34,109	24,049	31,586

Table 2.5 Comparative Summary of Proposed Land Use Decisions for Physical, Biological, and Cultural/Heritage Resources and Resource Uses by Alternative

Topic	Acreage Type	Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Miles Closed to Motorized Vehicle Use in 11 TMAs	BLM Administered Surface	No established TMAs	391.5 miles	5.6 miles	59.9 miles
Miles Open to Motorized Vehicle Use in 11 TMAs	BLM Administered Surface	No established TMAs Travel limited to existing roads and trails: 844.1 miles	348.1 miles	831.1 miles	616.7 miles
Special Designations					
ACECs	BLM Administered Surface	9 ACECs 37,896 acres	12 ACECs 181,175 acres	11 ACECs 67,079 acres	11 ACECs 38,786 acres
Wilderness Study Areas	BLM Administered Surface	4 WSAs 28,631 acres			
Wild and Scenic River (acres surface disturbance restrictions)	BLM Administered Surface	0	5,454	2,840	5,454
National Historic Trails (acres restrictions on surface development)	BLM Administered Surface	0	9,247	9,247	9,247

Notes:

ACEC	Area of Critical Environmental Concern	BLM	Bureau of Land Management
CSU	Controlled Surface Use	ERMA	Extensive Recreation Management Area
NHT	National Historic Trail	NSO	No Surface Occupancy
ROW	Right-of-Way	SRMA	Special Recreation Management Area
TL	Timing Limitation	TMA	Travel Management Area
VRI	Visual Resource Inventory	VRM	Visual Resource Management
WSA	Wilderness Study Area	WSR	Wild and Scenic River
YCT	Yellowstone Cutthroat Trout		

* Blue Ribbon Streams, Red Ribbon Streams, YCT Conservation Population, YCT Suitable Habitat
** Blue Ribbon Streams, YCT Conservation Population

Table 2.6 Comparative Summary of Proposed Special Designations by Alternative

Name	Emphasis	Acreage Type	Alternative A (No Action)		Alternative B		Alternative C		Alternative D (Proposed Alternative)	
			Existing Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage
Pompeys Pillar National Monument and ACEC	Cultural and Historic Values	BLM–AS	ACEC	432	ACEC	432	ACEC	432	ACEC	432
ACECs										
Bridger Fossil Area ACEC	Paleontological Values	BLM–AS	ACEC	577	ACEC	577	ACEC	577	ACEC	577
Castle Butte ACEC	Cultural Values	BLM–AS	ACEC	184	ACEC	184	ACEC	184	ACEC	184
East Pryor ACEC	Wild Horses & Wildlife Habitat, Historic, Cultural, Paleontological, and Special Status Plants and Animals	BLM–AS	ACEC	29,550	ACEC	8,301	ACEC	32,767	ACEC	11,122
Four Dances Natural Area ACEC	Safety Hazards, Cultural, Historic, and Scenic Values, Peregrine Falcon Nesting	BLM–AS	ACEC	784	ACEC	784	ACEC	784	ACEC	784
Grove Creek ACEC	Cultural Values and Special Status Plants	BLM–AS	None	0	ACEC	8,251	ACEC	9,445	ACEC	8,251
Meeteetse Spires ACEC	Scenic Values and Rare Plant Protection	BLM–AS	ACEC	965	ACEC	1,523	ACEC	2,173	ACEC	1,523
Petroglyph Canyon ACEC	Cultural Values	BLM–AS	ACEC	240	AECE	240	ACEC	240	ACEC	240
Pryor Foothills RNA ACEC	Special Status Plants, Rare Plant Communities, Cultural Values	BLM–AS	None	0	ACEC	958	ACEC	7,401	ACEC	2,606
Stark Site ACEC	Cultural Values	BLM–AS	ACEC	799	ACEC	799	ACEC	799	ACEC	799
Weatherman Draw ACEC	Cultural Values	BLM–AS	ACEC	4,365	ACEC	4,986	ACEC	12,277	ACEC	12,277
Greater Sage-Grouse Habitat ACEC	Protect Greater Sage-Grouse priority habitat	BLM-AS	None	0	ACEC	154,452	No SD	0	No SD	0
Horse Range										
Pryor Mountain Wild Horse Range	Wild Horses	BLM–AS	HR	24,595	HR	23,204	HR	28,622	HR	27,094
Wilderness Study Areas										
Big Horn Tack-On WSA	Wilderness values	BLM–AS	WSA / 2,689							
Burnt Timber Canyon WSA	Wilderness values	BLM–AS	WSA / 3,516							
Pryor Mountain WSA	Wilderness values	BLM–AS	WSA / 15,590							
Twin Coulee WSA	Wilderness values	BLM–AS	WSA / 6,836							

Table 2.6 Comparative Summary of Proposed Special Designations by Alternative

Name	Emphasis	Acreage Type	Alternative A (No Action)		Alternative B		Alternative C		Alternative D (Proposed Alternative)	
			Existing Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage	Proposed Designation	Acreage
Wild and Scenic Rivers										
Bad Canyon (4.5 miles)	Scenic	BLM–AS	WSR eligible	4.5 miles	WSR eligible and suitable	4.5 miles	WSR eligible	4.5 miles	No SD	0 miles
Bear Canyon (1.62 miles)	Recreational	BLM–AS	WSR eligible	1.62 miles	WSR eligible and suitable	1.62 miles	WSR eligible	1.62 miles	No SD	0 miles
Crooked Creek (upper) (1.59 miles)	Wild	BLM–AS	WSR eligible	1.59 miles	WSR eligible and suitable	1.59 miles	WSR eligible	1.59 miles	WSR suitable (Wild)	1.59 miles
Crooked Creek (lower) (1.56 miles)	Scenic	BLM–AS	WSR eligible	1.56 miles	WSR eligible and suitable	1.56 miles	WSR eligible	1.56 miles	WSR suitable (Scenic)	1.56 miles
Gyp Springs (0.46 miles)	Recreational	BLM–AS	WSR eligible	0.46 miles	WSR eligible and suitable	0.46 miles	WSR eligible	0.46 miles	No SD	0 miles
Piney Creek (0.16 miles)	Recreational	BLM–AS	WSR eligible	0.16 miles	WSR eligible and suitable	0.16 miles	WSR eligible	0.16 miles	No SD	0 miles
Yellowstone River / Pompeys Pillar (4.19 miles)	Recreational	BLM–AS	WSR eligible	4.19 miles	WSR eligible and suitable	4.19 miles	WSR eligible	4.19 miles	No SD	0 miles
National Historic Trails										
Lewis and Clark NHT	National Historic Trail values	BLM–AS	NHT / 3 miles							
Nez Perce NHT	National Historic Trail values	BLM–AS	NHT / 5 miles							

Notes:

ACEC	Area of Critical Environmental Concern	BLM	Bureau of Land Management
BLM–AS	Bureau of Land Management Administered Surface	HR	Horse Range
No SD	No Special Designation	NHT	National Historic Trail
WSA	Wilderness Study Area	WSR	Wild and Scenic River

2.5.1 Alternative A (No Action Alternative)

2.5.1.1 Overview of Alternative A

Alternative A represents the continuation of current management under the existing land use plan (1984), as amended. Direction contained in existing laws, regulation and policy would also continue to be implemented. This alternative provides the baseline against which to compare the other alternatives. Under Alternative A, resources, resource uses, and sensitive habitats would receive management emphasis (methods and mix of multiple use management of public land) at present levels. In general, most activities would be analyzed on a case-by-case basis, and few uses would be limited or excluded as long as land health standards would be met.

2.5.1.2 Physical, Biological, and Cultural/Heritage Resources

Alternative A restricts surface disturbance on 33,908 acres of highly erosive soils, surface disturbance is restricted on 10,114 acres in riparian areas and floodplains, surface disturbing activities are not restricted in fisheries, and there are restrictions on 4,847 acres on or near cultural sites.

Under Alternative A, there would be no established Greater Sage-Grouse Priority Habitat Management Areas or Restoration Areas.

Wildfire would not be used to meet resource objectives and prescribed fire and non-prescribed fire fuels treatments would treat 6,280 acres over a 10 year period.

Over the 20 year life of this plan, approximately 20,806 acres of forest and woodlands would be available for potential treatment, with an estimated 840 acres available for the sale of wood products, 160 acres of crested wheatgrass in rangelands would be treated, and 366 to 5,548 acres of invasive species and noxious weeds would be treated per year under Alternative A,

The Herd Management Area would consist of 24,595 acres of the BLM administered surface (37,494 total acres of all federal surface ownerships (BLM, USFS, and NPS)).

Under Alternative A, approximately 56,700 acres are identified as Visual Resource Management (VRM) Class I, 13,507 acres are identified as VRM Class II, 391,113 acres are identified as VRM Class III, and 816 acres are identified as VRM Class IV. There are 1,925 acres containing lands with wilderness characteristics under Alternative A.

2.5.1.3 Resource Uses and Support

Fluid minerals are available for leasing on 237,336 acres of the BLM administered federal mineral estate with standard lease terms. Fluid minerals are available for leasing on 369,048 acres of the BLM administered federal mineral estate with major and moderate constraints. Fluid minerals are not available for leasing on 61,100 acres of the BLM administered federal mineral estate. Coal is not available for leasing on 26,131 acres. A total of 1,855 acres of the BLM administered federal mineral estate (locatable minerals) are withdrawn from mineral

entry and an additional 39,709 acres are recommended for closure to the mining laws. Under Alternative A, a total of 44,583 acres are closed to mineral material sales.

Under Alternative A, the sale of forest and woodland products would be allowed on approximately 42 acres per year.

Approximately 7,463 acres of public land would be available for disposal with an additional 2,088 acres identified for further study. Rights-of-Way (ROW) exclusion and avoidance areas encompass 68,217 acres of the BLM administered surface (ROW exclusion: 44,014 acres, ROW avoidance: 24,203 acres). There would be one designated ROW corridor under this Alternative, encompassing 1,579 acres of the BLM administered surface.

Livestock grazing would be permitted on 387,057 acres and 37,408 acres would be closed to livestock grazing.

Under Alternative A, the BLM maintains two Special Recreation Management Areas (SMRAs): Sundance Lodge Recreation Area (387 acres) and Four Dances Natural Area ACEC (784 acres). The other seven areas receiving concentrated recreation are managed as Extensive Recreation Management Areas: Shepherd Ah-Nei Recreation Area (4,680 acres), Acton Recreation Area (3,697 acres), South Hills TMA (1,357 acres), Pryor Mountain TMA (81,227 acres), Horsethief TMA (12,261 acres), 17 Mile (2,080 acres), and Asparagus Point (158 acres).

Travel Management Areas are not delineated in the decision area. Off-highway vehicle use would be limited to existing roads and trails in the planning area, however in the following areas: Pryors, Acton, Shepherd Ah-Nei, and Horsethief, motorized travel would be restricted to designated routes. South Hills would be designated open for motorcycle use only.

Under Alternative A, the BLM responds to proposals for renewable wind energy development within the decision area on a case-by-case basis. Although interests in wind energy have increased, no wind farms currently exist in the planning area on the BLM administered surface. The area of the BLM administered surface open to renewable wind energy development, but still subject to terms and conditions identified during the right-of-way application process is 361,514 acres. The area of the BLM administered surface closed to renewable wind energy development is 47,496 acres. Alternative A has the highest number of acres available for renewable energy development.

2.5.1.4 Special Designations

Nine ACECs would be retained totaling 37,896 acres. Currently, special designations in the decision area include Pompeys Pillar National Monument and ACEC (432 acres), eight additional ACECs: Bridger Fossil Area ACEC (577 acres), Castle Butte (184 acres), East Pryor ACEC (29,550 acres), Four Dances Natural Area ACEC (784 acres), Meeteetse Spires ACEC (965 acres), Petroglyph Canyon ACEC (240 acres), Stark Site ACEC (799 acres), and Weatherman Draw ACEC (4,365 acres). Special designations also include the Pryor Mountain Wild Horse Range (37,494 acres) and the Lewis and Clark and Nez Perce National Historic Trails. Under Alternative A, the seven eligible river segments (14.08 miles) would be managed

to protect their outstandingly remarkable values and free-flowing nature. These designations continue and there would be no additional special designations are established under Alternative A.

2.5.2 Alternative B

2.5.2.1 Overview of Alternative B

Alternative B would emphasize the conservation of physical, biological, and/or cultural resources over commodity production, mineral extraction, and motorized recreation. Relative to all alternatives, Alternative B conserves the most land area for physical, biological, and cultural resources, closes the most miles of roads in TMAs, and is the most restrictive to coal and fluid mineral leasing and the most restrictive to renewable energy development. Management actions would focus on maintaining those ecological systems that are functioning and healthy and the restoration of ecological systems that have been degraded or altered. Production of food, fiber, minerals and services would be more constrained than in most other alternatives, and in some cases and in some areas, uses would be excluded to protect sensitive or fragile resources.

2.5.2.2 Physical, Biological, and Cultural/Heritage Resources

Alternative B restricts surface disturbance on 169,119 acres of highly erosive soils, surface disturbance is restricted on 24,373 acres in riparian areas and floodplains, surface disturbing activities are restricted on 15,693 acres in fisheries: Blue Ribbon Streams, Red Ribbon Streams, YCT Conservation populations, and YCT suitable habitat, and there are restrictions on surface development on 11,384 acres on or near cultural sites.

Greater Sage-Grouse General Habitat Management Areas consists of 78,575 acres of the BLM administered surface and 116, 452 acres of the BLM administered federal mineral estate. Greater Sage-Grouse Priority Habitat Management Areas consist of 154,452 acres of the BLM administered surface and 191,543 acres of the BLM administered federal mineral estate. Greater Sage-Grouse Restoration Areas consist of 45,555 acres of the BLM administered surface and 63,437 acres of the BLM administered federal mineral estate. These acres are the same for the Action Alternatives (B and C). Under this alternative only, the Greater Sage-Grouse Priority Habitat Management Areas (BLM administered surface – 154,452 acres) would be administered as an ACEC.

Over a 10 year period wildfire would be used to meet resource objectives on 52,548 acres and prescribed and non-prescribed fire fuels treatments would treat 21,700 acres over a 10 year period.

Over the 20 year life of this plan, approximately 18,375 acres of forest and woodlands would be available for potential treatment, with an estimated 1,340 acres available for the sale of wood products, 22,414 acres of crested wheatgrass would be treated, and 200 to 800 acres of invasive species and noxious weeds would be treated per year under Alternative B.

The Herd Management Area would consist of 23,204 acres of the BLM administered surface (31,153 total acres of all federal surface ownerships (BLM, USFS, and NPS)).

Under Alternative B, approximately 56,700 acres would be designated as Visual Resource Management Class I and 14,377 acres would be designated as Visual Resource Management Class II. There are 13 tracts totaling 27,507 acres of land that would be managed for wilderness characteristics.

2.5.2.3 Resource Uses and Support

Fluid minerals are available for leasing on 41,103 acres of the BLM administered federal mineral estate with standard lease terms. Fluid minerals are available for leasing on 618,628 acres of the BLM administered federal mineral estate with major and moderate constraints. Fluid minerals are not available for leasing on 300,907 acres of the BLM administered federal mineral estate. Coal is not available for leasing on 290,048 acres. A total of 1,855 acres of the BLM administered federal mineral estate (locatable minerals) are currently withdrawn from mineral entry and an additional 291,151 acres are recommended for closure to the mining laws, totaling 270,977 acres. Under Alternative B, a total of 343,749 acres are closed to mineral material sales.

Under Alternative B, the sale of forest and woodlands products would be allowed on approximately 67 acres per year.

Approximately 50 acres of public land would be available for disposal. Rights-of-Way (ROW) exclusion and avoidance areas encompass 369,991 acres of the BLM administered surface (ROW exclusion: 211,384 acres, ROW avoidance: 185,607 acres). There is one designated ROW corridor under this Alternative, encompassing 1,579 acres of the BLM administered surface and Silver Tip Road would not be designated a ROW corridor under Alternative B.

Livestock grazing would be permitted on 386,092 acres and 38,373 acres would be closed to livestock grazing.

Under Alternative B, the BLM would maintain two Special Recreation Management Areas (SMRAs): Sundance Lodge Recreation Area (387 acres) and Four Dances Natural Area ACEC (784 acres) and propose four additional SRMAs: Acton Recreation Area (3,697 acres), Bundy Island (98 acres), Pryor Mountain TMA (81,277 acres), and Shepherd Ah-Nei Recreation Area (4,680 acres). The other areas receiving concentrated recreation use would be managed as Extensive Recreation Management Areas (ERMAs): South Hills TMA (1,357 acres), Horsethief TMA (12,261 acres), 17 Mile (2,080 acres), Asparagus Point (158 acres), and the Yellowstone River Corridor (6,213 acres).

Travel Management Areas are delineated in the decision area. OHV use is limited to existing roads and trails except in the 11 TMAs where OHV use is limited to designated routes (391.5 miles closed to motorized vehicle use in the 11 TMAs and 348.1 miles open to motorized vehicle use in 11 TMAs). South Hills would be closed to motorized travel.

Under Alternative B, the area of the BLM administered surface open to renewable wind energy development is 0 acres. The area of the BLM administered surface closed to renewable wind energy development is 345,491 acres. Alternative B has the fewest acres open to renewable energy development.

2.5.2.4 Special Designations

Nine ACECs would be retained and three new ACECs would be designated totaling 185,961 acres. Currently, special designations in the decision area include Pompeys Pillar National Monument and ACEC (432 acres), ten additional ACECs: Bridger Fossil Area ACEC (577 acres), Castle Butte (184 acres), East Pryor ACEC (8,301 acres), Four Dances Natural Area ACEC (784 acres), Grove Creek ACEC (8,251 acres), Meeteetse Spires ACEC (1,523 acres), Petroglyph Canyon ACEC (240 acres), Pryor Foothills RNA ACEC (958 acres), Stark Site ACEC (799 acres), Weatherman Draw ACEC (4,986 acres), and Greater Sage-Grouse Habitat ACEC (158,926 acres). Under Alternative B, the proposed management of the ACECs is the most restrictive for resource uses.

The Greater Sage-Grouse PHMAs (BLM administered surface only) would be designated an ACEC (154,452 acres) to protect priority habitat for the Greater Sage-Grouse (see maps 168 and 169). The area would be managed consistent with the specific management actions and direction described under the Greater Sage-Grouse PHMAs (refer to Table 2.10 Wildlife and Special Status Species) to protect habitat and minimize fragmentation.

Special designations also include the Pryor Mountain Wild Horse Range (31,153 acres), four WSAs (28,631 acres) and the Lewis and Clark and Nez Perce National Historic Trails. Under Alternative B, the seven eligible river segments (14.08 miles) would be recommended as suitable for inclusion in the National Wild and Scenic River System to protect their outstandingly remarkable values and free-flowing nature.

2.5.3 Alternative C

2.5.3.1 Overview of the Alternative

Alternative C would emphasize commodity production (forage, minerals, etc.), motorized recreational access, and services. Among the three action alternatives (B, C, and D), Alternative C closes the least miles of roads in TMAs, is the least restrictive to coal and fluid mineral leasing. Under this alternative, constraints on commodity production for the protection of sensitive resources would be the least restrictive possible within the limits defined by law, regulation and BLM policy, including the ESA, cultural resource protection laws and wetland preservation. In this alternative, constraints to protect sensitive resources would tend to be implemented in specified geographic areas rather than across the entire planning area.

2.5.3.2 Physical, Biological, and Cultural/Heritage Resources

Alternative C restricts surface disturbance on highly erosive soils on the least number of acres of all the alternatives (16,782 acres). Surface disturbance is restricted on only 6,666 acres in riparian areas and floodplains, and on 806 acres in fisheries: Blue Ribbon Streams and YCT suitable habitat. There are restrictions on surface development on 5,407 acres on or near cultural sites.

The acreages for Greater Sage-Grouse PHMAs, RAs, and GHMAs have remained the same for Alternatives B and C.

Wildfire would not be used to meet resource objectives and prescribed fire and non-prescribed fire fuels treatments would treat 21,700 acres over a 10 year period.

Over the 20 year life of this plan, approximately 24,443 acres of forest and woodlands would be available for potential treatment, with an estimated 2,240 acres available for the sale of wood products, 7,500 acres of crested wheatgrass would be treated, and 1,500 to 3,000 acres of invasive species and noxious weeds would be treated per year under Alternative C.

The Herd Management Area would consist of 28,622 acres of the BLM administered surface (44,855 total acres of all federal surface ownerships (BLM, USFS, and NPS)).

Under Alternative C, approximately 29,714 acres would be designated as Visual Resource Management Class I and 26,569 acres would be designated as Visual Resource Management Class II. There are four tracts totaling 3,379 acres of land that would be managed for wilderness characteristics.

2.5.3.3 Resource Uses and Support

Fluid minerals are available for leasing on 319,133 acres of the BLM administered federal mineral estate with standard lease terms. Fluid minerals are available for leasing on 576,302 acres of the BLM administered federal mineral estate with major and moderate constraints. Fluid minerals are not available for leasing on 66,449 acres of the BLM administered federal mineral estate. Coal is not available for leasing on 264,450 acres. A total of 1,855 acres of the BLM administered federal mineral estate are withdrawn from mineral entry and an additional 48,623 acres are recommended for closure to the mining laws. Under Alternative C, a total of 261,260 acres are closed to mineral material sales.

Under Alternative C, the sale of forest and woodland products would be allowed on approximately 112 acres per year.

Approximately 4,223 acres of public land would be available for disposal. Rights-of-Way (ROW) exclusion and avoidance areas encompass 395,092 acres of the BLM administered surface (ROW exclusion: 39,491 acres, ROW avoidance: 355,601 acres). There are two designed ROW corridors under this alternative, encompassing 13,832 acres of the BLM administered surface.

Livestock grazing would be permitted on 386,822 acres and 28,622 acres would be closed to livestock grazing.

Under Alternative C, the BLM would maintain two Special Recreation Management Areas (SMRAs): Sundance Lodge Recreation Area (387 acres) and Four Dances Natural Area ACEC (784 acres) and propose nine additional SRMAs: Acton Recreation Area (3,697 acres), Asparagus Point (158 acres), Horsethief TMA (12,261 acres), Mill Creek/Bundy TMA (34,239 acres), Pryor Mountain TMA (81,277 acres), 17 Mile (2,080 acres), Shepherd Ah-Nei Recreation Area (4,680 acres), South Hills TMA (1,357 acres), and the Yellowstone River Corridor (6,213 acres). No Extensive Recreation Management Areas (ERMAs) are proposed under Alternative C.

Travel Management Areas (TMAs) are delineated in the decision area. OHV use is limited to existing roads and trails except in the 11 TMAs where OHV use is limited to designated routes (5.6 miles closed to motorized vehicle use in the 11 TMAs and 831.1 miles open to motorized vehicle use in 11 TMAs). South Hills would be designated open for motorcycle use only.

Under Alternative C, the area of BLM administered surface open to renewable wind energy development, but still subject to terms and conditions identified during the right-of-way application review process, is 21,349 acres. The area of BLM administered surface closed to renewable wind energy development is 82,019 acres.

2.5.3.4 Special Designations

Nine ACECs would be retained and two new ACECs would be designated totaling 67,079 acres.

The special designations in the decision area include Pompeys Pillar National Monument and ACEC (432 acres), ten additional ACECs: Bridger Fossil Area ACEC (577 acres), Castle Butte (184 acres), East Pryor ACEC (32,767 acres), Four Dances Natural Area ACEC (784 acres), Grove Creek ACEC (9,445 acres), Meeteetse Spires ACEC (2,173 acres), Petroglyph Canyon ACEC (240 acres), Pryor Foothills RNA ACEC (7,401 acres), Stark Site ACEC (799 acres), and Weatherman Draw ACEC (12,277 acres). Under Alternative C the proposed management of the ACECs is the least restrictive for resource uses.

Under Alternative C, the Greater Sage-Grouse PHMA area would not be designated an ACEC. Priority habitat for Greater Sage-Grouse in the planning area would be protected as described in the Greater Sage-Grouse PHA areas and associated management actions (refer to Table 2.10 Wildlife and Special Status Species, Greater Sage-Grouse PHMA management).

Special designations also include the Pryor Mountain Wild Horse Range (44,855 acres), four WSAs (28,631 acres) and the Lewis and Clark and Nez Perce National Historic Trails. Under Alternative C, the seven eligible river segments (14.08 miles) would be managed to protect their outstandingly remarkable values and free-flowing nature, however, none of the seven eligible river segments would be recommended as suitable for inclusion in the National Wild and Scenic River System.

2.5.4 Alternative D (Proposed Alternative)

2.5.4.1 Overview of the Alternative

Alternative D addresses the key planning issues identified in Chapter 1 by incorporating elements from each of the other alternatives to strike a balance between long-term conservation of public land and resources within the planning area with commodity production, recreational access, and services. Regarding the conservation of physical, biological, and cultural resources and restrictions on mineral leasing, Alternative D is generally between alternatives B and C. Alternative D represents an approach to land management that address the issues, management concerns and purpose and need while balancing resources and resource uses. Among the action

alternatives (B, C, and D), Alternative D has the most acres available for renewable energy development and the fewest acres closed to renewable energy development.

2.5.4.2 Physical, Biological, and Cultural/Heritage Resources

Alternative D restricts surface disturbance on sensitive soils and rock outcrops (169,719 acres), however surface disturbance is restricted on 7,563 acres in riparian areas and floodplains, and on 2,068 acres in fisheries: Blue Ribbon Streams and YCT suitable habitat. There are restrictions on surface development on 14,988 acres on or near cultural sites.

Greater Sage-Grouse General Habitat Management Areas consists of 113,816 acres of the BLM administered surface and 57,420 acres of the BLM administered federal mineral estate. Greater Sage-Grouse Priority Habitat Management Areas consist of 158,926 acres of the BLM administered surface and 60,569 acres of the BLM administered federal mineral estate. Greater Sage-Grouse Restoration Areas consist of 78,927 acres of BLM administered surface and 22,951 acres of the BLM administered federal mineral estate.

Over a 10 year period, wildfire would be used to meet resource objectives on 62,937 acres and prescribed and non-prescribed fire fuels treatments would treat 21,700 acres over a 10 year period.

Over the 20 year life of this plan, approximately 18,375 acres of forest and woodlands would be available for potential treatment, with an estimated 1,780 acres available for the sale of wood products; and 12,000 acres of crested wheatgrass would be treated. Under Alternative D, 400 to 2,000 acres of invasive species and noxious weeds would be treated per year.

The Herd Management Area would consist of 27,094 acres of the BLM administered surface (39,944 total acres of all federal surface ownerships (BLM, USFS, and NPS)).

Under Alternative D, approximately 29,714 acres would be designated as Visual Resource Management Class I and 55,883 acres would be designated as Visual Resource Management Class II. There are nine tracts totaling 13,653 acres of land that would be managed for wilderness characteristics.

2.5.4.3 Resource Uses and Support

Fluid minerals are available for leasing on 44,142 acres of the BLM administered federal mineral estate with standard lease terms. Fluid minerals are available for leasing on 835,720 acres of the BLM administered federal mineral estate with major and moderate constraints. Fluid minerals are not available for leasing on 60,359 acres of the BLM administered federal mineral estate. Coal is not available for leasing on 225,655 acres of the BLM administered federal mineral estate. A total of 1,855 acres of the BLM administered federal mineral estate (locatable minerals) are withdraw from mineral entry and an additional 52,906 acres are recommended for closure to the mining laws. Under Alternative D, a total of 281,597 acres are closed to mineral material sales.

Under Alternative D, the sale of forest and woodland products would be allowed on approximately 89 acres per year.

Approximately 264 acres of public land would be available for disposal under Alternative D. Rights-of-Way (ROW) exclusion and avoidance areas encompass 397,616 acres of the BLM administered surface (ROW exclusion: 48,258 acres, ROW avoidance: 378,958 acres). There are two designated ROW corridors under this Alternative, encompassing 4,511 acres of the BLM administered surface.

Livestock grazing would be permitted on 387,057 acres and 28,387 acres would be closed to livestock grazing.

Under Alternative D, the BLM would maintain two Special Recreation Management Areas (SRMAs): Sundance Lodge Recreation Area (387 acres) and Four Dances Natural Area ACEC (784 acres) and propose seven additional SRMAs: Acton Recreation Area (3,697 acres), Asparagus Point (158 acres), Horsethief TMA (12,261 acres), Pryor Mountain TMA (81,277 acres), Shepherd Ah-Nei Recreation Area (4,680 acres), South Hills TMA (1,357 acres), and the Yellowstone River Corridor (6,213 acres). The other areas receiving concentrated recreation use would be managed as Extensive Recreation Management Areas (ERMAs): 17 Mile (2,080 acres) and the Mill Creek area (34,239 acres).

Travel Management Areas (TMAs) area delineated in the decision area. OHV use is limited to existing roads and trails except in the 11 TMAs where OHV use is limited to designated routes (59.9 miles closed to motorized vehicle use in the 11 TMAs and 616.7 miles open to motorized vehicle use in 11 TMAs). South Hills would be designated open for motorcycle use only.

Under Alternative D, the area of BLM administered surface open to renewable wind energy development, but still subject to terms and conditions identified during the right-of-way application process, is 1,512 acres. The area of BLM administered surface closed to renewable wind energy development is 231,775 acres.

2.5.4.4 Special Designations

Nine ACECs would be retained and two new ACECs would be designated totaling 38,786 acres.

The special designations in the decision area include Pompeys Pillar National Monument and ACEC (432 acres), ten additional ACECs: Bridger Fossil Area ACEC (577 acres), Castle Butte (184 acres), East Pryor ACEC (11,122 acres), Four Dances Natural Area ACEC (784 acres), Grove Creek ACEC (8,251 acres), Meeteetse Spires ACEC (1,523 acres), Petroglyph Canyon ACEC (240 acres), Pryor Foothills RNA ACEC (2,606 acres), Stark Site ACEC (799 acres), and Weatherman Draw ACEC (12,277 acres).

Under Alternative D, the Greater Sage-Grouse PHMA area would not be designated an ACEC. Priority habitat for Greater Sage-Grouse in the planning area would be protected as described in the Greater Sage-Grouse PHMA areas and associated management actions (refer to Table 2.10 Wildlife and Special Status Species, Greater Sage-Grouse PHMA management).

Special designations also include the Pryor Mountain Wild Horse Range (39,944 acres), four WSAs (28,703 acres) and the Lewis and Clark and Nez Perce National Historic Trails. Under Alternative D, only two river segments (3.15 miles) would be recommended as suitable for inclusion in the National Wild and Scenic River System.

2.6 Alternatives Considered in Detail

RMPs are broad-scale land management plans that establish desired outcomes for resource management, and identify the measures deemed likely to achieve those outcomes. The following format of the alternatives identifies the desired outcomes for each resource and resource use. The goals and objectives are followed by different sets of management actions, allowable uses, and use allocations for each alternative—these identify areas and acreages where certain land uses would be prohibited, restricted, or allowed, as well as proactive management measures- that would achieve those goals and objectives.

Once an alternative is selected, the broad, plan-level decisions included in that alternative would become the RMP and provide the framework for site-specific management decisions and actions. Some implementation-level decisions have been included within the alternatives (e.g., travel management route designations, management actions within Areas of Critical Environmental Concern (ACECs), etc.), and are analyzed as part of each alternative. Though all future implementation decisions and administrative actions are influenced by the alternative ultimately selected by the BLM as the new RMP, these do not need to be determined as part of the planning process for this RMP.

Table 2.10 through Table 2.13 identifies goals and objectives, management actions common to all alternatives, and management actions by alternative. These are arranged according to the following resource topics: (see Table 2.7)

A detailed narrative, including tables, for Fluid Minerals is included in Chapter 2 to describe the changes by alternative for fluid mineral leasing restrictions.

Table 2.7 Organization of Comprehensive Alternatives Table

Physical, Biological, and Heritage Resources	Resource Uses	Special Designations	Social and Economic Conditions
• Air • Climate Change • Geology • Soil • Water • Vegetation ▶ Forests and Woodlands ▶ Rangelands ▶ Riparian and Wetlands ▶ Invasive Species and Noxious Weeds ▶ Special Status Plants • Wildlife Habitat and SSS • Fisheries Habitat and SSS • Wild Horses • Cultural/Heritage Resources • Paleontological Resources • Visual Resources • Fire Ecology & Management • Lands with Wilderness Characteristics • Cave and Karst Resources	• Energy and Mineral Resources ▶ Coal ▶ Fluid Minerals ▶ Locatable Minerals ▶ Mineral Materials • Forestry and Woodland Products • Realty, Cadastral Survey, and Lands ▶ Land Tenure Adjustment and Access ▶ Rights-of-Way, Leases, and Permits ▶ Withdrawals • Livestock Grazing • Recreation and Visitor Services • Trails and Travel Management • Renewable Energy • Transportation and Facilities	• Pompeys Pillar National Monument and ACEC • Areas of Critical Environmental Concern ▶ Bridger Fossil Area ACEC ▶ Castle Butte ACEC ▶ East Pryor ACEC ▶ Four Dances Natural Area ACEC ▶ Grove Creek ACEC ▶ Meeteetse Spires ACEC ▶ Petroglyph Canyon ACEC ▶ Pryor Foothills RNA ACEC ▶ Stark Site ACEC ▶ Weatherman Draw ACEC • Wilderness Study Areas ▶ Big Horn Tack-On WSA ▶ Burnt Timber WSA ▶ Pryor Mountain WSA ▶ Twin Coulee WSA • Wild and Scenic Rivers ▶ Bad Canyon ▶ Bear Canyon ▶ Crooked Creek (2 segments) ▶ Gyp Springs ▶ Piney Creek ▶ Yellowstone River/Pompeys Pillar • Pryor Mountain Wild Horse Range • National Historic Trails ▶ Nez Perce NHT ▶ Lewis and Clark NHT	• Economic Conditions • Social Conditions • Environmental Justice • Tribal Concerns/ Tribal Treaty Rights

2.6.1 Format of the Alternatives

Management actions are anticipated to achieve the goals and objectives identified for each resource topic. Some Management actions are constant across all alternatives, whereas others vary by alternative. Management actions that apply to all alternatives are listed for each resource topic under the heading *Management Actions Common to All Alternatives* immediately following the desired outcomes (goals and objectives) for each resource topic. Management actions common to Alternatives B, C, and D are listed under the heading *Management Common to Action Alternatives*. Management actions that vary by alternative are listed under the heading *Management Actions by Alternative*.

The following apply under all alternatives:

- Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Montana (Appendix I)
- Best Management Practices (Appendix B)

Restrictions on resource uses apply to the life of the RMP, but can be changed by amending the RMP. For example, areas identified as closed to leasing refer to minerals deferred from leasing for the life of the RMP unless changed through an RMP amendment and public involvement. Moreover, where seasonal or other restrictions or limitations are placed on development, exception, wavier, or modification of these limitations may be approved in writing, including documented supporting analysis, by the authorized officer. This applied to all restrictions and limitations.

2.6.2 Energy and Minerals

The general mining laws give the public the right to locate and develop mining claims on public land. The Mining and Minerals Policy Act of 1970 declares that it is the continuing policy of the federal government to foster and encourage private enterprise in the development of domestic mineral resources. Section 102 of the Federal Land Policy and Management Act of 1976 directs that the public land would be managed in a manner that recognizes the Nation's need for domestic sources of minerals and other commodities from the public lands, while protecting scientific, scenic, historic, archeological, ecological, environmental, air and atmospheric and hydrologic values. The BLM's mineral and national energy policy states that public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is justified in the national interest.

Federally owned minerals in the public domain are classified into three categories: leasable minerals, locatable minerals, and mineral materials as discussed below. The classifications are based on acts passed by the U.S. Congress. These acts provide the opportunity for the public to explore for, develop, and produce publicly owned minerals.

Leasable minerals are those minerals on public lands where the land is leased to individuals for their exploration and development. The leasable minerals have been subdivided into two classes, fluid and solid. Fluid minerals include oil and gas; geothermal resources and associated by-products; and oil shale, native asphalt, oil impregnated sands, and any other material in which oil is recoverable only by special treatment after the deposit is mined or quarried. Solid leasable minerals are those leased under the mineral leasing acts and those hardrock minerals leased under Reorganization Plan No. 3 of 1946 (acquired lands). Solid leasable minerals are specific minerals such as coal and phosphates. All minerals on acquired lands are considered to be leasable minerals. Leasable minerals are associated with the following laws: Mineral Leasing Act of 1920, as amended and supplemented, Mineral Leasing Act for Acquired Lands of 1947, as amended, and the Geothermal Steam Act of 1970, as amended.

Locatable minerals are those "minerals acquired through the General Mining Law of 1872, as amended" (National Research Council 1999). Locatable minerals can include gold, silver, platinum, lead, zinc, magnesium, nickel, tungsten, bentonite, barite, feldspar, uranium, and uncommon varieties of sand, gravel, and stone. Locatable minerals on public lands (if open to mineral entry) can be acquired by initially staking claims over the deposits. However, before mining can occur, permits from various state and federal agencies must be obtained.

Mineral materials are common varieties of minerals such as sand, gravel, rock, cinders, and common clay. Mineral materials are disposed of through sales contracts or free use permits and

are regulated under the Mineral Material Act of July 23, 1947, as amended, and the Surface Use and Occupancy Act of July 23, 1955. Disturbance of public lands in association with mineral material sales is considered a discretionary activity. This means that the action may be denied if resource concerns cannot be protected or mitigated.

2.6.2.1 Leasable Fluid Minerals

2.6.2.1.1 Management Common to All Alternatives

Goals and Objectives (Fluid Leasable Minerals)

- Provide opportunities for exploration and development of fluid mineral resources on available public lands
- Provide opportunities for exploring, leasing, and developing conventional oil and gas, coal bed natural gas, and geothermal resources while applying the appropriate lease stipulations and conditions of approval to mitigate environmental impacts from development
- Provide opportunities for geophysical (e.g. seismic) exploration for oil and gas subject to the appropriate mitigating measures

Oil and Gas

Federal oil and gas leasing authority for public lands is found in the Mineral Leasing Act of 1920, as amended; and for acquired lands in the Acquired Lands Leasing Act of 1947, as amended. Leasing of federal oil and gas is affected by other acts such as the National Environmental Policy Act of 1969, the National Historic Preservation Act of 1966, FLPMA (1976), the Wilderness Act of 1964, the Endangered Species Act of 1973, as amended, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987. Regulations and other guidance governing federal oil and gas leasing and lease operations are contained in 43 CFR Group 3100, Onshore Operating Orders, Notices to Lessees, and BLM handbooks manuals and instruction memorandums. Regulations governing geophysical exploration are found at 43 CFR 3150.

An oil and gas lease grants the lessee the right to explore for, extract, remove, and dispose of oil and gas deposits that may be found on the leased lands. The lessee may exercise the rights conveyed by the lease, subject to lease terms and any lease stipulations (modifications of the lease), and permit approval requirements.

The terms of existing oil and gas leases cannot be changed by the decisions in this document. When the lease expires, the area would be managed for oil and gas according to the decisions reached in this document.

The BLM planning process determines availability of federal mineral estate lands for oil and gas leasing (Table 2.8).

Table 2.8 Acres of Federal Mineral Estate Available or Not for Oil and Gas Leasing

	Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Acres Available for Oil and Gas Leasing[1]	896,442	659,731	615,435	879,836
No Surface Occupancy	34,145	196,033	70,980	420,126
Timing Limitations	543,078	15,875	134,016	17,116
Controlled Surface Use	81,883	406,720	371,306	398,452
Standard Lease Terms	237,336	41,103	319,133	44,142
Areas Unavailable for Oil and Gas Leasing	61,100	300,907	66,449	60,359
Non-discretionary	28,681	28,681	28,681	28,681
Discretionary	32,419	272,226	37,768	31,678

Note:

[1] Acreages by subcategory were calculated such that each column of subcategories under each alternative adds up to the total available acres for leasing based on the following general concepts where multiple stipulations overlapped: No Surface Occupancy stipulations override and are more restrictive than Timing Limitations, Controlled Surface Use, and Standard Lease Terms. Timing Limitation stipulations override and are more restrictive than Controlled Surface Use and Standard Lease Terms. Controlled Surface Use stipulations override and are more restrictive than Standard Lease Terms. Non-overlapping individual stipulation-specific acreages are displayed by alternative in Chapter 4 in Tables 4-29 through 4-40.

For federal oil and gas where the surface is managed by another federal agency, the BLM would consult with that agency before issuing leases. In areas where oil and gas development may conflict with other resources, the areas may be closed to leasing in accordance with decisions made from this document.

Regulations at part 43 CFR 3100.0-3(d); the Secretary's general authority to prevent the waste and dissipation of public property; and the Attorney General's Opinion of April 2, 1941 (Vol. 40 Op. Atty. Gen 41) allow the BLM to lease lands that are otherwise unavailable for leasing if oil and gas is being drained from such lands. If the unavailable lands were under the jurisdiction of another agency, leasing of such lands would only occur following consultation, and consent if necessary, from the surface managing agency. Unavailable lands for this RMP (refer to table above) would be leased only if a state or fee well is proposed or completed within the same spacing unit, or if the lands are within a producing unit. These lands would be leased with a no surface occupancy and no subsurface occupancy stipulation with no waiver, modification, or exception provisions. There would only be a paper transaction with no physical impacts on the unavailable lands. There would be no exploration or development (drilling or production) within the unavailable lands. After issuance of a lease, the lease would be committed to a communitization agreement and the United States would then receive

revenue in proportion to its acreage interest as it bears to the entire acreage interest committed to the agreements.

Areas where oil and gas development could coexist with other resource uses would be open to leasing under standard lease terms or with added stipulations. Stipulations are a part of the lease only when environmental and planning records show the need for them. Three types of stipulations describe how lease rights are modified: no surface occupancy, timing limitation (seasonal restriction), and controlled surface use (for descriptions, see Leasing Process in the Oil and Gas section of Appendices C and D – Fluid Minerals). Stipulations may be changed by application of waivers, exceptions, or modifications. The decision whether to grant waivers, exceptions, or modifications generally occurs during the Application for Permit to Drill approval process. If the authorized officer determines the change to be substantial, the proposed alternative would be subject to a 30-day public review period. Waivers are a permanent exemption from a lease stipulation. This occurs when the resource does not require the protection of stipulation. Exceptions are granted on a case-by-case basis. Each time the lessee applies for an exception, the resource objective of the stipulation must be met. Modifications are fundamental changes to the provisions of a lease stipulation either temporarily or for the term of the lease.

On Bureau of Reclamation or Corps of Engineers lands, in addition to the resource specific stipulations under each alternative (e.g., wildlife, recreation); stipulations that are recommended by the Bureau of Reclamation would be used (see Oil and Gas section in Appendix C – Fluid Minerals).

Additional information can be provided to the lessee in the form of a lease notice. This notice does not place restrictions on lease operation, but does provide information about applicable laws and regulations, and the requirements for additional information to be supplied by the lessee.

New information may lead to changes in existing resource inventories. New use areas and resource locations may be identified or use areas and resource locations that are no longer valid may be identified. These resources usually cover small areas requiring the same protection or mitigation as identified in this plan. Identification of new areas or removal of old areas that no longer have those resource values would result in the use of the same lease stipulation identified in this plan. These areas would be added to the existing data inventory without a plan amendment. In cases where the changes constitute a change in resource allocation outside the scope of this plan, a plan amendment would be required.

After lease issuance, the lessee may conduct lease operations with an approved permit. Proposed drilling and associated activities must be approved before beginning operations. The operator must file an Application for Permit to Drill or Sundry Notice that must be approved according to (1) lease stipulations, (2) Onshore Oil and Gas Order, and (3) regulations and laws (see Permitting in the Oil and Gas section of Appendix C – Fluid Minerals).

None of the lands within the Wilderness Study Areas (WSA) would be available for oil and gas leasing under any of the alternatives unless they are released from their existing status, at which

point they would be managed under the terms and conditions of the selected alternative identified from this RMP.

Table 2.9 Lease Terms and Stipulations by Alternative

Key
CSU = Controlled Surface Use Stipulation NSO = No Surface Occupancy Stipulation
LN = Lease Notice SLT = Standard Lease Terms
NA = Not Applicable TL = Timing Limitation Stipulation
NL = No Lease
Distances are enumerated and those equal or greater than 100 are feet and those 3 or less are miles. Time periods are month/day

Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
Wildlife				
Black-tailed and White-tailed Prairie Dogs	CSU – Prior to surface-disturbing activities, prairie dog colonies and complexes 80 acres or more in size and containing 5 burrows per acre would be examined to determine the presence or absence of black-footed ferrets.	NSO – Oil and gas leasing, development, and exploration, and geophysical operations would be prohibited within ½ mile of black-tailed or white-tailed prairie dog colonies, active within the past 10 years.	CSU – Oil and gas leasing, development and exploration, and geophysical operations would be allowed with within black-tailed or white-tailed prairie dog colonies with a mitigation plan	NSO – Surface occupancy and use is prohibited within ¼ mile of prairie dog colonies active within the past 10 years.
Potential Black-Footed Ferret Areas	CSU - Surface occupancy or use is subject to the following operating constraints. Prior to surface disturbance, a surface use plan of operations (SUPO) for oil and gas activities must be approved for black-footed ferret reintroduction areas by the authorized officer in consultation with the U.S. Fish and Wildlife Service (USFWS).	CSU - Prior to surface disturbance, prairie dog colonies and complexes 80 acres or more in size would be examined to determine the presence or absence of black-footed ferrets.	Same as B	NSO - Surface occupancy and use is prohibited within ¼ mile of black-footed ferret habitat
Mountain Plover	NSO – Surface use is prohibited within 0.25 mile of active mountain plover nest sites. Disturbance to prairie dog towns would be avoided where possible. Any active prairie dog town occupied by mountain plovers would have no surface use between April 1 and July 31.	NSO – within ½ mile of mountain plover nests.	CSU –mountain plover habitat within ¼ mile.	NSO - Oil and gas surface occupancy and use is prohibited within mountain plover habitat
	TL – No surface use between April 1 and July 31.	NSO only	NSO only	TL - Surface use is prohibited within ¼ mile of mountain plover habitat from April 1 through July 15.
Piping Plover	NSO – Surface occupancy and use is prohibited within ¼ mile of wetlands			

Table 2.9 Lease Terms and Stipulations by Alternative

Key
CSU = Controlled Surface Use Stipulation NSO = No Surface Occupancy Stipulation
LN = Lease Notice SLT = Standard Lease Terms
NA = Not Applicable TL = Timing Limitation Stipulation
NL = No Lease
Distances are enumerated and those equal or greater than 100 are feet and those 3 or less are miles. Time periods are month/day

Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
	identified as piping plover habitat			
Colonial-nesting Waterbirds (Clark's Grebe, American White Pelican, Great Blue Heron, Black-crowned Night-heron, White-faced Ibis, Franklin's Gull, Caspian Tern, Forster's Tern, Common Tern, Black Tern, Double-crested Cormorant)	No similar action	NSO - Surface occupancy and use is prohibited within ¼ mile of waterbird nesting colonies.		
Colonial-nesting Waterbirds (Clark's Grebe, American White Pelican, Great Blue Heron, Black-crowned Night-heron, White-faced Ibis, Franklin's Gull, Caspian Tern, Forster's Tern, Common Tern, Black Tern, Double-crested Cormorant)	No similar action	TL – Surface use is prohibited within ½ mile of waterbird nesting colonies from April 1 through July 15.		
Interior Least Tern	No similar action	NSO – ¼ mile of wetlands identified as Interior Least Tern habitat		
Peregrine Falcon	NSO – 1 mile of peregrine falcon nesting sites.	NSO – 1 mile of peregrine falcon nesting sites.	NSO – ¼ mile of active peregrine falcon nesting sites.	NSO –Surface occupancy and use is prohibited within 1 mile of peregrine falcon nest sites active within the preceding 7 years.
Bald Eagle Nests & Habitat	NSO – within ½ mile of eagle nest sites which have been active within the past 7 years and within eagle nesting habitat in riparian areas.	NSO – within 1 mile of eagle nest sites which have been active in the past 7 years and within eagle nesting habitat in riparian areas.	NSO – within ¼ mile of active eagle nest sites.	NSO – within ½ mile of active and alternate eagle nests (for territories occupied within the last five years) unless the activity complies with USFWS National Bald Eagle Management Guidelines (2007).

Table 2.9 Lease Terms and Stipulations by Alternative

Key
CSU = Controlled Surface Use Stipulation NSO = No Surface Occupancy Stipulation
LN = Lease Notice SLT = Standard Lease Terms
NA = Not Applicable TL = Timing Limitation Stipulation
NL = No Lease
Distances are enumerated and those equal or greater than 100 are feet and those 3 or less are miles. Time periods are month/day

Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
Greater Sage-Grouse Habitats	LN – The lease may in part or in total contain important Greater Sage-Grouse habitats as identified by the BLM either currently or prospectively.	CSU – surface occupancy and use within all identified sage-grouse habitat is subject to operating constraints	LN – The lease may in part or in total contain important Greater Sage-Grouse habitats as identified by the BLM either currently or prospectively.	CSU – surface occupancy and use within all identified sage-grouse habitat is subject to operating constraints
Greater Sage-Grouse Winter Range Site Density	No similar action	CSU – Surface occupancy and use is subject to operating constraints.		
Greater Sage-Grouse Priority Habitat Management Areas (PHMAs)	NSO – within ¼ mile of Greater Sage-Grouse leks	NL – Closed to future oil and gas leasing, exploration and/or development	NSO – within 0.6 miles of Greater Sage-Grouse leks.	NSO – To protect Greater Sage-grouse, a priority species for management, surface occupancy and use is prohibited within Greater Sage-Grouse Priority Habitat Management Areas.
			TL – Surface use would be prohibited from March 1 to June 15 in Greater Sage-Grouse nesting habitat within 2 miles of a lek.	
			CSU – Surface occupancy and use would be subject to the following special operating constraints: surface occupancy and surface disturbance density and mitigation plan.	
Greater Sage-Grouse Restoration Areas (RAs) – Nesting Habitat	NSO – within ¼ mile of Greater Sage-Grouse leks	NSO – within 0.6 miles of Greater Sage-Grouse lek.	NSO – within ¼ mile of Greater Sage-Grouse lek.	NSO – Surface occupancy and use is prohibited within 0.6 miles of Greater Sage-Grouse lek.
		TL – March 1 to June 15 in sage-grouse nesting habitat within 4 miles of a lek	TL – March 1 to June 15 in sage-grouse nesting habitat within 2 miles of a lek	TL – March 1 to June 15 in sage-grouse nesting habitat within 2 miles of a lek.
		CSU – Surface occupancy and use for oil and gas exploration and development would be subject to the following special operating constraints		CSU – Surface occupancy and use for oil and gas exploration and development would be subject to the following special operating constraints

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
		that would maintain Greater Sage-Grouse habitat: surface disturbance density and mitigation plan.		that would maintain Greater Sage-Grouse habitat: surface disturbance density and mitigation plan.
Greater Sage-Grouse Restoration Areas (RAs) – Nesting Habitat *(continued)*	Open to geophysical exploration, subject to the following: • Surface occupancy and use would be prohibited within 0.25 miles of Greater Sage-Grouse leks. (NSO; 4,876 acres) • Surface use is prohibited from March 1 to June 15 in grouse nesting habitat within 2 miles of a lek (TL).	Geophysical exploration would be allowed on existing roads and trails with surface use prohibited from March 1 to June 15 within 4 miles of a lek. (TL)	Geophysical exploration would be allowed if the applicant demonstrates that Greater Sage-Grouse habitat suitability would be maintained.	TL - Geophysical exploration would be allowed on existing roads and trails with surface use prohibited from March 1 to June 15 within 4 miles of a lek.
Greater Sage-Grouse Habitat: General Habitat Management Areas	NSO – within ¼ mile of Greater Sage-Grouse leks	NSO – within 0.6 miles of Greater Sage-Grouse leks	NSO – within ¼ mile of Greater Sage-Grouse leks	NSO – To protect general Greater Sage-grouse breeding activities, surface occupancy and use is prohibited within 0.6 miles of the perimeter of Greater Sage-Grouse leks
	TL – March 1 to June 15 in sage-grouse nesting habitat within 2 miles of a lek (TL).	TL – March 1 to June 15 in Greater Sage-Grouse nesting habitat within 3 miles of a lek.	TL – March 1 to June 15 in Greater Sage-Grouse nesting habitat within 2 miles of a lek.	CSU– To protect nesting Greater Sage-grouse, surface occupancy and use within 2 miles of a lek may be restricted or prohibited. Prior to such activities, a plan to mitigate impacts to nesting Greater Sage-grouse and Greater Sage-grouse nesting habitat would be prepared by the proponent and implemented upon approval by the authorized officer.
Crucial Winter Range (antelope, elk, moose, bighorn sheep, mule deer, whitetail deer, and	No similar action			NSO - Surface Occupancy and use would be prohibited in crucial winter range (antelope, elk, moose, bighorn sheep, mule deer, whitetail deer, and

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
Greater Sage-Grouse)				Greater Sage-Grouse).
Elk Calving	TL – from April 1 to June 15 within established spring calving range for elk.	TL – from April 1 to July 1 within established big game parturition habitat.	CSU – within big game parturition habitat.	CSU - Prior to surface occupancy and use a plan would be prepared by the proponent as a component of the APD, Sundry Notice, etc., and approved by the authorized officer in coordination with the state wildlife management agency. The operator would not initiate surface disturbing activities unless the authorized officer has approved the plan, The plan must demonstrate to the authorized officer's satisfaction that the function and suitability of the habitat would not be impaired.
Big Game Winter Range (antelope, elk, moose, bighorn sheep, mule deer, and whitetail deer)	TL –December 1 to March 31 within big game winter range to avoid disturbance of white-tailed deer, mule deer, elk, pronghorn antelope, moose, and bighorn sheep during the winter use season.	TL – December 1 to March 31 within CAPS SCORE 1 and 2 areas of big game winter range. CSU – The following special operating constraints apply in big game winter habitat: surface occupancy and surface disturbance density and / or mitigation plan.	TL – December 1 to March 31 within CAPS SCORE 2 areas of big game winter range to avoid disturbance of white-tailed deer, mule deer, elk, pronghorn antelope, moose, and bighorn sheep during the winter use season.	CSU - Prior to surface occupancy and use a plan would be prepared by the proponent as a component of the APD, Sundry Notice, etc. and approved by the Authorized Officer in coordination with the state wildlife management agency. The operator would not initiate surface-disturbing activities unless the Authorized Officer has approved the plan. The plan must demonstrate to the Authorized Officer's satisfaction the function and suitability of the habitat would not be impaired.
Bighorn Sheep Range And Bighorn Sheep Lambing and Winter	NSO – designated bighorn sheep lambing and winter range	NSO – designated bighorn sheep lambing and winter range	CSU – bighorn sheep habitat	NSO – designated bighorn sheep lambing and winter range

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
Range				Bighorn Sheep Range: CSU - Prior to surface occupancy and use a plan shall be prepared by the proponent of the APD, Sundry Notice, etc., and approved by the authorized officer in coordination with the state wildlife management agency. The operator shall not initiate surface disturbing activities unless the authorized officer has approved the plan. The plan must demonstrate to the authorized officer's satisfaction the function and suitability of the habitat would not be impaired
Raptor Nests (SSS) (Golden Eagle, Northern Goshawk, Ferruginous Hawk, Red-tailed hawk, Sharp-shinned Hawk, Swainson's Hawk, Prairie Falcon, Merlin, Osprey, Burrowing Owl, Long-eared Owl, Short-eared Owl)	TL – March 1 to August 1 within ½ mile of raptor nest sites which have been active the past 2 years.	NSO – within ½ mile of raptor nest sites which have been active in the past 7 years	NSO – within ¼ mile of raptor nest sites which have been active in the past 7 years.	NSO - Surface occupancy and use is prohibited within ¼ mile of raptor nest sites active within the preceding 7 years. TL - Surface occupancy and use is prohibited within ½ mile of active raptor nest sites from March 1 through July 31.
Sharp-tail Grouse and greater prairie chicken Leks	NSO – within ¼ mile of sharp-tail grouse leks.	NSO – within 2 miles of sharp-tailed grouse leks.	CSU – within ¼ mile of sharp-tailed grouse lek sites and nesting habitats. CSU – for noise levels and minimizing disturbance levels around leks and nesting habitat	NSO - Surface occupancy and use is prohibited on and within ½ mile of the perimeter of leks.
Sharp-tail Grouse and greater prairie chicken Nesting Zone	TL – March 1 to June 15 in sharp-tailed grouse nesting habitat within 2 miles of a lek.	NSO – within 2 miles of sharp-tailed grouse leks.	TL – March 1 to June 15 in sharp-tailed grouse nesting habitat within ½ mile of a lek.	TL - Surface use is prohibited within 2 miles of the perimeter of sharp-tailed grouse and/or greater prairie chicken

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
				leks from April 1 through July 15.
Sprague's Pipit	LN	TL - Surface-disturbing and disruptive activities would be avoided from April 15 through July 15 in Sprague's pipit habitat TL - Surface use for oil and gas exploration, (including geophysical exploration) is prohibited from April 15 through July 15 in Sprague's pipit habitat.		
Threatened & Endangered Species	LN	LN	LN	LN
Migratory Birds	No similar action	LN	LN	LN
State Lands	No similar action	NL - Where federal mineral estate exists, designate all State Wildlife Management Areas, Fishing Access Sites, and State Parks as No Lease areas.	CSU - Oil and gas leasing, development, and exploration would be allowed, if habitat suitability within designated State Wildlife Management Areas, Fishing Access Sites, and State Parks is maintained.	NSO – Surface occupancy and use is prohibited within the State of Montana Wildlife management Areas, Game Ranges, Fishing Access Sites, and State Parks.
Designated Reservoirs with Fisheries	NSO - within ¼ mile of designated reservoirs with fisheries.	NSO - Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ½ mile of designated reservoirs with fisheries.	Same as A	Same as A
Riparian Areas, Wetlands, Floodplains, and Streams	NSO – within riparian areas or wetlands; within 100 year flood plains of major rivers and on water bodies and streams.	NSO –within ¼ mile of riparian areas and wetlands, water bodies, perennial streams, and flood plains of perennial streams.	NSO – within riparian areas and wetlands, water bodies, perennial streams, and flood plains of perennial streams.	NSO - Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within riparian areas and wetlands, water bodies, perennial and intermittent streams, and floodplains of perennial streams. CSU - Surface occupancy and use

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
				would be controlled within 300 feet of riparian and/or wetland areas. Surface-disturbing activities would require a plan with design features that demonstrate how all actions would maintain and/or improve the functionality of riparian and wetland areas, The plan would address: (a) potential impacts to riparian and wetland resources, (b) mitigation to reduce impacts to acceptable levels (including timing restrictions), (c) post project restoration, and (d) monitoring (the operator must conduct monitoring capable of detecting early signs of change in riparian and/or wetland conditions.
Red and Blue Ribbon Streams/YCT	No similar action	NSO – within ½ mile of Blue and Red Ribbon streams, YCT conservation/core populations, YCT streams with restoration potential, and YCT suitable habitat.	NSO – within ¼ mile of Class I (Blue Ribbon) streams and YCT populations.	NSO – within ½ mile of Class I (Blue Ribbon) streams and YCT core populations.

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
Cultural & Paleontological Resources				
Cultural Resources	NSO – The following sites include a small buffer zone for protection from oil and gas actions: • Steamboat Butte • Bruder-Janich Site • Paul Duke Site • Demi-John Flat NR District • Young's Point • Bighorn Mouth North Cliffs Rock Art Site • Gyp Springs Site • Hoskins Basin Archaeological District	NL – • Steamboat Butte • Bruder-Janich Site • Paul Duke Site • Demi-John Flat NR District • Bighorn Mouth North Cliffs Rock Art Site • Gyp Springs Site • Hoskins Basin Archaeological District	NSO – on the following sites, districts, or areas: • Steamboat Butte • Bruder-Janich Site • Paul Duke Site • Demi-John Flat NR District • Bighorn Mouth North Cliffs Rock Art • Gyp Springs Site • Hoskins Basin Archaeological District • Bandit Site	NSO – on the following sites, districts, or areas: • Steamboat Butte • Bruder-Janich Site • Paul Duke Site • Demi-John Flat NR District • Bighorn Mouth North Cliffs Rock Art • Gyp Springs Site • Hoskins Basin Archaeological District • Bandit Site
	NSO – within sites or areas designated for conservation use, public use or socio-cultural use	NSO within National Register eligible sites or areas designated for conservation use, public use, scientific use, or traditional use.	NSO within National Register Eligible sites or areas designated for conservation use, public use, scientific use, or traditional use, including those areas determined to be sacred sites, traditional cultural properties, and/or designated for traditional use.	NSO within National Register Eligible sites or areas designated for conservation use, public use, scientific use, or traditional use, including those areas determined to be sacred sites, traditional cultural properties, and/or designated for traditional use
	No Similar Action	NSO ½ mile Bridger Cut-Off Trail Meeteetse Trail	CSU - ¼ mile Bridger Cut-Off Trail Meeteetse Trail	CSU – ¼ mile Bridger Cut-Off Trail Meeteetse Trail
Historic Properties (NHPA, AIRFA, NAGPRA, EO 13007)	LN –	LN	LN	LN
Sacred sites and Historic Properties	LN	LN	LN	LN

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
Cultural Inventories	LN	LN	LN	LN
Traditional Cultural Properties and Traditional Use Areas	No similar action	NSO – within ½ mile of designated TCPs or designated traditional use areas.	NSO – within ½ mile of designated TCPs or designated traditional use areas.	NSO – within ½ mile of designated TCPs or designated traditional use areas.
Lake Mason NWR	LN - Cultural sites are located in the _____, Sec. __ T. ___ R. . This parcel is located adjacent to the Lake Mason National Wildlife Refuge. In accordance with 43 CFR 3101.1-2, additional mitigation may be required in regard to exploration and development.	LN- Surface occupancy and use is subject to the following operating constraints: Cultural sites are located in the _____, Section___ T. ___., R. ___. This parcel is located adjacent to the Lake Mason National Wildlife Refuge. In accordance with 43 CFR 3101.1-2, additional mitigation may be required in regard to exploration and development.	LN - Surface occupancy and use is subject to the following operating constraints: Cultural sites are located in the _____, Section___ T. ___., R. ___. This parcel is located adjacent to the Lake Mason National Wildlife Refuge. In accordance with 43 CFR 3101.1-2, additional mitigation may be required in regard to exploration and development.	LN – Surface occupancy and use is subject to the following constraints: Cultural sites are located in the _____, Sec. __ T. ___ R. . This parcel is located adjacent to the Lake Mason NWR and may contain cultural sites. In accordance with 43 CFT 3101.1-2 additional mitigation may be required in regard to exploration and development.
Cemeteries	No similar action	NSO – Surface occupancy and use is prohibited for oil and gas exploration and development within and for a distance of 300 feet from the boundary of a cemetery.		
Paleontological Resources	NSO – Surface occupancy and use is prohibited within designated paleontological sites.	NSO – Surface occupancy and use is prohibited within designated or recorded paleontological sites.		
	LN - For oil and gas leasing, exploration, and development occurring within PFYC Class 3 or higher, a lease notice would be attached. Assessment, inventory, and/or mitigation would be required based on PFYC class.			
Vegetation, Wetlands, and Water Quality				
Riparian Areas and Floodplains	NSO – Surface occupancy and use is prohibited within riparian areas, 100 year floodplains of major rivers, and on water bodies and streams.	NSO – within ¼ mile of riparian areas and wetlands, water bodies, perennial streams, and flood plains of perennial streams.	NSO - within riparian areas and wetlands, water bodies, perennial streams, and flood plains of perennial streams.	NSO - Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within riparian areas and wetlands, water bodies, perennial and intermittent streams, and floodplains of

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
				perennial streams. CSU - Surface occupancy and use would be controlled within 300 feet of riparian and/or wetland areas. Surface-disturbing activities would require a plan with design features that demonstrate how all actions would maintain and/or improve the functionality of riparian and wetland areas, The plan would address: (a) potential impacts to riparian and wetland resources, (b) mitigation to reduce impacts to acceptable levels (including timing restrictions), (c) post project restoration, and (d) monitoring (the operator must conduct monitoring capable of detecting early signs of change in riparian and/or wetland conditions.
State-designated Source Water Protection Areas	No similar action			NSO - Surface occupancy and use is prohibited within State-designated Source Water Protection Areas
Sensitive Plant Species	No similar action	NSO – within ¼ mile of special status plant species or populations.	CSU – inventory required prior to oil and gas leasing, exploration and/or development surface disturbing activities.	CSU – inventory required prior to oil and gas leasing, exploration and/or development surface disturbing activities.
Sensitive Soils and Rock Outcrops	CSU Slopes > 30%	NSO Slopes > 30%	CSU Slopes > 30%	CSU - all sensitive soils NSO - all badland and rock outcrop areas

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
Invasive Species and Noxious Weeds	No similar action	CSU - Surface occupancy or use is subject to the following operating constraints. The following noxious weed(s) has been identified within the boundaries of the lease parcel:	CSU - Surface occupancy or use is subject to the following operating constraints. The following noxious weed(s) has been identified within the boundaries of the lease parcel:	CSU – Surface occupancy and use is subject to the following operating constraints: The following invasive species and/or noxious weeds have been identified within the boundaries of the lease parcel:
		LN - There may be noxious weeds present on the lease parcel. Prior to any surface disturbing activities, the operator would be responsible for providing an Integrated Weed Management (IWP) plan. The operator would be responsible for the cost of the treatment and monitoring throughout the duration of the lease as long as oil and gas activities are occurring on the lease.	LN - There may be noxious weeds present on the lease parcel. Prior to any surface disturbing activities, the operator would be responsible for providing an Integrated Weed Management (IWP) plan. The operator would be responsible for the cost of the treatment and monitoring throughout the duration of the lease as long as oil and gas activities are occurring on the lease.	LN - There may be noxious weeds present on the lease parcel. Prior to any surface disturbing activities, the operator would be responsible for providing an Integrated Weed Management (IWP) plan. The operator would be responsible for the cost of the treatment and monitoring throughout the duration of the lease as long as oil and gas activities are occurring on the lease.

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
Visual Resources, Caves and Karsts, Lands with Wilderness Characteristics, Recreation, and Travel Management				
VRM II, III, & IV	CSU – VRM Class II	CSU – VRM Class II – IV	CSU – VRM Class II	CSU – VRM Class II – IV
Caves & Karst	No similar action	NSO – within ½ mile of cave entrances	CSU – Cave and Karst Areas	CSU – Cave and Karst Areas
Lands with Wilderness Characteristics	Manage 1,925 acres (adjacent to Pryor Mountain and Big Horn Tack-On WSAs) as lands with wilderness characteristics (no lease).	NL	NL	NL
SRMAs	NSO – developed recreation areas and areas receiving high concentrated use.	NSO – SRMAs: • Sundance Lodge Recreation Area • Four Dances Natural Area ACEC • Shepherd Ah-Nei Recreation Area • Acton Recreation Area • Bundy Island • South Hills TMA • Pryor Mountain TMA	CSU – in developed recreation areas and SRMAs.	NSO – SRMAs: • Sundance Lodge Recreation Area • Four Dances Natural Area ACEC • Shepherd Ah-Nei Recreation Area • Acton Recreation Area • Yellowstone River Corridor: ½ mile corridor
	No similar action		No similar action	CSU – SRMAs: • Asparagus Point • Pryor Mountain TMA • Horsethief TMA • South Hills TMA
Travel Management	CSU – Oil and gas activities would comply with all motorized vehicle use and travel plan restrictions, including seasonal restrictions and areas closed to motorized travel			
Realty, Cadastral Survey, and Lands				
LWCF Lands	No similar action	NSO – Surface occupancy and use is prohibited for oil and gas exploration and development on lands acquired with Land and Water Conservation Funds.		
Unincorporated Towns and Residences	NSO – 300 feet from human occupied buildings	NSO – Surface occupancy and use is prohibited for oil and gas exploration and development within and 500 feet from unincorporated towns or human occupied residential structures.		
Setback from Human	No similar action	LN –Facilities not allowed within 500 feet of human occupied residences.		

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
Occupied Residences Requirement				
Land Use Authorizations	LN – The specifically authorized acreage for land use should be avoided by oil and gas exploration and development activities. All authorized surface land uses are valid claims to prior existing rights unless the authorization states otherwise.			
Minerals				
Coal Leases	NSO - Surface occupancy and directional drilling are prohibited within the boundaries of existing coal leases.	NSO - Surface occupancy and directional drilling are prohibited within the boundaries of existing coal lease	NSO - Surface occupancy and directional drilling are prohibited within the boundaries of existing coal lease	NSO – Surface occupancy and use is prohibited for oil and gas exploration and development within the boundaries of existing coal leases.
Special Designations				
Pompeys Pillar National Monument	NL	NL	NL	NL
Pompeys Pillar ACEC (Excluding the NM)	NSO	NL	NSO	NSO
Bridger Fossil Area ACEC	NL	NL	NSO (no WEMS)	NL
East Pryor ACEC	NL	NL (COAs for existing leases)	NL	NL
Four Dances Natural Area ACEC	NL	NL (COAs for existing leases)	NL	NL
Grove Creek ACEC	SLT	NL (COAs for existing leases)	NSO (COAs for existing leases)	
Meeteetse Spires ACEC	NL (965 acres)			
Petroglyph Canyon ACEC	NL		NSO	NL
Pryor Foothills Research Natural Area (RNA) ACEC	SLT	NL	NSO – known plant sites. Inventory prior to surface disturbing activities (CSU).	NSO – ¼ mile buffer known sensitive plant sites. CSU - Inventory prior to surface

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Resource	Alt A (No Action Alternative)	Alt B	Alt C	Alt D (Proposed Alternative)
				disturbing activities. (Note: All lands in this ACEC east of Crooked Creek Road are within an lands w/ wilderness characteristics unit and are No Lease)
Stark Site ACEC	NSO	NSO	NSO	NSO
Weatherman Draw ACEC	NSO (no WEMs)	NL	NSO (No WEMS)	NL (4,986 acres). NSO (7,291 acres) (No WEMS)
Greater Sage-Grouse Habitat ACEC	No ACEC Designation See page 2-44 (Greater Sage-Grouse –Priority Habitat Management Areas (PHMAs) for lease terms and stipulations by alternative	NL – Closed to future oil and gas leasing, exploration and/or development	No ACEC Designation See Greater Sage-Grouse – Priority Habitat Management Areas (PHMAs) for Habitat for lease terms and stipulations by alternative	No ACEC Designation See Greater Sage-Grouse –Priority Habitat Management Areas (PHMAs) for lease terms and stipulations by alternative
National Historic Trails	No similar action	NSO – within ½ mile of the L&C and NP NHTs.	CSU – within ½ mile of the L&C and NP NHTs with stipulations.	NSO – within ½ mile of the L&C and NP NHTs.
Wild and Scenic Rivers	No similar action	NL – WSR-suitable segments.	NSO – within ¼ mile of WSR- eligible.	NSO – within ½ mile of WSR-eligible and suitable segments.
Pryor Mountain Wild Horse Range	NL			
Wilderness Study Areas	NL			

Note:
a. Refer to Recommended COAs for Existing Leases in Appendix D

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Air				
Air resource goals are to ensure authorizations and management activities comply with local, state, and federal air quality regulations and requirements, including compliance with the National Ambient Air Quality Standards (NAAQS) and under the Clean Air Act (amended 1990), the Montana Ambient Air Quality Standards (MAAQS), and the Wyoming Ambient Air Quality Standards (WAAQS). The BLM authorized activities would also be managed to reduce air quality and climate change impacts by incorporating management actions to reduce emissions of criteria pollutants and hazardous air pollutants.				
Air – Desired Outcomes (Goals and Objectives)				
• Ensure authorizations and management activities comply with local, state, and federal air quality regulations and requirements. • Manage BLM authorized activities to maintain compliance with the NAAQS, MAAQS, and the Montana State Implementation Plan. • Reduce air quality and air quality related value (AQRV) impacts, including visibility and acid deposition, by including technically and economically feasible management actions to reduce emissions of criteria and hazardous air pollutants.				
Air – Management Common to All Alternatives				
	The BLM authorized activities would stipulate requirements to reduce fugitive dust emissions from construction activities and sites with surface disturbance.			
	The BLM authorized activities would stipulate requirements to reduce fugitive dust emissions from travel on high-traffic unpaved roads.			
	The BLM authorized activities would stipulate engine and stationary source emission control requirements needed to ensure compliance with NAAQS, MAAQS, WAAQS, and the Montana SIP.			
	If unacceptable air quality or AQRV degradation trends are identified and are determined to be caused by BLM authorized activities, additional emission control would be included in the BLM authorized activities.			
	The BLM would coordinate smoke management with the Montana-Idaho Airshed Management Group, the Montana Department of Environmental Quality (MDEQ), and the Yellowstone County Air Quality Unit in Yellowstone County.			
	Management of the non-attainment area(s) within the planning area would continue to be the responsibility of the State of Montana (Map 4).			
Climate Change				
The BLM goals and objectives for addressing climate change within the Billings Field Office are to reduce GHG emissions and to manage diverse, healthy landscapes to be resilient to stressors, including climate change, and incorporate adaptive, flexible management actions to adjust to changing climatic conditions. Adapting management, to reflect emerging science, projections, and impacts of climate change, allows the BLM to adjust management to best meet the challenges of climate change and is useful for complex processes and where potential impacts are large and could affect multiple resources. Adaptive management strategies are iterative processes where monitoring and assessment refine management. This document is based on current scientific knowledge and understanding, which in the case of climate change, is still emerging. Adaptive management provides for new information to be evaluated and incorporated into project level management decisions, BMPs, mitigation and the decision-making process.				
Climate Change – Desired Outcomes (Goals and Objectives)				
• For oil and gas activities, reduce GHG emissions on a unit-production basis. • Evaluate the observed and anticipated ling-term dynamic of climate change and reduce GHG emissions from projects when feasible. • Provide for diverse, healthy ecosystems that are resilient to stressors, such as climate change. • Provide for flexible, adaptable management that allows for timely responses to changing climatic conditions. • Maintain or improve the ability of the BLM lands to reduce (sequester) atmosphere GHGs.				

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Climate Change – Management Common to All Alternatives				
	Promote vegetative capture and storage of carbon, with consideration for resource objectives, by using Rangeland Standards and Montana Forestry/Rangeland BMP guidelines at the project planning and implementation level.			
	Identify opportunities for geophysical carbon sequestration on federal lands where federal mineral ownership exists as outlined in national guidance.			
	The BLM authorized activities would consider the use of BMPs to reduce emissions of GHGs.			
	Priority would be placed on actions such as: enhanced energy efficiency, use of lower GHG-emitting technologies and/or renewable energy, planning for carbon capture and sequestration, and the capture or beneficial use of fugitive methane emissions.			
	Adjust the timing of BLM-authorized activities as needed to accommodate long-term changes in seasonal weather patterns, while considering the impacts to other resources and resource uses.			
Soil				
The BLM goals for the management of soil resources within the Billings Field Office are to maintain or improve overall soil health and productivity. To accomplish this, the Billings Field Office proposes to implement a variety of management activities that review and/or restrict various land and resource uses that have the potential to inhibit soil health and watershed stability. Actions specific to soil resource uses are listed below, by alternative and are primarily focused on the severity of the slope where land use authorizations may occur, cross referenced by the known soil characteristics that occur on any given site. It is important to note that the overall goal of watershed health is directly related to the health of soils and there are many management actions under other resource areas that are designated to benefit soil resources (grazing management, vegetation management, forestry, etc.). Those actions listed below under the "Management Common to All Alternatives" form the basis for the soils management program. Those individual management actions within the various alternatives consider different levels of restrictions that may impact other resource uses.				
Soil – Desired Outcomes (Goals and Objectives)				
• Maintain or improve soil health and productivity (e.g., chemical, physical, and biotic properties) by implementing Standards for Rangeland Health and other soil protection measures. • Minimize accelerated soil erosion and compaction and maintain surface soil water infiltration based on site specific conditions. • Manage BLM-authorized activities to minimize soil mass movement (primarily from accelerated water/wind erosion) resulting from fire, above-ground disturbances, and accelerated stream bank erosion. • Manage soil resources to: ▶ Prevent or minimize accelerated soil erosion ▶ Prevent or minimize flood and sediment damage, as needed ▶ Establish desirable plant communities, maintain existing desirable vegetative ground cover composition consistent with the ecological site characteristics, and sustain other ground cover including biotic crusts and litter to increase or maintain surface soil stability and nutrient cycling. ▶ Manage BLM-authorized activities to minimize sediment delivery to creeks, streams, and standing bodies of water (lakes, ponds, reservoirs, etc.).				
Soil – Management Common to All Alternatives				
	BLM-authorized surface-disturbing activities would include plans for reclamation. Site-specific reclamation actions should reflect the complexity of the project, environmental concerns, and the reclamation potential of the site, giving consideration to soils susceptible to erosion and compaction when assessing projects.			
	The Standards for Rangeland Health would be used to assess compaction and erosion issues.			
	Respond in a timely manner to assess soil and mitigate potential soil damage after wildland or prescribed fire, in accordance with BLM Emergency Stabilization and Rehabilitation standards.			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Identify opportunities to construct water flow, sediment control and watershed stabilization projects in partnership with local, state, and federal programs.			
	Soil – Management Actions by Alternative			
	No current management decision provided.	Ground-disturbing authorizations would not be allowed in areas where erosion would not be effectively controlled or mitigated.	Ground-disturbing authorizations would be allowed in areas where erosion would be effectively controlled or mitigated with a BLM-approved design plan.	Same as C.
	Mitigate impacts of logging by prohibiting wheeled or tracked equipment operation on sustained slopes greater than 35% and re-seeding of grasses and forbs on skid trails, landings, and roads.	Surface disturbing activities would not be allowed on fragile soils with, steep slopes >30%, and soils with low reclamation potential and highly erodible characteristics. Use Rangeland Health Standards and BMPs to assess and mitigate disturbance of soils (e.g., erosion, re-vegetation, fiber mats and other restoration measures, etc.).	Surface disturbing activities would not be allowed on soils with slopes >45% or fragile soils with low reclamation potential and highly erodible characteristics Use Rangeland Health Standards and BMPs to assess and mitigate disturbance of soils (e.g., erosion, re-vegetation, fiber mats and other restoration measures, etc.).	Surface disturbance on slopes >25%, soils with low reclamation potential, and highly erodible characteristics would be avoided whenever possible. If disturbance could not be avoided an approved mitigation and reclamation plan would be required prior to activities taking place. Use Rangeland Health Standards and BMPs to assess and mitigate disturbance of soils (e.g., erosion, re-vegetation, fiber mats and other restoration measures, etc.).
	Mitigate impacts on slopes >30% for oil and gas leasing and development (CSU)	No surface occupancy on slopes >30% for oil and gas development and leasing (NSO).	Same as A	Mitigate impacts on sensitive soils for oil and gas leasing and development (CSU) Oil and gas surface occupancy and use is prohibited on badlands and rock outcrop. (NSO)
	No current management decision provided	Require engineering design, geologic analysis, and mitigation planning when considering activities in areas that are prone to slumping or instability.	Use BMPs and Rangeland Health Standards at the project level to assess and mitigate impacts to fragile and unstable soils prone to slumping.	Same as Alternative C.

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Water				
The BLM goals for water resources are primarily driven by compliance with applicable federal and state water quality standards, aiming to protect water quality for municipal, residential, industrial, agricultural, recreational, and resource benefit while providing multiple use opportunities for public lands. The actions listed below focus on restrictions to BLM authorized activities to protect water quality by maintaining or restoring the chemical, physical, and biological integrity of water resources. These proposed actions accomplish this goal through promoting proper drainage and watershed health by maintaining riparian functionality and minimizing surface disturbance to deter excessive erosion and maintain stream channel and upland morphological conditions that can fully support beneficial uses. Cooperating with MT DEQ to develop and monitor TMDL plans is an essential action necessary to maintain or improve water quality, stipulated by the Clean Water Act. The "Management Common to All Alternatives" section is the baseline of actions used to meet the described goals, while the actions specific to each alternative offer various degrees of protection that may impact other resource uses. The impacts to other resources are analyzed in Chapter 4 of this document.				
Water – Desired Outcomes (Goals and Objectives)				
• Maintain and/or improve surface water and groundwater resources, maintain compliance with applicable federal and state water quality standards, and improve water quality where practical within the scope of the BLM's authority • Restore and/or maintain the chemical, physical, and biological integrity of water resources to protect designated beneficial uses and achieve water quality standards. • Minimize erosion and subsequent sedimentation for improved stream and watershed health • Maintain or improve morphological conditions to a stable state that can fully support beneficial uses • Protect water quality for municipal, industrial, agricultural, recreation, and residential purposes by adopting protective measures to meet federal, tribal, state, and local water quality requirements • Floodplains are properly functioning allowing for aquifer recharge, wildlife habitat, and flood water retention (Map 8) • Stream channel conditions are representative of the site capacity and dimension and moderate flows to allow floodplain aquifer recharge and safeguard floodplains • Secure and protect water rights for beneficial uses on the BLM administered lands to ensure water availability to the BLM authorized uses and programs				
Water – Management Common to All Alternatives				
	BLM would participate in the development, implementation, and monitoring of water quality restoration plans/TMDL plans.			
	Use Rangeland Health guidelines and other management strategies to meet the Standards for Rangeland Health (Standards 2, 9 &12).			
	Use BMPs and other practical management strategies to meet water quality standards set forth in rules/laws of federal, tribal, state, and local agencies.			
	Acquire in-stream water rights where appropriate, to ensure water availability for multiple-use management and proper functioning riparian and upland areas.			
	Cooperate with Montana State DEQ and local communities to implement Source Water Protection Programs (SWPPs) and preserve source water.			
Water – Management Actions by Alternative				
	No current management decision provided	Mitigation of surface-disturbing activities would be applied where needed to minimize impacts of human activities on riparian, water and floodplain resources, consistent with the stipulations identified for oil and gas development in this section. Mitigation measures would be applied during activity level planning if an on-site evaluation of the project area indicates the presence of these resources. Exceptions may be granted by the authorized officer, if an environmental review demonstrates that effects could be mitigated to an acceptable level or portions of the area can be occupied without affecting a particular habitat. Exceptions may also be granted where the short-term effects are mitigated by the long-term benefits (e.g., prescribed fire, wildlife monitoring, forest health treatments, and habitat restoration). As defined in the Glossary, surface-disturbing and disruptive activities would not prohibit all activities or authorized uses. For example, emergency activities (e.g., fire suppression, search and rescue), rangeland monitoring, routine maintenance associated with an approved		

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		authorization, dispersed recreational activities (e.g., hunting, hiking), and livestock grazing are not considered surface-disturbing or disruptive activities.		
	No similar action	Oil and gas surface occupancy and use is prohibited within State-designated Source Water Protection Areas (NSO)		
	Stabilize watershed conditions where grazing management or range condition is contributing to excessive erosion. Use Rangeland Health Standards and Guidelines and BMPs to assess and mitigate impacts in areas where grazing or range condition is contributing to excessive erosion.	Restrict or limit BLM-authorized activities that contribute to deteriorating watershed conditions and/or excessive erosion.	Same as Alternative A	Restrict or limit BLM-authorized activities that contribute to deteriorating watershed conditions and/or excessive erosion. Use Rangeland Health Standards and Guidelines and BMPs to mitigate impacts from activities that are contributing to excessive erosion.
	No current management decision provided.	Close and reclaim roads where runoff contributes to accelerated decline in water quality and/or habitat.	Seasonally close roads where runoff contributes to accelerated decline in water quality and/or habitat.	Monitor route conditions and temporarily/permanently close roads and/or apply mitigation measures where runoff contributes to accelerated decline in water quality and/or habitat, and/or reclaim.
	Any allowed discharge of oil and gas-produced water from point sources from public lands would be in compliance with Montana DEQ requirements.	Prohibit disposal of new surface discharge of oil and gas produced water into streams or other flow-connected surface features on BLM-administered land.	Avoid the discharge of oil and gas-produced water from point sources to public lands, including stream channels and uplands, as a means of disposal. Any allowed discharge would be in compliance with Montana DEQ requirements.	Same as Alternative C
	Oil and gas leasing and development would only be allowed with an NSO stipulation on riparian areas, wetlands, water bodies, and 100-year flood plains of major rivers.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ¼ mile of riparian areas and wetlands, water bodies, perennial streams, and flood plains of perennial streams.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within riparian areas and wetlands, water bodies, perennial streams, and flood plains of perennial streams.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within riparian areas and wetlands, water bodies, perennial and intermittent streams, and floodplains of perennial streams. (NSO) Surface occupancy and use would be controlled within 300 feet of riparian and/or wetland areas. Surface-disturbing activities would require a plan with design features that demonstrate how all actions would maintain and/or improve the functionality of riparian and wetland areas, The plan would address: (a) potential impacts to riparian and wetland resources, (b) mitigation to reduce impacts to acceptable levels (including timing

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				restrictions), (c) post project restoration, and (d) monitoring (the operator must conduct monitoring capable of detecting early signs of change in riparian and/or wetland conditions. (CSU)
Vegetation: Forests and Woodlands				
The BLM would manage the public forests and woodlands to maintain and enhance the health, productivity, and biological diversity of these ecosystems. A balance of natural resource benefits would be provided to present and future generations. The management of forest and woodland resources would be consistent with the principles of multiple use and sustained yield. The Federal Land Policy and Management Act of 1976 (FLPMA) directs the BLM to prepare interdisciplinary land use plans based on the principles of multiple-use and sustained yield. The ecosystem management concept is at the core of FLPMA and the basis for all forestry activities in the BLM. All forest management actions would meet or exceed the Montana Streamside Management Zone (SMZ) law and Water Quality Best Management Practices for Montana Forests (BMPs) to ensure the protection of soil, water, riparian, and fisheries resources. The BLM's forestry program promotes forest and woodland communities that are healthy, resilient, and vigorous. Forestland mosaics are managed for a diversity of stand structures and species components that complement other resource values, including but not limited to recreation, wildlife, rangelands, fisheries, and wood fiber production.				
Vegetation: Forests and Woodlands – Desired Outcomes (Goals and Objectives)				
• Restore and/or maintain the health and productivity of public forests and woodlands to provide a balance of forest and woodland resource benefits to current and future generations. • Manage forests and woodlands, considering factors such as species, density, canopy cover, age class, and stand health and understory components, to restore vitality, health, and diversity. • Promote forest vegetation recovery on forested lands after wildfire events. • Use fire and fuels treatments as an integrated approach to meet forest health objectives. • Return forests toward a more natural forest condition class and fire regime by implementing treatments that move forest conditions toward Fire Regime Condition Class I (FRCC1). • Natural disturbance regimes would be maintained or mimicked so that plant communities are resilient to climate change and periodic outbreaks of insects, disease, and wildfire. • Manage quaking aspen stands to promote vigor and resilience and to promote expansion of its current range. • Manage coniferous and deciduous forests to promote vigor and resilience. • Manage forests and woodlands to meet or exceed the standards identified in BLM's Standards for Rangeland Health (Standards 1 and 5)				
Vegetation: Forests and Woodlands – Management Common to All Alternatives				
	An inventory and health assessment of forested stands within the planning area would be completed during the life of the plan, as budget and other priorities allow.			
	Monitor forest health indicators, including populations of insects, and apply forest management methods which promote the appropriate level of stocking and function based on the forest type.			
	Manage vegetation structure, density, species composition, patch size, pattern, and distribution in a manner which reduces the occurrence of unnaturally large and severe wildfires and forest insect/disease outbreaks. The amount of vegetation to be treated may vary and would be based on inventory and monitoring to meet desired objectives.			
	Treat stands at risk of catastrophic wildfire and epidemic levels of forest insects and/or disease as a high priority.			
	Conduct forest and woodland health management activities using a prescription based on the best available science. At a minimum, prescriptions would require a description of current stand conditions and desired future conditions.			
	Forest management would emphasize forest structures with large trees appropriate to the forest type, snag recruitment, and large diameter trees for cavity nesters where appropriate.			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Use adaptive management strategies that address climate change in order to maintain or enhance forest and woodland ecosystems			
	Vegetation: Forests and Woodlands – Management Actions by Alternative			
	No similar management decision			Remove conifers encroaching into sagebrush habitats. Prioritize treatments closest to occupied sage-grouse habitats and near occupied leks, and where juniper encroachment is phase 1 or phase 2. Use of site-specific analysis and principles like those included in the FIAT report (Chambers et. al., 2014) and other ongoing modeling efforts to address conifer encroachment would help refine the location for specific priority areas to be treated.
	Mechanical harvest (e.g. soil disturbing activities) limited to slopes < 35%, but line or helicopter operations allowed on slopes > 35%. Would allow operations on approx. 68% of forested acres not restricted by WSAs or ACECs.	Wheeled and tracked vehicle operation would not be allowed on sustained slopes greater than 30%. Would allow operations on approx. 60% of forested acres not restricted by WSAs or ACECs. Mechanical harvest (e.g. soil disturbing activities) limited on slopes > 30%, but line or helicopter operations allowed.	Wheeled and tracked vehicle operation would not be allowed on sustained slopes greater than 45%. Would allow operations on approx. 79% of forested acres not restricted by WSAs or ACECs. Mechanical harvest (e.g. soil disturbing activities) limited on slopes > 45%, but line or helicopter operations allowed.	Wheeled and tracked vehicle operation would be avoided on sustained slopes greater than 25% whenever possible. If operations could not be avoided, an approved mitigation and reclamation plan would be required prior to activities taking place. Would allow operations on approx. 60% of forested acres not restricted by WSAs or ACECs. Mechanical harvest (e.g. soil disturbing activities) limited on slopes > 25% without an approved mitigation and reclamation plan in place, but line or helicopter operations allowed.
	No current management decision provided.	Emphasis would be placed on retention and acquisition of forested lands. Disposal, retention, or acquisition of forested lands would consider the values of the forest type, habitat diversity, and potential for carbon sequestration.	Dispose of isolated forested lands where appropriate land/resource values are considered.	Same as Alternative B.
	9,500 acres of forested land would be protected from cutting, except where needed for other resource values. Protective areas include Pryor Mountain WSA, Bighorn Tack-On WSA, Burnt Timber WSA, Bad Canyon,	Same as Alternative A.	Cutting for density management, forest health, and fuels management would be allowed unless otherwise restricted (e.g., WSAs, ACECs, etc.). Removal of large trees would be allowed on forested lands	Cutting for density management, forest health, and fuels management would be allowed unless otherwise restricted (e.g., WSAs, ACECs, etc.). Large trees would be retained in numbers and species as

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Young's Point, Asparagus Point, Shepherd Ah-Nei and Acton.		consistent with wildlife requirements and other resources values.	appropriate for the forest type and successional stage, consistent with wildlife requirements and other resource values.
Vegetation: Rangelands				
The goal of the vegetation management program is to manage vegetative resources that maintain a diversity of ecological conditions while providing for a variety of multiple uses that are based on sound biological principles and the best available science. The BLM partners with other natural resource management agencies to provide sound ecological management of rangeland resources, implementing a variety of management actions that regulate resource uses or activities that have the potential to degrade or enhance rangeland habitats. The actions specific to vegetation resource management are listed below, by alternative. These actions primarily focus on varying degrees of ground disturbance in sagebrush dominated communities and crested wheatgrass monocultures. These actions would guide the authorization of BLM activities, ensuring the maintenance or enhancement of rangelands resources. Actions under "Management Common to All Alternatives", sets the basis for vegetation management, while those actions in various alternatives provides a range of levels of manipulation that may impact other resource uses. Some actions associated with other resources (soils, water, wildlife, vegetative communities, etc.) benefit rangeland resources by concentrating on rangeland health. "Rangeland Health" is the minimum ecological standard, independent of the rangeland's use and how it is managed. If rangeland health is protected, a variety of uses could be appropriate for any particular rangeland. For more information on rangeland health standards, see Appendix I.				
Vegetation: Rangelands – Desired Outcomes (Goals and Objectives)				
• Manage vegetative resources to maintain a diversity of ecological conditions on rangelands while providing for a variety of multiple uses that are economically feasible, and based on sound biological principles and the best available science. • Manage vegetative communities to restore, maintain or enhance vegetation community health, habitat, composition and diversity to provide a mix of successional stages that incorporate diverse structure and composition in the desired vegetation types. • Maintain, improve, enhance, or restore habitat to facilitate the conservation, recovery, and maintenance of populations of native and desirable nonnative plant and animal species. • Promote recovery and restoration of sagebrush communities after wildfire events.				
Vegetation: Rangelands – Management Common to All Alternatives				
	Manage rangelands to meet health standards consistent with the Standards for Rangeland Health (Standards 1 and 5) and Guidelines for Livestock Grazing Management and apply appropriate guidelines where not meeting the standards.			
	Identify and maintain areas containing high quality native vegetation for use as seed collection sites.			
	Identify priority treatment areas for conifer encroachment, including big game winter range, WUIs, current and historic sagebrush habitat, forest meadows and bighorn sheep habitat.			
	To manage cheatgrass and annual bromes, use the best available vegetation treatments, including but not limited to early spring grazing, prescribed fire, interim farming practices, and herbicide use.			
	Native seed would be used for all restoration and rehabilitation efforts unless site specific objectives dictate otherwise.			
Vegetation: Rangelands – Management Actions by Alternative				
	No similar action			Within Greater Sage-Grouse Priority Habitat Areas, only treatments that conserve, enhance, or restore Greater Sage-Grouse habitat would be allowed. Treatment methods, including prescribed burning and

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				mechanical treatments would be used to eliminate conifer encroachment and stimulate vegetative re-growth in grassland/shrub land habitats; and to reduce fuels, thin under-stories, recycle nutrients, and create small openings in forested vegetation types.
	No similar action			In Priority Habitat Management Areas, the desired condition is to maintain a minimum of 70% of lands capable of producing sagebrush with 10 to 30% sagebrush canopy cover. The attributes necessary to sustain these habitats are described in Interpreting Indicators of Rangeland Health (BLM Tech Ref 1734-6).*
	Prescribed fire/treatment on 6,418 acres of sagebrush for forage enhancement.	Prescribed fire would not be allowed in sagebrush communities. Wildfires would be suppressed in sagebrush communities.	A variety of treatment methods, including mechanical, chemical, biological and prescribed fire (including wildfire), would be used if the treatment would achieve a diversity of habitat components within sagebrush communities.	Same as C.
	Crested wheatgrass (160 acres) would be hayed or mechanically treated to increase forage production, improve range conditions, and reduce erosion.	A target of fifteen percent of crested wheatgrass acres (approximately 4,459 acres) would be converted to native sagebrush/ grassland over the life of the plan. Preferred treatment areas would be areas that are not currently being used in a grazing system to provide early spring grazing and reduce grazing pressure from other areas within a grazing allotment. Priority treatment areas would be in Greater Sage-Grouse PHMAs, RAs and GHMAs.	A target of five percent of crested wheatgrass acres (approximately 1,486 acres) in high density Greater Sage-Grouse population areas would be converted to native sagebrush/grassland over the life of the plan. Preferred treatment areas would be areas that are not currently being used in a grazing system to provide early spring grazing and reduce grazing pressure from other areas within a grazing allotment. Priority treatment areas would be in Greater Sage-Grouse PHMAs, RAs, and GHMAs.	A target of eight percent of crested wheatgrass acres (approximately 2,378 acres) would be converted to native sagebrush/grassland over the life of the plan. Preferred treatment areas would be areas that are not currently being used in a grazing system to provide early spring grazing and reduce grazing pressure from other areas within a grazing allotment. Priority treatment areas would be in Greater Sage-Grouse PHMAs, RAs, and GHMAs.

* Footnote: 70% of the lands capable of producing that level will be

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Vegetation: Riparian and Wetlands				
The BLM goals for the management of riparian areas within the Billings Field Office decision area center on promoting healthy wetland ecosystems, supporting physical processes and natural combinations of vegetation that work together to create stable stream banks, functional floodplains, complex fish and wildlife habitat and high water quality within site potential. Management actions ensure consistency with achieving or maintaining the Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota, and South Dakota (BLM 1997a) and as a minimum, all riparian areas and wetlands are in Proper Functioning Condition (PFC) or where PFC is not obtainable to be at their capability. The PFC is a method for assessing the condition of riparian wetland areas through a consistent approach, considering hydrology, vegetation, and erosion/deposition attributes and processes. The term PFC refers to how well the physical processes of the riparian area are functioning. In addition, Desired Future Conditions (DFCs) would be developed in some alternatives to help enhance riparian conditions beyond PFC. The DFCs can include, but are not limited to, riparian characteristics such as native species diversity and abundance, important in enhancing fish and wildlife habitat as well as riparian functionality.				
Vegetation: Riparian and Wetlands – Desired Outcomes (Goals and Objectives)				
• Riparian and wetland areas would be managed to promote healthy wetland ecosystems, supporting physical processes and natural combinations of vegetation that work together to create stable stream banks, functional floodplains, complex fish and wildlife habitat and high water quality within site potential. • Riparian vegetation would be managed to achieve or sustain desired future conditions (DFCs). The DFCs would be developed by an interdisciplinary team, giving consideration to restoring and/or promoting natural communities and complex riparian conditions valuable to water quality and wildlife habitat. • Invasive species management would focus on restoring native and desired non-native communities to riparian areas to attain DFCs.			
Vegetation: Riparian and Wetlands – Management Common to All Alternatives				
	Forest treatments would comply with the Montana Streamside Management Zone law to protect riparian resources.			
	Manage riparian communities to meet Standards for Rangeland Health (Standard 2) to ensure riparian areas and wetlands are in Proper Functioning Condition (PFC).			
Vegetation: Riparian and Wetlands – Management Actions by Alternative				
	No current management decision provided.	Mitigation of surface-disturbing activities would be applied where needed to minimize impacts of human activities on riparian, water and floodplain resources, consistent with the stipulations identified for oil and gas development in this section. Mitigation measures would be applied during activity level planning if an on-site evaluation of the project area indicates the presence of these resources. Exceptions may be granted by the authorized officer, if an environmental review demonstrates that effects could be mitigated to an acceptable level or portions of the area can be occupied without affecting a particular habitat. Exceptions may also be granted where the short-term effects are mitigated by the long-term benefits (e.g., prescribed fire, wildlife monitoring, forest health treatments, and habitat restoration). As defined in the Glossary, surface-disturbing and disruptive activities would not prohibit all activities or authorized uses. For example, emergency activities (e.g., fire suppression, search and rescue), rangeland monitoring, routine maintenance associated with an approved authorization, dispersed recreational activities (e.g., hunting, hiking), and livestock grazing are not considered surface-disturbing or disruptive activities.		
	No current management decision provided	Riparian areas would be monitored on a prioritized basis. High priority areas would include: • Riparian areas adjacent to fish bearing waters. • Riparian areas with existing cottonwood galleries or potential cottonwood gallery	Riparian areas would be monitored with a scheduled rotation or when needed for grazing permit renewals.	Same as B.

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		habitat • Riparian areas within Greater Sage-Grouse Priority Habitat		
	No current management decision provided	Riparian areas would be managed towards Desired Future Conditions. Desired Future Conditions would be established based on individual resources, as identified.	Riparian areas would be managed to meet rangeland health standards (properly functioning condition).	High priority riparian areas would be managed towards Desired Future Conditions. Other riparian areas would be managed to meet rangeland health standards (properly functioning condition), unless other Desired Future Conditions are appropriate.
	Oil and gas leasing and development would only be allowed with an NSO stipulation on riparian areas or wetlands. NSO within 100 year flood plains of major rivers and on water bodies and streams.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ¼ mile of riparian areas and wetlands, water bodies, perennial streams, and flood plains of perennial streams.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within riparian areas and wetlands, water bodies, perennial streams, and flood plains of perennial streams.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within riparian areas and wetlands, water bodies, perennial and intermittent streams, and floodplains of perennial streams. (NSO) Surface occupancy and use would be controlled within 300 feet of riparian and/or wetland areas. Surface-disturbing activities would require a plan with design features that demonstrate how all actions would maintain and/or improve the functionality of riparian and wetland areas, The plan would address: (a) potential impacts to riparian and wetland resources, (b) mitigation to reduce impacts to acceptable levels (including timing restrictions), (c) post project restoration, and (d) monitoring (the operator must conduct monitoring capable of detecting early signs of change in riparian and/or wetland conditions. (CSU)
	NSO for oil and gas leasing and development and geophysical exploration within ¼ mile of designated reservoirs with fisheries.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ½ mile of designated reservoirs with fisheries.	Same as A	Same as A
	No current management decision provided	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ½ mile of Blue and Red Ribbon streams, and YCT populations	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ¼ mile of Blue Ribbon streams, and YCT	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ½ mile of Blue Ribbon streams, and YCT

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		and YCT suitable habitat (NSO) (Maps 26-28).	populations (NSO) (Maps 26, 27).	populations (NSO) (Maps 26, 27).
	No current management decision provided	Priority riparian habitats would include riparian areas associated with perennial streams, fish bearing streams, cottonwood galleries, and riparian areas within Greater Sage-Grouse Priority Habitat Management Areas (PHMAs)	Priority riparian habitats would include riparian areas associated with YCT populations and suitable recovery habitat. Blue and Red Ribbon streams and cottonwood galleries.	Priority riparian habitats would include riparian areas associated with perennial streams and cottonwood galleries.
Vegetation: Invasive Species and Noxious Weeds				
The BLM goals for the management of invasive species and noxious weeds within the Billings Field Office are to manage for healthy native plant communities by reducing, preventing expansion of, or eliminating the occurrence of undesirable invasive, nonnative species, or noxious weeds (predatory plant pests or disease) by implementing management actions consistent with national guidance, state and local weed management plans and best available science. Integrated Pest Management would be implemented to move toward a healthy plant community, while meeting multiple land use objectives. The BLM would control invasive and non-native weed species and prevent the introduction of new invasive species, including aquatic nuisance species, by implementing a comprehensive weed program including: coordination with key partners, prevention and early detection, education, inventory and monitoring, and using principles of Integrated Pest Management (IPM) and creating weed management areas (WMAs). The actions specific to the management of invasive and noxious weeds are listed below, by alternative. These "Action Alternatives" would primarily protect people, water, fish, wildlife, special status species and their habitats, prevent the introduction and spread of invasive and noxious weeds. Some actions associated with other resources (soils, water, fish and wildlife etc.) benefit the management of invasive and noxious weed program by limiting activities that would reduce soil and vegetation disturbance and reduce the spread and introduction of invasive and noxious weeds.				
Vegetation: Invasive Species and Noxious Weeds – Desired Outcomes (Goals and Objectives)				
• Manage for healthy native plant communities and desirable nonnative plant communities by reducing, preventing expansion of, or eliminating the occurrence of undesirable invasive species, undesirable nonnative, or noxious weeds (predatory plant pests or disease) by implementing management actions consistent with national guidance, state and local weed management plans. • Use Integrated Pest Management to make progress towards a healthy plant community, while meeting multiple land use objectives and meeting Standards for Rangeland Health (Standards 1, 2, and 5). • Maintain baseline data to evaluate effectiveness of management actions and assess progress toward meeting invasive species management goals/objectives. • Create buffer zones to protect and/or restore fish and wildlife habitat and neighboring agricultural fields. • Control invasive and non-native weed species and prevent the introduction of new invasive species, including aquatic nuisance species, by implementing a comprehensive weed program including: coordination with key partners, prevention and early detection, education, inventory and monitoring, and using principles of Integrated Pest Management (IPM) and creating weed management areas (WMAs).				
Vegetation: Invasive Species and Noxious Weeds – Management Common to All Alternatives				
	Reclamation/stabilization and maintenance materials used would be from weed free seed source.			
	Invasive species, including aquatic invasives, would be managed in cooperation with other agencies, organizations, and landowners in accordance with EO 13112 (1999).			
	Biological control would be applied where appropriate and approved by APHIS. The BLM would consider adapting new or updated biological control techniques, as supported by research.			
	Domestic sheep and goats used for weed control would only be authorized where mechanisms are in place to achieve effective separation from wild sheep.			
	Weed control using domestic sheep and/or goats in potential grizzly bear and wolf habitat would only be authorized after consultation with U.S. Fish Wildlife Services.			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Visitor protection during herbicide treatments at developed recreation areas would include posting signs to prevent public entry. To the extent practical, herbicide treatments would occur only during low recreation use.			
	Require the use of certified weed free seed forage and feeds to prevent establishment of new weed species. Forage subject to this rule would include hay, grains, cubes, pelletized feeds, straw and mulch.			
	Require the use of weed free seed and mulch for BLM-authorized activities and projects.			
	Noxious/Invasive species treatments would be approved by the appropriate BLM specialist prior to treatment occurring			
	Stipulations would be attached to all surface disturbing projects for noxious/invasive species prevention, identification, and treatments, as well as monitoring during and after project.			
Vegetation: Invasive Species and Noxious Weeds – Management Common to Action Alternatives				
	No current management decision provided	Oil and gas leases would be inventoried for noxious and/or invasive weeds, monitoring would occur throughout the duration of the project to prevent the spread and introduction of noxious and/or invasive weeds, and project activities must be designed to minimize soil disturbance. (LN)		
	No current management decision provided	Oil and gas leases would be subject to constraints should noxious and/or invasive weeds be identified within the boundaries of the lease parcel (CSU).		
	No current management decision provided	When possible, hand spray herbicides in areas of special status species (plants and animals)		
	No current management decision provided	Noxious and invasive weed control would not occur within ½ mile of nesting and brood rearing areas for special status species during the nesting and brood rearing season		
	No current management decision provided	Treatment priorities would be established consistent with State of Montana Noxious Weed guidance. High Treatment Priority: eradication of new species; new infestations, areas of special concerns, riparian corridors or special status plant populations where there is a high threat to species of concern (such as Russian olive and salt cedar treatments); areas where partnership/cooperative agreements are in place; treatment and prevention in special designations and weed management areas. Moderate/Low Treatment Priority: areas that contain existing large infestations with a focus on boundaries of infestations, travel routes, trails, trailheads, and access points leading to areas of concern, control existing large infestations and suppression of existing large infestations when eradication/control or containment is likely not to be successful.		
Vegetation: Invasive Species and Noxious Weeds – Management Actions by Alternative				
	No current management decision provided	Remove invasive species from cottonwood galleries and take actions to maintain the appropriate stand composition, structure and understory diversity to promote the expansion of galleries.	Natural processes would be allowed to determine structure and composition of cottonwood galleries (no proactive management).	Same as B
	Aerial application of non-aquatic label herbicides would not be allowed within 100 feet of wetlands, riparian areas, and aquatic	Aerial application of non-aquatic label herbicides would not be allowed within ¼ mile of wetlands, riparian areas, and aquatic	Specific buffer strip widths indicated on pesticide labels or by state regulations would be followed. This also applies to	Aerial application of non-aquatic label herbicides would not be allowed within 500 feet of wetlands, riparian areas, and aquatic

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	habitats. Specific buffer strip widths indicated on pesticide labels or by state regulations must be followed. This also applies to cropland and ornamentals Exceptions would be applied when managing riparian noxious/invasive species and following aquatic approved herbicide labels.	habitats. Specific buffer strip widths indicated on pesticide labels or by state regulations must be followed. This also applies to cropland and ornamentals Exceptions would be applied when managing riparian noxious/invasive species and following aquatic approved herbicide labels.	cropland and ornamentals. Exceptions would be applied when managing riparian noxious/invasive species and following aquatic approved herbicide labels.	habitats. Specific buffer strip widths indicated on pesticide labels or by state regulations must be followed. This also applies to cropland and ornamentals Exceptions would be applied when managing riparian noxious/invasive species and following aquatic approved herbicide labels.
	Minimize treatments near fish-bearing and salmonid-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used. Use only spot treatment methods.	Land base application methods would not be allowed within ¼ mile of fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used.	Minimize treatments near fish-bearing and salmonid-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used. Use only spot treatment methods. Exceptions would be applied when managing riparian noxious/invasive species and following aquatic approved herbicide labels.	Land base application methods would not be allowed within 25 feet (by vehicle) or 10 feet (by hand) of fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used. Exceptions would be applied when managing riparian noxious/invasive species and following aquatic approved herbicide labels.
	Vehicle and hand application of herbicides would not be allowed within 25 feet (by vehicle) or 10 feet (by hand) of wetlands, riparian areas, aquatic habitats, dwellings and cropland. Exceptions would be applied when managing riparian noxious/invasive species and following aquatic approved herbicide labels.	Vehicle and hand application of herbicides would not be allowed within 50 feet of wetlands, riparian areas, aquatic habitats, dwellings and cropland. Exceptions would be applied when managing riparian noxious/invasive species and following aquatic approved herbicide labels.	Same as A	Same as A
	Mix herbicides with non-aquatic label at a minimum of 500 feet away from riparian areas, water sources, floodplains, and known special status plant species populations.	Mix herbicides with non-aquatic label at a minimum of ¼ mile away from riparian areas, water sources, floodplains and known special status plant species populations.	Same as A	Same as A

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Vehicle and hand application of herbicides near special status plant species would be determined on a case-by-case basis and allowed only when the treatment would benefit special status plant species.	Aerial application of herbicides would not be allowed within 1mile of special status plant species. Vehicle and hand application of herbicides would not be allowed within ¼ mile of special status plant species.	Aerial application of herbicides would not be allowed within ½ mile of special status plant species. Vehicle and hand application of herbicides near special status plant species would be allowed only when the treatment would benefit special status plant species (to be determined during site-specific analysis).	Same as C
	Use native seed mixtures unless modified through NEPA.	Only native species appropriate to the site would be used to restore vegetation on disturbed ground.	Native or low impact, non-invasive seed mixtures would be used to restore vegetation on disturbed ground.	Native plant species common to the site's natural plant community would be used to restore disturbed ground. Desirable non-native species would be considered based on site-specific analysis where difficult site stabilization or wildlife concerns prevail.
	In the past 10 years a combination of treatment methods (herbicide, manual, mechanical, sheep/goats, biological and fire) were used to treat 366 acres to 5,548 acres per year.	A target range of a minimum of 200 acres and at least a maximum of 800 acres of invasive and noxious weeds would be treated annually by BLM and cooperators through a variation of methods (herbicide, manual, mechanical, sheep/goats, biological and fire).	A target range of a minimum of 1,500 acres and at least a maximum of 3,000 acres of invasive and noxious weeds would be treated annually by BLM and cooperators through a variation of methods (herbicide, manual, mechanical, sheep/goats, biological and fire).	A target range of a minimum of 400 acres and at least a maximum of 2,000 acres of invasive and noxious weeds would be treated annually by BLM and cooperators through a variation of methods (herbicide, manual, mechanical, sheep/goats, biological and fire).
Vegetation: Special Status Plants				
The Bureau of Land Management goals for the management of Special Status Plants within the Billings Field Office are to conserve and recover Special Status Plant species and the ecosystems that they depend to prevent the need for listing as threatened or endangered. This includes protecting or enhancing areas of ecological importance for Special Status Plant species and managing for no net loss of habitat. The following Management Actions describe, by alternative, implementation strategies, restoration opportunities, and use restrictions to meet the goals. Management for specific environmental hazards, risks, and impacts that are compatible with Special Status Plant species are also identified by alternative.				
Vegetation: Special Status Plants – Desired Outcomes (Goals and Objectives)				
• Conserve and recover special status plant species and the ecosystems on which they depend to prevent the need to list any of these species as threatened or endangered. • Protect or enhance areas of ecological importance for special status plant species. Manage for no net loss of habitat for any special status plant species. • Conserve and recover special status plant species by determining and implementing strategies, restoration opportunities, use restrictions, and management actions. • Manage specific environmental hazards, risks, and impacts in a manner compatible with special status plant species health.				
Vegetation: Special Status Plants – Management Common to All Alternatives				
	BLM-authorized activities should maintain or improve habitat for Federally listed threatened, endangered, and special status plants.			
	Conduct inventory and monitoring to determine extent and trend of special status plant populations.			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Habitats of special status plants would be managed to meet or exceed the Montana Standard for Rangeland Health (Standard 5).			
	Increase public awareness of special status plants through outreach, tours, and brochures.			
	Consider the high public value of special status plants and their habitat in land exchanges, purchases or disposals in which public ownership of such habitat would be affected.			
	Vegetation: Special Status Plants – Management Actions by Alternative			
	On-site examination is required prior to surface disturbing activities. Evaluate all BLM actions for potential effects on special status plants and conduct on-site inventory for species of concern prior to treatment.	Evaluate all BLM-authorized activities for potential effects on special status plants. Conduct on-site inventory for special status plants prior to any surface disturbance.	Evaluate all BLM-authorized activities on known special status plant sites for potential effects on special status plants.	Same as B, except only conduct on-site inventory if potential special status plant habitat is known to be present.
	No current management decision provided	No surface occupancy for oil and gas leasing, exploration and/or development within ¼ mile of special status plant species or populations (NSO).	On-site examination would be required prior to oil and gas leasing, exploration and/or development surface disturbing activities (CSU).	Same as C
	Mineral Materials - No current management decision provided	No permitting of mineral materials would be authorized in special status plants sites.	Mineral material sales would be allowed through permit only with appropriate mitigation.	Mineral material sales would be allowed on a case-by-case basis by permit only. Mitigation may be required as appropriate.
	No current management decision provided	No supplement or salt placement within ½ mile of known special status plant sites.	No supplement or salt placement within ¼ mile of known special status plant sites.	No supplement or salt placement within ¼ mile of known special status plant sites, unless livestock is otherwise excluded (fence or barrier).
	Additional management actions, by alternative, related to Special Status Plants can be found under Special Designations - Areas of Critical Environmental Concern (ACECs) section under the East Pryor ACEC, Grove Creek ACEC, Meeteetse Spires ACEC, and Pryor Foothills Research Natural Area (RNA) ACEC.			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Wildlife Habitat and Special Status Species (Wildlife)				
The BLM, Billings Field Office's goals for wildlife are to manage terrestrial habitat to provide native and desirable non-native species diversity and viability, while considering multiple uses of public lands. The necessary habitat would be present to maintain, enhance, or restore T & E, priority, and special status species populations and habitat with "no net loss of habitat" as the goal. BLM would manage environmental risks and associated impacts in a manner compatible with sustaining plant, fish, wildlife, and special status species populations through restoration and building resilience to disturbance. Environmental risks include, but are not limited to, parasites, diseases, insect outbreaks, catastrophic fires, contamination, pesticides, rodenticides, herbicides, climate, and other hazards. Sagebrush, native grasslands, seasonal or crucial wildlife ranges, special status species habitat, fisheries, cottonwood galleries, and riparian/wetlands would be priority habitats. All wildlife habitats would be managed to meet Rangeland Health Standards (Standards 1 and 5). BLM is responsible for managing habitats, whereas state and federal wildlife management agencies (e.g., MT FWP, USFWS) oversee management of wildlife species. BLM would coordinate with and support the conservation plans of those agencies on BLM administered lands. Priority wildlife species for management are described in Chapter 3. Those actions listed under the "Management Common to All Alternatives" form the basis for the wildlife management program. The "Management Actions by Alternative" consider different levels of restrictions that may impact other resource uses. The management activities proposed by BLM to accomplish the wildlife goals are described in the management actions by alternative. For analysis purposes, the alternatives describe how wildlife habitat would be managed when affected by resource uses of public lands. Special status species include federally listed, proposed, or candidate species; state protected species; and BLM sensitive species. The BLM must follow the requirements of the Endangered Species Act of 1973, as amended, and BLM policy to conserve federally listed threatened and endangered species and the habitat on which they depend. BLM policy also states, "…ensure that actions requiring authorization or approval by the Bureau of Land Management (BLM or Bureau) are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species, either under provisions of the ESA or other provisions of this policy." The Billings Field Office would manage special status species following the direction and guidance identified in BLM Manual 6840; recovery plans; biological opinions; conservation agreements, plans, and strategies; habitat conservation plans; and the recommendations from interagency recovery implementation teams. Special status and T & E species designations and lists are dynamic and subject to change based on population changes, habitat improvements and protections, and new data. Please refer to the Appendices for definitions, descriptions of laws, regulations, policies, and guidance, Best Management Practices (BMPs), Oil and Gas leasing notices, stipulations, and CSU guidelines, Wildlife Monitoring and Protection Plan, and T&E and Special Status Species lists. The appendices are intended to clarify the content of the RMP. The "Wildlife Monitoring and Protection Plan" (WMPP) (Appendix H), was prepared to acquire baseline wildlife information, monitor populations, and assess stipulations for effectiveness. Wildlife stipulations attached to leases offer protective measures: 1) for certain species, 2) during a particular time period, or 3) within a specific area. These stipulations may not address other concerns related to special status species or water/habitat related issues caused by direct and indirect impacts from development activities. Inventory and monitoring data would be used in adaptive management for improving wildlife management techniques and processes. Therefore, the WMPP would facilitate our ability to pinpoint problems (including the evaluation of other contributing factors), design project plans which include conservation for declining species, monitor the effectiveness of decisions, and make recommendations to adjust management to address specific situations. In 2010, the U.S. Fish and Wildlife Service determined that the Greater Sage-Grouse is a Candidate species and Warranted, but precluded, by other priorities, for listing under the Endangered Species Act. In 2009, the MT/DAKs BLM delineated three types of Greater Sage-Grouse habitat areas as part of the planning process (Map 23): • Greater Sage-Grouse Habitat - Priority Habitat Management Areas (PHMAs), • Greater Sage-Grouse Habitat - Restoration areas (RAs), and • Greater Sage-Grouse Habitat – General Habitat Management Areas (GHMA) Each area would have varying degrees of management in order to achieve the goals or objectives for each Greater Sage-Grouse habitat area. The Greater Sage-Grouse habitat delineations may be modified as needed as local site conditions change or as new information becomes available. Refer to the Glossary for definitions of the three Greater Sage-Grouse habitat areas, Appendix AA (section F) for mitigation measures and conservation actions for Greater Sage-Grouse habitat, and Appendix AA (section A) for monitoring of Greater Sage-Grouse and Sagebrush Habitats.			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Wildlife Habitat) – Desired Outcomes (Goals and Objectives)				
• Manage terrestrial habitat to provide native species diversity and viability, and to sustain ecological, economic, and social values while providing for multiple uses of public lands. • Manage for no net loss and connectivity of priority habitats on BLM-administered lands. The necessary habitat would be present to maintain, enhance, or restore T & E, special status, and priority native species populations. Sagebrush, native grasslands, seasonal or crucial wildlife ranges, special status species habitat, fisheries, cottonwood galleries, and riparian/wetlands would be priorities. • Manage all BLM actions or authorized activities to sustain wildlife populations and their habitats and to avoid contributing to the listing of or jeopardizing the continued existence or recovery of special status species and their habitats. • Manage or restore habitat on BLM-administered lands within the planning area to facilitate the conservation, recovery, and maintenance of populations of native, desirable non-native, and special status species consistent with appropriate local, state, and federal management plans. • Manage habitats to support MT FWP in the attainment of objectives and well-distributed, healthy populations of wildlife species consistent with the MT FWP's Strategic Habitat Plan, Montana's Comprehensive Fish and Wildlife Conservation Strategy, and strategic population plans, and to achieve the stated purpose of designated State of Montana Wildlife Management Areas. • Minimize fragmentation of large intact blocks of wildlife habitat to maintain connectivity, population migrations and functional blocks of security habitat for big game species. • Manage environmental risks and associated impacts in a manner compatible with sustaining plant, fish, wildlife, and special status species populations. Environmental risks include, but are not limited to, parasites, diseases, insect outbreaks, catastrophic fires, contamination, pesticides, rodenticides, herbicides, climate, and other hazards. • Provide for the long-term conservation, enhancement, and restoration of the sagebrush steppe/mixed-grass prairie complex in a manner that supports sustainable Greater Sage-Grouse populations and a healthy diversity and abundance of wildlife species. • Coordinate with other agencies to prevent or control diseases, pests and species that threaten the health of humans, wildlife, livestock, and vegetation.			
Wildlife Habitat – Management Common to All Alternatives				
	Implement conservation actions identified in Executive Order 13186 – "Responsibilities of Federal Agencies To Protect Migratory Birds." Implement the North American Bird Conservation initiative to restore, enhance, and maintain habitats for migratory birds. Include USFWS Birds of Conservation Concern for Bird Conservation Regions 10 and/or 17 where appropriate through project level NEPA analysis. Emphasize maintenance and restoration of habitats that sustain special status species with minimum disturbance during the breeding season. Enhance or restore habitat composition and structure beyond PFC in riparian habitats, where and when appropriate, for migratory bird habitat.			
	Retaining important blocks of hiding, security, and thermal cover for big game would be considered during project planning. The BLM would emphasize habitat improvements in areas where there is limited or fragmented security habitat through vegetation treatments and route limitations (including seasonal closures).			
	Assist in the restoration, reintroduction, augmentation, or re-establishment of T & E, special status, and priority species and other populations and (or) habitats in coordination with other agencies.			
	Fences identified as barriers to wildlife movement on BLM-administered lands would be modified or removed to accommodate wildlife passage, unless the fences were built specifically to keep native ungulates out of an area. Fences would also be placed and marked, or modified, to reduce wildlife collisions or entanglements.			
	Conditions of Approval (COAs) would be applied to all Applications for Permit to Drill (APDs) for Special Status Species.			
	Utilize appropriate offsite compensatory mitigation to reduce impacts to wildlife habitat. This would be necessary if (1) all onsite mitigation has been accomplished and adverse effects have not been mitigated; or (2) if onsite mitigation is not feasible. Off –site mitigation would be applied as close to the affected area as possible and for the same or similar impacted species or habitats.			
	Manage siting of facilities to minimize impacts on wildlife habitat function and quality, to minimize impacts on vegetation resources for all uses, and to minimize wildlife mortality during			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	the life of the facility.			
	Where wildlife conflicts exist, overhead powerlines and tall structures would follow the recommendations in the APLIC guidelines. When possible, perch, collision, and electrocution preventions would be used.			
	Functional wildlife escape ramps would be installed on all water tanks on BLM-administered public lands with preference given to built-in bird ramps in new troughs/ tanks.			
	Management techniques, including but not limited to prescribed and managed wildfire, prescriptive livestock grazing, planting, exclusion to intense disturbance, timber harvest and other mechanical methods would be used to restore, maintain or improve the desired ecological conditions of vegetation communities for the purpose of improving forage, nesting, breeding, and security habitat, hiding cover and travel corridors for a wide diversity of terrestrial and aquatic species.			
	Management actions would emphasize providing habitat of sufficient quantity and quality, including connectivity and wildlife movement corridors, habitat complexity, forest openings, edges, and ecotones, to enhance biological diversity and provide quality, sustainable habitat for native wildlife species.			
	Caves and abandoned mines would be inventoried for bat habitation. The BLM would determine the need for closures or seasonal closures for activities affecting caves and abandoned mines. Hibernacula and maternity cave closure dates would be determined when the inventory is completed.			
	Bat gates or other suitable measures would be used to protect bat habitat. Public health and safety could take precedence over protection of bat habitat if hazardous mine openings cannot be remediated.			
	Clearing of vegetation, would not be allowed within 250 feet of the entrance of caves and abandoned mines with populations of bats except for public safety and vegetation would only be removed for installing bat gates, noxious weed control, or when it becomes an obstruction to bat movement.			
	Areas that would be targeted for conversion from crested wheatgrass to native sagebrush/grasslands would be areas that have high wildlife habitat potential, particularly for Greater Sage-Grouse, big game, and other sagebrush obligate species, and are currently monocultures with little vegetation diversity.			
	Predator control would be permitted subject to the stipulations outlined in the annual Animal Damage Control (ADC) Memorandum of Understanding between BLM and USDA-Animal Plant Health Inspection Service. Predator control in non-USDA ADC areas would be subject to the same stipulations as applied to those counties where predators are managed by USDA-APHIS.			
	The BLM could seasonally limit/close rock climbing activities in areas with active raptor nests and would educate the public about the importance of avoiding such locations.			
	Unoccupied raptor nests would be protected from removal or destruction for 7 years.			
	Surface disturbing and disruptive activities that impact special status species, particularly during critical life cycles, would be avoided or minimized.			
	Water developments, where deemed effective, would be managed to reduce the spread of West Nile virus			
	When wildlife or their habitat could be affected, the BLM would require, as appropriate, a current year wildlife survey of the project area from the project proponent.			
	Oil and gas timing stipulations would not apply to operation and maintenance of production facilities. If environmental analysis determines that the operations and maintenance of oil and gas production facilities results in surface disturbing and disruptive activities or impacts, mitigation of these types of oil and gas activities would be applied where needed through Conditions of Approval (COAs) to minimize impact of human activities on important seasonal wildlife habitat.			
	Designated Crucial Winter Ranges would be used in lieu of CAPS data when the data is available. Any references to CAPS data would be updated when Crucial Winter Ranges are designated.			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Wildlife Habitat – Management Common to Action Alternatives				
	No current management decision provided.	Mitigation of surface-disturbing or disrupting activities (including operations and maintenance associated with fluid mineral development) would be applied where needed to minimize impacts of human activities on important seasonal wildlife habitats, consistent with the wildlife stipulations outlined in the Wildlife / Special Status Species and Fluid Minerals sections of Chapter 2. Mitigation measures would be applied during activity level planning if an on-site evaluation of the project area indicates the presence of important wildlife species. Exceptions may be granted by the authorized officer, if an environmental review demonstrates that effects could be mitigated to an acceptable level, habitat for the species is not present in the area, or portions of the area can be occupied without affecting a particular species. Exceptions may also be granted where the short-term effects are mitigated by the long-term benefits (e.g., prescribed fire, wildlife monitoring, or forest health treatments). As defined in the Glossary, surface-disturbing and disruptive activities would not prohibit all activities or authorized uses. For example, emergency activities (e.g., fire suppression, search and rescue), rangeland monitoring, routine maintenance associated with an approved authorization, dispersed recreational activities (e.g., hunting, hiking), and livestock grazing are not considered surface-disturbing or disruptive activities.		
	No current management decision provided	Where environmental analysis and monitoring demonstrate a continued need for mitigation or insufficient mitigation measures are present for impacts to wildlife, restrictions could be applied to the operation and maintenance of production facilities or other projects.		
	Comply with Rangeland Health Standard 5	Monitor areas with wildlife habitat conflicts on an annual basis. Identify all/any activities leading to causal factors for not achieving Standard 5. Where Standard 5 is not being met, guidelines would be applied within 1 year to make progress toward meeting the standard.		
	No current management decision provided for Colonial Nesting Waterbird Colonies	Surface occupancy and use is prohibited within ¼ mile of Colonial nesting waterbird colonies. (NSO) Surface use is prohibited within ½ mile of Colonial nesting waterbird colonies from April 1 through July 15. (TL) Colonial nesting waterbirds include the following: Clark's Grebe, American White Pelican, Great Blue Heron, Black-crowned Night Heron, White-faced Ibis, Franklin's Gull, Caspian Tern, Forster's Tern, Common Tern, Black Tern, and Double-crested Cormorant.		
	No current management decision provided for Sprague's pipit	Surface-disturbing and disruptive activities would be avoided from April 15 through July 15 in Sprague's pipit habitat. (TL) Surface use for oil and gas exploration, (including geophysical exploration) is prohibited from April 15 through July 15 in Sprague's pipit habitat. (TL)		
	No current management decision provided for Migratory Birds	The oil and gas operator is responsible for compliance with provisions of the Migratory Bird Treaty Act (LN)		
Wildlife Habitat – Management Actions by Alternative				
	Where resource conflicts exist, Low voltage powerlines would be buried if feasible.	Where resource conflicts exist, BLM would not authorize above-ground powerlines (<69kV), unless burying the powerline is not feasible.	Where resource conflicts exist, powerlines (<69kV) would be authorized in a manner that ensures habitat is maintained (e.g. burying or line location).	Where resource conflicts exist, BLM would not authorize above-ground powerlines (<69kV), unless burying the powerline is unfeasible. If burying powerlines is unfeasible, then powerlines would be authorized in a manner that ensures habitat is maintained (e.g. line location).

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	No similar action	Where federal mineral estate exists, designate all State Wildlife Management Areas, Fishing Access Sites, and State Parks as No Lease areas (NL).	Oil and gas leasing, development and exploration would be allowed, if habitat suitability within designated State Wildlife Management Areas, Fishing Access Sites, and State Parks is maintained (CSU).	Oil and gas leasing, development and exploration would be allowed with NSO in designated State Wildlife Management Areas, Fishing Access Sites, and State Parks (NSO).
	Elk Calving			
	Oil and gas exploration and development and geophysical exploration would be prohibited from April 1 to June 15 (TL) within established spring calving range for elk.	Surface use for oil and gas exploration (including geophysical exploration) would be prohibited from April 1 to July 1 within established big game parturition habitat (TL).	Surface occupancy and use for oil and gas exploration leasing and development and (including geophysical exploration) within big game parturition habitat would be allowed with CSU stipulations.	Prior to surface occupancy and use a plan would be prepared by the proponent as a component of the APD, Sundry Notice, etc., and approved by the authorized officer in coordination with MTFWP. The operator would not initiate surface disturbing activities unless the authorized officer has approved the plan, The plan must demonstrate to the authorized officer's satisfaction that the function and suitability of the habitat would not be impaired.(CSU)
	Crucial Winter Range (antelope, elk, moose, bighorn sheep, mule deer, whitetail deer, and greater sage-grouse)			
	No similar action	Surface occupancy and use is prohibited (NSO).		
	Big Game Winter Range (antelope, elk, moose, bighorn sheep, mule deer, and whitetail deer)			
	Surface use is prohibited to avoid disturbance of white-tailed deer, mule deer, elk, pronghorn antelope, moose, and bighorn sheep during the winter use season, December 1 - March 31 (TL).	Surface occupancy and use for oil and gas exploration (including geophysical exploration) and geothermal operations is prohibited to avoid disturbance of white-tailed deer, mule deer, elk, pronghorn antelope, moose, and bighorn sheep during the winter use season, December 1 - March 31, big game winter range habitat (Maps 15-20). The following special operating constraints apply in big game winter habitat (Maps 15-20): • Surface occupancy and surface disturbance density and / or mitigation plan (CSU).	Surface use is prohibited to avoid disturbance of white-tailed deer, mule deer, elk, pronghorn antelope, moose, and bighorn sheep during the winter use season, December 1 - March 31 (TL).	Prior to surface occupancy and use a plan would be prepared by the proponent as a component of the APD, Sundry Notice, etc. and approved by the Authorized Officer in coordination with the state wildlife management agency. The operator would not initiate surface-disturbing activities unless the Authorized Officer has approved the plan. The plan must demonstrate to the Authorized Officer's satisfaction the function and suitability of the habitat would not be impaired. (CSU)
	No similar action.	No new permanent roads would be allowed in areas where open road densities are ½ mile/ square mile (mi/mi^2) or less in big game winter range habitat (Maps 15-20), and parturition	There would be no net increase in permanent roads built in areas where open road densities are 1 ½ mi/mi^2 or less in big game winter and parturition	There would be no net increase in permanent roads built in areas where open road densities are 1 mi/mi^2 or ,less in big game winter range habitat (Maps 15-20) and

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		ranges unless not possible due to conflicts with valid existing rights. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition. BLM would manage to reduce open road densities in big game winter range (Maps 15-20) and calving ranges where they exceed ½ mi/mi^2. Roads would be gated during crucial seasons, closed and/ or reclaimed.	ranges unless not possible due to conflicts with valid existing rights. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition. BLM would manage to reduce open road densities in big game winter and calving ranges where they exceed 1 ½ mi/mi^2. Roads would be gated during crucial seasons, closed and/ or reclaimed.	parturition ranges, unless not possible due to conflicts with valid existing rights. All practicable measures would be taken to assure that important habitats with low road densities remain in that condition. BLM would manage to reduce open road densities in big game winter range (Maps 15-20) and calving ranges where they exceed 1 mi/mi^2. Roads would be gated during crucial seasons, closed and/ or reclaimed.
	No current management decision provided	Over the snow vehicles would be prohibited in big game winter range.	Over the snow vehicles would be allowed in big game winter range.	Same as B
	Bighorn Sheep Range and Bighorn Sheep Lambing Areas			
	Oil and gas leasing and development would be allowed with an NSO stipulation within the designated bighorn sheep range (Map 17).	Surface occupancy and use for oil and gas exploration (including geophysical exploration) and development would be prohibited within designated bighorn sheep range (NSO).	Oil and gas exploration and development and geophysical exploration would require a mitigation plan to maintain habitat and avoid habitat loss (CSU).	Surface occupancy and use is prohibited within bighorn sheep lambing areas. (NSO). Prior to surface occupancy and use a plan would be prepared by the proponent as a component of the APD, sundry notice, etc., and approved by the authorized officer in coordination with the state wildlife management agency. The operator would not initiate surface-disturbing activities unless the authorized officer has approved the plan. The plan must demonstrate to the authorized officer's satisfaction that the function and suitability of the habitat would not be impaired. (CSU)
	Sheep or goats would not be permitted within 9 miles from known bighorn sheep habitat (Map 17). This distance would be greater if deemed necessary through site specific analysis.	Conversions from cattle to domestic sheep or goats would be prohibited in allotments within occupied wild sheep habitat (Map 17). New sheep and goat allotments or conversions from cattle to sheep or goats would not be permitted within 14.3 miles from known bighorn sheep habitat. This distance would be greater if deemed necessary through site specific analysis.	Conversions from cattle to domestic sheep or goats would be prohibited in allotments within occupied wild sheep habitat (Map 17). New sheep and goat allotments or conversions from cattle to sheep or goats would not be permitted within 12.4 miles from known bighorn sheep habitat. This distance would be greater if deemed	Domestic sheep/goat permits – No new grazing permits authorizing sheep or goats would be allowed within 14.3 air miles or 23 Kilometers in bighorn sheep range (Map 17) or as determined through consultation with MTFWP. Sheep and goat grazing allotments in areas with risk of contact between bighorn sheep and domestic sheep and/or goats in the

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
			necessary through site specific analysis.	planning area would be reviewed and managed, or reclassified if necessary, to achieve effective separation (both temporal and/or spatial at 23 kilometers (14.3 miles) or as determined through consultation with MTFWP. Contact risk would be based on habitat, distance between bighorn sheep range (current and anticipated), sheep and goat allotments, movement potential, and current science and guidelines. Domestic sheep/goats would not be allowed within bighorn sheep range unless mechanisms are in place to achieve effective separation from wild sheep.
	Raptor Nests (Applies to Special Status Species including ferruginous hawk, burrowing owl, great grey owl, Swainson's hawk, northern goshawk, and osprey (Bald Eagles and peregrine falcons are addressed separately) (note: Special Status Species designations can change)			
	Oil and gas exploration and development surface use would be prohibited from March 1 to August 1 (TL) within 0.5 mile of raptor nest sites which have been active within the past 2 years. Geophysical exploration would be prohibited.	Surface occupancy and use for oil and gas exploration and development activities (including geophysical exploration) would be prohibited within ½ mile of raptor nest sites which have been active within the past 7 years (NSO).	Oil and gas exploration and development and geophysical exploration activities would be prohibited within ¼ mile of raptor nest sites which have been active within the past 7 years (NSO).	Surface occupancy and use would be prohibited within ¼ mile of raptor nest sites active within the preceding 7 years. (NSO). Surface occupancy and use would be prohibited within ½ mile of active raptor nest sites from March 1 through July 31. (TL)
	Sharp-tailed Grouse Leks and Nesting Habitat			
	Surface occupancy within ¼ mile of leks is prohibited.	Surface occupancy and use for oil and gas exploration and development (including geophysical exploration) would be prohibited within 2 miles of sharp-tailed grouse leks (NSO).	Oil and gas exploration and development and geophysical exploration within ¼ mile of sharp-tailed grouse lek sites and nesting habitats would be subject to the following constraints: (1) noise from oil, gas and geothermal production facilities would not exceed 49 decibels (10dBa above background noise at the lek site); and (2) operational constraints would include off-site production facilities and gated access to minimize disturbance to sharp-tailed grouse lek sites and nesting habitats (CSU).	Surface occupancy and use is prohibited on and within ½ mile of the perimeter of leks. (NSO)

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Oil and gas exploration and development (including geophysical exploration) would be prohibited from March 1 to June 15 (TL) in sharp-tailed grouse nesting habitat within 2 miles of a lek.	Surface occupancy and use for oil and gas exploration and development (including geophysical exploration) would be prohibited within 2 miles of sharp-tailed grouse leks (NSO).	Surface use for oil and gas exploration and development (including geophysical exploration) would be prohibited between March 1 to June 15 in sharp-tailed grouse nesting habitat within ½ mile of a lek (TL).	Surface use is prohibited within 2 miles of the perimeter of sharp-tailed grouse and/or greater prairie chicken leks from April 1 through July 15. (TL)
Special Status Species (Wildlife) – Management Actions Common to All Alternatives				
	All federally listed and BLM sensitive species and their habitats would be considered priority species and habitats.			
	Identify distribution, key habitat areas, and special management needs for development of management plans and conservation measures, consistent with restoration, conservation and recovery plans for threatened, endangered, and other special status species. Priority habitats are riparian/ wetland areas, native grasslands, sagebrush steppe, conifer forests, and seasonal ranges supporting life cycle requirements for wildlife (i.e., winter, breeding, parturition, etc.).			
	Timing restrictions would be used in special status species habitat. Surface disturbing and disruptive activities that impact special status species habitats during their seasons of use, particularly during critical life cycles would be avoided or minimized.			
	Assist in the restoration, reintroduction, augmentation, or re-establishment of threatened, endangered, and other priority or special status species populations and (or) habitats in coordination with MTFWP and USFWS.			
	Water developments, and discharge water from energy development, where deemed effective, would be managed with BMPs to reduce the spread of West Nile virus			
	The BLM would require, as appropriate, a current year wildlife survey of the project area from the project proponent.			
	Oil and gas surface occupancy and use is subject to the following operating constraints: The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM approved activity that would contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM would not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation. (LN)			
Special Status Species (Wildlife) – Management Actions By Alternative				
	Potential Black-Footed Ferret Habitat			
	Black-footed ferret habitat is defined as prairie dog colonies within 1.5 km of each other and comprising of 1,500 acres.			
	Surface occupancy or use is subject to the following operating constraints: Prior to surface disturbance, a surface use plan of operations (SUPO) for oil and gas activities must be approved for black-footed ferret reintroduction areas by the authorized officer in consultation with the U.S. Fish and	Prior to surface disturbance, prairie dog colonies and complexes 80 acres or more in size would be examined to determine the presence or absence of black-footed ferrets. The findings of this examination may result in some restrictions to the operator's plans or may even preclude use and occupancy	Same as B	Surface occupancy and use for oil and gas leasing, development, and exploration and geophysical operations would be prohibited within ¼ mile of black-footed ferret habitat (NSO).

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Wildlife Service (USFWS). (CSU)	that would be in violation of the ESA. The lessee or operator may, at their own option, conduct an examination on the leased lands in order to determine the presence or absence of black-footed ferrets, if the activity would have an adverse effect, or if the area can be cleared. This examination must be done by or under the supervision of a qualified resource specialist approved by the surface managing agency. An acceptable report must be provided to the surface management agency documenting the presence or absence of black-footed ferrets and identifying the anticipated effects of the proposed action on the black-footed ferret and its habitat. This stipulation does not apply to the operation and maintenance of production facilities. (CSU)		
	Black-tailed and White-tailed Prairie Dogs			
	Management of prairie dog colonies on public lands would be subject to the Conservation Plan for Black-tailed and White-tailed Prairie Dogs in Montana. White-tailed prairie dogs would be considered a priority for management due to limited and declining populations in Montana.			
	Prior to surface-disturbing activities, prairie dog colonies and complexes 80 acres or more in size and containing 5 burrows per acre would be examined to determine the presence or absence of black-footed ferrets (CSU)	Oil and gas leasing, development, and exploration, and geophysical operations would be prohibited within ½ mile of black-tailed or white-tailed prairie dog colonies, active within the past 10 years (NSO).	Oil and gas leasing, development and exploration, and geophysical operations would be allowed with within black-tailed or white-tailed prairie dog colonies with a mitigation plan (CSU). Refer to Guidelines for Wildlife CSUs – Appendix H.	Oil and gas surface occupancy and use is prohibited within ¼ mile of prairie dog colonies active within the past 10 years. (NSO).
	Prairie Dog Habitat			
	Management of prairie dog colonies on public lands would be subject to the statewide prairie dog conservation plan (2002). Prairie dog towns that occur on public lands would be managed for wildlife and recreational values.	Prairie dog colonies would be managed to ensure their populations are maintained at the current levels. If populations decline, measures would be implemented to develop and enhance habitat for colony expansions.**	Prairie dog colonies would be managed for maintenance of populations where the public has access. Control measures would be considered with the following criteria**:	Prairie dog colonies would be managed for maintenance of populations where the public has access. Control measures would be considered with the following criteria**:
	No similar criteria	**Prairie dog towns would be allowed to expand as long as they are not adversely impacting adjacent private or state land, other resources, or affecting Standards for Rangeland Health (Appendix I). Prairie dog towns would be adversely impacting other resources, and		

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		controls could be considered, if the towns are: • The source of or an exacerbation of invasive or noxious plants; • Substantially limiting forage and/or important habitat for wildlife species in the immediate area; • Substantially limiting forage for livestock in the immediate area; • Overriding the effectiveness of other management measures; or • Posing a substantial economic hardship or risk for other landowners, resulting from the need to control populations on private or state land because of prairie dogs on adjacent BLM land. Controls would not occur where mountain plover or burrowing owls have been documented using established habitat. Prairie dogs could be reestablished on historic towns that have been eradicated or that have died out due to sylvatic plague. Specific actions to address adverse impacts to or from prairie dogs would be addressed through a site-specific environmental assessment.		
	Mountain Plover			
	Surface use is prohibited within ¼ mile of active mountain plover nest sites. Disturbance to prairie dog towns would be avoided where possible. Any active prairie dog town occupied by mountain plovers would have No Surface Use between April 1 and July 31. (NSO)	Surface occupancy and use for oil and gas exploration and development (including geophysical exploration) would be prohibited within ½ mile of mountain plover habitat (NSO).	Oil and gas leasing and development and geophysical exploration would not be allowed within ¼ mile of mountain plover habitat, subject to the following special operating constraints: (1) operational constraints could include off-site production facilities, audio restrictions, and gated access to minimize disturbance to key mountain plover habitats (CSU).	NSO - Oil and gas surface occupancy and use is prohibited within mountain plover habitat TL Surface use is prohibited within ¼ mile of mountain plover habitat from April 1 through July 15.
	Interior Least Tern			
	Surface occupancy and use is prohibited within ¼ mile of wetlands identified as Interior Least Tern habitat. (NSO)			
	Peregrine Falcon			
	Oil and gas leasing and development would be allowed with an NSO stipulation within 1 mile of peregrine falcon nesting sites. Geophysical exploration would not be allowed.	Surface occupancy and use for oil and gas exploration and development (including geophysical exploration) would be prohibited within 1 mile of peregrine falcon nesting sites (NSO).	Surface occupancy and use for oil and gas exploration (including geophysical exploration) would be prohibited within ¼ mile of active peregrine falcon nesting sites (NSO).	Surface occupancy and use for oil and gas exploration and development (including geophysical exploration) would be prohibited within 1 mile of peregrine falcon nest sites active within the preceding 7 years. (NSO).
	Bald Eagle and Golden Eagle Nests and Habitat			
	BGEPA (Bald and Golden Eagle Protection Act): BLM would coordinate with USFWS on activities that may affect bald or golden eagles for compliance with BGEPA. The BLM would not issue a notice to proceed for any project that is likely to result in take of bald eagles and/or golden eagles until the applicant completes its obligation under applicable requirements of BGEPA, including completion of any required procedure for coordination with the FWS or any required permit. The applicant may be required to conduct further analysis and mitigation following assessment of operational impacts.			
	Bald eagle and golden eagle nesting habitats would be actively protected from loss due to fire, insect, or disease by reducing vegetation competition and encroachment in these habitats, unless visual barriers are compromised.			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Bald Eagle Nests			
	Activities and habitat alterations including surface disturbing or disruptive activities that disturb bald eagles would be restricted within suitable habitats or avoided within ½ mile of bald eagle nest sites active within the preceding 5 breeding seasons. Activities in bald eagle habitat would be conducted according to Montana Bald Eagle Management guidelines (Montana Bald Eagle Working Group, 2009, Montana Bald Eagle Management Guidelines: An Addendum to Montana Bald Eagle Management Plan, 1994).			
	Oil and gas leasing and development would be prohibited within an NSO stipulation within ½ mile of eagle nest sites which have been active within the past 7 years and within eagle nesting habitat in riparian areas (NSO). Geophysical exploration would not be allowed.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within 1 mile of eagle nest sites which have been active in the past 7 years and within eagle nesting habitat in riparian areas (NSO).	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ¼ mile of active eagle nest sites (NSO).	Surface occupancy and use for oil and gas exploration would be prohibited within ½ mile of eagle nest sites active within the preceding 5 years unless the activity complies with the USFWS National Bald Eagle Management Guidelines (2007). (NSO)
	Greater Sage-Grouse			
	Refer to crested wheatgrass conversion alternative in the Vegetation- Rangelands section of this table. Acreages and priorities for conversion or treatments are discussed. Greater Sage-Grouse habitat is a priority for crested wheatgrass conversions or treatments.			
	No current management decision			In all sage-grouse habitat, in undertaking BLM management actions, and consistent with valid existing rights and applicable law, in authorizing third-party actions that result in habitat loss and degradation, the BLM would require and ensure mitigation that provides a net conservation gain to the species including accounting for any uncertainty associated with the effectiveness of such mitigation. This would be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions.
	No current management decision			Vegetation objectives have been identified for sage-grouse breeding (leks, pre-laying, nesting and early brood-rearing) habitat on public land. The desired conditions for sage-grouse habitat presented are based on recommendations in current literature (Stiver, et al. 2014, Doherty, et al. 2014, Doherty, et al. 2011, Connelly, et al. 2000b, and Hagen, et al. 2007) and have been modified to more accurately reflect local

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				conditions based on the vegetative potentials identified for ecological sites in the Billings Field Office. Table 2.3 Billings Field Office Greater Sage-Grouse Habitat Objectives, is to be used as a minimum to meet the applicable Land Health Standard in sage-grouse habitats.
	No similar action			These habitat objectives in Table 2.3 summarize the characteristics that research has found represent the seasonal habitat needs for Greater Sage-Grouse. The specific seasonal components identified in the Table were adjusted based on local science and monitoring data to define the range of characteristics used in this subregion. Thus, the habitat objectives provide the broad vegetative conditions we strive to obtain across the landscape that indicate the seasonal habitats used by sage-grouse. These habitat indicators are consistent with the rangeland health indicators used by the BLM. The habitat objectives would be part of the sage-grouse habitat assessment to be used during land health evaluations (Monitoring Framework, Appendix AA, section B). These habitat objectives are not obtainable on every acre within the designated GRSG habitat management areas. Therefore, the determination on whether the objectives have been met would be based on the specific site's ecological ability to meet the desired condition identified in the table. All BLM use authorizations would contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives. If monitoring data show the habitat objectives have not been met nor progress being made towards meeting them, there would be an evaluation and a determination made as to the cause.

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				If it is determined that the authorized use is a cause, the use would be adjusted by the response specified in the instrument that authorized the use.
	Surface use is prohibited from December 1 to March 31 within crucial winter range for sage-grouse. Stipulation does not apply to the operation and maintenance of production facilities. Note: Crucial winter range was not designated for Greater Sage-Grouse.	Surface use for oil and gas exploration (including geophysical operations) would be prohibited from December 1 to March 1 within Greater Sage-Grouse winter range or within 4 miles of a Greater Sage-Grouse lek (TL). The following special operating constraints apply in Greater Sage-Grouse winter range: surface occupancy and surface disturbance density and / or mitigation plan (CSU) within Greater Sage-Grouse winter range.	Surface use for oil and gas exploration (including geophysical operations) would be prohibited from December 1 to March 1 within Greater Sage-Grouse winter range or within 2 miles of a Greater Sage-Grouse lek (TL).	Surface occupancy and use is prohibited within Greater sage-grouse crucial winter range (NSO).
	No similar action	Manage priority sage-grouse habitats so that discrete anthropogenic disturbances cover less than 3% of the total sage-grouse habitat regardless of ownership to protect priority sage-grouse habitats from anthropogenic disturbances that would reduce distribution or abundance of sage-grouse.	The BLM would apply appropriate mitigation measures and conservation actions to BLM authorized activities to avoid, minimize, rectify, reduce, or compensate for impacts if an evaluation of the project area indicates the presence of important wildlife species, seasonal wildlife habitat, or other resource concern.	If the 3% anthropogenic disturbance cap is exceeded on lands (regardless of land ownership) within GRSG Priority Habitat Management Areas in any given Biologically Significant Unit, then no further discrete anthropogenic disturbances (subject to applicable laws and regulations, such as the 1872 hard rock mining law, valid existing rights, etc.) would be permitted by BLM within GRSG Priority Habitat Management Areas in any given Biologically Significant Unit until the disturbance has been reduced to less than the cap. If the BLM determines that the State of Montana has adopted a GRSG Habitat Conservation Program that contains comparable components to those found in the State of Wyoming's Core Area Strategy including an all lands approach for calculating anthropogenic disturbances, a clear methodology for measuring the density of operations, and a fully operational Density Disturbance Calculation Tool, the 3% disturbance cap would be converted to a 5% cap for all sources of habitat alteration within a project analysis area

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				If the 3% disturbance cap is exceeded on all lands (regardless of land ownership) within a proposed project analysis area in a Priority Habitat Management Areas, then no further anthropogenic disturbance would be permitted by BLM until disturbance in the proposed project analysis area has been reduced to maintain the area under the cap (subject to applicable laws and regulations, such as the 1872 hard rock mining law, valid existing rights, etc.).
	Priority Habitat Management Areas (PHMAs) for Greater Sage-Grouse habitat: to maintain or improve Greater Sage-Grouse populations by maintaining Greater Sage-Grouse habitat in good condition.			
	No similar action - Greater Sage-Grouse habitat is managed uniformly throughout the planning area.	Establish Greater Sage-Grouse PHMAs (158,926 acres of BLM-administered lands and 60,569 acres of federal minerals). These PHMAs are generally consistent with MTFWP Greater Sage-Grouse core area designations, with the exception of one small area in southern Carbon County near Elk Basin Oil field (Map 23).		
	No similar action			In all Priority Habitat Management Areas, the desired condition is to maintain a minimum of 70% of lands capable of producing sagebrush with 10 to 30% sagebrush canopy cover. The attributes necessary to sustain these habitats are described in Interpreting Indicators of Rangeland Health (BLM Tech Ref 1734-6).*
	No similar action			In undertaking BLM management actions, and consistent with valid and existing rights and applicable law in authorizing third-party actions, the BLM would apply the lek buffer-distances identified in the USGS Report Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review (Open File Report 2014-1239) in accordance with Appendix AA (section G).
	No similar action			No waivers or modifications to a fluid mineral lease no-surface-occupancy stipulation would be granted. The Authorized Officer may grant an exception to a fluid mineral lease no-surface-occupancy stipulation only where the proposed action:

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Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				i. Would not have direct, indirect, or cumulative effects on GRSG or its habitat; or, ii. Is proposed to be undertaken as an alternative to a similar action occurring on a nearby parcel, and would provide a clear conservation gain to GRSG. Exceptions based on conservation gain (ii) may only be considered in (a) PHMAs of mixed ownership where federal minerals underlie less than fifty percent of the total surface, or (b) areas of the public lands where the proposed exception is an alternative to an action occurring on a nearby parcel subject to a valid Federal fluid mineral lease existing as of the date of this RMP [revision or amendment]. Exceptions based on conservation gain must also include measures, such as enforceable institutional controls and buffers, sufficient to allow the BLM to conclude that such benefits would endure for the duration of the proposed action's impacts. Any exceptions to this lease stipulation may be approved by the Authorized Officer only with the concurrence of the State Director. The Authorized Officer may not grant an exception unless the applicable state wildlife agency, the USFWS, and the BLM unanimously find that the proposed action satisfies (i) or (ii). Such finding shall initially be made by a team of one field biologist or other GRSG expert from each respective agency. In the event the initial finding is not unanimous, the finding may be elevated to the appropriate BLM State Director, USFWS State Ecological Services Director, and state wildlife agency head for final resolution. In the event their finding is not unanimous, the

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				exception would not be granted. Approved exceptions would be made publically available at least quarterly."
	No similar action	Create Greater Sage-Grouse ACEC on the 158,926 acres of BLM managed surface of Greater Sage-Grouse PHMAs.	No ACEC established	
	Open to oil and gas leasing and geophysical operations, subject to the following lease stipulations: Surface occupancy and use would be prohibited within 0.25 miles of Greater Sage-Grouse leks (NSO).	Closed to future oil and gas leasing, exploration and/or development and prohibit other surface disturbing and disruptive activities (NL). Surface occupancy and use would be prohibited in all PHMA habitat areas. Leases would not be renewed upon expiration.	Open to oil and gas leasing and development (including geophysical exploration). Surface occupancy and use would be prohibited within 0.6 miles of Greater Sage-Grouse leks (NSO). Surface occupancy and use would be subject to the following special operating constraints: surface occupancy and surface disturbance density and mitigation plan (CSU).	Open to oil and gas leasing and development (including geophysical exploration). To protect Greater Sage-grouse, a priority species for management, surface occupancy and use would be prohibited within Greater Sage-Grouse Priority Habitat Management Areas (NSO).
	Open to commercial renewable energy.	Exclusion area for renewable and solar energy exploration and facility development.	Avoidance area for renewable and solar energy exploration and facility development with approved mitigation.	Same as B
	Open for ROWs.	Exclusion area for major and minor ROWs, except for valid existing rights.	Avoidance area for major and minor ROWs. However ROWs would only be allowed in GRSG PHMAs where habitat functionality would be maintained.	Same as C
	Greater Sage-Grouse Restoration Areas (RAs): In these areas, BLM would manage habitat so that Greater Sage-Grouse populations can be restored over the long-term. BLM would strive to restore historical Greater Sage-Grouse habitat functionality, or at a minimum, have no net loss of Greater Sage-Grouse habitat, to support Greater Sage-Grouse populations.			
	No similar action - Greater Sage-Grouse habitat is managed uniformly throughout the planning area.	Establish RAs (78,927 acres of BLM-administered lands and 22,951 acres of federal mineral estate). These areas would include one small polygon of core habitat in Carbon County near Elk Basin Oil Field, as well as other areas (Map 23).		
	Open to oil and gas leasing and geophysical operations, subject to the following lease stipulations: • Surface occupancy and use would be prohibited within ¼ miles of Greater Sage-Grouse leks (NSO). • Surface occupancy and use would be	Surface occupancy and use for oil and gas exploration and development would be prohibited within 0.6 miles of Greater Sage-Grouse leks (NSO). Surface use for oil and gas exploration and development would be prohibited from March 1 to June 15 in Greater Sage-Grouse nesting	Surface occupancy and use for oil and gas exploration and development would be prohibited within ¼ miles of Greater Sage-Grouse leks (NSO). Surface use for oil and gas exploration and development would be prohibited from March 1 to June 15 in sage- grouse	Surface occupancy and use for oil and gas exploration and development would be prohibited within 0.6 miles of Greater Sage-Grouse leks (NSO). Surface use for oil and gas exploration and development would be prohibited from March 1 to June 15 in Greater Sage-Grouse nesting

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	prohibited from March 1 to June 15 in sage- grouse nesting habitat within 2 miles of a lek (TL).	habitat within 4 miles of a lek (TL). Surface occupancy and use for oil and gas exploration and development would be subject to the following special operating constraints that would maintain Greater Sage-Grouse habitat (CSU –surface occupancy and surface disturbance density and mitigation plan).	nesting habitat within 2 miles of a lek (TL).	habitat within 3 miles of a lek (TL). Surface occupancy and use for oil and gas exploration and development would be subject to the following special operating constraints that would maintain Greater Sage-Grouse habitat: surface disturbance density and mitigation plan (CSU).
	Open to geophysical exploration, subject to the following: • Surface occupancy and use would be prohibited within ¼ miles of Greater Sage-Grouse leks. (NSO) • Surface use is prohibited from March 1 to June 15 in grouse nesting habitat within 2 miles of a lek (TL).	Geophysical exploration would be allowed on existing roads and trails with surface use prohibited from March 1 to June 15 within 4 miles of a lek (TL).	Geophysical exploration would be allowed if the applicant demonstrates that Greater Sage-Grouse habitat suitability would be maintained.	Same as B
	Open to commercial renewable energy.	GRSG Restoration Areas outside of Elk Basin would be exclusion areas for renewable and solar energy exploration and facility development.	GRSG Restoration Areas outside of Elk Basin would be avoidance areas for renewable and solar energy exploration, development and facilities with approved mitigation.	Same as C
	Open to commercial renewable energy.	The Elk Basin GRSG Restoration Area would be an exclusion area for renewable and solar energy exploration and facility development.	The Elk Basin GRSG Restoration Area would be an avoidance area for renewable and solar energy exploration, development and facilities with approved mitigation.	Same as B
	Open for ROWs	Avoidance area for major and minor ROWs.	Avoidance area for major and minor ROWs. However ROWs would only be allowed in GRSG RAs where habitat functionality would be maintained.	Same as C
	Greater Sage-Grouse Habitat: General Habitat Management Areas (GHMAs): BLM would maintain habitat for viable Greater Sage-Grouse populations to promote movement and genetic diversity. Maintain, restore or enhance Greater Sage-Grouse habitat and connectivity between sagebrush habitats, with emphasis on those habitats occupied by Greater Sage-Grouse.			
	Greater Sage-Grouse habitat is managed uniformly throughout the planning area.	Establish General Habitat Management Areas (113,816 acres of BLM-administered lands and 57,420 acres of federal mineral estate). These areas include a 3 mile buffer around Greater Sage-Grouse leks, outside of the PHMA and RA areas (Map 23).		
	No similar action			In undertaking BLM management actions, and consistent with valid and existing rights

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				and applicable law in authorizing third-party actions, the BLM would apply the lek buffer-distances identified in the USGS Report Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review (Open File Report 2014-1239) in accordance with Appendix AA (section G).
	Oil and gas leasing and development would not be allowed within ¼ mile of Greater Sage-Grouse leks (NSO). Oil and gas surface occupancy and use would be prohibited from March 1 to June 15 in Greater Sage-Grouse nesting habitat within 2 miles of a lek (TL).	Surface occupancy and use for oil and gas exploration and development would be prohibited within 0.6 miles of the perimeter of Greater Sage-Grouse leks (NSO). To protect nesting Greater Sage-grouse, surface occupancy and use within 2 miles of a lek may be restricted or prohibited. Prior to such activities, a plan to mitigate impacts to nesting Greater Sage-grouse and Greater Sage-grouse nesting habitat would be prepared by the proponent and implemented upon approval by the authorized officer (CSU).	Oil and gas leasing and development would be prohibited within ¼ miles of Greater Sage-Grouse leks (NSO). Surface use for oil and gas exploration and development would be prohibited from March 1 to June 15 in Greater Sage-Grouse nesting habitat within 2 miles of a lek (TL).	Same as B
	Open to geophysical exploration, subject to the following: • Surface occupancy and use would be prohibited within ¼ mile of Greater Sage-Grouse leks. (NSO) • Surface use is prohibited from March 1 to June 15 in grouse nesting habitat within 2 miles of a lek (TL).	Geophysical exploration would be allowed on existing roads and trails with surface use prohibited from March 1 to June 15 within 3 miles of a lek (TL).	Geophysical exploration would be allowed with mitigation to maintain Greater Sage-Grouse habitat suitability.	Same as B
	Open to commercial renewable energy.	Exclusion area for renewable and solar energy exploration and facility development.	Avoidance area for renewable and solar energy exploration, development and facilities with approved mitigation.	Same as C
	Open for ROWs	GRSG GHMAs would be avoidance areas for major and minor ROWs.	ROWs would be allowed. Utilities and similar facilities would be located adjacent to other facilities where practical and only when habitat can be maintained.	GRSG GHMAs would be avoidance areas for major ROWs. GRSG GHMAs would be open to minor ROWs. Utilities and similar facilities would be located adjacent to other facilities where practical and

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				only when habitat can be maintained.
Fisheries Habitat and Special Status Species (Fisheries)				
The BLM goals for the management of fisheries resources within the Billings Field Office decision area are to manage aquatic and riparian habitats to provide native and desirable non-native aquatic species diversity and viability, sustaining ecological, economic and social values while providing for multiple uses of public lands. The BLM partners with Montana Fish, Wildlife and Parks (MTFWP) and other natural resource management agencies in plans to provide sound ecological management of aquatic resources, implementing a variety of management actions that regulate resource uses or activities that have the potential to degrade or enhance riparian and aquatic habitats. The actions specific to fisheries and aquatic resource management are listed below, by alternative. These actions primarily focus on reducing ground disturbance in or near riparian areas adjacent to fisheries and water resources, which can lead to degraded riparian function, increasing erosion, sedimentation, and water temperatures, and direct habitat alteration (increased width to depth ratios, removal of security cover and loss of coarse woody debris recruitment). These actions would guide the authorization of BLM activities, ensuring the maintenance or enhancement of riparian and aquatic habitats to protect water quality, fisheries and other aquatic species from harmful impacts associated with those activities. The BLM identifies opportunities to protect these resources in partnership with private land owners adjacent to public lands, generally expanding quality fisheries and habitat management where feasible. Actions under "Management Common to All Alternatives", sets the basis for fisheries habitat management, while those actions in various alternatives provides a range of levels of protection that may impact other resource uses. Some actions associated with other resources (soils, water, wildlife, vegetative communities, etc.) benefit fisheries resources by concentrating on watershed health, promoting proper drainage of the surrounding uplands. The Billings Field Office decision area contains populations of Yellowstone Cutthroat Trout (YCT) and associated habitat. YCT are a BLM special status fish species, warranting specific actions to protect and enhance existing populations and habitat conditions. Many actions listed below have been developed through cooperative efforts to ensure viable populations persist in existing habitats, as well as opportunistically restoring habitats and populations in streams that currently do not have populations.				
Fisheries – Desired Outcomes (Goals and Objectives)				
• Manage aquatic habitat to provide native and desirable non-native species diversity and viability, and sustain ecological, economic, and social values while providing for multiple uses of public lands. • Manage aquatic ecosystems to provide sustainable recreational and educational benefits to the public. • Manage fisheries habitat to support Montana Fish, Wildlife and Park's Strategic Habitat Plan and the Montana Comprehensive Fish and Wildlife Conservation Strategy. • Management activities would emphasize restoration and/or maintenance of riparian structure, composition, and processes, including physical integrity of riparian ecosystems, amount and distribution of woody debris to sustain physical and biological complexity, adequate summer and winter thermal regulation, water quality and hydrologic processes, distribution and diversity of riparian vegetative communities and source habitats for riparian dependent species. • Use cooperative efforts to minimize negative impacts to, or enhance aquatic ecosystems on adjacent private lands. • Coordinate with other agencies to prevent or control diseases, pests and species that threaten the health of humans, wildlife, livestock, and vegetation. • Manage or restore habitat on BLM-administered lands within the planning area to facilitate the conservation, recovery and maintenance of populations of native and special status species (BLM special status species, Candidate species, USFWS listed, proposed, or petitioned species) consistent with appropriate local, state, and federal management plans. • Yellowstone Cutthroat Trout bearing waters and associated riparian habitat would be managed to protect all ecological values necessary to maintain or enhance YCT populations (using guidelines outlined in the *Conservation Strategy for Yellowstone Cutthroat Trout in the States of ID, MT, UT, NV, and WY*).				
Fisheries – Management Common to All Alternatives				
	Manage riparian areas and wetlands supporting fisheries toward PFC, as required through Standards and Guidelines.			
	Roads would be located, designed and maintained, to the extent practical, to reduce sedimentation, identify and remove unnatural barriers, eliminate fish passage barriers (when desired), and restore or maintain riparian vegetation.			
	Manage siting of facilities to minimize impacts on fish habitat function and quality, to minimize impacts on vegetation resources for all uses, and to minimize fish mortality during the life of			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	the facility.			
	If natural barriers cannot be used, in-channel barriers (including selective barriers) would be constructed downstream of the native fish populations at risk from invasion.			
	Impacts beyond the riparian zone would be considered as part of YCT habitat management. Project-level activities would mitigate impacts on water quality, in-stream habitat, channel morphology, and riparian areas to benefit YCT populations.			
	Habitat-improvement techniques would be used where appropriate to provide missing habitat components or improve existing habitats.			
	The BLM would continue to partner with MT FWP in the establishment of fishing access sites.			
	Land and water management decisions likely to affect YCT populations would include both pre- and post-project evaluation and monitoring to ensure that the habitat elements for YCT are protected.			
	Use restoration to enhance YCT habitat and riparian function where habitat conditions are determined to be degraded.			
	Opportunistically enhance or restore habitat for populations of YCT.			
	Establish high priority YCT habitat zones and increase monitoring on YCT bearing streams to ensure no significant degradation to water quality and fish habitat.			
	Develop and maintain a prairie fish and fish habitat inventory and identify potential or suitable habitat.			
	Fisheries – Management Actions by Alternative			
	No current management decision provided	Mitigation of surface-disturbing activities would be applied where needed to minimize impacts of human activities on important fisheries, riparian and water resources, consistent with the stipulations identified for oil and gas development in this section. Mitigation measures would be applied during activity level planning if an on-site evaluation of the project area indicates the presence of important fisheries, water or riparian resources. Exceptions may be granted by the authorized officer, if an environmental review demonstrates that effects could be mitigated to an acceptable level, habitat for the species is not present in the area, or portions of the area can be occupied without affecting a particular species or habitat. Exceptions may also be granted where the short-term effects are mitigated by the long-term benefits (e.g., prescribed fire, wildlife monitoring, forest health treatments, and habitat restoration). As defined in this chapter and in the Glossary, surface-disturbing and disruptive activities would not prohibit all activities or authorized uses. For example, emergency activities (e.g., fire suppression, search and rescue), rangeland monitoring, routine maintenance associated with an approved authorization, dispersed recreational activities (e.g., hunting, hiking), and livestock grazing are not considered surface-disturbing or disruptive activities.		
	Oil and gas leasing and development would only be allowed with an NSO stipulation on riparian areas or wetlands. NSO within 100 year flood plains of major rivers and on water bodies and streams.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ¼ mile of riparian areas and wetlands, water bodies, perennial streams, and flood plains of perennial streams.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within riparian areas and wetlands, water bodies, perennial streams, and flood plains of perennial streams.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within riparian areas and wetlands, water bodies, perennial and intermittent streams, and floodplains of perennial streams. (NSO) Surface occupancy and use would be controlled within 300 feet of riparian and/or

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				wetland areas. Surface-disturbing activities would require a plan with design features that demonstrate how all actions would maintain and/or improve the functionality of riparian and wetland areas, The plan would address: (a) potential impacts to riparian and wetland resources, (b) mitigation to reduce impacts to acceptable levels (including timing restrictions), (c) post project restoration, and (d) monitoring (the operator must conduct monitoring capable of detecting early signs of change in riparian and/or wetland conditions. (CSU)
	No current management decision provided.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ½ mile of Blue and Red Ribbon streams, YCT populations and YCT suitable habitat (Maps 26-28).	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ¼ mile of Class I (Blue Ribbon) streams, and YCT populations (Maps 26, 27).	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ½ mile of Class I (Blue Ribbon) streams, and YCT populations (Maps 26, 27).
	NSO for oil and gas leasing and development and geophysical exploration within ¼ mile of designated reservoirs with fisheries.	Surface occupancy and use for oil and gas exploration (including geophysical operations) would be prohibited within ½ mile of designated reservoirs with fisheries.	Same as A	Same as A
	Spring developments would be considered on a case-by-case basis.	New spring developments would not be authorized in riparian areas or wetlands.	New spring developments would be authorized and fenced if the development would maintain the integrity and functionality of the associated riparian area/wetland.	Same as C
	Approximately 10 miles of streams with active fisheries would be surveyed per year to collect species occurrence and habitat condition data.	Habitat conditions would be monitored on fish-bearing streams (approx. 10 miles) on a 3 year rotation.	Fish-bearing stream habitat would not be surveyed or monitored. Other source-data (e.g., FWP) would be used to assist in management decisions as needed.	Habitat conditions would be monitored on fish-bearing streams (approx. 7 miles) with existing or potential threats, where grazing or human-caused impacts are likely.
	No current management decision provided	Livestock grazing would be excluded from fish bearing streams and associated riparian habitat. Fencing around the riparian zone, or at least 50' from the water's edge or using drift fence or other methods to exclude livestock from the riparian zone.	Livestock grazing would be allowed on YCT- bearing or other sensitive habitats as long as rangeland health standards are being met. If standards cannot be met through grazing management, grazing would be excluded. Fencing around the riparian zone, or at	Same as C

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Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
			least 50' from the water's edge or using drift fence or other methods to exclude livestock from the riparian zone.	
	Survey three reservoirs per year to determine suitability for sport fishery.	Reservoir fishery development would not be promoted by the BLM.	Existing and potential reservoirs would be developed to promote recreational fisheries and riparian/aquatic habitat enhancement.	Development of existing or potential reservoirs would be considered to promote recreational fisheries and riparian/aquatic habitat enhancement.
Wild Horses				
Protection, management, and control of wild horses to ensure a thriving natural ecological balance and preserving multiple use relationships are the primary management drivers for wild horses maintained on BLM administered lands. Wild horses are principally managed under authorities from the Wild Free-Roaming Horse and Burro Act of 1971, as amended. Numerous other public land laws (e.g. Federal Land Policy and Management Act, Public Range Improvement Act, Taylor Grazing Act, Antiquities Act, Wilderness Act) other Federal Agencies (e.g. United States Forest Service, National Park Service) and Secretarial Orders also dictate management activities that can occur on the land and resources that wild horses use. Due to this myriad of public land law, the primary management tool for wild horses is maintenance of numbers or appropriate management level (AML) through removal of excess animals or fertility control (e.g. birth control or sterilization). Management of the wild horses on the range is designed to manage both the population and individual animals while making progress towards standards for rangeland health, in balance with other multiple uses.				
Wild Horses– Desired Outcomes (Goals and Objectives)				
• Maintain, protect, manage, and control a healthy wild horse herd inside the herd management area within the appropriate management level to ensure a thriving natural ecological balance, while preserving multiple use relationships with other uses and resources, and making progress towards Standards for Rangeland Health (Standards 1 and 5). • Maintain a wild horse herd that exhibits a diverse age structure, genetic diversity, and any characteristics unique to the Pryor horses. • Manage wild horses within a balanced program which considers all values without impairment to the productivity of the land.				
Wild Horses– Management Common to All Alternatives				
	Initially, the wild horse population would be managed within a population range between 90 to 120 wild horses.			
	Maintain a wild horse herd that exhibits a diverse age structure, genetic diversity, and any characteristics unique to the Pryor horses.			
	Unless otherwise specified, implementation level planning through a Herd Management Area Plan (HMAP) or other activity level plans would identify and set objectives for, but not limited to, the following: herd composition, animal characteristics, genetics, and habitat development needs; soil, vegetation, and watershed characteristics; and establishment and adjustment to appropriate management level (AML).			
	Appropriate management levels would be adjusted as needed to ensure a thriving natural ecological balance through monitoring and data collection including but not limited to: forage utilization, trend, ecological condition, precipitation data, rangeland health assessments, population inventory, climate or habitat changes, and range availability.			
Wild Horses– Management Actions by Alternative				
	Herd Management Area Establishment			
	Manage wild horses on approximately 24,595 acres of BLM-administered lands (37,494 acres all ownerships) (Map 31).	Manage wild horses only within the boundaries of the original Secretarial Orders from 1968 and 1969 (23,204 acres BLM-administered	Manage wild horses on approximately 28,622 acres of BLM-administered lands (44,855 acres all ownerships) (Map 33).	Manage wild horses on approximately 27,094 acres of BLM-administered lands (39,994 acres all ownerships) (Map 34).

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Keep the administrative pastures closed as well as areas adjacent to private lands to reduce public/private conflicts.	lands and 31,153 acres all ownerships) (Map 32). The rest of the Herd Area would be closed to wild horse use in order to maximize protection of plant species of concern, sub-alpine meadows and to protect wild horses from commercial uses.	Designate the entire Herd Area as the Herd Management Area.	Designate the closed portions of the Herd Area known as the administrative pastures to be included in the Herd Management Area. Due to private property conflicts, the "buffer" area would remain closed.
	Herd Characteristics			
	Within an HMAP, herd structure would be managed for all representations in the herd, not allowing specific colors or bloodlines to dominate from management manipulation.	Within an HMAP, herd structure would be managed through natural selection with no promotion of any characteristics or preservation of colors or bloodlines.	Within an HMAP, herd structure would be managed for and to promote the public perception of the quintessential Pryor horse that is Dun or Grulla with striping and line back markings.	Same as A
	Appropriate Management Levels			
	Appropriate management level (AML) determination would be made within the context of having the maximum amount of wild horses the range can sustain while preventing deterioration.	Appropriate management level (AML) determination would be made within the context of having a minimum amount of wild horses in order to improve ecological conditions, protecting other resources and individual animals.	Same as A	Same as A
	Wild Horse Habitat			
	Range improvements would be authorized through site-specific analysis. Vegetation conversion treatments would not be allowed.	Range improvements and/or vegetation treatments would not be authorized in wild horse habitat; only natural processes would be allowed to occur.	Maximize the amount of acres available for vegetation treatments and/or water developments that potentially increase forage availability for wild horses that is compliant with other multiple-use decisions and restrictions.	Same as C
Cultural and Heritage Resources				
Management of cultural resources is directed primarily, but not exclusively, by two laws: the National Historic Preservation Act of 1966, as amended, and the Archaeological Resources Protection Act of 1979. The National Historic Preservation Act requires management and enhancement of significant historic properties and the Archaeological Resources Protection Act requires protection of archaeological resources (sites and objects of 100 years or more in age). The Federal Land Policy and Management Act directs the Bureau of Land Management to manage public lands on the basis of multiple use and to "protect the quality of historical resources and archaeological values." This act provides for the periodic inventory of public lands and resources. Following Washington Office Instruction Bulletin 2002-101, the BLM would allocate all cultural resources in the Billings Field Office, whether already recorded or projected to occur on the basis of existing data synthesis (including cultural landscapes), or not projected to occur but later identified through inventory, to the following uses according to their nature and relative preservation value. *These use allocations pertain to cultural resources, not to areas of land.* Each resource would be assigned to a primary use category, but that assignment would not preclude management from other use categories. The six types of use allocations are: Scientific Use, Conservation for Future Use, Traditional Use, Public Use, Experimental Use, and Discharged from Management. See the			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Cultural category in the glossary for cultural use allocation definitions and Appendix F for management direction of site types.				
Cultural and Heritage Resources – Desired Outcomes (Goals and Objectives)				
• Identify, preserve, and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations (FLPMA, Section 103 (c), 201(a) and (c); National Historic Preservation Act, Section 110(a); Archaeological Resources Protection Act, Section 14(a)). • Seek to reduce imminent threats and resolve potential conflicts from natural or human-caused deterioration, or potential conflict with other resource uses (FLPMA Section 203(c), NHPA 106, 110(a) (2)) by ensuring that all authorizations for land use and resource use would comply with the NHPA Section 106. • Cultural resources on BLM-administered land would be protected and maintained in stable condition. Appropriate management actions would be determined after evaluation and allocation of cultural resource use categories through cultural resource project plans. • Maintain viewsheds of important cultural resources whose settings contribute significantly to their scientific, public, traditional, or conservation values. • Provide and promote research opportunities that would contribute to our understanding of the ways humans have used and influenced the landscape. • Manage historic trails to realize their educational, recreational, and scientific values. • Enhance public understanding of, and appreciation for, cultural resources through educational outreach and heritage tourism opportunities.				
Cultural and Heritage Resources – Management Common to All Alternatives				
	Evaluate cultural resources according to National Register criteria (36 CFR Part 60.4) and assign cultural resources to appropriate use categories as the basis for management decisions (see Appendix F)			
	All sites determined eligible to the National Register of Historic Places would be allocated and managed for Scientific, Public, Traditional, Experimental, and/or Conservation for Future Use. However, if another use becomes evident or proposed after use allocation has occurred, the use allocation may be changed without a plan amendment.			
	All sites determined not eligible to the National Register of Historic Places and not containing antiquities or archaeological resources would be allocated and managed as Discharged from Management Use			
	Cremains scattering would not be permitted on prehistoric or historic archaeological sites, buildings, or structures, Native American burials, sacred sites, or traditional cultural use areas.			
	Design and maintain facilities to preserve the visual integrity of cultural resources, settings, and cultural landscapes consistent with VRM objectives established in the RMP			
	Where feasible, acquire properties adjacent to public lands through donation, exchange, or purchase that contain significant cultural resources including, but not limited to, those properties eligible for inclusion on the NRHP			
	A lease notice (consistent with the Montana guidance for cultural resource protection related to oil and gas) would continue to be issued to ensure that leased lands are examined to determine if cultural resources are present and to specify mitigation measures.			
	A lease notice stipulation would be attached to oil and gas leases around the Lake Mason National Wildlife Refuge to protect cultural resources.			
	A lease notice for NHPA, AIRFA, NAGPRA and E.O. 13007 would be attached to all oil and gas leases.			
Cultural and Heritage Resources – Management Common to Action Alternatives				
	Allowed	A Lease Notice for sacred sites and Historic Properties would be attached to oil and gas leases.		
	Allowed	No Surface Occupancy (NSO) stipulation would be attached to leases for cemeteries or individual gravesites located on private		

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Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		surface/federal mineral estate (known cemeteries include: Annherer Spring Grave, Sunrise Cemetery, Castle Butte Cemetery, and Cabin Creek Cemetery)		
	Allowed	NSO within ½ mile of cultural properties of particular importance to Native Americans (TCPs, traditional use areas, burials, plant gathering locations, etc.)		
	Cultural and Heritage Resources – Management Actions by Alternative			
	The following sites include a small buffer zone for protection from oil and gas actions (NSO): • Steamboat Butte • Bruder-Janich Site • Paul Duke Site • Demi-John Flat NR District • Young's Point • Bighorn Mouth North Cliffs Rock Art Site • Gyp Springs Site • Hoskins Basin Archaeological District	The following sites, districts, or areas would not be available for oil and gas leasing, exploration, and/or development (NL): • Steamboat Butte • Bruder-Janich Site • Paul Duke Site • Demi-John Flat NR District • Bighorn Mouth North Cliffs Rock Art Site • Gyp Springs Site • Hoskins Basin Archaeological District	NSO for oil and gas leasing, development and/or exploration on the following sites, districts, or areas: • Steamboat Butte • Bruder-Janich Site • Paul Duke Site • Demi-John Flat NR District • Bighorn Mouth North Cliffs Rock Art • Gyp Springs Site • Hoskins Basin Archaeological District • Bandit Site (48BH0460)	Same as C
	NSO within sites or areas designated for conservation use, public use or socio-cultural use.	NSO within sites or areas designated for conservation use, public use, scientific use, or traditional use.	NSO within eligible sites or areas designated for conservation use, public use, scientific use, or traditional use, including those areas determined to be traditional cultural properties and/or designated for traditional use.	Same as C
	No current management decision provided	NSO within ½ mile for oil and gas leasing, exploration and/or development on the following historic trails: • Bridger Cut-Off Trail • Meeteetse Trail	Oil and gas leasing, exploration and development would be allowed within ¼ mile of the following historic trails with stipulations (CSU): • Bridger Cut-Off Trail • Meeteetse Trail	Same as C
	Parameter – Cultural Resource Use Allocation – Rock Art Sites			
	The following sites would be allocated to conservation or socio-cultural use: • Steamboat Butte • Paul Duke Site • Petroglyph Canyon ACEC • Castle Butte ACEC • Young's Point	Allocate and manage all National Register eligible rock art sites for Conservation, Traditional, and/or Scientific Use. No interpretative sites would be developed	Allocate and manage all National Register eligible rock art sites for Conservation, Traditional, and/or Public Use. Up to four sites would be developed for interpretative use.	Allocate and manage all National Register eligible sites for Conservation, Scientific, Traditional, and /or Public Use. Interpretative sites would be developed as appropriate.

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Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	• Weatherman Draw ACEC • Bighorn Mouth North Cliffs Rock Art Site			
	Parameter – Cultural Resource Use Allocation – Rockshelter/Cave Sites			
	The following sites would be allocated to conservation or socio-cultural use: • Steamboat Butte • Petroglyph Canyon NR Site • Stark Bison Kill Site • Young's Point • Dryhead Overlook site • Weatherman Draw • Sykes Spring Site	Allocate and manage all National Register eligible sites for Conservation and/or Traditional Use. No interpretative sites would be developed	Allocate and manage all National Register eligible sites to Conservation, Scientific, and/or Public Use. Up to five sites would be developed for interpretative use.	Allocate and manage all National Register eligible sites for Conservation, Scientific, Traditional, and /or Public Use. Interpretative sites would be developed as appropriate.
	Parameter – Cultural Resource Use Allocation – Aboriginal Occupation Sites and Structures (prehistoric & protohistoric)			
	The following sites would be allocated to conservation or socio-cultural use: • Steamboat Butte • Paul Duke Site • Petroglyph Canyon NR Site • Demi-John Flat NR District • Castle Butte • Stark Bison Kill Site • Young's Point • Gyp Springs Site • Dryhead Overlook site • Weatherman Draw • Sykes Spring Site • Bruder-Janich Site	Allocate and manage all National Register eligible sites to Scientific, Traditional, and/or Conservation Use. No interpretative sites would be developed	Allocate and manage all National Register eligible sites to Scientific Public and/or Conservation Use. Up to four interpretative sites would be developed.	Allocate and manage all National Register eligible sites to Scientific, Public, Traditional, and/or Conservation Use. Interpretative sites would be developed as appropriate.
	Parameter – Cultural Resource Use Allocation – Lithic Scatters/Workshops			
	Manage for future Cultural Resource Use Allocations	Allocate and manage all National Register eligible sites to Conservation Use.	Allocate and manage all National Register eligible sites to Conservation and or Scientific Use.	Same as C

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Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Parameter – Cultural Resource Use Allocation – Communal Kill Sites			
	The following sites would be allocated to conservation or socio-cultural use: • Steamboat Butte • Castle Butte • Stark Bison Kill Site • Young's Point • Sykes Spring Site	Allocate and manage all National Register eligible sites to Conservation and/or Scientific Use. No interpretative sites would be developed	Allocate and manage all National Register eligible sites to Scientific, Public, and/or Experimental Use. Up to five interpretative sites would be developed.	Allocate and manage all National Register eligible sites to Conservation, Scientific, and/or Public Use. Interpretative sites would be developed as appropriate.
	Parameter – Cultural Resource Use Allocation – Aboriginal trails			
	Manage for future Cultural Resource Use Allocations. Allocate and manage Demi-John Flat NR District.	Allocate and manage all National Register eligible sites to Conservation and/or Traditional Use. No interpretative sites would be developed	Allocate and manage all National Register eligible sites to Conservation and/or Public Use. Up to three interpretative sites would be developed.	Allocate and manage all National Register eligible sites to Conservation, Traditional, and/or Public Use. Interpretative sites would be developed as appropriate
	Parameter – Cultural Resource Use Allocation – Lithic Procurement Sites/Quarries (bedrock and surface)			
	Manage for future Cultural Resource Use Allocations	Allocate and manage all National Register eligible lithic procurement sites/quarries to Conservation and/or Traditional Use	Allocate and manage all National Register eligible lithic procurement sites/quarries to Conservation, Traditional, and/or Scientific Use.	Same as C
	Parameter – Cultural Resource Use Allocation – Vision Quest Sites/Sacred Sites/TCPs/Ethnohistoric Sites			
	Manage for future Cultural Resource Use Allocations	Allocate and manage all National Register eligible sites to Conservation and/or Traditional Use	Same as B	Same as B
	Parameter – Cultural Resource Use Allocation – Historic Features			
	Manage for future Cultural Resource Use Allocations	Allocate and manage all National Register eligible sites to Conservation and/or Scientific Use	Allocate and Mange all National Register eligible sites to Conservation and/or Public Use.	Same as B
	Parameter – Cultural Resource Use Allocation – Historic Roads/Trails			
	Manage for future Cultural Resource Use Allocations	Allocate and manage all National Register eligible resources for Scientific, Conservation, and/or Public Use. No interpretative sites would be developed.	Allocate and manage all National Register eligible resources for Scientific, Conservation, and/or Public Use. Interpretative sites would be developed at all sites allocated and managed for Public Use.	Allocate and manage all National Register eligible resources for Scientific, Conservation, and/or Public Use. Interpretative sites would be developed as appropriate.
	Parameter – Cultural Resource Use Allocation – Historic Structures and/or Homesteads			

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Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Manage for future Cultural Resource Use Allocations	Allocate and manage all National Register eligible sites to Scientific and/or Conservation Use. No interpretative sites would be developed	Allocate and manage all National Register eligible sites with standing structures to Public Use. Allocate and manage all National Register eligible sites to Scientific, Conservation, and/or Public Use. Up to three interpretative sites would be developed.	Allocate and manage all National Register eligible sites to Scientific, Conservation, and/or Public Use. Interpretative sites would be developed as appropriate.
	Parameter – Cultural Resource Use Allocation – Historic Industrial/Development (mines, oil/gas, etc.)			
	Manage for future Cultural Resource Use Allocations	Allocate and manage all National Register eligible sites to Conservation Use.	Allocate and manage all National Register eligible sites to Conservation and/or Scientific Use.	Same as C
	Parameter – Cultural Resource Use Allocation – Historic Structures and/or Homesteads			
	Manage for future Cultural Resource Use Allocations	Allocate and manage all National Register eligible sites to Scientific and/or Conservation Use. No interpretative sites would be developed	Allocate and manage all National Register eligible sites with standing structures to Public Use. Allocate and manage all National Register eligible sites to Scientific, Conservation, and/or Public Use. Up to three interpretative sites would be developed.	Allocate and manage all National Register eligible sites to Scientific, Conservation, and/or Public Use. Interpretative sites would be developed as appropriate.
	Parameter – Cultural Resource Use Allocation – "Other" Sites			
	Manage for future Cultural Resource Use Allocations	All National Register eligible sites would be allocated and managed for Scientific and/or Conservation Use.	All National Register eligible sites would be allocated and managed for Scientific and/or Conservation Use with public use being monitored.	Same as C
Paleontological Resources				
The BLM has authority to manage and protect paleontological resources under the Paleontological Resources Preservation Act (PRPA) 2009 (P.L. 111-011 Title VI Subtitle D). PRPA directs the BLM to manage, protect, and preserve paleontological resources using scientific principles and expertise as well as provide for public education and awareness, scientific research, curation, and other proactive efforts.				
Paleontological Resources – Desired Outcomes (Goals and Objectives)				
• Identify, manage, and monitor at-risk paleontological resources (scientific values); preserve and protect vertebrate fossils through best science methods; and promote public and scientific use of invertebrate and paleo-botanical fossils. • Manage fossil locales with high scientific value in a stable condition, while allowing appropriate scientific and public use. • Locate, evaluate, and manage paleontological resources and protect them where appropriate • Facilitate suitable scientific, educational, and recreational uses of fossils				

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
• Ensure that significant fossils are not inadvertently damaged, destroyed, or removed from public ownership as a result of surface disturbance or land tenure adjustments				
Paleontological Resources – Management Common to All Alternatives				
	The Potential Fossil Yield Classification (PFYC) system would be used to assess possible resource impacts and mitigation needs for Federal actions involving surface disturbance, land tenure adjustments, and land-use planning			
	Recreational collectors may collect and retain reasonable amounts of common invertebrate and plant fossils for personal, non-commercial use. Surface disturbance must be negligible and mechanized tools cannot be used			
	Vertebrate fossils can be collected only under a permit issued to qualified individuals. Vertebrate fossils include bones, teeth, eggs, and other body parts of animals with backbones, such as dinosaurs, fish, turtles, and mammals. Vertebrate fossils also include trace fossils such as footprints, burrows, gastroliths, and coprolites.			
	Fossils collected under a permit remain the property of the federal government and must be placed in a suitable repository which would be identified at the time of permit issuance			
	Lands identified for disposal or exchange would be evaluated to determine whether such actions would remove significant fossils from federal ownership			
	Where feasible, acquire properties adjacent to public lands through donation, exchange, or purchase that contain significant paleontological resources			
	Surface occupancy and use is prohibited within designated or recorded paleontological sites (NSO)			
Paleontological Resources – Management Actions by Alternative				
	The combination of Lease Stipulations and Lease Terms would mitigate impacts to paleontological resources on a case by case basis.	For oil and gas leasing, exploration, and development occurring within PFYC Class 3 or higher, a lease notice would be attached. Assessment, inventory, and/or mitigation would be required based on PFYC class (Map 35).		
	No current management decision provided	For all surface disturbing activities occurring within PFYC Class 3 or higher units, a stipulation or condition of approval would be included on the permitting document. Assessment, inventory, and/or mitigation would be required based on PFYC class (Map 35).		
	Written information about fossils and hobby fossil collecting would be provided	Written and web-based information would be provided about fossils, hobby collecting, and local interpretative sites	Same as A	Written and web-based information would be developed, maintained, and provided about fossils and to promote visitor education
	Paleontological Resource Use permits for scientific study would be issued	Paleontological Resource Use permits would be issued for scientific study, promoting or supporting investigations in poorly documented areas	Same as A	Paleontological Resource Use permits would be issued for scientific study. BLM would support investigations in lesser known areas and in areas where surface disturbance is occurring or anticipated.
	Collection of common invertebrate and plant fossils for personal, non-commercial use would be allowed	Collection of common invertebrate and plant fossils would be allowed for personal, non-commercial use.	Collection of common invertebrate and plant fossils for personal, non-commercial use would be allowed. Areas for hobby collection would be identified and monitored.	Collection of common invertebrate and plant fossils would be allowed for personal, non-commercial use. Areas with vertebrate fossils would be closed to common invertebrate and plant fossil

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				hobby collecting unless collection activity is authorized by the BLM.
Visual Resources				
Visual resources are the visible physical features in a landscape defined by landforms, water, vegetation, animals, structures, and other natural or manmade features. The purpose of visual resource management (VRM) program is to manage the visual environment and any potential visual impediments while maintaining the viability of resource programs in the BiFO planning area. Lands are first inventoried using the visual resource inventory (VRI) process in BLM Manual 8410-1, and then assigned visual resource management classes (VRM) which have different management objectives, found in BLM Manual 8431-1. The Billings Field Office goal is to manage public lands for their scenic values while providing for the overall multiple-use and quality of experience to visitors of public lands. Through the VRI process, the Billings Field Office would establish visual management objectives to minimize adverse impacts to the visual resources on the landscape.				
Visual Resources – Desired Outcomes (Goals and Objectives)				
• Manage public lands for their scenic values while providing for the overall multiple-use and quality of experience to visitors of public lands. • Establish visual management objectives to minimize adverse impacts to the visual resources on the landscape. • Maintain the overall integrity of VRM classes, while allowing for modifications to landscapes in those classes, consistent with the established management objectives.				
Visual Resources – Management Common to All Alternatives				
	Manage visual resources according to established guidelines for VRM classes.			
	Use the visual resource contrast rating system during project level planning to determine whether or not proposed activities would meet VRM objectives. Identify appropriate mitigation measures to reduce visual contrasts.			
	Following BLM Handbook 8410-1 and BLM IM 2000-96, the Billings Field office would manage WSAs under VRM Class I objectives to maintain an undeveloped landscape and preserve their natural values.			
	Prepare rehabilitation plans to address landscape modifications on a case-by-case basis.			
Visual Resources – Management Actions by Alternative				
	Manage BLM public lands according to the following Visual Resource Inventory (VRI) classifications (the existing 1984 RMP did not assign visual resource management (VRM) classifications) (Map 38): • VRI Class A 28,717 acres • VRI Class B 13,507 acres • VRI Class B/C 391,113 acres • VRI Class C 816 acres	Manage BLM public lands according to the following VRM class designations (Map 39): • VRM Class I 56,700 acres • VRM Class II 14,377 acres • VRM Class III 362,905 acres • VRM Class IV 0 acres	Manage BLM public lands according to the following VRM class designations (Map 40): • VRM Class I 29,714 acres • VRM Class II 26,569 acres • VRM Class III 378,751 acres • VRM Class IV 0 acres	Manage BLM public lands according to the following VRM class designations (Map 41): • VRM Class I 29,714 acres • VRM Class II 55,883 acres • VRM Class III 349,441 acres • VRM Class IV 0 acres
	Oil and gas activities would be allowed in VRM Class II areas if the contrasting visual elements from the actions can be minimized	Surface occupancy or use, surface disturbing activities, and construction of semi-permanent and permanent facilities in VRM Class II – IV areas would require special design including	Same as A	Same as B

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	or eliminated (CSU).	location, painting, and camouflage to blend with the natural surroundings and meet the visual quality objectives for each respective class (CSU).		
Fire Ecology and Management				
The BLM goals and objectives are to manage fire and fuels to protect life and property and to protect or enhance resource values and to enhance public awareness and knowledge of hazards associated with fuel accumulation and fire, as well as practical preventive measures especially in the wildland urban interface. The BLM works with the public to ensure a greater understanding about the natural role of fire in the ecosystem and the use of prescribed fire to protect property, reduce fuels, and maintain healthy plant and animal communities. The BLM provides guidance to develop management of wildfires with an emphasis on firefighter and public safety and works to use fire to protect, maintain, and enhance resources; and to function in its ecological role where appropriate. Management actions within the fire program are directed at integrating fire and fuels management across landscape, agency, and ownership boundaries and coordination with fire adapted communities and other government agencies to identify wildfire hazards and create mitigation strategies, as well as providing public education on fire ecology and ecosystem restoration.				
Fire Ecology and Management – Desired Outcomes (Goals and Objectives)				
• Manage wildfire and fuels for the protection of public health, safety, property, and resource values. • Manage hazardous fuels in areas of urban and industrial interface to reduce potential loss due to fire. • Maintain desired mix of seral stages within vegetation communities, including desert shrublands, forest and woodlands, grasslands, mountain shrublands, sagebrush (all sub-species), riparian/wetlands and aspen. • Manage vegetation communities through cooperative efforts by restoring natural fire regimes and frequency to the landscape, where appropriate. • Maintain partnerships with the public and interagency cooperators to strengthen coordination of all fire management activities and encourage the creation of fire-safe communities. • Utilize an integrated management technique unless otherwise restricted (defined as prescribed fire, mechanical, chemical, or biological, followed by desired reseeding) to reduce fuels to protect high priority areas or resource values.				
Fire Ecology and Management – Management Common to All Alternatives				
	In the course of fire suppression, a resource advisor would be consulted or assigned to wildfires that involve or threaten public lands.			
	The use of fire suppression chemicals would be limited around areas with rock art and standing structures and other areas with significant cultural resources (including ACECs).			
	Use of wildfire suppression chemicals within 300 feet of waterways would be prohibited.			
	Fuels treatments would be designed to protect or improve resource values.			
	Emergency stabilization and rehabilitation of burned areas would be conducted according to current policy to protect and sustain ecosystems, public health and safety.			
	Prevent the movement of wildfires from the wildlands into the Wildland Urban Interface area (Interagency Strategy for the Implementation of Federal Wildland Fire Management, pg. 28)			
	Within the following areas work to restore or maintain approximately 14,000 acres available for restoring natural Fire Regime Condition Classes in Musselshell, Stillwater, Carbon, and Sweet Grass Counties, should resource management constraints and considerations (i.e. Greater Sage-Grouse habitat, other identified T&E issues and culturally sensitive areas) allow.			
	Fire Ecology and Management – Management Common to Action Alternatives			

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	No similar management decision			If prescribed fire is used in Greater Sage-Grouse habitat, the NEPA analysis for the Burn Plan would address: ▪ why alternative techniques were not selected as a viable options; ▪ how Greater Sage-Grouse goals and objectives would be met by its use; ▪ how the COT Report objectives would be addressed and met; ▪ A risk assessment to address how potential threats to Greater Sage-Grouse habitat would be minimized. a) Prescribed fire as a vegetation or fuels treatment shall only be considered after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Prescribed fire could be used to meet specific fuels objectives that would protect Greater Sage-Grouse habitat in PHMAs (e.g., creation of fuel breaks that would disrupt the fuel continuity across the landscape in stands where annual invasive grasses are a minor component in the understory, burning slash piles from conifer reduction treatments, used as a component with other treatment methods to combat annual grasses and restore native plant communities). b) Prescribed fire in known winter range shall only be considered after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Any prescribed fire in winter habitat would need to be designed to strategically reduce wildfire risk around and/or in the winter range and designed to protect winter range habitat quality."
	No similar management decision			Remove conifers encroaching into

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				sagebrush habitats. Prioritize treatments closest to occupied sage-grouse habitats and near occupied leks, and where juniper encroachment is phase 1 or phase 2. Use of site-specific analysis and principles like those included in the FIAT report (Chambers et. al., 2014) and other ongoing modeling efforts to address conifer encroachment would help refine the location for specific priority areas to be treated.
Fire Ecology and Management – Management Actions by Alternative				

	Use appropriate management response to implement protection objectives in accordance with management objectives based on current conditions and fire location.	The full range of fire management activities would be used to help achieve ecosystem sustainability, including interrelated ecological, economical, and social components. Fire suppression strategies and tactics would be used in the following areas:
		• Wildland urban interface
		• Wildland industrial interface
		• Developed recreation sites
		• Developed electronics sites of all types
		In all other areas, fire management strategies and tactics would be determined by (but not limited to) the following:
		• Firefighter and public safety
		• Resource values at risk
		• Proximity to private land
		• Firefighting resource availability
			Fire suppression strategies would be used across the entire planning area.
			Fire management strategies and tactics would be determined by (but not limited to) the following:
			• Firefighter and public safety
			• Resource values at risk
			• Proximity to private land
			• Firefighting resource availability
				Response to wildfires would be based on ecological, social, economic and legal consequences of the wildfire.
				Fire management strategies and tactics would be determined by (but not limited to) the following:
				• Firefighter and public safety
				• Resource values at risk
				  ○ In PHMA suppression would be prioritized to conserve habitat
				  ○ In GMHA, suppression would be prioritized where wildlfires threaten PHMA
				• Proximity to private land
				• Firefighting resource availability

	Heavy equipment would not be used to construct fire lines in areas containing cultural resources.
	Cultural resource specialists or area resource advisors would be consulted for locations of identified areas before use of or anticipated use of heavy equipment. Exceptions may be permitted for protection of human life and/or property.
	Heavy equipment generally would not be
		Tactical constraints would follow:
		• No heavy equipment would be used within the following areas, except when human safety is at risk:
		  ▶ Areas of cultural resource sensitivity
		  ▶ Riparian/wetland habitats
		  ▶ Big game crucial winter range habitat
		  ▶ Greater Sage-Grouse nesting habitat within proximity of lek sites
		  ▶ Areas of highly erosive soils
			Tactical constraints would follow:
			• Heavy equipment use would be allowed in all areas, unless otherwise restricted (e.g., ACECs, WSAs, etc.).
			• Heavy equipment would not be restricted to roads and trails, except where prohibited (ex: known special status plant sites).
				Heavy equipment would not be used to construct fire lines in crucial winter range, habitat of candidate or special status species, riparian/wetlands or in areas of cultural resource sensitivity or other designated areas (e.g., ACECs, WSAs). Exceptions would be permitted for protection of human life, property and/or to protect resource values from further loss due to unwanted/unplanned natural or human

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	used to construct fire lines in critical winter range. Agency wildlife biologist(s) would be consulted when fires threaten critical winter range. If heavy equipment is used, rehabilitation work on lines would begin immediately after containment.	In areas not identified as full suppression, heavy equipment usage would be limited to existing roads and trails or immediately adjacent to them. Full Suppression acreage		caused wildland fires. Cultural Resource Specialists, Wildlife Biologists, or Resource Advisors would be consulted for locations of identified areas before use of or anticipated use of heavy equipment. If heavy equipment is used, rehabilitation work on lines would begin immediately after containment. Heavy equipment could be used in a WSA only if the exceptions in the non-impairment standards are met.
	In areas where a prescribed fire is planned, appropriate fire management would be used if a wildfire is meeting the stated resource management objectives of the prescribed fire project. Management plans would emphasize containment within the Project Area/Allowable area as developed in prescribed fire plans.	Wildfires (natural ignitions) that occur within or adjacent to an area identified for vegetation or fuels treatment could be managed to meet the desired management objectives.	Same as Alternative B.	Same as Alternative B.
	Fire management is categorized into six (6) Fire Management Units (FMUs). There are five (5) Category B FMUs. These areas are where unplanned wildfire is not desired because of current conditions and where an unplanned ignition would have negative effects unless/until some form of mitigation takes place. There is one Category C FMU. This area is where wildfire is desired, but there are significant constraints that must be considered for its use.	Wildfire management (natural ignitions) for resource benefit would be considered for the following areas: • East Pryor ACEC • Grove Creek ACEC • Meeteetse Spires ACEC • Pryor Foothills RNA ACEC • Weatherman Draw ACEC • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA	Wildfire management (natural ignitions) for resource benefit would not be authorized.	Wildfire management (natural ignitions) for resource benefit would be considered for the following areas: • East Pryor ACEC • Grove Creek ACEC • Meeteetse Spires ACEC • Pryor Foothills RNA ACEC • Weatherman Draw ACEC • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA
	Prescribed burning would be implemented to manipulate vegetation on areas identified for treatment in the range, forestry, and wildlife programs.	Prescribed fire would be allowed on up to 5 percent of BLM administered acres within the planning area to achieve measurable landscape level objectives from (1) other resources, including, but not limited to,	Prescribed fire would be allowed on up to 5 percent of the percent of BLM administered acres within the planning area to achieve measurable landscape level objectives from (1) other resources, including, but not	Same as Alternative C.

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		forestry, wildlife, range, vegetation, and watershed; (2) the reduction of hazardous fuels; and (3) the introduction of fire into fire-adapted ecosystems. Prescribed fire would not be allowed in the Greater Sage-Grouse Habitat ACEC, Greater Sage-Grouse PHMAs, or RAs.	limited to, forestry, wildlife, range, vegetation, and watershed; (2) the reduction of hazardous fuels; and (3) the introduction of fire into fire-adapted ecosystems. Within Greater Sage-Grouse PHMAs and RAs, only treatments that conserve, enhance, or restore Greater Sage-Grouse habitat would be allowed. Treatment methods, including prescribed burning and mechanical treatments would be used to eliminate conifer encroachment and stimulate vegetative re-growth in grassland/shrub land habitats; and to reduce fuels, thin under-stories, recycle nutrients, and create small openings in forested vegetation types. A fire risk assessment would be completed for implementation of prescribed fire in relation to GRSG goals and objectives. When prescribed fire is used for vegetation treatments, the burn plan would clearly indicate how COT objectives would be addressed and met by use of prescribed fire and why alternative techniques for vegetation treatment were not selected.	
Lands with Wilderness Characteristics				
BLM is required under Section 201 of FLPMA to conduct and maintain a current inventory of natural resources. BLM conducts its wilderness characteristics inventory through the BLM Manual 6310 and incorporates the findings in the RMP through its Manual 6320. These manuals incorporate principles from BLM guidance (ex: Organic Act directives) and legal rules developed as part of BLM's original wilderness inventories.				
Lands with Wilderness Characteristics – Desired Outcomes (Goals and Objectives)				
• Protect, preserve, and maintain wilderness characteristics in areas inventoried and found to possess them. • Lands with wilderness characteristics would be managed to maintain: o A high degree of naturalness (where lands and resources are affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable); o Outstanding opportunities for solitude (when the sights, sounds, and evidence of other people are rare or infrequent and where visitors can be isolated, alone or secluded from others), and o Outstanding opportunities for primitive and unconfined recreation, where the use of the area would be through non-motorized, non-mechanical means, and where no or minimal developed recreation facilities are encountered.				

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Lands with Wilderness Characteristics – Management Common to All Alternatives			
	Conduct active restoration activities to remove unnatural features and rehabilitate unauthorized human disturbances. Remove unauthorized facilities consistent with regulations.			
	Monitor for development and disturbances, as well as visitor use, to identify and address potential impacts to wilderness character.			
	Lands with Wilderness Characteristics – Management Actions by Alternative			
	Manage 1,925 acres outside of the Bighorn Tack-On and Pryor Mountain WSAs for their wilderness characteristics (Map 42).	Manage for wilderness characteristics all areas/acres found to contain wilderness character (27,507 acres) (Map 43): • Pryor Mountain Unit Tract 1 – 2,873 acres • Pryor Mountain Unit Tract 2- 497 acres • Pryor Mountain Unit Tract 3 - 143 acres • Pryor Mountain Unit Tract 5 – 512 acres • Pryor Mountain Unit Tract 6 – 1,074 acres • Pryor Mountain Unit Tract 7 – 327 acres • Burnt Timber Unit Tract 1 – 703 acres • Burnt Timber Unit Tract 2 – 5,375 acres • Weatherman Draw Unit – 6,033 acres • Meeteetse Unit Tract 10 – 2,149 acres • Yellowstone River islands – 126 acres • Bad Canyon Unit – 2,036 acres • Bear Canyon Unit – 5,659 acres	Manage for wilderness characteristics the following select areas/acres (3,379 acres) (Map 44): • Pryor Mountain Unit Tract 2- 497 acres • Pryor Mountain Unit Tract 3 - 143 acres • Burnt Timber Unit Tract 1 – 703 acres • Bad Canyon Unit – 2,036 acres Do not manage for wilderness characteristics the following areas/acres (24,128 acres): • Pryor Mountain Unit Tract 1 – 2,873 acres • Pryor Mountain Unit Tract 5 – 512 acres • Pryor Mountain Unit Tract 6 – 1,074 acres • Pryor Mountain Unit Tract 7 – 327 acres • Burnt Timber Unit Tract 2 – 5,375 acres • Meeteetse Unit Tract 10 – 2,149 acre • Weatherman Draw – 6,033 acres • Yellowstone River islands – 126 acres • Bear Canyon Unit – 5,659 acres	Manage for wilderness characteristics the following areas/acres immediately adjacent to WSA (13,653 acres) (Map 45): • Pryor Mountain Unit Tract 1 – 2,873 acres • Pryor Mountain Unit Tract 2- 497 acres • Pryor Mountain Unit Tract 3 - 143 acres • Pryor Mountain Unit Tract 5 – 512 acres • Pryor Mountain Unit Tract 6 – 1,074 acres • Pryor Mountain Unit Tract 7 – 327 acres • Meeteetse Unit Tract 10 – 2,149 acre • Burnt Timber Unit Tract 1 – 703 acres • Burnt Timber Unit Tract 2 – 5,375 acres Do not manage for wilderness characteristics the following areas/acres (13,854 acres): • Weatherman Draw – 6,033 acres • Bad Canyon Unit – 2,036 acres • Yellowstone River islands – 126 acres • Bear Canyon Unit – 5,659 acres

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Currently the BiFO has the following management prescriptions in place: • VRM Class II • Closed to motorized OHV use • Closed to oil and gas leasing, exploration and development (NL) • Closed to solid mineral leasing • Closed to disposal of mineral materials • Closed and recommend for withdrawal from mineral entry • Exclusion area for new ROWs • Closed to permitted commercial and personal use wood cutting and seed collection • Vegetation and fuel treatments using prescribed fire would be allowed	Lands with wilderness characteristics would be managed as follows: • VRM Class I • Closed to motorized OHV use • Closed to oil and gas leasing, exploration and development (NL) • Closed to solid mineral leasing • Closed to disposal of mineral materials • Closed and recommend for withdrawal from mineral entry • Exclusion area for new ROWs • Closed to permitted commercial and personal use wood cutting and seed collection • Vegetation and fuel treatments using prescribed fire would be allowed • Surface disturbing and disruptive activities would be allowed only if the activity does not impair the resource values and/or wilderness characteristics, with the exception of emergency operations and the exercise of valid existing rights. • Closed to new structures unrelated to preserving the wilderness characteristics • Vegetation treatments to control expansion of invasive exotic species would be allowed	Lands with wilderness characteristics would be managed as follows: • VRM Class II • Closed to motorized OHV use, with the exception of the Meeteetse Spires Unit, which would be limited to authorized motorized OHV use only. • Closed to oil and gas leasing, exploration and development (NL) • Closed to solid mineral leasing • Closed to disposal of mineral materials • Closed and recommend for withdrawal from mineral entry • Exclusion area for new ROWs • Closed to permitted commercial and personal use wood cutting and seed collection • Vegetation and fuel treatments using prescribed fire would be allowed • Surface disturbing and disruptive activities would be allowed only if the activity does not impair the resource values and/or wilderness characteristics, with the exception of emergency operations and the exercise of valid existing rights. • Closed to new structures unrelated to preserving the wilderness characteristics • Vegetation treatments to control expansion of invasive exotic species would be allowed	
Note for Lands with Wilderness Characteristics: BiFO interprets the statement from the BiFO 1984 ROD *("managed as WSA")* as the intent for BiFO to administratively apply similar management prescriptions (avoid surface disturbing activities and permanent facilities, close the lands to motorized uses, permit grandfathered and prior-existing uses, and in general to continue those land uses which maintain the land suitability for potential Wilderness designation by Congress.				

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Cave and Karsts Resources				
Cave and karsts resources are managed under 43 CFR, part 37, cave management, BLM MOU WO-250-2007-01 , The latest policy guidance on Cave Safety Standards and the Federal Cave Resources Protection Act of 1988 in order to protect and maintain their biologic, geologic, mineralogic, paleontological, hydrologic, cultural, educational, scientific, and recreational values.				
Cave and Karsts Resources – Desired Outcomes (Goals and Objectives)				
• Manage all cave resources as mandated by the Federal Cave Resources Protection Act of 1988, the National Environmental Policy Act, and the Endangered Species Act and other applicable laws and regulations to protect unique, nonrenewable, and fragile biological, geological, hydrological, cultural, paleontological, scientific and recreational values for present and future users. • Cave and karst resources would be managed to provide opportunities for scientific research, educational study, and recreational experiences which are compatible and consistent with protection of all biologic and non-biologic resources associated with caves and karst landforms.				
Cave and Karsts Resources – Management Common to All Alternatives				
	Secure, protect, and preserve natural cave features and conditions.			
	Geocaching would not be allowed in caves or at cave entrances.			
	Scientific and research use of caves requires a written proposal explaining the purpose of the research, who would be conducting it, how long it is expected to take, if it would require any collection of specimens, and what kind of reporting would be done.			
	Manage all cave and karst formations in compliance with the *National Plan for assisting state, federal agencies, and tribes in managing White-Nose Syndrome in Bats* (US Fish and Wildlife Service, May 2011).			
	Evaluate all known caves in the region to determine if they satisfy the six criteria of significance. The *Code of Federal Regulations* at 43CFR, Part 37.11 (c) lists the six criteria that are used to evaluate cave significance.			
	Manage recreational use of all known caves under a cave management plan and address: protecting and maintaining cave resources, including wildlife species and habitat in and around caves, by interpreting, restricting, and/or prohibiting nonconforming uses; enhancing user experiences and opportunities by managing use at levels compatible with resource carrying capacity and protection. Management actions proposed to be implemented also could include installation of cave gates, implementation of a visitor use permit system, the development of new visitor public education materials; systematic inventories of cave resources; restoration of damaged habitat; and monitoring of cave conditions and the quality of visitor recreational experiences.			
	Mystery Cave, already designated as a significant cave, located near the Big Horn Tack-On WSA, is recommended for withdrawal from mineral entry and No Lease for oil and gas leasing, exploration, and/or development.			
	Caves found to be significant would be recommended for withdrawal from mineral entry and managed as No Lease for oil and gas leasing, exploration, and development.			
Cave and Karsts Resources – Management Actions by Alternative				
	No current management decision provided.	No surface disturbing or disruptive activities within ½ mile of cave entrances.	No surface use restrictions.	Surface disturbing or disruptive activities within ¼ mile of cave entrances may be allowed if the activity benefits the desired outcome of this resource.
	No current management decision provided	Oil and gas leasing, exploration and/or development within ½ mile of cave entrances would not be allowed (NSO).	Cave and karst areas would be inventoried prior to oil and gas leasing, exploration and/or development. An approved mitigation plan would be	Same as C

Table 2.10 Detailed Table of Alternatives: Physical, Biological, and Cultural / Heritage Resources

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
			required to avoid impacts to cave resources (CSU).	
	No current management decision provided	Cave and karst resources would be closed to locatable minerals and recommended for withdrawal from mineral entry; closed to solid leasable development and mineral material sales.	Inventory of cave and karst areas would be required prior to surface-disturbing activities. Cave and karst resources would be open to mineral development with an approved mitigation plan that protects resource values.	Same as C
	No current management decision provided	Cave and karst areas would be managed as a ROW exclusion area.	Cave and karst areas would be managed as ROW avoidance areas.	Same as C

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Energy and Mineral Resources: Solid Leasables (including Coal)				
The BLM goals and objectives for coal resources are to make federal solid mineral resources available for exploration and acquisition consistent with other resource goals. In accordance with existing laws and regulations, BLM-administered public lands open to solid mineral leasing would be identified. The management actions listed below are the various restrictions and constraints to the development of mineral resources.				
Energy and Mineral Resources: Coal – Desired Outcomes (Goals and Objectives)				
• Make federal solid mineral resources available for exploration and acquisition consistent with other resource goals. • Identify the public lands open to solid minerals leasing in accordance with existing laws and regulations (43 CFR 3400 and 3500).				
Energy and Mineral Resources: Coal – Management Common to All Alternatives				
	BLM would consider proposals for developing leasable minerals (coal, phosphate, sodium, potash, sulfur, oil shale, native asphalt, and solid and semi-solid bituminous rock) under the administration of the federal government on a case-by-case basis. Site specific environmental analysis would be required to lease these minerals.			
	BLM would allow exploration and development of solid minerals as authorized under the 1920 and 1947 Mineral Leasing Acts.			
	Prospecting permits would be available for all land not closed to mineral leasing in conformance with 43 CFR 3500.			
	Terms and conditions would be applied to mining activities to meet land health standards for uplands, riparian areas and wetlands, water quality, air quality, and native plant and animal species (see BMPs in Appendix B and Greater Sage-Grouse Appendix AA).			
	Surface occupancy and directional drilling are prohibited within the boundaries of existing coal leases. (NSO)			Surface occupancy and use is prohibited for oil and gas exploration and development within the boundaries of existing coal leases. (NSO)
	No similar action			At the time an application for a new coal lease or lease modification is submitted to the BLM, the BLM would determine whether the lease application area is "unsuitable" for all or certain coal mining methods pursuant to 43 CFR 3461.5. PHMA is essential habitat for maintaining GRSG for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).
Energy and Mineral Resources: Coal – Management Actions by Alternative				
	The following areas are closed to solid leasable mineral development (26,131 acres): • Pompeys Pillar NM • Four Dances ACEC • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA	The following areas would be closed to solid leasable mineral leasing and development (290,048 acres): • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA • Lands with wilderness characteristics • Bridger Fossil Area ACEC	The following areas would be closed to solid mineral leasing and development (264,450 acres): • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA. (If Twin Coulee WSA is released from further consideration, the area may be open for solid mineral leasing and development.)	The following areas would be closed to solid mineral leasing and development (225,655 acres): • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA. (If Twin Coulee WSA is released from further consideration, the area may be open for solid mineral leasing and development.)

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	• Lands with wilderness characteristics • Process lease by application (LBAs) for new coal leases by applying the coal screening process to the application. The coal screening process results would determine which lands may be available for further consideration for coal leasing and development. Appropriate NEPA analysis would be required prior to leasing. The existing RMP (BLM 1984) coal-screening management decisions are current and relevant to the application area.	• East Pryor ACEC • Four Dances ACEC • Grove Creek ACEC • Meeteetse Spires ACEC • Petroglyph Canyon ACEC • Pompeys Pillar NM and ACEC • Pryor Foothills RNA/ACEC • Stark Site ACEC • Weatherman Draw ACEC • Nez Perce NHT • Lewis and Clark NHT • Cave and karst areas • Lands with wilderness characteristics	• Lands with wilderness characteristics • Bridger Fossil Area ACEC • Four Dances ACEC • Pompeys Pillar NM and ACEC • Stark Site ACEC • Nez Perce NHT • Lewis and Clark NHT • Lands with wilderness characteristics	• Lands with wilderness characteristics • Bridger Fossil Area ACEC • East Pryor ACEC • Four Dances ACEC • Grove Creek ACEC • Meeteetse Spires ACEC • Petroglyph Canyon ACEC • Pompeys Pillar NM and ACEC • Pryor Foothills RNA/ACEC • Weatherman Draw ACEC • Nez Perce NHT • Lewis and Clark NHT • Lands with wilderness characteristics
	No current management decision provided	Within Greater Sage-Grouse PHMAs (including the Alternative B Greater Sage-Grouse Habitat ACEC) and RAs solid mineral leasing (coal) would only be allowed with the following lease stipulations: • Mining may only occur via sub-surface methods • All mine related appurtenant facilities would be placed outside of the Priority Habitat Areas		
	No current management decision provided	• Remainder of Planning Area: Process lease by application (LBAs) for new coal leases by applying the coal screening process to the application. The coal screening process results would determine which lands may be available for further consideration for coal leasing and development. Appropriate NEPA analysis would be required prior to leasing. The existing RMP (BLM 1984) coal-screening management decisions are current and relevant to the application area. (See Appendix M)		
Energy and Mineral Resources – Fluid Minerals				
The BLM goal for management of oil and gas resources within the Billings Field Office is to provide opportunities for exploration and development of fluid mineral resources on available public lands. This includes providing opportunities for exploring, leasing, and developing conventional oil and gas, coal bed natural gas, and geothermal resources while applying the appropriate lease stipulations, to varying degrees by alternative as indicated below, and conditions of approval and the project level stage, to mitigate environmental impacts from development and providing opportunities for geophysical (e.g. seismic) exploration for oil and gas subject to the appropriate mitigating measures. The BLM identifies opportunities for leasing and development by alternative. Actions under "Management Common to All Alternatives" as well as Appendix D sets the framework for the fluid minerals program.				
Energy and Mineral Resources – Fluid Minerals – Desired Outcomes (Goals and Objectives)				
• Provide opportunities for exploration and development of fluid mineral resources on available public lands. • Provide opportunities for exploring, leasing, and developing conventional oil and gas, coal bed natural gas, and geothermal resources while applying the appropriate lease stipulations and conditions of approval to mitigate environmental impacts from development. • Provide opportunities for geophysical (e.g. seismic) exploration for oil and gas subject to the appropriate mitigating measures.				
Energy and Mineral Resources – Fluid Minerals – Management Common to All Alternatives				
	Federal oil and gas leasing authority for public lands is found in the Mineral Leasing Act of 1920, as amended; and for acquired lands in the Acquired Lands Leasing Act of 1947, as amended. Leasing of federal oil and gas is affected by other acts such as the National Environmental Policy Act of 1969, the National Historic Preservation Act of 1966, FLPMA (1976), the Wilderness Act of 1964, the Endangered Species Act of 1973, as amended, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987. Regulations and other guidance governing federal oil and gas leasing and lease operations are contained in 43 CFR Group 3100, Onshore Operating Orders, Notices to Lessees, and BLM handbooks			

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	manuals and instruction memorandums. Regulations governing geophysical exploration are found at 43 CFR 3150.			
	All public lands available for oil and gas leasing would be offered first by competitive bid at an oral auction.			
	Appropriate stipulations would be applied at the time of leasing.			
	Areas where oil and gas development would coexist with other resource uses would be open to leasing under standard lease terms or with added stipulations. Stipulations are a part of the lease only when environmental and planning records show the need for them. Three types of stipulations describe how lease rights are modified: no surface occupancy, timing limitation (seasonal restriction), and controlled surface use. (For descriptions, see Leasing Process in the Oil and Gas section of Appendix D – Fluid Mineral**s**) Stipulations may be changed by application of waivers, exceptions, or modifications. The decision whether to grant waivers, exceptions, or modifications generally occurs during the Application for Permit to Drill approval process. If the authorized officer determines the change to be substantial, the preferred alternative would be subject to a 30-day public review period. Waivers are a permanent exemption from a lease stipulation. This occurs when the resource does not require the protection of stipulation. Exceptions are granted on a case-by-case basis. Each time the lessee applies for an exception, the resource objective of the stipulation must be met. Modifications are fundamental changes to the provisions of a lease stipulation either temporarily or for the term of the lease.			
	An oil and gas lease grants the lessee the right to explore for, extract, remove, and dispose of oil and gas deposits that may be found on the leased lands. The lessee may exercise the rights conveyed by the lease, subject to lease terms and any lease stipulations (modifications of the lease), and permit approval requirements.			
	The terms of existing oil and gas leases cannot be changed by the decisions in this document. When the lease expires, the area would be managed for oil and gas according to the decisions reached in this document.			
	For federal oil and gas where the surface is managed by another federal agency, the BLM would consult with that agency before issuing leases. In areas where oil and gas development may conflict with other resources, the areas may be closed to leasing in accordance with decisions made from this document. Regulations at part 43 CFR 3100.0-3(d); the Secretary's general authority to prevent the waste and dissipation of public property; and the Attorney General's Opinion of April 2, 1941 (Vol. 40 Op. Atty. Gen 41) allow the BLM to lease lands that are otherwise unavailable for leasing if oil and gas is being drained from such lands. If the unavailable lands were under the jurisdiction of another agency, leasing of such lands would only occur following consultation, and consent if necessary, from the surface managing agency.			
	On Bureau of Reclamation or Corps of Engineers lands, in addition to the resource specific stipulations under each alternative (e.g., wildlife, recreation); stipulations that are recommended by the Bureau of Reclamation or Corps of Engineers would be used (see Oil and Gas section in Appendix D – Fluid Minerals).			
	Lands unavailable under this RMP (Table 2.8) would be leased only if a state or fee well is proposed or completed within the same spacing unit, or if the lands are within a producing unit. These lands would be leased with a no surface occupancy and no subsurface occupancy stipulation with no waiver, modification or exception provisions. There would only be a paper transaction with no physical impacts on the unavailable lands. There would be no exploration or development (drilling or production) within the unavailable lands. After issuance of a lease, the lease would be committed to a communitization agreement and the United States would then receive revenue in proportion to its acreage interest as it bears to the entire acreage interest committed to the agreements.			
	Additional information can be provided to the lessee in the form of a lease notice. This notice does not place restrictions on lease operation, but does provide information about applicable laws and regulations, and the requirements for additional information to be supplied by the lessee.			
	After lease issuance, the lessee may conduct lease operations with an approved permit. Proposed drilling and associated activities must be approved before beginning operations. The operator must file an Application for Permit to Drill or Sundry Notice that must be approved according to (1) lease stipulations, (2) Onshore Oil and Gas Order, and (3) regulations and laws. (See Permitting in the Oil and Gas section of Appendix D– Fluid Minerals).			
	Follow BLM Manual 6330 guidance for mineral leasing in WSAs as appropriate. All WSAs would be closed to new oil and gas leases.			
	Oil and gas geophysical activity which is administered by the BLM is governed by regulations found at 43 CFR Subparts 3150, 3151 and 3154. Additional guidance is found in BLM Manual Section 3150 and Handbook 3150. For additional information on geophysical operations and the BLM's procedures and regulations see the Geophysical Operations portion of the oil and gas section of the Appendix D - Fluid Minerals. The BLM would review Notices of Intent to Conduct Geophysical Exploration in the planning area and develop appropriate mitigation measures so as not to create undue and			

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	unnecessary degradation. A site-specific environmental analysis would be prepared for each NOI filed.			
	Lands in the planning area would be available for geothermal leasing, unless located within wilderness or WSAs or in instances where it is determined that issuing the lease would cause unnecessary or undue degradation to public lands or resources. Other areas that would be made unavailable are listed in the Record of Decision and RMP Amendments for Geothermal Leasing in the Western United States (December, 2008) which is incorporated in this RMP. A site-specific environmental analysis would be prepared as needed should interest be expressed in exploring for or developing geothermal resources in the planning area. This analysis would address the application of stipulations and develop any additional mitigating measures over and above the lease stipulations required. Stipulations developed in this document for oil and gas leases would be applied to any geothermal lease issued if appropriate. If geothermal exploration and production activity is sufficiently different from oil and gas, the stipulations developed would be modified.			
	Priority would be given to leasing and development of fluid mineral resources, including geothermal, outside of PHMA and GHMA. When analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMA and GHMA, and subject to applicable stipulations for the conservation of Greater Sage-Grouse, priority would be given to development in non-habitat areas first and then in the least suitable habitat for Greater Sage-Grouse. The implementation of these priorities would be subject to valid existing rights and any applicable law or regulation, including, but not limited to, 30 U.S.C. 226(p) and 43 C.F.R. 3162.3-1(h).			
	Where a proposed fluid mineral development project on an existing lease could adversely affect GRSG populations or habitat, the BLM would work with the lessees, operators, or other project proponents to avoid, reduce and mitigate adverse impacts to the extent compatible with lessees' rights to drill and produce fluid mineral resources. The BLM would work with the lessee, operator, or project proponent in developing an APD for the lease to avoid and minimize impacts to sage-grouse or its habitat and would ensure that the best information about the GRSG and its habitat informs and helps to guide development of such Federal leases.			
Energy and Mineral Resources – Fluid Minerals – Management Common to Action Alternatives				
	No similar management decision provided			Where the federal government owns the mineral estate in PHMAs and GHMAs, and the surface is in non-federal ownership, apply the same stipulations, COAs, and/or conservation measures and RDFs applied if the mineral estate is developed on BLM-administered lands in that management area, to the maximum extent permissible under existing authorities, and in coordination with the landowner.
	No similar management decision provided			Where the federal government owns the surface and the mineral estate is in non-federal ownership in PHMA and GHMA, apply appropriate surface use COAs, stipulations, and mineral RDFs through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.
Energy and Mineral Resources – Fluid Minerals – Management Actions by Alternative				
	Oil and Gas			
	Manage 237,336 acres as open to	Manage 41,103 acres as open to leasing,	Manage 319,133 acres as open to	Manage 44,142 acres as open to leasing,

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	leasing, subject to standard lease terms (Map 50)	subject to standard lease terms (Map 51)	leasing, subject to standard lease terms (Map 52)	subject to standard lease terms (Map 53)
	Manage 624,961 acres as open to leasing subject to moderate constraints (CSU/TL stipulations) (Map 54).	Manage 422,595 acres as open to leasing subject to moderate constraints (CSU/TL stipulations) (Map 55).	Manage 505,322 acres as open to leasing subject to moderate constraints (CSU/TL stipulations) (Map 56).	Manage 412,600 acres as open to leasing subject to moderate constraints (CSU/TL stipulations) (Map 57).
	Manage 34,145 acres as open to leasing subject to major constraints (NSO) (Map 54).	Manage 196,033 acres as open to leasing subject to major constraints (NSO) (Map 55).	Manage 70,980 acres as open to leasing subject to major constraints (NSO) (Map 56).	Manage 420,126 acres as open to leasing subject to major constraints (NSO) (Map 57).
	Manage 61,100 acres as closed to leasing in the following areas (NL) (Map 54): **Non-Discretionary:** • Pompeys Pillar NM • Big Horn Tack-on WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA **Discretionary:** • Bridger Fossil Area ACEC • East Pryor ACEC • Four Dances ACEC • Meeteetse Spires ACEC (965 acres) • Petroglyph Canyon ACEC • PMWHR • Lands with wilderness characteristics	Manage 300,907 acres as closed to leasing in the following areas (NL) (Map 55): **Non-Discretionary:** • Pompeys Pillar NM • Big Horn Tack-on WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA **Discretionary:** • Bridger Fossil Area ACEC • East Pryor ACEC • Four Dances ACEC • Grove Creek ACEC • Meeteetse Spires ACEC (965 acres) • Petroglyph Canyon ACEC • Pryor Foothills RNA ACEC • Weatherman Draw ACEC (4,986 acres) • PMWHR • Steamboat Butte • Bruder-Janich Site • Paul Duke Site • Demi-John Flat NR District • Bighorn Mouth North Cliffs Rock Art Site • Gyp Springs • Site Hoskins Basin Archaeological District • Lands with wilderness characteristics • State Wildlife Management Areas,	Manage 66,449 acres as closed to leasing in the following areas (NL) (Map 56): **Non-Discretionary:** • Pompeys Pillar NM • Big Horn Tack-on WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA **Discretionary:** • East Pryor ACEC • Four Dances ACEC • Meeteetse Spires ACEC (965 acres) • PMWHR • Lands with wilderness characteristics	Manage 60,359 acres as closed to leasing in the following areas (NL) (Map 57): **Non-Discretionary:** • Pompeys Pillar NM • Big Horn Tack-on WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA **Discretionary:** • Bridger Fossil Area ACEC • East Pryor ACEC • Four Dances ACEC • Meeteetse Spires ACEC (965 acres) • Petroglyph Canyon ACEC • Weatherman Draw ACEC (4,986 acres) • PMWHR • Lands with wilderness characteristics

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		Fishing Access sites, and State Parks • WSR-suitable segments • Greater Sage-Grouse Habitat ACEC (Sage –grouse PHMAs)		
	No similar action	Unitization would be required when deemed necessary for proper development and operation of an area (with strong oversight and monitoring) to minimize impacts to Greater Sage-Grouse according to the Federal Lease Form 3100-11, sections 4 and 6	No similar action	No similar action
	No similar action	For development within Greater Sage-Grouse PHMAs, BLM would require a full reclamation bond specific to the site. Insure bonds are sufficient for costs relative to reclamation (Connelly et al. 2000, Hagen et al. 2007) that would result in full restoration. Base the reclamation costs on the assumption that contractors for the BLM would perform the work.	No similar action	No similar action
	Geophysical exploration			
	Geophysical exploration would not be allowed in the following areas: • Pompeys Pillar NM & ACEC • East Pryor Mountain ACEC • Four Dances ACEC • Meeteetse Spires ACEC • Petroglyph Canyon ACEC • Stark Site ACEC • Weatherman Draw ACEC • Within ½ mile of bald and golden eagle nest sites which have been active within the past 7 years and within bald and golden eagle nesting habitat in riparian areas. • Within ½ mile of ferruginous hawk nest sites which have been active within the past 2 years. • Within 1 mile of peregrine falcon	Geophysical exploration would not be allowed in the following areas: • Pompeys Pillar NM & ACEC • East Pryor ACEC • Four Dances ACEC • Grove Creek ACEC • Meeteetse Spires ACEC • Petroglyph Canyon ACEC • Pryor Foothills RNA ACEC • Stark Site ACEC • Weatherman Draw ACEC • Within 1mile of bald and golden eagle nest sites which have been active within the past 7 years and within bald and golden eagle nesting habitat in riparian areas. • Within ½ mile of ferruginous hawk nest sites which have been active within the	Geophysical exploration would not be allowed in the following areas: • Pompeys Pillar NM & ACEC • East Pryor ACEC • Four Dances ACEC • Meeteetse Spires ACEC • Petroglyph Canyon ACEC • Stark Site ACEC • Weatherman Draw ACEC • Within ¼ mile of bald and golden eagle nest sites which have been active within the past 7 years and within bald and golden eagle nesting habitat in riparian areas. • Within 300 feet of ferruginous hawk nest sites which have been active within the past 2 years. • Within ¼ mile of peregrine falcon	Geophysical exploration would not be allowed in the following areas: • Pompeys Pillar NM & ACEC • East Pryor ACEC • Four Dances ACEC • Meeteetse Spires ACEC • Petroglyph Canyon ACEC • Pryor Foothills RNA ACEC • Stark Site ACEC • Weatherman Draw ACEC • Within ½ mile of bald and golden eagle nest sites which have been active within the past 7 years and within bald and golden eagle nesting habitat in riparian areas. • Within ½ mile of ferruginous hawk nest sites which have been active within the past 2 years.

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	nesting sites. • Within ½ mile of raptor nests (stipulations for peregrine, ferruginous and bald and golden eagles noted above) from March 1 to August 1 which have been active within the last 2 years. • Bighorn Sheep Habitat	past 2 years. • Within 1 mile of peregrine falcon nesting sites. • Within ½ mile of raptor nests (peregrine, ferruginous and bald and golden eagles noted above) from March 1 to August 1 which have been active within the last 2 years. • Bighorn Sheep Habitat	nesting sites. • Within ¼ mile of raptor nests (peregrine, ferruginous and bald and golden eagles noted above) which have been active within the last 2 years if the activity would result in nest abandonment. • Bighorn Sheep Habitat	• Within 1 mile of peregrine falcon nesting sites (distance may be reduced if natural barriers reduce line of site). • Within ½ mile of raptor nests (peregrine, ferruginous and bald and golden eagles noted above) from March 1 to August 1 which have been active within the last 2 years (distance may be reduced). • Bighorn Sheep Habitat
Energy and Mineral Resources: Locatable Minerals				
The BLM goals and objectives for energy and mineral resources (locatable minerals) is to allow the development of minerals in a manner that prevents degradation of sensitive resources and landscapes. The management actions below identify varying degrees of proposed development by identifying public lands that would be unavailable for locatable mineral development.				
Energy and Mineral Resources: Locatable Minerals – Desired Outcomes (Goals and Objectives)				
• Encourage and facilitate development of locatable minerals in the manner to prevent unnecessary or undue degradation , as defined in 3809.5. Provide land use opportunities contributing to economic benefits while protecting or minimizing adverse impacts to other resources. • Identify the public lands open to locatable mineral entry in accordance with existing laws and regulations (43 CFR 3700 and 3800).				
Energy and Mineral Resources: Locatable Minerals – Management Common to All Alternatives				
	Standard management practices in the public land administration of locatable minerals would continue across all alternatives. BLM would coordinate with MDEQ during the review, approval, inspection and reclamation of mining operations. At a minimum, conduct an annual compliance inspection on each active notice, and two times per year for Plan of Operations. Requirements of all state and federal laws would be met in the management of mining operations. In cases involving valid mining claims, exploration would occur under all alternatives. Administration of locatable minerals on public lands would continue as required by law and regulation (43 CFR 3809) by taking the following steps: • Review and process notices to ensure the proposed action does not create unnecessary or undue degradation of the environment. • Review and process plans of operation to ensure the proposed action does not create unnecessary or undue degradation of the environment. • Conduct at a minimum, annual compliance inspections on each active notice and plan of operation. • Allow casual use where work is done by hand and no explosives are used. Refer inquiries to appropriate agencies for further guidance on other permit requirements.			
	Terms and conditions would be applied to mining activities (within the constraints of the mining law) to meet land health standards for uplands, riparian and wetlands, water quality, air quality, and native plant and animal species (see Appendices H and AA for Greater Sage-Grouse specific measures). Note: All withdrawal actions (including mineral withdrawals) are processed in the Realty, Cadastral Survey, and Lands program. Restrictions applicable to locatable minerals are limited to the prevention of unnecessary or undue degradation, as defined in 43 CFR 3809.5.			
	Valid, existing mineral rights, within the planning area would not be changed by any decision in this document. None of the alternatives give BLM the discretion to prohibit mineral exploration or development on valid leases or mining claims.			
Management Actions by Alternative				
	The following areas are currently closed and withdrawn from mineral entry (1,855	The following areas are currently closed and would continue to be recommended for	The following areas are currently closed and would continue to be recommended	The following areas are currently closed and would continue to be recommended

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	acres)(Map 58): • Britton Springs Administrative Site Crooked Creek Natural Area (WY) • Four Dances ACEC • Petroglyph Canyon ACEC • Pompeys Pillar NM • Weatherman Draw ACEC (600 acres) The following areas are closed and recommended for withdrawal from mineral entry (37,845 acres): • Meeteetse Spires ACEC • East Pryor ACEC • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA • Lands with wilderness characteristics All other federal mineral estate within the planning area would be available for locatable mineral entry and would be managed according to policy, as described in management common.	withdrawal from mineral entry (1,855 acres) (Map 59): • Britton Springs Administrative Site Crooked Creek Natural Area (WY) • Four Dances ACEC • Petroglyph Canyon ACEC • Pompeys Pillar NM • Weatherman Draw ACEC (600 acres) The following areas would be recommended for withdrawal from all locatable mineral entry (289,296 acres) • Bridger Fossil Area ACEC • East Pryor ACEC • Grove Creek ACEC • Meeteetse Spires ACEC • Pompeys Pillar ACEC • Pryor Foothills RNA/ACEC • Stark Site ACEC • Weatherman Draw ACEC (4,386 acres) • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA • Greater Sage-Grouse Habitat ACEC (Greater Sage-Grouse PHMAs) • Lands with wilderness characteristics • Cave and Karst Areas	for withdrawal from mineral entry (1,855 acres) (Map 60): • Britton Springs Administrative Site Crooked Creek Natural Area (WY) • Four Dances ACEC • Petroglyph Canyon ACEC • Pompeys Pillar NM • Weatherman Draw ACEC (600 acres) The following areas would be recommended for withdrawal from all locatable mineral entry (46,768 acres): • Bridger Fossil Area ACEC • Meeteetse Spires ACEC • Pompeys Pillar ACEC, • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA • Lands with wilderness characteristics	for withdrawal from mineral entry (1,855 acres) (Map 61): • Britton Springs Administrative Site Crooked Creek Natural Area (WY) • Four Dances ACEC • Petroglyph Canyon ACEC • Pompeys Pillar NM • Weatherman Draw ACEC (600 acres) The following areas would be recommended for withdrawal from all locatable mineral entry (60,204 acres): • Bridger Fossil Area ACEC • East Pryor ACEC • Meeteetse Spires ACEC • Pompeys Pillar ACEC • Pryor Foothills RNA/ACEC • Stark Site ACEC • Weatherman Draw ACEC (4,386 acres) • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA • Lands with wilderness characteristics
	No similar action	Make any existing claims within the withdrawal area subject to validity patent exams or buy out. Include claims that have been subsequently determined to be null and void in the proposed withdrawal.	No similar action	No similar action
Energy and Mineral Resources: Mineral Materials (Saleable Minerals)				
The BLM goals and objectives for mineral materials would be to allow mineral use while providing protection to sensitive resources and habitat. The BLM would identify areas of BLM-administered public lands open to mineral material disposal in accordance with existing laws and regulations. The management actions by alternative below meet this overall goal by achieving varying degrees of development and protection while still meeting the goals and objectives.				
Energy and Mineral Resources: Mineral Materials – Desired Outcomes (Goals and Objectives)				
• Provide land-use opportunities contributing to economic benefits and meet local infrastructure needs while protecting or minimizing adverse impacts to other resources and resource uses.				

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
• Identify the public lands open to minerals materials disposal in accordance with existing laws and regulations (43 CFR 3600).				
Energy and Mineral Resources: Mineral Materials – Management Common to All Alternatives				
	BLM would dispose of saleable minerals on unpatented mining claims only for a public purpose when no reasonable alternative exists. Saleable mineral sites would have an approved mining and reclamation plan and an environmental analysis prior to being opened. Mineral material would be sold at a fair market value to the public, but would be free to state, county, or other local governments when used for public projects. Mineral material sales would be processed on a case-by-case basis.			
	The BLM would continue to provide for the exploration and development of mineral materials unless closed.			
	New mineral material sites would be evaluated on a case-by-case basis. With the exception of lands withdrawn from all mineral entry, the planning area would be available for establishment of future sites, pending site-specific analysis. Terms and conditions to protect public land and resource values would be applied on a case-by-case basis.			
Energy and Mineral Resources: Mineral Materials – Management Actions by Alternative				

	The following areas are closed to mineral material disposals (44,583 acres) (Map 62):
	• Bridger Fossil Area ACEC
	• East Pryor ACEC
	• Four Dances ACEC
	• Meeteetse Spires ACEC
	• Pompeys Pillar NM
	• Stark Site ACEC
	• Weatherman Draw ACEC
	• Lands with wilderness characteristics
	• Big Horn Tack-On WSA
	• Burnt Timber Canyon WSA
	• Pryor Mountain WSA
	• Twin Coulee WSA
		The following areas are closed to mineral material disposals 343,749 acres) (Map 63):
		• Bridger Fossil Area ACEC
		• East Pryor ACEC
		• Four Dances ACEC
		• Grove Creek ACEC
		• Meeteetse Spires ACEC
		• Petroglyph Canyon ACEC
		• Pompeys Pillar NM and ACEC
		• Pryor Foothills RNA/ACEC
		• Stark Site ACEC
		• Weatherman Draw ACEC
		• Lands with wilderness characteristics
		• Big Horn Tack-On WSA
		• Burnt Timber Canyon WSA
		• Pryor Mountain WSA
		• Twin Coulee WSA
		• Greater Sage-Grouse Habitat ACEC (Greater Sage-Grouse PHMAs)
		• Greater Sage-Grouse RAs
		• Shepherd Ah-Nei Recreation Area
		• Acton Recreation Area
			The following areas are closed to mineral material disposals (261,260 acres) (Map 64):
			• Four Dances ACEC
			• Pompeys Pillar NM and ACEC
			• Weatherman Draw ACEC
			• Lands with wilderness characteristics
			• Big Horn Tack-On WSA
			• Burnt Timber Canyon WSA
			• Pryor Mountain WSA
			• Twin Coulee WSA. (If Twin Coulee WSA is released from further consideration, the area may be open to mineral material disposals.)
			• Greater Sage-Grouse PHMAs – closed to new salable minerals; existing permits would be renewed with no increase in the permitted boundary.
				The following areas are closed to mineral material disposals (281,597 acres) (Map 65):
				• Four Dances ACEC
				• Petroglyph Canyon ACEC
				• Pompeys Pillar NM and ACEC
				• Pryor Foothills RNA/ACEC
				• Stark Site ACEC
				• Weatherman Draw ACEC
				• Lands with wilderness characteristics
				• Big Horn Tack-On WSA
				• Burnt Timber Canyon WSA
				• Pryor Mountain WSA
				• Twin Coulee WSA. (If Twin Coulee WSA is released from further consideration, the area may be open to mineral material disposals.)
				• Greater Sage-Grouse PHMAs - closed to new salable minerals; existing permits would be renewed with no increase in the permitted boundary. However, these areas remain "open" to free use permits and the expansion of existing active pits, only if the following criteria are met:
				  • the activity is within the Biologically Significant Unit (BSU) and project area disturbance cap;
				  • the activity is subject to the

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				provisions set forth in the mitigation framework [Appendix AA, sections E and F]; • all applicable required design features are applied; and [if applicable] the activity is permissible under the specific sub-regional screening criteria. • Shepherd Ah-Nei Recreation Area • Acton Recreation Area • Asparagus Point
Forestry and Woodland Products				
The BLM would manage the public forests and woodlands to maintain and enhance the health, productivity, and biological diversity of these ecosystems. A balance of natural resource benefits would be provided to present and future generations. The management of forest and woodland resources would be consistent with the principles of multiple use and sustained yield. The Federal Land Policy and Management Act of 1976 (FLPMA) directs the BLM to prepare interdisciplinary land use plans based on the principles of multiple-use and sustained yield. The ecosystem management concept is at the core of FLPMA and the basis for all forestry activities in the BLM. All forest management actions would meet or exceed the Montana Streamside Management Zone (SMZ) law and Water Quality Best Management Practices for Montana Forests (BMPs) to ensure the protection of soil, water, riparian, and fisheries resources. The BLM's forestry program promotes forest and woodland communities that are healthy, resilient, and vigorous. Forestland mosaics are managed for a diversity of stand structures and species components that complement other resource values, including but not limited to recreation, wildlife, rangelands, fisheries, and wood fiber production.				
Forestry and Woodland Products – Desired Outcomes (Goals and Objectives)				
• Manage forest resources to provide a sustained flow of local economic benefits and protect non-market economic values, consistent with other resource objectives. • Provide forest products while maintaining a balance between public demand and the health and productivity of native and desired vegetative communities. Forest product sales include over the-counter sales of firewood, Christmas trees or other products, and small amounts of materials removed as a result of other authorizations such as rights-of-way, road use agreements, grazing leases, or other land uses. • Provide forest and woodland products including, but not limited to; sawlogs, pulp, post/poles, fuel wood, and biomass on a sustainable basis. • Manage forests and woodlands to meet or exceed the standards identified in BLM's Standards for Rangeland Health (Standards 1 and 5)				
Forestry and Woodland Products – Management Common to All Alternatives				
	Commercial harvest of forest products would normally be associated with vegetative restoration (including forest health and fuels treatments) and would be designed to meet objectives for forest management, wildlife habitat management, fire hazard reduction, hazard tree removal, special status species management, visuals, recreation, travel management, and any other relevant resource concerns.			
	Provide forest products as practical where forests have been damaged by wildfire and/or insects/disease.			
	Biomass and small diameter materials associated with forest/fuels treatments would be made available for use.			
	Forest products would be managed according to sustainability limits and where consistent with other resource management objectives.			
	Removal of dead or down trees would be allowed for firewood cutting, unless otherwise restricted (e.g., WSAs, ACECs, riparian areas, etc.). Cutting of live trees for firewood for personal use or commercial purposes would be authorized on a case by case basis after review and compliance with NEPA. Forest products use would be allowed except where prohibited.			
Forestry and Woodland Products – Management Actions by Alternative				

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Accommodate demand for the sale of commercial forest products (PSQ appx. 84 MBF/year).	Meet public demand for commercial forest products (PSQ appx. 134 MBF/year). PSQ values may be adjusted based on monitoring evaluations, due to unforeseen events such as wildfires, current inventories, insect/disease, or climate conditions.	Accommodate the demand for commercial forest products (PSQ appx. 223 MBF/year). PSQ values may be adjusted based on monitoring evaluations, due to unforeseen events such as wildfires, current inventories, and insect/disease, or climate conditions.	Accommodate the demand for commercial forest products (PSQ appx. 178 MBF/year). PSQ values may be adjusted based on monitoring evaluations, due to unforeseen events such as wildfires, current inventories, and insect/disease, or climate conditions.
	No current management decision provided	Restrict permits for other forest products (e.g., Christmas trees, fuel wood, juniper, wildlings, mushrooms, etc.), when harvest would conflict with other resource values.	Allow unlimited permits/year, unless otherwise restricted, for other forest products (e.g., Christmas trees, fuel wood, juniper, wildings, mushrooms, etc.).	Restrict permits for other forest products (e.g., Christmas trees, fuel wood, juniper, wildlings, mushrooms, etc.), when harvest would conflict with other resource values.
	No current management decision provided	Forest treatments would occur in areas already accessible by the current road system. Temporary road construction would follow Montana's Water Quality BMPs for Montana Forests and would be decommissioned and reclaimed as soon as the project is completed.	New roads would be built where multiple entries would be necessary to meet objectives. New road construction would follow Montana's Water Quality BMPs for Montana Forests and would be added to the existing travel management plan for the given area if travel plan objectives for the area are met. Temporary road construction would follow Montana's Water Quality BMPs for Montana forests and be decommissioned, with reclamation initiated within 1 year of project completion.	New roads would be built where multiple entries would be necessary to meet objectives. New road construction would follow Montana's Water Quality BMPs for Montana forests. New roads may be left open to the public if travel plan objectives for the area are met. Temporary road construction would follow Montana's Water Quality BMPs for Montana forests and be decommissioned, with reclamation initiated within 1 year of project completion.
	No current management decision provided	Where contiguous acres of dead and dying forest exceed 1,000 acres, up to 50% of the forested area may be treated. Harvest treatments within the remaining project area may include creation of forest openings and/or selective thinning between openings.	Salvage may proceed with appropriate mitigation measures applied	When salvage is proposed in dead and dying forests, contiguous acres of undisturbed standing and down woody material would be retained on a site specific basis, consistent with wildlife species, forest health restoration, and other resource requirements (e.g., soils, riparian, visual resources, etc.).

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Realty, Cadastral Survey, and Lands: Land Tenure Adjustment and Access				
The goals and objectives of land tenure adjustment and access would be to retain public lands with high resource values in public ownership, as well as provide for adjustments in land ownership to consolidate public land holdings, acquire lands with high public resource values, and meet public and community needs. All proposed land ownership adjustment actions would be considered at project specific environmental reviews. Public access would be maintained or improved through all land ownership adjustments transactions. Section 102(a)(1) of FLPMA provides that ". . . the public lands be retained in Federal ownership, unless as a result of the land use planning procedure provided for in this Act, it is determined that disposal of a particular tract would serve the national interest." Lands generally identified for disposal have low or unknown resource values or are isolated or fragmented from other public lands.				
Realty, Cadastral Survey, and Lands: Land Tenure Adjustment and Access – Desired Outcomes (Goals and Objectives)				
• Manage the acquisition, disposal, withdrawal, and use of public lands to meet the access needs of internal and external customers and to preserve important resource values. • Acquire or retain access to public lands to improve management efficiency, to facilitate multiple uses and public enjoyment of BLM public lands in coordination with private landownership, local, state or federal entities. • Maintain and/or acquire access across state/private lands to public lands for recreational opportunities and management of public land resources. • Public access would be maintained or improved through all land ownership adjustment transactions.				
Realty, Cadastral Survey, and Lands: Land Tenure Adjustment and Access – Management Common to All Alternatives				
	Newly acquired lands would be managed for the highest potential purpose and greatest public benefit for which they are acquired and would be managed similar to adjacent and/or surrounding lands.			
	Lands or interest in lands would be acquired by purchase, exchange, revocation of another agency's withdrawals, administrative transfer from another agency, cooperative agreement, donation, or other authority, and evaluated against the criteria in Appendix J. All land or mineral ownership adjustments would be based on a willing buyer, willing seller basis and would be managed as similar lands are under the approved RMP. Administration of other federal lands could occur through revocation of withdrawals, jurisdictional or administrative transfer, or agreement.			
	Evaluate the proposed disposal tracts (Category III) using the land tenure criteria identified in Appendix J.			
	Parcels of land administered by BLM and discovered through land status updates and corrections would be managed as similar lands are under the approved RMP.			
	Lands acquired within or adjoining Congressionally designated areas (NM, NHT, etc.) or within administratively designated special management areas, such as ACECs and SRMAs, which have unique or fragile resources, would be managed the same as the special management area.			
	Acquisition of patented mining claims would be addressed on a case-by-case basis. Patented claims so acquired would be withdrawn from mineral entry.			
	Use all methods available to acquire access: easements from land or land exchange with willing parties would be the preferred methods of access acquisition.			
	Retain existing access to BLM-administered lands, or other public lands, in conveyance documents.			
	Participate and adopt National Historic Trails Land Acquisition Plans			
	The specifically authorized acreage for land use should be avoided by oil and gas exploration and development activities. All authorized surface land uses are valid claims to prior existing rights unless the authorization states otherwise. (LN)			
Realty, Cadastral Survey, and Lands: Land Tenure Adjustment and Access – Management Common to Action Alternatives				
	No current management decision provided	Oil and gas exploration, leasing and development would be allowed with a No Surface occupancy stipulation on lands acquired with Land and Water Conservation Funds (NSO)		
	Retention zones as identified in the current plan.	Special Designations (including ACECs and WSAs), archeological sites/historic districts, and lands acquired through Land Water Conservation Funds would be managed as Category I – Retention.		
	No current management decision	Oil and gas facilities would not be allowed within 500 feet of human occupied dwellings (LN).		

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	provided			
	No current management decision provided			Lands classified as priority habitat and general habitat (or habitat classification appropriate for the sub-region) for Greater Sage-Grouse would be retained in federal management unless: (1) the agency can demonstrate that disposal of the lands would provide a net conservation gain to the Greater Sage-Grouse or (2) the agency can demonstrate that the disposal of the lands would have no direct or indirect adverse impact on conservation of the Greater Sage-Grouse.
	Surface occupancy and use is prohibited 300 feet from occupied buildings	Surface occupancy and use is prohibited for oil and gas exploration and development within and 500 feet from unincorporated towns or human occupied residential structures (structures that are regularly occupied by persons at least 20 hours per week) (NSO).		
	Consider land ownership adjustments according to the established criteria and zones.	Land ownership adjustments would be considered through site-specific analysis, based on retention, acquisition and disposal criteria (Appendix J). Establish three (3) adjustment categories based on BLM land tenure adjustment classes: • Category I – Retention: Lands managed in Category I – Retention would include all lands with Special Designations (including ACECs, WSAs, National Historic Trails, National Monuments, etc.), lands with wilderness characteristics, National Register listed archeological/historic sites/districts, and lands acquired through LWCF. Category I lands would not be transferred from BLM management by any method for the life of the plan. • Category II- Retention/Limited Land Ownership Adjustment: Public lands within Category II would be considered for limited land ownership adjustments; however lands in Category II would not be available for sale under section 203 of FLPMA. Some public lands in Category II may contain resource values protected by law or policy. If actions cannot be taken to adequately mitigate impacts from disposal of those lands, those parcels would be retained. • Category III – Disposal (land ownership adjustments, including sales): These lands generally have low or unknown resource values or are isolated or fragmented from other public land ownerships making them difficult to manage. Public land parcels in this category are relatively smaller in size (typically 160 acres or less). A listing of the legal descriptions of these disposal parcels can be found by alternative in Appendix J. These parcels have been found to potentially meet the sale criteria of section 203(a)(1) of FLPMA and could be made available for sale, however, exchange could have priority over disposal by FLPMA sale.		
Realty, Cadastral Survey, and Lands: Land Tenure Adjustment and Access – Management Actions by Alternative				
	Manage 26,616 acres for Retention	Manage 68,300 acres in Category I – Retention	Manage 108,184 acres in Category I – Retention	Manage 83,507 acres in Category I – Retention
	No current management decision provided	Manage 365,804 acres in Category II - Retention/Limited Land Ownership Adjustment (no land disposals through direct sale). Land exchanges would be considered.	Manage 321,747 acres in Category II - Retention/Limited Land Ownership Adjustment (no land disposals through direct sale). Land exchanges would be considered.	Manage 353,829 acres in Category II - Retention/Limited Land Ownership Adjustment (no land disposals through direct sale). Land exchanges would be considered.

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Manage 7,529 acres for Disposal, and 2,088 acres were identified for further study. (Map 171)	Manage 50 acres in Category III – Disposal (land ownership adjustments, including direct sale). (Map 172)	Manage 4,223 acres in Category III – Disposal (land ownership adjustments, including direct sale or land exchanges). (Map 173)	Manage 264.4 acres in Category III – Disposal (land ownership adjustments, including direct sale or land exchanges). (Map 174)
	Consider applications for Recreation and Public Purposes (R&PP) Act transfers and airport grants on a case-by-case basis.	Consider applications for R&PP leases/patents and airport grants only in Category III.	Consider applications for R&PP leases/patent and airport grants in all Categories II and III.	Consider applications for R&PP leases/patents and airport grants only in Category II and Category III.
	Make lands available for state grants, agricultural entries, and Indian allotments on a case-by-case basis.	BLM public lands would be available for state indemnity grants, as legally required in Categories II and III lands. There are no lands in the Billings Field Office that are suitable for agricultural entry or Indian allotments. This is based on a combination of poor soil types, a lack of water, available water rights, and rugged topography.		
Realty, Cadastral Survey, and Lands: Rights-of-Way, Leases, and Permits				
The BLM goals for the management of Rights-of-Way (ROW), leases, and permits within the Billings Field Office are to protect resources while meeting transportation and ROW needs in the planning area. To accomplish this, the Billings Field Office proposes to implement a variety of management activities that allow to various land actions or authorizations, with a range of restrictions based on resource concerns to help meet the goals and objectives of other resources. Actions specific to lands ROWs, leases and permits are listed below, by alternative and are primarily focused categorizing ROWs in areas as exclusion areas and avoidance areas, as well as how and under what conditions land use authorizations may occur within the decision area.				
Realty, Cadastral Survey, and Lands: Rights-of-Way, Leases, and Permits – Desired Outcomes (Goals and Objectives)				
• Manage public lands to meet transportation and rights-of-way (ROW) needs while protecting resources. • Address the needs of industry, utilities, the public, or government entities for land use authorizations while minimizing impacts to other resource values. • Maintain availability of public lands to meet the habitation, cultivation, trade, mineral development, recreation, and manufacturing needs of external customers and the general public.				
Realty, Cadastral Survey, and Lands: Rights-of-Way, Leases, and Permits – Management Common to All Alternatives				
	Analyze requests for land use authorizations and apply mitigation measures as appropriate (Appendix B).			
	Land use authorizations would not be issued for uses that involve the disposal or storage of materials which would contaminate the land (hazardous waste disposal sites, landfills, rifle ranges, etc.).			
	New ROW facilities would be located within or adjacent to existing rights-of-way to the extent possible.			
	New communication site users would be encouraged to locate within existing communication site buildings or within boundaries defined by communication site plans.			
	Reclamation of sites would be required where documented resource damage has occurred from unauthorized use.			
	ROW exclusion or avoidance areas would be subject to valid existing rights.			
	Terms and conditions for ROWs, corridors and development areas would incorporate best management practices.			
	Issues in connection with RS2477 roads would be subject to the current guidance			
	If a BLM ROW, lease, permit, conservation easement, or R&PP lease or patent occurs on an oil and gas lease, the lessee would be notified			
	The following five ROW areas are designated for communication sites: Wall Creek, north of Pompeys Pillar, Bridger, Tin Can Hill, and Four Dances Natural Area ACEC. Applicants are encouraged to utilize existing communication site facilities to minimize disturbance.			

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Upon project completion, roads used for commercial access on public lands would be reclaimed, unless, based on site-specific analysis, the route provides specific benefits for public access and does not contribute to resource conflicts.			
	Pursue reciprocal rights for public access when granting a BLM right-of-way, as appropriate.			
	Overhead powerlines, where authorized, would follow the recommendations in *Avian Protection on Powerlines, State of the Art in 2006* (APLIC). Power poles and other tall structures would be designed to prevent raptors from perching on the poles and reflectors attached.			
	No current management decision provided	Geophysical carbon sequestration would be allowed in the planning area in accordance with the goals and objectives for resources in the RMP. The BLM would comply with policy for issuing ROWs or leases for the purpose of geophysical carbon sequestration.		
	GRSG PHMAs open for ROWs.	Exclusion area for major and minor ROWs, except for valid existing rights.	Avoidance area for major and minor ROWs. However ROWs would only be allowed in GRSG PHMAs where habitat functionality would be maintained.	Same as C
	GRSG RAs open for ROWs	Avoidance area for major and minor ROWs.	Avoidance area for major and minor ROWs. However ROWs would only be allowed in GRSG RAs where habitat functionality would be maintained.	Same as C
	GRSG GHMAs open for ROWs	GRSG GHMAs would be avoidance areas for major and minor ROWs.	ROWs would be allowed . Utilities and similar facilities would be located adjacent to other facilities where practical and only when habitat can be maintained.	GRSG GHMAs would be avoidance areas for major ROWs. GRSG GHMAs would be open to minor ROWs. Utilities and similar facilities would be located adjacent to other facilities where practical and only when habitat can be maintained.
	Low voltage powerlines would be buried if feasible.	BLM would require powerlines 69kV and less in size to be buried if feasible.	BLM would require powerlines 69kV and less in size to be authorized in a manner that ensures habitat is maintained (e.g. burying, perch, collision and electrocution prevention measures, or line location).	BLM would require powerlines 69kV and less in size to be buried if feasible. BLM would require powerlines 69kV and less in size to be authorized in a manner that ensures habitat is maintained (e.g. burying, perch, collision, and electrocution prevention measures, or line location).
	Corridors			
	A multi-modal (pipeline and electrical transmission) Section 368 corridor (identified as Segment 79-216) would continue to be a designated corridor and is 5.2 miles in length, 3,500 feet in total width, located east of Highway 310 in Carbon County (Map 76).			
	No current management decision	Silver Tip Road would not be designated a	Silver Tip Road in Carbon County would be designated as a ROW corridor (1 mile	Silver Tip Road in Carbon County would be designated as a ROW corridor (1,750 feet

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	provided	ROW corridor (Map 76).	on either side of the center line of Silver Tip Road) (Map 77).	on either side of the center line of Silver Tip Road). This corridor would have a total width of 3,500 feet and 6 miles in length on public land, with the exception of the portion of this corridor occurring in the Elk Basin GRSG Restoration Area which would be 1,320 feet on either side of the center line of Silver Tip Road (total width of 2,640 feet) (Map 78).
	No current management decision provided.	Applicants would be encouraged, but not required, to use designated corridors; ROW requests would be considered on a case by case basis.	Applicants would be encouraged, but not required, to use designated corridors; ROW requests would be considered on a case by case basis. ROW application processing time would be expedited by the use of a designated corridor.	Same as C.
	ROW Exclusion Areas			
	ROW exclusion areas include (44,014 acres) (Map 72): The following are ROW exclusion areas: • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA • Bridger Fossil Area ACEC • East Pryor ACEC • Meeteetse Spires ACEC • Petroglyph Canyon • Pompeys Pillar ACEC – Historic Zone except those necessary to service the site facilities. • Stark Site ACEC • Weatherman Draw ACEC • Lands with wilderness characteristics	ROW Exclusion Areas: (211,384 acres) and include the following areas (Map 73): • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA • In addition, if not designated by Congress as Wilderness, the WSAs would continue to be managed as ROW exclusion areas. • Bridger Fossil Area ACEC • Castle Butte ACEC • East Pryor ACEC • Grove Creek ACEC • Meeteetse Spires ACEC • Petroglyph Canyon • Pompeys Pillar ACEC – Zone A and B, except those necessary to service the site facilities. • Pryor Foothills RNA ACEC • Stark Site ACEC • Portion of Weatherman Draw ACEC (original ACEC and acquisition).	ROW Exclusion Areas: (39,491 acres) and include the following areas (Map 74): • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA • Meeteetse Spires ACEC • Petroglyph Canyon • Pompeys Pillar ACEC – Zone A and B except those necessary to service the site facilities • Portion of Weatherman Draw ACEC (original ACEC and acquisition). • Lands with wilderness characteristics	ROW Exclusion Areas: (48,258 acres) and include the following areas (Map 75): • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA. • In addition, if not designated by Congress as Wilderness, the WSAs would continue to be managed as ROW exclusion areas. • Bridger Fossil Area ACEC • Meeteetse Spires ACEC • Petroglyph Canyon • Pompeys Pillar ACEC – Zone A and B, except those necessary to service the site facilities • Portion of Weatherman Draw ACEC (original ACEC and acquisition). • Lands with wilderness characteristics

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		• Lands with wilderness characteristics • Cave and karst areas would be managed as a ROW exclusion area. • Greater Sage-Grouse Habitat ACEC (Greater Sage-Grouse PHMAs) would be ROW exclusion areas		
	ROW Avoidance Areas			
	ROW avoidance areas include 24,203 acres (Map 68): • Castle Butte ACEC • Four Dances ACEC • Pompeys Pillar ACEC (Historic-developed and General Management Zones (avoidance area and restricts ROW to a 500' wide path paralleling the southern boundary of the public lands along Highway 312) • Asparagus Point, Steamboat Butte • Red Dome, Red Valley, Portion of Acton, Portion of Shepherd Ah-Nei, • Bad Canyon, East and Red Pryor Mountains • Hoskins Basin Archeological District, Demi-John Flat Archeological District, Beartooth Mountain Front (2 mile strip bordering the eastern boundary of the Custer National Forest)	ROW avoidance areas would include 185,607 acres (Map 69): • Four Dances ACEC, • Pompeys Pillar ACEC (Zone C-restricts ROW to a 500' wide path paralleling the southern boundary of the public lands along Highway 312) • L&C NHT and NP NHT • Asparagus Point, Steamboat Butte, Portion of Acton, Portion of Shepherd Ah-Nei, Bad Canyon, East and Red Pryor Mountains • Hoskins Basin Archeological District, Demi-John Flat Archeological District, Beartooth Mountain Front (2 mile strip bordering the eastern boundary of the Custer National Forest) • WSR eligible segments • Big Horn Sheep Winter Range • Big Game Winter Range • Greater Sage-Grouse RAs • Greater Sage-Grouse GHMAs	ROW avoidance areas would include 355,601 acres (Map 70): • Bridger Fossil Area ACEC • Castle Butte ACEC • East Pryor ACEC • Four Dances ACEC • Grove Creek ACEC • Pompeys Pillar ACEC (Zone C - restricts ROW to a 500' wide path paralleling the southern boundary of the public lands along Highway 312) • Pryor Foothills RNA/ACEC • Stark Site ACEC • Weatherman Draw (expansion area) • Cave and karst areas • L&C NHT and NP NHT • Asparagus Point, Steamboat Butte, Portion of Acton, Portion of Shepherd Ah-Nei, Bad Canyon, East and Red Pryor Mountains, • Hoskins Basin Archeological District, Demi-John Flat Archeological District, Beartooth Mountain Front (2 mile strip bordering the eastern boundary of the Custer National Forest) • WSR eligible segments • Big Horn Sheep Winter Range • Big Game Winter Range • Greater Sage-Grouse PHMAs and	ROW avoidance areas would include 378,958 acres (Map 71): • Castle Butte ACEC • East Pryor ACEC • Four Dances ACEC • Grove Creek ACEC Pompeys Pillar ACEC (Zone C - restricts ROW to a 500' wide path paralleling the southern boundary of the public lands along Highway 312) • Pryor Foothills RNA/ACEC • Stark Site ACEC Weatherman Draw (expansion area) • Cave and karst areas would be managed as ROW avoidance areas. • L&CNHT and NPNHT corridors would managed as ROW avoidance areas • Asparagus Point, Steamboat Butte, portion of Acton, portion of Shepherd Ah-Nei, Bad Canyon, East and Red Pryor Mountains • Hoskins Basin Archeological District, Demi-John Flat Archeological District, Beartooth Mountain Front (2 mile strip bordering the eastern boundary of the Custer National Forest) • WSR eligible segments • Big Horn Sheep Winter Range • Big Game Winter Range • Greater Sage-Grouse GHMA • Greater Sage-Grouse PHMAs and RAs would remain avoidance areas.

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
			RAs would remain avoidance areas. However ROWs would only be allowed in Greater Sage-Grouse PHMAs and RAs where habitat functionality would be maintained.	However ROWs would only be allowed in Greater Sage-Grouse PHMAs and RAs where habitat functionality would be maintained.
Realty, Cadastral Survey, and Lands: Withdrawals				
The BLM goals for the management of Withdrawals within the Billings Field Office are to protect significant resources through mineral withdrawal actions that accomplish the required purposes of the withdrawal. To accomplish this, the Billings Field Office has proposed, by alternative, withdrawal actions to protect the identified resource values. The BLM would follow departmental and bureau policies in consideration of any new proposed withdrawals. Lands recommended for closure to the mining laws would be the minimum area required for the intended use.				
Realty, Cadastral Survey, and Lands: Withdrawals – Desired Outcomes (Goals and Objectives)				
• Protect significant resources or significant government investments. • Use withdrawal actions with the least restrictive measures and minimum size necessary to accomplish the required purposes of the withdrawal.				
Realty, Cadastral Survey, and Lands: Withdrawals – Management Common to All Alternatives				
	Review withdrawals two (2) years prior to termination either to extend, modify, or revoke. If withdrawals are no longer needed, in whole or in part, for the intended purpose for which they were created, the withdrawal would be revoked or modified.			
	Consider other agency requests for new withdrawals, relinquishments, extensions or modifications on a case-by-case basis with consideration given to determining if the lands would be suitable for return to BLM public domain.			
	All Classification and Multiple Use classifications in the planning area have been terminated.			
	Withdrawal proposals would be evaluated at the project level and would not be approved unless the land management is consistent with maintaining and protecting BLM resource values (see BMP (Appendix B) and GRSG (Appendix AA) Appendices as appropriate).			
	The following areas are currently closed and withdrawn from mineral entry (1,855 acres): • Britton Springs Administrative Site Crooked Creek Natural Area (WY) • Four Dances ACEC • Petroglyph Canyon ACEC • Pompeys Pillar NM • Weatherman Draw ACEC (600 acres) The following areas are closed and recommended for withdrawal from mineral entry (37,845 acres): • Meeteetse Spires ACEC • East Pryor ACEC • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA	The following areas are currently closed and would continue to be recommended for withdrawal from mineral entry (1,855 acres): • Britton Springs Administrative Site Crooked Creek Natural Area (WY) • Four Dances ACEC • Petroglyph Canyon ACEC • Pompeys Pillar NM • Weatherman Draw ACEC (600 acres) The following areas would be closed and recommended for withdrawal from mineral entry (289,296 acres) • Bridger Fossil Area ACEC • East Pryor ACEC • Grove Creek ACEC • Meeteetse Spires ACEC • Pompeys Pillar ACEC • Pryor Foothills RNA/ACEC • Stark Site ACEC	The following areas are currently closed and would continue to be recommended for withdrawal from mineral entry (1,855 acres): • Britton Springs Administrative Site Crooked Creek Natural Area (WY) • Four Dances ACEC • Petroglyph Canyon ACEC • Pompeys Pillar NM • Weatherman Draw ACEC (600 acres) The following areas would be closed and recommended for withdrawal from mineral entry (46,768 acres): • Bridger Fossil Area ACEC • Meeteetse Spires ACEC • Pompeys Pillar ACEC, • Big Horn Tack-On WSA • Burnt Timber Canyon WSA	The following areas are currently closed and would continue to be recommended for withdrawal from mineral entry (1,855 acres): • Britton Springs Administrative Site Crooked Creek Natural Area (WY) • Four Dances ACEC • Petroglyph Canyon ACEC • Pompeys Pillar NM • Weatherman Draw ACEC (600 acres) The following areas would be closed and recommended for withdrawal from mineral entry (60,204 acres): • Bridger Fossil Area ACEC • East Pryor ACEC • Meeteetse Spires ACEC • Pompeys Pillar ACEC • Pryor Foothills RNA/ACEC • Stark Site ACEC

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	• Lands with wilderness characteristics All other federal mineral estate within the planning area would be available for locatable mineral entry and would be managed according to policy, as described in management common.	• Weatherman Draw ACEC (4,386 acres) • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA • Greater Sage-Grouse PHMAs • Lands with wilderness characteristics • Cave and Karst Areas	• Pryor Mountain WSA • Twin Coulee WSA • Lands with wilderness characteristics	• Weatherman Draw ACEC (4,386 acres) • Big Horn Tack-On WSA • Burnt Timber Canyon WSA • Pryor Mountain WSA • Twin Coulee WSA • Lands with wilderness characteristics
Livestock Grazing				
The Bureau of Land Management livestock grazing program is mandated by law to provide opportunities for grazing in a manner that maintains and/or improves rangeland health. Management actions that preclude grazing in certain areas of the planning area are in place because livestock grazing has been deemed inconsistent with other activities, uses, or needs (i.e. wild sheep range, concentrated recreation areas, etc.). Livestock grazing management actions that are common to all alternatives focus primarily on meeting the *Standards for Rangeland Heath*, as outlined in Appendix I. In order to reach the goal of healthy rangelands, the bureau must maintain existing desirable rangeland conditions or improve rangeland health utilizing the *Guidelines for Grazing Management*, also outlined in Appendix I. It is critical that grazing management actions are monitored and evaluated to determine if rangeland and riparian conditions are improving, or at minimum, being maintained. Prescribed grazing strategies and systems as well as natural and mechanical vegetation improvements also maintain the number of Animal Unit Months (AUMs) available for livestock grazing that support and sustain local ranching communities. The integration of livestock grazing with other multiple-use needs and objectives is also essential. When issuing or transferring grazing authorizations a thorough review of these actions is conducted.				
Livestock Grazing – Desired Outcomes (Goals and Objectives)				
• Provide opportunities for livestock grazing as a part of multiple-use in a manner that meets and/or exceeds rangeland health standards. • Maintain existing desirable (allotment categorization) rangeland conditions or improve rangeland health utilizing best grazing management practices. • Monitor and evaluate rangeland health to determine appropriate management actions. • Integrate livestock use and associated management practices with other multiple-use needs and objectives to maintain, protect, and improve rangeland health.				
Livestock Grazing – Management Common to All Alternatives				
	Monitor and evaluate grazing allotments to maintain or improve rangeland productivity.			
	AUM levels would be sustained on an allotment-by-allotment basis for livestock grazing, providing Montana Standards for Healthy Rangelands are being met.			
	Adjust permit terms and conditions (e.g. increased/decreased permitted use, season of use, and kind and class of livestock) when grazing permits are issued or as otherwise deemed necessary by site specific evaluation of monitoring data and environmental analysis.			
	Use livestock grazing to enhance ecosystem health, wildlife habitat, or mitigate resource issues (e.g., noxious/invasive weed control and hazardous fuel reduction) where supported by site-specific environmental analysis.			
	During periods of drought, adjust livestock numbers commensurate with the needs of other resources in the area (riparian, wildlife, etc.)			
	Exclude livestock grazing from small areas (such as springs) within allotments that cannot meet Rangeland Health Standards with livestock grazing.			
	Site-specific management actions that protect riparian areas would be addressed at the project level.			
	Grazing treatments and systems would be adaptive to new research, science and methodologies.			
	In areas of resource conflicts, installation of structural range improvements would only be considered where grazing practices (change in season of use, reduction of AUMs, increased rest, etc.) are unable to resolve the resource concern. Structural range improvements could be considered where necessary to facilitate the change in grazing management practices. Existing range improvements would be evaluated and modified to address impacts on wildlife populations (e.g. Greater Sage-Grouse/fence conflicts).			

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Newly acquired lands would be evaluated for livestock grazing during the acquisition process, and subject to 43CFR 4110.1-1.			
	Livestock Grazing – Management Common to Action Alternatives			
	No similar action	All allotments wholly located in Greater Sage-Grouse PHMAs would be considered for retirement, where the base property owner relinquishes their preference.		
	No similar action			Site specific Greater Sage-Grouse habitat and management objectives would be developed for BLM land within Greater Sage-Grouse Priority Habitat Management Areas. These objectives would be incorporated into the respective allotment management plans or livestock grazing permits as appropriate.
	No similar action			The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within PHMAs would include specific management thresholds based on GRSG Habitat Objectives Table (Table 2.3) and Land Health Standards (43 CFR 4180.2) and one or more defined responses that would allow the authorizing officer to make adjustments to livestock grazing that have already been subject to NEPA analysis.
	No similar action			• The BLM would prioritize (1) the review of grazing permits/leases, in particular to determine if modification is necessary prior to renewal, and (2) the processing of grazing permits/leases in PHMAs. In setting workload priorities, precedence would be given to existing permits/leases in these areas not meeting Land Health Standards, with focus on those containing riparian areas, including wet meadows. The BLM may use other criteria for prioritization to respond to urgent natural resource concerns (ex., fire) and legal obligations. • The NEPA analysis for renewals and modifications of livestock grazing

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				permits/leases that include lands within PHMAs would include specific management thresholds based on GRSG Habitat Objectives Table (Table 2.3) and Land Health Standards (43 CFR 4180.2), ecological site potential, and one or more defined responses that would allow the authorizing officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis. • Allotments within PHMAs, and focusing on those containing riparian areas, including wet meadows, would be prioritized for field checks to help ensure compliance with the terms and conditions of the grazing permits. Field checks could include monitoring for actual use, utilization, and use supervision. • At the time a permittee or lessee voluntarily relinquishes a permit or lease, the BLM would consider whether the public lands where that permitted use was authorized should remain available for livestock grazing or be used for other resource management objectives, such as reserve common allotments or fire breaks.
Livestock Grazing – Management Actions by Alternative				
	Areas open to Grazing, AUM Allocation, and Monitoring			
	Total Acres Available to livestock grazing: 434,154			
	Isolated parcels not included within grazing allotments: 9,522 acres			
	Total acres permitted for livestock grazing: 387,057	Total acres permitted for livestock grazing: 386,092	Total acres permitted for livestock grazing: 386,822	Total acres permitted for livestock grazing: 387,057
	Total acres closed to permitted livestock use for the life of the plan: 37,408 acres Areas specifically closed to livestock grazing include:	Total acres closed to permitted livestock use for the life of the plan: 38,373 acres Areas specifically closed to livestock grazing include:	Total acres closed to permitted livestock use for the life of the plan: 28,622 acres Areas specifically closed to livestock grazing include:	Total acres closed to permitted livestock use for the life of the plan: 28,387 acres Areas specifically closed to livestock grazing include:

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	• Pryor Mountain Herd Area: 28,387 acres • Pompeys Pillar ACEC: 432 acres • Bundy Island: 78 acres • Sundance Lodge Recreation Area: 387 acres • Four Dances Natural Area ACEC: 784 acres • Asparagus Point: +/- 26 acres (that portion north of the Musselshell River and accessible from State Hwy 12) • Meeteetse Spires ACEC: 558 acre acquisition area • Twin Coulee WSA: 6,756 acres	• Pryor Mountain Herd Area: 28,387 acres • Pompeys Pillar ACEC: 432 acres • Bundy Island: 78 acres • Sundance Lodge Recreation Area: 387 acres • Four Dances Natural Area ACEC: 784 acres • Asparagus Point: +/- 26 acres (that portion north of the Musselshell River and accessible from State Hwy 12) • Meeteetse Spires ACEC: 1,523 acres • Twin Coulee WSA: 6,756 acres	• Pryor Mountain Herd Area: 28,622 acres (Bad Pass Allotment (149 acres) is within the formal boundary of the Pryor Mountain Herd Area boundary and would be open to trailing and therefore open to grazing.)	• Pryor Mountain Herd Area: 28,387 acres
			Total acres available for prescriptive use of livestock grazing: 9,021 acres The following areas could be open to livestock grazing on a temporary basis for the treatment of noxious weeds or as a prescriptive treatment (targeted grazing) to meet site specific vegetation or other resource management goals: • Pompeys Pillar ACEC: 432 acres • Bundy Island: 78 acres • Sundance Lodge Recreation Area: 387 acres • Four Dances Natural Area ACEC: 784 acres • Asparagus Point: +/- 26 acres (that portion north of the Musselshell River and accessible from State Hwy 12) • Meeteetse Spires ACEC: 558 acres • Twin Coulee WSA: 6,756 acres	Same as C
	Current available AUMs are 54,873.	Maintain current available AUMs (up to 54,873). Adjustments to permitted use would	Maintain current available AUMs (up to 54,873). Implement range improvements	Same as B

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		be authorized, based on allotment specific standards and conformance reviews.	that meet forage demand.	
	Current suspended non-use allocation - 7,746 AUMs.	Maintain current AUMs in suspense (7,746) for watershed health or wildlife habitat.	Make current AUMs suspended non-use (7,746) available for livestock grazing use.	Consider adjusting (increase or decrease) suspended AUMs, based on monitoring data and range conditions.
	Maintain existing allotment management categories (see Appendix S)	Designate those allotments within or containing Greater Sage-Grouse PHMAs as management category I. All other allotments would maintain their existing designation and would be updated as resource conditions change	Same as A	Same as B
	Monitor and evaluate the appropriate management actions (grazing systems and range improvements) to ensure range condition and objectives are met on I allotments and maintained on M and C allotment.	Priority Allotments for monitoring and evaluation would be allotments which: • Are not meeting standards for rangeland health • Contain special status species habitat (including Greater Sage-Grouse PHMAs / RAs) • Contain impaired streams • Contain non-functional or functioning at risk downward trend riparian areas. • Contain invasive plant species.	Same as A	Priority Allotments for monitoring and evaluation would be allotments which: • Are not meeting standards for rangeland health • Contain special status species habitat (including Greater Sage-Grouse PHMAs / RAs) • Contain impaired streams • Contain non-functional or functioning at risk downward trend riparian areas. • Contain invasive plant species. • Allotments that have established and implemented management plans during the life of the plan.
	Riparian areas are assessed every 10 years (permit renewal). If standards are not being met, and grazing is a causal factor, management actions would be taken to make progress toward meeting the standard before the next grazing season.	Assess PFC on all fish bearing streams on a 3 year rotation (approx. 46 miles). If standards are not being met, and grazing is a causal factor, management actions would be taken to make progress toward meeting the standard before the next grazing season.	Same as A	Assess PFC on all fish bearing streams on a 3 year rotation, with the exception of areas that are free of existing or potential threats (approx. 30 miles). (ex: Piney and Crooked Creek are the current exceptions). If standards are not being met, and grazing is a causal factor, management actions would be taken to make progress toward meeting the standard before the next grazing season.
	No current management decision provided.	No supplement or salt placement within ½ mile of known special status plant sites.	No supplement or salt placement within ¼ mile of known special status plant sites.	No supplement or salt placement within ¼ mile of known special status plant sites, unless livestock is otherwise excluded (fence or barrier).

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Permit and Lease Renewal and Relinquishments			
	No current management decision provided	Grazing permits/leases would be transferred or renewed for C category grazing allotments where the new grazing authorization: (1) Contains the same mandatory terms and conditions (kind of livestock, the active use previously authorized is not exceeded, and grazing does not occur more than 14 days earlier or later than as specified on the previous permit/lease). (2) Have evaluation reports documenting that they are meeting land health standards. A screening criteria checklist (Appendix L) would be reviewed prior to renewal. If the answer to each of the questions is "NO", the renewal is within scope and NEPA compliance can be achieved by preparing a Documentation of NEPA Adequacy (DNA) form which references this RMP/EIS. If the answer to any question is "YES", the proposed action represents an exception, and site-specific analysis would be prepared. Category I and M allotments would not meet the criteria for this type of action.	Grazing permits/leases would be transferred or renewed for C and M category grazing allotments where the new grazing authorization (Same as B). Category I allotments would not meet the criteria for this type of action.	Same as C
	No current management decision provided	Relinquished AUMs would be retired.	Relinquished AUMs would remain available for transfer.	Relinquished AUMs would be transferred or managed as reserve common allotments for neighboring allotments with conflict or resource condition issues.
	No current management decision provided	Areas with active surface disturbance would be unavailable to livestock grazing. The AUMs for these areas would be suspended during surface disturbance activities until at such time grazing would continue in a manner which supports the standards for rangeland health.	Areas with active surface disturbance would be available to livestock grazing. The AUMs for these areas would be suspended during surface disturbance activities until at such time grazing would continue in a manner which supports the standards for rangeland health.	Same as C
	Sheep or goats would not be permitted within 9 miles from known bighorn sheep habitat. This distance would be greater if deemed necessary through site specific	Conversions from cattle to domestic sheep or goats would be prohibited in allotments within occupied wild sheep habitat (Map 17). New sheep and goat allotments or	Conversions from cattle to domestic sheep or goats would be prohibited in allotments within occupied wild sheep habitat (Map 17).	Domestic sheep/goat permits – No new grazing permits authorizing sheep or goats would be allowed within 14.3 air miles or 23 Kilometers in bighorn sheep range (Map

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	analysis.	conversions from cattle to sheep or goats would not be permitted within 14.3 miles from known bighorn sheep habitat. This distance would be greater if deemed necessary through site specific analysis.	New sheep and goat allotments or conversions from cattle to sheep or goats would not be permitted within 12.4 miles from known bighorn sheep habitat. This distance would be greater if deemed necessary through site specific analysis.	17) or as determined through consultation with MTFWP. Sheep and goat grazing allotments in areas with risk of contact between bighorn sheep and domestic sheep and/or goats in the planning area would be reviewed and managed, or reclassified if necessary, to achieve effective separation (both temporal and/or spatial at 23 kilometers (14.3 miles) or as determined through consultation with MTFWP. Contact risk would be based on habitat, distance between bighorn sheep range (current and anticipated), sheep and goat allotments, movement potential, and current science and guidelines. Domestic sheep/goats would not be allowed within bighorn sheep range unless mechanisms are in place to achieve effective separation from wild sheep.
Recreation and Visitor Services				
The Federal Land Policy and Management Act provides for recreation use of public land as an integral part of multiple use management. Dispersed, unstructured activities typify the recreational uses occurring throughout the majority of the planning area. BLM Manual 8320 directs the BLM to designate recreation management areas (RMAs). RMAs can be either Special Recreation Management Areas (SRMAs) where recreation is managed as the priority; or Extensive Recreation Management Areas (ERMAs) where recreation is managed commensurately with other resources and resources uses. Public lands that are not designated (PLND) as RMAs are managed to meet basic recreation and resource needs. Management within special recreation management areas focuses on providing recreation opportunities that would not otherwise be available to the public, reducing conflicts among users, minimizing damage to resources, and reducing visitor health and safety problems. The ERMA is an administrative unit that requires specific management consideration in order to address recreation use, demand, or recreation program investments. All other lands not designated as a SRMA or an ERMA are lands where recreation is not emphasized, however recreation activities may occur in equal emphasis with other resources and activities except on those lands closed to public use. The PLND lands are managed to allow recreation uses that are not in conflict with the primary uses of these lands and have minimal recreation program investment.				
Recreation and Visitor Services – Desired Outcomes (Goals and Objectives)				
• Public lands managed by the Billings Field Office provide a diverse array of benefits to the public, including economic, environmental, personal, and social ones. • The BLM policy is to develop and maintain cooperative relationships with national, state, and local recreation providers, tourism entities, and local recreational groups. • BLM's goal is to develop and maintain appropriate recreational facilities, balancing public demand, protection of public land resources, and fiscal responsibility. • The management direction is to emphasize and support collaborative public outreach, awareness events, and programs that promote public service and stewardship, and to encourage sustainable travel and tourism development with local communities and provide community-based conservation support for visitor service. The emphasis is placed on providing interpretive and informational signs and materials for public lands visitors, maintaining facilities to a high standard consistent with the recreational setting, and limiting development of additional facilities to those areas where public recreational use of surrounding public lands requires them.				
	Recreation and Visitor Services – Management Common to All Alternatives			
	Conduct periodic accessibility, safety, and condition assessments in accordance with Bureau policy at developed recreation sites. Prioritize available funds to resolve deferred and			

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	corrective maintenance needs.			
	Monitoring. Monitoring of recreation resources and human use including the following: visitor use and use patterns; recreation caused resource effects or impacts; visitor satisfaction; and effectiveness or attainment of outcomes-focused management objectives, recreation setting characteristics, and standards and indicators will be developed and implemented as a Implementation-Plan level Decision component.			
	Allow non-commercial dispersed camping subject to length of stay limitations, without a permit on BLM-administered lands in the planning area, except where prohibited. Evaluate the need for future developed camping locations in SRMA plans, based on select criteria such as habitat, resources, cultural, and socio-economic needs.			
	Mineral exploration activities would be coordinated for timing to minimize conflicts during peak use periods (e.g., weekends, holidays, summer use season, etc.).			
	Cooperate with FWP, private landowners, and other partners to improve hunter access and the availability of public lands for hunting in accordance with EO 13443. Lands closed to hunting are 51 acres at the Pompeys Pillar National Monument and 784 acres at Four Dances Natural Area SRMA/ACEC.			
	Use off-site interpretation, education, and outreach as a means to protect public resources.			
	Allow target shooting in appropriate areas and prohibit target shooting in areas with resource conflicts (refer to management actions by alternative below for areas available/prohibited to target shooting). The Billings Field office would not designate specific target shooting sites but would pursue or facilitate the transfer of fee title ownership of suitable areas commonly used for shooting areas, to interested local governments or organizations. The Billings Field office can also employ the patent provisions of the Recreation and Public Purposes (R&PP) Act, 43 U.S.C. § 1721, to convey ownership of lands for shooting ranges to non-profit organizations or local governments with the stipulation of non-revision of fee title and with no monitoring requirements by BLM (refer to the Land Tenure and Access section).			
	The Bureau of Land Management (BLM) would not issue permits or other land use authorizations for commercial services providing for the disposal of cremated remains on public lands. Individual, non-commercial scattering of cremated remains is subject to applicable state law and is considered casual use under 43 CFR 2920.0-5(k). Inquiries from individuals and families to scatter cremated remains should be handled on a case-by-case basis. If the level of use associated with individual, non-commercial scattering of cremated remains exceeds casual use criteria and causes resource concerns, the BiFO may establish notification requirements to determine the extent of use and whether an authorization process for this activity needs to be implemented, and may provide guidelines to users about appropriate scattering procedures and locations. If warranted, the BiFO may establish a process for issuing letters of authorization through the Lands, Realty, and Cadastral Survey Division, after the appropriate level of public scoping, National Environmental Policy Act (NEPA) analysis, and consultation have been completed.			
	The landing of fixed wing aircraft and rotary wing helicopters, for non-emergency purposes, would be restricted to existing or designated roads. The landing of aircraft for non-casual, commercial use such as guiding or air taxi services would be addressed on a case-by-case basis in the development of an SRP. Develop an appropriate method to allocate air taxi operator and guiding permits, such as lottery, sealed bid, or ranking criteria.			
	Monitoring of recreation resources would continue to occur, with emphasis placed on developed recreation sites and SRMAs. Monitoring would include regular patrols to check on signing, visitor use, recreation related impacts, and user conflicts. Monitoring would also emphasize identification of areas with compliance problems. Actual visitor numbers and/or vehicle counts would be documented at developed sites for trend analysis. Monitoring of SRPs would be conducted for compliance with the terms, conditions, and stipulations of the SRP as well as annual monitoring and evaluation of compliance with administrative requirements. Periodic assessments would be made to ensure that uses in SRMAs and ERMAs are consistent with their management objectives.			
	Cultivation for wildlife habitat improvements at the Sundance Lodge Recreation Area and at Pompeys Pillar ACEC would continue. Changes in cultivation patterns, seasons of use, and type of activity, including termination of use, could occur during project level review.			
	All signs would conform to the sign policies, guidelines, directives, and plans (Appendix AC).			
	As emerging technologies cause new types of recreational activities to be developed or proposed for use on lands managed by the BLM Billings Field Office, these new recreational activities would be evaluated on a case-by-case basis, taking into account the resource values present, the types of activities proposed and their potential impacts. The emphasis on permitting these activities would be to allow them only if they avoid any impacts on high value resource locations (WSAs, ACECs, PMWHR, visual resources, areas of high soil erosion, critical wildlife habitats, cultural and paleontological sites, etc.).			

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Recreation and Visitor Services – Management Common to Action Alternatives				
	No current management decision provided	No Surface Occupancy for oil and gas leasing, exploration and development within agency-designated fishing access sites.		
	No current management decision provided			In PHMA, do not construct new recreation facilities (e.g., campgrounds, trails, trailheads, staging areas) unless the development would have a net conservation gain to GRSG habitat (such as concentrating recreation, diverting use away from critical areas, etc.), or unless the development is required for visitor health and safety or resource protection.
	Special Recreation Management Areas			
	No current management decision provided	Special recreation management areas (SRMAs) management plans would be initiated within 5 years. Existing SRMA plans would be reviewed for consistency and revised as needed.		
	No current management decision provided	Distinct recreation settings, recreation objectives, recreational experiences, and activities for each SRMA and recreation management zone (RMZ) are identified in Appendix N.		
	No current management decision provided	Construction and maintenance of non-motorized recreational trails would be considered during the development of SRMA management plans.		
Recreation and Visitor Services – Management Actions by Alternative				
	Manage the following areas as SRMAs (2 SRMAs – 1,171 acres) (Maps 80, 84, 85): • Sundance Lodge Recreation Area (387 acres) • Four Dances Natural Area/ ACEC (784 acres)	The following areas would be managed as SRMAs (6 SRMAs – 90,783 acres) (Maps 81, 84, 85, 86a, 90, 92,101) : • Sundance Lodge Recreation Area (387 acres) • Four Dances Natural Area/ ACEC (784 acres) • Shepherd Ah -Nei Recreation Area (4,680 acres) • Acton Recreation Area (3,697 acres) • Bundy Island (98 acres) • Pryor Mountain TMA (81,227 acres)	The following areas would be managed as SRMAs (11 SRMAs – 147,181 acres) (Maps 82, 84, 85, 86a, 88, 90, 92, 94, 98, 99, 100): • Sundance Lodge Recreation Area (387 acres) • Four Dances Natural Area ACEC (784 acres) • Shepherd Ah-Nei Recreation Area (4,680 acres) • Acton Recreation Area (3,697 acres) • Yellowstone River Corridor (½ mile corridor from centerline) (6,311 acres) • South Hills TMA (1,357 acres) • Mill Creek/Bundy TMA(34,239	The following areas would be managed as SRMAs (9 SRMAs – 110,862 acres) (Maps 83, 84, 85, 86a, 88, 90, 92, 94, 98, 99): • Sundance Lodge Recreation Area (387 acres) • Four Dances Natural Area ACEC (784 acres) • Shepherd Ah-Nei Recreation Area (4,680 acres) • Acton Recreation Area (3,697 acres) • Yellowstone River Corridor (½ mile corridor from centerline) (6,311 acres) • Asparagus Point (158 acres) (Would be managed as an SRMA provided that the course of the Musselshell River stabilizes to a condition that management as an SRMA is feasible or practical.)

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
			acres) • Pryor Mountain TMA (81,227 acres) • Horsethief TMA (12,261 acres) • 17 Mile (2,080 acres) • Asparagus Point (158 acres)	• South Hills TMA (1,357 acres) • Pryor Mountain TMA (81,227 acres) • Horsethief TMA (12,261 acres)
	Manage the following 7 areas as ERMAs (105,460 acres) (Maps 86, 87, 89, 91, 93, 95, 97): • Shepherd Ah-Nei Recreation Area (4,680 acres) • Acton Recreation Area (3,697 acres) • South Hills TMA (1,357 acres) • Pryor Mountain TMA (81,227 acres) • Horsethief TMA (12,261 acres) • 17 Mile (2,080 acres) • Asparagus Point Area (158 acres)	Manage the following 5 areas as ERMAs (7,668 acres) (Maps 87, 93, 95, 97, 99a) : • Horsethief TMA (12,261 acres) • 17 Mile (2,080 acres) • Asparagus Point (158 acres) • Yellowstone River Corridor (½ mile corridor from centerline) (6,213 acres) • South Hills TMA (1,357 acres)	Manage the following areas as ERMAs: • None	Manage the following 2 areas as ERMAs (36,319 acres) (Maps 95, 100a): • 17 Mile (2,080 acres) • Mill Creek/Bundy TMA (34,239 acres)
	All Lands not designated as SRMAs are managed as ERMAs. (327, 518 acres)	Manage the following areas as non-designated areas: The remaining public lands not identified above as SRMAs or ERMAs. (327,421 acres)	Manage the following areas as non-designated areas: The remaining public lands not identified above as SRMAs or ERMAs. (288,495 acres)	Manage the following areas as non-designated areas: The remaining public lands not identified above as SRMAs or ERMAs. (322,418 acres)
	No current management decision provided	Surface disturbing activities related to recreation facility development and maintenance, at developed recreation sites would be subject to mitigation guidelines.	Surface disturbing activities that benefit recreational facilities and visitor experiences would be allowed with an approved mitigation plan.	Surface disturbing activities related to facility development and maintenance would be subject to mitigation guidelines.
	No current management decision provided	Close the following areas to trapping: • Sundance Lodge Recreation Area SRMA • Shepherd Ah-Nei Recreation Area SRMA • Four Dances Natural Area and ACEC/SRMA Allow trapping in the other designated SRMAs (see individual ACECs (Table 2.12) for trapping restrictions in ACECs)	Sundance Lodge Recreation Area SRMA and Shepherd Ah-Nei Recreation Area SRMA would be open to trapping. Four Dances Natural Area ACEC/SRMA would remain closed to trapping.	Same as B
	NSO in developed recreation areas and	Oil and gas leasing, exploration and	Oil and gas leasing, exploration and	Oil and gas leasing, exploration and

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	areas receiving high concentrated use.	development activities would be allowed with No Surface Occupancy (NSO): • Sundance Lodge Recreation Area • Four Dances Natural Area ACEC • Shepherd Ah-Nei Recreation Area • Acton Recreation Area • Bundy Island • South Hills TMA • Pryor Mountain TMA	development allowed with a CSU, in developed recreation areas and SRMAs.	development would be allowed with an NSO stipulation in the following SRMAs: • Sundance Lodge Recreation Area • Four Dances Natural Area ACEC • Shepherd Ah-Nei Recreation Area • Acton Recreation Area • Yellowstone River Corridor: ½ mile corridor Oil and gas leasing, exploration and development allowed with a CSU: • Asparagus Point • Pryor Mountain TMA • Horsethief TMA • South Hills TMA
	No current management decision	The following SRMAs or ERMAs would be managed as VRM Class II: • Sundance Lodge Recreation Area SRMA (387 acres) • Four Dances Natural Area ACEC/SRMA (784 acres) • Shepherd Ah-Nei Recreation Area SRMA (RMZ 2) (3,664 acres) • Acton Recreation Area SRMA (3,697 acres) • Bundy Island SRMA (98 acres) • Yellowstone River Corridor (6,311 acres) • Pryor Mountain TMA SRMA (which includes WSA, lands w/ wilderness characteristics, and ACECs)	The following SRMAs or ERMAs would be managed as VRM Class II: • Sundance Lodge Recreation Area SRMA (387 acres) • Four Dances Natural Area ACEC/SRMA (784 acres) • Shepherd Ah-Nei Recreation Area SRMA (RMZ 2) (3,664 acres) • Acton Recreation Area SRMA (3,697 acres) • Yellowstone River Corridor • Pryor Mountain TMA SRMA (which includes WSA, lands w/ wilderness characteristics, and ACECs) • Mill Creek/Bundy TMA SRMA (YRC only)	The following SRMAs or ERMAs would be managed as VRM Class II: • Sundance Lodge Recreation Area SRMA (387 acres) • Four Dances Natural Area ACEC/SRMA (784 acres) • Shepherd Ah-Nei Recreation Area SRMA (RMZ 2) (3,664 acres) • Acton Recreation Area SRMA (3,697 acres) • Yellowstone River Corridor • Pryor Mountain TMA SRMA (which includes WSA, lands w/ wilderness characteristics, and ACECs) • Mill Creek/Bundy TMA/ERMA (YRC only)
	Sundance Lodge Recreation Area SRMA and Four Dances Natural Area ACEC/SRMA would be managed as VRM Class III	The following SRMAs or ERMAs would be managed as VRM Class III: • Shepherd Ah-Nei Recreation Area SRMA (RMZ 1 (OHV area)) (976 acres) • Horsethief TMA ERMA (12,261 acres) • 17 Mile Recreation Area ERMA (2,080 acres) • Asparagus Point Recreation Area ERMA (158 acres) • South Hills TMA ERMA (1,357 acres)	The following SRMAs or ERMAs would be managed as VRM Class III: • Shepherd Ah-Nei Recreation Area SRMA (RMZ 1 (OHV area)) (976 acres) • Horsethief TMA SRMA (12,261 acres) • 17 Mile Recreation Area SRMA (2,080 acres) • Asparagus Point Recreation Area	The following SRMAs or ERMAs would be managed as VRM Class III: • Shepherd Ah-Nei Recreation Area SRMA (RMZ 1 (OHV area)) (976 acres) • Acton Recreation Area SRMA (parking area) • Horsethief TMA SRMA (12,261 acres) • 17 Mile Recreation Area ERMA

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		• YRC? • Pryor Mountain TMA SRMA (all lands outside of ACEC, lands w/ wilderness characteristics and WSA)	SRMA (158 acres) • South Hills TMA SRMA (1,357 acres) • Yellowstone River Corridor • Pryor Mountain TMA SRMA (all lands outside of ACEC, lands w/ wilderness characteristics, and WSA) • Mill Creek/Bundy TMA/SRMA (lands outside of the YRC)	(2,080 acres) • Asparagus Point Recreation Area SRMA (158 acres) • South Hills TMA SRMA (1,357 acres) • Mill Creek/Bundy TMA ERMA (lands outside of YRC) • Pryor Mountain TMA SRMA (all lands outside of ACEC, lands w/ wilderness characteristics, and WSA)
	Special Recreation Permits			
	The BLM would issue special recreation use permits as appropriate for commercial, competitive, and special events subject to guidelines in BLM Handbook 2930, resource capabilities, social conflict concerns, professional qualifications, public safety, and public needs. SRPs would only be allowed in priority habitat if they are consistent with the goals and objectives for that habitat or species.			
	Issuance of Special Recreation Permits and special stipulations attached per permit for both commercial and non-commercial permits would be determined by set monitoring indicators, BLM policies, and identified through site specific analysis.			
	No current management decision provided	Issue special recreation permits, as appropriate, in an equitable manner for specific recreational uses of public lands and related waters as a means to minimize user conflicts, control visitor use, protect recreation resources, and provide for private and commercial recreation use. "Activity level planning would be developed through an environmental review process with public involvement. This management approach would identify the necessary indicators to monitor all permit conditions of approval that include the standards and stipulations necessary to change operations in the future." Individual Special Recreation Permits (ISRP) would continue to be issued at Shepherd Ah-Nei per regulation of the Federal Land Recreation Enhancement Act (FLREA) and follow the business plan for Shepherd Ah-Nei.		
	Target Shooting: Areas Open/Closed. (Note: acreages proposed for shooting vary by alternative due to other resource and activity decisions. Specifically, refer to Appendix E for changes in ACEC acreage.)			
	Four Dances Natural Area ACEC/SRMA			
	784 acres closed for resource (cultural, historical, wildlife) and public safety concerns (private inholdings, proximity to urban area, topography and vegetation screening) 0 acres open	784 acres closed for resource (cultural, historical, wildlife) and public safety concerns (private inholdings, proximity to urban area, topography and vegetation screening) 0 acres open Managed as SRMA		
	Sundance Lodge SRMA			
	387 acres closed for resource (cultural, historical, wildlife) and public safety concerns (proximity to suburban residential areas, vegetation and topography screening) 0 acres open	387 acres closed for resource (cultural, historical, wildlife) and public safety concerns (proximity to suburban areas, vegetation screening) 0 acres open Managed as SRMA		
	Acton Recreation Area			
	3,697 acres closed for resource (cultural, historical) and public safety concerns	3,697 acres closed for resource (cultural, historical) and public safety concerns (vegetation and topography screening, number of other users)		

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	(vegetation and topography screening, number of users) 0 acres open	0 acres open designated an SRMA		
	Shepherd Ah-Nei Recreation Area			
	4,689 acres closed for public safety (other recreation users) due to vegetation and topography screening factors. 0 acres open	4,689 acres closed for public safety (other recreation users). 0 acres open SRMA designated for motorized and non-motorized activities, specifically: OHVs less than 50 "		
	South Hills Recreation Area			
	1,357 acres closed for public safety concerns (adjacent housing tracts, golf course, roads). 0 acres open	1,357 acres closed for public safety concerns (adjacent housing tracts, golf course, roads). 0 acres open		
	Pompeys Pillar National Monument and ACEC			
	432 acres closed for resource (cultural, historical) and public safety concerns (major destination site by Act of Congress: visitor center, parking lots, trails, other facilities, adjacent private lands) 0 acres open	432 acres closed for resource (cultural, historical) and public safety concerns (major destination site: visitor center, parking lots, trails, other facilities, adjacent private lands). 0 acres open. Management emphasis is on historical significance		
	17 Mile Recreation Area			
	0 acres closed 2,080 acres open No specific management emphasis	0 acres closed 2,080 acres open ERMA designated – no specific management emphasis	0 acres closed 2,080 acres open SRMA designated with emphasis on shooting	0 acres closed 2,080 acres open ERMA designated – no specific management emphasis
	Castle Butte ACEC			
	0 acres closed 184 acres open ACEC designation	184 acres closed for resource concerns (historical and cultural) 0 acres open Managed as ACEC		
	Weatherman Draw ACEC			
	0 acres closed 4,365 acres open – ACEC designation	4,986 acres closed for resource concerns (Historical and cultural) ACEC size increased 0 acres open	12,277 acres closed for resource concerns (historical and cultural) ACEC size increased 0 acres open	
	Petroglyph Canyon ACEC			
	O acres closed 240 acres open ACEC designation	240 acres closed for resource (historical and cultural significance) and public safety concerns (topography screening) 0 acres open ACEC designation		
	Pryor Mountain Wild Horse Range and East Pryor ACEC (using East Pryor ACEC acreages in Alt C and different acreage in Alt D)			
	0 acres closed 29,550 acres open PMWHR – Congressional designation,	8,301 acres closed year-round for resource concerns (wild Horse population), safety concerns (number of people present,	0 acres closed 32,767 acres open PMWHR Congressional designation and	Shooting not allowed only in T. 8 S., R 28 E., from Memorial Day through Labor Day for resource (wild horse population), public

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	and ACEC designation	topography and vegetation screening) PMWHR Congressional designation and ACEC designation in place	ACEC designation in place	safety concerns (number of people present). Total area seasonally closed is approximately 6,720 acres.
	Asparagus Point Area			
	2 acres closed for public safety concerns (developed site) 156 acres open Managed as ERMA	2 acres closed for public safety concerns (developed site) 156 acres open Managed as ERMA	2 acres closed for public safety concerns (developed site) 156 acres open Managed as SRMA	2 acres closed for public safety concerns (developed site) 156 acres open Managed as SRMA
	Stark Site ACEC			
	0 acres closed 799 acres open ACEC designation	799 acres closed for resource concerns (cultural and Historical resources) 0 acres open ACEC designation	0 acres closed 799 acres open ACEC designation	799 acres closed for resource concerns (cultural and Historical resources) 0 acres open ACEC designation
	Grove Creek ACEC			
	0 acres closed 8,251 acres open	8,251 acres closed for public safety concerns (adjacent private residences)	0 acres closed 8,251 acres open	0 acres closed 8,251 acres open
	Total Field Office BLM-administered public lands			
	11,348 acres closed to target shooting 422,185 acres open to target shooting (map 102)	34,109 acres closed for resource safety concerns (map 103) 400,045 acres open to target shooting	24,049 acres closed for resource /safety concerns (map 104) 410,105 acres open to target shooting	31,586 acres closed or seasonally closed for resource/safety concerns (map 105) 402,568 acres open to target shooting
Trails and Travel Management				
The BLM manages travel and transportation on public lands in accordance with existing laws, regulations and policies. Program policy guidance provides direction to the field for management and administration of all aspects of the travel management program. This guidance is developed at the National, State and District Office level, and includes regulations, manuals, handbooks, Strategic Action Plans, Instruction Memorandums, and Information Bulletins. The Billings Field Office Travel Management program would support the accomplishment of management objectives for all resource programs. Within this context, the Billings Field Office would identify a transportation system that supports the agency's mission, management of land and resource programs and their goals and objectives, and provides for appropriate public and administrative access. The BLM's present transportation network is largely inherited, created from past resource uses and public access patterns.				
Trails and Travel Management – Desired Outcomes (Goals and Objectives)				
• Manage access to balance public use and protect public land resources, • Promote safety for all public land users, and • Minimize conflicts among OHV users and other uses of public lands. • Goals and objectives would accomplish this by using partnerships with other land managing agencies, local governments, communities, and interest groups through a balanced approach, so as to protect public lands by minimizing impacts and resources while providing opportunities for the safe use and enjoyment of OHVs • The Billings Field Office would use a systematic process that considers the unique resource issues and social environments within each individual Travel Management Area (TMA) and integrate concepts of habitat connectivity into OHV planning to minimize habitat fragmentation. • Establish a long-term, sustainable, multi-modal transportation system of areas, roads, trails, and primitive roads which addresses public and administrative access needs to and across BLM-managed lands and related waters. • Manage travel and transportation on public lands and related waters in accordance with law, Executive Order, proclamation, regulation, and policy.				

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Trails and Travel Management – Management Common to All Alternatives				
	Motorized travel on BLM-administered land (outside of established TMAs) would be limited to existing roads and trails. Measureable limits of change that would occur to the resource as a result of these travel modes would include indicators based on Land Health Standards, accelerated soil erosion and/or other resource concerns and potential for natural rehabilitation. Site specific travel planning would be initiated. Site specific travel planning would be initiated when those limits are exceeded within a five (5) year period after the BiFO ROD is signed.			
	To protect resource values 28,631 acres would be managed as closed to motorized vehicle use and 405,523 acres would be managed as limited to motorized vehicle use (refer to the specific TMA sections below).			
	Modifications to a transportation network (routes, re-routes or closures) in the planning area where travel is limited to existing roads and trails may be made through activity-level planning.			
	Cooperatively develop public outreach programs to promote trail etiquette, environmental ethics and a responsible-use stewardship ethic (e.g., Tread Lightly, Leave No Trace, etc.).			
	BLM would continue to coordinate with MFWP in the Block Management program, or other access agreements with other landowners, as appropriate. Designated motorized routes would conform with seasonal travel limitations, based on annual block management agreements, as determined by the authorized officer on a case-by-case basis.			
	Administrative access would limit motorized use to BLM-authorized use only. BLM employees, permittees, contractors, personnel from other agencies and other motorized access needs authorized by the authorized officer, would be allowed for resource management, maintenance, inventory, monitoring, or compliance purposes. Public use on administrative access routes would be limited to non-motorized access.			
	Motorized wheeled cross-country travel to conduct BLM-authorized activities would require prior authorization			
	Upon completion of site-specific projects, roads used for commercial or administrative access on BLM-administered lands would be reclaimed, unless the route provides specific benefits for public access, minimizes impacts to the resource and would be considered on a case-by-case basis.			
	The BLM may close or restore unauthorized, user created roads and trails to prevent resource damage.			
	Motorized off-road travel would be allowed for any military, fire, search and rescue, or law enforcement vehicle for emergency operations.			
	Special recreation permits for motorized events, competitive events, or organized group activities would be considered and addressed through site-specific analysis.			
	Non-motorized recreational trails would be considered during the development of SRMA management plans and travel management plans (refer to Recreation/Visitor Services section).			
	Motorized off-road big game retrieval would be authorized by the Field Manager on a case-by-case basis for individuals with a disabled hunter access permit (issued by MT FWP). Stipulations or limitations would be included in the authorization.			
	Oil and gas activities would comply with all motorized vehicle use and travel plan restrictions, including seasonal restrictions and areas closed to motorized travel. (CSU)			
	By BLM Manual 6330, WSAs do not allow for new surface disturbances and there is no cross-country OHV use. Use is restricted to the actual tread width.			
	Efforts would be made to acquire easements across private lands to provide for public access.			
	Motorized travel in designated SRMAs would be allowed on designated routes only.			
	Motorized travel for all activities would be allowed on designated or existing routes only. Livestock permittees building or maintaining fences as part of the implementation of a grazing permit or lease would be exempted.			
	All motorized routes designated as “Open”, “Closed” or “Administrative Use Only” would be available for use for non-motorized activities.			
	The NPNHT and Lewis& Clark NHT are non-motorized trails by Congressional designation except for auto tour routes and crossings, and approve motorized use dating prior to the enacting legislation.			

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Trails and Travel Management – Management Common to Action Alternatives				
	No current management decision provided	BLM would manage to reduce open road densities in big game winter and calving ranges where they exceed 1.0 miles/square mile.		
	No current management decision provided	Snowmobile use in the decision area would be allowed, except where restricted, and would be subject to the following restrictions: avoid locations where wind or topographic conditions may have reduced snow depth and create situations where damage to vegetation or soils would occur, or where vegetation is taller than the protective snow cover. Ecologically sensitive areas would be closed to snowmobiling if resource damage caused or exacerbated by snowmobile activity is found to be occurring in these areas.		
	No current management decision provided	Where off-highway vehicles are causing or would cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability or other authorized uses, or other resources, the affected areas would be immediately closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence.		
	No current management decision provided	Site specific travel planning within Greater Sage-Grouse PHMAs would be completed within a five (5) year period after the ROD is signed where it hasn't already been completed as part of this plan.		
	No current management decision provided			In PHMA and GHMA, temporary closures would be considered in accordance with 43 CFR subpart 8364 (Closures and Restrictions); 43 CFR subpart 8351 (Designated National Area); 43 CFR subpart 6320 (Use of Wilderness Areas, Prohibited Acts, and Penalties); 43 CFR subpart 8341 (Conditions of Use). Temporary closure or restriction orders under these authorities are enacted at the discretion of the authorized officer to resolve management conflicts and protect persons, property, and public lands and resources. Where an authorized officer determines that off-highway vehicles are causing or would cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. (43 CFR 8341.2) A closure or restriction order should be

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				considered only after other management strategies and alternatives have been explored. The duration of temporary closure or restriction orders should be limited to 24 months or less; however, certain situations may require longer closures and/or iterative temporary closures. This may include closure of routes or areas.
	Trails and Travel Management – Management Actions by Alternative			
	Dispersed Camping			
	Motorized wheeled cross-country travel to a campsite is permissible within 300 feet of existing roads and trails. Site selection must be completed by non-motorized means and accessed by the most direct route. This does not apply where existing seasonal restrictions prohibit traveling off designated routes to a campsite.	Ecologically sensitive areas or other areas restricted to motorized use would be closed to dispersed camping if resource damage is found to be occurring in these areas.	Same as A.	Excluding WSAs and ACECs, OHV use off designated routes for the purposes of camping would be allowed, for a distance up to 150 feet from the centerline of the route. Site selection must be completed by non-motorized means only and accessed by the most direct route. Ecologically sensitive areas or other areas restricted to motorized use would be closed to dispersed camping if resource damage is found to be occurring in these areas.
	Game Retrieval			
	Motorized off-road big game retrieval not allowed for the general public.	OHV use off-road big game retrieval would not be allowed for the general public.	OHV use off-road big game retrieval would be allowed within 300 feet of an open route, excluding WSAs (where it is not allowed).	Same as Alternative B.
	Snowmobiles (any vehicle capable of over snow travel)			
	No current management decision provided	Unrestricted Snowmobile (OSV) use would be allowed within the Field Office lands except the following areas: • Restricted to the following designated routes within the PMWHR: Sykes Ridge Road – PM 1002, PM 1001, PM 1006 and Burnt Timber Road -PM 1011, (except between April 15 and June 15, when Burnt Timber Road is closed to all vehicle use for resource protection). • Not allowed at any time within WSAs in accordance with Manual 6300. • Motorized over-the-snow travel may be limited by vehicle type, season, snow-depth, or other conditions as necessary. • Over the snow vehicles would be prohibited in big game winter range.		
	Landing of Aircraft			
	Landing of aircraft (helicopters, wheel and float planes, ultra-lights, gliders, etc.)	Landing of aircraft (helicopters, wheel and float planes, ultra-lights, gliders, etc.) is permissible on roads and primitive roads designated as "open" within TMAs and routes outside of TMAs.		

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	is permissible on existing roads.			
	Designated Non-motorized Trails			
	Sundance Lodge Recreation Area – Provide for high-visitation day-use activities while protecting natural resources.			
	No current management decision, but existing trail system has been developed and improved	3 trail segments totaling approximately 3.9 miles		
	Four Dances Natural Area/ACEC – Provide for high-visitation day-use activities while protecting natural resources.			
	No current management decision, but existing trail system has been developed and improved	5 trail segments totaling approximately 6.5 miles		
	Shepherd Ah-Nei Recreation Area – Provide for staging and trail use			
	No current management decision, but existing trail system has been developed and improved	3 trail segments totaling approximately 5.4 miles		
	Weatherman Draw ACEC – provide an emphasis on resource protection with dispersed recreation opportunities through a designated trail system			
	No current management decision, but existing trail system has been used	13 Trail segments totaling approximately 20.2 miles		
	Acton Recreation Area – Provide for staging and trail use with an emphasis on mountain bike use			
	No current management decision, but existing trail system has been developed and improved	12 trail segments totaling approximately 18.3 miles		
	Meeteetse Spires ACEC – Provide for access to adjacent USFS lands			
	No current management decision, but existing trail system has been developed and improved	2 trail segments totaling approximately 2.0 miles		
	Pryor Mountains - Provide for non-motorized recreational activities			
	No current management decision, but existing trail system has been developed and improved	5 trail segments totaling approximately 13.6 miles.		
	Billings Field Office WSAs – Provide for primitive recreation opportunities while meeting non-impairment of wilderness values			
	No current management decision, but trail system exists and segments are identified from the initial route inventory	5 trail segments totaling approximately 5.1 miles		

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Pompeys Pillar National Monument			
	Interpretation Trail	3 trail segments totaling approximately 0.5 miles		
	Walking Trail 1			
	Walking Trail 2			
	Other Areas			
	Lilly Pad Lake Trail	1 trail segment totaling approximately 0.6 miles		
	Bad Canyon Lands w/ Wilderness Characteristics Trail	1 Trail segment totaling approximately 5.9 miles		
	Burnt Timber Lands w/ Wilderness Characteristics Trail	1 Trail segment totaling approximately 8.2 miles		
	Travel Management Areas (TMAs)			
	No current management decision provided	Establish 11 Travel Management Areas (TMAs) to minimize impacts and provide a spectrum of motorized and non-motorized recreational opportunities (Map 106). (refer to Glossary – Travel Management Areas - for definitions of terminology)		
	No current management decision provided	Motorized travel in TMAs would be limited to designated roads, primitive roads, and trails, except in designated Open Areas (South Hills OHV Area) or on designated and existing routes (Elk Basin area of the Sub Region III of the Cottonwood/Weatherman Draw TMA) until the TMA Implementation Plan is completed or other resource concerns (such as soil erosion or sage grouse habitat concerns) are addressed. For the Elk Basin Area boundary defined see Section 3.21.3.11 in the RMP.)		
	No current management decision provided	An implementation and monitoring plan would be initiated for the TMAs within 3-5 years of the ROD. The plan would include signing, mapping, information, and education, and monitoring of impacts associated with continued use on designated open routes, etc. Implementation plan would also identify criteria for route variances specific to each TMA.		
	No current management decision provided	Upon project completion, routes used for commercial or other BLM authorized activities would be reclaimed, unless the route provides specific benefits for public access, minimizes impacts to the resource and would be considered on a case-by-case basis.		
	No current management decision provided	The BLM would close or restore unauthorized or user created roads and trails to prevent resource damage.		
	No current management decision provided	Variances to travel plan or route designations would be issued based on essential agency administrative actions, data variances due to route inventory, boundary adjustments, etc., as determined by the authorized officer.		
	No current management decision provided	Travel management planning is not intended to provide evidence bearing on or addressing the validity of any R.S. 2477 assertions. R.S. 2477 rights are adjudicated through a separate administrative process. The travel planning process analyzed resources, resource uses and associated access to public lands and waters. At such time as a decision is made on any R.S. 2477 assertions, the BLM would adjust its travel routes accordingly (refer to Appendix O – Travel Management).		
	No current management decision provided	TMAs can be changed, added, or deleted as conditions warrant, but the management prescriptions remain constant.		
	Gage Dome/Colony Road TMA			
	No established boundary for Gage Dome/Colony Road area.	**Gage Dome/Colony Road TMA** Management Objectives: reduce road density to minimize impacts to Greater Sage-Grouse habitat and other resource values. Manage the TMA to provide recreational opportunities and access while protecting Greater Sage-Grouse habitat.		

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Motorized travel limited to existing roads and trails – 96 miles (Map 107).	The following routes would be designated in the Gage Dome/Colony Road TMA (Map 108): • Open (additional management): 31 miles • Admin Use Only: 42 miles • Closed: 20 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.	The following routes would be designated in the Gage Dome/Colony Road TMA (Map 109): • Open: 72 miles • Open (additional management): 15 miles • Admin Use Only: 6 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.	The following routes would be designated in the Gage Dome/Colony Road TMA (Map 110): • Open (additional management): 64 miles • Admin Use Only: 29 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.
	Horsethief TMA Management Objectives: provide a range of recreational and access opportunities while minimizing impacts to cultural and heritage values and other resources. This TMA was expanded to include Stark Site ACEC.			
	Motorized use allowed on designated roads: 36 miles (Map 111)	The following routes would be designated in the Horsethief TMA (Map 112): • Open (additional management): 10 miles • Admin Use Only: 13 miles • Closed: 13 miles • Non-motorized use only: 1 mile To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.	The following routes would be designated in the Horsethief TMA (Map 113): • Open: 31 miles • Open (additional management): 3.4 miles • Admin Use Only: 1 mile • Closed: 0.1 mile To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.	The following routes would be designated in the Horsethief TMA (Map 114): • Open: 8.4 miles • Open (additional management): 14 miles • Admin Use Only: 13 miles • Closed: 0.1 mile To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.
	No current management decision provided	A rock crawl area would not be established.	A designated rock crawl area would be established – 1.5 miles (open area for technical 4WD by permit). The area would be limited to technical four-wheel drive vehicles only. This activity would be confined to a single location where it would be managed and monitored.	A rock crawl area would not be established. Special recreation permits for motorized events or organized group activities would be considered on a case-by-case basis.
	Acton TMA Management Objectives**:** provide a range of recreational and access opportunities while minimizing impacts to cultural properties and other resource values.			
	Motorized use allowed on designated roads: 7.1 miles Closed: 1.5 miles (Map 115)	The following routes would be designated in the Acton TMA (Map 116): • Open (cond.): 5.1 miles • Closed: 3.5 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.	The following routes would be designated in the Acton TMA (Map 117): • Open (additional management): 8.6 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.	The following routes would be designated in the Acton TMA (Map 118): • Open (seasonal/conditions restriction) 6.8 miles • Admin Use Only: 1 mile • Closed: 0.8 mile To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Shepherd Ah-Nei TMA. This TMA is delineated into three sub-regions, based on landscape patterns, use, and resource considerations. Management Objectives: minimize user conflicts and impacts to resources while providing opportunities for both motorized and non-motorized activities through three distinct management zones.			
	Shepherd Ah-Nei Area I: 53 miles Limited to motorized vehicles less than 50" wide): Motorized use limited to existing roads and trails (Map 119)	The following routes would be designated in the Shepherd Ah-Nei TMA Area I: 53 miles: Limited to existing roads and trails (conditional and vehicle (less than 50" wide) restrictions apply). To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP (Map 120).		
	Shepherd Ah-Nei Area II: Closed to all motorized use	Shepherd Ah-Nei Area II: Admin Use only		
	Shepherd Ah-Nei Area III Limited to motorized use (by permit only)	Shepherd Ah-Nei Area III: Admin Use Only		
	Mill Creek/Bundy TMA			
	No established boundary for Mill Creek/Bundy area	**Mill Creek/Bundy TMA** Management Objectives: improve access and provide a range of recreational opportunities. Protect cultural and resource habitat values within the Castle Butte ACEC boundaries. Emphasis would be placed on minimizing impacts to cultural properties and other resource values while providing access for the public, permittees, non-federal landowners, and administrative needs.		
	Motorized travel limited to existing roads and trails: 141 miles (Map 123)	The following routes would be designated in the Mill Creek/Bundy TMA (Map 124): • Open (additional management): 20 miles • Admin Use Only: 54 miles • Closed: 67 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.	The following routes would be designated in the Mill Creek/Bundy TMA (Map 125): • Open: 70 miles • Open (additional management): 37 miles • Admin Use Only: 32 miles • Closed: 2 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.	The following routes would be designated in the Mill Creek/Bundy TMA (Map 126): • Open: 8 miles • Open (additional management): 61 miles • Admin Use Only: 67 miles • Closed: 5 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP.
	South Hills TMA			
	Manage for motorcycle use.	**South Hills TMA** Management Objectives: minimize user conflicts and impacts to resources while providing opportunities for both motorized and non-motorized activities		
	Manage South Hills open to cross country travel - Motorcycles only 1,097 acres Motorcycle Use only 260 acre Buffer Area - Closed to Motorized Use (adjacent to residential area) (Map 127)	South Hills would be closed to motorized travel (1,357 acres closed) To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 128)	Manage South Hills open to cross country travel - Motorcycles only 1,296 acres Motorcycle Use only 61 acre Buffer Area - Closed to Motorized Use (adjacent to residential area) To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 129)	Manage South Hills open to cross country travel - Motorcycles only 1,097 acres Motorcycle Use only 260 acre Buffer Area - Closed to Motorized Use (adjacent to residential area) (Map 127) To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 127)

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Tin Can Hill TMA			
	No established boundary for Tin Can Hill area.	**Tin Can Hill TMA** Management Objectives: to provide a range of recreational and access (public and administrative) opportunities. Minimize impacts to cultural properties and other resource values and minimize conflicting uses.		
	Motorized travel is not authorized; a temporary closure in place pending resource management plan analysis Motorized travel limited to existing roads and trails (Map 131)	The following routes would be designated in the Tin Can Hill TMA: • Admin Use Only: 3 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 132)	The following routes would be designated in the Tin Can Hill TMA: • Open (additional management): 2.5 miles • Admin Use Only: 0.5 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 133)	The following routes would be designated in the Tin Can Hill TMA: • Open (seasonal restrictions): 1.5 miles • Admin Use Only: 0.5 miles • Closed: 1 mile To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 134)
	Cottonwood/Weatherman Draw TMA			
	No established boundary for Cottonwood/Weatherman Draw area	This area would be delineated into three sub-regions to address varying resource issues, access and recreational opportunities. Sub-Region I - Weatherman Draw/Castle Coulee. The area is described as being all lands in the Cottonwood/Weatherman Draw TMA which are east of Cottonwood Road. These lands include the Weatherman Draw ACEC and the Weatherman Draw LWC unit. The management objectives are to protect cultural values and resources within the ACEC and the LWC units, minimize impacts to cultural values, fragile and erosive soils, scenery and other resources throughout the sub-region. Sub-Region II - Hollenbeck These lands are described as all lands within the Cottonwood/Weatherman Draw TMA which lie west of Silver Tip Road. The management objectives are to provide recreational opportunities with an emphasis on minimizing impacts to Sage-grouse habitat, fragile and erodible soils, and other resources. Sub-Region III - Silver Tip. The area is described as being all lands within the Cottonwood/Weatherman Draw TMA lying between Silver Tip Road and Cottonwood Road. These lands include the Elk Basin area which covers the Oil and Gas field and the OHV Motorcycle Trail system. The management goals are to provide for motorized recreational opportunities and oil and gas development with emphasis on minimizing impacts to fragile and erosive soils, sage grouse habitat, and other resources.		
	Motorcycle use permitted on designated and existing single track trails in the Elk Basin Area	Motorcycle use permitted on designated and existing single track trails in the Elk Basin Area (area defined in Section 3.21.3.11) until addressed through the follow-on Cottonwood/Weatherman Draw Travel Implementation Plan or through other resource initiatives (soil erosion, sage grouse, etc.).		
	Weatherman Draw ACEC: motorized travel limited to administrative use only. No mechanized travel: 24 miles Motorized travel limited to existing roads and trails: 285 miles (Map 135)	The following routes would be designated in the Cottonwood/Weatherman TMA: • Open (to motorcycles only): 10 miles • Open (additional management): 123 miles • Admin Use Only: 68 miles • Closed: 108 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 136)	The following routes would be designated in the Cottonwood/Weatherman TMA: • Open: 196 miles • Open (to motorcycles only): 6 miles • Open (vehicles 50" or less): 10 miles • Open (additional management): 82 mi. • Admin Use Only: 14 miles • Closed: 1 mile	The following routes would be designated in the Cottonwood/Weatherman TMA: • Open: 103 miles • Open (to motorcycles only): 3 miles • Open (vehicles 50" or less): 10 miles • Open (additional management): 104 mi • Admin Use Only: 75 miles • Closed: 14 miles To see acres of the total miles, refer to the

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
			To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 137)	travel area maps in the Map Section of the RMP. (Map 138)
	Warren TMA			
	No established boundary for Warren area	**Warren TMA** Management Objectives: to provide recreational opportunities with emphasis on protecting key Greater Sage-Grouse habitat while minimizing impacts to other resources values. Maintain current level of access.		
	Motorized travel limited to existing roads and trails: 34 miles (Map 139)	The following routes would be designated in the Warren TMA: • Admin Use Only: 18 miles • Closed: 16 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 140)	The following routes would be designated in the Warren TMA: • Open: 29 miles • Open (additional management): 4 miles • Admin Use Only: 0.5 miles • Closed: 0.5 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 141)	The following routes would be designated in the Warren TMA: • Open: 1 mile • Open (additional management): 9 miles • Admin Use Only: 23 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 142)
	Pryor Mountain TMA Management Objectives: to protect wilderness values, cultural/heritage/paleontological resources, visual characteristics, special status plants, fragile and erosive soils, wild horses, and wild horse habitat.			
	Motorized travel limited to designated roads and trails (Map 143): • Open: 119 miles • Admin Use Only: 2.5 miles • Closed: 103.5 miles	The following routes would be designated in the Pryor Mountain TMA: • Open (additional management): 71 miles • Open (seasonal restrictions): 7 miles • Admin Use Only: 28.5 miles • Closed: 118 miles • Non-motorized use only: 0.5 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 144)	The following routes would be designated in the Pryor Mountain TMA: • Open: 175 miles • Open (additional management): 17 miles • Open (seasonal restrictions): 1.2 miles • Admin Use Only: 30.3 miles • Closed: 1.5 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 145)	The following routes would be designated in the Pryor Mountain TMA: • Open: 37 miles • Open (vehicles 50" or less): 2.5 miles • Open (additional management): 87 miles • Open (seasonal restrictions): 0.5 miles • Admin Use Only: 60 miles • Closed: 38 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 146)
	Grove Creek TMA			
	No established boundary for the Grove Creek area.	**Grove Creek TMA** Management Objectives: to minimize impacts to geologic and visual resources, special status plants, and cultural and wildlife values, including Greater Sage-Grouse, while providing casual, non-commercial public recreational access.		
	Motorized travel limited to existing roads and trails: 73 miles (Map 147)	The following routes would be designated in the Grove Creek TMA: • Open (additional management): 18 miles	The following routes would be designated in the Grove Creek TMA: • Open: 38 miles • Open (additional management): 32	The following routes would be designated in the Grove Creek TMA: • Open: 12 miles • Open (additional management): 25

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		• Admin Use Only: 9 miles • Closed: 46 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 148)	miles • Admin Use Only: 2.5 miles • Closed: 0.5 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 149)	miles • Admin Use Only: 32 miles • Closed: 4 miles To see acres of the total miles, refer to the travel area maps in the Map Section of the RMP. (Map 150)
		Routes may provide non-commercial access to private property; however, even though route has been designated as part of the official BLM travel management network, such designation does not constitute or afford the rights of a legally or officially recognized easement or ROW.		
Renewable Energy				
The Bureau of Land Management has placed increased emphasis on development of renewable energy resources to meet the provisions of the Energy Policy Act of 2005 and the Secretary of the Interior's goals as set out in Secretarial Order No. 3285, as amended. Specific areas administered by the Billings Field Office are valuable given their high wind potential, but development may be constrained due to the presence of other significant resources. Allocations and/or management actions for renewable energy sources such as geothermal and biomass in the Billings Field Office are addressed in the Forest and Woodlands and Leasable Minerals sections, respectively. Specific allocations and management actions for solar resources are not discussed in this planning document given the low solar insolance levels in Montana that make commercial development unlikely, though the exclusion and avoidance areas outlined for renewable energy would be utilized should a solar development application be received. The allocations and management actions outlined in the alternatives below provide varying degrees of a Renewable Energy program focused on wind energy development in the Billings Field Office. Designation by BLM of renewable energy exclusion and avoidance areas would minimize adverse impacts to important resource values. Opportunities for testing and development with the least resource conflicts are greatest in open areas based on known resources. Proposals in those areas would likely encounter fewer resource issues and associated mitigation measures. BLM would cooperate with project proponents and other agencies and stakeholders to promote the use of these resources in the Billings Field Office, consistent with goals and objectives for other resources.			
Renewable Energy – Desired Outcomes (Goals and Objectives)				
• Provide opportunities for the development of renewable energy resources from sources such as wind, biomass, and solar, while minimizing adverse impacts to other resource values. • Make lands available for renewable energy development, consistent with goals and objectives of other resources. • In cooperation with project proponents, promote and enhance scientific knowledge of renewable energy resources in the planning area.				
Renewable Energy – Management Common to All Alternatives				
	Proposals for renewable energy development would be considered, except in exclusion areas. Proposals would not be entertained in designated exclusion areas. Proposals in avoidance areas could be subject to substantial special stipulations given known resource values.			
	Wind and solar applications would be processed under the Realty, Cadastral Survey, and Lands right-of-way regulations found at 43 CFR 2800, as would biomass energy generating facilities.			
	Geothermal development would be considered under the geothermal regulations found at 43 CFR 3200; utilization of biomass would generally be authorized under regulations for the forestry program found at 43 CFR 5400, and hydropower applications would be considered under provisions of the Federal Power Act, as amended, in coordination with the Federal Regulatory Energy Commission (FERC).			
	Programmatic policies and best management practices identified in the Record of Decision for Implementation of a Wind Energy Development Program as well as BLM policies and directives regarding wind energy would be used in processing all wind energy applications.			
Renewable Energy – Management Actions by Alternative				
	Manage 47,496 acres as exclusion areas (closed) to renewable energy authorizations, including: • WSAs ► Big Horn Tack-On WSA	Manage 345,491 acres as exclusion areas (closed) to renewable energy authorizations, including: • WSAs* ► Big Horn Tack-On WSA	Manage 82,019 acres as exclusion areas (closed) to renewable energy authorizations, including: • WSAs ► Big Horn Tack-On WSA	Manage 231,755 acres as exclusion areas (closed) to renewable energy authorizations, including: • WSAs* ► Big Horn Tack-On WSA

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	▶ Burnt Timber Canyon WSA ▶ Pryor Mountain WSA ▶ Twin Coulee WSA • National Historic Trails ▶ Nez Perce NHT ▶ Lewis & Clark NHT ▶ Pompeys Pillar NM • ACECs ▶ Bridger Fossil Area ACEC ▶ East Pryor ACEC ▶ Meeteetse Spires ACEC ▶ Petroglyph Canyon ACEC ▶ Stark Site ACEC ▶ Weatherman Draw ACEC (Map 153)	▶ Burnt Timber Canyon WSA ▶ Pryor Mountain WSA ▶ Twin Coulee WSA *If released by an Act of Congress, lands within WSA boundaries would remain closed. • National Historic Trails ▶ Nez Perce NHT ▶ Lewis & Clark NHT ▶ Pompeys Pillar NM • ACECs ▶ Bridger Fossil Area ACEC ▶ Castle Butte ACEC ▶ East Pryor ACEC ▶ Four Dances ACEC ▶ Grove Creek ▶ Meeteetse Spires ACEC ▶ Petroglyph Canyon ACEC ▶ Pompeys Pillar NM/ACEC ▶ Pryor Foothills ACEC ▶ Stark Site ACEC ▶ Weatherman Draw ACEC ▶ Wild and Scenic River Eligible/Suitable Segments ▶ Lands with wilderness characteristics ▶ Pryor Mountain Wild Horse Range (PMWHR) • Cultural Sites ▶ Steamboat Butte ▶ Bruder-Janich Site ▶ Paul Duke Site ▶ Demi-John Flat NR District ▶ Bighorn Mouth North Cliffs Rock Art Site ▶ Hoskins Basin Archaeological District • Greater Sage-Grouse: PHMAs, RAs and GHMAs • VRM Class I areas • Slopes >30% and/or fragile soils with low reclamation potential and highly erodible characteristics. • Cave and Karst Area (Map 154)	▶ Burnt Timber Canyon WSA ▶ Pryor Mountain WSA ▶ Twin Coulee WSA • National Historic Trails ▶ Nez Perce NHT ▶ Lewis & Clark NHT ▶ Pompeys Pillar NM • ACECs ▶ Bridger Fossil Area ACEC ▶ Castle Butte ACEC ▶ East Pryor ACEC ▶ Four Dances ACEC ▶ Grove Creek ▶ Meeteetse Spires ACEC ▶ Petroglyph Canyon ACEC ▶ Pompeys Pillar NM/ACEC ▶ Stark Site ACEC ▶ Weatherman Draw ACEC ▶ Wild and Scenic River Eligible/Suitable Segments ▶ Lands with wilderness characteristics ▶ Pryor Mountain Wild Horse Range (PMWHR) • Cultural Sites ▶ Steamboat Butte ▶ Bruder-Janich Site ▶ Paul Duke Site ▶ Demi-John Flat NR District ▶ Bighorn Mouth North Cliffs Rock Art Site ▶ Hoskins Basin Archaeological District • VRM Class I areas • Slopes >45% and/or fragile soils with low reclamation potential and highly erodible characteristics. (Map 155)	▶ Burnt Timber Canyon WSA ▶ Pryor Mountain WSA ▶ Twin Coulee WSA *If released by an Act of Congress, lands within WSA boundaries would remain closed. • National Historic Trails ▶ Nez Perce NHT ▶ Lewis & Clark NHT ▶ Pompeys Pillar NM • ACECs ▶ Bridger Fossil Area ACEC ▶ Castle Butte ACEC ▶ East Pryor ACEC ▶ Four Dances ACEC ▶ Grove Creek ACEC ▶ Meeteetse Spires ACEC ▶ Petroglyph Canyon ACEC ▶ Pompeys Pillar ACEC ▶ Pryor Foothills ACEC ▶ Stark Site ACEC ▶ Weatherman Draw ACEC ▶ Wild and Scenic River Eligible/Suitable Segments ▶ Lands with wilderness characteristics ▶ Pryor Mountain Wild Horse Range (PMWHR) • Cultural Sites ▶ Steamboat Butte ▶ Bruder-Janich Site ▶ Paul Duke Site ▶ Demi-John Flat NR District ▶ Bighorn Mouth North Cliffs Rock Art Site ▶ Hoskins Basin Archaeological District • VRM Class I areas • Greater Sage-Grouse PHMAs • Elk Basin GRSG Restoration Area (Map 156)

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	Manage 25,144 acres identified as avoidance areas for other Realty, Cadastral Survey, and Lands authorizations as avoidance for renewable energy authorizations. If authorizations are allowed, special stipulations and mitigation measures along with standard stipulations and BMPs would be applied as necessary through site-specific analysis. Avoidance areas include: • Asparagus Point, Steamboat Butte, Portion of Acton, Portion of Shepherd Ah-Nei, Bad Canyon, East and Red Pryor Mountains • Hoskins Basin Archeological District, Demi-John Flat Archeological District, Beartooth Mountain Front (2 mile strip bordering the eastern boundary of the Custer National Forest). • Pompeys Pillar ACEC • Four Dances ACEC (Map 153)	Manage 85,461 acres as avoidance areas for renewable energy authorizations, subject to special stipulations and mitigation beyond standard stipulations and BMPs applied through site specific analysis. Special stipulations and mitigation include provisions such as timing limitations, controlled surface use, and other constraints/restrictions consistent with fluid minerals stipulations that would be applied to protect the following particular resources/habitats: • Bald/Golden Eagles • Ferruginous Hawks • Greater Sage-Grouse Winter Range • Big Game Winter Range • Big Game Parturition • Bighorn Sheep Habitat • Sharp-tailed grouse nesting • Peregrine Falcon • Mountain Plover • Raptor Nests Other avoidance areas include: • Asparagus Point, Steamboat Butte, Portion of Acton, Portion of Shepherd Ah-Nei, Bad Canyon, East and Red Pryor Mountains • VRM Class II and III areas • Within ½ mile of riparian areas and wetlands, designated 100 year flood plains and on water bodies and streams, except activities are not in conflict with the desired outcomes. • Timing limitations apply to development of facilities, but not to operation or maintenance. (Map 154)	Manage 326,722 acres as avoidance areas for renewable energy authorizations, subject to special stipulations and mitigation beyond the standard stipulations and BMPs applied through site-specific analysis. Special stipulations and mitigation include provisions such as timing limitations, controlled surface use, and other constraints/restrictions consistent with fluid minerals stipulations that would be applied to protect the following particular resources/habitats: • Greater Sage-Grouse PHMAs, RAs and GHMAs • Bald/Golden Eagles • Ferruginous Hawks • Greater Sage-Grouse Winter Range • Big Game Winter Range • Big Game Parturition • Bighorn Sheep Habitat • Sharp-tailed grouse • Peregrine Falcon • Mountain Plover • Raptor Nests Other avoidance areas include: • Asparagus Point, Steamboat Butte, Portion of Acton, Portion of Shepherd Ah-Nei, Bad Canyon, East and Red Pryor Mountains • Pryor Foothills ACEC • Cave and Karst areas • VRM Class II areas • Within riparian areas or wetlands, designated 100 year floodplains and on water bodies and streams, except activities that are not in conflict with desired outcomes. • Timing limitations apply to development of facilities, but not to operation or maintenance. (Map 155)	Manage 200,278 acres as avoidance areas for renewable energy authorizations, subject to special stipulations and mitigation beyond standard stipulations and BMPs applied through site-specific analysis. Special stipulations and mitigation include provisions such as timing limitations, controlled surface use, and other constraints/restrictions consistent with fluid minerals stipulations that would be applied to protect the following particular resources/habitats: • Greater Sage-Grouse GHMAs • Greater Sage-Grouse Restoration Areas outside of Elk Basin • Bald/Golden Eagles • Ferruginous Hawks • Greater Sage-Grouse Winter Range • Big Game Winter Range • Big Game Parturition • Bighorn Sheep Habitat • Sharp-tailed grouse • Peregrine Falcon • Mountain Plover • Raptor Nests Other avoidance areas include: • Asparagus Point, Steamboat Butte, Portion of Acton, Portion of Shepherd Ah-Nei, Bad Canyon, East and Red Pryor Mountains, • Cave and Karst areas • VRM Class II areas • Within ¼ mile of riparian areas and wetlands, designated 100 year flood plains and on water bodies and streams, unless activities are not in conflict with desired outcomes. • Surface disturbance on slopes >30%, soils with low reclamation potential, and highly erodible characteristics would be avoided whenever possible.

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
				If disturbance could not be avoided an approved mitigation and reclamation plan would be required prior to activities taking place. • Timing limitations apply to development of facilities, but not to operation or maintenance. (Map 156)
	Manage 361,514 acres as Open to renewable energy, applying standard ROW terms and conditions and wind or other BMPs, including in the following areas (Map 153): • Greater Sage-Grouse PHMAs, RAs and GHMAs • ACECs ▶ Castle Butte ▶ Grove Creek ▶ Pryor Foothills • WSR Eligible Segments ▶ Bad Canyon ▶ Bear Canyon ▶ Crooked Creek (upper) ▶ Crooked Creek (lower) ▶ Gyp Springs ▶ Piney Creek ▶ Yellowstone River/Pompeys Pillar	Manage 0 acres as Open to renewable energy. (Map 154)	Manage 21,349 acres as Open to renewable energy, applying standard ROW terms and conditions and wind or other BMPs. (Map 155)	Manage 1,512 acres as Open to renewable energy, applying standard ROW terms and conditions and wind or other BMPs. (Map 156) Designate 360 acres of Open acres in Class 4 and above as Potential Wind Development Areas. At the discretion of the Authorized Officer, areas designated as Potential Wind Development Areas could be offered for competitive leasing.
Transportation and Facilities				
The BLM public lands are accessible by a variety of National, State, local and agency road and trail networks. The BLM also has a number of developed facilities to administer its programs; they include bridges, major culverts, buildings, recreation and administrative sites, and dams. All facilities, roads, and trails are managed through the Facility Asset Management System (FAMS) program. All facilities are identified as public property.				
Transportation and Facilities – Desired Outcomes (Goals and Objectives)				
• Manage roads, primitive roads and trails for public access or administrative needs, while maintaining or protecting resource values, in coordination with other federal agencies, state and local governments and private landowners. This action would be done in coordination with the development and implementation of the TMAs. • Ensure BLM facilities are maintained to meet public health and safety requirements.				
Transportation and Facilities – Management Common to All Alternatives				
	BLM-administered roads included in the transportation system would be assigned maintenance intensities, as needed. These roads would be managed in accordance with objectives identified in the travel management areas (TMAs), assigned maintenance intensities and in consideration of resources issues and available funding.			
	Roads and trails would be inspected on an established schedule in accordance with the Bureau's Condition Assessment guidance. The results of the condition assessments would be reviewed to determine the need for reconstruction, maintenance, or disposal.			
	BLM authorized recreation sites, administrative sites, buildings, bridges, roads, and trails would be maintained within Bureau standards to reduce deferred maintenance costs; meet			

Table 2.11 Detailed Table of Alternatives: Resource Uses and Support

Record#	Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	public health and safety requirements; provide universal accessibility as appropriate and to enhance visitor experiences. These activities would be coordinated with other federal, state and local government agencies, private landowners and the general public as needed.			
	Bridges and major culverts would be inspected on an established schedule in accordance with the Bureau's Condition Assessment guidance. The results of the condition assessments would be reviewed to determine the need for reconstruction, maintenance or disposal. Condition assessments and Emergency Action Planning for hazard class dams would be performed as required by the latest version of the 9177 (Dam Safety) manual section and associated handbooks. The results of the condition assessments would be reviewed to determine the need for reconstruction, maintenance, or disposal.			
	New roads and trails determined to be necessary for permanent or long-term use as part of BLM's transportation system would be constructed subject to NEPA and approved engineering standards. Consideration would be given to use demands, location, safety and resource constraints when determining the level of road necessary, in accordance with BLM Manuals 9113 and 9114.			
	Lands available or suitable for transportation facilities within the planning area would be identified. Road repair, road rehabilitation, road construction, and maintenance standards appropriate to specific areas would be identified as well as any limitations.			
	If an existing road, primitive road or trail is substantially contributing to resource impacts, the road would be considered for re-design, re-routing, closure, or decommissioning to minimize the adverse impacts.			
	Provide adequate administrative and other facilities to accommodate management needs, based on management analysis, to maintain, replace, construct, lease; including asset disposal.			

Table 2.12 Detailed Table of Alternatives: Special Designations

Record#	Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Special Designations				
Evaluate areas of interest needing special management for special designation				
	Retain 9 ACECs for a total of 37,896 acres	Retain 9 ACECs and designate 3 new ACECs for a total of 181,175 acres	Retain 9 ACECs and designate 2 new ACECs for a total of 67,079 acres	Retain 9 ACECs and designate 2 new ACECs for a total of 38,786 acres

Table 2.12 Detailed Table of Alternatives: Special Designations

Pompeys Pillar National Monument (51 acres)					
Record#	**Management Activity**	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Pompeys Pillar National Monument– Desired Outcomes (Goals and Objectives) as expressed in BLM Manual 6220					
Comply with the designating Act of Congress and Presidential Proclamation (Appendix W) by conserving, protecting, and restoring the nationally significant landscape, objects, and values for which PPNM was designated for the benefit of present and future generations. Effectively manage valid existing rights and compatible uses within the PPNM. Manage discretionary uses within PPNM to ensure the protection of the objects and values for which the PPNM was designated. Utilize science, local knowledge, partnerships, and volunteers to effectively manage the PPNM in order to enhance the public's understanding and enjoyment of the PPNM consistent with the designating legislation or proclamation, with an emphasis on youth and veterans. PPNM would be managed as a high potential historic site and a high potential route segment along the Lewis and Clark National Historic Trail. The Lewis and Clark high potential route segment would be managed consistent with the trailwide goals for the Lewis and Clark National Historic Trail. PPNM is included within the Lewis and Clark National Historic Trail Management corridor. Where multiple NLCS designations overlap, as in this case with the PPNM and the Lewis and Clark National Historic Trail, the BLM must comply with all applicable statutes. In order to do so, the more protective management requirements would likely apply. However, this would be evaluated on a case-by-case basis.					
Pompeys Pillar National Monument– Management Common to All Alternatives					
	Manage Pompeys Pillar NM (51) acres to protect the historical and cultural objects for which it was nominated a National Monument.				
	Develop and maintain relationships with other Federal agencies, tribal governments, state and local governments, national-level partnership organizations and non-profit groups, and the general public in order to effectively manage the PPNM in accordance with designating legislation and proclamations, other applicable laws, and BLM policy.				
	Land Use Authorizations	Exclusion area, except for those necessary to serve the site facilities.			
	Land Tenure	land disposals not allowed			
	Visual Resource Management	Class II for the National Historic Landmark (6 acres) for protection of the significant historical resource and VRM Class III for the remainder of the PPNM for consideration of potential facility development and public management concerns.			
	BLM Road Maintenance	Limited to the designated roadway and only that work necessary to ensure public safety and serviceability of the road to meet government standards.			
	Fluid Mineral Leasing, Locatable Minerals, Solid Leasable Minerals, Mineral	All Federal lands and interest in lands within the boundaries of PPNM are appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including, but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, subject to valid existing rights. Consider acquiring minerals from willing sellers.			

Table 2.12 Detailed Table of Alternatives: Special Designations

Pompeys Pillar National Monument (51 acres)					
Record#	**Management Activity**	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
	Materials Sales and Permits				
	Geophysical Exploration	closed to geophysical exploration			
	Fuelwood cutting/Wood Product Sales	not allowed			
	Hunting	Closed to hunting for public safety and resource concerns			
	Target Shooting	Not allowed for public safety and resource concerns			
	Road Maintenance	Limited to the designated roadway and only that work necessary to ensure public safety and serviceability of the road and to meet government standards			
	Site Facilities	When new administrative offices, visitor centers, contact stations, and similar facilities are needed for the Monument, the BLM would generally develop, or encourage the development of, these facilities within nearby communities to enhance local economic vitality and quality of life and to minimize disturbance within the Monument.			
	Management Zones	**Historic (Natural) Zone** – (29 acres). Objective: provide visitor access to Clark's signature and other historic inscriptions/rock art, and to enhance the visitors' experience by providing landscapes that appear similar to the natural setting Clark viewed in 1806. **Historic (Developed) Zone** – (54 acres). Objective: provide an area where most facilities would be placed. Facilities would be designed to enhance visitor experiences. Farming is to be excluded and currently tilled ground restored to a setting characteristic of 1806. (Map 157)	**Front Country Zone –** includes all of the National Monument lands (51 acres) and 34 acres outside of and immediately adjacent to the National Monument (Map 158). In this zone the BLM would: 1. Inventory existing facilities and determine whether to remove, maintain, restore, enhance, or allow natural disintegration of each facility. Subject to applicable law and valid existing rights, the BLM would consider removal of facilities that do not have administrative, public safety, recreational, cultural, or historic value. 2. Use this zone area to develop new facilities, including structures and roads, where they are necessary for public health and safety, are required under law, are necessary for the exercise of valid existing rights or other non-discretionary uses, prevent impacts to fragile resources, or further the purposes for which the NM was designated. 3. Facilities within the Monument, including utility, water, and electrical supply lines, would be designed and sited in a manner that minimizes impacts to the objects and values and the area's scenic characteristics; emphasizes energy efficiency and, where possible, the use of small-scale renewable energy installations; and conforms to best management practices for visual resources management and the BLM Guidelines for a Quality Built Environment. 4. Facilities would be designed to enhance visitor experiences		
	Off-Highway Vehicles and Bicycles	Limited to designated roads and trails (administrative use or other authorized use allowed).	Limited to designated roads and trails (2). Administrative use or other authorized use allowed on a case-by-case basis.		
	Plant Collecting	No current management decision provided	Not allowed		
	Renewable Energy	No current management decision provided	Closed (6) to commercial renewable energy facilities and development.		
	Fire Suppression	Water use only within NHL (6 acres). Appropriate fire management for the rest of the PPNM (full protection strategies).	Water use only within monument (51 acres).		
	Livestock Grazing	Allowed only as a management tool.	Livestock grazing would not be	Livestock grazing may be allowed on a temporary	

Table 2.12 Detailed Table of Alternatives: Special Designations

Pompeys Pillar National Monument (51 acres)					
Record#	**Management Activity**	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
			allowed.	basis, for the treatment of noxious weeds, or as a prescription to meet site specific vegetation or other resource management goals.(6)	
	Fuels Management	No current management decision provided.	Fuels management and prescribed fire (7) may be allowed in the entire PPNM		
	Range Improvements	No current management decision provided	Conditionally Allowed (4)		
	Noxious/Invasive Weed Treatments	Utilize integrated weed management to reduce the incidence of noxious/non-native species.	Allowed (4) (9)		
	Animal Trapping/Traplines	Allowed	Allowed for administrative purposes in the entire PPNM.		
	Non-Commercial Collection of Common Invertebrate and Plant Fossils	No current management decision provided.	Not allowed		
	Cremains Scattering	No current management decision provided	Not allowed		
	Special Recreation Permits and Letters of Authorization	Allowed	Allowed (4) SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.		
	Other Permitted Activities	Allowed	Allowed (4)		
	Geocaching	Allowed	Generally not allowed (10)		
	Other Management Activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the PPNM is designated (4).		

Notes:

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.

2 Off-highway vehicle, and bicycle, use would be limited to designated routes only.

3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.

4 The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to PPNM resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within PPNM (especially if cultural resources are one of the values for PPNM designation)..

5 This includes all commercial renewable energy facilities, including those for testing, monitoring, and development.

6 Livestock grazing will be controlled through terms and conditions on the grazing permit.

7 Evaluate fire potential and remove fuels where needed to protect resource values. Types of treatments permitted include: mechanical treatments, treatment or application of chemicals, and other treatments that would not negatively impact the values of the PPNM.

8 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.

9 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.

10 If geocache location/activity does not conflict with the resource values of the PPNM this activity could be considered. BLM resource specialists (archaeologist and wildlife biologist), BLM ORP, and PPNM manager must agree activity does not impact PPNM values.

Table 2.12 Detailed Table of Alternatives: Special Designations

Pompeys Pillar ACEC (432 acres)					
Record#	**Management Activity**	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Pompeys Pillar ACEC– Desired Outcomes (Goals and Objectives), as expressed in BLM Manual 1613					
Pompeys Pillar ACEC would be managed as a high potential historic site and a high potential route segment along the Lewis and Clark National Historic Trail. The Lewis and Clark high potential route segment would be managed consistent with the trail-wide goals for the Lewis and Clark National Historic Trail. Pompeys Pillar ACEC is included within the Lewis and Clark National Historic Trail Management corridor. Give priority to the management and protection of the resources for which the ACEC was designated, according to FLPMA. The identified resources are primarily significant cultural resources, and also a functional riparian ecosystem and fish and wildlife habitat.					
Pompeys Pillar ACEC– Management Common to All Alternatives					
	The 432 acre ACEC includes the 51 acre National Monument. The following management is for the ACEC (347 acres) outside of the National Monument and Front Country Zone.				
	Land Use Authorizations	Avoidance (1) Area –restricts ROW to a 500' wide path paralleling the southern boundary of the public lands along Highway 312.			
	Land Tenure	Land disposals not allowed, with the possible exception of the three acre parcel south of Interstate 94.			
	Visual Resource Management	Class II established for consistency with the Lewis and Clark National Historic Trail management.			
	BLM Road Maintenance	Limited to the designated roadway and only that work necessary to ensure public safety and serviceability of the road to meet government standards.			
	Fluid Mineral leasing	No surface occupancy			
	Fuelwood cutting/Wood Product Sales	not allowed			
	Target Shooting	Not allowed for public safety and resource concerns			
	Hunting	Allowed. Management restrictions would be implemented to ensure public safety. Alterations to restrictions would be made if conditions require. Hunting is not allowed in a portion of the ACEC located in proximity to developed facilities and an area of high public use. (Approximately 58 acres) for safety considerations.			
	Management Zones	**General Management Zone –** (349 acres). Objective: improve and/or maintain wildlife habitat condition, enhance recreation opportunities and utilize agriculture to further general management. (Map 157)	**General Management Zone** – (347 acres) - entire ACEC outside of the PPNM/Front Country Zone: The management objective is to improve and/or maintain wildlife habitat, protect significant cultural and riparian ecosystem, provide for or enhance recreational opportunities, visitor services, and wildlife viewing. Priority may be given to resource protection measures for identified needs, but decisions may also include facility development, if needed. (Map 158)		
	OHV and Bicycle use	Limited to existing roads and trails	Limited to designated roads and trails (2). Administrative use or other authorized use allowed on a case-by-case basis.		
	Plant Collecting	No current management decision provided	Not allowed	Allowed but with restrictions (3)	
	Locatable minerals	No current management decision provided	Recommend withdrawal from mineral entry and location under the Mining Law of 1872, as amended. Subject to valid existing rights.		
	Solid leasable minerals	No current management decision provided.	Closed and recommend for withdrawal from solid leasable mineral entry, subject to valid existing rights.		
	Mineral materials sales and permits	No current management decision provided	Not allowed		
	Renewable Energy	No current management decision provided	Not allowed (6)		
	Geophysical exploration	No current management decision provided	Closed to geophysical exploration		

Table 2.12 Detailed Table of Alternatives: Special Designations

Pompeys Pillar ACEC (432 acres)					
Record#	**Management Activity**	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
	Fire Suppression	Appropriate fire management for the ACEC (full protection strategies).	No heavy equipment in riparian area. Full range of fire management activities would be used in remainder of ACEC.		
	Fuels Management	No current management decision provided.	Fuels management (8) allowed in the entire ACEC. Prescribed fire allowed.	Fuels management and prescribed fire (8) may be allowed in the ACEC.	
	Livestock grazing	Allowed only as a management tool.	Livestock grazing would not be allowed.	Livestock grazing may be allowed on a temporary basis, for the treatment of noxious weeds, or as a prescription to meet site specific vegetation or other resource management goals.(7)	
	Range Improvements	No current management decision provided	Allowed (5)		
	Noxious/Invasive Weed Treatments	Utilize integrated weed management to reduce the incidence of noxious/non-native species.	Allowed (5) (10)		
	Animal Trapping/Traplines	Allowed	Allowed for administrative purposes in the entire ACEC.		
	Non-Commercial Collection of Common Invertebrate and Plant Fossils	No current management decision provided.	Not allowed		
	Cremains Scattering	No current management decision provided	Not allowed		
	Special Recreation Permits and Letters of Authorization	Allowed	Allowed (5) SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.		
	Other Permitted Activities	Allowed	Allowed (5)		
	Geocaching	Allowed	Generally not allowed but could be if conditions are met (11)		
	Road Maintenance	No current management decision provided	Allowed (4)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		

Notes:

1. Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.
2. Off-highway vehicle, and bicycle, use would be limited to designated routes only.
3. Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4. Road maintenance will be limited to the designated roadway and only that necessary to ensure public safety and serviceability of the road.
5. The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).
6. Closed to renewable energy facilities and renewable energy development. This includes all commercial renewable energy facilities, including those for testing, monitoring, and development.
7. Livestock grazing will be controlled through terms and conditions on the grazing permit.
8. Evaluate fire potential and remove fuels where needed to protect resource values. Types of treatments permitted include: mechanical treatments, treatment or application of chemicals, and other treatments that would not negatively impact the values of the ACEC.
9. Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10. Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11. If geocache location/activity does not conflict with the resource values of the ACEC this activity could be considered. BLM resource specialists (archaeologist and wildlife biologist), BLM ORP, must agree activity does not impact ACEC values

Table 2-12 Detailed Table of Alternatives: Special Designations

Bridger Fossil Area ACEC					
Record#	**Management Activity**	**Alternative A (577 acres)**	**Alternative B (577 acres)**	**Alternative C (577 acres)**	**Alternative D (577 acres)**
Bridger Fossil Area ACEC – Desired Outcomes (Goals and Objectives)					
The Bridger Fossil Area ACEC would be managed to protect paleontological values. In addition, the values for which the Bridger Fossil Area National Natural Landmark was designated would be maintained.					
Bridger Fossil Area ACEC – Management Actions by Alternative					
	Land use authorization, including ROWs	Exclusion area	Exclusion area	Avoidance area (1)	Same as B
	Land tenure	No current management decision provided	Category I retention land: no land disposal would occur		
	Off-highway vehicle use	Limited to existing roads.	Limited to designated roads and trails (refer to Warren TMA).	Limited to designated roads and trails (refer to Warren TMA).	Limited to designated roads and trails (refer to Warren TMA).
	BLM road maintenance	No current management decision provided	Limited (4)	Same as B	Same as B
	Visual resource management	Class IV	Class III	Class III	Class II
	Plant collecting	No current management decision provided	Not allowed	Allowed (3)	
	Fluid Mineral leasing	Closed (NL)	Closed (NL)	NSO with no Waivers, Exceptions, Modifications	Closed (NL)
	Locatable minerals	No current management decision provided	Recommend withdrawal from mineral entry and location under the Mining Law of 1872, as amended. Subject to valid existing rights.		
	Solid leasable minerals	No current management decision provided	Closed		
	Mineral materials sales and permits	Not allowed	Same as A	Allowed (9)	
	Renewable energy	No current management decision provided	Closed (6)		
	Geophysical exploration for oil and gas	Allowed if no damage to paleontological resources. If monitoring indicates fossil damage, this activity would not be allowed.	Not allowed	Same as A	Allowed (5) if no damage to paleontological resources. If monitoring indicates fossil damage, this activity would not be allowed.
	Use of explosives for geophysical exploration for oil and gas	Not allowed			
	Fire suppression	No current management decision provided	With the exclusion of heavy equipment, a full range of fire management activities would be used in the ACEC.		
	Fuels management	No current management decision provided	Fuels removed where there would be threat of loss of resource (8)		
	Fuel wood cutting/wood product sales	Not allowed			
	Livestock grazing	Allowed	Available (7)		
	Range improvements	No current management decision provided	Not allowed	Allowed if no conflicts with ACEC values (5)	
	Noxious/Invasive weed treatments	No current management decision provided	Allowed (5) (10)		
	Animal trapping/traplines	No current management decision provided	Not allowed	Allowed	

Table 2-12 Detailed Table of Alternatives: Special Designations

Bridger Fossil Area ACEC					
Record#	**Management Activity**	**Alternative A (577 acres)**	**Alternative B (577 acres)**	**Alternative C (577 acres)**	**Alternative D (577 acres)**
	Target shooting	No current management decision provided	Not allowed	Allowed	Allowed – monitor to ensure no conflicts with resource values.
	Non-commercial collection of common invertebrate and plant fossils	Allowed	Allowed (5) by BLM authorization only		
	Cremains scattering	No current management decision provided	Not allowed	Allowed (5)	Allowed (5)
	Special Recreation Permits and letters of authorization	Allowed	Not allowed	Allowed (5)	Allowed (5) SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.
	Other permitted activities	Allowed	Not allowed.	Allowed (5)	Allowed (5)
	Transportation	No current management decision provided	No new permanent road or trail development for motorized vehicles.		
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		

Notes: (Map 159 and 175)

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way would be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.
2 Off-highway vehicle, and bicycle, use would be limited to designated routes only.
3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4 Road maintenance will be limited to the designated roadway and only that necessary to ensure public safety and serviceability of the road.
5 The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).
6 Closed to renewable energy facilities and renewable energy development
7 Livestock grazing will be controlled through terms and conditions on the grazing permit.
8 Evaluate fire potential and remove fuels where needed to protect resource values and meet the objectives of the ACEC values. Types of treatments permitted: No surface disturbing heavy equipment use, most types of fire/fuels treatments permitted, check with archaeologist prior to retardant use
9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM Resource Specialist (arch) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

Castle Butte ACEC					
Record#	**Management Activity**	**Alternative A (184 acres)**	**Alternative B (184 acres)**	**Alternative C (184 acres)**	**Alternative D (184 acres)**
Castle Butte ACEC – Desired Outcomes (Goals and Objectives)					
The Castle Butte ACEC would be managed to protect unique cultural values.					
Castle Butte ACEC – Management Common to All Alternatives					
	Consider acquiring mineral estate from willing sellers for the ACEC.				
Castle Butte ACEC – Management Actions by Alternative					
	Land use authorizations	Allowed if significant cultural sites avoided	Exclusion area.	Avoidance (1)	Avoidance (1)
	Land tenure	No current management decision provided	Category I retention land: no land disposal would occur		
	Off-highway vehicle use	Limited to designated roads and trails.	Limited to designated routes (refer to Mill Creek TMA).	Limited to designated routes (refer to Mill Creek TMA).	Limited to designated routes (refer to Mill Creek TMA).
	BLM road maintenance	No current management decision provided	Limited (4)		
	Visual resource management	Class III	Class III	Class III	Class II
	Plant collecting	No current management decision provided	Not allowed	Allowed (3)	
	Fluid Mineral leasing	No federal minerals			
	Locatable minerals	No federal minerals			
	Solid leasable minerals	No federal minerals			
	Mineral materials sales and permits	No federal minerals			
	Renewable energy	No current management decision provided	Closed (6)		
	Geophysical exploration for oil and gas	Not allowed on the significant cultural sites, surface methods and vibroseis allowed in the remainder of the area	Not allowed	Same as A	Same as B
	Use of explosives for geophysical exploration for oil and gas	No current management decision provided	Not allowed		
	Fire suppression	Conditional fire suppression	No heavy equipment use; no retardant or foam use on Castle Butte; full range of fire management activities would be used in remainder of ACEC.		
	Fuels management	No current management decision provided	Fuels removed where there would be threat of loss of resource (8).		
	Fuel wood cutting/wood product sales	Not allowed			
	Livestock grazing	Allowed	Available (7)		
	Range improvements	Allowed	Not allowed	Allowed if no conflicts with ACEC values (5)	
	Noxious/Invasive weed treatments	No current management decision provided	Allowed (5) (10)		
	Animal trapping/traplines	No current management decision provided	Not allowed	Not allowed within 150 feet of Castle Butte rock formation; allowed in remaining ACEC	Same as B
	Target shooting	No current management decision provided	Not allowed		
	Non-commercial collection of common plant fossils	No current management decision provided	Allowed		

Table 2-12 Detailed Table of Alternatives: Special Designations

Castle Butte ACEC					
Record#	**Management Activity**	**Alternative A (184 acres)**	**Alternative B (184 acres)**	**Alternative C (184 acres)**	**Alternative D (184 acres)**
	Cremains scattering	No current management decision provided	Not allowed	Allowed (5)	Same as B
	Special Recreation Permits and letters of authorization	Allowed (5)	Not allowed	Allowed (5)	Allowed (5) SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.
	Other permitted activities	Allowed on a case-by-case basis	Allowed (5)		
	Transportation	No current management decision provided	No new road or trail development		
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		

Notes: (Map 159 and 176)

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.

2 Off-highway vehicle, and bicycle, use would be limited to designated routes only

3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.

4 Road maintenance will be limited to the designated roadway; and only that necessary to ensure public safety and serviceability of the road.

5 The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).

6 Closed to renewable energy facilities and renewable energy development

7 Livestock grazing will be controlled through terms and conditions on the grazing permit.

8 Evaluate fire potential and remove fuels where needed to protect resource values and meet the objectives of the ACEC values. Types of treatments permitted: hand cutting or, chainsaw use only on the Castle Butte rock formation, elsewhere in the ACEC other types of treatment would be allowed.

9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.

10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.

11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialist (archaeologist) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

East Pryor ACEC					
Record#	**Management Activity**	**Alternative A (29,550 acres)**	**Alternative B (8,301 acres)**	**Alternative C (32,767 acres)**	**Alternative D (11,122 acres)**
East Pryor ACEC – Desired Outcomes (Goals and Objectives)					
The East Pryor ACEC would be managed to protect wild horse and wildlife habitat, historical/cultural resources, special status plant species, and paleontological values. In addition, the values for which the Crooked Creek Natural Area and the Crooked Creek National Natural Landmark were designated would be maintained. (Maps 177, 178, 179, 180)					
East Pryor ACEC – Management Actions by Alternative					
	Land use authorization	Exclusion area	Exclusion area, except valid existing rights.	Avoidance (1)	
	Land tenure	No current management decision provided	Category I retention land: no land disposal would occur		
	Off-highway vehicle use including snowmobiles (OSVs)	Limited to designated routes (refer to Pryor TMA and Table 2.11 Trails and Travel Management – Management Actions by Alternative. Snowmobiles (OSVs)	Limited to designed routes (refer to Pryor TMA and Table 2.11Trails and Travel Management – Management Actions by Alternative. Snowmobiles (OSVs).	Limited to designated routes (refer to Pryor TMA and Table 2.11Trails and Travel Management – Management Actions by Alternative. Snowmobiles (OSVs).	Limited to designated routes (refer to Pryor TMA and Table 2.11 Trails and Travel Management – Management Actions by Alternative. Snowmobiles (OSVs).
	BLM road maintenance	No current management decision provided	Limited (4)		
	Visual resource management	Class II			
	Plant collecting	No current management decision provided	Allowed for scientific use or range/forestry studies. No collection of special status species without a permit.	Allowed for personal use as well as scientific use and range/forestry studies. No collection of special status species without a permit.	Allowed (3)
	Fluid Mineral leasing	Closed to oil and gas leasing and development (NL)	Closed to oil and gas leasing and development (NL).	Closed to oil and gas leasing and development (NL).	Closed to oil and gas leasing and development (NL).
	Locatable minerals	Closed and recommended for withdrawal	Recommend withdrawal from mineral entry and location under the Mining Law of 1872, as amended. Subject to valid existing rights.	Open	Same as B
	Solid leasable minerals	No current management decision provided	Closed, subject to valid existing rights.	Open (5)	Same as B
	Mineral materials sales and permits	Not allowed	Not allowed	Allowed (9)	
	Renewable energy	No current management decision provided	Closed (6)		
	Geophysical exploration for oil and gas	Not allowed			

Table 2-12 Detailed Table of Alternatives: Special Designations

East Pryor ACEC					
Record#	**Management Activity**	**Alternative A (29,550 acres)**	**Alternative B (8,301 acres)**	**Alternative C (32,767 acres)**	**Alternative D (11,122 acres)**
	Use of explosives for geophysical exploration for oil and gas	No current management decision provided	Not allowed		
	Fire suppression	Conditional fire suppression	Wildfire management (natural ignitions) for resource benefit. Full range of fire management activities would be used in ACEC in response to human-ignited fires.	Full range of fire management activities would be used in ACEC.	Same as B
	Fuels management	No current management decision provided	Allowed (8)		
	Fuel wood cutting/wood product sales	Not allowed	Not allowed	Casual collection of dead and down allowed for personal use only while recreating.	
	Livestock grazing	Closed within PMWHR boundary, except trailing allowed through Bad Pass only. Available outside PMWHR (7)	Same as A	Closed within PMWHR boundary, except Bad Pass Trail Allotment. Available outside PMWHR (7)	Same as C
	Wild Horses	Managed only within the PMWHR			
	Range improvements	No current management decision provided	Allowed (5)		
	Noxious/Invasive weed treatments	No current management decision provided	Allowed (5) (10)		
	Animal trapping/trap lines	No current management decision provided	Not allowed	Allowed	
	Target shooting	No current management decision provided	Not allowed	Allowed	Not allowed on 8S 28E Memorial Day weekend through Labor Day weekend. Allowed in remainder of ACEC
	Non-commercial collection of common invertebrate and plant fossils	Allowed			
	Cremains scattering	No current management decision provided	Not allowed		
	Special Recreation Permits and letters of authorization	No current management decision provided	SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in congestion, wild horse displacement, cause an adverse experience for members of the public viewing wild horses outside of an SRP experience through monitoring of existing SRPs and visitation, and when determined not to result in impacts to the values for which the ACEC was designated. (5)		
	Other permitted	No current management decision provided	Allowed (5)		

Table 2-12 Detailed Table of Alternatives: Special Designations

East Pryor ACEC					
Record#	**Management Activity**	**Alternative A (29,550 acres)**	**Alternative B (8,301 acres)**	**Alternative C (32,767 acres)**	**Alternative D (11,122 acres)**
	activities				
	Transportation	No current management decision provided	No net increase in road density	Routes for commercial or other BLM authorized activities may be considered on a case-by-case basis if the route meets public access needs.	Same as C
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		
	WSA	No current management decision provided	Until Congress acts to either release or designate the WSAs as Wilderness, the area would continue to be managed under the BLM Manual 6300 prescriptions. If Congress releases the lands from WSA status, the special management prescriptions as an ACEC would comprise the management direction. These management prescriptions are slightly different from the WSA prescriptions. A more detailed ACEC Management Plan would be initiated within 2 years following WSA release. This ACEC management plan would be developed through a public process. If at that time management decisions are proposed that would significantly alter the resource allocations outlined in this RMP, a Plan Amendment would likely be undertaken.		

Notes: (Maps 159 and 177, 178, 179, 180)

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.
2 Off-highway vehicle, and bicycle, use would be limited to designated routes only.
3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4 Road maintenance will be limited to the designated roadway; and only that necessary to ensure public safety and serviceability of the road.
5 The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).
6 Closed to renewable energy facilities and renewable energy development
7 Livestock grazing will be controlled through terms and conditions on the grazing permit.
8 Evaluate fire potential and remove fuels where needed to protect resource values. Most types of fire and fuels treatments are permitted.
9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialists (Wild Horse Specialist, wildlife biologist, and archaeologist) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

Four Dances Natural Area ACEC					
Record#	**Management Activity**	**Alternative A (784 acres)**	**Alternative B (784 acres)**	**Alternative C (784 acres)**	**Alternative D (784 acres)**
Four Dances Natural Area ACEC – Desired Outcomes (Goals and Objectives)					
The Four Dances Natural Area ACEC would be managed to protect significant historic, cultural, and scenic values, peregrine falcon nesting habitat, and managed for the natural hazards of the cliffs.					
Four Dances Natural Area ACEC – Management Common to All Alternatives					
	Consider acquiring minerals from willing sellers for the ACEC.				
Four Dances Natural Area ACEC – Management Actions by Alternative					
	Land use authorization	Avoidance area. Uses and practices would be consistent with the Deed of Conservation Easement. A restricted quantity of ROWs, temporary use permits, and land authorizations are available if the actions are consistent with ACEC objectives.	Avoidance (1). Uses and practices would be consistent with the Deed of Conservation Easement.		
	Land Tenure	No land sales, R&PPs, conveyances, or long-term leases for habitation or industrial use.	Category I retention land: no land disposal would occur		
	Off-highway vehicle use	OHV use (including bicycles) limited to administrative or authorized use only. No snowmobiles and no off-road vehicle use.	Same as A	Closed to motorized public use. Mechanized (bicycle) travel would be considered in a future SRMA plan.	Same as C
	BLM road maintenance	No current management decision provided	Limited (4)		
	Visual resource management	Class III	Class III	Class III	Class II (parking lot – Class III)
	Plant collecting	No current management decision provided	Not allowed	Allowed (3)	
	Fluid Mineral leasing	Closed to oil and gas leasing, exploration and development.			
	Locatable minerals	Closed and withdrawn from mineral entry.	Closed and continue withdrawal from mineral entry.		
	Solid leasable minerals	Closed and withdrawn from mineral entry.	Closed and continue withdrawal from mineral entry.		
	Mineral materials sales and permits	Not allowed			
	Renewable energy	No current management decision provided	Closed (6)		
	Geophysical exploration for oil and gas	Not allowed			
	Use of explosives for geophysical exploration for oil and gas	Not allowed			
	Fire suppression	Appropriate management response to wildfire would be aggressive fire suppression. Appropriate response would include use of natural barriers and hand constructed fire lines. Use of bulldozers and retardant avoided unless	Fire suppression would include use of natural barriers and hand constructed fire lines. Use of heavy equipment and retardant would be avoided unless approved by the authorized officer. No heavy equipment use near vision quest site, no retardant use within 100 feet of Will James cabin or rock art. Full range of fire management activities would be used in remainder of ACEC.		

Table 2-12 Detailed Table of Alternatives: Special Designations

Four Dances Natural Area ACEC					
Record#	**Management Activity**	**Alternative A (784 acres)**	**Alternative B (784 acres)**	**Alternative C (784 acres)**	**Alternative D (784 acres)**
		approved by the authorized officer.			
	Fuels management	Prescribed fire would be used to reduce hazardous fuels and meet other resource objectives. Allowed only during favorable smoke dispersal conditions with stable atmospheric conditions.	Allowed (5) (8)	Same as B	
	Fuel wood cutting/wood product sales	Wood product sales permits would not be issued. Commercial timber harvest not allowed. Timber management for the safety and enhancement of other values would be practiced in the woody draws, on the islands, and along the Yellowstone River bottom	Not allowed	Wood product sales and commercial timber harvest would not be allowed. Timber management for the safety and enhancement of other values would be allowed in the woody draws, on the islands, and along the Yellowstone River bottom.	
	Livestock grazing	Only authorized to meet other resource objectives consistent with ACEC designation. Grazing must meet Standard and Guidelines. Buffalo grazing not permitted.	Buffalo grazing not permitted. Livestock grazing would be allowed. Only authorized to meet other resource objectives consistent with ACEC designation. Grazing must meet Standard and Guidelines. (7)		
	Range improvements	No current management decision provided.	Not allowed	Allowed if no conflicts with ACEC objectives (5)	
	Noxious/Invasive weed treatments	Treatments may include any combination of herbicide application, burning, grazing, and the use of insects or pathogens. The use of chemicals would be minimized.	Allowed (5) (10)		
	Animal trapping/traplines	No current management decision provided.	Not allowed		
	Hunting/target shooting	No discharging of firearms. Archery hunting may be allowed, if deemed necessary by Montana Fish, Wildlife, and Parks (authorization from BLM required).			
	Cremains scattering	No current management decision provided.	Not allowed		
	Special Recreation Permits and letters of authorization	Authorizations would be required or timing and locations would be specified for events, such as cross country races. Some limitations on use by the general public may be required to facilitate Native American religious activities. These would be limited to specific time periods and specific portions of the property.	Not allowed	Allowed (5) Authorizations would be required or timing and locations would be specified for events, such as cross country races. Some limitations on use by the general public may be required to facilitate Native American religious activities. These would be limited to specific time periods and specific portions of the property. SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.	
	Other permitted activities	No current management decision provided	Not allowed	Allowed (5)	
	Transportation	No current management decision provided	No new roads	No increase in road density	
	Recreation	Day use area only	Same as A	Day use area only	

Table 2-12 Detailed Table of Alternatives: Special Designations

Four Dances Natural Area ACEC					
Record#	**Management Activity**	**Alternative A (784 acres)**	**Alternative B (784 acres)**	**Alternative C (784 acres)**	**Alternative D (784 acres)**
		Closed to horseback riding, use of fireworks, hang gliding, rock climbing, paint ball, discharging of fire arms, and exercising pets off leash		Closed to horseback riding (with the exception of authorized Native American religious ceremonies), hang gliding, rock climbing, paint ball, and discharging of fire arms. Pets must be leashed within parking area.	
	Wildlife	Special management and priority would be given to protecting falcon eyries by restricting human activity along the rims that might adversely affect the nesting birds. Non-ACEC values may be adjusted as necessary.			
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		

Notes: (Map 159 and 181)

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.
2 Off-highway vehicle, and bicycle, use would be limited to designated routes.
3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4 Road maintenance will be limited to the designated roadway and only that necessary to ensure public safety and serviceability of the road.
5 The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).
6 Closed to renewable energy facilities and renewable energy development.
7 Livestock grazing will be controlled through terms and conditions on the grazing permit.
8 Evaluate fire potential and remove fuels where needed to protect resource values and meet the objectives of the ACEC. Types of treatments permitted: prescribed fire throughout ACEC allowed, handcutting/chainsaw use preferred around rock art sites.
9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialists (archaeologist and wildlife biologist) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

Grove Creek ACEC					
Record#	**Management Activity**	**Alternative A (No ACEC Designation)**	**Alternative B (8,251 acres)**	**Alternative C (9,445 acres)**	**Alternative D (8,251 acres)**
Grove Creek ACEC – Desired Outcomes (Goals and Objectives)					
The Grove Creek ACEC would be managed to protect significant archaeological and traditional cultural values and special status plants. (Maps 182, 182)					
Grove Creek ACEC – Management Actions by Alternative					
	Land use authorization	Allowed	Exclusion area	Avoidance (1)	Avoidance (1)
	Land tenure	Land adjustments (acquisitions, exchanges, disposals) subject to existing land tenure criteria.	Category I retention land: no land disposal would occur		
	Off-highway vehicle use	Limited to existing roads and trails	Limited to designated routes (refer to Grove Creek TMA).		
	BLM road maintenance	No current management decision provided	Limited (4)		
	Visual resource management	Class III	Class III	Class III	Class III
	Plant collecting	Allowed	Allowed (3)	Allowed	Same as B
	Fluid Mineral leasing	Open, subject to standard stipulations	Closed to oil and gas leasing, exploration and development (NL). COAs for existing leases	NSO. Conditions of Approval for existing leases	
	Locatable minerals	Open	Recommend withdrawal from mineral entry and location under the Mining Law of 1872, as amended. Subject to valid existing rights.	Open	Same as B
	Solid leasable minerals	Open	Closed and recommend withdrawing from mineral entry	Open (5)	Same as B
	Mineral materials sales and permits	Allowed	Not allowed	Allowed (9)	
	Renewable energy	Open	Closed (6)		
	Geophysical exploration for oil and gas	Allowed	Not allowed	Allowed (5)	
	Use of explosives for geophysical exploration for oil and gas	Allowed	Not allowed		
	Fire suppression	Full suppression	Wildfire management (natural ignitions) for resource benefit. Full range of fire management activities would be used in ACEC in response to human-ignited fires. No heavy equipment use within ACEC.	No heavy equipment use within ACEC; full range of fire management activities would be used in response to human-ignited fires.	Wildfire management (natural ignitions) for resource benefit. Full range of fire management activities would be used in ACEC in response to human-ignited fires. Use of heavy equipment and retardant would be avoided unless approved by authorized officer.
	Fuels management	Allowed	Allowed (8)		
	Fuel wood cutting	Allowed	Not allowed	Allowed if no conflicts with ACEC values (5)	

Table 2-12 Detailed Table of Alternatives: Special Designations

Grove Creek ACEC					
Record#	**Management Activity**	**Alternative A (No ACEC Designation)**	**Alternative B (8,251 acres)**	**Alternative C (9,445 acres)**	**Alternative D (8,251 acres)**
	Wood product sales	Allowed	Not allowed	Allowed if no conflicts with ACEC values (5)	
	Livestock grazing	Available	Available (7)		
	Range improvements	Allowed	Not allowed	Allowed if no conflicts with ACEC values (5)	
	Noxious/Invasive weed treatments	Allowed	Allowed (5) (10) Herbicide applications would be by hand, not by boom or aerial in order to protect special status plants		
	Animal trapping/traplines	Allowed	Not allowed	Same as A	
	Target shooting	Allowed	Not allowed	Same as A	
	Cremains scattering	Allowed	Not allowed	Allowed (5)	Same as B
	Special Recreation Permits and letters of authorization	Allowed	Not allowed	Allowed (5) SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.	
	Other permitted activities	Allowed	Not allowed	Allowed (5)	
	Transportation	Open	No increase in road density	New routes for commercial or other BLM authorized activities may be considered if the route meets public access needs.	Same as B
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		

Notes: (Map 159 and 182, 183)

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.
2 Off-highway vehicle, and bicycle, use would be limited to designated routes only
3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4 Road maintenance will be limited to the designated roadway; shoulder barrow/ditch construction will be limited to only that necessary to ensure public safety and serviceability of the road.
5 The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).
6 Closed to renewable energy facilities and renewable energy development
7 Livestock grazing will be controlled through terms and conditions on the grazing permit.
8 Evaluate fire potential and remove fuels where needed to protect resource values and meet the objectives of the ACEC. Types of treatments permitted: hand cutting, chainsaw, mechanical, prescribed fire.
9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialists (archaeologist and botanist) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

Meeteetse Spires ACEC					
Record#	**Management Activity**	**Alternative A (965 acres)**	**Alternative B (1,523 acres)**	**Alternative C (2,173 acres)**	**Alternative D (1,523 acres)**
Meeteetse Spires ACEC – Desired Outcomes (Goals and Objectives)					
The Meeteetse Spires ACEC would be managed to protect and enhance unique vegetation (rare plants) and conserve scenic values. (Maps 184, 185, 186)					
Meeteetse Spires ACEC – Management Common to All Alternatives					
	Consider acquiring minerals from willing sellers for the ACEC.				
Meeteetse Spires ACEC – Management Actions by Alternative					
	Land use authorization	Exclusion area			
	Land tenure	No current management decision provided	Category I retention land: no land disposal would occur		
	Off-highway vehicles	Limited to existing roads and trails	Designated routes (refer to Grove Creek TMA)		
	BLM road maintenance	No current management decision provided	Not allowed	Limited (4)	Same as B
	Visual resource management	Class II			
	Plant collecting	No current management decision provided	Allowed for scientific use or range/forestry studies. No collection of special status species without a permit.		
	Fluid Mineral leasing	Closed (NL)	Closed (NL) (original ACEC – 965 acres) Manage remainder of ACEC for no surface occupancy (no federal minerals)		
	Locatable minerals	Closed and recommended for withdrawal	Recommend withdrawal from mineral entry and location under the Mining Law of 1872, as amended. Subject to valid existing rights. (original ACEC – 965 acres). Remainder of ACEC would be Open (no federal minerals)		
	Solid leasable minerals	Open	Open (5)		
	Mineral materials sales and permits	Not allowed	Not allowed	Allowed (9)	
	Renewable energy	No current management decision provided	Closed (6)		
	Geophysical exploration	Not allowed in the special status plant areas, on the remaining area, exploration access by air only. Shot holes and above ground shots only. No vibroseis.	Not allowed	Same as A	Same as B
	Use of explosives for geophysical exploration for oil and gas	Not allowed			
	Fire suppression	Conditional suppression	Wildfire management (natural ignitions) for resource benefit. Full range of fire management activities would be used in ACEC in response to human-ignited fires. No heavy equipment use within ACEC.	Full range of fire management activities would be used in remainder of ACEC	Same as B
	Fuels management	No current management decision provided	Allowed (8)		
	Fuel wood cutting	Not allowed	Not allowed		
	Wood product sales	Select timber harvest allowed periodically to protect resource values. Wood product sales not allowed.	Not allowed	Allowed if no conflicts with ACEC values (5)	

Table 2-12 Detailed Table of Alternatives: Special Designations

Meeteetse Spires ACEC					
Record#	**Management Activity**	**Alternative A (965 acres)**	**Alternative B (1,523 acres)**	**Alternative C (2,173 acres)**	**Alternative D (1,523 acres)**
	Livestock grazing	Livestock grazing permitted, except for sheep	Closed	Livestock grazing permitted, except for sheep on 965 acres (original ACEC -). The 558 acre acquisition is not suitable for livestock grazing.	
	Range improvements	Allowed	Not allowed	Allowed if no conflicts with ACEC values (5)	
	Noxious/Invasive weed treatments	Allowed	Allowed (5) (10) Herbicide applications would be by hand, not by boom or aerial in order to protect special status plants		
	Animal trapping/traplines	No current management decision provided	Allowed		
	Target shooting	No current management decision provided	Allowed		
	Cremains scattering	No current management decision provided	Not allowed		
	Special Recreation Permits and letters of authorization	Allowed	Not allowed	Allowed (5) SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.	
	Other permitted activities	Allowed	Not allowed	Allowed (5)	
	Transportation	No current management decision provided	No net increase in road density		
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		

Notes: (Map 159 and 184, 185, 186)

1 Avoidance area; granting rights-of-way (surface, subsurface, aerial) within the area should be avoided, but rights-of-ways may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.
2 Off-highway vehicle, and bicycle, use would be limited to designated routes only.
3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4 Road maintenance will be limited to the designated roadway; and only that necessary to ensure public safety and serviceability of the road.
5 The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).
6 Closed to renewable energy facilities and renewable energy development
7 Livestock grazing will be controlled through terms and conditions on the grazing permit.
8 Evaluate fire potential and remove fuels where needed to protect resource values and must meet objectives of ACEC. Types of treatments permitted: hand cutting, chainsaw, mechanical, prescribed and non-surface disturbing treatments.
9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialist (botanist) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

Petroglyph Canyon ACEC					
Record#	**Management Activity**	**Alternative A (240 acres)**	**Alternative B (240 acres)**	**Alternative C (240 acres)**	**Alternative D (240 acres)**
Desired Future Conditions (Goals and Objectives)					
The Petroglyph Canyon ACEC would be managed to protect unique cultural values.					
Management Actions by Alternative					
	Land use authorization	Exclusion Area			
	Land tenure	No current management decision provided	Category I retention land: no land disposal would occur		
	Off-highway vehicle use	Closed to vehicle use	Designated routes only (refer to Pryor TMA)	Designated routes only (refer to Pryor TMA)	Designated routes only (refer to Pryor TMA)
	BLM road maintenance	No current management decision provided	Limited (4)		
	Visual resource management	Class IV	Class II	Class III	Class II
	Plant collecting	Allowed	Not allowed	Allowed (3)	
	Fluid Mineral leasing	Closed (NL)		NSO (no WEMs)	Closed (NL)
	Locatable minerals	Closed and withdrawn from mineral entry	Closed and continue withdrawal from mineral entry		
	Solid leasable minerals	No current management decision provided	Closed	Open with NSO (5)	Same as B
	Mineral materials sales and permits	No current management decision provided	Not allowed	Allowed (9)	Same as B
	Renewable energy	No current management decision provided	Closed (6)		
	Geophysical exploration for oil and gas	Not allowed			
	Use of explosives for geophysical exploration for oil and gas	No current management decision provided	Not allowed		
	Fire suppression	No current management decision provided	No heavy equipment use, no retardant or foam use;		
	Fuels management	No current management decision provided	Allowed (8)		
	Fuel wood cutting/wood product sales	Not allowed			
	Livestock grazing	Allowed	Available (7)		
	Range improvements	Allowed	Not allowed	Allowed if no conflicts with ACEC values (5)	
	Noxious/Invasive weed treatments	No current management decision provided	Allowed (5) (10)		
	Animal trapping/traplines	No current management decision provided	Not allowed	Allowed	Same as B
	Target shooting	No current management decision provided	Not allowed		

Table 2-12 Detailed Table of Alternatives: Special Designations

Petroglyph Canyon ACEC					
Record#	**Management Activity**	**Alternative A (240 acres)**	**Alternative B (240 acres)**	**Alternative C (240 acres)**	**Alternative D (240 acres)**
	Cremains scattering	No current management decision provided	Not allowed		
	Special Recreation Permits and letters of authorization	No current management decision provided	Not allowed	Allowed (5)	Allowed (5) SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.
	Other permitted activities	No current management decision provided	Not allowed	Allowed (5)	
	Transportation	No current management decision provided	No net increase in road density		
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		

Notes: (Map 159 and 187)

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.
2 Off-highway vehicle, and bicycle, use would be limited to designated routes only.
3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4 Road maintenance will be limited to the designated roadway; and only that necessary to ensure public safety and serviceability of the road.
5 The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).
6 Closed to renewable energy facilities and renewable energy development
7 Livestock grazing will be controlled through terms and conditions on the grazing permit.
8 Evaluate fire potential and remove fuels where needed to protect resource values and meet the objectives of the ACEC. Types of treatments permitted: hand cutting and chainsaw use only.
9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialist (archaeologist) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

Pryor Foothills Research Natural Area (RNA) ACEC					
Record#	**Management Activity**	**Alternative A (No ACEC)**	**Alternative B (958 acres)**	**Alternative C (7,401 acres)**	**Alternative D (2,606 acres)**
Pryor Foothills Research Natural Area ACEC – Desired Outcomes (Goals and Objectives)					
The Pryor Foothills Research Natural Area ACEC would be managed to protect unique vegetation (a large concentration of Bureau special status plant species and rare plant communities) and to protect significant historic and cultural values in the Gyp Springs area. The objectives of the BLM RNA program are: 1) to preserve examples of all significant natural ecosystems for comparison with those influenced by man; 2) to provide educational and research areas for ecological and environmental studies; and 3) to preserve gene pools of typical and endangered plants and animals. Research natural areas are intended to represent the full array of North American ecosystems with their biological communities, habitats, natural phenomena, and geological and hydrological formations.					
Pryor Foothills Research Natural Area ACEC – Management Actions by Alternative					
	Land use authorization	Allowed	Exclusion Area	Avoidance (1), subject to valid existing rights.	
	Land tenure	Land adjustments subject to existing land tenure criteria.	Category I retention land: no land disposal would occur		
	Off-highway vehicles	Limited to designated routes (refer to Pryors TMA)	Limited to designated routes (refer to Pryors TMA)	Limited to designated routes (refer to Pryors TMA)	Limited to designated routes (refer to Pryors TMA)
	BLM road maintenance	Allowed	Limited (4)		
	Visual resource management	Class III	Class III		839 acres – Class II (overlap w/ LWC unit) Class III - remaining portions of ACEC
	Plant collecting	Allowed	Not allowed	Allowed for scientific use or range/forestry studies. No collection of special status species without a permit.	Same as C
	Fluid Mineral leasing	Open	Closed (NL)	No surface occupancy (NSO) on known plant sites. Inventory prior to surface disturbing activities (CSU).	NSO - ¼ mile buffer on known sensitive plant sites (acres). CSU - Inventory prior to surface disturbing activities. (Note: All lands in this ACEC east of Crooked Creek Rd (839 acres) are within a lands w/ wilderness characteristics unit and are No Lease)
	Locatable minerals	Open	Recommend withdrawal from mineral entry and location under the Mining Law of 1872, as amended. Subject to valid existing rights.	Open - Inventory prior to surface disturbing activities (CSU).	Same as B
	Solid leasable minerals	Open	Closed, subject to valid existing rights	Open (5)- Inventory prior to surface disturbing activity CSU	Same as B
	Mineral materials sales and permits	Allowed	Not allowed	Allowed (9)	Same as B
	Renewable energy	No current management decision provided	Closed (6)	Open (5)	Same as B
	Geophysical exploration	Allowed	Not allowed	Allowed (5)	Same as B
	Fire suppression	Allowed	Wildfire management (natural ignitions) for resource benefit. Full range of fire	Full range of fire management activities would be used in ACEC.	Same as B

Table 2-12 Detailed Table of Alternatives: Special Designations

Pryor Foothills Research Natural Area (RNA) ACEC					
Record#	**Management Activity**	**Alternative A (No ACEC)**	**Alternative B (958 acres)**	**Alternative C (7,401 acres)**	**Alternative D (2,606 acres)**
			management activities would be used in ACEC in response to human-ignited fires. No heavy equipment use within ACEC.		
	Fuels management	Allowed	Allowed (8)		
	Fuel wood cutting/wood product sales	No current management decision provided	Not allowed	Allowed (5) periodically to protect resource values.	
	Livestock grazing	Permitted	Available (7)		
	Range improvements	Allowed	No improvements would be allowed that would result in a net increase of livestock use in the ACEC (5)	Same as A	Same as B
	Noxious/Invasive weed treatments	Allowed	Allowed (5) (10) to protect rare plant values Herbicide applications would be by hand, not by boom or aerial in order to protect special status plants		
	Animal trapping/traplines	Allowed			
	Target shooting	Allowed	Not allowed	Allowed	
	Cremains scattering	No current management decision provided	Not allowed		
	Special Recreation Permits and letters of authorization	Allowed	Not allowed	Allowed (5) SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.	
	Other permitted activities	Allowed	Not allowed	Allowed (5)	
	Transportation	No current management decision provided	No new road or trail development.	No increase in road density.	
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		

Notes: (Map 159 and 188, 189, 190)

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.
2 Off-highway vehicle, and bicycle, use would be limited to designated roads and trails only
3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4 Road maintenance will be limited to the designated roadway; and only that necessary to ensure public safety and serviceability of the road.
5 The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).
6 Closed to renewable energy facilities and renewable energy development
7 Livestock grazing will be controlled through terms and conditions on the grazing permit.
8 Evaluate fire potential and remove fuels where needed to protect resource values and meet objectives of the ACEC. Types of treatments permitted include: prescribed fire, hand-cutting, chainsaws, mechanical and non-surface disturbing treatments.
9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialists (botanist and archaeologist) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

Stark Site ACEC					
Record#	**Management Activity**	**Alternative A (799 acres)**	**Alternative B (799 acres)**	**Alternative C (799 acres)**	**Alternative D (799 acres)**
Stark Site ACEC – Desired Outcomes (Goals and Objectives)					
The Stark Site ACEC would be managed to protect unique cultural values.					
Stark Site ACEC – Management Actions by Alternative					
	Land use authorization	Exclusion area	Exclusion area	Avoidance (1)	Avoidance (1)
	Land tenure	No current management decision provided	Category I retention land: no land disposal would occur		
	Off-highway vehicle use	Limited to existing roads and trails	Motorized travel limited to designated routes (refer to Horsethief TMA)	Motorized travel limited to designated routes (refer to Horsethief TMA)	Motorized travel limited to designated routes (refer to Horsethief TMA)
	BLM road maintenance	No current management decision provided	Limited (4)		
	Visual resource management	Class III			Class II
	Plant collecting	Allowed	Allowed (3)		
	Fluid Mineral leasing	NSO			
	Locatable minerals	Open	Recommend withdrawal from mineral entry and location under the Mining Law of 1872, as amended. Subject to valid existing rights.	Open	Same as B
	Solid leasable minerals	No current management decision provided	Closed	Open (5) with NSO	
	Mineral materials sales and permits	Not allowed	Not allowed	Allowed (9)	Same as B
	Renewable energy	No current management decision provided	Closed (6)		
	Geophysical exploration for oil and gas	Not allowed on the significant cultural resource sites, but allowed in other areas of ACEC (surface and vibroseis only)	Not allowed	Same as A	Same as B
	Use of explosives for geophysical exploration for oil and gas	No current management decision provided	Not allowed		
	Fire suppression	Conditional fire suppression	No heavy equipment use, no retardant or foam use.		
	Fuels management	No current management decision provided	Allowed (8)		
	Fuel wood cutting/wood product sales	Not allowed			
	Livestock grazing	Allowed	Available (7)		
	Range improvements	Allowed	Not allowed	Allowed if no conflicts with ACEC values (5)	

Table 2-12 Detailed Table of Alternatives: Special Designations

Stark Site ACEC					
Record#	**Management Activity**	**Alternative A (799 acres)**	**Alternative B (799 acres)**	**Alternative C (799 acres)**	**Alternative D (799 acres)**
	Noxious/Invasive weed treatments	No current management decision provided	Allowed (5) (10)		
	Animal trapping/traplines	No current management decision provided	Not allowed	Allowed	
	Target shooting	No current management decision provided	Not allowed	Allowed	Same as B
	Cremains scattering	No current management decision provided	Not allowed		
	Special Recreation Permits and letters of authorization	Allowed(5)	Not allowed	Allowed (5)	Allowed (5) SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.
	Other permitted activities	Allowed, case-by-case basis	Not allowed	Allowed (5)	
	Transportation	Limited to existing roads and trails	No new road or trail development.	No increase in road density.	
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		

Notes: (Map 159 and 191)

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.
2 Off-highway vehicles, and bicycles, use would be limited to designated routes only
3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4 Road maintenance will be limited to the designated roadway; and only that necessary to ensure public safety and serviceability of the road.
5 The activity is allowed in the area on a case-by-case basis and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).
6 Closed to renewable energy facilities and renewable energy development
7 Livestock grazing will be controlled through terms and conditions on the grazing permit.
8 Evaluate fire potential and remove fuels where needed to protect resource values and meet the ACEC values. Types of treatments permitted: hand cutting & chainsaw use. Other types of treatment (mechanical or prescribed) would be allowed if treatment meets objectives of ACEC.
9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialist (archaeologist) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

Weatherman Draw ACEC					
Record#	**Management Activity**	**Alternative A (4,365 acres)**	**Alternative B (4,986 acres)**	**Alternative C (12,277 acres)**	**Alternative D (12,277 acres)**
Desired Outcomes (Goals and Objectives)					
The Weatherman Draw ACEC would be managed to protect unique cultural values.					
Management Actions by Alternative					
	Land use authorization	Exclusion area, ROWs associated with valid existing oil or gas lease rights allowed with restrictions.	Exclusion area, subject to valid existing rights.	ROW exclusion area, subject to valid existing rights (1) (4,986 acres) Remainder of ACEC: Avoidance area (1) (7,291 acres)	Same as C
	Land Tenure	No current management decision provided	Category I retention land: no land disposal would occur		
	Off-highway vehicle use	Limited to authorized use only	Limited to designated routes (refer to Weatherman Draw TMA)	Limited to designated routes (refer to Weatherman Draw TMA)	Limited to designated routes (refer to Weatherman Draw TMA)
	BLM road maintenance	No current management decision provided	Limited (4)		
	Visual resource management	Class II	Class II	Class II: 4,986 acres Class III: 7,291 acres	Class II
	Plant collecting	Open	Not allowed	Allowed (3)	
	Fluid Mineral leasing	NSO (with no waiver, exception, or modification provisions)	Closed (NL)	NSO (5)	Closed (NL) (4,986 acres). NSO (5) (7,291 acres)
	Locatable minerals	600 acres closed and withdrawn from mineral entry	600 acres closed and continue to recommend withdrawal from mineral entry Recommend withdrawal from mineral entry and location under the Mining Law of 1872, as amended. Subject to valid existing rights. (4,386 acres)	600 acres closed and continue to recommend withdrawal from mineral entry Open (5) (11,677 acres)	600 acres withdrawn from mineral entry Recommend withdrawal from mineral entry and location under the Mining Law of 1872, as amended. Subject to valid existing rights. (4,386 acres) Open (5) (7,291 acres)
	Solid leasable minerals	No current management decision provided	Closed	Open (5) with NSO	Closed from mineral entry (4,986 acres) Open (5) with NSO (7,291 acres)
	Mineral materials sales and permits	Not allowed	Not allowed	Not allowed (4,986 acres) Allowed (7,291 acres) (9)	Same as C
	Renewable energy	No current management decision provided	Closed (6)		
	Geophysical exploration for oil and gas	Not allowed			
	Fire suppression	Conditional fire suppression	Wildfire management (natural ignitions) for resource benefit. Full range of fire management activities would be used in ACEC in response to human-ignited fires. No heavy equipment, no retardant or foam use	Full range of fire management activities would be used in ACEC	Same as B

Table 2-12 Detailed Table of Alternatives: Special Designations

Stark Site ACEC					
Record#	**Management Activity**	**Alternative A (799 acres)**	**Alternative B (799 acres)**	**Alternative C (799 acres)**	**Alternative D (799 acres)**
	Fuels management	No current management decision provided	Fuels removed where there would be threat or loss of resource (8)		
	Fuel wood cutting/wood product sales	Not allowed		Not allowed: (4,986 acres) Allowed by permit only (7,291 acres)	
	Livestock grazing	Allowed	Available (7)	Same as B	
	Range improvements	Allowed if no conflicts with ACEC values	Not allowed	Allowed if no conflicts with ACEC values (5)	
	Noxious/Invasive weed treatments	No current management decision provided	Allowed (5) (10)		
	Animal trapping/traplines	No current management decision provided	Not allowed	Allowed	Not allowed (4,986 acres) Allowed: (7,291 acres)
	Target shooting	No current management decision provided	Not allowed		
	Cremains scattering	No current management decision provided	Not allowed		
	Special Recreation Permits and letters of authorization	Open	Not allowed	Allowed (5)	Allowed (5) SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in impacts to the values for which the ACEC was designated.
	Other permitted activities	Allowed	Not allowed	Allowed (5)	
	Transportation	No current management decision provided	No net increase in road density		
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).		

Notes: (Map 159 and 192, 193, 194)

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.

2 Off-highway vehicles, and bicycles, use would be limited to designated routes only.

3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.

4 Road maintenance will be limited to the designated roadway and only that necessary to ensure public safety and serviceability of the road.

5 The activity is allowed in the area subject to specific environmental analysis upon individual permit applications and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).

6 Closed to renewable energy facilities and renewable energy development

7 Livestock grazing will be controlled through terms and conditions on the grazing permit.

8 Evaluate fire potential and remove fuels where needed to protect resource values. Types of treatments permitted: hand cutting/chainsaw only around rock art sites. Mechanical thinning would be allowed on a case-by-case basis - must meet objectives of ACEC.

9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.

10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.

11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialist (archaeologist) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

Greater Sage-Grouse ACEC					
Record#	**Management Activity**	**Alternative A (0 acres)**	**Alternative B (158,926 acres)**	**Alternative C (0 acres)**	**Alternative D (0 acres)**
Desired Outcomes (Goals and Objectives)					
The Greater Sage-Grouse ACEC would be managed to protect Greater Sage-Grouse priority habitat.					
Management Actions by Alternative					
	Land use authorization	Allowed	Exclusion area, subject to valid existing rights.	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Land Tenure	Land adjustments (acquisitions, exchanges, disposals) subject to existing land tenure criteria	Category I retention land: no land disposal would occur		
	Off-highway vehicle use	Limited to existing roads and trails	The BLM may close or restore unauthorized, user created roads and trails to prevent resource damage. TMAs in or partially in the ACEC would be managed to minimize impacts to Greater Sage-Grouse habitat or managed to protect Greater Sage-Grouse habitat		
	BLM road maintenance	Allowed	Allowed if no resource conflict	Management for Greater Sage-Grouse Priority Habitat Areas (PHMAs) provided throughout alternative/document.	
	Visual resource management	Class II and Class III			
	Plant collecting	Open	Allowed (3)	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Fluid Mineral leasing	NSO (with no waiver, exception, or modification provisions)	Closed (NL)	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Locatable minerals	Open	Closed and recommended for withdrawal	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Solid leasable minerals	Allowed	Allowed with lease stipulations	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHAs) provided throughout alternative/document.	
	Mineral materials sales and permits	Allowed	Closed	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Renewable energy	Allowed	Exclusion area (6)	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Geophysical exploration for oil and gas	Open to oil and gas leasing and geophysical operations, subject to the following lease stipulations: Surface occupancy and use would be prohibited within 0.25 miles of Greater Sage-Grouse leks (NSO).	Closed to future oil and gas leasing, exploration, and/or development and prohibit other surface disturbing and disruptive activities. Surface occupancy and use would be prohibited. Leases would not be renewed upon expiration.	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Fire suppression	Conditional fire suppression	Heavy equipment would not be used within 4 miles of lek sites (Greater Sage-Grouse nesting habitat).	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	

Table 2-12 Detailed Table of Alternatives: Special Designations

Greater Sage-Grouse ACEC					
Record#	**Management Activity**	**Alternative A (0 acres)**	**Alternative B (158,926 acres)**	**Alternative C (0 acres)**	**Alternative D (0 acres)**
	Fuels management	Allowed	Prescribed fire would not be allowed in ACEC.	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Fuel wood cutting/wood product sales	Allowed			
	Livestock grazing	Allowed	Available (7) Designate those allotments within or containing portions of the Greater Sage-Grouse ACEC as management Category I (managed to improve Greater Sage-Grouse habitat and changes in grazing would be proposed should Greater Sage-Grouse habitat be impacted by grazing). Allotments within or containing portions of the Greater Sage-Grouse ACEC would be priority Allotments for monitoring and evaluation.	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Range improvements	Allowed	Installation of structural range improvements would only be considered where grazing practices are unable to resolve the resource concern. Structural range improvements could be considered where necessary to facilitate the change in grazing management practices.	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Noxious/Invasive weed treatments	Allowed	Allowed (5) (10)	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Animal trapping/traplines	Allowed			
	Target shooting	Allowed			
	Cremains scattering	Allowed			
	Special Recreation Permits	Allowed	SRPs would only be allowed in priority habitat if they are consistent with the goals and objectives for that habitat or species.	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	

Table 2-12 Detailed Table of Alternatives: Special Designations

Greater Sage-Grouse ACEC					
Record#	**Management Activity**	**Alternative A (0 acres)**	**Alternative B (158,926 acres)**	**Alternative C (0 acres)**	**Alternative D (0 acres)**
	Other permitted activities	Allowed	Not allowed	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Transportation	No current management decision provided	The BLM may close or restore unauthorized, user created roads and trails to prevent resource damage. TMAs in or partially in the ACEC would be managed to minimize impacts to Greater Sage-Grouse habitat	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	
	Geocaching	Allowed	Not allowed (11)		
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the ACEC is designated (5).	Management for Greater Sage-Grouse Priority Habitat Management Areas (PHMAs) provided throughout alternative/document.	

Notes: (Map 159)

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to ACEC resource values can be fully mitigated.
2 Off-highway vehicles and bicycles, use would be limited to designated routes only.
3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4 Road maintenance will be limited to the designated roadway and only that necessary to ensure public safety and serviceability of the road.
5 The activity is allowed in the area subject to specific environmental analysis upon individual permit applications and only if there is minimal or no conflict with identified resources values and impacts to ACEC resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities. Native American coordination/consultation required on activities within ACEC (especially if cultural resources are one of the values for ACEC designation).
6 Closed to renewable energy facilities and renewable energy development
7 Livestock grazing will be controlled through terms and conditions on the grazing permit.
8 Evaluate fire potential and remove fuels where needed to protect resource values. Types of treatments permitted: hand cutting/chainsaw only around rock art sites. Mechanical thinning would be allowed on a case-by-case basis - must meet objectives of ACEC.
9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialist (wildlife biologist) and BLM ORP must agree activity does not impact ACEC values.

Table 2-12 Detailed Table of Alternatives: Special Designations

Wilderness Study Areas (WSAs)				
Record#	**Alternative A (No Action)**	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
A wilderness study area (WSA) contains undeveloped United States federal land retaining its primeval character and influence, without permanent improvements or human habitation, and managed to preserve its natural conditions. WSAs are not included in the National Wilderness Preservation System until the United States Congress passes wilderness legislation. On BLM lands, a WSA is a road-less area that has been inventoried (but not designated by Congress) and found to have wilderness characteristics as described in Section 603 of the Federal Land Management Policy Act of 1976 and Section 2(c) of the Wilderness Act of 1964. The Billings Field Office currently manages the Twin Coulee WSA in Musselshell County (Map 160) and the Burnt Timber Canyon, Big Horn Tack-On, and Pryor Mountain WSAs in Carbon County, Montana and Big Horn County, Wyoming (Map 161). Wilderness study areas within the planning area total approximately 28,631 acres. The Billings Field Office would manage wilderness study areas according to BLM Manual 6330 – Management of BLM Wilderness Study Areas, until such time as Congress makes a determination regarding wilderness designations.* (*Acreages for WSAs are taken from the 1991 Montana Statewide Wilderness Report and no not reflect GIS data acreages.)				
Desired Outcomes (Goals and Objectives)				
Manage Wilderness Study Areas (WSAs) following BLM Manual 6330 – Management of BLM Wilderness Study Areas - until such time as Congress acts upon the recommendations. The BLM is statutorily (FLPMA Section 603(c)) required to manage these areas to protect their suitability for Congressional designation into the National Wilderness Preservation System unless and until Congress either designates an area as wilderness or releases it from further consideration.				
Management Common to All Alternatives				
	Wilderness Study Areas would be managed according to BLM Manual 6330 – Management of BLM Wilderness Study Areas. he BLM is statutorily (FLPMA Section 603) required to manage these areas to protect their suitability for congressional designation to the National Wilderness Preservation System unless and until Congress either designates an area as wilderness or releases it from further consideration.			
	Conduct resource and activity monitoring to identify developments and disturbances and to timely address impacts to wilderness characteristics.			
	Competitive or commercial SRPS would not be allowed within WSAs, with the exception of outfitter and guide uses and existing permittees.			
	Manage WSAs to protect, conserve, and enhance wilderness characteristics			
	Surface disturbing and disruptive activities would only be allowed if the activity does not impair the resource values and/or wilderness characteristics, except those actions specifically exempted from this standard by FLPMA (such as grandfathered uses). BLM will rehabilitate existing impacts during ESR/rehab operations of any human impacts which are destabilized by during a fire event.			
	Vegetation and fuels treatments, including prescribed fire, would be allowed, only if they enhance wilderness values.			
	Allow for habitat manipulations in WSAs on a case-by-case basis using methods which protect areas from weed infestations resulting from human influence and which specifically conform to guidance in BLM Manual 6330.			
	WSA lands would be closed to permitted commercial and personal use wood cutting, seed and plant collection.			
	WSAs would be managed as VRM Class I.			
	WSAs would be managed as closed to all types of mechanical transport, including snowmobiles. Aircraft may not land in a WSA, nor may air deliveries be made, with the exception of law enforcement activities, emergencies, aerial surveys, the installation of temporary or removal of obsolete facilities, and the gathering of wild horses. New routes (those not found in the initial Wilderness inventory) may not be established or designated for mechanical use.			
	WSAs would be closed to oil and gas leasing and development, subject to valid existing rights.			
	Mineral material sales would not be allowed in WSAs			
	WSAs would be managed as a ROW exclusion area. Existing ROWs may be renewed if still being used for their authorized purpose.			
	Conduct active restoration activities to remove unnatural features and rehabilitate unauthorized facilities, consistent with regulations. Closed vehicle routes will be rehabilitated or converted into non-mechanized trails.			

Table 2-12 Detailed Table of Alternatives: Special Designations

Wilderness Study Areas (WSAs)				
Record#	**Alternative A (No Action)**	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
	As a high priority, BLM will acquire lands within WSAs boundaries from willing sellers. BLM will rehabilitate existing impacts on any acquired lands			
	Public access to WSAs would be provided through public access easements across public lands where feasible and needed.			
	Fire activities and projects in WSAs will adhere to the direction of BLM Manual 6330. Minimum Impact Suppression Tactics (MIST) would be used for all suppression efforts. A Resource Advisor would be assigned to all fires which occur within a WSAs			
	Release of WSAs - Management Actions by Alternative			
	BLM Manages lands released from wilderness study area designation by Congress in the same manner as surrounding lands. In the event that lands released from wilderness study area designation are protected under some other special designation, those lands would retain those same protections identified in the Common to All (e.g., ACECs within a wilderness study area). WSA lands not retained under some other special designation would be released for other purposes and uses. These other special designations are not a substitute for wilderness designation but provide specific management prescriptions to protect important resources.			
	If Congress acts on designation, and Big Horn Tack-On, Burnt Timber Canyon and Pryor Mountain WSAs are not selected as wilderness, the area within the current boundaries of all WSAs would continue to be closed to motorized use including snowmobile use.			
	Portions of Big Horn Tack-On, Burnt Timber Canyon, and Pryor Mountain WSAs current WSA boundaries would be managed as an ACEC.	If Congress acts on designation, and Big Horn Tack-On, Burnt Timber Canyon, and Pryor Mountain WSAs are not selected as wilderness, the land area within these current WSA boundaries would be managed as an ACEC.	Same as B	Same as B
	By policy Lands within the WSAs are managed as VRM Class I	If Congress acts on designation and the lands within Big Horn Tack-On, Burnt Timber Canyon, Pryor Mountain, and Twin Coulee WSAs are released from further consideration; the land area within the current boundaries would be managed as VRM Class II.	Same as B	Same as B
	No similar action	If Congress acts on designation, and Twin Coulee, Big Horn Tack-On, Burnt Timber Canyon and Pryor Mountain WSAs are not selected as wilderness, the land area within these current WSA boundaries would continue to be closed and recommended for withdrawal from mineral entry.	If Congress acts on the designation and Twin Coulee WSA is released from further consideration, the area would be open for mineral entry and leasing. If Congress acts on designation, and Big Horn Tack-On, Burnt Timber Canyon and Pryor Mountain WSAs are not selected as wilderness, the land area within these current WSA boundaries would continue to be closed and recommended for withdrawal from mineral entry.	Same as C
	No current Wildland fire management decision provided	Wildfire management (natural ignitions) for resource benefit. Appropriate fire management in response to human-ignited fires.	Appropriate fire management protection strategies.	Same as B

Table 2-12 Detailed Table of Alternatives: Special Designations

Wild and Scenic Rivers				
Record#	**Alternative A (No Action)**	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
Agencies conduct eligibility and suitability recommendations for potential river segments through the planning process and submit their findings to Congress for action. Upon appropriate study and evaluation, rivers are classified as wild, scenic, or recreational, depending on the level of human impact. See Appendix R for the eligibility report for river segments in the Billings Field Office.				
Wild and Scenic Rivers – Desired Outcomes (Goals and Objectives)				
The Billings Field Office management strategy is to manage eligible river to protect and enhance the free-flowing character, water quality, and outstandingly remarkable values until suitability can be determined through the land use planning process, determine the suitability or non-suitability of eligible rivers for potential inclusion within the NWSR through the land use planning process, manage suitable rivers to protect and enhance the free-flowing character, water quality, and identified outstandingly remarkable values until congress designates the river as a component of the NWSRS or releases the river for other uses.				
Wild and Scenic Rivers – Management Common to All Alternatives				
	Management would be conducted in a manner to protect and enhance the outstandingly remarkable values, the free flowing nature, and the water quality for each river segment.			
Wild and Scenic Rivers – Management Actions by Alternative				
	Manage all of the eligible river segments (14.08 miles) (Map 162) to protect their outstandingly remarkable values, free-flowing nature, and tentative classification, as follows: • Bad Canyon • Bear Canyon • Crooked Creek (upper) • Crooked Creek (lower) • Gyp Springs • Piney Creek • Yellowstone River/Pompeys Pillar	Recommend all of the eligible river segments (14.08 miles) (map 163) as suitable for inclusion in the National Wild and Scenic River System to protect their outstandingly remarkable values, free-flowing nature, and tentative classification, as follows: • Bad Canyon • Bear Canyon • Crooked Creek (upper) • Crooked Creek (lower) • Gyp Springs • Piney Creek • Yellowstone River/Pompeys Pillar	Manage none of the eligible river segments (14.08 miles) (Map 164) to protect their outstandingly remarkable values, free-flowing nature, and tentative classification, as follows: • Bad Canyon • Bear Canyon • Crooked Creek (upper) • Crooked Creek (lower) • Gyp Springs • Piney Creek • Yellowstone River/Pompeys Pillar None of the eligible river segments would be recommended as suitable for inclusion in the National Wild and Scenic River system.	Manage the following river segments (3.15 miles) (Map 165) as suitable to protect their outstandingly remarkable values, free-flowing nature, and classification. The following segments would be recommended as suitable for inclusion in the National Wild and Scenic River System: • Crooked Creek (above fish barrier – 1.59 miles); tentative management class would be Wild. • Crooked Creek (below fish barrier – 1.56 miles); tentative management class would be Scenic.
	No current management decision provided	WSR-suitable segments would be closed to oil and gas leasing, exploration and development (NL).	NSO for oil and gas leasing, exploration and development within ¼ mile of WSR- eligible (NSO).	NSO for oil and gas leasing, exploration and development within ½ mile of WSR-eligible and suitable segments (NSO).
	No current management decision provided.	WSR-suitable and eligible segments would be exclusion areas for wind energy.		

Table 2-12 Detailed Table of Alternatives: Special Designations

Pryor Mountain Wild Horse Range					
Record#	**Management Activity**	**Alternative A (No Action)**	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
The Pryor Mountain Wild Horse Range (PMWHR) is an administrative designation dictating a Herd Management Area (HMA) is to be managed principally, but not necessarily exclusively, for the benefit of wild horses within the authorities of the Wild Free-Roaming Horse and Burro Act of 1971, as amended.					
Pryor Mountain Wild Horse Range – Desired Outcomes (Goals and Objectives)					
Management activities for other resources and programs within the PMWHR would be designed in a manner to minimize impacts to wild horses and their habitat. During the summer and fall seasons the PMWHR attracts many members of the public who enjoy viewing the wild horses and other recreational opportunities (e.g. camping, hiking, ATV riding, hunting, naturalizing, etc.). Management of the administrative designation area would be to enhance wild horse protection and habitat from congested recreational use, providing for public health, and safety of public land users.					
Pryor Mountain Wild Horse Range – Management Actions by Alternative					
	Wild horse protection: public feeding	Allowed but discouraged	Not allowed	Allowed as long as no moving or chasing of horses	Only allowed for management purposes
	Wild horse protection: Harassment	Not allowed, but harassment of wild horses not locally defined	Interrupting their behavior or disruption of their daily activities, outside of management activities, such as moving animals to take photos or filming, feeding or touching or attempting to do these things would not be allowed.	Same as A	Same as B
	Wild Horse Protection: Seasonal Road Closures	Motorized travel limited to designated routes. There would be no seasonal road closure during foaling season or for habitat protection.	Motorized routes within the PMWHR would be designated according to the Pryor TMA. Burnt Timber Road from the East Pryor Mine (the abandoned uranium mine) to the USFS boundary and Sykes Ridge Road from the Sykes horse trap to the USFS boundary would be closed to provide protection during the primary foaling season and protecting habitat when roads are not ready for travel due to moisture content in soils (March 1-June 30).	Motorized routes within the PMWHR would be designated according to the Pryor TMA. There would be no seasonal road closure during foaling season or for habitat protection	Motorized routes within the PMWHR would be designated according to the Pryor TMA. Burnt Timber Road from the East Pryor Mine (the abandoned uranium mine) to the USFS boundary and Sykes Ridge Road from the horse trap to USFS boundary would be closed to wheeled vehicles and motorized vehicles to protect wild horse foaling and their habitat (April 15 to June 15) providing consistency with the USFS seasonal closures.
	Wild Horse Protection: Fencing	Exclusion fences for study, riparian protection or rehabilitation would be allowed.	No exclusion fences would be allowed within the HMA.	Same as A	Exclusion fences for study, range improvements, riparian protection or rehabilitation would be allowed through site-specific analysis.
	Wild Horse Protection: Wild horse health	No current management decision provided	Domestic horse use would not be allowed except for special recreation permits or livestock trailing.	Domestic horse use would be allowed during overnight camping (16 day limit). Recreational domestic horse use would require proof of a free-use	Domestic horse use would be limited to day use only. Recreational domestic horse use would require a free-use permit to ensure animals have health

Table 2-12 Detailed Table of Alternatives: Special Designations

Pryor Mountain Wild Horse Range					
Record#	**Management Activity**	**Alternative A (No Action)**	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
				permit to ensure animals have health certifications to protect wild horses from disease transmission.	certifications to protect wild horses from disease transmission.
	Wild Horse Habitat Enhancement	Considered on a site specific basis.	No vegetation treatments would be conducted in wild horse habitat; only allow natural processes to occur.	Maximize the amount of acres for vegetation treatment and water developments that would increase forage availability for wild horses, to maximize and/or increase wild horse numbers within other multiple uses and restrictions.	Same as C
	Public Health and Safety: Target shooting	No current management decision provided	Not allowed	Allowed	Not allowed on T8S R28E Memorial day weekend through Labor day weekend. Allowed in remainder of PMWHR
	Public Health and Safety: Speed limits for mechanized and motorized vehicles	No current management decision provided	Not to exceed 15 miles per hour	No limit	Not to exceed 15 miles per hour within T8S R28E
	Livestock grazing	The PMWHR would be unavailable for livestock grazing, except for trailing through Bad Pass.	The PMWHR would be unavailable for livestock grazing.	Bad Pass Trail would be managed as a livestock grazing allotment for trailing use only. The remainder of the PMWHR would be closed to livestock grazing.	Same as C
	Special Recreation Permits and Letters of Authorization	Current levels of permitted use with approximately 1,200 visitor use days in the PMWHR would be managed per application, with no limit on commercial permits.	No commercial special recreation permits (SRPs) would be authorized in the PMWHR. Non-commercial, organized group events would be considered per application dependent on site specific analysis and monitoring.	An Outfitter Permit Area (OPA) would be established in the PMWHR in order to protect wild horses, resources within the range, and minimize conflicts based on site specific analysis and monitoring. Visitor use days for both commercial and non-commercial permits would be analyzed through site-specific analysis and monitoring and would also consider other commercial permitted uses.	SRPs would initially be limited to existing SRPs. Additional (new) SRPs would be permitted only when determined not to result in congestion, wild horse displacement or cause an adverse experience for members of the public viewing wild horses outside of an SRP experience through monitoring of existing SRPs and visitation.
	Land use authorization	Exclusion area	Exclusion area, except valid existing rights.	Avoidance (1)	

Table 2-12 Detailed Table of Alternatives: Special Designations

Pryor Mountain Wild Horse Range					
Record#	**Management Activity**	**Alternative A (No Action)**	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
	Land tenure	No current management decision provided	Category I retention land: no land disposal would occur		
	Off-highway vehicle use (including snowmobiles (OSVs))	Limited to designated routes (refer to Table 2.11 Trails and Travel Management – Management Actions by Alternative. Snowmobiles (OSVs)	Limited to designated routes (refer to Table 2.11 Trails and Travel Management – Management Actions by Alternative. Snowmobiles (OSVs)	Limited to designated routes (refer to Table 2.11 Trails and Travel Management – Management Actions by Alternative. Snowmobiles (OSVs)	Limited to designated routes (refer to Table 2.11 Trails and Travel Management – Management Actions by Alternative. Snowmobiles (OSVs)
	BLM road maintenance	No current management decision provided	Limited (4)		
	Plant collecting	No current management decision provided	Allowed for scientific use or range/forestry studies. No collection of special status species without a permit.	Allowed for personal use as well as scientific use and range/forestry studies. No collection of special status species without a permit.	Allowed (3)
	Fluid Mineral leasing	Closed to oil and gas leasing and development (NL)	Closed to oil and gas leasing and development (NL).	Closed to oil and gas leasing and development (NL).	Closed to oil and gas leasing and development (NL).
	Locatable minerals	Closed and recommended for withdrawal	Close and recommend withdrawal from mineral entry, subject to valid existing rights.	Open	Same as B
	Solid leasable minerals	No current management decision provided	Closed, subject to valid existing rights.	Open (5)	Same as B
	Mineral materials sales and permits	Not allowed	Not allowed	Allowed (9)	
	Renewable energy	No current management decision provided	Closed (6)		
	Geophysical exploration for oil and gas	Not allowed			
	Use of explosives for geophysical exploration for oil and gas	No current management decision provided	Not allowed		
	Fire suppression	Conditional fire suppression	Wildfire management (natural ignitions) for resource benefit. Appropriate fire management in response to human-ignited fires.	Appropriate fire management protection strategies.	Same as B
	Fuels management	No current management decision provided	Allowed (8)		
	Fuel wood cutting/wood product sales	Not allowed	Not allowed	Casual collection of dead and down allowed for personal use during recreation activities.	
	Range improvements	No current management decision provided	Allowed (5)		
	Noxious/Invasive weed treatments	No current management decision provided	Allowed (5) (10)		

Table 2-12 Detailed Table of Alternatives: Special Designations

Pryor Mountain Wild Horse Range					
Record#	**Management Activity**	**Alternative A (No Action)**	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
	Animal trapping/traplines	No current management decision provided	Not allowed	Allowed	
	Non-commercial collection of common invertebrate and plant fossils	Allowed			
	Other permitted activities	No current management decision provided	No commercial film permits allowed	Allowed (5)	Commercial film permits would be limited to existing permits. Additional (new) commercial film permits would be permitted only when determined not to result in congestion, wild horse displacement or cause an adverse experience for members of the public viewing wild horses through monitoring of existing commercial film permits and visitation. (5)
	Transportation	No current management decision provided	No net increase in road density	Routes for commercial or other BLM authorized activities may be considered if the route meets public access needs.	Same as C
	Other management activities	No current management decision provided	Other management activities and/or uses would be considered in subsequent site-specific analysis, and would consider the values for which the PMWHR is designated (5).		

1 Avoidance area; granting Rights-of-Way (surface, subsurface, aerial) within the area should be avoided, but rights-of-way may be granted if there is minimal or no conflict with identified resource values and impacts to PMWHR resource values can be fully mitigated.
2 Off-highway vehicles and bicycles, use would be limited to designated routes only.
3 Commercial collection of plant materials, including common species, authorized by permit only. Casual use allowed.
4 Road maintenance will be limited to the designated roadway and only that necessary to ensure public safety and serviceability of the road.
5 The activity is allowed in the area subject to specific environmental analysis upon individual permit applications and only if there is minimal or no conflict with identified resources values and impacts to PMWHR resource values can be fully mitigated. Additional NEPA analysis required. Cultural inventories will be required for surface disturbing activities.
6 Closed to renewable energy facilities and renewable energy development
7 Livestock grazing will be controlled through terms and conditions on the grazing permit.
8 Evaluate fire potential and remove fuels where needed to protect and/or enhance resource values. Must meet objectives of PMWHR HMAP.
9 Open to mineral material activities on a case-by-case basis and subject to controlled surface use, seasonal timing restrictions, restricted or no uses in avoidance areas (e.g. riparian areas, areas with special wildlife or plant features, areas of high cultural significance, and sensitive viewsheds), and additional NEPA analysis required.
10 Treatments may include any combination of herbicide application, mechanical treatments, burning, grazing, and the use of insects or pathogens.
11 If geocache location/activity does not conflict with the resource values of the ACEC, this activity could be considered. BLM resource specialist (Wild Horse State Lead) and BLM ORP must agree activity does not impact PMWHR values.

Table 2-12 Detailed Table of Alternatives: Special Designations

National Historic Trails				
Record#	**Alternative A (No Action)**	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
National Historic Trails are extended trails that closely follow a historic trail or route of travel of national significance. Congressional designation identifies and protects historic routes, historic remnants, and artifacts for public use and enjoyment. The Billings Field Office manages portions of two designated National Historic Trails, the Lewis and Clark National Historic Trail and the Nez Perce National Historic Trail. Pompeys Pillar National Monument is a Lewis and Clark National Historic Trail-related site.				
National Historic Trails – Desired Outcomes (Goals and Objectives)				
The BLM's intent is to protect National Historic Trails for long-term heritage and educational values and to enhance the public experiences of these unique trails through interpretation and support of heritage tourism while maintaining compatible recreational use with historic trail values. The BLM's intent is to: 1) safeguard the nature and purposes; and conserve, protect, and restore the National Trail resources, qualities, values, and associated settings and the primary use or uses; 2) Reduce the potential for uses that substantially interfere with the nature and purposes of the National Trails; and 3) Avoid activities that are incompatible with the purposes for which the National Trail was established.				
National Historic Trails – Management Common to All Alternatives				
	Implement the Interagency National Historic Trail Plans for the Lewis and Clark and Nez Perce National Historic Trails. Participate in the Interagency planning update efforts as needed.			
	Identify and acquire from willing sellers easements and lands within the NHT corridors. See Realty, Cadastral Survey, and Lands Section for additional references			
	Retain public land within federal ownership			
	The Lewis and Clark NHT would be withdrawn from mineral actions. Once the actual Nez Perce NHT course is determined it would also be withdrawn			
	Minimize changes that would result in degradation of resource values or opportunities for sharing the experience of the original users of the NHTs.			
	Identify the Nez Perce NHT Corridor and establish management prescriptions through a land use plan amendment once the corridor has been determined			
	The Lewis and Clark NHT management corridor is identical to the Yellowstone River corridor.			
	Support partnerships and cooperative agreements with other agencies, local and state authorities, and NGOs to implement stewardship and educational goals for the NHTs. Support the Montana site stewardship program for monitoring and evaluation of significant trail resources.			
	Manage the auto tours routes associated with the NHTs to include signage and appropriate facilities as set out in the NHT's Comprehensive Management Plan.			
	Implement the Interagency National Historic Trail Plans and all revisions including sub plans such as interpretive plans.			
	Participate and follow the NHT's Land Acquisition Management Plans.			
Management Common to Action Alternatives				
	No current management decision provided	The setting for the Lewis and Clark and Nez Perce NHT segments would be maintained where setting is an aspect of integrity by utilizing viewshed management tools.		
	No current management decision provided	The management corridor for the Lewis and Clark and Nez Perce NHT segments is ½ mile either side of centerline		
	No current management decision provided	Management actions would apply to the NHT management corridor		
	No current management decision provided	An inventory and evaluation would be maintained for the trail segments and include this data in a trails management plan.		
	No current management decision provided.	Manage NHTs as ROW avoidance areas.		
	No current management decision provided	The NHTs would be managed as exclusion areas for Renewable Energy (wind and solar) ROW actions.		
Management Actions by Alternative				
	No current management decision provided	Surface disturbing activities would not be allowed within ½ mile of the L&C or NP NHTs	Surface disturbing activities would be subject to mitigation guidelines for surface disturbing	Surface disturbing activities would be subject to mitigation guidelines.

Table 2-12 Detailed Table of Alternatives: Special Designations

National Historic Trails				
Record#	**Alternative A (No Action)**	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
		management corridor.	activities.	
	No current management decision provided	No surface occupancy for oil and gas development and exploration within ½ mile of the L&C and NP NHTs management corridor (NSO).	Oil and gas development and exploration would be allowed within ½ mile of the L&C and NP NHTs management corridor with stipulations (CSU).	Same as B
	Manage NHTs as Visual Resource Inventory (VRI) Class III.	Manage National Historic Trails as Visual Resource Inventory (VRI) Class III. Manage NHT trails as Visual Resource Management (VRM) Class II once specific trail course has been identified	Manage National Historic Trails as Visual Resource Inventory (VRI) Class III. Manage NHT trails as Visual Resource Management (VRM) Class III once specific trail course has been identified	Manage National Historic Trails as Visual Resource Inventory (VRI) Class III. Manage NHT trails as Visual Resource Management (VRM) Class II once specific trail course has been identified

Table 2.13 Detailed Table of Alternatives: Social and Economic Conditions

Social and Economic Conditions and Environmental Justice				
Record #	**Alternative A (No Action)**	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
The goals and objectives for social and economic conditions and environmental justice would provide for a diverse array of opportunities that result in social and economic benefits for interested groups and individuals such as local residents, recreationists, permittees, etc. The use of lands and minerals managed by the BLM provide opportunities to contribute to local, state, and national economic development and growth. Opportunities to use and develop these lands and minerals, as well as the costs and likelihood of these lands and minerals being used and developed given other resource management objectives and constraints, vary among the alternatives described and analyzed. The positive and negative social effects to the various groups and individuals are identified in the effects analysis. During social effects analysis, identity disproportionate negative effects to minority or low income populations per Executive Order 12898. If negative disproportionate effects are identified, remediate these effects to the extent possible by identifying mitigation to be added to the alternatives where the effects are found.				
Desired Outcomes (Goals and Objectives)				
• Provide opportunities for economic sustainability at the national, regional, and local level. • Provide for a diverse array of opportunities that result in social benefits for local residents, businesses, recreationists, visitors, interested citizens and future generations, while minimizing the negative social effects. • Identify and remediate, to the extent possible, disproportionate negative effects to minority or low income populations per EO 12898. • BLM would continue to notify and consult with appropriate American Indian Tribes and BLM authorized actions. Consultation and coordination would be conducted on a government-to-government basis with federally recognized tribes with cultural affinity to the decision area. Management of public lands would accommodate the exercise of rights provided by treaties or law that are applicable to the planning area. BLM would coordinate with appropriate entities within tribal government on issues under its jurisdiction to determine appropriate protocols that provide for treaty uses of public lands.				

2.7 Summary of Environmental Consequences by Alternative

Table 2.14 (Summary Comparison of Impacts by Alternative) summarizes potential meaningful impacts anticipated from activities within the Billings Field Office decision area by alternative. Where applicable, potential impacts anticipated from the BLM actions are quantified. Table 2.14 summarizes the difference of impacts to alternatives in acres and actions. For example, a greater acreage implies a greater impact (either beneficial or adverse). A more detailed comparison of impacts between alternatives is summarized in the conclusion for each resource section in Chapter 4.

Table 2.15 (Summary Comparison of Impacts) summarizes potential meaningful impacts anticipated to economics from activities within the Billings Field Office decision area by alternative.

The environmental consequences of alternatives are not anticipated to exceed known legal thresholds or standards over the life of the plan. Standard practices, best management practices, and guidelines for surface disturbing/disruptive activities are built into each alternative to avoid and minimize potential impacts. Mitigation of residual impacts will be considered during subsequent implementation decision plans and any associated environmental analyses conducted at that time. Reclamation will be applied to surface disturbance under all alternatives to reduce the amount of long-term impact.

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
Air			
The largest impacts to air resources would be caused by emissions from fire management, coal mining, and oil and gas activity. Additional activities that could affect emissions include the following resource programs: Soil Management, Vegetation Management, Forestry and Woodland Products, Realty, Cadastral Survey, and Lands, Livestock Grazing, Recreation and Visitor Services, Trails and Travel Management. Other programs were determined to have small emissions with little or no impact on air resources.			
Alternative A emissions are summarized in Table 4-14 and detailed emission calculations are provided in Appendix Y. Fire management activities would cause the greatest CO, SO_2, $PM_{2.5}$, and HAP emissions, while oil and gas development and production would account for the largest NO_x, and VOC emissions. Recreational visits would cause the greatest PM_{10} emissions.	Alternative B emissions are summarized in Table 4-15. The largest Alternative B emissions of CO, NO_x, $PM_{2.5}$, SO_2, VOCs, and HAPs would result from fire management activities. Recreational activities are expected to cause the greatest PM_{10} emissions.	Alternative C emissions are summarized in Table 4-16. Total Alternative C emissions are nearly identical to those for Alternative B, but are greater than those for Alternative A.	Alternative D emissions are nearly identical to those for Alternatives B and C, but are greater than those for Alternative A. Alternative D emissions are summarized in Table 4-17.
Climate			
In terms of quantifiable changes in estimated GHG emissions, Alternative A would have slightly lower climate impacts than the other Alternatives. However, the quantifiable differences between the Alternatives' GHG emissions could have less impact than net GHG differences that may occur due to carbon sequestration in vegetation and soils.	Based on estimated GHG emissions, Alternative B would lead to an approximate 1% increase in emissions over Alternative A. Alternative B closes the most travel routes and imposes the greatest limits on some recreational and commercial uses (oil and gas, coal, and forest products) of public lands. Travel route and recreational closures and constraints on oil and gas surface occupancy would do little to reduce emitted GHGs since use would shift to open routes and surface occupancy areas and emissions would remain relatively unchanged. Alternative B would not allow any new federal coal leasing actions. However, if federal coal has already been leased, mining would continue to occur. Therefore, quantifiable GHG emissions are conservatively estimated to include continued coal mining. Increased prescribed fire would lead to a temporary increase in GHG emissions during these activities followed by a long-term decrease in net GHG emissions (Wiedinmyer 2010). As a result, forested and	Alternative C offers the most open travel routes, recreational opportunities, and commercial use of resources, although increases in quantifiable GHG emissions over Alternatives B and D are negligible. More surface disturbance is allowed in Alternative C than in Alternative B, which could potentially allow more vegetation treatments designed to improve long-term vegetation health and reduce wildfire potential. Removing underbrush and small trees, which store less carbon, would allow faster growth of larger trees resulting in more long-term carbon sequestration. The increase in vegetation treatments would be driven by budget constraints, keeping treatments small and the increase in carbon uptake would be minor.	Based on estimated GHG emissions, climate impacts in Alternative D would be greater than those for Alternative A and similar to those for the other Alternatives. Alternative D provides balance between climate change emissions, recreation, commercial demand, healthy vegetation, and carbon sequestration.

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
	grass/shrub lands would improve as carbon sinks and help reduce the net GHG emissions within the planning area Mandatory monitoring and adherence to range standards, stream zone law, and use of BMPs allows adaptive management strategies that would successfully address impacts from climate change. The limitation on surface disturbance on slopes <30%, or in areas such as crucial winter range, would limit vegetation treatments designed to maintain and/or enhance vegetation and reduce the risk of wildfire. Hence the likelihood of large fires, releasing large amounts of carbon would increase and the net amount of carbon stored would decrease sharply and slowly return over 25–50 years.		
Soil			
Impacts to soils resources would likely result from actions proposed under the following resource programs: Soil Resources, Water Resources, Vegetative Communities, Fish, Wildlife and Special Status Species, Wild Horses, Visual Resources, Fire Ecology and Management, Lands with wilderness characteristics, Energy and Minerals, Forest and Woodland Products, Realty, Cadastral Survey, and Lands, Livestock Management, Recreation and Visitor Services, Trails and Travel Management, Renewable Energy, Special Designations: Pompeys Pillar, Areas of Critical Environmental Concern, Wilderness Study Areas. Other programs were determined to have little or no impact to soils resources.			
While local impacts to soils would occur under all alternatives (primarily compaction and soil loss/erosion), overall improvements in soil conditions are expected to occur as we move towards the achievement of the land health standards.			
Alternatives A and D also place restrictions to surface use authorizations. Restrictions are typically less than B but more than C, generally with more restrictions on Alternative D than A.	Alternative B would place more restrictions to surface use authorizations, therefore protecting the most soil resources compared to all other Alternatives.	Alternative C would have the fewest restrictions to surface use authorizations, therefore protecting the least soil resources of all Alternatives.	Alternatives A and D also place restrictions to surface use authorizations. Restrictions are typically less than B but more than C, generally with more restrictions on Alternative D than A.
Water			
The management actions associated with the resources listed below may have impacts on riparian resources: Soil, Water, Vegetation, Wildlife and Special Status Species, Fisheries and Special Status Species, Wild Horses, Visual Resources, Fire Ecology and Management, Lands with wilderness characteristics, Energy and Mineral Resources, Forestry and Woodland Products, Livestock Grazing, Recreation and Visitor Services, Trails and Travel Management, Renewable Energy, Special Designations. Those not listed are believed to have negligible or unapparent impacts.			
Under all Alternatives, water resources would benefit from management in accordance with Rangeland Health Standards and applicable state and federal water-quality standards. Site-specific mitigation and BMPs for surface disturbing activities would further reduce impacts on water resources. Adherence to these standards would reduce many of the adverse impacts from future actions. In addition, existing and proposed stipulations designed to protect water resources would be beneficial by minimizing sediment and contaminant delivery potential by preventing or limiting surface-disturbing activities in proximity to hydrologic features. Stipulations and limitations for other resources that prevent or limit surface disturbing activities would provide additional protection for water resources and thereby could be beneficial (e.g., fisheries, riparian). Furthermore, timing limitations could benefit water resources by limiting or preventing surface-disturbing activities during times of			

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
the year when saturated soil conditions exist or when precipitation and runoff are frequent (e.g., winter, spring). While local inputs of non-point source pollutants would occur (under all alternatives), overall improvements in water quality are expected to occur as these sources are reduced. These reductions would occur due to the proposed RMP restrictions, management actions that improve watershed function throughout the Field Office, and the implementation of state approved TMDLs. However, with the scattered distribution and sparse ownership of BLM administered lands in the planning area, stipulations and management actions to minimize impacts to water resources may not prevent impaired water quality on BLM waterways, as is the current situation in some areas.			
Vegetation: Forests and Woodlands and Forestry and Woodland Products			
Impacts to forest and woodlands/forestry and woodland products would likely result from actions proposed under the following resources and resource use programs: Air, Soil, Water, Vegetation, Wildlife Habitat and Special Status Species, Fisheries Habitat and Special Status Species, Cultural Resources, Paleontological Resources, Visual Resources, Fire Ecology and Management, Lands with wilderness characteristics, Realty, Cadastral Survey, and Lands, Livestock Grazing, Recreation and Visitor Services, Trails and Travel Management, Transportation and Facilities, and Special Designations. Other programs were determined to have little or no impact on Vegetative Communities – Forests and Woodlands/Forestry and Woodland Products.			
Alternative A would provide an incidental low volume of commercial forest products and contribute to a decline in forest health, productivity, and resiliency. Under this Alternative, forest management activities requiring the use of wheeled or tracked logging equipment would be restricted to sustained slopes of 35% or less, allowing forest treatments on 68% of forested acres not restricted by WSAs or ACECs; thereby limiting or prohibiting some forest treatment activities. The impacts of these actions would increase total costs and alter management activities; including the size, scale, type, location, and timing (e.g., temporary skid and haul road layout, skidding distances, cutting unit design, harvest system requirements, transportation systems, season of operations, mitigation measures, and silvicultural prescriptions) of treatments designed to improve forest health. The availability of forest and woodland products, especially sawtimber, biomass, and post and pole material would be reduced due to the high cost of operations in areas where tracked and wheeled operations are not allowed. As a result, forests and woodlands would continue to depart from historic conditions, which would contribute to a decline in forest health, species composition changes,	Alternative B would also provide an incidental-low volume of commercial forest products and contribute to a decline in forest health, productivity, and resiliency. Impacts would be similar to Alternative A; however, forest management activities requiring the use of wheeled or tracked logging equipment would be limited to sustained slopes of 30% or less. As a result, mechanical treatment and harvest would only be allowed on approximately 60% of coniferous forest acres not restricted by WSAs or ACECs. This would result in higher cost treatment acres and would further reduce the level of forest management treatments and timber harvest that would occur. Consequently, forest and woodland areas would be at risk for extensive resource damage or loss due to landscape-level insect outbreaks or severe or high intensity wildfires.	Alternative C would provide a moderate volume of commercial forest products and contribute to long-term forest health improvement. Under this Alternative, forest management activities requiring the use of wheeled or tracked logging equipment would be restricted to sustained slopes of 45% or less; thereby allowing forest treatment activities on 79% of forested acres not restricted by WSAs and ACECs. Implementation of silvicultural treatments in forests and woodlands would reduce the density of overstocked stands, which would subsequently reduce competitive stress for water, sunlight, and nutrients, and reduce the susceptibility of forests and woodlands to insect attacks, disease, and stand-replacing fire. Lower stand density levels and increased sunlight would promote tree growth and ponderosa pine and limber pine regeneration. Alternative C would contribute to the overall vigor, productivity, and resiliency of forest and woodland vegetation in the planning area and the restoration historic conditions.	Alternative D would provide a low-moderate volume of commercial forest products and contribute to long-term improvements in forest health. Under this alternative, slope restrictions would be reduced to 25%; however, actions would be allowed if an approved mitigation and reclamation plan (e.g., Water Quality Best Management Practices for Montana Forests) is developed prior to activities taking place. As a result, the number of forested acres that would receive silvicultural treatments designed to reduce the density of overstocked stands would increase; thereby reducing competitive stress for growing space (e.g., water, sunlight, nutrients, etc.) and the area's susceptibility to insect attacks, disease, and stand-replacing wildfire. Alternative D would also contribute to the overall vigor, productivity, and resiliency of forest and woodland vegetation in the planning area and the restoration of historic conditions.

Table 2.14 Summary of Environmental Consequences by Alternative

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
increased stand density levels and fuel loadings, and increased susceptibility of these areas to insect and disease epidemics. Competition for resources (e.g., sunlight, water, and nutrients) would increase stress to forest and woodland vegetation across the entire landscape, which would result in declining vigor, productivity, and resiliency to disturbances (e.g., wildfire, insects, and disease).			
Vegetation: Rangelands			
Management actions for the following resource programs would result in specific minor to moderate adverse impacts, and substantial beneficial impacts to vegetation resources: Soil, Water, Vegetation, Wildlife and Fisheries Habitat and Special Status Species, Fire Ecology and Management, Energy and Mineral Development, Forestry and Woodland Products, Realty, Cadastral Survey, and Lands, Livestock Grazing, Recreation and Visitor Services, Trails and Travel Management, and Special Designations. Other programs were determined to have little or no impact on rangeland vegetation communities.			
Alternative A is the current acres planned for the treatment of sagebrush and crested wheatgrass stand within the planning area. Impacts to Greater Sage-Grouse habitat are not considered under this alternative. Instead, impacts to livestock forage are emphasized.	Alternative B would not allow any use of prescribed in sagebrush habitat, and require full suppression of any wildfires in this community type. Impacts from this alternative would limit the number and kind of tools available for improving sagebrush habitat. Under this alternative, a total of **fifteen** percent of crested wheatgrass acres would be converted to native sagebrush/ grassland over the life of the plan. This is the highest number of treatment acres of all of the alternatives.	Alternative C considers the use of prescribed fire and wildland fire as a treatment options in sagebrush habitat if the treatment would achieve a diversity of age classes in sagebrush communities *"… if the treatment would achieve a diversity of age classes in sagebrush communities"*. Under this alternative, a total of **five** percent of crested wheatgrass acres would be converted to native sagebrush/ grassland over the life of the plan. This is the lowest of number of acres under Alternatives B, C and D but higher that Alternative A.	Alternative D also considers the use of prescribed fire and wildland fire as a treatment options in sagebrush habitat if the treatment would achieve a diversity of age classes in sagebrush communities *"… if the treatment would achieve a diversity of age classes in sagebrush communities"*. Under this alternative, a total of **eight** percent of crested wheatgrass acres would be converted to native sagebrush/ grassland over the life of the plan. This number of acres is lower that Alternatives A and C but higher that Alternative B.
	The impacts of Alternatives B, C and D would increase total costs and alter management activities including the size, scale, type, location, and timing of treatments designed to improve rangeland health and protect and improve sagebrush habitat.		
Preferred treatment areas are not considered under Alternative A. Priority treatment areas are also not considered under Alternative A.	Preferred treatment areas would be areas that are not currently being used in a grazing system to provide early spring grazing and reduce grazing pressure from other areas within a grazing allotment, and is consistent throughout Alternatives B, C and D. Priority treatment areas would be in Greater Sage-Grouse PHMAs, RAs and GHMAs and is also consistent throughout Alternatives B, C and D.		
Vegetation: Riparian and Wetlands			
The management actions associated with the resources listed below may have impacts on riparian resources: Soil, Water, Vegetation, Wildlife Habitat and Special Status Species, Fisheries Habitat and Special Status Species, Wild Horses, Visual Resources, Fire Ecology and Management Lands with wilderness characteristics, Energy and Mineral Resources, Forestry and Woodland Products, Realty, Cadastral Survey, and Lands, Livestock Grazing, Recreation and Visitor Services, Trails and Travel Management, and Special Designations. Those not listed have negligible or unapparent impacts.			

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
Under all Alternatives, riparian resources would benefit from management in accordance with Rangeland Health Standards. Site-specific mitigation and BMPs for surface disturbing activities would further reduce impacts on riparian resources. Adherence to these standards would reduce many of the adverse impacts from future actions. In addition, existing and proposed stipulations designed to protect riparian resources would be beneficial by minimizing sediment and contaminant delivery potential by preventing or limiting surface-disturbing activities in proximity to hydrologic features. Stipulations and limitations for other resources that prevent or limit surface disturbing activities would provide additional protection for riparian resources and thereby could be beneficial (e.g., fisheries, water, wildlife, lands w/ wilderness characteristics, etc.). Furthermore, timing limitations could benefit riparian resources by limiting or preventing surface-disturbing activities during times of the year when saturated soil conditions exist or when precipitation and runoff are frequent (e.g., winter, spring). While local impacts to riparian resources would occur (primarily bank disturbance and altered vegetation), under all alternatives, overall improvements are expected to occur as we move towards the achievement of the land health standards. However, with the scattered distribution and sparse ownership of BLM administered lands in the planning area, stipulations and management actions to minimize impacts to riparian resources may not prevent impaired water quality on BLM administered lands, as is the current situation in some areas.			
Alternative A represents how impacts have affected riparian resources under current management. Currently, the primary sources of riparian impairment are livestock grazing and invasive species infestations. At this time, approximately 40% of riparian areas are in Properly Functioning Condition (PFC), while 46% are rated as Functioning at Risk (FAR) and 6% Non-Functioning (NF). 8% are unknown/unsurveyed. Current management requires riparian areas to be meeting PFC, or if FAR, moving toward PFC. Rangeland and riparian specialists would adjust grazing practices to attain these ratings where possible (if livestock grazing is identified as the causal factor or impairment). Other resource uses have negligible impacts on riparian resources under this alternative.	Under Alternative B management, riparian resources would have the most protection and should attain the highest state of functionality compared to any other alternative. Management actions for all resources and resource uses have the most restrictions to surface disturbing activities and potential invasive species infestation under this alternative. Increased buffer distances for oil and gas development, other surface disturbing activities and livestock exclusion from fish bearing streams are examples of restrictions made to conserve or improve riparian resources. Establishing 78 miles of "priority riparian habitat" will ensure increased monitoring and management action to attain PFC conditions on perennial streams.	Impacts to riparian resources would be similar to impacts from Alternative A. There are still appropriate measures taken to protect riparian areas from erosion, sedimentation and invasive species infestation, however, being less restrictive that alternative B and D actions, there is a higher potential for degradation. Livestock grazing and weed infestation would still be the primary source of impairment for riparian areas and would be managed using the standards and guidelines for livestock grazing. These methods, as described under alternative A impacts, require managers to change grazing practices to move riparian status towards PFC or maintain PFC when already meeting.	Compared to Alternative A, Alternative D provides a higher level of protection to riparian resources from impacts associated with surface disturbance by applying a CSU that ensures activities will be designed to promote riparian health and water quality.
Vegetation: Invasive Species and Noxious Weeds			
Impacts to noxious and invasive species would likely result from actions proposed under the following resource and resource uses programs: Soil, Water, Vegetation, Wildlife Habitat, Fisheries Habitat and Special Status Species, Wild Horses, Cultural Resources, Visual Resources, Fire Ecology and Management, Lands with wilderness characteristics, Energy and Mineral Resources, Forestry and Woodland Products, Realty, Cadastral Survey, and Lands, Livestock Grazing, Recreation, Visitor Services, and Trails, Travel Management, Renewable Energy, and Special Designations. Other programs were determined to have little or no impact on noxious and invasive species.			
Across all Alternatives, the BLM would continue to monitor and treat new and existing populations of noxious and invasive weeds and would continue to work with partners from local, state, and federal agencies to control weeds on a broad scale. The BiFO would continue implementation of integrated weed management while adhering to federal, state, and county laws and regulations			
The BLM would continue to monitor and treat new and existing populations of noxious and invasive weeds	The cumulative surface disturbance acreage across the BiFO is anticipated to be the least under Alternative B. Because weed invasion and spread is directly related to the amount of	The cumulative surface disturbance acreage across the BiFO is anticipated to be the most under Alternative C. Because weed invasion and spread is directly related to the amount of	Alternative D would have slightly more surface disturbance than under Alternative B but substantially less than under Alternative C.

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
	surface disturbance, Alternative B would have the least risk of weed spread.	surface disturbance, Alternative C would have the most risk of weed spread.	
Vegetation: Special Status Plants			
Impacts to special status plants would likely result from actions proposed under the following resource programs: Soils, Vegetative Communities, Wildlife and Fisheries Habitat and Special Status Species, Wild Horses and Burro Management, Fire Ecology and Management, Cave and Karst Resources, Energy and Minerals Management, Livestock Grazing Management, Recreation and Visitor Services Management, Trails and Travel Management, Forestry and Woodland Products, Realty, Cadastral Survey, and Lands, Renewable Energy, and Special Designations. Other programs were determined to have little or no impact on special status plants.			
The principle adverse impacts to BLM special status plant species result from management that increases surface disturbance and habitat fragmentation; the principle beneficial impacts include management that increases restrictions in known or potential BLM special status plant species habitat. Based on the acreage of surface disturbance, the potential for habitat fragmentation, and proactive management actions and special designations to protect BLM special status plant species, Alternatives with the least to most potential adverse impacts to BLM special status plant species are Alternatives B, D, A, and C. Alternative B would result in the least surface disturbance and habitat fragmentation, followed by Alternatives A, D, and C respectively. Alternative D contains management actions to minimize habitat fragmentation. Alternative B includes the most provisions to protect sensitive soils and riparian areas for the benefit of BLM special status plants. Restrictions on motorized vehicle use, especially restricting motorized cross-country travel, would reduce adverse impacts to BLM special status plant species in all Alternatives.			
Wildlife Habitat and Special Status Species			
Impacts to wildlife and special status species would likely result from actions proposed under the following resource programs: Soil Resources, Water Resources, Vegetative Communities, Wildlife Habitat and Special Status Species (Wildlife), Fisheries Including Habitat and Special Status Species (Fisheries), Wild Horses, Visual Resources, Fire Ecology and Management, Lands with wilderness characteristics, Cave and Karst Resources, Energy and Mineral Resources, Livestock Grazing, Recreation and Visitor Services, Trails and Travel Management, Forest and Wood Products, Realty, Cadastral Survey, and Lands, Transportation/Facilities Access, Renewable Energy, and Special Designations. Other programs were determined to have little or no impact on wildlife and special status species.			
Because this area is mixed ownership with scattered public lands and BLM lands may have more restrictions for oil and gas leasing, oil and gas development companies would develop adjacent private and other lands rather than lease public lands. Wildlife management opportunities for the BLM are very limited in scattered land ownership areas due to the influence of developments on adjacent private lands. Mobile wildlife species, such as big game and birds, may be directly affected by management of habitat on surrounding ownerships.			
Actions that remove, degrade, or fragment wildlife habitat are considered adverse. Beneficial impacts include actions that conserve or improve habitats, such as big game crucial winter range, nest sites, or leks. Habitats can be lost and fragmented by activities such as vegetation treatments; fire and fuels management. Indirect impacts to wildlife can occur by changing habitat characteristics or quality. Habitat quality can be impacted by various surface-disturbing activities and other actions that remove vegetation and disturb soil. Indirect impacts to wildlife habitats also could occur when specific actions change the habitats in a way that would make it unsuitable for future habitation. The allowable uses and management actions for resources and resource uses are anticipated to result in a mix of beneficial and adverse impacts relative to wildfire management. The numbers of acres potentially impacted are identified in Table 4-24 "Average Treatment Acreage by Alternative."			
Alternative A would provide incidental impacts from management activities that have the potential to adversely affect wildlife and special status species (surface disturbance, disruptive activities, and direct habitat alteration/loss). However, fire management resulting in habitat manipulations could benefit wildlife and special status species over the long-term by improving vegetative conditions	Alternative B, fire suppression activities would be limited to urban and industrial interface and developed recreational and electronics areas, reducing impacts to big game and Greater Sage-Grouse. Within these areas, any heavy equipment needed for suppression operations would be restricted to existing roads and trails or immediately adjacent to them, therefore avoiding adverse impacts	Alternative C, suppression operations, including the use of heavy equipment would have fewer restrictions, which could degrade wildlife and special status species habitat. Impacts from wildfire management would have the same impacts as listed under Alternative B, except there would be no use of naturally ignited fires to benefit wildlife and associated habitat resources. This could limit	Alternative D fire suppression activities would be limited to urban and industrial interface and developed recreational and electronics areas, reducing impacts to big game and Greater Sage-Grouse. Within these areas, any heavy equipment needed for suppression operations would be restricted to existing roads and trails or immediately adjacent to them, therefore avoiding adverse impacts within sensitive

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
that are linked to forage and cover.	within sensitive wildlife and special status species habitats.	possible restoration through fire, necessary in certain habitats. In addition, prescribed fires would be allowed, including Greater Sage-Grouse habitat, if the activity is determined to benefit the sagebrush community or meet other resource objectives. This action would have short-term adverse impacts to species dependent on sage brush communities, but long-term beneficial impacts would be expected.	wildlife and special status species habitats. Exceptions would be permitted for protection of human life, property and/or to protect resource values from further loss due to unwanted/unplanned natural or human caused wildland fires. Prescribed fires would be allowed, including Greater Sage-Grouse habitat, if the activity is determined to benefit the sagebrush community or meet other resource objectives. This action would have short-term adverse impacts to species dependent on sage brush communities, but long-term beneficial impacts would be expected.
This alternative would allow greater impacts to wildlife and SSS to occur and less beneficial wildlife habitat treatments would be developed than Alternatives, B, C, and D. Actions not addressed in this alternative, are travel management or road densities within important wildlife habitats, guidelines for stipulations to be applied to the operation and maintenance of production facilities or other projects, or restrictions for oil and gas leasing, development, and exploration within designated State Wildlife Management Areas. As a result, impacts to wildlife and associated habitat could include short-term and long-term adverse habitat loss and fragmentation, species displacement due to disturbance, and degradation of habitat quality.	Alternative B has additional protection for wildlife resources, including updated and larger scale stipulations for development versus Alternatives A and C. Alternative B would provide more protection than other Alternatives to wildlife and special status species from surface disturbance and disruptive activities, including travel management and road densities. This Alternative Closes or limits to administrative access more route miles than all Alternatives. Alternative A designates 83% of route miles as open, Alternative C designates 90% of route miles as open, and Alternative D designates 62% of route miles as open.	Generally, the impacts to wildlife and SSS would be greater than those described under Alternatives B and D, with less protection to wildlife resources due to smaller buffers and fewer avoidance areas for ROWs and other potential development. There would be less impact to wildlife than Alternative A with greater restrictions and areas closed to travel, and other development.	The impacts to wildlife and SSS would be the same as those described under Alternative B but with less protection to wildlife resources due to smaller buffers and fewer exclusion areas for potential development. Management actions would be less beneficial to wildlife and special status species than actions provided under Alternative B, creating the potential for more adverse impacts from human disturbance and habitat loss from surface disturbing activities, although protections would be greater than Alternatives A and C. Under Alternative D, there would be 614 miles of open routes (62% of all route miles). Alternative A designates 83% of route miles as open, Alternative B designates 35% of route miles as open and Alternative C designates 90% of route miles as open.
Particularly for Greater Sage-Grouse, recent research findings, have provided updated and more accurate seasonal timing restrictions and expanded protection distances. Research has demonstrated that both the 0.25 mile and 2 mile buffer distances are not adequate for the protection of Greater Sage-Grouse populations. Leks with at least one oil	This Alternative, including Alternatives C and D, designates Greater Sage-Grouse habitat areas (PHMAs, RAs, and GHMAs) versus Alternative A that does not recognize any special designation for Greater Sage-Grouse habitat. PHMAs would be closed to future oil and gas leasing, exploration, and development, and grazing allotments would	This alternative provides less protection for Greater Sage-Grouse and Greater Sage-Grouse habitat than Alternatives B and D and more protection than Alternative A. This is due to decreased protection distances and less restrictions than Alternatives B and D.	Within Greater Sage-Grouse PHMAs, oil and gas leasing, development, and geophysical activities, as well as surface disturbance and disruptive activities would be similar to Alternative B. However, Alternative B is Closed to oil and gas leasing and Alternative D is an NSO. Grazing allotments would be designated management Category I allotments.

Table 2.14 Summary of Environmental Consequences by Alternative

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
and gas well within a 0.4 km (0.25 miles) radius had 35-91% fewer attending males than leks with no well within this radius (Harju et al. 2010). A study in Musselshell and Golden Valley counties found that 98% of nest locations were within 3 miles of an active lek (Sika 2006). With regard to existing stipulations applied by the BLM (Walker et al. 2007a) research has demonstrated that the 0.4 km (0.25 mile) NSO stipulation is insufficient to conserve breeding Greater Sage-Grouse populations in fully developed gas fields because this buffer distance leaves 98% of the landscape with 3.2 km. (2 miles) open to full-scale development. Full-field development of 98% of the landscape with 3.2 km. (2 miles) of leks in a typical landscape in the Powder River Basin reduced the average probability of lek persistence from 87% to 5% (Walker et al. 2007a). Holloran (2005) shows that lek counts decreased with distance to the nearest active drilling rig, producing well, or main haul road, and that development influence counts of displaying males to a distance of between 4.7 and 6.2 km (2.9 and 3.9 miles). Models with development at 6.4 km (4 miles) had considerably less support, but the regression coefficient indicated that impacts were still apparent out to 6.4 km (4 miles) (Walker et al. 2007a).	be designated management Category I allotments. This alternative provides the greatest protection for the management of Greater Sage-Grouse and Greater Sage-Grouse habitat. Only Alternative B establishes the Greater Sage-Grouse Habitat ACEC on BLM-administered surface of Greater Sage-Grouse PHMAs (158,926 acres)		
Fisheries Habitat and Special Status Species			
The management actions associated with the resources listed below may have impacts on water, riparian vegetation, fisheries, and special status fish species resources: Soil, Water, Vegetation Communities, Wildlife Habitat and Special Status Species, Fisheries Habitat and Special Status Species, Wild Horses, Visual Resources, Fire Ecology and Management, Lands with wilderness characteristics, Energy and Mineral Resources, Forestry and Woodland Products, Livestock Grazing, Recreation and Visitor Services, Trails and Travel Management, and Special Designations. Those not listed have negligible or unapparent impacts			
Under all Alternatives, fisheries resources would benefit from management in accordance with Rangeland Health Standards and applicable state and federal water-quality standards. Site-specific mitigation and BMPs for surface disturbing activities would further reduce impacts on fisheries resources. Adherence to these standards would reduce many of the adverse impacts from future actions. In addition, existing and proposed stipulations designed to protect water, riparian and fisheries resources would be beneficial by minimizing sediment and contaminant delivery potential by preventing or limiting surface-disturbing activities in proximity to hydrologic features. Stipulations and limitations for other resources that prevent or limit surface disturbing activities would provide additional protection for fisheries resources and thereby could be beneficial (e.g., fisheries, riparian). Furthermore, timing limitations could benefit fisheries resources by limiting or preventing			

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
surface-disturbing activities during times of the year when saturated soil conditions exist or when precipitation and runoff are frequent (e.g., winter, spring). However, with the scattered distribution and sparse ownership of BLM administered lands in the planning area, stipulations and management actions to minimize impacts to fisheries resources may not prevent poor conditions on BLM waterways, as is the current situation in some areas.			
Under Alternative A actions, impacts to fisheries resources primarily occur from erosion, sedimentation and degradation of riparian resources. Currently, priority fishery resources are not being impacted from BLM authorized activities. Other fisheries resources are impacted from sediment delivery and degraded water quality. The source of these impacts is hard to identify, as the Billings Field Office has a scattered land pattern (for example, in many cases only a ¼ or ½ mile of stream may be managed by the BLM, while the remaining 10 miles is under private ownership). Where riparian conditions are degraded, alternative A requires management actions to move the area towards PFC. BLM authorized surface disturbing activities have negligible impacts to fisheries resources in all alternatives, however, proposed development would restrict activities that degrade water quality or riparian functionality (hence, protecting fisheries habitat and water quality) under this alternative.	Actions under Alternative B provide the highest level of protection to fisheries resources. Larger buffers and more restrictions for surface disturbing activities would be implemented to conserve fish habitat. Perennial and fish bearing streams would be classified a "priority" for monitoring and improvement.	Impacts would be the same as described in Alternative A.	Compared to Alternative A, Alternative D conserves GSG habitat by converting custodial allotments to category I and restricting surface disturbing activities with an NSO stipulation for oil and gas and similar management for other uses. Compared to Alternative A, Alternative D would be beneficial to fisheries resources by applying measures and stipulations that restrict surface disturbing activities within 300 feet of water bodies and riparian areas, minimizing potential adverse impacts from those activities to water quality and aquatic habitat.
Wild Horses			
The following resources or resource uses have been determined to have little or no impacts to wild horses or the Pryor Mountain Wild Horse Range from BLM authorized uses and management: Air, Climate, Geology, Cave and Karst Resources, Energy and Mineral Materials, Forestry and Woodland Products, Renewable Energy, National Historic Trails, Transportation and Facilities, Wild and Scenic River, Fisheries Habitat and Special Status Species, Wildlife Habitat and Special Status Species.			
Under Alternative A, management of the PMWHR and wild horses would remain the same as is currently occurring.	Under Alternative B the PMWHR would be limited to within the 1968 and 1969 Secretarial Orders only. The maximum amount of protection would be allowed for the wild horses and the rangeland resources. The wild horse population would initially be managed for 90 wild horses due to a reduction from the current size and limited water sources.	Under Alternative C the PMWHR would be managed within the entire Herd Area. This Alternative would result in extensive fencing of private property owners and re-routing of county roads. The length of time to implement this could be very long. Wild horses would abut to private property owners and domestic horses. The boundary fence on the south end of the	Under Alternative D the PMWHR would be managed to include a majority of the Herd Area. The administrative pastures would be re-opened and a buffer between private property and the wild horse range would be in place to reduce conflict and protection of wild horses. Within the confines of meeting other multiple-use mandates (i.e. WSA, ACEC, SSS protections) habitat and range improvement

Table 2.14 Summary of Environmental Consequences by Alternative

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
	All range improvements would be removed (i.e. water tanks, guzzlers, reservoirs), access would be limited and natural processes would be primary to other resources. Greater potential for loss of genetic diversity (if no animals are introduced) would happen. Greater wild horse removals and other population control methods would occur under this management scenario.	PMWHR would be the private property fence line. Within the confines of meeting other multiple-use mandates (i.e. WSA, ACEC, SSS protections) habitat and range improvement work would be maximized. Very little management of recreational and visitor activities would occur. The conflict between people and wild horses would increase. Impacts to wild horse habitat would increase from visitation and recreation under this Alternative.	work would be maximized. Area-wide restrictions would be implemented to enhance protections for wild horses, habitat, and public safety. More intensive management of recreational uses and visitor activities would occur. Conflict between users in and around wild horses would be reduced.
Cultural/Heritage Resources			
Impacts to cultural and heritage resources would likely result from actions proposed under the following resource programs: Water, Vegetation, Wildlife Habitat and Special Status Species, Fisheries Habitat and Special Status Species, Wild Horses, Cultural and Heritage Resources, Fire Ecology and Management, Visual Resources, Lands with wilderness characteristics, Energy and Mineral Resources, Forestry and Woodland Products, Realty, Cadastral Survey, and Lands, Livestock Grazing, Recreation and Visitor Services, Trails and Travel Management, Renewable Energy, and Special Designations. Other programs were determined to have little or no impact on cultural and heritage resources			
Impacts to cultural resources in the Pryor Mountains would continue to occur as an indirect result of permits issues through the Recreation program (SRPs) and the Realty, Cadastral Survey, and Lands program (commercial film permits). This impact remains the same across all alternatives.			
	Under Alternative B, C, and D, authorized surface disturbances would be minimized (see glossary for definition of surface disturbing activities). This would protect cultural and heritage resources from being impacted by the proposed activity. However, as a cultural inventory is required for all surface disturbing activities, the knowledge gained by each inventory adds to the database of known and recorded sites, which enables the BLM to better manage the resources and activities occurring in a specific location.		
Under Alternative A, only specific identified/recorded sites would be allocated to conservation or socio-cultural use.	Under Alternative B the majority of National Register eligible sites would be allocated and managed by site type for Conservation, Traditional and/or Scientific Use. No interpretative sites would be considered or developed.	Under Alternative C the majority of National Register eligible sites would be allocated and managed by site type for Conservation, Scientific, Public and/or Traditional Use (as appropriate). Interpretative sites could be developed.	Under Alternative D the majority of National Register eligible site types would be allocated and managed by site type for Conservation, Scientific, Traditional, and/or Public Use. Interpretative sites would be considered and developed as appropriate for the resource.
Paleontological Resources			
Impacts to paleontological resources would result from actions proposed under the following resource management programs: Soil, Water, Vegetation, Wildlife Habitat and Special Status Species, Fisheries Habitat and Special Status Species, Cultural Resources, Paleontological Resources, Fire Ecology and Management, Lands with wilderness characteristics, Energy and Mineral Resources, Forestry and Woodland Products, Realty, Cadastral Survey, and Lands, Livestock Grazing, Recreation and Visitor Services, Trails and Travel Management, Renewable Energy, and Special Designations. For all Alternatives, Paleontological Resources would not be impacted by Air, Climate Change, Geology, Wild Horses, Visual Resources, Cave and Karst Resources, or Transportation and Facilities.			

Table 2.14 Summary of Environmental Consequences by Alternative

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Impacts on paleontological resources occur from natural weathering and erosion and from surface disturbing activities, excavation, and theft or vandalism. In general, impacts on paleontological resources include the physical destruction or damage of fossil-bearing geological formations resulting in the loss of vertebrate fossils or other scientifically significant fossil resources and their geologic content. Without removing some rock surrounding fossils, the fossils would remain largely undetected; therefore, management actions that result in erosion do not necessarily result in damage to paleontological resources. Excessive erosion, especially from other surface disturbance, could damage fossils at the surface.			
Impacts on paleontological resources would result from management actions that could cause surface disturbance. Because of their widespread occurrence and generally unsupervised nature, casual recreation and OHV use would likely have the greatest impact on paleontological resources. Unlike permitted activities (e.g. oil and gas development or ROW development) that are subject to site-specific evaluations and monitoring, recreation and OHV activity are not under much scrutiny. Realty, Cadastral Survey, and Lands actions could also remove or add land subject to federal protections for paleontological resources. To a lesser extent, effects on paleontological resources could occur from actions that open or close land to minor surface disturbances, allow potentially incompatible uses, and actions that could affect natural processes such as erosion.			
The impacts to paleontological resources do not vary by Alternative, the intensity of impacts may vary, but the impacts are the same regardless of the Alternative. Management actions with the most potential to impact paleontological resources include minerals and energy development, fire suppression, vandalism, dispersed recreation, and unauthorized collection of paleontological resources. The intensity of impacts would be greatest under Alternative A, followed by Alternatives C, D, and B.			
Paleontological Resources are mitigated on a case by case basis. No inventory is required.	Costs would increase for the proponents as a result of requiring an assessment, inventory and/or mitigation of paleontological resources if the activity is located in a PFYC Class 3 or higher area.		
No inventory required for surface disturbing activities occurring in PFYC 3 or higher areas.	Costs would increase for the proponent and the BLM as a result of assessment, inventory and/or mitigation of paleontological resources if the activity is located in a PFYC Class 3 or higher area.		
Visual Resources			
Impacts to Visual Resources would result from actions proposed under the following resource management programs: Vegetation, Wildlife habitat and Special Status Species, Fisheries habitat and special status species, Cultural Resources, Visual Resources, Wildland Fire Ecology and Management, Energy and Mineral resources, Forestry and Woodland Products, Realty, Cadastral Survey, and Lands, Livestock Grazing, Recreation, Trails and Travel Management, Renewable Energy, and Special Designations. Other programs were determined to have little or no impact on visual resources.			
The potential cumulative impacts of this RMP/EIS Alternative A, combined with past, present, and reasonably foreseeable future actions on visual resources could adversely affect visual resources and scenic quality from increasing minerals and recreation-related surface disturbances and from wildfires. However, mitigation would likely limit the impacts in viewsheds with high scenic quality in the BiFO.	Past and present management, and reasonably foreseeable future actions, combined with the proposed action Alternatives (the RMP/EIS Alternatives B, C, and D), would reduce the potential for cumulative impacts on visual resources, and preserve scenic quality. The risks of wildfire would be reduced within the BiFO and on adjacent national forests through increased vegetation treatments to reduce fuel loads; recreation activities and off-road travel would be managed to limit surface disturbances by greatly reducing the potential for illegal or unrestricted OHV use, so that areas inventoried as having high scenic quality would be preserved. Mineral exploration, development, and extraction, including oil and natural gas well drilling, are expected to increase over the next 15 years to 20 years, but visual resource management and associated mitigation would likely limit the impacts in view sheds with high scenic quality and in the adjacent national parks and national forests. Visual resource management would include conformance of minerals exploration and development activities with VRM class objectives, which would preserve scenic quality in the long term in areas that the plan has designated for scenic quality protection.		
Fire Ecology and Management			
Impacts to fire and fuels management would result from actions proposed under the following resource management programs: Air Quality, Vegetation, Special Status Species, Fish and Wildlife, Cultural Resources, Visual Resources, Fire and Fuels Management, Forestry and Woodland Products, Livestock Grazing, Recreation, Travel Management, Minerals and Energy, and Special Designations. Other programs were determined to have little or no impact on fire and fuels management.			

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
Actions limiting fire suppression tactics, thereby resulting in larger burn areas or more intense fire, are considered adverse impacts. Conversely, actions contributing to a decrease in the incidence of resource damaging wildfires, including restoring natural Fire Regime Condition Classes are beneficial impacts			
Wilderness Characteristics			
The types of impacts are described as being categorized based on the wilderness qualities of naturalness, undeveloped character, opportunities for solitude, or primitive and unconfined recreation and untrammeled quality. Impacts to non-WSA lands with wilderness characteristics would likely result from actions proposed under the following resource management programs: Vegetation, Wildlife Special Status Species, Fish Special Status Species, Wild Horses, Cultural Resources, Visual Resources, Wildland Fire Ecology and Management, Wilderness Characteristics, Minerals and Energy, Realty, Cadastral Survey, and Lands, Livestock Grazing, Recreation and Visitor Services, Travel Management, and Special Designations. Other programs were determined to have little or no impact on non-WSA lands with wilderness characteristics.			
Under Alternative A, management actions would protect, preserve, and maintain the wilderness characteristics on 1,925 acres.	Alternative B management actions would protect, preserve, and maintain the wilderness characteristics on 33,077 acres.	Alternative C management actions would protect, preserve, and maintain the wilderness characteristics on 3,379 acres	Alternative D management actions would protect, preserve, and maintain the wilderness characteristics on 13,653 acres.
Cave and Karsts			
Impacts to cave and karst management would likely result from actions proposed under the following resource programs: Wildlife habitat and Special Status Species, Cave and Karst Resources, Recreation, and Energy and Mineral Resources. Other programs were determined to have little or no impact on cave and karst resources.			
	Cave and Karsts are managed as mandated by the Federal Cave Resources Protection Act as well as other Acts such as the Endangered Species Act. Management actions in the RMP are in conformance with these prescriptions and protect the unique, nonrenewable, and fragile biological, geological, hydrological, cultural, paleontological, scientific, and recreational values. The management actions would result in significant restrictions of casual use of Caves and Karsts but also provide more directed and focused responses due to the mandate for development of a specific Cave and karsts Management Plan.		
Resource Uses			
Energy and Mineral Resources: Solid Leasable Minerals, including Coal			
Implementing management actions under the Alternatives may result in direct impacts that open, limit, or deny access to solid mineral (leasable, locatable, and salable) development in the planning area.			
Coal development could occur under Alternatives A, C, and D. However, under Alternative B, future coal leasing actions would be prohibited. Most of the areas closed to coal development in Alternatives A, C, and D occur in areas where the coal development potential is extremely low, or does not exist.			
Alternative A contains the lowest number of acres unavailable to coal leasing.	Alternative B contains the highest number of acres unavailable to coal leasing.	Alternative C contains more acres unavailable to coal leasing than Alternative A, but less than Alternative B and D.	Alternative D contains more acres unavailable to coal leasing than Alternatives A and C, but less acres than Alternative B.
Energy and Mineral Resources: Fluid Minerals			
	Total Projected New Oil and Gas Wells per year - 2 to 4	Total Projected New Oil and Gas Wells per year – 2 to 4	Total Projected New Oil and Gas Wells per year - 2 to 4
All federal mineral leases would be subject to standard lease terms. The impacts to fluid minerals would vary depending in the number of acres available for leasing with standard lease terms and the number of acres available for leasing with major and moderate constraints.			

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
Continuation of current management would result in the availability of approximately 633,582 acres for fluid mineral leasing across the entire decision area. Approximately 61,100 acres of BLM subsurface ownership would be unavailable (4.9% of the total BLM oil and gas estate; Table 4-29), including four WSAs: The remainder of federal mineral estate lands would be available for leasing, subject to the stipulations specified in Chapter 2 or under Standard Lease Terms. Table 4-30 displays areas affected by no surface occupancy, timing limitations, and controlled surface use oil and gas stipulations.	Approximately 421,852acres would be available for fluid mineral leasing under Alternative B. Approximately 302,713 acres of BLM-administered federal mineral estate lands would not be available for oil and gas leasing (34.3% of the total BLM oil and gas estate; Table 4-32) including four WSAs: The remainder of federal mineral estate lands in the Planning Area would be available for leasing, subject to the stipulations specified in Chapter 2 or to Standard Lease Terms.	Under Alternative C, 65,891 acres of the Decision Area would not be available for oil and gas leasing (5.2% of the total BLM oil and gas estate; Table 4-34) including four WSAs: This includes the Wilderness Study Areas identified in Alternative B plus discretionary no lease areas. The remainder of mineral estate in the Planning Area (610,151 acres) would be available for leasing, subject to the stipulations specified in Chapter 2 or to Standard Lease Terms.	Under Alternative D approximately 606,096 acres would be available for fluid mineral leasing. A total of 60,359 acres of federal mineral estate lands would not be available for oil and gas leasing (approximately 7% of the total BLM oil and gas estate) including the Wilderness Study Areas. Effects would be similar to Alternative A with respect to overall acres of BLM administered land available for leasing and not available for leasing (compare Tables 4-31, 4-34, 4-37, and 4-40). However, Alternative D would apply stipulations to different acres. For example, there are fewer acres of land under No Surface Occupancy and Controlled Surface Use stipulations and a much larger number of acres under Timing Limitations and Standard Lease Terms stipulations under Alternative A, than Alternative D (Tables 4-31, 4-34, 4-37, and 4-40). As a result Alternative D includes more area with No Surface Occupancy and would be more stringent in the application of stipulations for leasing of essentially the same amount of land as Alternative A.
Energy and Mineral Resources: Locatable Minerals			
Implementation of the Alternatives would result in some public lands being opened or withdrawn from locatable mineral entry under the mining laws. Such actions could affect the ability of potential mining claimants and/or exploration and mining companies to explore and develop locatable minerals in the planning area. Management actions that restrict access are long term in nature and the withdrawals are for 20-year periods from the operation of the mining laws, subject to valid existing rights. In these instances, only valid, existing mining claims can be developed. Subject to such valid existing rights, exploration, staking of new mining claims, development, or mining on withdrawn federal mineral estate is prohibited.			
Under the existing Billings Resource Area RMP (BLM, 1984), the entire planning area is open to locatable mineral entry except for 1,855 acres which are currently withdrawn. Areas recommended for withdrawal from locatable mineral entry in the planning area range from 39,700 acres (Alternative A) to 270,977 acres (Alternative B). In cases involving valid mining claims, exploration for locatable minerals would occur under all Alternatives. The impact of the locatable mineral withdrawals would be minimal because bentonite is the only locatable mineral located within the decision area and while there are a great number of acres, the potential is low throughout the majority of the decision area, with the exception of Carbon County.			
Energy and Mineral Resources: Mineral Materials			
Implementing management actions under the alternatives may result in direct impacts that open, limit or deny access to the disposition of mineral materials from public lands in the planning area. Adverse impacts to mineral materials disposal can result from management actions that restrict or limit disposals of mineral materials, or that place specific stipulations or mitigation requirements on development activity. Beneficial impacts to mineral materials disposal can result from management actions that encourage disposal or opens areas to disposal.			

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
Indirect impacts result from actions that place or remove restrictions, or place additional requirements on the exploration and development activities for mineral materials. For example, actions taken to preserve Greater Sage-Grouse habitat could either prevent or constrain the exploration and development of mineral materials.			
Short-term impacts may include such seasonal restrictions to accessing mineral material resources to protect Greater Sage-Grouse, or delays caused by requiring the completion of resource surveys (such as cultural resources) before commencing mining operations. Long-term impacts may include transferring federal mineral estate, including the mineral materials therein, to private ownership, thereby potentially removing the resource from public access, as allowed by 43 CFR 2720 and FLPMA Section 209(b)(1).			
Under the existing Billings Resource Area RMP (BLM, 1984), the entire planning area is open for the development of mineral materials except for 44,583 acres which are currently closed to disposal.	Areas recommended for closure to mineral materials disposal in the planning area range from 44,583 acres (Alternative A) to 343,745 acres (Alternative B). Although there is a wide variance between Alternatives, the plan would provide land-use opportunities for the development of mineral materials. It would provide economic benefits and meet local infrastructure needs while protecting or minimizing adverse impacts to other resources and their uses.		
Realty, Cadastral Survey, and Lands: Land Tenure Adjustment and Access, Rights-of-Way/Leases/Permits, and Withdrawals			
Impacts to land tenure, ROWs/Leases/Permits, and withdrawals would likely result from actions proposed under the following resource programs: Soils, Water, Vegetation, Wildlife Habitat and Special Status Species, Fisheries Habitat and Special Status Species, Cultural Resources, Paleontological Resources, Visual Resources, Wildfire Ecology & Management, Lands with wilderness characteristics, Cave and Karst Resources, Energy and Mineral Resources, Realty, Cadastral Survey, and Lands, Recreation and Visitor Services, Trails and Travel Management, Renewable Energy, Transportation and Facilities, and Special Designations. Other programs were determined to have little or no impact on Realty, Cadastral Survey, and Lands.			
The designation of ROW avoidance and exclusion areas on BLM lands, along with similar restrictions on ROW development on adjacent lands, would have a cumulative impact of reducing overall routing options for ROW facilities such as utilities and roads. Restrictions on ROWs in the decision area, combined with restrictions form other management plans in the planning area, would have an incremental effect by limiting the location of the ROW. Alternatives B and D have the most avoidance and exclusion areas; and the fewest ROW avoidance and exclusion areas identified in Alternative A.			
The increased number of acres of ROW exclusion and avoidance areas located on BLM lands could increase development costs for the applicants.			
Livestock Grazing			
Impacts to livestock grazing would likely result from actions proposed under the following resource management programs: Soil, Water, Vegetation, Wildlife and Fisheries Habitat and Special Status Species, Fire Ecology and Management, Cultural / Paleontological / Historic Resources, Energy and Mineral Development, Realty, Cadastral Survey, and Lands, Livestock Grazing, Recreation, Travel Management, and Special Designations. Other programs were determined to have little or no impact on livestock grazing.			
The types of impacts projected to occur to livestock grazing management because of each Alternative are similar and include changes in AUM allocations and rangeland health. The factors causing these impacts primarily include surface-disturbing activities, restrictions protecting resource values, fire and fuels management, invasive species and noxious weeds, and proactive management actions. Changes in AUM allocations and rangeland health, and the associated causative factors of these changes, are described below as impacts common to all Alternatives. How the intensity of these impacts varies by Alternative is described under individual Alternatives.			
Alternative A would maintain the status quo for allotment categorization (I: Improve, M: Maintain and C: Custodial). Under this alternative, allotments with high priority resource issues are categorized as I and receive the highest priority for improvement (mainly staff, planning and funding) and	Alternative B re-categorizes all allotments within the PHMA boundaries to the I category. Under this alternative, all allotments within the boundary of the PHMA would receive priority for protection, maintenance, improvement and monitoring. Impacts to staff and funding levels with creation of the newly re-categorized	Impacts under Alternative C are the same as Alternative A for both monitoring and allotment categorization.	Alternative D is essentially the same as Alternative B, with the exception that Alternative D includes the continued priority for monitoring of existing allotment management plans that are currently in place.

Table 2.14 Summary of Environmental Consequences by Alternative

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
monitoring. As I allotments improve to a level where they are meeting the standards for rangeland health (or making significant progress towards meeting the standards) the category can be lowered to the M category so that staff and funding can be put towards other allotments that require improvement. Category C allotments are typically small (less than 320 acres), isolated and unfenced parcels with little or no management potential (other than season of use), and are managed under the custodial oversight of the grazing permittee. There are currently 35 I category allotments, 111 M category allotments and 253 C category allotments. Impacts under this alternative would be minimal to staff and funding. The flexibility to change categorization based on improving resource conditions is maximized.	allotments would be low to moderate and dependent on existing resource conditions and the degree of departure from the standards for rangeland health, if any. Existing I allotments outside PHMAs would continue to be treated the same as under Alternative A.		
Recreation and Visitor Services			
Impacts to recreation would likely result from actions proposed under the following resource programs: Air, Vegetation, Wildlife habitat and Special Status Species, Fish Habitat and Special Status Species, Wild Horses, Cultural Resources, Paleontological Resources, Visual Resources, Wildfire Ecology and Management, Lands with wilderness characteristics, Cave and Karsts Resources, Minerals and Energy, Realty, Cadastral Survey, and Lands, Livestock Grazing, Forestry and Woodland Resources, Recreation, Travel Management, Renewable Energy, and Special Designations. Other programs were determined to have little or no impact on recreation.			
Various past, present, and reasonably foreseeable future BLM actions have affected and would continue to affect recreational opportunities within the planning area, including mineral development, wildfire suppression and fuels treatments, OHV travel, utility corridor development, grazing and recreational activities in riparian areas, and management within existing SRMAs and the ERMA. The increase in vehicle-based recreation and urban development and associated population growth all contribute to increased demand for recreational opportunities in the region. As a result, the planning area could experience increased recreational visitors over the life of the plan, which could degrade certain recreational settings, resulting in diminished recreational opportunities and experiences, or increase user conflicts associated with dispersed unconfined recreational opportunities. Similarly, increasing development or utilities within or near the BiFO could degrade certain recreational settings. The increase in recreational activities is minimally a result of BLM actions. There would be a minor incremental impact to recreational opportunities and experiences from the Proposed RMP management actions. The issuance of SRPs would not be affected by the change of management emphasis between Alternatives.			
Trails and Travel Management			
Impacts to travel management would likely result from actions proposed under the following resource programs: Wildlife habitat and Special Status Species, Non-WSA Lands with wilderness characteristics, Realty, Cadastral Survey, and Lands, Recreation, Travel Management, Renewable Energy, and Special Designations. Other programs were determined to have little or no impact on travel management.			
The Proposed RMP management actions for closing 99% of the decision area to cross-country OHV travel in combination with similar management actions of adjacent field offices and agencies would incrementally reduce opportunities for cross-country OHV travel.			
There is no comprehensive FO-wide	In contrast, the Proposed RMP and Alternatives B, C, and D management actions designate individual non-motorized trails and entire non-motorized trail		

Table 2.14 Summary of Environmental Consequences by Alternative			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
non-motorized trail system, just an assortment of trails developed on an ad-hoc basis.	systems in chosen locations throughout the FO. Recreational opportunities and experiences are identified through the BLM design process specified in the relevant Manuals and Guidance documents are implemented and the user experiences are enhanced.		
Areas protected from development have guided in the past, and would continue to guide, the location and development of many highways and roads near and within the BiFO.	In contrast, the Proposed RMP and Alternatives B, C, and D management actions restrict travel within the BiFO mostly to designated routes and very few, if any, additional routes would be developed. As a result, there could be increased concentrations of vehicles within certain areas of the BiFO, that is, restricting the miles of roads open for motorized travel would be expected to increase vehicle concentrations more in the BiFO than in surrounding areas that do not impose travel restrictions.		
Renewable Energy			
Impacts to wind energy would likely result from actions/restrictions proposed under the following resource programs: Wild Horse Management, Wildlife Habitat and Special Status Species, Cultural and Heritage Resources, Renewable Energy, Realty, Cadastral Survey, and Lands, Special Designations, and Visual Resource Management. Other programs were determined to have little or no impact on renewable energy.			
Managing 47,496 acres as renewable energy exclusion areas (closed) would remove 11% of BLM-administered land in the planning area from wind development, of which 12,372 acres are high and 6,350 acres are moderate development potential. Table 4-41 shows the impact allocations in this Alternative have on the availability of land for wind energy development. Opportunity for development is provided to the greatest degree by this Alternative, especially on the 50,135 acres of high potential land that would be managed as open (see Map 153) as long as resource issues could be resolved and important values protected with BMPs and standard stipulations.	Managing 345,491 acres as renewable energy exclusion areas (closed) would remove 80% of BLM-administered land in the planning area from wind development, of which 53,537 acres are high and 111,742 acres are moderate in development potential. Table 4-42 shows the impact of allocations in this Alternative on the availability of land for wind energy development. Maximizing restrictions under this Alternative would remove the greatest number of acres exhibiting high wind resources of any Alternative, severely impacting opportunities for development. This would be the most restrictive of any of the Alternatives for wind development with no areas considered "open" (see Map 154). However, exclusion of renewable energy development from lands with wilderness characteristics would affect only low potential wind areas. Should technologies be developed in the future to take advantage of winds in lower potential areas, as well as to better mitigate impacts, this Alternative would have detrimental long-term impacts on industry and renewable energy development in the BiFO.	Managing 82,019 acres as renewable energy exclusion areas (closed) would remove 19% of BLM-administered land in the planning area from wind development, of which 19,960 acres are high and 15,358 acres are moderate in development potential. Table 4-43 shows the impact of allocations in this Alternative on the availability of land for wind energy development. Application of special design features, timing limitations, and other restrictions would increase costs and processing time, and in some instances, result in applications being withdrawn by industry as described under Impacts from Management Common to All Alternatives. Allowing wind energy development in the Pryor Foothills ACEC and in Greater Sage-Grouse PHMAs and RAs if Greater Sage-Grouse habitat suitability would be maintained would potentially increase the amount of acreage available for wind development in comparison to Alternative B, where development in Greater Sage-Grouse areas is excluded. Managing VRM Class III as open rather than as avoidance areas could result in additional development flexibility,	Managing 231,775 acres as renewable energy exclusion areas (closed) would remove 53% of BLM-administered land in the planning area from wind development, of which 38,558 acres are high in development potential. Table 4-44 shows the impact of allocations in this Alternative on the availability of land for wind energy development. Impacts are similar to Alternative C, though different timing limitation and distances would be applied for some resources. Areas such as the Pryor Foothills ACEC and slopes over 30% would be managed for avoidance rather than exclusion, which provides additional flexibility for development on about 2,500 additional high wind potential acres. Under Alternative D, the 1,512 acres of open BLM-administered land, including 360 acres with High wind potential and 502 acres with Moderate wind potential would provide opportunities similar to Alternative C for generation of renewable energy to meet agency goals and potentially assist in reducing reliance on other energy sources and in turn, reduce emissions from other generating sources.

Table 2.14 Summary of Environmental Consequences by Alternative

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
		though VRM objectives must still be met.	
Special Designations			
Pompeys Pillar National Monument and ACEC			
Under all Alternatives, Pompeys Pillar ACEC (432 acres) would continue to be managed to protect the historical, cultural, and biological values, including its outstanding viewsheds and unique resources of the area. Emphasis on providing opportunities for interpretation, education and enjoyment of the area would continue.			
The ACEC would be available for oil and gas leasing, subject to a No Surface Occupancy (NSO) stipulation. The 432 acres within the ACEC have low mineral development potential; therefore, while the NSO stipulation protects the values of concern within the ACEC, there would be minimal adverse impacts to oil and gas leasing. Pompeys Pillar National Monument (51 acres) which is included in a portion of the ACEC, would be managed to protect the historical and cultural objects for which is was nominated, and would be withdrawn from all forms of entry, location, selection, sale or disposition, subject to valid existing rights.			
The National Historic Landmark (NHL 6 acres) which includes the rock feature itself, would be managed as a VRM Class II to protect the values associated with the landform. The remainder of the ACEC would be managed as VRM Class III. This would allow for interpretive and educational programming, facilities and access to and within the site, while ensuring the visual quality and visual obtrusions are minimized or mitigated to protect the scenic values of the area.			
Areas of Critical Environmental Concern			
Nine ACECs would be retained for a total of 37,896 acres. Wind Energy development could occur in ACECs under this alternative. Target shooting is allowed in the cultural ACECs.	Nine ACECs would be retained and three ACECs proposed for a total of 185,861 acres. Under this action alternative the management of the ACECs is the most restrictive.	Nine ACECs would be retained and two ACECs proposed for a total of 67,079 acres. Under this alternative the management of the ACECs is the least restrictive.	Nine ACECs would be retained and two ACECs proposed for a total of 38,786 acres. Under this alternative, the total acreage for all 11 ACECs is between Alternatives B and C and the management would protect the values of each ACEC.
Wild and Scenic Rivers			
Manage all of the eligible river segments (14.08 miles) to protect their outstandingly remarkable values, free-flowing nature, and tentative classification, as follows: • Bad Canyon • Bear Canyon • Crooked Creek (upper) • Crooked Creek (lower) • Gyp Springs • Piney Creek • Yellowstone River/Pompeys Pillar	Recommend all of the eligible river segments (14.08 miles) as suitable for inclusion in the National Wild and Scenic River System to protect their outstandingly remarkable values, free-flowing nature, and tentative classification, as follows: • Bad Canyon • Bear Canyon • Crooked Creek (upper) • Crooked Creek (lower) • Gyp Springs • Piney Creek • Yellowstone River/Pompeys Pillar	Manage none of the eligible river segments (14.08 miles) to protect their outstandingly remarkable values, free-flowing nature, and tentative classification, as follows: • Bad Canyon • Bear Canyon • Crooked Creek (upper) • Crooked Creek (lower) • Gyp Springs • Piney Creek • Yellowstone River/Pompeys Pillar None of the eligible river segments would be recommended as suitable for inclusion in the National Wild and Scenic River system.	Manage the following river segments (3.15 miles) as suitable to protect their outstandingly remarkable values, free-flowing nature, and classification. The following segments would be recommended as suitable for inclusion in the National Wild and Scenic River System: • Crooked Creek (above fish barrier – 1.59 miles); tentative management class would be Wild. • Crooked Creek (below fish barrier – 1.56 miles); tentative management class would be Scenic.

Notes:
Based upon the programmatic and strategic nature of the RMP alternatives, this table reflects the potential for environmental consequences.
Closed to leasing means deferred for the life of the plan.
1 These impacts are anticipated to occur outside of the planning area

ACEC	Area of Critical Environmental Concern	AUM	animal unit month
BLM	Bureau of Land Management	MAAQS	Montana Ambient Air Quality Standards
N/A	not applicable	NAAQS	National Ambient Air Quality Standards
NHT	National Historic Trail	OHV	off-highway vehicle
ROW	Right-of-Way	SRMA	Special Recreation Management Area
TMA	Travel Management Area	VRM	Visual Resource Management
WH	Wild Horses	WSA	Wilderness Study Area
WSR	Wild and Scenic River		

Table 2.15 Summary Comparison of Impacts

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Social			
Continuation of current management would maintain the quality of life of permittees, those who favor resource use including some residents of small communities. Those who favor resource protection would not feel resources such as wildlife and plant habitat would receive adequate protection. Issue between motorized and non-motorized recreation would not be addressed.	Alternative B would enhance the quality of life of those who favor resource protection and non-motorized recreation use. Those who favor resource use including some residents of small communities may feel that their interests are not adequately protected. Some of the issues between motorized and non-motorized use would be addressed but at the expense of motorized users.	Alterative C would maintain or enhance the quality of life of permittees, those who favor resource use and residents of small communities. Those who favor resource protection would not feel resources such as wildlife and plant habitat would receive adequate protection. Some of the issues between motorized and non-motorized use would be addressed but at the expense of non-motorized users.	Alternative D offers a balance between resource use and resource protection which would meet many of the needs of the groups and individuals interested in public lands. Both motorized and non-motorized recreation use would be enhanced and many of the issues that currently exist on these public lands would be addressed.
Economics			
Air			
Economic costs or benefits from air resource management (cost of emission reduction techniques and revenue from emission capture or reduction) associated with resource uses are unknown.			
Climate Change			
Economic costs or benefits from GHG emission reduction (cost of emission reduction techniques and revenue from emission capture or reduction) associated with resource uses are unknown.			
Agricultural and Livestock Use (Common)			
BLM would continue to provide about 1% of the total livestock forage needs in the local economy where economic dependency of livestock producers on BLM forage would remain unchanged. About 310 operators would continue to have grazing leases. The amount of authorized use would remain unchanged; dependency on BLM forage would remain relatively unchanged; and BLM forage would continue to provide a critical element of some livestock producers' complement of grazing, forage, and hay production. An annual average of 42,931 AUMs of authorized livestock grazing would support approximately 73 total full and part-time jobs and $954,000 in labor and proprietor's income. Annual federal revenues from livestock grazing fees would be about $58,000 annually, of which about $10,000 would be distributed to the counties.			
Minerals Development (common)			
Most of the oil and gas activity and production would continue to occur in Carbon County. An estimated 264,000 short tons of bentonite, 100 tons of building stone, and 6,500 tons of mineral materials would be produced from federal minerals annually. Over a 13-year period, rent would be paid on an estimated 2,680 acres of federal coal that would be leased. Annual federal coal production would average 2.8 million tons.			
Minerals Development			
An estimated 247,805 acres of federal minerals would be leased for oil/gas exploration, development, and production. Average annual production of 236,700 MCF of natural gas, 459,200 bbl of oil, 2.8 million tons of coal, 264,000 short tons of bentonite, 100 tons of building stone, and 6,500 tons of mineral materials would support about 239 local jobs and $11.3 million in wage and proprietors' income. Total annual federal revenues from leases,	An estimated 178,560 acres of federal minerals would be leased for oil/gas exploration, development, and production. Average annual production of 170,500 MCF of natural gas, 330,900 bbl of oil, 2.8 million tons of coal, 264,000 short tons of bentonite, 100 tons of building stone, and 6,500 tons of mineral materials would support about 215 local jobs and $10.1 million in wage and proprietors' income. Total annual federal revenues from leases, rents, production	An estimated 248,033 acres of federal minerals would be leased for oil/gas exploration, development, and production. Average annual production of 236,900 MCF of natural gas, 459,700 bbl of oil, 2.8 million tons of coal, 264,000 short tons of bentonite, 100 tons of building stone, and 6,500 tons of mineral materials would support about 239 local jobs and $11.3 million in wage and proprietors' income. Total annual federal revenues from leases, rents, production	An estimated 246,910 acres of federal minerals would be leased for oil/gas exploration, development, and production. Average annual production of 235,800 MCF of natural gas, 457,600 bbl of oil, 2.8 million tons of coal, 264,000 short tons of bentonite, 110 tons of building stone, and 6,500 tons of mineral materials would support about 239 local jobs and $11.3 million in wage and proprietors' income. Total annual federal revenues from leases, rents, production royalties, and sales

Table 2.15 Summary Comparison of Impacts

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
rents, production royalties, and sales would be about $9.3 million; of which about $3.6 million would be distributed to the counties of production.	royalties, and sales would be about $7.6 million; of which about $3.3 million would be distributed to the counties of production.	royalties, and sales would be about $9.4 million; of which about $3.6 million would be distributed to the counties of production.	would be about $9.3 million; of which about $3.6 million would be distributed to the counties of production.
Recreation (common)			
An annual average of 261,000 recreation visits would support about 136 full and part time jobs and $3.7 million in labor income. The willingness to pay for recreation opportunities would represent an estimated annual consumer surplus of $13.4 million to the recreation visitors. Annual revenues from recreation use permits, campground receipts, and outfitter/guide receipts would be about $47,000. None of these revenues would be distributed to the local counties.			
Timber			
Harvesting an estimated average 160 CCF of sawtimber, 131 CCF of pulp wood, 2 CCF of post and poles, 960 CCF of biomass, 1 CCF of fuelwood, and 1,102 lbs of juniper would support less than one local job and about $23,000 in local income. Timber management would generate about $7,000 in federal revenues and less than $300 in state revenue.	Same as Alternative A.	Harvesting an estimated average 570 CCF of sawtimber, 131 CCF of pulp wood, 2 CCF of post and poles, 960 CCF of biomass, 1 CCF of fuelwood, and 1,102 lbs of juniper would support one or two local jobs and about $55,000 in local income. Timber management would generate about $22,000 in federal revenues and less than $900 in state revenue.	Harvesting an estimated average 285 CCF of sawtimber, 131 CCF of pulp wood, 2 CCF of post and poles, 960 CCF of biomass, 1 CCF of fuelwood, and 1,102 lbs of juniper would support one local job and about $33,000 in local income. Timber management would generate about $11,000 in federal revenues and less than $500 in state revenue.
Realty, Cadastral Survey, and Lands (Common)			
Existing use authorizations (e.g. rights-of-way, permits, and lease rentals) would continue to generate an estimated annual average $22,000 of revenue to the federal government. The development of renewable wind energy on public lands would stimulate economic activity from the construction and operation of the towers and related infrastructure. After construction, annual employment and income contributions associated with maintenance and operation of wind energy developments would be about 20 jobs and $600,000 respectively. Wind energy development would generate an additional $270,000 annually in federal revenues. None of the rights-of-way rents would be disbursed to state or local governments.			
Payments to Counties (Common)			
Payments in Lieu of Taxes (PILT) from the federal government to 8 counties would continue to be approximately $620,000. A portion of coal lease bonuses, rent, and royalty payments to Musselshell county would average $2.3 million per year over a 13-year period. An estimated $308,700 from the MT Bentonite Production Tax would be distributed to Carbon County. An annual average of $30,000 would be distributed to counties from the BLM budget under partnership agreements to treat weeds. An estimated average of $224,000 would be provided to local governments and entities through community assistance agreements to reduce the risk of wildland fire to communities.			
Payments to Counties			
Including payments listed above, total revenues disbursed to the 8 Montana counties would average about $4.5 million per year. This would contribute about 72 jobs and $3.0 million of income annually to the local economy.	Including payments listed above, total revenues disbursed to the 8 Montana counties would average about $4.2 million per year. This would contribute about 68 jobs and $2.9 million of income annually to the local economy.	Including payments listed above, total revenues disbursed to the 8 Montana counties would average about $4.5 million per year. This would contribute about 73 jobs and $3.0 million of income annually to the local economy.	Including payments listed above, total revenues disbursed to the 8 Montana counties would average about $4.5 million per year. This would contribute about 72 jobs and $3.0 million income annually to the local economy.

Table 2.15 Summary Comparison of Impacts

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Proposed Alternative)
Government (Common)			
Average annual BLM labor and non-labor expenditures ($6.4 million) would support an estimated 103 full and part time jobs and about $6.9 million in wage and proprietor's income. The influence of BLM labor and operations contributions would be most apparent in Billings (Yellowstone County) where the BLM Field Office is located. Employment and income effects of mechanical treatments, prescribed burning, invasive species treatments, and timber management (fuels treatments) would be included in government operations. Treating hazardous fuels would tend to reduce the threat to life and property nearby.			
Combined Effects			
The combined effect of Alternative A would contribute an average annual 640 local full and part-time jobs and $26.55 million in wage and proprietors' income. This would be less than 0.3% of current local employment and income. Annual revenues to the federal government would be about $9.7 million; payments to counties would be about $4.49 million, most of which would be related to mineral leasing, rents, and production royalties. Local employment would increase by about 106jobs; income would increase by about $4.92 million; federal revenues would increase by about $8.41 million; and local revenues would increase by about $2.71 million compared to current average annual levels. The local population would increase by an estimated 159 people and the number of households would increase by an estimated 70. Population and households would increase by approximately 0.05% relative to current levels.	The combined effect of Alternative B would contribute an average annual 612 local full and part-time jobs and $24.15 million in wage and proprietors' income. This would be less than 0.3% of current local employment and income. Annual revenues to the federal government would be about $8.0 million; payments to counties would be about $4.21 million, most of which would be related to mineral leasing, rents, and production royalties. Local employment would increase by about 78 jobs; income would increase by about $2.52 million; federal revenues would increase by about $6.66 million; and local revenues would increase by about $2.43 million compared to current average annual levels. The local population would increase by an estimated 117 people and the number of households would increase by an estimated 51. Population and households would increase by approximately 0.05% relative to current levels.	The combined effect of Alternative C would contribute an average annual 641 local full and part-time jobs and $26.59 million in wage and proprietors' income. This would be less than 0.3% of current local employment and income. Annual revenues to the federal government would be about $9.8 million; payments to counties would be about $4.50 million, most of which would be related to mineral leasing, rents, and production royalties. Local employment would increase by about 107 jobs; income would increase by about $4.96 million; federal revenues would increase by about $8.48 million; and local revenues would increase by about $2.72 million compared to current average annual levels. The local population would increase by an estimated 161 people and the number of households would increase by an estimated 71. Population and households would increase by approximately 0.05% relative to current levels.	The combined effect of Alternative D would contribute an average annual 640 local full and part-time jobs and $26.54 million in wage and proprietors' income. This would be less than 0.3% of current local employment and income. Annual revenues to the federal government would be about $9.7 million; payments to counties would be about $4.49 million, most of which would be related to mineral leasing, rents, and production royalties. Local employment would increase by about 106 jobs; income would increase by about $4.91 million; federal revenues would increase by about $8.40 million; and local revenues would increase by about $2.70 million compared to current average annual levels. The local population would increase by an estimated 159 people and the number of households would increase by an estimated 70. Population and households would increase by approximately 0.05% relative to current levels.
Other Combined Effects (Common)			
The employment, income, and revenue effects of BLM resource management would be spread unequally among the counties and communities within the Planning Area and the 10 counties that make up the local economy. Most of BLM land and minerals base and land/mineral uses are in Carbon and Musselshell counties. Much of the economic impacts would also occur in those counties. The influence of resource management on BLM-administered lands would not change local economic diversity (as indicated by the number of economic sectors), dependency (i.e. where one or a few industries dominate the economy), or stability (as indicated by seasonal unemployment, sporadic population changes, and fluctuating income rates). The population density and average income per household would continue to be about the same as current levels.			
Soil and Water (Common)			
Economic benefits or costs from soil and water management (e.g., change in life of dams and reservoirs, change in quantity and quality of water that would change the cost of water for			

Table 2.15 Summary Comparison of Impacts			
Alternative A (No Action Alternative)	**Alternative B**	**Alternative C**	**Alternative D (Proposed Alternative)**
agricultural, industrial, municipal, recreational purposes, and change in soil productivity) associated with resource uses are unknown.			
Cumulative Effects (Common)			
The demographic and economic trends that are described in Chapter 3 to provide context for impacts would be expected to continue. The description of the Affected Environment found in Chapter 3 summarizes the past and present activities that influenced cumulative economic conditions. The economic impacts summarized above for each alternative would be combined with those demographic and economic trends to provide an idea of the cumulative economic effects. In addition, construction of wind energy developments with towers on BLM lands would be anticipated.			

Billings and Pompeys Pillar National Monument

Resource Management Plan and Environmental Impact Statement

Chapter 3: Affected Environment

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3 Affected Environment

3.1 Introduction

Chapter 3 provides information on the current condition of resources, resource uses, and programs in the Billings Field Office (BiFO) decision area that could be affected by the revised RMP alternatives described in Chapter 2. This chapter is organized into Resources, Resource Uses, Special Area Designations, and Social and Economic. Each of these sections is further divided into resources or program areas. This is the organization prescribed in the BLM guidance (USDI-BLM 2005). Existing conditions described herein are used as the baseline against which impacts of the different alternatives are analyzed and compared in Chapter 4.

Management of resources and resource uses on public lands administered by the BLM is directed by a variety of laws, regulations, policies, and other requirements as summarized in Chapter 1. The BiFO operates under these requirements and guidance and also considers Best Management Practices (BMPs) in the management of resources and resource uses in the decision area.

Throughout this document, the term "planning area" refers to all lands in the BiFO administrative boundary, regardless of ownership or jurisdiction. The term "decision area" refers to lands in the planning area where the BLM has authority to make land use and management decisions; this includes split estate lands where the federal government has retained subsurface minerals.

3.2 Physical, Biological, and Heritage Resources

Section 3.2 provides information on the current condition of resources that could be affected by the revised RMP alternatives described in Chapter 2. Resources discussed in this RMP include:

- Air
- Climate change
- Geology
- Soil
- Water
- Vegetation
    - Forests and woodlands
    - Rangelands
    - Riparian and wetlands
    - Invasive species and noxious weeds
    - Special status plants
- Wildlife habitat and special status species
- Fisheries habitat and special status species

- Wild horses
- Cultural/heritage resources
- Paleontological resources
- Visual resources
- Fire ecology and management
- Wilderness characteristics
- Cave and karst resources

3.2.1 Air

Regional air resources are influenced by the interaction of several factors, including weather, climate, the magnitude and spatial distribution of local and regional air pollutant sources, and the chemical properties of emitted air pollutants. Air resources include air quality and air quality related values (AQRVs), which include visibility and acid deposition to soils and lakes.

3.2.1.1 Regional Winds

Wind is a critical component of ambient air quality because it disperses pollutants and transports them away from the point of origin. The prevailing wind direction for Billings, Montana is out of the southwest, with the exception of May to July, when wind typically comes from the north (see Table 3-1). Average wind speeds range from 9 to 13 miles per hour (mph), which is generally considered a "gentle breeze" where "leaves and small twigs can be in constant motion and where the wind can extend a light flag" (Lutgens and Tarbuck 1989). Winter conditions may produce moderate winds with individual days generating strong winds.

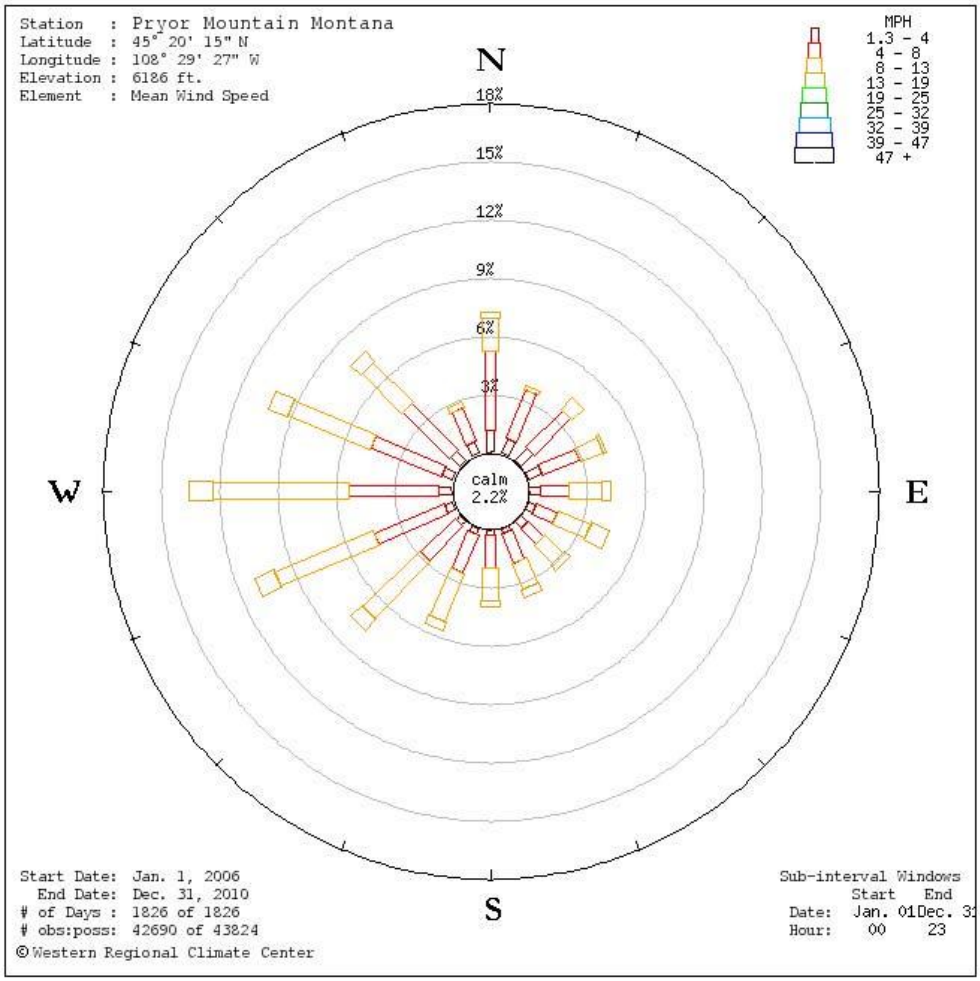
Table 3-1 Prevailing Wind Directions and Average Speeds (mph) for Billings

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
SW	SW	SW	SW	N	N	N	SW	SW	SW	SW	SW	SW
13	12	11	11	10	10	09	09	10	10	12	13	11

Note:
Source: http://www.wrcc.dri.edu/htmlfiles/westwinddir.html (data from 1992-2002), accessed August 23, 2011.
http://www.wrcc.dri.edu/htmlfiles/westwind.final.html (data from 1996-2006), accessed August 23, 2011.

Wind varies considerably from one location to another. A wind rose for the Pryor Mountain Remote Automated Weather Station (RAWS) in the southern portion of the BiFO indicates more westerly winds at this location. The 16 arms in Figure 3-1indicate the frequency of wind blowing from the indicated direction. Longer arms indicate that the wind more frequently originates from the illustrated direction. Colored bands within each arm indicate the proportion of time that the wind blows with a given speed.

Figure 3-1 Wind Rose for Pryor Mountain, Montana (data from 2006-2010)



Note:
Source: http://www.raws.dri.edu

3.2.1.2 Criteria Air Pollutants

Criteria air pollutants are substances for which the US Environmental Protection Agency (USEPA) established national health-based concentration standards under the National Ambient Air Quality Standards (NAAQS) program. Criteria air pollutants include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter with a diameter greater than or equal to 10 micrometers (PM_{10}), particulate matter with a diameter greater than or equal to 2.5 micrometers ($PM_{2.5}$), and sulfur dioxide (SO_2). Criteria air pollutant concentrations are compared to NAAQS (USEPA 2010c) and Montana Ambient Air Quality Standards (MAAQS). The NAAQS include both primary and secondary standards, as shown in Table 3-2. Primary standards protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards protect public welfare by preventing damage to buildings, infrastructure, and vegetation.

Table 3-2 Federal and State Ambient Air Quality Standards

Pollutant	Federal NAAQS[1]			State MAAQS[2]
	Averaging Time	Level	Standard Type	Level
Carbon Monoxide (CO)	8-hour	9 ppm[3]	Primary	9 ppm[12]
	1-hour	35 ppm[3]	Primary	23 ppm[12]
Fluoride in Forage	Monthly	N/A	N/A	50 µg/g
	Grazing Season	N/A	N/A	35 µg/g
Lead (Pb)	3-month (rolling)	0.15 µg/m^3 [5]	Primary, Secondary	N/A
	90-day	N/A	N/A	1.5 µg/g[5]
Nitrogen Dioxide (NO_2)	Annual	0.053 ppm[5]	Primary, Secondary	0.05 ppm[13]
	1-hour	0.100 ppm[10]	Primary	0.30 ppm[12]
Fine Particulate Matter ($PM_{2.5}$)	Annual	12.0 µg/m^3 [11]	Primary	N/A
	Annual	15.0 µg/m^3 [11]	Secondary	N/A
	24 hour	35 µg/m^3 [7]	Primary, Secondary	N/A
Particulate Matter (PM_{10})	Annual	N/A	N/A	50 µg/m^3 [4]
	24-hour	150 µg/m^3 [8]	Primary, Secondary	150 µg/m^3
Settleable Particulate	30-day	N/A	N/A	10 g/m^2
Ozone (O_3)	8-hour	0.075 ppm[6]	Primary, Secondary	0.10 ppm[12]
Sulfur Dioxide (SO_2)	Annual	0.030 ppm[5]	Primary	0.02 ppm[13]
	24-hour	0.14 ppm[3]	Primary	0.10 ppm[12]
	3-hour	0.5 ppm[3]	Secondary	N/A
	1-hour	0.075 ppm[9]	Primary	0.50 ppm[14]
Visibility	Annual	N/A	N/A	3 x 10^{-5}/m[15]

Note:

1 NAAQS are codified in Title 40 of the Code of Federal Regulations (CFR), Part 50.

2 MAAQS are codified in Title 17, Chapter 8, Subchapter 2 of the Ambient Air Quality regulations in the Administrative Rules of Montana (ARM).

3 Not to be exceeded more than once per calendar year.

4 Not to be exceeded more than once per year on average over 3 years.

5 Not to be exceeded.

6 Not to be exceeded based on the 3-year average of the fourth-highest daily maximum 8-hour concentrations per calendar year. On January 19, 2010, USEPA proposed to revise the 8-hour standard to a level between 0.060 to 0.070 ppm (EPA 2010q).

7 Not to be exceeded based on the 98th percentile of 24-hour concentrations at each population-oriented monitor.

8 Not to be exceeded more than once per calendar year, based on a 3-year average of maximum 24-hour values.

9 Not to be exceeded based on a 3-year average of the 99th percentile of the daily maximum concentrations.

10 Not to be exceeded based on a 3-year average of the 98th percentile of the daily maximum concentrations.

11 Not to be exceeded based on a 3-year average of the weighted annual mean from one or more community monitors.

12 Not to be exceeded more than once over any 12 consecutive months.

13 Arithmetic average not to be exceeded more than once over any 4 consecutive quarters.

14 Not to be exceeded more than 18 times in any 12 consecutive months.

15 This standard applies only in certain Class I areas (Table 3-7).

Areas that do not meet federal standards are designated as nonattainment areas (Map 4). Within the BiFO, the only nonattainment area is an SO_2 nonattainment area located in a small area in Laurel, Montana in Yellowstone County (USEPA 2010a, 2010b). The Sundance Lodge

Recreation area lies within the Laurel nonattainment area. Although not designated as an SO_2 nonattainment area, the Billings area has been identified as an area of concern for SO_2 by the Montana Department of Environmental Quality (MDEQ).

To the east of the BiFO, the community of Lame Deer within Rosebud County is the only nonattainment area near the planning area. Lame Deer is designated nonattainment due to high PM_{10} concentrations.

3.2.1.3 Air Quality Monitoring

The MDEQ performs regulatory monitoring of NO_2, ozone, SO_2, PM_{10}, and $PM_{2.5}$ in order to determine compliance with NAAQS and MAAQS. Air pollutant concentration monitoring networks in Montana include the State and Local Air Monitoring Stations (SLAMS), a National Core (NCore) monitoring site, Tribal monitoring networks, and the Clean Air Status and Trends Network (CASTNet). SLAMS are usually located in urban areas and measure criteria pollutants. The MDEQ operates the SLAMS network to determine compliance with regulatory concentration standards. CASTNet stations are located in remote areas and measure concentrations of compounds that are of interest to ecosystem health. Air pollutant concentrations are usually reported on a volume basis as parts per million (ppm) or parts per billion (ppb) for gaseous substances and on a mass basis as micrograms per cubic meter ($\mu g/m^3$) for solid substances such as PM_{10} and $PM_{2.5}$.

Monitors that provide information on AQRVs include the National Acid Deposition Program (NADP) network and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network. A list of monitoring stations in or near the planning area is provided in Table 3-3.

Table 3-3 Air Quality Monitoring Stations in the BiFO or Vicinity

Monitoring System	Station Identifier	Pollutant or AQRV	Location	Latitude	Longitude
SLAMS	30-111-0066	SO_2	Billings – Coburn Road	45.7883	-108.4595
	30-111-0085	$PM_{2.5}$	Billings – St. Luke's	45.7822	-108.5115
	30-087-0001	NO, NO_2, NO_x, O_3, PM_{10}, $PM_{2.5}$	Birney – Tongue River	45.3662	-106.4894
	30-031-0019	$PM_{2.5}$	Bozeman – High School	45.7262	-111.0681
CASTNET	YEL408	O_3, SO_2, Deposition	Yellowstone National Park (Wyoming)	44.5597	-110.4006
NADP	MT00	Wet Deposition	Little Bighorn Battlefield National Monument	45.5686	-107.4375
	WY08	Wet Deposition	Yellowstone National Park – Tower Falls (Wyoming)	44.9166	-110.4203
IMPROVE	NOCH1	Visibility	Northern Cheyenne Indian Reservation	45.6493	-106.557
	ULBE1	Visibility	UL Bend	47.5823	-108.72
	NOAB1	Visibility	North Absaroka (Wyoming)	44.7448	-109.3816

Table 3-3 Air Quality Monitoring Stations in the BiFO or Vicinity

Monitoring System	Station Identifier	Pollutant or AQRV	Location	Latitude	Longitude
	YELL2	Visibility	Yellowstone NP (Wyoming)	44.5653	-110.4002
	CLPE1	Visibility	Cloud Peak (Wyoming)	44.3335	-106.9565

Sources: MDEQ 2013, USEPA 2012.

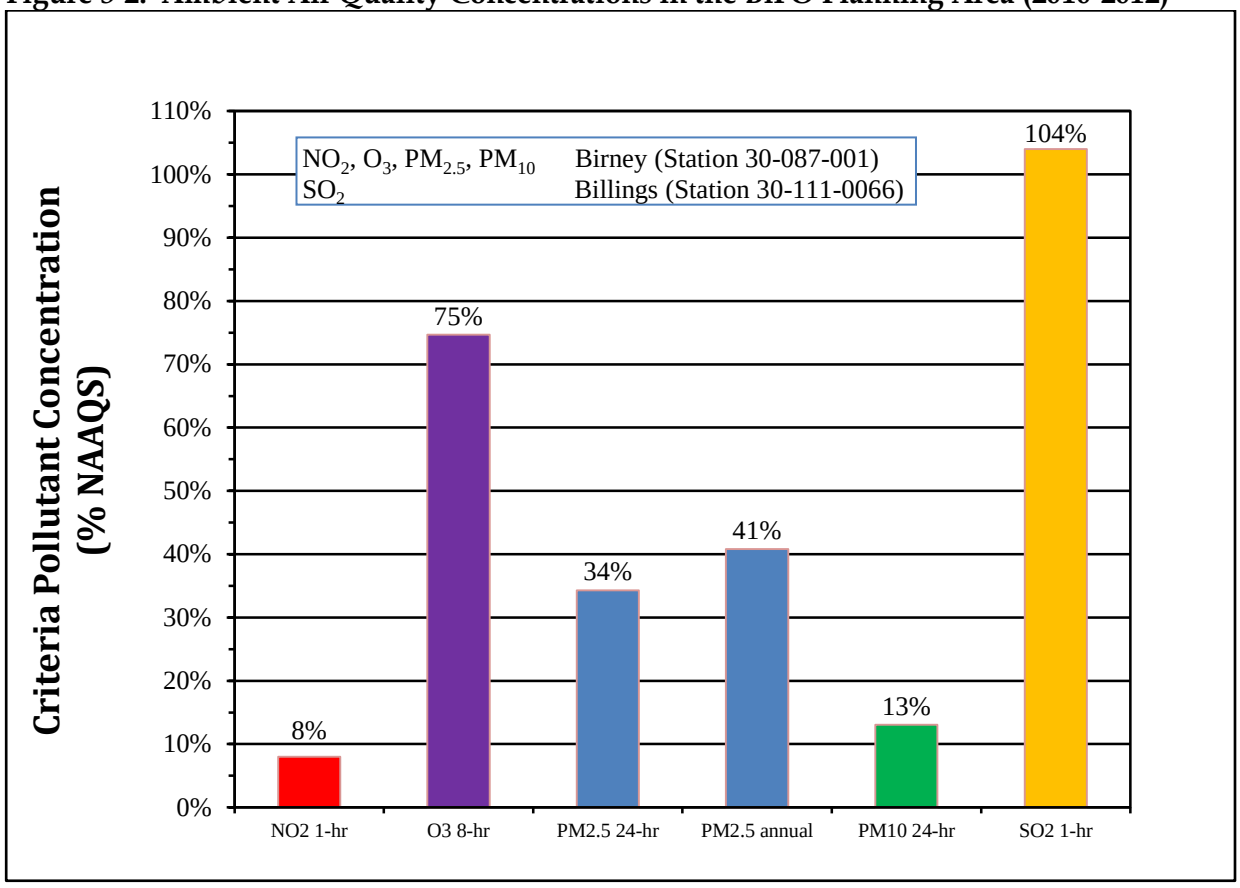
The sources and effects of each criteria pollutant are explained below. Recent ambient air quality monitoring data are shown as the percentage of the monitored concentration compared to the NAAQS in Figure 3-2– Ambient Air Quality Concentrations in the BiFO Planning Area. Values shown in Figure 3-2 are based on the format of the NAAQS. For example, when a NAAQS allows one exceedance of a standard per year, the second highest monitored value is reported for comparison to the NAAQS. Due to the geographic distribution of Montana monitors, some of the monitoring sites considered to be representative of the planning area are located outside the planning area.

3.2.1.4 Carbon Monoxide

CO can have significant effects on human health because it combines readily with hemoglobin and consequently reduces the amount of oxygen transported in the bloodstream. Effects on humans from exposure to high CO concentrations can include slight headaches, nausea, or death.

Motor vehicles and other internal combustion engines are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. CO is also created during refuse, agricultural, and wood-stove burning and through some industrial processes.

Figure 3-2: Ambient Air Quality Concentrations in the BiFO Planning Area (2010-2012)



Source: MDEQ 2013
Notes:
NO_2 1 hour: 3 year average of 8th highest daily maximum (2010-2012)
O_3 3-year average of 4th highest daily maximum 8-hour average (2010-2012)
$PM_{2.5}$ 24-hour: 3-year average of 98th percentile (2010-2012)
Annual: 3-year average weighted mean (2010-2012)
PM_{10} 3 year average of second maximum (2010-2012,)
SO_2 3-year average of the 99th percentile (2010-2012)

3.2.1.5 Lead

The primary historical sources of lead emissions have been certain types of industrial sources and lead in gasoline and diesel fuel. However, since lead in fuels has decreased substantially, processing of metals containing trace amounts of lead is now the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturing plants. The effects of lead exposure include brain and other nervous system damage; children exposed to lead are particularly at risk. Due to the lack of large lead emission sources, lead levels in the planning area are expected to be well below the NAAQS and MAAQS. No data are available to determine the trend in lead concentrations. However, decreasing lead levels in gasoline and diesel fuel indicate a likely decrease in lead levels within the planning area.

3.2.1.6 Nitrogen Dioxide

Nitrogen oxides (NO_x), including nitric oxide (NO) and NO_2, are formed when naturally occurring atmospheric nitrogen and oxygen are combusted with fuel in automobiles, power plants, industrial processes, and home and office heating. At high exposures, NO_2 causes respiratory system damage of various types, including bronchial damage. Its effects are exhibited by increased susceptibility to respiratory infection and changes in lung function. Within the atmosphere, NO_2 contributes to visibility impacts and may be visible as reddish-brown haze. NO_2 and other forms of NO_x form nitric acid (HNO_3), a component of atmospheric deposition (e.g., acid rain.).

Hourly NO_2 concentrations at the Birney monitor in nearby Rosebud County were 8 percent of the NAAQS during 2010-2012.

3.2.1.7 Ozone

Ozone is not emitted directly into the atmosphere. Instead, it is formed by a photochemical reaction of precursor air pollutants, including volatile organic compounds (VOCs) and NO_x. These precursors are emitted by mobile sources, stationary combustion equipment, and other industrial sources. Ozone is produced year-round, but due to greater sunlight and air temperatures, urban ozone concentrations are generally greatest during the summer. Elevated ozone concentrations may also occur during winter in snow-covered rural areas.

Ozone is a severe eye, nose, and throat irritant. A potent oxidant, it increases susceptibility to respiratory infections and may cause substantial damage to vegetation (leaf discoloration and cell damage) and other materials (attacking synthetic rubber, textiles, paints, and other substances).

The 3-year average of the fourth highest 8-hour ozone concentration was 0.056 ppm at the Birney monitor, as estimated using data from 2010-2012. This measured concentration is 75 percent of the 8-hour 2008 primary and secondary NAAQS of 0.075 ppm.

3.2.1.8 Particulate Matter

Particulate matter includes PM_{10} and $PM_{2.5}$. PM_{10} impacts include health effects (because PM_{10} is small enough to reach the lungs when inhaled), deposition on plants and surfaces (including soiling of snow which can contribute to climate change), localized reductions in visibility, and potential corrosion. PM_{10} emissions are generated by a variety of sources including agricultural activities, industrial emissions, and road dust re-suspended by vehicle traffic. Within the planning area, primary sources of PM_{10} include smoke from wildland fire, residential wood burning, street sand, physically disturbed soils, and dust from unpaved roads.

$PM_{2.5}$ poses greater health concerns than PM_{10} because it can pass through the nose and throat and be trapped deep in the lungs. Fine particulate also contributes to reduced visibility in nationally important areas such as national parks and wilderness areas. $PM_{2.5}$ emissions are primarily generated by internal combustion diesel engines, soils with high silt and clay content, and secondary aerosols formed by chemical reactions in the atmosphere.

The second highest 24-hour PM_{10} concentration near the planning area was 19.6 $\mu g/m^3$ or 13 percent of the corresponding primary and secondary NAAQS at the Birney monitor (Rosebud County), as estimated using data from 2010-2012. The 3-year average 98th percentile 24-hour $PM_{2.5}$ concentration at the same location and year was 12 $\mu g/m^3$, which was 34 percent of the corresponding primary and secondary NAAQS. The 3-year average weighted mean $PM_{2.5}$ annual concentrations at the same location was 4.9 $\mu g/m^3$, or 41 percent of the corresponding primary and secondary NAAQS.

3.2.1.9 Sulfur Dioxide

SO_2 is a colorless gas with a pungent odor. Prolonged exposure to high levels of SO_2 can lead to respiratory failure, and SO_2 plays an important role in the aggravation of chronic respiratory illnesses such as asthma. SO_2 is emitted primarily from stationary sources that burn fossil fuels (i.e., coal and oil) containing trace amounts of elemental sulfur. Other human-caused sources of SO_2 include metal smelters and petroleum refineries. In the atmosphere, SO_2 converts to sulfuric acid, a component of atmospheric deposition (acid rain), and forms secondary aerosols, subsequently contributing to visibility impacts in nationally important areas.

The 3-year average 99^{th} percentile 1-hour SO_2 concentration was 78 ppb in Billings (Yellowstone County) in 2010-2012. This concentration was 104 percent of the corresponding primary NAAQS, as calculated using data from USEPA's Air Quality Statistics Report website (http://www.epa.gov/airquality/airdata/ad_rep_con.html).

The 1-hour SO_2 NAAQS is a relatively new standard and EPA has not yet determined attainment/nonattainment area designations for this standard. On May 27, 2011, the MDEQ submitted a letter to the USEPA requesting that all counties in Montana should be designated attainment or unclassifiable based on data from 2008 through 2010 (MDEQ 2011). The MDEQ letter reported that high monitored 1-hour SO_2 concentrations measured during 2010 were due to events that are not likely to be repeated in future years.

3.2.1.10 Air Quality Index

The USEPA air quality index (AQI) shows that the BiFO has good air quality that poses little health risk to the general public (Table 3-4). The AQI is an index used for reporting daily air quality indicating how clean or polluted an area's air is and whether associated health effects may be a concern. The AQI focuses on potential health effects a person may experience in a few hours or days after breathing ambient air.

The USEPA calculates the AQI for five criteria air pollutants: ground-level ozone, particulate matter, CO, CO_2, and NO_2. For each of these pollutants, USEPA established NAAQS to protect public health. An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level the USEPA has set to protect public health. The following terms define AQI information:

- **Good –** The AQI value is between 0 and 50. Air quality is considered satisfactory and air pollution poses little or no risk.
- **Moderate –** The AQI is between 51 and 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
- **Unhealthy for Sensitive Groups –** When AQI values are between 101 and 150, members of "sensitive groups" may experience health effects. These groups are likely to be affected at lower levels than the general public. For example, people with lung disease are at greater risk from exposure to ozone, while people with either lung disease or heart disease are at greater risk from exposure to particulate pollution. The general public is not likely to be affected when the AQI is in this range.
- **Unhealthy –** Everyone may begin to experience health effects when AQI values are between 151 and 200, and members of sensitive groups may experience more serious health effects.

The AQI data summarized below show that air quality in Yellowstone County poses little risk to the general public. Over a recent 3-year period from 2010-2012, 84 percent of the days with data were rated "good" with 14 percent being "moderate." While health risk occurrences have been documented in Yellowstone County, occurrences of unhealthy days for sensitive populations are rare (approximately 2 percent); no days were unhealthy or very unhealthy. Pollutants responsible for the highest AQIs were $PM_{2.5}$ and SO_2

Table 3-4 Air Quality Index Report

AirData Air Quality Index Report – Field Office Summary								
		Number of Days						
County	Data Years	With Data	Rated Good	Rated Moderate	Rated Unhealthy for Sensitive Groups	Rated Unhealthy	Percentage of Days Rated Good	Average. 90th Percentile AQI
Yellowstone	2010-2012	1,096	1,924	157	15	0	84%	59

Note:
Source: USEPA

3.2.1.11 VOCs

VOCs include a variety of chemicals, some of which have adverse health effects. Concentrations of many VOCs are consistently higher indoors than outdoors. VOCs are emitted from equipment such as organic liquid storage tanks, leaking equipment, and from engines and other combustion equipment. In addition, thousands of products emit VOCs, including paints, cleaning supplies, pesticides, building materials, office equipment, glues, and permanent markers (USEPA 2010d). VOCs are not subject to a NAAQS. However, since they react with NO_x to form ground-level ozone, VOCs are a precursor to ozone and VOC emissions are regulated by USEPA.

3.2.1.12 Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are pollutants that are known or suspected to cause cancer or other serious health problems, which include chronic respiratory disease, reproductive disorders, or birth defects. Of the 187 regulated HAPs, several are commonly emitted from planning area engines and other sources. Engine-emitted HAPs include formaldehyde, benzene, toluene, ethyl benzene, xylenes, and hexane (i.e., n-hexane). Potential concentrations of HAPs are compared to health-based thresholds to estimate the risk of health effects.

3.2.1.13 Other Pollutants

Other air pollutants of interest include nitrogen and sulfur compounds because they contribute to acid deposition and regional haze. Nitrogen compounds include particulate nitrate (NO_3^-), nitric acid, and ammonium (NH_4^+), while sulfur compounds include particulate sulfate (SO_4^{-2}) and SO_2. Concentrations of HNO_3, SO_2, NH_4^+, NO_3^-, and SO_4^{-2} are low in Montana relative to concentrations across the United States (NADP 2010c, 2010d, 2010e).

3.2.1.14 Criteria Pollutant Emissions

Current air quality reflects the impacts of emissions from existing sources of air pollution. Table 3-5 provides an estimate of recent emissions within the BiFO based on a USEPA estimate of recent emissions based on the 2011 National Emissions Inventory (NEI). Emissions of HAPs and greenhouse gases (GHGs) are not included in Table 3-5. Due to recent implementation of a new federal air quality rule, many facilities within the planning area will began reporting GHG emissions to USEPA in 2011.

Table 3-5 BiFO Criteria Pollutant Emissions by County

County	Emissions (tons/year)					
	CO	NO_X	PM_{10}	$PM_{2.5}$	VOC	SO_2
Big Horn	12,539	4,506	16,440	2,920	3,695	474
Carbon	8,072	890	5,903	1,135	2,077	49
Golden Valley	2,659	198	1,241	330	673	13

Musselshell	3,276	338	2,963	532	931	16
Stillwater	4,801	1,262	6,888	1,032	850	24
Sweet Grass	7,871	1,073	3,138	795	1,669	39
Wheatland	1,306	285	1,623	278	269	5
Yellowstone	29,768	8,761	18,082	3,347	7,876	7,473
Total	**70,292**	**17,313**	**56,278**	**10,369**	**18,040**	**8,093**
Biogenic emissions	25,425	6,272	---	---	150,644	---
Wildfire emissions	55,143	546	5,426	4,598	12,952	351
Total [2]	**150,860**	**24,131**	**61,704**	**14,967**	**181,636**	**8,444**

Note:
Source: USEPA 2013d.
1 Reported values exclude emissions from biogenic sources and wildfires.
2 Total emissions.

3.2.1.15 Emission Sources

Emission sources include rural and urban sources and the largest sources vary by pollutant. The largest three source categories for each criteria air pollutant are provided in Table 3-6. When emissions from all counties within the BiFO are aggregated, mobile on-road vehicles are the largest sources of CO, NO_x, and VOCs based on data from USEPA's 2008 National Emission Inventory. PM_{10} and $PM_{2.5}$ emissions are emitted primarily by fugitive dust sources. $PM_{2.5}$ is also emitted by electricity generation and wood combustion. SO_2 is emitted primarily by industrial sources. Lead is not included in Table 3-6 because it is emitted in small quantities.

Table 3-6 Largest 2008 Emission Sources by Pollutant

Pollutant / Sector		Emissions (tons/year)	Emission Percentage (%)
CO	Mobile on-road vehicles	28,378	40%
	Prescribed Fires	21,865	31%
	Mobile non-road vehicles	9,963	14%
	Other sources	10,085	14%
	Total	**70,291**	**100%**
NO_x	Mobile on-road vehicles	5,559	32%
	Locomotives	3,862	22%
	Electricity	2,009	12%
	Other sources	5,883	34%
	Total	**17,313**	**100%**
PM_{10}	Unpaved road fugitive dust	26,760	48%
	Mining	12,050	21%
	Agriculture: Crops and Livestock	8,786	16%

Pollutant / Sector		Emissions (tons/year)	Emission Percentage (%)
	Other sources	8,862	15%
	Total	**56,278**	**100%**
$PM_{2.5}$	Unpaved road fugitive dust	2,668	26%
	Mining	1,531	15%
	Prescribed Fires	1,821	18%
	Other sources	4,350	42%
	Total	**10,370**	**100%**
SO_2	Electricity	4,643	57%
	Chemical	1,988	25%
	Petroleum	962	12%
	Other sources	500	6%
	Total	**8,093**	**100%**
VOC	Prescribed fires	5,135	28%
	Oil and Gas	2,563	14%
	Petroleum	1,857	10%
	Other sources	8,484	47%
	Total	**18,039**	**100%**

Note:
Source: Derived from USEPA 2013d.

3.2.1.16 Air Quality Related Values

AQRVs include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified for a particular area. Air pollution can impact AQRVs through ambient exposure to elevated atmospheric concentrations, such as ozone effects to vegetation, through impairment of scenic views by pollution particles in the atmosphere, and through deposition of air pollutants, such as sulfur and nitrogen compounds, on the earth's surface through precipitation or dry deposition. AQRVs on federal lands are identified and managed within the respective jurisdictions of several land management agencies, including the US Forest Service (USFS), National Park Service (NPS), and US Fish and Wildlife Service (USFWS), and the BLM. Class I areas are afforded specific AQRV protection under the Clean Air Act. Class II areas may be analyzed to assess AQRV impacts if they are identified as sensitive Class II areas.

No Class I areas are located within the BiFO. However, the Northern Cheyenne Indian Reservation is adjacent to the eastern boundary of the BiFO, and other Class I areas are located nearby as shown in Table 3-7. Sensitive Class II areas include the Crow Indian Reservation, the Bighorn Canyon National Recreation Area, Little Bighorn Battlefield National Monument, and several National Wildlife Refuges (NWR).

Table 3-7 Class I and Sensitive Class II Areas in or near the BiFO

Area name	Acres	Jurisdictional Agency
Class I Areas		
North Absaroka Wilderness	351,104	USFS
Northern Cheyenne Indian Reservation	444,000	Tribal
U. L. Bend Wilderness Area	20,890	USFWS
Wind Cave National Park	28,060	NPS
Yellowstone National Park	2,020,625	NPS
Sensitive Class II Areas		
Bighorn Canyon National Recreation Area	120,296	NPS
Crow Indian Reservation	2,282,000	Tribal
Halfbreed Lake NWR	4,318	FWS
Hailstone NWR	920	FWS
Lake Mason NWR	1,250	FWS
Little Bighorn Battlefield National Monument	765	NPS

Note:
Source: USEPA 2010c.
NWR = National Wildlife Refuge

3.2.1.17 Deposition

Atmospheric deposition refers to the processes by which air pollutants are removed from the atmosphere and deposited on terrestrial and aquatic ecosystems. Deposition is reported as the mass of material deposited on an area in a given period (e.g., kilogram per hectare per year [kg/ha-yr]). Wet deposition refers to air pollutants deposited by precipitation, such as rain and snow. One expression of wet deposition is precipitation pH, a measure of the acidity or alkalinity of the precipitation. Dry deposition refers to gravitational settling of particles and adherence of gaseous pollutants to soil, water, and vegetation. Total deposition refers to the sum of airborne material transferred to the Earth's surface by both wet and dry deposition. Total nitrogen deposition is calculated by summing the nitrogen portion of wet and dry deposition of nitrogen compounds, and total sulfur deposition is calculated by summing the sulfur portion of wet and dry deposition of sulfur compounds.

The normal range of precipitation pH is 5.0–5.6 (Seinfeld 1986). At Little Bighorn Battlefield National Monument, 2010 annual average precipitation pH was approximately 5.4 (NADP 2011). The planning area has low nitrate, sulfate, and ammonium deposition compared to the rest of the United States.

Atmospheric deposition can cause acidification of lakes and streams. One expression of lake acidification is the change in acid neutralizing capacity, the lake's capacity to resist acidification from atmospheric deposition. Acid neutralizing capacity is expressed in units of micro-equivalents per liter (μeq/L). Lakes with acid neutralizing capacity values of between 25

to 100 μeq/L are considered to be sensitive to atmospheric deposition, lakes with acid neutralizing capacity values of between 10 to 25 μeq/L are considered to be very sensitive, and lakes with acid neutralizing capacity values of less than 10 are considered to be extremely sensitive (Fox et al. 1989).

3.2.1.18 Visibility

Visibility is a measure of how far and how well an observer can see a distant and varied scene. Pollutant particles in the atmosphere can impair scenic views, degrading the contrast, colors, and distance an observer is able to see. Light extinction is used as a measure of visibility and is calculated from the monitored components of fine particle mass (aerosols) and relative humidity. Light extinction is expressed in terms of deciviews, a measure for describing perceived changes in visibility. One deciview is defined as a change in visibility that is just perceptible to an average person, which is approximately a 10-percent change in light extinction. To estimate potential visibility impairment, monitored aerosol concentrations are used to estimate visibility conditions for each monitored day. Aerosol species affecting visual range include ammonium sulfate, ammonium nitrate, organic mass, elemental carbon, soil elements, and coarse mass.

Daily visibility values are ranked from clearest to haziest and divided into three categories to indicate the mean visibility for all days (average), the 20 percent of days with the clearest visibility (20 percent clearest), and the 20 percent of days with the worst visibility (20 percent haziest). Visibility can also be defined by standard visual range (SVR), which is the farthest distance at which an observer can see a black object viewed against the sky above the horizon; the larger the SVR, the cleaner the air. Since 1980, the Interagency Monitoring of Protected Visual Environments (IMPROVE) network has measured visibility in national parks and wilderness areas.

The average standard visible range at the Northern Cheyenne Indian reservation IMPROVE monitor was 58 miles during the average haziest 20 percent of days and 171 miles during the clearest 20 percent of days. Similar standard visual range data are 76 and 182 miles at Yellowstone National Park, and 57 and 168 miles at the UL Bend National Wildlife Refuge.

Visibility has remained relatively constant over recent years in the planning area and nearby areas. Standard visual range trends at Class I areas near the BiFO are shown in Figure 3-3 and Figure 3-4 Visibility Trends During the 20 Percent Worst and 20 Percent Best Days. From 2005 through 2009, visibility on the 20 percent worst visibility days improved slightly near the planning area. When the 20 percent best visibility days are considered, visibility improved throughout central Montana and northwestern Wyoming.

Figure 3-3 Visibility Trends on the Best and Worst Visibility Days (2005-2009)

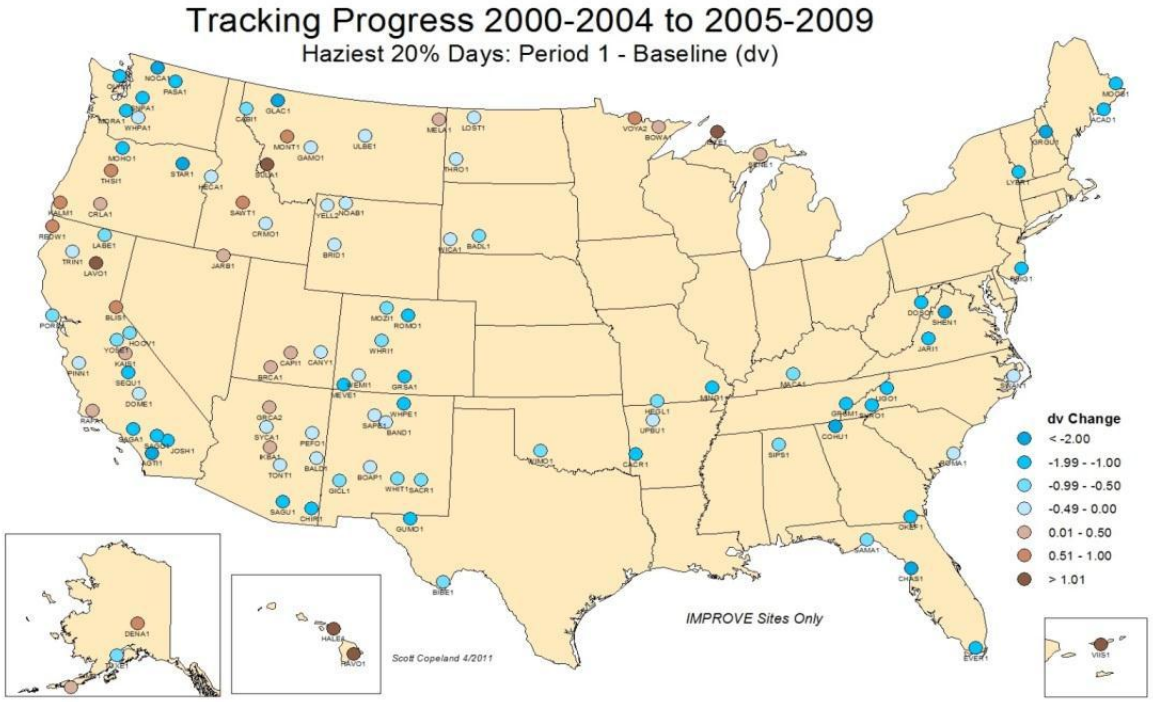
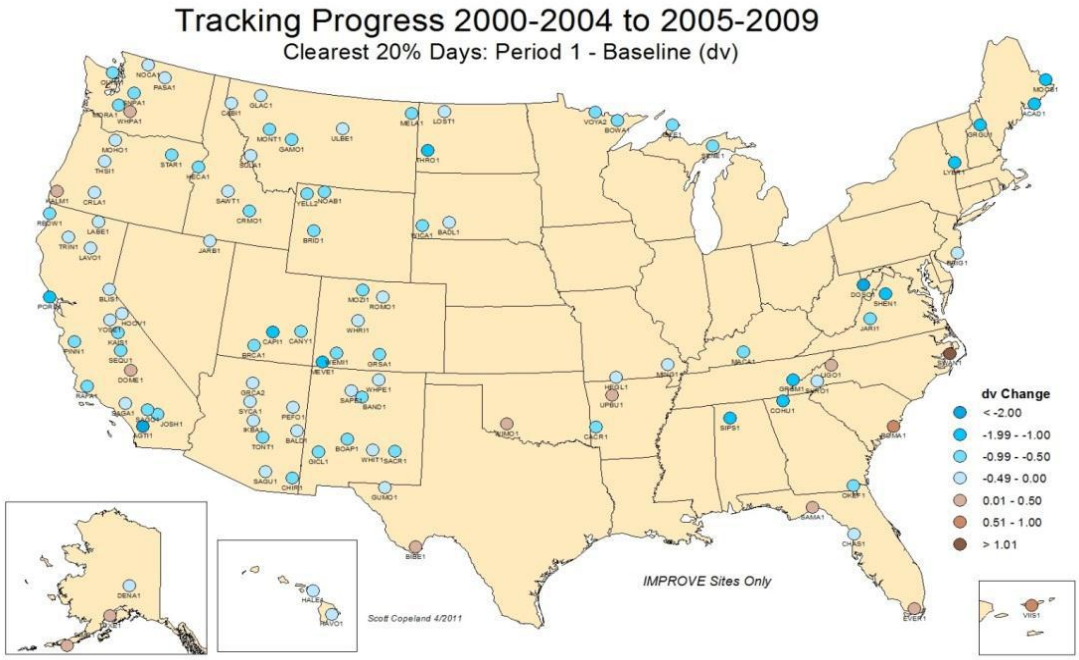


Figure 3-4 Visibility Trends on the Best and Worst Visibility Days (2005-2009)



Note:
Source: IMPROVE 2011

3.2.1.19 Smoke Management

Smoke contains large quantities of CO and particulate matter. The MDEQ regulates prescribed fire activity under the authority of the Montana Open Burning Regulations (ARM Title 17, Section 8, Subchapter 6). The MDEQ issues open burn permits and, along with several counties, operates a Major and Minor Open Burning Smoke Management Program under the authority of MDEQ's Open Burning Regulations. In cooperation with the MDEQ, smoke management for prescribed fire activity is managed by the Montana/Idaho Airshed Group. Prescribed burns would be completed in a manner that is consistent with procedures established by the Montana/Idaho Airshed Group and the associated permit conditions of the Major Open Burning Permit and the rules addressing Minor Open Burning pursuant to the MDEQ Open Burning Regulations.

3.2.2 Climate

The topography of the state plays an important role in Montana's climate and creates a variable climate in the BiFO planning area. The Continental Divide exerts a marked influence on the climate of adjacent areas. West of the Divide the climate might be termed a modified northern Pacific coast type, while to the east, climatic characteristics are decidedly continental. The continental climate of eastern Montana is characterized by light precipitation totals, abundant sunshine, low relative humidity, and a relatively large annual and diurnal temperature range. A climate summary for Billings, Montana is presented in Table 3-8.

Table 3-8 Monthly Climate Summary for Billings, Montana

Period of Record: 7/1/1948 to 8/31/2009													
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	32.8	39.1	46.0	56.8	67.1	76.8	86.7	85.1	72.6	60.3	45.1	35.9	58.7
Average Min. Temperature (F)	14.3	19.6	25.0	34.0	43.4	51.7	58.4	56.8	47.0	37.3	26.1	18.1	36.0
Average Total Precipitation (in.)	0.73	0.59	1.06	1.77	2.27	2.04	1.10	0.84	1.31	1.18	0.71	0.65	14.26
Average Total Snowfall (in.)	10.2	7.4	10.4	8.7	1.7	0.0	0.0	0.0	1.1	4.2	6.6	8.7	58.9
Average Snow Depth (in.)	2	2	1	0	0	0	0	0	0	0	1	2	1

Note:
Source: Western Regional Climate Center 2009.

3.2.2.1 Temperature

Winters in the planning area, while usually cold, have few extended cold spells. Between cold waves there are periods, sometimes longer than 10 days, of mild but often windy weather. These warm, windy winter periods occur almost entirely along the eastern slopes of the Divide and are known as chinooks. The so-called chinook belt extends from the Browning-Shelby area southeastward to the Yellowstone Valley above Billings. Through this belt, chinook winds frequently reach speeds of 25 to 50 mph or more and can persist, with few interruptions, for

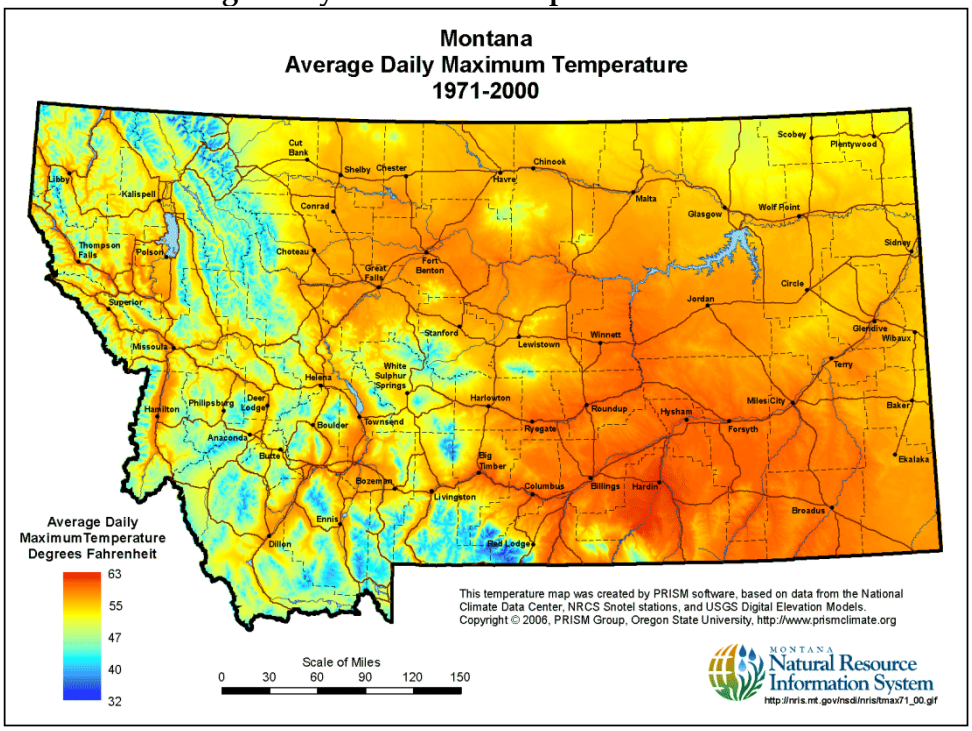
several days. In January, the coldest month, temperature averages range from 11° Fahrenheit (F) for the Northeastern Division to 22°F for the South Central (upper Yellowstone Valley) Division. In some areas east of the Continental Divide, January or February can average zero or below, however such occurrences range from infrequent to approximately once in 10 to 15 years in the coldest spots.

January is also the coldest month for Billings, with average day time high temperatures in the low 30s, and average night time low temperatures in the teens. Overnight lows below zero are fairly common during winter, and record low temperatures for all six of the cooler season months from October through March are below 0°F. However, nearly as common as these coldest temperatures, the region also experiences warm down slope winds fairly frequently during the winter. This is clear in the high temperatures recorded in Billings, where the daily maximum record is nearly at or above 70°F for each of these six colder months. The coldest temperature on record at Billings was -32°F on Christmas Eve, 1983, while the warmest high temperature in January is 68°F recorded on January 11, 1953.

Most Montana lakes freeze over every winter. All rivers carry floating ice during the late winter or early spring. Few streams freeze solid; water generally continues to flow beneath the ice. During the coldest winters, anchor ice, which builds from the bottom of shallow streams, may on rare occasions create flooding.

During the summer, hot weather occurs fairly often in the planning area. In Billings, July and August are the warmest months with average daytime highs in the upper mid 80s. This midsummer warmth is fairly steady, seldom severe, and is tempered by normal night time temperatures in the 50s and 60s. Generally, adequate moisture permits rapid plant and crop development during most growing seasons. The hottest temperature recorded at the Billings station was 108°F occurring on July 14, 2002. Figure-3-5 - Montana Average Daily Maximum Temperature shows state wide average daily maximum temperature.

Figure-3-5 Montana Average Daily Maximum Temperature



Note:
Source: NRIS 2011a.

3.2.2.2 Precipitation

Precipitation varies widely and seasonally, and over the mountainous areas depends largely on topographic influences. Areas on the windward side of mountain ranges are generally the wettest. On the eastern plains, as seen in the Billings records, there are two peaks in the average monthly rainfall, the primary one in May and a second less pronounced peak in September. Most annual precipitation comes as rain, and daily total precipitation seldom exceeds one inch. During the spring, precipitation events are associated with larger scale weather systems that bring widespread snow and rain to the eastern plains. Summer rains fall almost entirely during brief, but frequently intense thunderstorms.

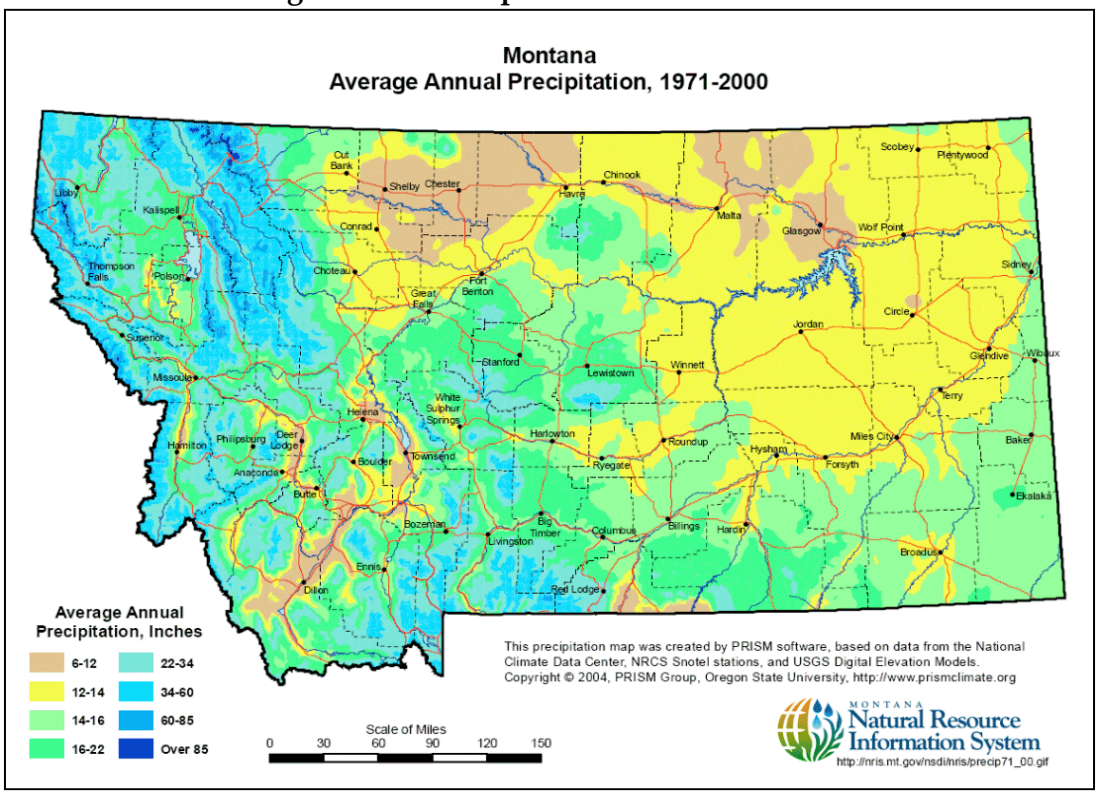
Within the planning area, an area surrounding Clarks Fork of the Yellowstone River in Carbon County is one of the driest portions of Montana. In this area, 8 miles south-southwest of Belfry, the average precipitation for a 16-year period was 6.59 inches.

Annual snowfall varies from 300 inches in mountain areas in the western half of the state, to around 20 inches at some stations in the two northern Divisions east of the Continental Divide. Most snow falls during November to March, with heavy snowstorms that can occur as early as mid-September or as late as May 1 in the higher southwestern half of the state. In eastern sections, early or late season snows are not common. Figure 3-6 - Montana Average Annual Precipitation depicts the state wide average annual precipitation.

The greatest volume of flow of Montana's rivers occurs during the spring and early summer months with the winter snowpack melt. Heavy rains falling during the spring thaw constitute a

serious flood threat. Ice jams may occur during the spring breakup, usually in March, and cause backwater flooding. Flash floods, although restricted in scope, are probably the most numerous and result from locally heavy rainstorms in the spring and summer. Damaging floods in Montana have occurred in 1952, 1953, 1964, and 2011.

Figure 3-6 Montana Average Annual Precipitation



Note:
Source: NRIS 2011a.

3.2.2.3 Other Climatic Features

Severe storms of various types occur in the planning area; however the most troublesome are hailstorms that cause crop and property damage of approximately $5 million on an average annual basis. This amount is not unusually large for an area of 146,316 square miles, and hail storm occurrence is limited mainly to July and August, infrequently in June and September.

Tornadoes develop infrequently (approximately two per year) and occur almost entirely east of the Divide, mostly in the eastern third of the state. Local but severe windstorms can occur east of the Divide, from a few to several times a year. Drought in its most severe form is not common, but dry years do occur. All parts of the state rarely suffer from dryness at the same time.

In spite of figures that indicate cold winters, growing seasons (freeze-free periods) are four months or more in much of the agricultural area. In parts of the middle Yellowstone Valley, in fact, the freeze-free period runs as long as the 150 day average at Miles City. Much of the state

has average freeze-free periods longer than 130 days, allowing plenty of time for growing a wide variety of crops.

3.2.2.4 Climate Change

Climate is the combination of temperature, humidity, atmospheric pressure, wind, rainfall, sunshine, cloudiness, and other meteorological characteristics in a given region over a long period of time. Climate differs from weather, which is the present condition of these characteristics and their variations over shorter periods. Climate change involves long-term trends indicating a noticeable shift in climate.

Primary climate indicators that can be monitored include ambient air temperature, atmospheric pressure, wind, relative humidity, precipitation amounts and timing, annual snow pack levels, stream flow volume and timing, and solar radiation.

The Intergovernmental Panel on Climate Change (IPCC) concluded "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very *likely* due to the observed increase in anthropogenic greenhouse gas concentrations." Chapter 9 of Working Group I of the 2007 IPCC Report (IPCC 2007) addressed the causes of climate change. Some of the conclusions included: 1) human-induced warming of the climate system is widespread, 2) "it is *likely*" that there has been a substantial anthropogenic contribution to surface temperature increases since the mid-20th century, and 3) surface temperature extremes have "*likely*" been affected by anthropogenic forcing. As with any field of scientific study, there are uncertainties associated with the science of climate change. This does not imply that scientists do not have confidence in many aspects of climate change science. Some aspects of the science are known with virtual certainty because they are based on well-known physical laws and document trends (USEPA 2008).

The temperature of the planet's atmosphere is determined by the amount of solar radiation absorbed by the earth and its atmosphere. GHGs (primarily carbon dioxide [CO_2], methane, and nitrous oxide [N_2O]) increase the earth's temperature by reducing the amount of solar energy that re-radiates back into space. In other words, more heat is trapped in the earth's atmosphere when atmospheric concentrations of GHGs are greater. While GHGs have occurred naturally for millennia and are necessary for life on earth, increased atmospheric concentrations of GHGs as well as land use changes are contributing to an increase in average global temperature (USEPA 2007). This warming is associated with climatic variability that exceeds the historic norm and is known as climate change. Extensive explanations of climate change causes and effects are provided in the *Climate Change Supplementary Information Report: Montana, North Dakota, and South Dakota Bureau of Land Management* (BLM 2010a), IPCC Fourth Assessment (IPCC 2007), *Climate Change Indicators in the United States* (USEPA 2010e), and *Global Climate Change Impacts in the United States* (USGCRP 2009).

Annual GHG emissions for Montana, the United States, and the world are summarized in Table 3-9. Annual emissions of GHGs are usually quantified in units of metric tons (mt). A metric ton is equivalent to approximately 2,005 pounds (1.102 short tons). The combined effect of emissions of multiple GHGs is reported in terms of carbon dioxide equivalent (CO_2e), which is calculated by multiplying emissions by a global warming potential (GWP) number that takes into account each gas' atmospheric longevity and its heat-trapping capability. The GWP of CO_2

is set at 1. The USEPA determined other GHGs' relative climate change potentials over a 100-year time period. In USEPA regulations effective as of November 1, 2013, global warming potentials for methane and nitrous oxide are 21 and 310, respectively. The USEPA proposed to revised these global warming potentials to 25 (methane) and 298 (nitrous oxide). CO_2e emissions given in this document are based on global warming potential values of 21 and 310 because data referenced for comparison purposes are based on these values.

Other organizations, such as the IPCC, have set different GWPs and these vary depending on the time frame being analyzed. For example, estimates of methane's global warming potential over a 20-year period range from 72 to 105. The BLM uses the methane global warming potentials that are specified in EPA regulations and are used for GHG emission reporting under 40 Code of Federal Regulations Part 98 as of November 1, 2013. This approach allows for consistent comparisons with state and national GHG emission inventories. The BLM also provides estimated methane and nitrous oxide emission quantities in Chapter 4, which allow the public to use other global warming potentials to calculate CO_2e, if desired.

Planning area GHG emission sources include combustion equipment such as heaters and engines, oil and gas development and production, coal mining, fire events, motorized vehicle use (construction equipment, cars and trucks, and off-highway vehicles), livestock grazing, facilities development, and other equipment exhaust and fugitive emissions. Contributions to climate change also result from land use changes (conversion of land to less reflective surfaces that absorb heat, such as concrete or pavement), changes in vegetation, and soil erosion (which can reduce snow's solar reflectivity and contribute to faster snowmelt). Emission controls on some sources can reduce GHG emissions.

Table 3-9 Estimated Annual GHG Emissions

Entity	Data Year	CO_2e Emissions (10^6 mt)[1]
Montana[2]	2007	50.4
United States[3]	2011	6,702
Global[4]	2004	49,000

Note:
1 Emissions exclude GHG emissions and sequestration due to land use and land use changes.
2 World Resources Institute Climate Analysis Tool (WRI 2011).
3 Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2011 (USEPA 2013a).
4 Climate Change 2007: Synthesis Report (IPCC 2007).

Global atmospheric concentrations of GHGs are determined by the quantity of GHGs emitted to and removed from the atmosphere. Global concentrations of CO_2, methane, and N_2O in 2009 were 387 parts per million (ppm), 1,744 parts per billion (ppb), and 323 ppb, respectively (USEPA 2011a). More recently, the CO_2 concentration monitored at the Mauna Loa Observatory in Hawaii surpassed 400 ppm for the first time in May 2013. Atmospheric concentrations of CO_2 can be reduced by carbon storage in forests, woodlands, and rangelands, as well as in underground carbon sequestration projects. Vegetation management can provide a source of CO_2 (e.g., prescribed burns) or it can provide a sink of CO_2 through vegetation

growth. The net storage or loss of carbon on rangelands and grasslands in the planning area is generally small and difficult to estimate or measure. Most soils within the planning area contain relatively little organic matter compared to forest soils, and forests and woodlands make up approximately 7 percent of the total acres on public lands in the planning area.

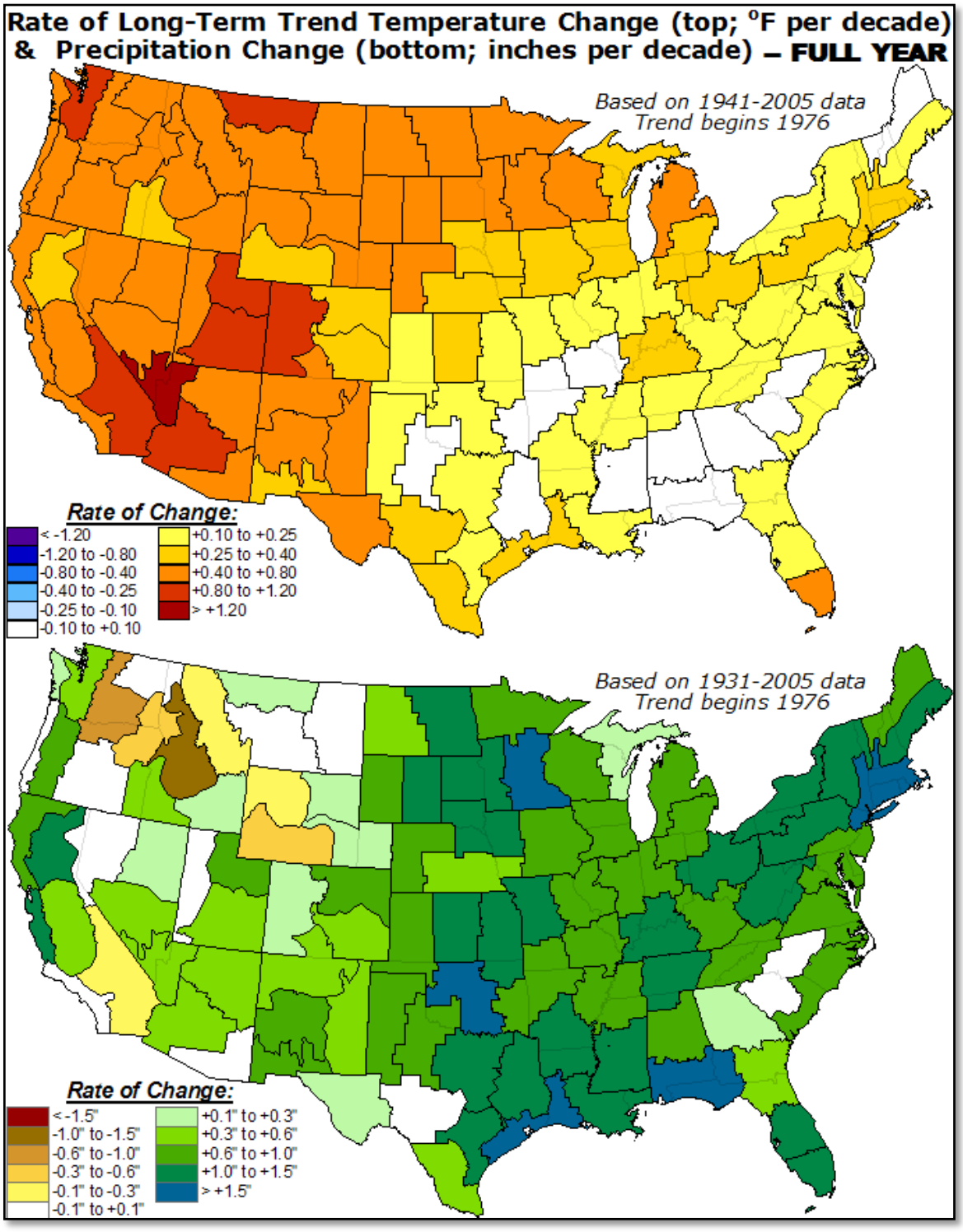
3.2.2.4.1 Climate Change Trends

Climate change trends include two types of trends: historic and predicted. Historic trends describe climate changes that have already been observed. Predicted climate change indicates modeled future changes based on assumptions of future global GHG emission and resulting environmental effects. Climate change will continue into the future even if GHG emissions remain at current levels or decrease. Long lag times are associated with the massive thermal energy stored in oceans, which can take decades, or even centuries, to adjust to climate changes (USEPA 2010e). In addition, the long lifetimes of many GHGs contribute to committed climate change. For example, CO_2 typically remains in the atmosphere for 50–200 years, depending on how long it takes CO_2 molecules to be absorbed by plants, land, or the ocean. N_2O is also long-lived; it remains in the atmosphere for approximately 120 years. In contrast, methane has a shorter lifetime and remains in the atmosphere for approximately 12 years (USEPA 2010e). Additional types of GHGs also contribute to climate change, but their impact is substantially less due to their relatively small concentrations in the atmosphere.

3.2.2.4.2 Temperature and Precipitation

Historical global mean surface temperatures have increased nearly 1.3°F from 1906 through 2008 (GISS and Sato 2010). Northern latitudes (above 23.6 through 90.0° N) have exhibited greater temperature increases of nearly 2.1°F since 1900, with nearly a 1.8 °F increase since 1970 alone (GISS and Sato 2010). In the planning area, data from 1941 through 2005 indicate a long-term temperature increase between 0.40 to 0.80 °F per decade since 1976, as shown in Figure 3-7 – Long-Term Historical Temperature and Precipitation Trends. Over a recent 32-year period, planning area observed winter temperatures increased up to 7°F (USGCRP 2009). With regard to precipitation, data from 1931 through 2005 indicate little change in total annual precipitation in eastern Montana since 1976. However, the timing of precipitation may have changed.

Figure 3-7 Long-Term Historical Temperature and Precipitation Trends

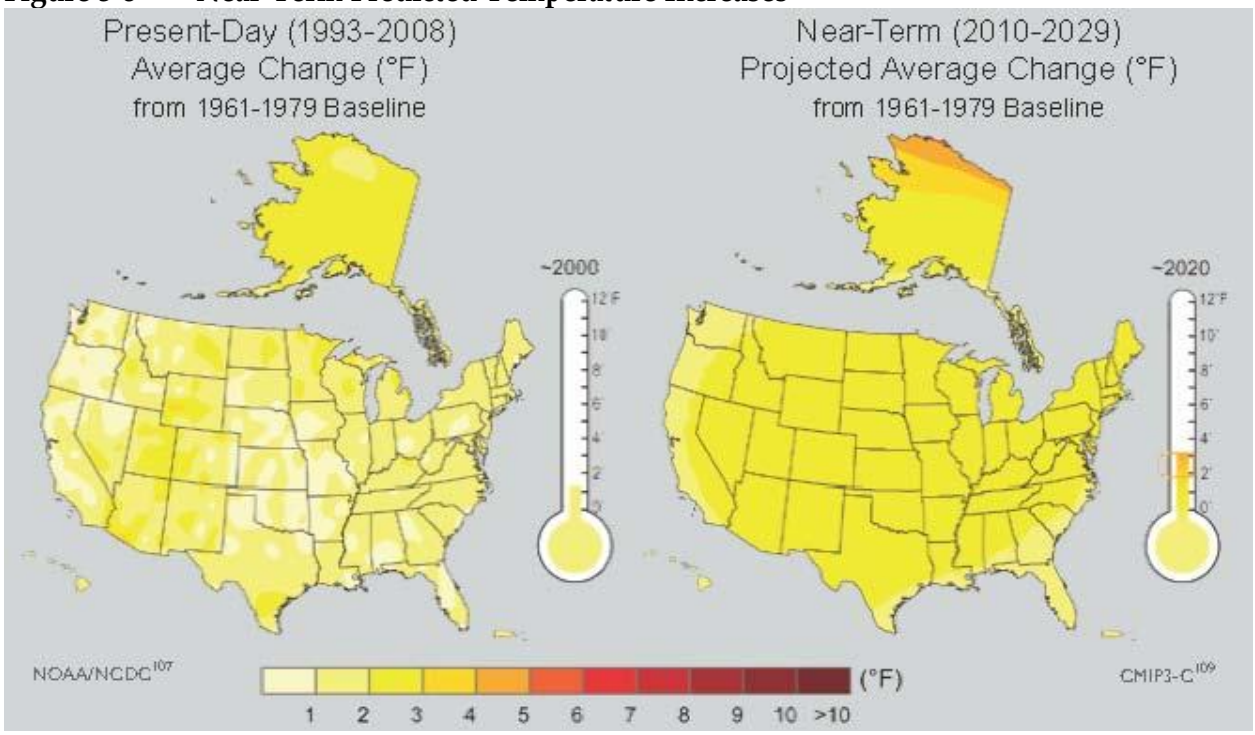


Note:
Source: NOAA 2010a

Predictions of future temperature changes compared to a 1961–1979 baseline indicate that temperatures in the planning area may increase 2–3°F by 2010–2029, as shown in Figure 3-8 – Near-Term Predicted Temperature Increases. Temperatures are predicted to continue increasing

through the century by 3–5°F by the mid-twenty-first century and increase by 5–9°F by the end of the century, compared to the 1961–1979 baseline (USGCRP 2009). The lower end of these ranges is based on a lower future GHG emission scenario, while the upper end of the ranges is based on a higher GHG emission scenario. Along with generally increasing temperatures, many more days are predicted to have maximum temperatures greater than 100°F (USGCRP 2009). In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 2.5 to 10.4°F above 1990 levels (IPCC 2001). Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures. Rising temperatures would increase water vapor in the atmosphere, and reduce soil moisture, increasing generalized drought conditions, while at the same time enhancing heavy storm events.

Figure 3-8 Near-Term Predicted Temperature Increases



Note:
Source: USGCRP 2009.

Prediction of future precipitation changes from the recent past to 2080–2099 indicate that precipitation in the planning area will increase 15–20 percent in winter and spring and will decrease no more than 5 percent in summer. During fall, precipitation in the northern part of the planning area will increase by up to 5 percent while the southern portion of the planning will experience a 0–5 percent decrease (USGCRP 2009).

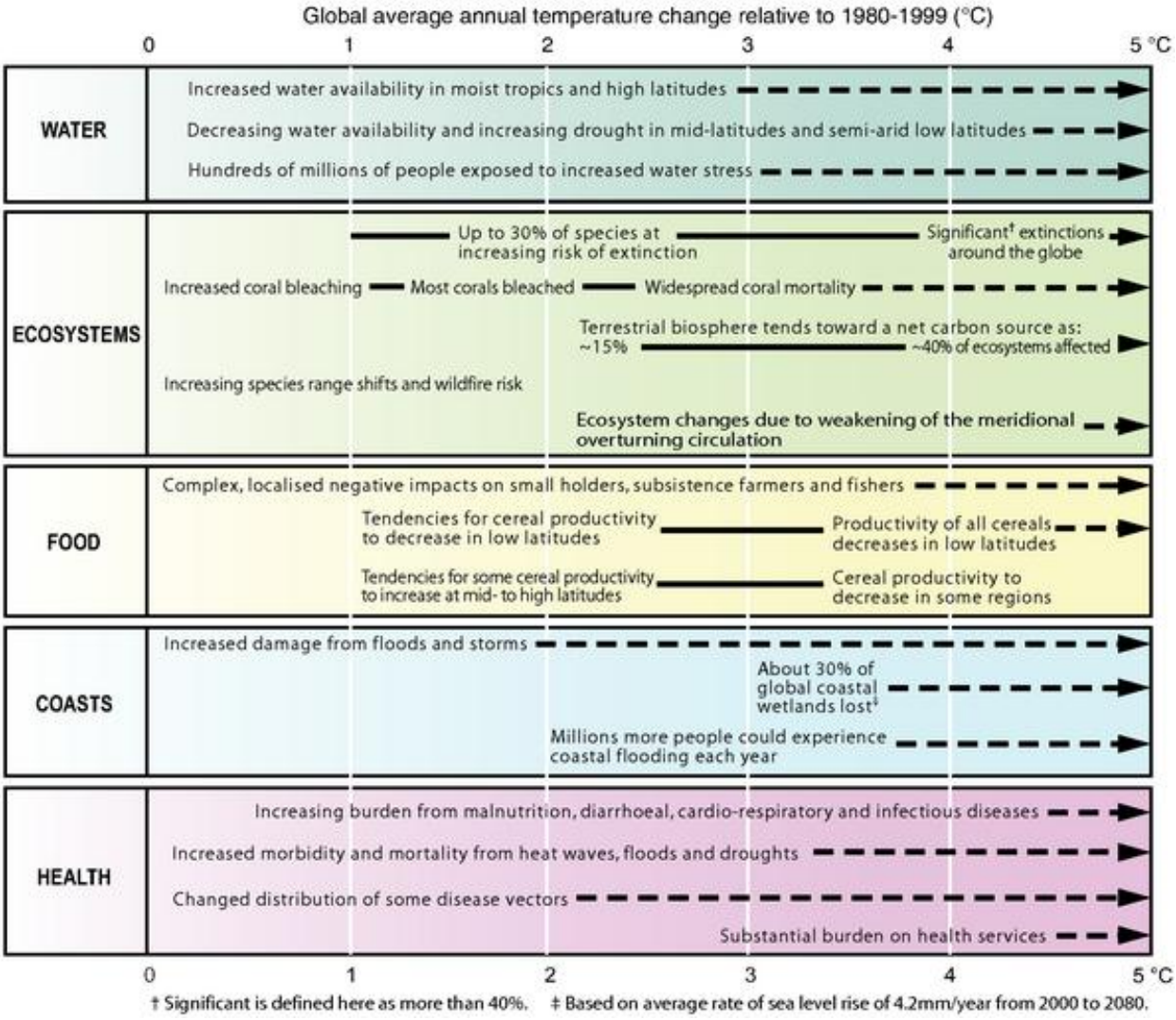
In addition to temperature and total precipitation changes, predicted climate changes include changes in precipitation timing by season and an increase extreme rainfall events and other extreme weather events. Due to warming temperatures melting glaciers and thermal expansion

within the seawater, ocean levels are expected to rise. These changes will affect a broad array of ecosystems and affect food supplies and human health.

3.2.2.4.3 Climate Change Effects on Resources

Climate change affects nearly all resources at local, regional, and global levels. The effects of climate change are so widespread that they cannot all be described in this RMP. To illustrate the effects of global temperature change, Figure 3-9 – Examples of Resource Impacts Due to Climate Change provides broad examples of climate change impacts. As global temperatures increase, effects on resources become more significant.

Figure 3-9 Examples of Resource Impacts Due to Climate Change



Temperature and precipitation changes could directly affect air quality. Air quality would be improved if increased precipitation reduces wind-blown dust, but would be degraded if dry periods cause increased particulate emissions. Ground-level ozone may also be affected. High temperatures are a contributing factor in ground-level ozone formation, which is highly dependent on NO_x and VOC concentrations. End-of-century ozone concentrations in the

planning area are predicted to decrease during the months of June through August based on a lower GHG emission scenario and increase based on a higher emission scenario (USGCRP 2009).

Climate change will affect water quality in the planning area. Increasing temperatures in the planning area are likely to contribute to increased evaporation, drought frequencies, and declining water quantity. The warming of lakes and rivers will adversely affect the thermal structure and water quality of hydrological systems, which will add additional stress to water resources in the region (IPCC 2007). The planning area depends on temperature-sensitive springtime snowpack to meet demand for water from municipal, industrial, agricultural, recreational uses and BLM authorized activities. The USGS notes that mountain ecosystems in the western United States are particularly sensitive to climate change. Higher elevations, where much of the snowpack occurs, have experienced three times the global average temperature increase over the past century (USGS 2010). Higher temperatures are causing more winter precipitation to fall as rain rather than snow, which contributes to earlier snowmelt. Additional declines in snowmelt associated with climate change are projected, which would reduce the amount of water available during summer (USGCRP 2009). Rapid spring snowmelt due to sudden and unseasonal temperature increases can also lead to greater erosive events and unstable soil conditions.

Increases in average summer temperatures and earlier spring snowmelt in the planning area are expected to increase the risk of wildfires by increasing summer moisture deficits (USGCRP 2009). Studies have shown that earlier snowmelts can lead to a longer dry season, which increases the incidence of catastrophic fire (Westerling 2006). Together with historic changes in land use, climate change is anticipated to increase the occurrence of wildfire throughout the western United States. Predicted climate change impacts to wildfires show large increases in the annual average acreage burned. Based on modeling that assumed a 1°C (1.8°F) increase in global average temperature, a 393 percent increase in acreage burned in wildfires is predicted in the planning area (USGCRP 2009). Air quality, ecosystem, and economic impacts from wildfires are extensive. Wildfires also release large quantities of CO_2 that would increase atmospheric GHG concentrations.

There is evidence that recent warming is affecting terrestrial and aquatic biological systems (IPCC 2007). Warming temperatures are leading to earlier timing of spring events such as leaf unfolding, bird migration, and egg-laying (IPCC 2007). The range of many plant and animal species has shifted poleward and to higher elevation, as the climate of these species' traditional habitat changes. As future changes in climate are predicted to be even greater past changes, there will likely be even larger range shifts in the coming decades (Lawler 2009). Warming temperatures are also linked to earlier vegetation growth in the spring and longer thermal growing seasons (IPCC 2007). In aquatic habitats, increases in algal abundance in high-altitude lakes have been linked to warmer temperatures, while range changes and earlier fish migrations in rivers have also been observed (IPCC 2007). Climate change is likely to combine with other human-induced stress to further increase the vulnerability of ecosystems to additional pests, additional invasive species, and loss of native species. Climate change is likely to affect breeding patterns, water and food supply, and habitat availability to some degree. Sensitive species in the planning area, such as the sage grouse, which are already stressed by declining

habitat, increased development, and other factors, could experience additional pressures because of climate change.

More frequent flooding events, erosion, wildfires, and hotter temperatures pose increased threats to cultural and paleontological sites and artifacts. Heat from wildfires, suppression activities, and equipment, as well as greater ambient daytime heat can damage sensitive cultural resources. Similarly, flooding and erosion can wash away artifacts and damage cultural and paleontological sites. However, these same events may also uncover and lead to discoveries of new cultural and paleontological localities.

Climate change also poses challenges for many resource uses on BLM-administered land. Increased temperatures, drought, and evaporation may reduce seasonal water supplies for livestock and could impact forage availability. However, in non-drought years, longer growing seasons resulting from thermal increases may increase forage availability throughout the year. Shifts in wildlife habitat due to climate change may influence hunting and fishing activities, and early snowmelt may affect winter and water-based recreational activities. Drought and resulting stress on vegetation is likely to increase the frequency and intensity of mountain bark beetle and other insect infestations, which further increases the risk of fire and reduces the potential for sale of forest products on BLM-administered lands.

3.2.2.4.4 National Actions to Reduce GHGs

U.S. GHG emissions are expected to decline due to USEPA's listing of GHGs as a regulated air pollutant and implementation of several recent GHG regulatory programs. Facilities with large emissions of GHGs must report these emissions to USEPA and new facilities with large expected GHG emissions must obtain air quality permits and potentially control GHG emissions.

With regard to oil and gas activities, USEPA regulations in 40 *Code of Federal Regulations (CFR)* Part 60, Subpart OOOO require emission controls or reductions on hydraulically fractured gas wells, oil and condensate storage tanks, gas venting, and equipment leaks that are predicted to reduce national methane emissions by 1 million tons per year. These regulations became effective on October 15, 2012.

The USEPA also requires facilities that emit more than 25,000 metric tons per year (mtpy) of CO_2e to report emissions on an annual basis. Regulations for this reporting program were promulgated under the Greenhouse Gas Mandatory Reporting Rule in 40 *CFR* Part 98. While most types of sources began reporting emissions for calendar year 2010, onshore oil and gas sources began reporting emissions for calendar year 2012. The USEPA's Facility Level Information on GreenHouse Gases Tool (FLIGHT) website provides public access to the data and became operational in April 2013 (USEPA 2013b). The BLM obtained data in December 2013 and assessed emissions and emission sources for calendar year 2012.

No coal mines on BLM surface or mineral estate within the planning area reported GHG emissions under the EPA Mandatory Reporting Rule (USEPA 2013b). Because only underground mines are required to report, it is possible that some surface mines could have had emissions exceeding 25,000 mtpy CO_2e and were not required to report.

No oil and gas production companies reported activities within the planning area that contributed to emissions exceeding the 25,000 mtpy reporting threshold (USEPA 2013b). USEPA regulations require that onshore oil and gas facilities report total GHG emissions for each oil and gas basin in which they operate. Based on USEPA's FLIGHT map, the northern portion of the Big Horn Basin includes portions of Carbon and Big Horn counties within the planning area, as well as the Bighorn, Hot Springs, Park, and Washakie counties of northern Wyoming. Two companies reported GHG emissions from oil and gas production facilities in the northern Wyoming portion of the Big Horn Basin. Due to the close geographic proximity of facilities in this area of Wyoming, USEPA GHG emission data for the Big Horn Basin is considered to be representative of the planning area portion of the basin and is reported in the following discussion.

Within the Big Horn Basin, CO_2 from oil and gas production facilities accounted for 36 percent of CO_2e emissions, while methane accounted for 64 percent of CO_2e emissions. Table 3-10 provides a summary of the largest source types for CO_2 and methane emissions.

Table 3-10 Oil and Gas Greenhouse Gas Emission Sources Within the Big Horn Basin

Oil and Gas Greenhouse Gas Emission Sources Within the Big Horn Basin				
Oil and Gas Source Type	*Percentage of Total CH_4 Emissions*	*Percentage of Total CO_2 Emissions*	*Percentage of Total CO_2e Emissions*	*Is Source Subject to Regulation That Will Reduce Future CH_4 Emissions?*
Gas from produced oil sent to atmospheric tanks	57%	21.5%	44%	Yes
Natural gas pneumatic devices	21%	<0.1%	14%	Yes
Other equipment leaks	19%	1.3%	12%	Yes
Dehydrators	2%	<0.1%	<0.1%	Yes
Natural gas distribution combustion equipment	<0.1%	57.0%	21%	No
Flare stacks	<0.1%	19.5%	7%	No
Other sources	1%	0.6%	2%	---
Total	100%	100%	100%	

Source: Derived from GHG emissions reported for calendar year 2012 under the EPA GHG Mandatory Reporting Rule for the entire Williston Basin. (EPA 2013b).

The following types of oil and gas methane emission sources accounted for less than 2 percent of CO_2e emissions based on Big Horn Basin FLIGHT data (EPA 2013b).

- Acid gas removal (zero methane emissions)
- Associated gas venting and flaring (zero methane emissions)
- Blowdown vent stacks (zero methane emissions)
- Centrifugal compressors (zero methane emissions)
- Dehydrators
- Enhanced oil recovery injection pump blowdown (zero methane emissions)

- Flare stacks
- Gas well completion and workover
- Natural gas pneumatic devices
- Natural gas pneumatic pumps
- Reciprocating compressors
- Transmission tanks (zero methane emissions)
- Well testing venting and flaring
- Well venting and liquids unloading

A trade-off exists between methane and CO_2 emissions. Combustion of methane contained in natural gas decreases methane emissions while increasing CO_2 emissions. Flaring of natural gas is an example of this trade-off. Natural gas produced during oil production is known as associated gas.

Within the US Department of the Interior (USDI), several initiatives have been launched to improve the ability to understand, predict, and adapt to the challenges of climate change. The Secretary of the Interior signed Secretarial Order 3289 on February 22, 2010, establishing a Department-wide, scientific-based approach to increase understanding of climate change and to coordinate an effective response to impacts on managed resources. The order reiterated the importance of analyzing potential climate change impacts when undertaking long-range planning issues, and also established several initiatives including the development of eight Regional Climate Science Centers. Regional Climate Science Centers would provide scientific information and tools that land and resource managers can apply to monitor and adapt to climate changes at regional and local scales (USDI 2010). The North Central Climate Science Center, which will incorporate the planning area, has a target establishment date of 2011.

Given the broad spatial influence of climate change, which requires response at the landscape-level, the USDI also established Landscape Conservation Cooperatives, which are management-science partnerships that help to inform management actions addressing climate change across landscapes. These Cooperatives are formed and directed by land, water, wildlife and cultural resource managers and interested public and private organizations, designed to increase the scope of climate change response beyond federal lands.

Rapid ecoregional assessments are one of the tools the BLM uses to monitor and respond to the effects of climate change. Ecoregional assessments are geospatial landscape evaluations that are designed to identify areas of high ecological value within an ecoregion that may warrant conservation, adaptation, or restoration. These assessments can help to identify resources that are being impacted by climate change and provide information to facilitate the subsequent development of an ecoregional conservation strategy for plants, wildlife and fish communities on public lands. Ecoregional assessments can identify areas, species, and ecological features and services that are sensitive to ecosystem instability and changes in climatic conditions. One of the objectives of the BLM rapid ecoregional assessments is to provide guidance for adaptation and mitigation planning in response to climate change.

In addition to efforts being undertaken to better respond and adapt to climate change, other federal initiatives are being implemented to mitigate climate change. The Carbon Storage Project was implemented to develop carbon sequestration methodologies for geological (i.e.,

underground) and biological (e.g., forests and rangelands) carbon storage. The project is a collaboration of federal agency and external stakeholders to enhance carbon storage in geologic formations and in plants and soils in an environmentally responsible manner. The Carbon Footprint Project is a project to develop a unified GHG emission reduction program for the USDI, including setting a baseline and reduction goal for the Department's GHG emissions and energy use. More information about USDI's efforts to respond to climate change is available from www.doi.gov/whatwedo/climate/index.cfm.

3.3 Geology

3.3.1 Geologic Setting

Mountain ranges in the BiFO planning area include the Absaroka-Beartooth, Big and Little Snowy, Pryor, Crazy, and Bull mountains. Rock uplift and resultant erosion has exposed the core of these ranges, providing evidence of their structures and the forces which produced them (Figure 3-10- Stratigraphic Column). The Absaroka-Beartooth range forms a large rectangular block of rock 80 miles long and 40 miles wide. Rocks are predominantly Precambrian metamorphic rocks, up to 3.1 billion years old. These rocks were once shale, limestone, and sandstone that were altered to gneisses, schists, marble, and quartzite by high temperatures and pressures of burial deep beneath the earth's crust. Rocks in this range have been uplifted several thousand feet along faults, folding the overlying Paleozoic and Mesozoic sedimentary rock. Along the Beartooth Front south of Red Lodge and up the Boulder River, sedimentary rocks have been tilted to a nearly vertical position.

The Pryor Mountains were developed through generally vertical uplift of deep seated Precambrian basement rocks. The overlying strata fractured into five distinct blocks, with high angle faults on their north and west flanks. Paleozoic and Lower Mesozoic rocks outcrop over most of the range. Only on the East Pryor Mountain fault block was the uplift sufficient to bring these basement rocks to the surface (Blackstone 1975). West of the Pryor Mountains, successively younger rocks outcrop, with a dip close to that of the Red Pryor Mountain fault block.

The Snowy Mountains are the most obvious expression of a general uplift that affected all of central Montana. Here, uplift was caused mainly by horizontal compression rather than the vertical forces described above. The strata were folded into a series of anticlines (upfolds) and synclines (downfolds) which provide much of the topographic relief in the region. Devil's Basin is a good example of such an anticline (Reeves 1931).

The Bull Mountains are a series of small, broken plateaus, little more than hills when compared to other mountains in the region. The massive sandstones of the Tongue River Member of the Fort Union Formation and interspersed clinker (formed when coal beds burned) which cap the plateaus, are more resistant to erosion than the soft sandstones and shale which underlie them. The harder rocks are preserved as remnants of higher topographic relief, even though the geologic structure is a basin (Woolsey, et. a1. 1917; Alt and Hyndman 1991).

The Crazy Mountains are unique in that they are the only range in the area formed by the intrusion of molten rock (magma). Magma rose from great depth and was injected into fissures

between strata, doming the overlying sediments. Subsequent erosion has exposed this igneous rock, and strata dip away from the mountain core in all directions. Another interesting feature of the Crazy Mountains is the system of dikes (magma injected into cracks through the strata) that radiate outward from the mountains, resembling spokes from the hub of a wheel. The high southern end of the range is one major intrusion, the Big Timber Stock (Alt and Hyndman 1991).

The surrounding plains areas are composed of flat lying or slightly tilted sedimentary rocks deposited during the Cretaceous Period and Paleocene Epoch. Rocks are predominantly shales and sandstones with minor limestone, coal, and bentonite beds. Small anticlines and fault systems associated with the mountain uplifts described above affect the bedding and outcrop pattern of these rocks. Examples include the Crazy Mountain Basin, Lake Basin fault zone, and Nye-Bowler Lineament.

The most recent sedimentary deposits found in the planning area are gravel alluvium. This material often forms benches or terraces. Sources for the material vary, but generally benches develop along mountain foothills through accumulation of outwash from the slow erosion of those ranges. Terraces, on the other hand, represent old stream channels that have been filled with gravel and then abandoned as the streams cut down through their floodplains. No continental glaciations reached this far south in Montana, though alpine glaciers occupied the upper slopes of the mountain ranges. These glaciers left mountain lakes, U-shaped valleys, and mounds of drift as evidence of their passing (Perry 1962).

Overall, sedimentation has been nearly continuous from the Cambrian to the Paleocene (about 500 million years) aggregating over 10,000 feet of rock as shown in Figure 3-10– Stratigraphic Column. Further information can be found at http://www.mbmg.mtech.edu/gmr/gmr-statemap.asp.

Figure 3-10 Stratigraphic Column

		Formation	Range of Average Thickness (in feet)		Description
CENEZOIC	QUARTERNARY	Alluvium			Unconsolidated stream and fan deposits range from fine to course grained.
CENEZOIC	TERTIARY	Tongue River Member	Fort Union Formation	Up to 2500'	Light yellow sandstone with brown and light-dark gray shale; many coal beds; reddish clinker.
CENEZOIC	TERTIARY	Lebo	Fort Union Formation	Up to 2500'	Dark gray shale with orange to purple ironstone concretions and green-gray beds of altered volcanic ash.
CENEZOIC	TERTIARY	Tullock	Fort Union Formation	Up to 2500'	Light tan to yellow sandstone with brown shale and tan-gray siltstone; some coal and clinker.
MESOZOIC	CRETACEOUS	Hellcreek	300-1200'		Fresh water deposits of alternating sandstones and clay shales.
MESOZOIC	CRETACEOUS	Fox Hills Sandstone	100-200'		Gray to yellowish sandstone and sandy shales.
MESOZOIC	CRETACEOUS	Bear Paw	900'		Steel-gray to black marine shale containing a few grayish white and dark-red concretions and beds of bentonite.
MESOZOIC	CRETACEOUS	Judith River	200-400'		Fresh and brackish water deposits consisting of irregularly and thin-bedded gray clayey sand, sandstone, lignite clay and coal beds.
MESOZOIC	CRETACEOUS	Cleggett	500'		Dark-brownish-black marine shale containing persistent yellow calcareous concretionary beds; bentonite and tan sandstone in the upper part.
MESOZOIC	CRETACEOUS	Eagle	220'		Massive and thin-bedded buff to white sandstone, carbonaceous shale, and coal beds.
MESOZOIC	CRETACEOUS	Telegraph Creek	180-300'		Dark gray-black, thin beds of marine shale with thin sandstone members especially near the base; fossiliferous; gypsiferous.
MESOZOIC	CRETACEOUS	Niobara	200'		Upper part mark lower lightish yellow to whitish limestone.
MESOZOIC	CRETACEOUS	Carlisle	150-300'		Gray shales with thin shaly to silty sandstone layers, some bentonite, some ironstone concretions.
MESOZOIC	CRETACEOUS	Greenhorn	600'		Black shales with hard, thin sandstone beds, buff-light gray limestone layers in eastern Montana with interbedded calcareous shales, some bentonite.
MESOZOIC	CRETACEOUS	Frontier	150-500'		Alternating beds of gray to yellow sandstone and dark carbonaceous shales; contains bentonite beds in Carbon County. Produces gas in Dry Creek field.
MESOZOIC	CRETACEOUS	Mowry	180-325'		Hard light gray shales and thin-bedded sandstone; contains numerous fish scales; also bentonite mined in Carbon County.
MESOZOIC	CRETACEOUS	Thermopolis	700-760'		Upper and lower members are thick dark marine shales; middle member yellow-brown sandstone; shales have bentonite beds mined in Carbon County.
MESOZOIC	CRETACEOUS	Cloverly / Kootenai	160-500'		Upper member – Greybull sandstone; middle multicolored shale member; lower, Pryor conglomerate contains vertebrate fossils and petrified wood. Some uranium mineralization; gas producer in Dry Creek field.
MESOZOIC	JURASSIC	Morrison	150-200'		Interbedded buff sandstone and gray-green shales; vertebrate fossils; some uranium mineralization
MESOZOIC	JURASSIC	Swift	10-300'		Green shales and fine-grained thin bedded brown or green sandstone; fossiliferous (marine).
MESOZOIC	JURASSIC	Rierdon	50-250'		Gray to green marine shales and thin limestone; fossiliferous.
MESOZOIC	JURASSIC	Piper	0-150'		Red to green shales and limestone with some gypsum

		Formation		Range of Average Thickness (in feet)	Description
PALEOZOIC	TRIASSIC	Chugwater / eroded		0-800'	Brick-red sandstones, shales and siltstones, often ripple-marked; gypsum bed 20-30' thick.
PALEOZOIC	PERMIAN	Embar / eroded		5-100'	White porous limestone. Reported gypsum bed; oil producer in Elk Basin field.
PALEOZOIC	PENNSYVANIAN	Ten Sleep / quadrant		50-105'	White to buff cross-bedded soft sandstone; oil producer in Elk Basin field.
PALEOZOIC	PENNSYVANIAN	Amsden		150-350'	Red shales, white limestone, chart/limestone breccias; uranium mineralization; contains oil in Central Montana fields.
PALEOZOIC	PENNSYVANIAN	Alaska Bench		100-150'	Hard gray fossiliferous limestone; exposed in Snowy Mountains.
PALEOZOIC	PENNSYVANIAN	Tyler		5-100'	White to brick-red cross-bedded channel sandstone; produces oil in Central Montana Field.
PALEOZOIC	DEVONIAN	Heath	Big Snowy Group	150- 500'	Found in Central and Eastern Montana only. Heath: Black shales and black limestone; serves as source rock for petroleum in Central Montana oil/metalliferous shale
PALEOZOIC	DEVONIAN	Otter	Big Snowy Group	150- 500'	Otter: Light green shales and limestone.
PALEOZOIC	DEVONIAN	Kibbey	Big Snowy Group	150- 500'	Kibbey: Red to brown sandstones and shale; some gypsum.
PALEOZOIC	MISSISSIPPIAN	Mission Canyon	Madison Group	600-1200'	Mission Canyon: Massive while or gray (marine) limestone.
PALEOZOIC	MISSISSIPPIAN	Lodgepole	Madison Group	600-1200'	Lodegpole: Thin bedded, cherty, fossiliferous limestone, produces oil in Elk Basin Field.
PALEOZOIC	MISSISSIPPIAN	Three Forks		200-250'	Multicolored shales with thin dark limestone and yellow sandstone.
PALEOZOIC	MISSISSIPPIAN	Jefferson		50-600'	Brown to gray and black limestone and dolomite.
PALEOZOIC	ORDOVICIAN	Big Horn Dolomite		250-300'	Thin Bedded or massive limestones and dolomite; upper portion very fossiliferous.
PALEOZOIC	CAMBRIAN	Gros Ventre		700'	Greenish and gray calcareous shales and colitic limestones.
PALEOZOIC	CAMBRIAN	Flathead		185'	Hard dense quartzite with red to brown sandstone.
PRECAMBRIAN	PRECAMBRIAN	PreCambrian			Gneisses and schists, exposed only near Dryhead area of East Pryor Mountain, and on top of Beartooth Mountains.

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3.4 Soil

BiFO management decisions affect soil on BLM surface and split estate during minerals development. In general, soil management focuses on maintaining soil integrity, reclaiming disturbed soils, minimizing erosion and, in some cases, improving soil health. Detailed soils inventory data are available for a portion of the planning area; however, there are data gaps in the southwest and northwest portions of the planning area. These gaps do not occur on BLM managed surface lands, but only occur on 715 acres of BLM managed split estate. Additionally, while all of the BLM managed surface lands do have detailed soil data, Ecological Site Descriptions (ESDs) are not currently available on 151,211 acres due to several factors including limited soil development and rock outcrop formations.

Major Land Resource Areas (MLRA) are geographically associated land resource units identified by the US Department of Agriculture (USDA) to facilitate regional and national planning. The dominant physical characteristics of the MLRAs describe the similar land use, elevation and topography, climate, water, soils, and potential natural vegetation in a designated area. Soils in the planning area are located in the following MLRAs (Map 5) (USDA 2006).

- 32 – Northern Intermountain Desertic Basin
    - 17 ecological sites are listed within this MLRA
- 43B – Central Rocky Mountain
    - There are no approved ESDs for this MLRA
- 46S – Northern Rocky Mountain Foothills, South
    - 3 ecological sites are listed within this MLRA
- 58AC – Northern Rolling High Plains, Northern Part
    - 21 ecological sites are listed within this MLRA
- 58AE - Northern Rolling Plains, North Part
    - 22 ecological sites are listed within this MLRA

Most of the planning area is in the Northern Rolling High Plains MLRA, an area of old eroded plateaus and terraces. Slopes generally are gently rolling to steep and wide belts of steeply sloping badlands border a few of the larger river valleys. In some areas, flat topped, steep sided buttes rise sharply above the general level of the plains. Elevations range from 2,950 to 3,280 feet and in the mountains reach 6,900 feet. Shale, siltstone, and sandstone underlie much of the area. Marine and continental sediments are found mostly at the higher elevations. The dominant soil orders in this MLRA are Entisols and Inceptisols, and soils are generally shallow to very deep, well drained, and clayey or loamy.

The Northern Rocky Mountain Foothills MLRA, with elevation ranges from 3,600 to 7870 feet, is in the south and northwestern region of the planning area. The foothills east of the Northern Rocky Mountains are on an old plateau of uplifted marine sediments. The rugged hills and low mountains are cut by many narrow valleys with steep gradients. Broad floodplains and fans border a few of the major rivers. Almost all this area is characterized by marine sediments. These rocks are primarily sandstones and shales with some layers of chalk and conglomerate. The dominant soil orders in this MLRA are Mollisols and Entisols, and soils are shallow to very deep, generally well drained, and loamy or clayey.

Soils in the planning area are derived mainly from sedimentary bedrock and alluvium. Soil depth ranges from shallow to bedrock to very deep. Differences in climate, parent material, topography, and erosion conditions result in soils with diverse physical and chemical properties. An overview of the four geomorphic groups and associated soils in the planning area are presented below.

3.4.1 Geomorphic Group One: Shale and Sandstone Uplands

These soils formed in shale and sandstone uplands occurring throughout the area. The depth of soils in this group range from very shallow to deep, and their surface texture is primarily loamy with local areas of clayey or sandy textures. The number of rock fragments and amount of calcium carbonate (from limestone) in these soils vary depending on the bedrock and parent materials associated with each soil type. Terrain is usually gently rolling to very steep, highly dissected landscapes.

3.4.2 Geomorphic Group Two: Floodplains, Streams, Terraces, and Fans

This group includes soils that formed on floodplains, stream terraces, and fans found throughout the area. These soils contain deep, nearly level to strongly sloping soils that are well drained to very poorly drained. Soil textures range from loamy fine sand to clay. Rock fragments are more numerous along terrace edges near fast moving water areas. These soils are formed in alluvium dissected by incised water channels.

3.4.3 Geomorphic Group Three: High Terraces and Benches

Soils in this group formed on high terraces and benches mainly in Carbon, Musselshell, and Yellowstone counties. These soils comprise deep, well drained soils on nearly level to moderately sloping terrain dissected by deep drainages. Their textures are generally loamy or loamy skeletal (includes rock fragments), and the soils are high in calcium carbonate. Soils are formed in gravel outwash and alluvium from mixed rock sources.

3.4.4 Geomorphic Group Four: Mountains and Foothills

This group includes soils from the mountains (Beartooth, Bull, Crazy, Pryor and Snowy) and foothills in the planning area. Soil depths range from very shallow to deep, depending on the proximity to rock outcrops. They are well drained and are on gently sloping to very steep, dissected terrain. The texture is loamy or loamy skeletal with high calcium carbonate in the Pryor and Snowy mountain soils. These soils are formed from material derived from sedimentary, igneous, and metamorphic rocks.

Soil erosion potential and susceptibility to damage can be evaluated using three indicators: T factor, Wind Erodibility Group, and Potential Fire Damage Hazard. T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting soil productivity over a sustained period. Soil erosion is related to soil depth, ground cover, slope, and organic matter content in surface layers. The rate is expressed in tons per acre per year and is usually compared to the actual rate of soil erosion to determine whether the erosion levels are sustainable to soil health and stability. Some soils in the planning area have a high T factor of 1 (Map 7 - T Factor Soils). In areas in Stillwater, Musselshell, and Wheatland counties, soil data inconsistencies make it difficult to summarize soils in that area and may be

due to differences in the scale of the existing soil surveys. Further data development should be pursued whenever possible.

A Wind Erodibility Group (WEG) is a grouping of soils with similar properties affecting their susceptibility to wind erosion of bare ground. Soils assigned to group 1 are the most susceptible to wind erosion. Musselshell, Golden Valley, Yellowstone, and Stillwater counties have the most soils susceptible to wind erosion in the planning area (Map 6 - Wind Erodibility Groups).

The third rating indicates the potential hazard of damage to soil nutrients, physical, and biotic characteristics from fire. These ratings are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. Soils are described as having a low, moderate, or high potential for this kind of damage. Ratings indicate an evaluation of the potential impact to soils from prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

A rating of "low" indicates the soil has features that reduce its potential for fire damage. Good performance can be expected, and little or no maintenance is needed. A "moderate" rating indicates the soil has features that result in a moderate potential for fire damage. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. A "high" rating indicates the soil has one or more properties that result in a high potential for fire damage. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration (Map 37 - High Potential Fire Damage Hazard Soils).

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and that is also available for these uses. The land could be currently used for cropland, pastureland, rangeland, forest land, or other land, but not urban or built up land or water areas.

Unique farmland is land other than prime farmland that is used for the production of specific high value food and fiber crops. This land has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality crops and/or high yields of a specific crop when the lands are treated and managed according to acceptable farming methods.

The Farmland Protection Policy Act (FPPA) states that federal programs that contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses will be minimized and shall be administered in a manner that, as practicable, are compatible with state and local government and private programs and policies to protect farmland. No Prime or Unique Farmlands are located in the decision area.

3.5 Water

The United States is divided and subdivided into successively smaller hydrologic units classified into four levels: regions, sub regions, accounting units, and cataloging units. Generally, a hydrologic unit is defined as a geographic area from where water naturally drains to a specific outlet. Hydrologic units are arranged within each other, from the smallest (cataloging units) to the largest (regions).

Water resources in the semi-arid environment of the planning area include both surface and subsurface resources. The availability, volume, and quality of water resources affect other resources and resource uses, including, but not limited to, wetlands and riparian areas, biological resources, livestock grazing, recreation, and public water supplies.

The BLM is responsible for managing surface lands and federal mineral estate in a manner that maintains or enhances water quality and quantity for other uses and complies with state and federal water quality standards. The BLM coordinates with state and other federal agencies to ensure compliance with required water resource management responsibilities.

3.5.1 Surface Water

The BiFO manages approximately 1,002 miles of perennial, intermittent, and ephemeral streams. Surface water runoff drains into the Yellowstone, Musselshell, Clarks Fork of the Yellowstone, Boulder, Stillwater, and Bighorn rivers (Table 3-11). Each major stream is characterized by a pattern of tributary branching streams ranging from ephemeral to perennial.

Table 3-11 Annual Stream Flow Data

River/Stream	Site Code	Parameter Name	Period of Approved Daily-Mean (Water Year)		
			From	To	Count
Big Horn at St. Xavier, MT	06287000	Discharge Cubic feet/sec	1935	2008	27028
Boulder near Big Timber, Mt	06200000	Discharge Cubic feet/sec	1947	2008	22009
Clarks Fork of the Yellowstone near Edgar, MT	06208500	Discharge Cubic feet/sec	1921	2008	25631
Clarks Fork of the Yellowstone near Belfry, MT	06207500	Discharge Cubic feet/sec	1921	2008	31838
Musselshell near Roundup, MT	06126500	Discharge Cubic feet/sec	1946	2008	27768
Musselshell near Musselshell, MT	06127500	Discharge Cubic feet/sec	1928	2009	19642
Stillwater near Absarokee, MT	06205000	Discharge Cubic feet/sec	1910	2008	27135
Yellowstone near Billings, MT	06214500	Discharge Cubic feet/sec	1904	2008	29708

Note:
Source: USGS National Water Information System: http://waterdata.usgs.gov/mt/nwis/current?type=flow

A total maximum daily load (TMDL) is the allowable pollutant loading from all sources (point, non-point, and natural background) established at a level necessary to achieve compliance with applicable surface water quality standards. Streams in the planning area meet these standards except for those listed below (Table 3-12). A majority of impairment sources are outside of BLM administered lands and come from agriculture production and industrial sources.

Table 3-12 Impaired Water Bodies

Impaired Water Bodies by 4th Level Hydrologic Unit Code				
4th Hydrologic Unit Code	**Stream Segment on BLM Land**	**Estimated Miles in BLM Land**	**Probable Impairment Type(s)[A]**	**Probable Impairment Source(s)[B]**
Stillwater River	Stillwater	0.3	1, 4, 14	5, 9, 12, 14, 15
	Bad Canyon	4.5	12	2
Clarks Fork of the Yellowstone	Clarks Fork	0.4	1, 3, 4, 9, 10, 12, 13	3, 4, 12,13
	Silvertip	9.6	1, 2, 3, 5, 6, 7, 8, 9, 10, 11	1, 2, 6, 7, 8, 9, 10, 11
	SF Bridger	5.2	3, 16	8, 9, 12
	Bear	0.7	1, 2, 3, 4, 12	1, 2, 3, 4, 5
	Blue Water	1.2	3, 8, 12	2, 3 , 4, 16, 18
	Cottonwood	.75	2, 5, 8	1, 2, 8, 9, 18
Upper Yellowstone	Yellowstone	4.3	1, 3, 8	3, 9, 10, 16, 17,
	Boulder	0.14	1,2,4,	2,3,12
	Big Lake	.25	8	18
Big Horn Lake	Crooked	3.2	13	18
Middle Musselshell	Musselshell	0.9	2, 10, 13	4, 6, 13, 18
	North Willow	3.5	1, 3, 4, 6, 15,	9, 11, 12
Total		34.94		

Note:

[A] Cause: 1 = Nutrients, 2 = Alteration of Streamside Vegetation, 3 = Sediment, 4 = Metals, 5 = Oxygen Depletion, 6 = Specific Conductance, 7 = Turbidity, 8 = Total Dissolved Solids, 9 = Temperature, 10 = Flow Alterations, 11 = Toxic Organics, 12 = Harmful Algae, 13 = Habitat Alterations, 14 = Cyanide, 15 = Sulfates, 16 = Arsenic

[B] Source: 1 = Loss of Riparian Habitat, 2 = Rangeland Grazing; 3 = Irrigated Crop Production; 4 = Hydrologic Modification, 5 = Abandoned Mine Lands, 6 = Channelization, 7 = Impoundments, 8 = Riparian Grazing, 9 = Natural, 10 = Industrial Permitted, 11 = Spills, 12 = Unknown, 13 = Streambank modification, 14 = Hard Rock Mining, 15 = Post Fire Runoff, 16 = Feedlots, 17 = Municipal Discharge, 18 = Agriculture

Source: 2010 Montana 303(d)/ 305(b) Intergraded Report

Wetlands and riparian areas can play a critical role in reducing nonpoint source pollution by intercepting surface runoff, subsurface flow, and certain ground water flows. Their role in water quality improvement includes processing, removing, transforming, and storing such pollutants as sediment, nitrogen, phosphorus, and certain heavy metals. Research also shows that riparian areas control the release of herbicides into surface waters (EPA 2005a). Thus, wetlands and riparian areas buffer receiving water from the effects of pollutants and/or prevent the entry of pollutants into receiving waters. It is important to consider that degradation of wetlands and riparian areas can inhibit their ability to treat NPS pollution, and degraded wetlands and riparian areas can also become sources of NPS pollution. Current wetland and riparian area conditions and management are described in Riparian Areas and Wetlands Section.

3.5.2 Ground Water

Ground water is a valuable resource in Montana and is vulnerable to the effects of nonpoint source (NPS) pollution. Depending on the setting, ground water can be intricately linked with surface water. Ground water is the primary source of drinking water for Montanans who live outside city boundaries, as well as those who are on public water systems in smaller towns. In many cases, ground water is also the primary source of water in streams and rivers during the fall and winter 'baseflow' period and may be the primary source of lake water. Additionally, ground water is vital to wetlands and riparian areas.

The planning area is underlain by sandstone and limestone that provide large quantities of water to wells and springs. In the north, wells drilled to the Kootenai Formation yield good volumes and quality water. The Madison Limestone in the Pryor Mountains yields good quantities of water that is of quality suitable for domestic and agricultural use. In the Bull Mountains, ground water apparently occurs in perched aquifers and springs or seeps and is located near outcrops of the Mammoth-Rehder coal bed. Water is not as dependable in the Bull Mountains as elsewhere in the region. Water in springs is good quality with calcium, magnesium, and bicarbonate the principal ions. Deeper aquifers are present at depths that vary from 20 feet to several hundred feet. Deeper aquifers have water of lower quality with sodium and sulfate ions present.

No current, comprehensive, quantification, nor quality measurements have been made on ground waters occurring on BLM administered lands.

Best management practices, state, and federal guidance concentrate on protecting water resources, which sets the foundation for BLM management of both surface and groundwater resources.

3.6 Vegetation

There are numerous vegetation cover types in the BiFO planning area. These vegetation types are an expression of the wide range of climatic and soil conditions found throughout the planning area. The Landscape Fire and Resource Management Planning Tools Project (commonly referred to as LANDFIRE) was used to delineate rangelands and identify them as existing vegetation types (EVTs) (LANDFIRE 2006). Vegetation cover types and associated plant communities were defined and analyzed using the Northwest Regional Gap Analysis Project (NWReGAP), information provided by BLM resource specialists and other references, as noted (NWReGAP 2001). Nomenclature herein is consistent with the Nature Conservancy's ecological classification database system known as NatureServe (NatureServe 2008).

Vegetation cover types in the decision area consist primarily of shrubland and rangeland communities and cover approximately 386,212 acres (89 percent) of the total BLM managed surface acreage. Forest/woodlands and riparian/wetland vegetation cover types, comprise approximately 47,035 acres (11 percent) and are a biologically diverse and important resource in the decision area. Urban and agricultural cover types comprise the remaining 8,552 acres (2 percent) in the decision area. Table 3-13 summarizes vegetation cover types, spatial extent of each vegetation type, and a description of each associated plant community in the decision area. Map 9 (Vegetative Map) illustrates each vegetation cover type in the planning area.

Table 3-13 Percent of Vegetation Cover Types in the Decision Area

Vegetation Cover Type	Total Cover (Acres/Percent)	Characteristic Species
Shrubland	243,656 (56.1 %)	Wyoming big sagebrush, Basin big sagebrush, black sage, saltbush and greasewood species
Rangelands	142,556 acres (32.8 %)	Wheatgrass, grama, and needle-and thread species
Forest/Woodlands	32,100 acres (7.4 %)	Ponderosa pine, lodgepole pine, limber pine, Douglas-fir, subalpine fir, Engelmann spruce, quaking aspen, Rocky Mountain juniper, Utah juniper, and cottonwood species
Riparian/Wetlands	14,966 acres (3.5 %)	Cottonwood species, quaking aspen, green ash, willow, red osier dogwood with understory of woody plant and grass/forbs
Urban and Agricultural Lands	876 acres (<1 %)	Agricultural species including hay, alfalfa, corn and introduced herbaceous species including bluegrass and ornamental grass and tree species
TOTAL	**434,154 acres (100.0 %)**	

Regardless of cover type, the BLM uses the *Standards for Rangeland Health* to manage public lands. The Billings Field Office uses five standards to assess rangeland health. These standards are: Standard 1 - Uplands, Standard 2 - Riparian and Wetlands, Standard 3 – Water Quality, Standard 4 – Air Quality, Standard 5 – Habitat. Standards 1, 2, and 5 directly relate to vegetation, while Standards 3, 4, and potentially 5 are influenced by vegetation. Table 3-17 shows the number of allotments/acres within the decision area where Standards are or are not being met and if appropriate action has been taken to make progress towards meeting Standards.

3.6.1 Forest and Woodlands

Forest and woodland areas were delineated utilizing LANDFIRE. Twenty-two separate forest and woodland habitat communities were mapped to identify existing vegetation types (EVTs) in the planning area. Forests/woodlands comprise approximately 32,100 acres (7.5 percent) of the decision area. Cover types are characterized as a composite of evergreen conifer and deciduous forest types that occur throughout Montana. Species dominance varies with altitude, latitude, slope, aspect, topography, soil characteristics, and climatic regime. The predominant tree species include ponderosa pine (*Pinus ponderosa*), lodgepole pine (*Pinus contorta*), limber pine (*Pinus flexilis*), Douglas-fir (*Pseudotsuga menziesii*), subalpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmannii*), quaking aspen (*Populus tremuloides*), and Eastern cottonwood (*Populus deltoides*). Rocky Mountain juniper (*Juniperus scopulorum*) is the predominant woodland species found throughout the decision area. Table 3-14 details each forest and woodland ecological system community, the spatial extent of each type, and a description of each associated plant community in the decision area.

Table 3-14 Forest/Woodland Vegetation Cover Types

Forest and Woodland Ecological System and Community Name	Total Vegetation Cover in Decision Area (Percent)	Forest/ Woodland Cover in Decision Area (Percent)	Total Acreage	Predominant Woody Characteristic Species
Northwestern Great Plains-Black Hills Ponderosa Pine Woodland and Savanna & Associated Ponderosa Pine Communities	3%	42%	13,400	Ponderosa pine and Rocky Mountain juniper
Middle Rocky Mountain Montane Douglas-Fir Forest and Woodland/*Pseudotsuga menziesii* Forest Alliance	2%	24%	7,800	Douglas-fir, lodgepole pine, subalpine fir
Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest	1%	14%	4,600	Lodgepole pine, Douglas-fir, Engelmann spruce, and subalpine fir
Rocky Mountain Foothill Limber Pine-Juniper Woodland	1%	12%	3,800	Limber pine and Rocky Mountain juniper
Other Forest and Woodland Ecological Systems and Communities	0.6%	8%	2,500	Quaking aspen, Rocky Mountain juniper, one-seed juniper (***Juniperus monosperma)*, lodgepole pine, Engelmann spruce, and cottonwood species.**
TOTAL	**7.6%**	**100%**	**32,100**	***N/A***

Note:
Source: NatureServe 2008, LANDFIRE National Existing Vegetation Type layer 2006.

Quaking aspen communities or "stands" comprise a small percentage of the overall vegetation community structure in the decision area. They are often found as small groves in mountain coniferous forest communities. These communities usually support a dense understory of mixed grasses and forbs with an occasional shrub component. Quaking aspen communities are most abundant along the Beartooth and Absaroka mountains and appear to be mature stands. These stands vigorously resprout following fire and are often an early seral stage species in forested communities. Many show evidence of invasion by shade tolerant conifers, which may eventually replace the quaking aspen component; however, conifer removal would promote aspen regeneration (Howard 1996).

Douglas-fir communities are found on north slopes in the Pryor Mountains and throughout the Beartooth and Absaroka mountain areas. This forest type is generally found in steep north or northeast facing drainages at middle elevations in the planning area. Soils are usually shallow, and the slopes are colder and moister than the surrounding habitat. Douglas-fir is found intermixed with limber pine, ponderosa pine, lodgepole pine, and quaking aspen. Numerous acres of Douglas-fir throughout the planning area are reported to be infested with western

spruce budworm. Most infestation areas are in older stands, decadent stands, or both (Steinberg 2002).

Limber pine communities occupy warm and dry sites at low and middle elevations, primarily in the Pryor, Beartooth, and Absaroka mountain areas. Sparse pockets intermingled with shrublands are located throughout the entire southern portion of the planning area. Limber pine is often found intermingled with other pine species or shrubs, most commonly Douglas-fir and lodgepole pine at the higher elevations, and juniper and/or sagebrush at the lower elevations (Johnson 2001).

Lodgepole pine communities in the planning area have three different ecological roles: (1) as a seral species to more shade tolerant tree species; (2) as a relatively stable co-dominant with one or more other species (persistent); and (3) as the only tree layer dominant (persistent). Found primarily in the Absaroka, Beartooth, and Pryor mountain areas, lodgepole pine grows with nearly all other mountain conifers in its range and often forms dense, nearly pure stands. Pure lodgepole pine stands frequently result after repeated fires and where there is no seed source for other species. In pure stands of lodgepole pine, there is seldom an understory of reproduction, though in low density stands there may be younger trees in the understory.

Mixed stands of lodgepole pine and other species are also common; especially stands of lodgepole pine, Engelmann spruce, and subalpine fir at higher elevations, and stands of lodgepole pine and Douglas-fir and/or limber pine at mid to lower elevations. In mixed stands, the overstory may be either pure lodgepole pine or may contain a mix of the above-mentioned conifer species, with the more shade tolerant species in the understory. Lodgepole pine invades dry meadows and sites previously dominated by big sagebrush. However, lodgepole pine is primarily an aggressive pioneer on disturbed sites, with its occurrence due largely to fire. This is visible in the various successional stages of homogeneous stands throughout the Beartooth and Pryor mountain areas. In fire generated stands of similar age, trees become susceptible to mountain pine beetle attack at approximately the same time, resulting in large scale infestations. Where lodgepole pine is persistent, mountain pine beetle infests and kills most large lodgepole pine trees. The openings created by beetle attacked areas are seeded by lodgepole pine, and the cycle is repeated as other trees reach the size conducive to beetle populations. Mountain pine beetle and other non-fire disturbances thin the larger size classes. When combined with patchy fire spread, this complex disturbance regime results in multi-storied, mosaic stands, consisting of different ages and size classes. The overall effect is chronic infestations of mountain pine beetle due to the constant food source (Anderson 2003).

Subalpine fir communities exist at the higher elevations in wetter precipitation zones, generally occupying cold and higher mountain forests in the Absaroka, Beartooth, and Pryor mountain areas. Subalpine fir is a mid to upper elevation mountain conifer. It is generally found where there is a short growing season caused by cold winters, cool summers, frequent summer frosts, and heavy snowpack. It forms extensive forests between warm and dry lower elevation forests of Douglas-fir, lodgepole pine, or Engelmann spruce, and higher elevation alpine tundra. At lower elevations, subalpine fir is often restricted to stream bottoms, ravines, frosty basins, or northern exposures. In the Pryor Mountains, subalpine fir is commonly found intermingled with limber pine at mid to lower elevations. It increasingly occupies westerly and easterly aspects with increasing elevation and may occupy all aspects at upper timberline. Most subalpine fir stands throughout the planning area are in some stage of fir beetle and spruce budworm

infestation. Extended drought and decadent stands contribute to the insect proliferation. Numerous insects attack subalpine fir; the most destructive seems to be the western spruce budworm. Subalpine fir is one of the western spruce budworm's most common hosts. This pest generally attacks low and middle elevation subalpine fir forests and is largely absent from high elevation forests. Other insect pests include the Douglas-fir tussock moth, western black-headed budworm, and fir engraver beetle (Uchytil 1991).

The interior ponderosa pine/bunchgrass community type is the most common vegetative community throughout the planning area. It is characterized by open grasslands interspersed with widely spaced trees. Under pristine conditions, the tree canopy usually covers no more than 25 percent of the forest floor. Stand structure in the planning area resembles open savanna at lower elevations and dense forest at higher elevations. In the central part of the planning area, the interior ponderosa pine type merges into plains grassland at lower elevations and limber pine at higher elevations. Limber pine, Douglas-fir, and Rocky Mountain juniper are common overstory associates. Interior ponderosa pine is one of the only forest trees in southeastern Montana and forms several diverse habitats. On dry sites, it supports an understory of plains grassland species. Understories are typically dense on wetter sites and include species characteristic of Pacific ponderosa pine forests to the west (Arno 1979).

Cottonwood species communities are found in wetter drainage bottoms with the largest concentrations along the Yellowstone, Clarks Fork of the Yellowstone, Boulder, Bighorn, and Musselshell rivers. Many stands are mature or over-mature and in decline. Regeneration is poor and exacerbated by domestic animals, encroachment of noxious and undesirable species, and wildlife (Taylor 2001).

Long-term fire suppression since the early 1900s has allowed forests and woodlands to become overstocked with dense fuels, such that wildfires often are more intense and severe than under historic fire regimes. In some cases, this results in widespread stand replacement and could result in vegetation type conversion, severe erosion, or the need for extensive restoration efforts, including tree planting. Juniper expansion into coniferous forests and quaking aspen stands affects the growth, reproduction, and overall health of these forests. Bartos and Campbell (1998) have estimated that 60% to 90% of quaking aspen stands in the western United States have been taken over by other species due to fire exclusion since European settlement.

Plains island forests – refugia of trees and tree-dependent species isolated in a grassland matrix are at significant risk from climate changes because they are ecotone systems (borderline between grassland and forest ecosystems) and therefore sensitive to relatively small changes in environmental conditions. In addition, because island forests are relatively small ecosystems, they may exhibit reduced genetic diversity and greater vulnerability to catastrophic disturbance such as wildfire, pathogen attack, or severe drought (Henderson et al. 2002).

Silvicultural treatments including harvest, thinning, other mechanical treatments, and prescribed fire would reduce conifer stocking levels and create openings of various sizes to stimulate the growth and development of forests and woodlands. Increasing growing space (e.g., sunlight, water, nutrients, etc.) is expected to maintain or enhance vegetative vigor; structure; density; and species composition, pattern, and distribution; which would promote

forest resiliency and productivity and reduce the occurrence of catastrophic wildfire and forest insect and disease outbreaks.

3.6.2 Rangelands and Shrublands

Rangelands, the second most abundant vegetation cover type, covers approximately 142,556 acres (32.8 percent) of the decision area. Rangeland communities range from subalpine meadows in annual average precipitation zones of 20 or more inches on top of the Pryor Mountains to Red Desert saltbush communities receiving less than nine inches as observed in southern Carbon County. Vegetation composition and structure varies between and within types due to local factors including soils, aspect, precipitation, elevation, slope, and ecological condition. Fifteen cover types are identified in the decision area. Of the fifteen cover types identified approximately 96% of the acreage occurs within five cover types. These cover types are listed in Table 3-15.

Table 3-15 Rangeland Cover Types

Rangeland Cover Types				
Rangeland Ecological System and Community Name	**Total vegetation cover in Decision Area (Percent)**	**Rangeland cover in Decision Area (Percent)**	**Total Acreage**	**Predominant Characteristic Species**
Northwestern Great Plains Mixedgrass Prairie	25.4	77.4%	110,347	Green needlegrass, western wheatgrass, needle-and-thread, prairie junegrass, threadleaf sedge
[1]Introduced Upland Vegetation-Annual and Biennial Forbland	2.8%	8.7%	12,454	Crested Wheatgrass, alfalfa, sweet clover
Northern Rocky Mountain Lower Montane-Foothill-Valley Grassland	1.14%	4.2	5,954	Bluebunch wheatgrass, Idaho Fescue, rough Fescue
Western Great Plains Sand Prairie	1.1	3.2%	4,590	Blue grama, needle-and-thread, little bluestem
Inter-Mountain Basins Semi-Desert Grassland	0.8%	2.67%	3,815	Needle-and- thread, bluebunch wheatgrass, Sandberg bluegrass
Other	1.2%	3.78%	5,396	N/A
Total	32.44%	99.95%	142,556	N/A

Note:
Source: NatureServe 2008, LANDFIRE National Existing Vegetation Type Layer 2006.

1. Ecological System and Community Name derived from Landfire Existing Vegetation Layer 2006. These Vegetation types are not referenced in NatureServe 2008. Predominant characteristic species were derived from Ecological Site Descriptions, and local knowledge.

The Northwestern Great Plains Mixedgrass Prairie occurs in all counties within the decision area. This system occurs on 110,347 acres (25.4 percent) of the decision area and is the most abundant rangeland system in the decision area. This ecological system is found on both glaciated and non-glaciated substrate. This system occurs on fine and medium textured soils. This system is similar to the Western Great Plains Sand Prairie which occurs on courser textured soils. Common vegetation found in this system in Montana includes: western wheatgrass (*Pascopyrum smithii),* green needlegrass (*Nassella viridula),* needle-and-thread

(*Hesperostipa comata)*, prairie junegrass (*Koeleria macrantha)*, and threadleaf sedge (*Carex filifolia)*. Communities within this system adjacent to the Northern Rocky Mountain Lower Montane Foothills Valley Grassland system may begin to pick up Idaho Fescue (*Festuca idahoensis)*.

The Introduced Upland Vegetation-Annual and Biennial Forbland system is common in Carbon, Musselshell, and Yellowstone Counties. This system occurs on approximately 12,500 acres or (2.8 percent) of the decision area. These systems typically occur on lands that have been degraded due to past management practices, such as grazing or agriculture. Common species on these lands include crested wheatgrass (*Agropyron cristatum*), dryland alfalfa (*Medicago ssp*.), sweet clover (*Melilotus ssp.*), and milkvetch species (*Astragalus ssp.).*

The Northern Rocky Mountain Lower Montane-Foothill-Valley Grassland system is located in Carbon, Stillwater, Sweet Grass, Golden Valley, and Wheatland Counties. This system occurs on approximately 6,000 acres or (1.14 percent) of the decision area. This system is found at foothill elevations of the Beartooth, Absaroka, Pryor, Crazy, Little Belt, and Big Snowy mountain ranges. This system often is adjacent to the Northwestern Great Plains Mixedgrass Prairie System which typically occurs at lower elevations. This system is commonly found on relatively deep, fine textured soils, often with course fragments. Common vegetation within this system includes: bluebunch wheatgrass (*Pseudoroegneria spicata)*, Idaho fescue, rough fescue (*Festuca campestris)*, and needle-and-thread.

The Western Great Plains Sand Prairie system is similar to the Northwestern Great Plains Mixed Grass Prairie, which can surround the Western Great Plains Sand Prairie system. Soils separate the two systems, as the Western Great Plains Sand prairie system occurs on courser soils with a sand influence, while the Northwestern Great Plains Mixed Grass Prairie occurs on fine to medium textured soils. Weathered in place sandstone typically provides the substrate needed for this system to occur in Montana. This system occurs on approximately 4,500 acres or (1.1 percent) of the decision area. In the decision area, this system is occurs in eastern Carbon and southern and south eastern Yellowstone Counties. In these counties the common species found within this system include: prairie sandreed (*Calamovilfa longifolia*), little bluestem (*Schizachyrium scoparium*), and needle-and thread.

The Inter-Mountain Basins Semi-Desert Grassland within the decision area is found in the northern portions of the bighorn basin which occurs in southern Carbon County. This system occurs on approximately 3,800 acres or (0.8 percent) of the decision area. This system is found on a variety of landforms in the area and may constitute a mosaic within shrubland systems. In Montana, this system is dominated by bluebunch wheatgrass and Sandberg bluegrass (*Poa secunda*). Other common herbaceous species in this system include indian ricegrass (*Achnatherum hymenoides)*, blue grama (*Bouteloua gracilis)*, and needle-and-thread.

Shrublands, the most abundant cover type in the decision area, compose approximately 243,653 acres within the decision area. This represents approximately 56.1 percent of the area. Of the 19 cover types identified, approximately 97% of the decision area occurs within five cover types. These cover types are listed in Table 3-16.

Table 3-16 Shrubland Cover Types

Shrubland Cover Types				
Shrubland Ecological System and Community Name	**Total vegetation cover in Decision Area (Percent)**	**Rangeland cover in Decision Area (Percent)**	**Total Acreage**	**Predominant Characteristic Species**
Inter-Mountain Basins Big Sagebrush Shrubland	32.8%	58.5%	142,549	Wyoming big sagebrush, rabbit brush, saltbush, needle-and-thread, bluebunch wheatgrass
Inter-Mountain Basins Big Sagebrush Steppe	15%	26.6%	64,892	Wyoming big sagebrush, western wheatgrass, indian ricegrass, needle-and-thread
Inter-Mountain Basins Montane Sagebrush Steppe	3.96%	7%	17,204	Mountain big sagebrush, snowberry, timber oatgrass, Idaho fescue, muttongrass, Sandberg bluegrass, bluebunch wheatgrass
Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland	1.3%	2.6%	5,757	Curl leaf mountain mahogany, mountain big sagebrush, Idaho fescue, bluebunch wheatgrass
Wyoming Basins Dwarf Sagebrush Shrubland and Steppe	1.15%	2%	5,012	Birdsfoot, black, dwarf, and Wyoming sage brush species, blue grama, Idaho fescue, bluebunch wheatgrass
Other	1.89%	3.3%	8,239	N/A
Total	56.1%	100%	243,653	

Note:
Source: NatureServe 2008, LANDFIRE National Existing Vegetation Type Layer 2006.

The Inter-Mountain Basins Big Sagebrush shrubland is the most dominant cover type in the decision area. This cover type is found on approximately 142,500 acres (32.8 percent) of the decision area. This system is found throughout most of Carbon County, and eastern Musselshell and Yellowstone Counties. This system is typically found in broad basins between mountain ranges, plains, and foothills. Soils are typically deep and well drained. Dominant shrub species in this system includes Wyoming big sagebrush (*Artemisia tridentata ssp. Wyomingensis),* rubber rabbitbrush *(Ericameria nauseosa),* and green rabbitbrush *(Chrysothamnus viscidiflorus).* Common understory vegetation includes: indian ricegrass, blue grama, Sandberg bluegrass, and bluebunch wheatgrass.

The Inter-Mountain basins Big Sagebrush Steppe system occurs on approximately 65,000 acres (15 percent) of the decisions areas. This system occurs in Carbon, Musselshell and Yellowstone Counties. This system is similar to the Inter-Mountain Basins Big Sagebrush Shrubland system; however shrub diversity is typically lower in the steppe system. This system is typically dominated by Wyoming big sagebrush, with western wheatgrass, indian ricegrass, needle-and-thread, green needlegrass, and bluebunch wheatgrass common herbaceous understory vegetation.

The Inter-Mountain Basins Montane Sagebrush Steppe occurs on approximately 17,000 acres (4 percent) of the decision area. This system is found in Carbon, Golden Valley, Stillwater, Sweet Grass, and Wheatland Counties. This system occurs at foothill elevations of the Absaroka, Beartooth, Crazy, Little Belt, Pryor, and Big Snowy Mountains. This system is

found on mesic sites with gentle topography and fine soils. The dominant shrub in this system is mountain big sagebrush (*Artemisia tridentata ssp. Vaseyana)*; other shrub species include snowberry (*Symphoricarpos spp.)* rubber rabbitbrush, green rabbitbrush, and Wyoming big sagebrush. Common understory vegetation includes timber oatgrass (*Danthonia intermedia*), Idaho fescue, muttongrass (*Poa fendleriana*), Sandberg bluegrass, and bluebunch wheatgrass. The Inter-Mountain Basins Curl-Leaf Mountain Mahogany Woodland and Shrubland System occurs on approximately 5,800 acres or (1.3 percent) of the decision area. This system is found predominantly in Carbon County in the foothills of the Pryor Mountains. This system is typically found in small stands on ridges and steep rimrock slopes. This system is dominated by curl leaf mountain mahogany (*Cercocarpus ledifolius*) and mountain big sagebrush.

Understory vegetation is typically sparse and includes bluebunch wheatgrass and Idaho fescue. The Wyoming Basins Dwarf Sagebrush Shrubland and Steppe system occurs on approximately 5,000 acres (1.1 percent) of the decision area. This system is found predominantly in southern Carbon County. This system is occurs on gently rolling hills to long gentle slopes. Sites are typically very windy with shallow rocky soils. Short shrubs distinguish this system and contribute at least 66% of the canopy cover. Common shrub species include birdsfoot sagebrush (*Artemisia tripartita),* black sagebrush (*Artemisia nova),* and wind dwarfed Wyoming big sagebrush.

Ecological site descriptions (ESDs) are available for most of the locations within the decision area. These ESDs describe the expected soils and vegetation characteristics that should be found on individual sites, as well as the transitional pathways a community may experience due to disturbance and management practices. Information contained in the ESDs has been used extensively in local planning efforts, including Allotment Management Plans.

Rangeland communities range from subalpine meadows in annual average precipitation zones of 20 or more inches on top of the Pryor Mountains to Red Desert saltbush communities receiving less than nine inches, as observed in southern Carbon County. Vegetation composition and structure varies between and within types due to local factors including soils, aspect, precipitation, elevation, slope, and ecological condition. Loehman (2009) found that *"*Climate changes in the Prairie Potholes and Grasslands bioregion include increased seasonal, annual, minimum, and maximum temperature and changing precipitation patterns."

Vegetation can be grouped into three broad geographic zones in the decision area: Eastern Sedimentary Plains, Western Sedimentary Plains, and Foothills and Mountains (Map 9 – Vegetative Map). The Eastern Sedimentary Plains zone encompasses the area between the Musselshell and Yellowstone rivers and east of U.S. Highway 87. This area includes approximately 110,000 acres of public land and is in the 10 to14 inch precipitation zone. This is primarily a sagebrush/grassland vegetative type consisting of big sagebrush, bunch grasses, and western wheatgrass. A ponderosa pine/grassland type is also included in this zone.

The Western Sedimentary Plains zone includes a variety of vegetative types. This zone takes in essentially all of northern Musselshell, Golden Valley, Wheatland, and western Yellowstone counties, those portions of Stillwater and Sweet Grass counties north of the Yellowstone River, and the Clarks Fork valley and triangle area in Carbon County. Precipitation ranges from five to 20 inches. Collectively, this zone encompasses approximately 260,000 acres of public land.

Vegetation consists primarily of sagebrush/grassland and grassland types, though it does include the red desert/saltbush type on the Wyoming border in southern Carbon County, as well as some areas of ponderosa pine/grassland type vegetation.

The remaining 55,000 acres of public land are located in the Foothills and Mountain zone. This zone includes the Pryor Mountains, the north face of the Beartooth Mountains, and the south face of the Big Snowy Mountains.

The Natural Resource Conservation Service (NRCS) developed site-specific "Technical Range Site Guides" that apply to each of the broad regions. The guides describe the expected soil and vegetative characteristics that should be found on individual range sites and the expected departure in condition with respect to varying degrees of management. Information contained in the guides has been used extensively in local planning efforts, including Allotment Management Plans.

In August 1997, the Montana/Dakotas *Standards for Rangeland Health and Guidelines for Livestock Grazing* (S&Gs) became effective for all BLM lands in Montana and the Dakotas. Standards describe the conditions needed to sustain public land health and apply to all uses of public lands. Rangeland health is the minimum ecological standard, independent of how a rangeland is used or managed. If rangeland health is protected, a variety of uses could be appropriate for any particular rangeland. Standards apply to rangeland health and not to the important byproducts of healthy rangelands such as more fish, higher livestock weaning weights, regional social and cultural values, increased timber production, economic viability of livestock operations, or higher numbers of game animals. The sustainability of the rangeland health processes produces these social values and commodities.

The S&Gs are intended to maintain healthy and productive public rangelands essential to support long term grazing and stable communities that rely on the land. Standards are measurable levels of resource quality, condition, or function upon which management decisions are based. It is the BLM's policy to achieve rangeland health standards through management of existing uses when feasible. Standards provide the technical and scientific basis for measuring progress towards healthy, productive rangelands. Standards are not expected to recreate theoretical "pristine" rangeland conditions that may have existed before livestock grazing began. It is assumed most areas will be grazed unless there is no way to graze them and still achieve standards or that the area is dedicated to other uses such as campgrounds, mining, and cultural/historical sites, such as Pompeys Pillar. Refer to Appendix I – Land Health Standards outlining the standards conformance review determinations for each allotment in the decision area.

Table 3-17 Rangeland Conditions

Rangelands meeting all Standards		Rangelands making significant progress toward meeting Standards		Rangelands not meeting Standards, but changes have been made		Rangelands not meeting Standards and no changes have been made		Rangelands not meeting Standards due to causes other than livestock grazing		No Assessment Completed	
Allotments	Acres*	Allotments	Acres*	Allotments	Acres	Allotment	Acres*	Allotments	Acres*	Allotments	Acres*
309	309,658	34	41,153	8	3,675	1	80	2	80	16	6,835
Figures listed below represent Land Health Standards for lands/allotments located within Priority Sage-grouse habitat											
85	194,762	12	33,251	2	1,501	0	0	0	0	3	1,135

Note:
Source: 2012 year end rangeland monitoring report.
* Due to acreage accounting differences in the PMWHR, the administrative pastures are double counted as an allotment and as part of the HMA.

At a minimum, state or regional standards must address the following: watershed function; nutrient cycling and energy flow; water quality; habitat for endangered, threatened, proposed, Candidate 1 or 2 or special status species; and habitat quality for native plant and animal populations and communities.

3.6.3 Riparian and Wetlands

Riparian/wetlands were analyzed through the LANDFIRE database, delineating this community in some 14,966 acres (3.5 percent) of the decision area. The riparian zone is a minor community in the decision area; however its importance to water quality and wildlife habitat is widely recognized. Riparian zones are defined as "a form of wetland transition between permanently saturated wetlands and upland areas." These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water. Lands along, adjacent to, or contiguous with perennially flowing rivers and streams, wetlands, glacial potholes, and shores of lakes and reservoirs with stable water levels, are typical riparian areas. Ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil are excluded (BLM Manual 1737).

Wetlands are defined as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, under normal circumstances, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands include marshes, shallows, swamps, lakeshores, bogs, muskegs, wet meadows, estuaries, and riparian areas (BLM Manual 1737). These areas provide a wide range of functions critical to many different wildlife species, water quality, scenery, and recreation (Brimson 2001).

Jurisdictional wetlands, those regulated by the US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA), must exhibit all three of the following characteristics: hydrology, hydrophytic vegetation, and hydric soils (USACE 1987). It is important to note that some areas function as wetlands ecologically, but exhibit only one or two of the three characteristics. Consequently, they do not currently qualify as USACE jurisdictional wetlands, and activities there are not regulated under the Section 404 program. These wetlands still perform valuable functions.

Riparian diversity in the decision area is extensive, ranging from subalpine to prairie and desert community types. Herbaceous and woody species common to riparian areas vary widely from site to site. Riparian communities along the larger perennial drainages are often dominated by cottonwood (Populus spp.) and willow (*Salix* spp.) with occasional stands of box elder (*Acer negundo*) and green ash (*Fraxinus pennsylvanica*). In mountain streams, riparian communities are dominated by willow, water birch (*Betula occidentalis*), red osier dogwood (*Cornus sericea*), cottonwood, and conifers such as Douglas-fir and lodgepole pine. The understory often consists of woody plants such as buffaloberry (*Shepherdia* spp.), snowberry (*Symphoricarpos* spp.), Woods' rose (*Rosa woodsii*), and grasses and forbs.

In the southern portion of the decision area, there is a small desert region that receives an average of five inches of precipitation a year. However, several springs and intermittent streams in this area support a lush riparian zone. These narrow bands of lush vegetation and free water are invaluable to wildlife in the area, and this elevates the value of the riparian area.

Along many of the prairie and desert streams, infestation of plants such as Russian olive and salt cedar is prevalent. Control of these invasive species is difficult since riparian segments on public land are limited and fragmented. To effectively remove Russian olive (*Elaeagnus angustifolia*) and salt cedar (*Tamarix ramosissima*) from a riparian zone, it would be critical to manage/treat all adjacent areas, upstream and down, to control seed dispersal.

The ongoing drought, which started in 1997 (NOAA, NCDC), has resulted in new ephemeral streams that do not support riparian communities. Range and riparian surveys and observations have recorded perennial wetlands in pre drought conditions; however, the areas have since become dry washes that do not support riparian communities or diversity has diminished to a single hardy obligate species.

Climate factors can have a significant effect on the health and vigor of many wetlands.

> *"Because wetlands exist in the transition zone between aquatic and terrestrial environments, they are vulnerable to changes in the surface and ground water hydrology. These hydrologic shifts may push wetland species beyond their limits of adaption and tolerance. Wetlands that depend upon precipitation as their primary water source are the most vulnerable to climate variation and change."* (Burkett and Kusler 2000).

Information on the condition of riparian areas and wetlands is available from proper functioning condition (PFC) assessments conducted from 1989 to the present (available at the BiFO). All riparian habitats are dependent on a balanced combination of physical (stream bank, channel, and soil characteristics), hydrologic (regular occurrence of surface water), and vegetation (hydrophytic communities) components. When any of these three components (soil, water, and vegetation) are negatively affected, the functional capacity of a riparian habitat may be degraded. A PFC assessment evaluates these components then rates the riparian area as either: PFC; Functioning at Risk, Upward Trend (FAR-U); Functioning at Risk, Trend Not Apparent (FAR-NA); Functioning at Risk, Downward Trend (FAR-D); and Non-Functional (NF).

Since the purpose of the PFC assessment is to evaluate most of the indicators for land health Standard 2, the functional rating (PFC, FAR, NF) for each riparian area determines whether the standard is being achieved. A PFC rating means most or all the indicators in the system's potential have been met, and therefore Standard 2 has been achieved. A FAR-U rating generally means that several indicators have not been met but that significant progress is being made toward achieving them. A FAR-D or FAR-NA rating means several indicators have not been met and generally, Standard 2 is not achieved. Similarly, an NF rating means critical indicators have not been met and, consequently, Standard 2 is not achieved.

For swift flowing (lotic) systems, a riparian/wetland area is considered to be in PFC when adequate vegetation, landform, or large woody debris is present to accomplish the following:

- Dissipate stream energy associated with high water flow, thereby reducing erosion and improving water quality
- Filter sediment, capture bed load, and aid floodplain development
- Improve floodwater retention and groundwater recharge
- Develop root masses that stabilize stream banks against cutting action
- Develop diverse ponding and channel characteristics to provide habitat and water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses
- Support greater biodiversity (Technical Reference BLM-RS-ST-99-001+1737)

For still or slow flowing (lentic) systems, riparian wetland areas are functioning properly when adequate vegetation, landform, or debris is present to accomplish the following:

- Dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality
- Filter sediment and aid floodplain development
- Improve floodwater retention and groundwater recharge
- Develop root masses that stabilize islands and shoreline features against cutting action
- Restrict water percolation
- Develop diverse ponding characteristics to provide habitat and water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses
- Support greater biodiversity (Technical Reference BLM-RS-ST-99-001-1737)

Each riparian/wetland area is judged against its capability and potential (Technical Reference BLM-RS-ST-98-001-1737).

The decision area contains limited lentic riparian habitat. The extended drought, coupled with soil and geographic characteristics, has created minimal ponding features, and many reservoir attempts in the decision area have failed. Lentic areas that do exist are closed systems with high alkaline constituent, limiting riparian obligates to a few species that can adapt to such conditions. These communities offer little beneficial riparian wildlife habitat. Due to the limited

number of lentic areas and loss of climatic moisture from the drought, many of these areas have not been inventoried. Additional inventories may provide additional information about the lentic status in the decision area.

The most recent results of the PFC assessments are identified in Table 3-18 and Table 3-19, and illustrated in Map 10 (Riparian Properly Functioning Condition Surveys).

It is difficult to directly correlate changes in lotic and lentic riparian condition over the years. As streams and wetlands are inventoried and assessed, stream miles and wetland acres are sometimes added or removed from the inventory. Using geographic positioning system (GPS) technology makes accurate measurements easier, allowing for a higher standard of data and repeatability.

Table 3-18 2010 Functional Condition of Lotic Systems by County (miles)

County	Proper Functioning Condition	Functioning at Risk	Non-Functioning	Unknown
Big Horn	0.0	0.2	0.1	0.3
Carbon	19.2	19.5	7.8	8.0
Golden Valley	0.0	0.6	0.0	0.0
Musselshell	4.3	17.6	3.5	0.0
Stillwater	6.0	0.3	1.4	1.8
Sweet Grass	0.8	0.5	0.3	3.8
Wheatland	0.0	0.3	0.0	0.5
Yellowstone	10.9	28.5	7.0	0.4
All Counties Total	**58.5**	**67.5**	**8.0**	**12**
Percentages	40	46	6	8

Note:
Source: BLM Internal Records – PFC Data

Table 3-19 Functional Condition of Lentic Systems by County

County	Acres of Riparian	Wetland Name	Type	Assessment Date	PFC
Musselshell	1.0	Devils Basin	Playa	9/2008	FAR-U
Musselshell	2.0	Willow Reservoir	Reservoir	8/2008	FAR-U
Musselshell	1.3	Donaldson Reservoir	Reservoir	5/2010	FAR-U
Stillwater	1.0	Big Lake	Lake	N/A	Not surveyed
Carbon	0.5	Sage Creek	Reservoir	8/2008	PFC
Sweet Grass	3.0	Reed Point	Playa	8/2008	PFC

Note:
Source: BLM Internal Records – PFC Data

The Table 3-18 indicates approximately 50 percent of the riparian areas in the decision area are functioning at risk. Decision-area-wide, the primary stressors that contribute to the FAR rating

include: invasive and non-native vegetative infestations, bank alteration from livestock grazing, channel instability (both vertical and lateral), and lack of riparian obligate recruitment and riparian vigor. FAR ratings determined in the last decade, give or take a few years, may be attributed to climatic conditions (drought) that have stressed riparian systems throughout the decision area. These conditions are difficult to manage for, as they are relatively unpredictable. Livestock grazing systems that have succeeded in maintaining PFC in many areas pre-drought can have negative impacts on these systems during the drought (reduced vegetative cover, recruitment and vigor, and stream bank alteration). Trying to manage grazing impacts in response to drought conditions is challenging and can involve building fences and developing water sources to keep livestock out of riparian areas.

The Clean Water Act requires a list of water bodies that do not fully support beneficial uses such as aquatic life, fisheries, drinking water, recreation, industry, or agriculture. These inventories are known as 303(d) lists and characterize waters as fully supporting, impaired, or in some cases threatened for beneficial uses. The decision area has 14 segments of stream, river, or lake shore listed as impaired on the DEQ's 303(d) list. Riparian degradation can lead to water quality impairment. Table 3-20 lists those waters with riparian degradation as one of several causal factors by the MT DEQ. It is important to note that this riparian degradation is not necessarily found on BLM managed lands, as the stream segments generally cover many miles while BLM may only manage as little as 0.25 miles of the stream.

Table 3-20 DEQ Impaired Waters List in the Planning Area

Impaired Water Bodies by 4th Level Hydrologic Unit Code (from 2010 Montana 303(d)/ 305(b) Intergraded Report)				
4th Hydrologic Unit Code Name	**Stream Segment on BLM Land**	**Estimated Miles on BLM Land**	**Probable Impairment Type(s)[A]**	**Probable Impairment Source(s)[B]**
Stillwater River	Stillwater	0.3	1, 4, 14	5, 9, 12, 14, 15
	Bad Canyon	4.82	12	2
Clarks Fork of the Yellowstone	Clarks Fork	2.2	1, 3, 4, 9, 10, 12, 13	3, 4, 12,13
	Silvertip	11.6	1, 2, 3, 5, 6, 7, 8, 9, 10, 11	1, 2, 6, 7, 8, 9, 10, 11
	SF Bridger	6.3	3, 16	8, 9, 12
	Bear	0.7	1, 2, 3, 4, 12	1, 2, 3, 4, 5
	Blue Water	0.1	3, 8, 12	2, 3 , 4, 16, 18
	Cottonwood	0.75	2, 5, 8	1, 2, 8, 9, 18
Upper Yellowstone	Yellowstone	8.1	1, 3, 8	3, 9, 10, 16, 17,
	Boulder	0.16	1,2,4,	2,3,12
	Big Lake	.25	8	18
Middle Yellowstone	Yellowstone	11.5	1,8,12,16	9,11,17,18
Big Horn Lake	Crooked	3.2	13	18
Middle Musselshell	Musselshell	0.9	2, 10, 13	4, 6, 13, 18
	North Willow	4.75	1, 3, 4, 6, 15,	9, 11, 12
Total		55.63		

Impaired Water Bodies by 4th Level Hydrologic Unit Code (from 2010 Montana 303(d)/ 305(b) Intergraded Report)				
4th Hydrologic Unit Code Name	**Stream Segment on BLM Land**	**Estimated Miles on BLM Land**	**Probable Impairment Type(s)[A]**	**Probable Impairment Source(s)[B]**
[A] Cause: 1=Nutrients, 2=Alteration of Streamside Vegetation, 3=Sediment, 4=Metals, 5=Oxygen Depletion, 6=Specific Conductance, 7=Turbidity, 8=Total Dissolved Solids, 9=Temperature, 10=Flow Alterations, 11=Toxic Organics, 12=Harmful Algae, 13=Habitat Alterations, 14=Cyanide, 15=Sulfates, 16=Arsenic [B] Source: 1=Loss of Riparian Habitat, 2=Rangeland Grazing; 3=Irrigated Crop Production; 4= Hydrologic Modification, 5=AML, 6=Channelization, 7=Impoundments, 8=Riparian Grazing, 9=Natural, 10=Industrial Permitted, 11=Spills, 12=Unknown, 13=Streambank modification, 14=Hard rock Mining, 15=Post Fire Runoff , 16=Feedlots, 17=Municipal Discharge, 18=Agriculture				

Best management practices, state (MT DEQ), and federal guidance set the foundation for BLM management of aquatic resources through sound riparian habitat and water quality management. A clear establishment of the importance of riparian health is critical in understanding the connectivity between riparian vegetation, water quality and quantity and aquatic resources. The following guidance, as well as the use of BMPs sets the foundation for BLM management of aquatic resources through sound habitat and water quality management.

3.6.4 Urban and Agricultural Lands

The urban land use and agricultural cover types comprise approximately 8,550 acres (2 percent) of the decision area. This area is covered by 30 percent or more of non-native species, including introduced and noxious weed species. Total vegetation cover ranges from 20 to 80 percent. Crested wheatgrass (*Agropyron cristatum*) and yellow sweet clover (*Melilotus officinalis*) are introduced species that have been used widely for rangeland pasture improvement. Such habitats are often used for early season livestock grazing. Urban areas are often dominated by bare ground and have been disturbed or altered by human use including irrigated and dryland crops, surface mining operations, and human settlements.

3.6.5 Invasive Species and Noxious Weeds

Noxious weeds, designated by Montana state law and county weed boards, are exotic plant species that may harm native plant communities. Most invasive plant species currently known to occur in south central Montana were originally introduced to North America from Europe and Asia (Sheley and Petroff 1999). Introductions were both intentional for various reasons or unintentionally brought in as contaminants of feed, seed, and ship ballast. Once established, these plants spread rapidly by natural (wind, water, and wildlife) and artificial (roads, equipment, and movement of contaminated feed and seed) means. These plants generally invade disturbed soils and stressed plant communities. Once established, many invade healthy plant communities and alter healthy plant systems. These aggressive invaders decrease wildlife habitat value, reduce livestock range productivity, and increase land management costs.

Noxious and invasive species move across jurisdictional boundaries and property lines; therefore, coordination and partnerships with local, state, tribal governments, and other federal agencies, as well as with interested organizations and individuals, is a critical management component. Noxious and invasive plant species in the planning area are currently managed

using an integrated weed management (IWM) approach. This approach includes prevention, early detection and rapid response strategies; and priority inventory and treatment areas. Management of vegetation for resources and habitat enhancement is accomplished with a variety of treatment methods, including, but not limited to: herbicides, prescribed fire, manual and mechanical methods, and biological controls (insects, pathogens, and domestic grazing animals).

The BiFO cooperates with county weed boards in Yellowstone, Musselshell, Carbon, Stillwater and Sweet Grass counties through assistance agreements and Cooperative Weed Management Areas (WMAs) for noxious weed management and control. The purpose of creating WMAs is to facilitate cooperation among all land managers and land owners to manage a common problem in common areas.

The formation of a WMA replaces jurisdictional boundaries that are barriers to weed management programs in favor of more logical boundaries that facilitate weed management and control. The advantages include, but are not limited to, establishing common priorities, channeled communication, and shared (and more secure) funding.

The Billings Field Office is currently a member of ten WMAs throughout the planning area. Cooperators include: USDA – USFS, USDA - NRCS, Montana Fish, Wildlife, and Parks, Montana Department of State Lands, county governments and weed boards, local land owners and land owner organizations.

Golden Valley and Wheatland counties do not have a weed board or a county weed department. Cooperation with the counties involves providing BLM funding to map, treat, and monitor noxious/invasive species; data and information exchange; and providing education to the general public.

Noxious plant lists are established on federal, state, and county levels. Table 3-21 outlines all noxious and invasive weed species currently designated by the State of Montana, the Noxious Weed Control Act and Administrative Rules of Montana (maintained as a county designation). The County Noxious Weed Control Act and Administrative Rules of Montana declare that each county is allowed to designate plant species as "noxious." The purpose of this list is to gather more information on potentially problematic weed species and monitor for occurrence or spread. Although there is no regulatory aspect to the list, information collected may be used to justify future inclusion on the state noxious weed list. BLM is currently building a national mapping database, NISIMS, which will be an information management system that would be used to track the mapping, treatment, and monitoring of invasive species (Map 13).

The State of Montana lists and prioritizes 34 state-designated noxious weeds based on the following prioritization:

- **Priority 1A (1 species) –** These weeds are not present in Montana. Management criteria will require eradication if detected, education, and prevention.
    - Yellow starthistle (*Centaurea solstitialis*)

- **Priority 1B (8 species) –** These weeds have limited presence in Montana. Management criteria will require eradication or containment and education.

- Dyer's woad (*Isatis tinctoria*)
- Flowering rush (*Butomus umbellatus*)
- Japanese knotweed complex (*Polygonum spp.*)
- Purple loosestrife (*Lythrum spp.*)
- Rush skeletonweed (*Chondrilla juncea*)
- Eurasian water milfoil (*Myriophyllum spicatum*)
- Scotch broom (*Cytisus scoparius*)
- Curlyleaf pondweed (*Potamageton crispus*)

- **Priority 2A (8 Species) –** These weeds are common in isolated areas of Montana. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts.
  - Tansy ragwort (*Senecio jacobea*)
  - Meadow hawkweed complex (*Hieracium spp.*)
  - Orange hawkweed (*Hieracium aurantiacum*)
  - Tall buttercup (*Ranunculus acris*)
  - Perennial pepperweed (*Lepidium latifolium*)
  - Yellowflag iris (*Iris pseudacorus*)
  - Blueweed (*Echium vulgare*)
  - Hoary alyssum (*Berteroa incana*)

- **Priority 2B (16 Species) –** These weeds are abundant in Montana and widespread in many counties. Management criteria will require eradication or containment where less abundant. Management is prioritized by local weed districts.
  - Canada thistle (*Cirsium arvense*)
  - Field bindweed (*Convolvulus arvensis*)
  - Leafy spurge (*Euphorbia esula*)
  - Whitetop (hoary cress; *Cardaria draba*)
  - Russian knapweed (*Centaurea repens*)
  - Spotted knapweed (*Centauria stoebe* or *maculosa*)
  - Diffuse knapweed (*Centaurea diffusa*)
  - Dalmatian toadflax (*Linaria dalmatica*)
  - St. John's Wort (*Hypericum perforatum*)
  - Sulfur cinquefoil (*Potentilla recta*)
  - Common tansy (*Tanacetum vulgare*)
  - Oxeye daisy (*Chrysanthemum leucanthemum* or *Leucanthemum vulgare*)
  - Houndstongue (*Cynoglossum officinale*)
  - Yellow toadflax (*Linaria vulgaris*)

  - Saltcedar (*Tamarix spp*.)

- **Priority 3 (2 Species) –** These weeds are regulated plants, not Montana listed noxious weeds. These regulated plants have the potential to have significant negative impacts. The plant may not be intentionally spread or sold other than as a contaminant in agricultural products. The state recommends research, education, and prevention to minimize the spread of the regulated plant.
  - Cheatgrass (*Bromus tectorum*)
  - Hydrilla (*Hydrilla verticillata*)

Russian olive (*Elaeagnus angustifolia*) is not listed as a state/county noxious weed species or a regulated plant; however, the BiFO is applying integrated weed management to this species. Russian olive is invasive in riparian areas due to high seed production and viability, seed longevity, seed dispersal by birds and mammals, vegetation reproduction following injury, drought and salt tolerance, and the ability to establish in the absence of disturbance in late successional communities. The Salt Cedar and Russian Olive Control Demonstration Act was signed into public law on October 11, 2006 for funding to assess extent of species infestation, demonstrate long term management, and assess economic means to dispose of biomass created when removing salt cedar and Russian olive. Russian olive site inventory is currently in process, and some management of these species is being conducted.

Table 3-21 Noxious and Invasive Weed Species by County

Common Name	Scientific Name	County Species Designations[1]							BLM Acre Class[2, 3]
		Montana	Big Horn County, MT	Carbon County	Musselshell County	Stillwater County	Sweet Grass County	Yellowstone County	
Common burdock	*Arctium minus*	N/A	x	N/A	N/A	x	N/A	N/A	Low
Absinth wormwood	*Artemisia absinthium*	N/A	N/A	x	N/A	N/A	N/A	N/A	Low
Hoary alyssum	*Berteroa incana*	x (Priority 2A)	N/A	x	N/A	N/A	N/A	x	Rare
Flowering rush	*Butomus umbellatus*	x (Priority 1B)	N/A	N/A	N/A	N/A	N/A	N/A	None
Whitetop or hoary cress	*Cardaria draba*	x (Priority 2B)	N/A	x	x	x	x	x	Moderate
Musk thistle	*Carduus nutans*	N/A	N/A	x	N/A	N/A	x	N/A	Low
Diffuse knapweed	*Centaurea diffusa*	x (Priority 2B)	N/A	x	x	N/A	x	x	Low
Spotted knapweed	*Centaurea maculosa*	x (Priority 2B)	N/A	x	x	x	x	x	High
Russian knapweed	*Centaurea repens*	x (Priority 2B)	N/A	x	x	x	x	x	Low
Yellow starthistle	*Centaurea solstitialis*	x (Priority 1A)	N/A	N/A	N/A	x	N/A	N/A	Rare
Rush skeletonweed	*Chondrilla juncea*	x (Priority 1B)	N/A	N/A	N/A	N/A	N/A	N/A	None
Oxeye-daisy	*Chrysanthemum leucanthemum*	x (Priority 2B)	N/A	x	N/A	x	x	x	Low
Canada thistle	*Cirsium arvense*	x (Priority 2B)	N/A	x	x	x	x	x	High
Poison hemlock	*Conium maculatum*	N/A	x	N/A	N/A	N/A	N/A	x	Low
Field bindweed	*Convolvulus arvensis*	x (Priority 2B)	N/A	x	x	x	x	x	High
Common crupina	*Crupina vulgaris*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Rare
Houndstongue	*Cynoglossum officinale*	x (Priority 2B)	N/A	x	x	x	x	x	Moderate
Scotch broom	*Cytisus scoparius*	x (Priority 1B)	N/A	N/A	N/A	N/A	N/A	N/A	None
Common teasel	*Dipsacus fullonum*	N/A	N/A	N/A	N/A	N/A	N/A	x	Low
Blueweed	*Echium vulgare*	x (Priority 2A)	N/A	N/A	N/A	N/A	x	N/A	Rare
Urban spurge	*Euphorbia agraria*	N/A	N/A	N/A	N/A	N/A	x	N/A	Low
Leafy spurge	*Euphorbia esula*	x (Priority 2B)	N/A	x	x	x	x	x	High
Orange hawkweed	*Hieracium aurantiacum*	x (Priority 2A)	N/A	N/A	N/A	N/A	x	N/A	Rare
Meadow hawkweed complex	*Hieracium 3-59retense, H. floribundum, H. piloselloides*	x (Priority 2A)	N/A	N/A	N/A	N/A	N/A	N/A	None
Black henbane	*Hyoscyamus niger*	N/A	x	N/A	N/A	N/A	x	N/A	Low
St. Johnswort	*Hypericum perforatum*	x (Priority 2B)	N/A	N/A	N/A	N/A	x	x	Rare
Yellowflag iris	*Iris pseudacorus*	x (Priority 2A)	N/A	N/A	N/A	N/A	N/A	N/A	None
Dyer's woad	*Isatis tinctoria*	x (Priority 1B)	N/A	x	N/A	N/A	N/A	N/A	Rare
Perennial pepperweed	*Lepidium latifolium*	x (Priority 2A)	N/A	N/A	N/A	N/A	N/A	N/A	Low
Dalmatian toadflax	*Linaria dalmatica*	x (Priority 2B)	N/A	x	x	N/A	x	x	Low Moderate
Yellow toadflax	*Linaria vulgaris*	x (Priority 2B)	N/A	x	x	x	x	x	Low
Purple loosestrife	*Lythrum salicaria, L. virgatum*	x (Priority 1B)	N/A	x	N/A	N/A	N/A	x	Rare
Eurasian water milfoil	*Myriophyllum spicatum*	x (Priority 1B)	N/A	N/A	N/A	N/A	N/A	N/A	None
Scotch thistle	*Onopordum acanthium*	N/A	N/A	x	x	N/A	N/A	N/A	Low
Japanese knotweed complex	*Polygonum cuspidatum, P. sachalinense, P. polystachyum*	x (Priority 1B)	N/A	N/A	N/A	N/A	N/A	N/A	None
Sulfur cinquefoil	*Potentilla recta*	x (Priority 2B)	N/A	x	x	x	x	x	Low
Tall buttercup	*Ranunculus acris*	x (Priority 2A)	N/A	N/A	N/A	N/A	x	x	Rare
Woodland sage	*Salvia nemorosa*	N/A	N/A	N/A	N/A	N/A	x	N/A	Low
Tansy ragwort	*Senecio jacobea*	x (Priority 2A)	N/A	N/A	N/A	N/A	N/A	N/A	None
Milk thistle	*Silybum marianum*	N/A	N/A	x	N/A	N/A	N/A	N/A	Low
Salt Cedar or Tamarisk	*Tamarix* spp.	X (Priority 2B)	N/A	x	x	x	x	x	High
Common tansy	*Tanacetum vulgare*	x (Priority 2B)	N/A	N/A	x	N/A	x	x	Low
Puncture vine	*Tribulus terrestris*	N/A	N/A	N/A	N/A	N/A	N/A	x	High
Common mullein	*Verbascum thapsus*	N/A	N/A	N/A	N/A	x	N/A	x	Low
Curlyleaf pondweed	*Potamageton crispus*	x (Priority 1B)	N/A	N/A	N/A	N/A	N/A	N/A	None
Cheatgrass	*Bromus tectorum*	x (Priority 3)	x	x	x	x	x	x	High
Hydrilla	*Hydrilla verticillata*	x (Priority 3)	N/A	N/A	N/A	N/A	N/A	N/A	None

Note:

1 Golden Valley and Wheatland counties do not maintain a separate noxious weed list.
2 Acreage calculations based on historic data and map digitization; acreage calculations are not mutually exclusive.
3 BLM Class Values: None = 0; Rare = <1 acre; Trace = 1-5 acres; Low = 5-50 acres; Moderate = 50-500 acres; High = >500 acres.
As of July 2011, MT-DOA will no longer post county designated noxious weeds. County Weed Districts will now provide this information when requested.
Source: Montana Department of Agriculture 2008.

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Noxious weeds and invasive plant species are mostly associated with areas experiencing natural or manmade disturbances such as waterways, roads, recreational destinations, heavily utilized rangeland, pipelines, drilling pads, rights-of-way (ROWs), and livestock/wildlife paths and congregation areas. Table 3-21 indicates the presence of noxious weeds and invasive plant species in the planning area using historic data and map digitization. Acreage was calculated using data collected for the presence of weed species, acres of treatment evaluation, and acres of applied weed treatments.

3.6.6 Special Status Plants

Special status species are species listed as threatened or endangered under the Endangered Species Act (ESA), species proposed or candidates for listing, species designated as sensitive by BLM, and state listed species. These species require particular management attention due to population or habitat concerns.

Management of special status species on public lands administered by BLM occurs under a variety of laws, policies, and other requirements, as summarized in Chapter 1. There are no federally listed plants within the planning area.

There are 21 BLM sensitive plant species documented as occurring or containing suitable habitat in the decision area (Map 14). The BiFO inventories for presence of special status plant species and determines restrictions in areas with known populations on a case by case basis. Table 3-22 summarizes each species, its listed status, and known range and habitat associations in the decision area (BLM 2009).

There are nine areas of critical environmental concern (ACECs) in the decision area; however, only the Meeteetse Spires and East Pryor ACECs have documented special status plant species populations. The Shoshone carrot, a BLM sensitive species, has been identified in the Meeteetse Spires. The species population trend in the ACEC was recorded as stable. The ACEC Decision Record and Approved Amendment of the Billings, Powder River, and South Dakota RMPs identifies numerous management actions to protect the species and enhance associated habitats including, but not limited to, closures to livestock grazing, closure to entry for locatable minerals, closure to mineral material sales, no geophysical exploration, and OHV limitations on existing road and trails. The Shoshone carrot was also identified in the East Pryor ACEC; however, it was determined no further protection or habitat enhancement measures were needed to protect the population (BLM 1999).

Table 3-22 Special Status Plant Species

Common Name[1]	Scientific Name[1]	BLM Status	Known Range and Habitat Associations
Nodding Rock Cress	*Arabis demissa var. languid (Boechera demissa)*	Sensitive	Primarily inhabits canyon bottoms and outwash plains with dry, stony soils derived from limestone. Known to occur in two places in the decision area, known only from Pryor Mountains and foothills vicinity and the Bighorn Canyon National Recreation Area (BCNRA).
Cushion Milkvetch	*Astragalus aretioides (Orophaca aretioides)*	Sensitive	Primarily inhabits foothill and montane communities on exposed ridges and slopes in thin soil usually derived from limestone or calcareous sandstone in openings of Douglas-fir between 4,400 to 7,800 feet amsl. This species is endemic known mainly in the Pryor Mountains in Montana where there

Table 3-22 Special Status Plant Species

Common Name[1]	Scientific Name[1]	BLM Status	Known Range and Habitat Associations
			are three known occurrences.
Geyer's Milkvetch	*Astragalus geyeri*	Sensitive	Occupies loose sandy soil habitats with little or no organic matter in alluvial plains and terraces. This species is known to occur in the Pryor Mountain foothills at four sites.
Gray's Milkvetch	*Astragalus grayi*	Sensitive	Occupies open soil, valley habitats in sagebrush steppe communities. Species is known from three occurrences in the Pryor Mountain foothills.
Oregon Milkvetch	*Astragalus oreganus*	Sensitive	Occupies sandy soil habitats associated with the Chugwater Formation below 5,000 feet amsl often forming large colonies. A regional endemic of south central Montana and central Wyoming, five species occurrences are known in the decision area, restricted to the Pryor Mountain foothills.
Blackfoot River Evening-Primrose	*Camissonia andina (Oenothera andina)*	Sensitive	Occupies exposed, sandy soil habitats of dry prairie slopes, flats, and depressions in moist swales on south facing hillsides dominated by big sagebrush, curl-leaf mountain mahogany, and occasionally, Douglas-fir-Utah juniper woodlands between 4,000-6,200 feet amsl. Species is known from seven occurrences in the decision area, restricted to the south side of the Pryor Mountains.
Lewis River Suncup	*Camissonia parvula (Oenothera parvula)*	Sensitive	Occupies sandy soil habitats weathered from calcareous sandstone between juniper woodland and sagebrush steppe zones. Species is known from two occurrences in the decision area on the southern edge of the Pryor Mountains.
Yellow Spiderflower	*Cleome lutea*	Sensitive	Occupies open, often sandy soil of sagebrush steppe valley communities. Species is known from four occurrences in the decision area, restricted to the Pryor Mountain foothills.
Pinyon Desert Cryptantha	*Cryptantha scoparia*	Sensitive	Occupies dry, sandy, limestone uplands at approximately 4,500 feet amsl. Species is known from one location in the Pryor Mountains.
Spiny Hopsage	*Grayia spinosa*	Sensitive	Occupies dry shrublands in the valleys and foothills usually on sandy textured alkaline soils below 5,000 feet amsl. Species is known from 10 occurrences in the decision area and is restricted to the Pryor Mountain foothills.
Mat Prickly Phlox	*Leptodactylon caespitosum*	Sensitive	Occupies north or east facing slopes in dry, open sandy breaks confined to outcroppings of Chugwater sandstone. Species is known from 16 occurrences in the decision area and is restricted to the Pryor Mountain foothills.
Pryor Mountain Bladderpod	*Lesquerella lesicii (Physaria lesicii)*	Sensitive	Occupies two distinct vegetation types: (1) woodlands with a sparse overstory of Rocky Mountain juniper-mountain mahogany on moderate to steep, usually warm slopes between 5,300-6,300 feet amsl, and (2) open, south facing, gentle slopes of exposed ridge crests surrounded by forests in bunchgrass/cushion plant communities. Species is known from 10 occurrences in the decision area, is endemic to the Pryor Mountains, and restricted to a few areas of limestone outcrops in the eastern Pryor Mountains.
Torrey's Desert Dandelion	*Malacothrix torreyi (M. sonchoides v. torreyi)*	Sensitive	Occupies sandy alluvium, five occurrences are known from the south side of the Pryor Mountains.
Dwarf	*Mentzelia pumila*	Sensitive	Occupies open habitats, usually characterized by sandy soil in desert

Table 3-22 Special Status Plant Species

Common Name[1]	Scientific Name[1]	BLM Status	Known Range and Habitat Associations
Mentzelia			shrubland and woodland valley and foothill zones. Species is known from 16 occurrences in the Pryor Mountain foothills.
Leafy Nama	*Nama densum*	Sensitive	Occupies sandy soil habitats weathered from outcrops of calcareous sandstone and is known from one site in the Pryor Mountain foothills.
Wasatch Bluegrass	*Poa arnowiae*	Sensitive	Occupies sparsely vegetated soil of Douglas-fir forest floors in the montane zone and is known from one occurrence in the Pryor Mountains.
Platte River Cinquefoil	*Potentilla plattensis*	Sensitive	Occupies grassland and sagebrush steppe habitats in the valley and montane zones. Species is known from one site in the decision area in the Pryor Mountains.
Largeflower Goldenweed	*Pyrrocoma carthamoides* var. *subsquarrosa (Haplopappus carthamoides* var. *subsquarrosus)*	Sensitive	Occupies grassland and sagebrush habitats dominated by bunchgrasses or bunchgrass with sagebrush, frequently found on cooler, moderate to steep slopes. Species is known from eight occurrences in the decision area and is a regional endemic restricted in Montana to the eastern front of the Beartooth and Pryor mountain foothills.
Persistent Sepal Yellowcress	*Rorippa calycina*	Sensitive	Occupies sparsely vegetated, moist sandy to muddy banks of streams, stock ponds, and manmade reservoirs near the high water line. Species is only known from one historic site in the decision area.
Shoshone Carrot	*Shoshonea pulvinata*	Sensitive	Occupies open, exposed limestone outcrops, ridge tops, and canyon rims in thin rocky soils. Species is known from six occurrences in the decision area and is a regional endemic species to the Absaroka, Owl Creek, and Pryor mountains of Park and Fremont counties, Wyoming and Carbon County, Montana. In addition, stable populations have been identified in the Meeteetse Spires and East Pryor Mountains ACECs.
Salty Buckwheat	*Stenogonum salsuginosum (Eriogonum salsuginosum)*	Sensitive	Occupies bentonite soils in dry, open slopes of breaklands at approximately 4,700 feet amsl. Species is known from two small populations documented on the south side of the Pryor Mountains.

Note:
[1] Species nomenclature consistent with the USDA PLANTS database (USDA 2009).
amsl = above mean sea level
Source: BLM 2009, USDA 2009.

3.7 Wildlife Habitat and Special Status Species

Wildlife species in the BiFO planning area include big game animals, raptors, upland game birds, and other species. These populations are managed by the U.S. Fish and Wildlife Service (USFWS) and Montana Fish, Wildlife and Parks (MTFWP). The BLM works cooperatively with these agencies to manage wildlife habitat on public lands. Therefore, the BLM is directly responsible for managing fish and wildlife habitat on public lands and is indirectly responsible for the health and well-being of fish and wildlife populations supported by habitats on public lands.

Distribution and abundance of wildlife in the decision area are primarily functions of habitat availability and conditions. Wildlife habitat is best characterized by the various vegetation cover types in the decision area (Vegetative Communities Section). The diversity of habitat

types in the decision area is high (37 types) and ranges from moderate/high cover grasslands to Douglas-fir forests. Habitat types are a subcategory of vegetation cover types and are defined as a land area that supports, or has the potential of supporting, the same primary climax vegetation. For example, a shrubland vegetation cover type could be composed of several species of sagebrush and other shrub habitat types.

These 37 habitat types can be grouped into the following primary vegetative communities: grasslands, shrublands, forests, riparian/wetlands, and urban and agricultural lands (see Table 3-13). The most common vegetation community is grassland and shrubland, which represents approximately 87 percent of the decision area, and the least common community type is agricultural lands, which represents 2 percent of the decision area. Carbon County has the northern most extension of the Big Horn Basin cold desert into Montana. This area creates additional floral and faunal species diversity due to its northern cold desert climate. For example, this is the only area in Montana that has white-tailed prairie dogs and a breeding population of blue-gray gnatcatchers.

The diversity and populations of fish and wildlife throughout the decision area provide considerable recreational opportunity and economic benefit. The species listed in Table 3-23 characterize fish and wildlife resources in the planning area and include game species, species vulnerable to impacts, and species with high economic or recreational value.

3.7.1 Wildlife Habitat Threats

Fragmentation of habitats and corridors continues to be an ongoing problem for wildlife. There are seven large blocks of public land over 5,000 acres in the decision area. Refer to Map 1 and 1a for locations of the large blocks of public land. The remaining public land is mixed ownership of scattered public lands. Wildlife management opportunities for the BLM are very limited on the small or scattered tracts of public land. Wildlife species that are mobile, such as big game and birds, are affected by management of habitat on the surrounding ownerships. BLM can effectively manage wildlife habitat on the large blocks of public land, although management options are less effective on scattered public lands, due to the influence of habitat management on surrounding areas. Maintaining connectivity and continuity of habitat with scattered land ownership is difficult. Conversely, these small tracts of relatively undisturbed public land can provide valuable islands of native habitat, native species, and biodiversity.

Wildlife habitat threats in the scattered public land ownership include: habitat loss and conversion from construction and farming; subdivisions with the associated infrastructure developments; rights-of-ways for pipelines, power lines, roads, and fences; disturbances from human activities; and noxious weeds. All of these actions can prevent wildlife movement and reduce, eliminate, or fragment wildlife habitat and quality.

3.7.2 Priority Wildlife Species

Priority wildlife species include game animals and non-game species of special interest. The latter includes those species considered to have a unique role in the ecosystem, are of public interest, have a low abundance or declining population, are associated with rare habitats, have potential threats, may be sensitive to BLM management activities, and have a majority of their

habitat on BLM lands. Availability and quality of data vary for individual species. Refer to Maps 15-23 and 25 for some of the wildlife and big game species maps.

In addition to the species described in Table 3-23, the following species are considered priority wildlife species: white-tailed prairie dog, mountain plover, Blue-gray gnatcatcher, Greater sage-grouse, and Yellowstone cutthroat trout. White-tailed prairie dogs, mountain plover, and Yellowstone cutthroat trout are considered priority species due to their rarity, low abundance, and declining populations in Montana. Blue-gray gnatcatchers are considered a priority due to their unique, rare, and only known documented breeding location in Montana. Greater sage-grouse are considered a priority species due to their declining population trends and number of habitat threats.

Table 3-23 Habitat for Priority Wildlife Species in the Planning Area

Species	Occurrence in Planning Area	General Habitat Associations	Abundance & Trends in Area
Mule deer	Most abundant big game species.	Use wide variety of habitat; generally prefer sagebrush, grassland, and conifer areas.	Mule deer populations in prairie habitats are below levels in the early 1990s and mountain mule deer populations are well below levels of the 1980s and 1990s.[a]
White-tailed deer	Well distributed throughout suitable habitat.	Prefer riparian drainage bottoms and conifer forests.	White-tailed deer populations in south-central Montana have remained relatively stable at above average levels. [b]
Pronghorn antelope	Second most abundant big game species.	Use grasslands, sagebrush and other shrub-grasslands, and agricultural fields.	From 1998 to 2006 numbers increased in most districts. Low fawn numbers and a bluetongue outbreak during 2007 have resulted in reduced antelope populations in many districts during 2007 and 2008. [b]
Rocky Mountain elk	Common in Beartooth and Bull mountains; less common in south-central portion of the planning area.	Use grasslands, shrub-grasslands, woodlands, and riparian/wetlands.	Of the 14 Elk Management Units (EMUs) 6 showed population increases, 7 showed population declines and 1 unit was not inventoried. [b]
Bighorn sheep	Occur as a single herd -in the Pryor Mountains.	Use cliffs, mountain slopes, and rolling foothills with open to semi-open conditions (rocks, grasses, shrubs).	Pryor Mountain population trend has been increasing since 2003 with 78 bighorn sheep in 2008. Hunting was initiated in 1990. Three ram permits have been issued since 2005 and three either-sex permits were issued beginning in 2008. [b]
Moose	Historically, in the Boulder River and Beartooth Mountain foothills.	Often use southerly aspects in winter, forest, wet meadows, and riparian/wetland areas.	Flight efficiencies are too variable to make any statements about moose population trends. [b]
Black Bear	Pryor Mountains and Beartooth Front.	Forested habitats in the mountain ranges.	Population data is unavailable, although according to observations of cubs/female the population trend appears to be static and close to the average over 27 years of data.[b]
Mountain Lion	Widespread, concentrated where deer and elk prey base is available	All habitats where deer and elk are present.	Population data is unavailable, although according to the report, ranges have expanded substantially to previously uninhabited areas due to the distribution and habitat expansion of deer and elk, their primary prey base. [b]
Furbearers- Bobcat, marten, fisher, beaver, muskrat, mink, otter	Widespread over Field Office	Variable depending on the species	• Population trends are unknown. • Trapping harvest data in 2008 indicate beaver, muskrat, coyote, mink, weasel, fox, and badger were 46% below the long term average from 1993-2009. • Total number of bobcats trapped has steadily increased from 1995 to 2009. [b]

Species	Occurrence in Planning Area	General Habitat Associations	Abundance & Trends in Area
Upland Birds:[1] Sharp-tailed grouse, blue grouse, ruffed grouse, wild turkey, ring-necked pheasant, Hungarian partridge, chukar partridge	Generally well distributed throughout suitable habitat.	• Sharp-tailed grouse use grasslands, shrub-grasslands, woodlands, riparian/wetlands, and agricultural areas. • Wild turkey use forested riparian areas, use Ponderosa pine hillsides, agricultural fields. • Ring-necked pheasant use riparian bottoms with adjacent agricultural fields. • Hungarian partridge use grasslands with interspersed agricultural fields and brushy/weedy areas. Chukar partridge are found in the broken terrain in south Carbon County.	• Sharp-tailed grouse are declining in abundance.[c] • Hungarian partridge population in the state has been increasing since the 1940s due to increased grain production.[d] • 2009 harvest data indicate blue grouse harvest at 12% below average and ruffed grouse 10% above average. • 2010 data show ring-necked pheasant population trends down 11%. • Wild turkey harvest data indicates an upward trend in populations. [b] • Population trend data is not available for chukar partridge.
Bats: Spotted, Townsend's Big-Eared, Pallid, Hoary, Fringed Myotis	Not well known other than caves.	Primarily caves and forested or riparian areas.	Data is not available.
Waterfowl	Well distributed throughout suitable habitat.	Use reservoirs, wetlands, and rivers.	Information is not available.
Raptors	Well distributed; riparian areas are important habitat for raptors in BiFO.	Utilize key habitat features such as Cliffs, Steep banks, structures, large trees, etc.	Information is not available. Peregrine falcon and bald eagle populations increasing.
Reptiles: Spiny softshell Turtle, Snapping turtle, Western hog-nosed snake, pale milksnake, greater short-horned lizard, common sagebrush lizard	Some species such as pale milksnake and western hog-nosed snake not well documented; other species well distributed in suitable habitat.	Turtles in large rivers and snakes and lizards in open and rocky shrublands.	Population trend data is not available.

Note:

[1] Greater sage-grouse are addressed in the Special Status Species section.

[a] Source: Progress Report (MFWP, 2007 – 2008)

[b] Source: Progress Report (MFWP, 2009 – 2010)

[c] J. Newell, pers. comm. 2005

[d] MTFWP and MNHP 2005

3.7.3 Terrestrial Wildlife

3.7.3.1 Big Game

Big game species in the planning area include mule deer, white-tailed deer, pronghorn antelope, Rocky Mountain elk, bighorn sheep, moose, black bear, and mountain lion. Winter is a crucial and stressful time for big game; therefore, winter range is often the focus of management and a criterion for analyzing the impacts to big game from resource management (see Table 3-23). Big game maps are included in Appendices/ Maps 16-20, and will be updated as information becomes available.

Threats to big game habitat in the decision area are direct habitat loss, disturbance from human activities, fragmentation from habitat loss, and barriers to movement such as fencing. The greatest barrier to big game movements are woven-wire or net-wire fences, particularly for young big game. Currently, there is not an inventory of fences not meeting BLM fencing standards. Most of the net-wire fences exist along highway and road rights-of-ways.

Table 3-24 Big Game Habitat and Distribution by Land Ownership in the Planning Area

Species	Habitat/Distribution	BLM	Total
Mule Deer	Year round distribution	428,896 (5%)	**8,506,948**
	General winter range	93,099 (3%)	**2,942,431**
	Crucial winter range	72,432 (5%)	**1,335,622**
White-tailed Deer	Year round distribution	70,673 (2%)	**3,208,637**
	General winter range	25,439 (2%)	**1,295,443**
	Crucial winter range	6,076 (3%)	**205,530**
Pronghorn Antelope	Year round distribution	179,690 (4%)	**4,859,757**
	General winter range – not identified	—	**—**
	Crucial winter range	35,086 (8%)	**454,789**
Rocky Mountain Elk	Year round distribution	79,353 (1%)	**7,734,652**
	General winter range	12,240 (2%)	**586,235**
	Crucial winter range	13,567 (6%)	**229,393**
Bighorn Sheep	Year round distribution	13,875 (4%)	**358,368**
Moose	Year-round distribution	12,595 (2%)	**791,814**
	General winter range	3864 (1%)	**278,996**
	Crucial winter range	*	*
Gray Wolf	FWP Wolf District	34,457 (2%)	**1,529,493**
Lynx	Year-round distribution	0	**528,367**
Grizzly Bear	Year-round distribution	0	**140,674**

Note:

Source: Crucial winter range values taken from Montana Fish Wildlife & Parks Historic (1970s) inventory data. All other data obtained from the Montana Fish Wildlife and Parks website: http://fwp.mt.gov/doingBusiness/reference/gisData/default.html/ Last accessed 01/14/2010

3.7.3.1.1 Mule Deer

Mule deer are the most abundant big game species in the planning area and use the greatest variety of habitats (refer to Table 3-24 and Map 19 [Mule Deer Distribution]). Areas of year-round mule deer distribution total over 8 million acres in the planning area, with about 5 percent of that acreage on BLM public lands. An important limiting factor for mule deer, as well as other big game in the planning area, is the availability of winter range (Map 15 – Big Game Winter Range).

Spring and summer drought reduces forage abundance and, therefore, populations fluctuate. Only a small area of mule deer winter range is documented in the MTFWP database.

3.7.3.1.2 White-tailed Deer

Although less abundant than mule deer, white-tailed deer are common in the planning area (Table 3-24). White-tailed deer prefer riparian drainage bottoms and conifer areas and will also use a variety of other habitats (Map 20 – White-tailed Deer Range Distribution). Approximately 25,439 acres or 2 percent of the over 3 million acres of white-tailed deer habitat in the planning area is on public lands.

3.7.3.1.3 Pronghorn Antelope

Pronghorn antelope are the second most abundant big game species in the planning area (Table 3-24). These animals are generally associated with grasslands and shrublands, and they will also use agricultural fields (Map 16 – Antelope Range Distribution). Approximately 179,690 acres or 4 percent of the more than 4 million acres of pronghorn antelope habitat in the planning area are on BLM public lands. Currently, Antelope Winter range has not been designated by MTFWP in the planning area. Historically, there were 35,086 acres of Antelope Crucial Winter Range identified in the planning area. Documented crucial winter range for pronghorn antelope was most abundant in Sweet Grass, Golden Valley, Musselshell, Yellowstone and Carbon counties. Antelope populations reached record high numbers in 1990-1994, declined from 1995-1997, and generally have increased since 1998. Habitat conditions for antelope are unknown, other than that extensive drought may have decreased forage availability. Portions of the planning area have been affected by outbreaks of blue tongue disease.

3.7.3.1.4 Rocky Mountain Elk

Rocky Mountain elk are associated with grasslands, shrublands, woodlands/forests, and riparian/wetlands (Table 3-24). This species is common in the Bull, Snowy, Crazy, and Beartooth mountains foothills in the planning area (Map 18 – Elk Range Distribution). A recent increase in elk populations into new areas where there is more open sagebrush/grassland and open timber types have been observed. Summer habitat is primarily in the Bull Mountains and foothills of the decision area. Winter habitat is concentrated in the mountain foothills and the area south of the Bull Mountains. There are 14 known elk herds in the planning area. The 2010 population trends were up in six herds, down in seven elk herds, and one herd not inventoried, when compared to 2008 -2009 population levels.

3.7.3.1.5 Bighorn Sheep

Rocky Mountain bighorn sheep occur as a single herd and occupy areas on USFS, National Park Service (NPS), BLM, state, and private lands surrounding the east and west Pryor Mountains. Approximately 13,875 acres or 4% percent of the occupied area occurs on BLM public lands (Map 17 –Bighorn Sheep Range Distribution). Historically, there was a herd along the Boulder River but died out due to disease. Habitats include cliffs, mountain slopes, and rolling foothills. A 2008 survey for bighorn sheep indicated the second highest population count since 1997.

3.7.3.1.6 Moose

Moose are associated with forested and riparian/wetland areas of the Beartooth Mountains. Populations have remained static. Seasonal habitat data from the 1970s indicate there are approximately 3,864 acres of moose winter range on BLM lands, or 1% of total winter range, and little summer range in the decision area.

3.7.3.1.7 Black Bear

Black bears use a variety of habitats depending on seasonal variation in diet and availability of food. Black bears are omnivorous; however, much of their diet consists of berries, fruits, grasses, sedges, and inner bark. In the planning area, black bears tend to prefer dense forested areas, riparian areas, open slopes, and mountain meadows (Foresman 2001). Black bears tend to be relatively tolerant of land uses since they have a large home range and can utilize a variety of habitats. Recreation, road development, and timber management are land uses that bears tolerate less.

3.7.3.1.8 Mountain Lion

Mountain lions are distributed throughout the planning area where suitable habitat is present. They use different habitat types, depending on prey availability, cover, and preference for areas with minimal human disturbance. Mountain lions typically prefer mountainous and foothill areas; however, in eastern Montana, they are commonly associated with riparian areas and woody draws. Mountain lions are carnivorous and feed on a variety of animals. However, they prefer deer, elk, porcupines, and rabbits.

3.7.3.1.9 Furbearing Animals

Furbearing animals in the planning area include otter, beaver, bobcat, mink, weasel, muskrat, and marten. Bobcats are habitat generalists and can be found throughout the planning area, although bobcat do not occupy high mountain areas. Beaver, mink, and muskrat are common in the waters and riparian areas throughout the planning area. Marten occur in forested regions of the mountains in the planning area. Short-tailed weasels are found in coniferous forest, riparian shrub, and meadow habitats, while long-tailed weasel are typically found in rock outcrops near water in desert shrub, grassland, and riparian shrub habitats (Cerovski et al. 2004).

3.7.3.1.10 Game Birds

Upland game birds common to the planning area include sharp-tailed grouse, greater sage-grouse, blue grouse, ruffed grouse, wild turkey, ring-necked pheasant, Hungarian, and chukar

partridge (Table 3-25). Greater sage-grouse is considered a special status species and is addressed further in the Special Status Species section. Primary threats to upland game bird populations in the planning area include habitat loss, habitat fragmentation, possibly West Nile virus, and adverse weather conditions. Hunting pressure can also affect upland game bird locations where hunting pressure is concentrated, such as Pompeys Pillar. Hunted birds may move to adjacent habitat as hunting pressure increases. However, as with big game, MTFWP regulates upland game bird hunting.

Waterfowl species common in the planning area include Canada and snow geese and 18 species of ducks (Table 3-26). The presence of open water is the most important factor for waterfowl production. Grassland habitats adjacent to open water are also important for waterfowl in the planning area. There are 241,079 acres of open water habitat in the planning area including rivers, streams, natural potholes, and artificial reservoirs. Natural and constructed islands on reservoirs are important to Canada geese and some duck species because they provide security from predators during nesting and brood rearing. In addition to the breeding season, waterfowl use the planning area during spring and fall migrations seeking agricultural fields, wetlands, and major rivers such as the Yellowstone, for roosting, cover, and feeding.

The Bundy Island area, just west of Pompeys Pillar, NM in Yellowstone County, and other river bottom riparian areas provide brood rearing habitat for Canada geese and other waterfowl species. Other wildlife such as bald eagles, white-tailed deer, ring-necked pheasants, numerous furbearers, and various non-game species inhabit the island. Bundy Island is one of the few islands in the Yellowstone River managed by the BLM.

Table 3-25 Upland Game Bird Habitat and Distribution by Ownership in the Planning Area

Species	Habitat/Distribution	BLM[4]	Total
Sharp-Tailed Grouse[1]	Overall distribution	307,236 (4%)	**8,263,040**
Wild Turkey[2,3]		74,044 (4%)	**2,055,715**
Ring-Necked Pheasant[2]	Good/excellent habitat	9094 (2%)	**438,250**
	Fair habitat	2081 (1%)	**219,139**
	Total pheasant habitat	11,175 (2%)	**637,389**
Hungarian Partridge[2]	Overall distribution	292,975 (3%)	**8,584,264**
Chukar	No data available	No data	**No data**
Blue Grouse		97,649 (4%)	**2,354,033**
Ruffed Grouse		139,107 (8%)	**1,837,558**

Note:
a. Totals may not add up, due to rounding errors.
1. Data are from BLM 2000a.
2. Data from MTFWP.
3. Distribution and habitat data for wild turkey and ring-necked pheasant on tribal/BIA land are incomplete.
4. There are no areas designated as potential (unoccupied) turkey habitat in the Billings decision area.
5. Numbers in parentheses are the percent of habitat located on BLM-administered land.

Table 3-26 Waterfowl Species Known to Occur in the Planning Area

Dabbling Ducks	Diving Ducks	Other Waterfowl
American widgeon	Bufflehead	Canada goose
Barrow's goldeneye	Canvasback	Snow goose
Blue-winged teal	Common goldeneye	
Cinnamon teal	Common merganser	
Green-winged teal	Redhead	
Gadwall	Ring-necked duck	
Harlequin duck	Ruddy duck	
Mallard	Lesser scaup	
Northern pintail		
Northern shoveler		
Wood duck		

Note:
Source: BLM 2000a

3.7.3.2 Non-Game Animals

Various non-game species occur in the planning area including small mammals, bats, songbirds, raptors, reptiles, and amphibians. Non-game mammals include an undetermined number of small mammals such as ground squirrels, mice, chipmunks, rabbits, skunks, and raccoons that provide the main prey for raptors and larger carnivores.

Raptors and other migratory birds are protected under the Migratory Bird Treaty Act. Under Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, federal agencies are required to address migratory birds in all of their activities. A wide variety of migratory birds reside in the planning area, and species are generally associated with particular habitat types. Migratory birds with declining population trends and/or those associated with uncommon habitats, as identified through the Montana Partners in Flight Bird Conservation Plan, are of the greatest conservation concern (Casey 2000).

Montana Audubon and the National Audubon Society has identified one Important Bird Area (IBA) in the planning area at Bear Canyon in the foothills of West Pryor Mountain, near the Wyoming border. The area is four square miles, and the Utah juniper supports breeding populations of more than a dozen species on the Montana Priority Bird Species List. The foothill canyons in the area have the only known breeding location of blue-gray gnatcatchers in Montana (Audobon.org).

Currently, approximately 94 raptor nests are documented in the planning area, of which 28 raptor nests are on BLM administered surface land. Not all of these nests are occupied. Raptors include eagles, hawks, owls, falcons, and vultures, and the planning area provides seasonal and year round habitat for a multitude of raptor species. Raptor utilization for specific and region wide areas varies greatly year to year and season to season depending on prey availability, habitat quality, level of raptor populations, and other factors. Common breeding raptors in the planning area include Swainson's hawk, ferruginous hawk, red-tailed hawk, northern harrier, golden eagle, prairie falcon, American kestrel, and great-horned owl. Of these raptors, golden

eagle and great-horned owl are year round residents, and smaller winter populations of red-tailed hawk and northern harrier occur in the planning area.

The Special Status Species section addresses the bald eagle, golden eagle, ferruginous hawk, Swainson's hawk, burrowing owl, northern goshawk, and peregrine falcon. Other raptor species found during various times of the year include rough-legged hawk, a winter resident; snowy owl, a rare winter visitor; long-eared owl, a denizen of open and forested areas; and short-eared owl. Ospreys are common summer residents along major river and stream systems in the planning area.

Forest raptors in the planning area include sharp-shinned hawk, Cooper's hawk, northern goshawk, and northern saw-whet owl. Management direction for the BLM is identified in the *BLM Fish and Wildlife 2000 Raptor Habitat Management Plan* (BLM 1992b). Management procedures and activities for raptors have been identified by the USFWS management guidelines (USFWS 2002) and Avian Protection Plan guidelines (APLIC and USFWS 2005). Golden eagles also are protected under the Bald and Golden Eagle Protection Act and the Eagle Act.

Raptors have specific nesting territory requirements, including vegetation structure and diversity. Requirements for physiographic features (elevation, slope), as well as prey availability, vary by species. Raptors typically reuse the same nesting territory for years, and alterations to these areas could reduce the viability of raptor populations. Threats to raptors include loss of habitat, reduction in food supply, and disturbance during nesting. Habitat loss from changing land use to industrial, agricultural, or recreational could reduce available food supply or alter nesting territories. Each raptor nest, its offspring, and supporting habitat are considered important to the long term viability of raptor populations.

Generally courtship, nest construction, incubation, and early brooding are considered higher risk periods during which adults are easily prone to temporarily or permanently abandon nests in response to disturbance. This may result in abandonment of eggs or young. Loss or alteration of habitat for any raptor species can also result in a loss of or change in the raptor prey base or historical nesting territories (USFWS 2002).

The Billings Field Office harbors the greatest diversity of bat species in Montana, including 3 species listed as Sensitive by the BLM, MFWP, and Montana Natural Heritage, including spotted bat, Pallid bat, and Townsend's big-eared bat. Ten bat species have been documented, and the potential exists for additional species to be present (Hendricks et al., 2004).

Other animals include amphibians, which are considered a special management group of species due to their association with rare habitats (wetlands and riparian areas), their sensitivity to environmental conditions, global population declines for some species, and the limited knowledge regarding their occurrence and distribution in the planning area. Amphibians that are known or expected to occur in the planning area include the tiger salamander, plains spadefoot, Great Plains toad, Woodhouse's toad, boreal chorus frog, and northern leopard frog (Table 3-23).

3.7.3.3 Wildlife Special Status Species

Special status species are species listed as threatened or endangered under the Endangered Species Act (ESA), species proposed or candidates for listing and species designated as sensitive by BLM. These species require particular management attention due to population or habitat concerns.

Management of special status species on public lands administered by BLM occurs under a variety of laws, policies, and other requirements, as summarized in Chapter 1. No management actions are permitted on BLM lands that would jeopardize the continued existence of species that are federally listed, proposed for listing, or candidates for listing. Consultation is required on any action that a federal agency proposes that (1) may adversely impact a federally listed species, or (2) will result in jeopardy or adverse modification of critical habitats. BLM Manual 6840 - Special Status Species Management (BLM 2008) addresses management with the objectives to:

1) Conserve listed species and the ecosystems on which they depend

2) Ensure that actions requiring authorization or approval by the BLM are consistent with conservation needs of special status species and do not contribute to the need to list special status species either under the provisions of the ESA or BLM Manual 6840

3) Prioritize needed conservation work with an emphasis on habitats (BLM 2008)

BLM sensitive species are defined as species that:

- Could become endangered in or extirpated from a state, or within a significant portion of its distribution
- Are under status review by the usfws and/or the national marine fisheries service (nmfs)
- Are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution
- Are undergoing significant current or predicted downward trends in population or density such that federally listed, proposed, candidate, or state-listed status may become necessary
- Typically have small and widely dispersed populations
- Inhabit ecological refugia or other specialized or unique habitats, or
- Are state listed, but which may be better conserved through application of BLM sensitive species status.

For federally listed species that do not have critical habitat designated, BLM cooperates with the USFWS to determine and manage habitats of importance. The USFWS provides regulatory oversight for all fish, plant, and wildlife species listed as threatened or endangered, proposed

for listing, or that are candidates for listing under the ESA. Management of federally listed species and the designation of critical habitats are overseen by the USFWS in accordance with the ESA.

BLM, Montana State Office entered into a Memorandum of Understanding (MOU) with the USFWS, Montana Field Office, to improve the efficiency and effectiveness of plan level Section 7 consultation processes under the ESA. The MOU states that during planning BLM agrees to promote conservation of candidate, proposed, and listed species and to consult on RMP effects for listed species, confer on RMP effects for proposed species, and develop conservation strategies for candidate species (BLM-MOU-MT923-0402, June, 2004). The BLM maintains specific goals of contributing to the recovery of species currently listed under the ESA and to promoting the recovery and conservation of all special status animal and plant species in the planning area

3.7.3.4 Special Status Wildlife in Planning Area

Currently, there are 48 special status wildlife species that occur in the planning area (Table 3-27). Four species are listed under the ESA: the black-footed ferret (endangered), the grizzly bear (threatened), the Canada lynx (threatened), and the whooping crane (endangered). Three species, the gray wolf, peregrine falcon, and bald eagle, were delisted; however, they are considered BLM sensitive species. No critical habitat for ESA listed species occurs in the planning area.

In addition, migratory birds have special protections through the Migratory Bird Treaty Act and Executive Order 13186. Two federally listed species (the black-footed ferret and grizzly bear) had historically occurred in the planning area but are no longer present. The grizzly bear recovery zone has been identified along the FS/BLM boundary in the Beartooth Mountain foothills. Grizzly bears and wolves may be occasional migrants on BLM lands and still require consideration in BLM activities. Lynx exist along the perimeter of the planning area on FS lands; however, there are no Lynx Analysis Units, (management areas that contain suitable lynx habitat and approximate the size of a female home range (Ehle and Keinath 2002), identified on public lands in the planning area. Lynx may be occasional migrants onto public lands. Whooping cranes may also be an occasional migrant into the planning area. If prairie dog populations expand in the future, the possibility exists that black-footed ferrets may be considered for reintroduction into portions of the planning area, particularly in Musselshell County. Due to that possibility, they are included in this section, although habitat suitability models would have to be analyzed. Sources of information include GIS data from the BLM, MTFWP, the 1984 RMP, communications with regional biologists (BLM, USFWS and MTFWP), and a literature review.

Table 3-27 Special Status Wildlife Species in the Planning Area

Common Name	Scientific Name	Federal Listing	Status[1] BLM Listing	State Listing
Mammals				
Black-footed Ferret	*Mustela nigripes*	LE, XN	Special Status	S1
Black-tailed Prairie Dog	*Cynomys ludovicianus*		Sensitive	S3

Common Name	Scientific Name	Federal Listing	Status[1] BLM Listing	State Listing
Fringed Myotis	*Myotis thysanodes*		Sensitive	S3
Gray Wolf	*Canis lupus*	DM	Sensitive	S3
Grizzly Bear	*Ursus arctos*	LT	Sensitive	S2S3
Meadow Jumping Mouse	*Zapus hudsonius*		Sensitive	S2
Pallid Bat	*Antrozous pallidus*		Sensitive	S2
Spotted Bat	*Euderma maculatum*		Sensitive	S2
Townsend's Big-eared Bat	*Corynorhinus townsendii*		Sensitive	S2
White-tailed Prairie Dog	*Cynomys* leucurus			
Wolverine	*Gulo gulo*	LT	Sensitive	S3
Canada Lynx	*Lynx canadensis*	LT	Special Status	S3
Birds				
Baird's Sparrow	*Ammodramus bairdii*		Sensitive	S3B
Bald Eagle	*Haliaeetus leucocephalus*	DM	Sensitive	S3
Black Tern	*Chlidonias niger*		Sensitive	S3B
Bobolink	*Dolichonyx oryzivorus*		Sensitive	S3B
Brewer's Sparrow	*Spizella breweri*		Sensitive	S3B
Burrowing Owl	*Athene cunicularia*		Sensitive	S3B
Chestnut-collared Longspur	*Calcarius ornatus*		Sensitive	S2B
Ferruginous Hawk	*Buteo regalis*		Sensitive	S3B
Golden Eagle	*Aquila chrysaetos*		Sensitive	S3
Great Gray Owl	*Strix nebulosa*		Sensitive	S3
Greater Sage-Grouse	*Centrocercus urophasianus*	Candidate	Sensitive	S2
Harlequin Duck	*Histrionicus histrionicus*		Sensitive	S2B
Loggerhead Shrike	*Lanius ludovicianus*		Sensitive	S3B
Long-billed Curlew	*Numenius americanus*		Sensitive	S3B
McCown's Longspur	*Calcarius mccownii*		Sensitive	S3B
Mountain Plover	*Charadrius montanus*		Sensitive	S2B
Northern Goshawk	*Accipiter gentilis*		Sensitive	S3
Peregrine Falcon	*Falco peregrinus*	DM	Sensitive	S3B
Red-headed Woodpecker	*Melanerpes erythrocephalus*		Sensitive	S3B
Sage Thrasher	*Oreoscoptes montanus*		Sensitive	S3B
Sprague's Pipit	*Anthus spragueii*	Candidate	Sensitive	S3B

Common Name	Scientific Name	Federal Listing	Status[1] BLM Listing	State Listing
Swainson's Hawk	*Buteo swainsoni*		Sensitive	S4B
Whooping Crane	*Grus americana*	LE	Special Status	S1M
Fish				
Northern Redbelly x Finescale Dace	Phoxinus eos x phoxinus neogaeus		Sensitive	S3
Sauger	*Sander canadensis*		Sensitive	S2
Yellowstone Cutthroat Trout	*Oncorhynchus clarkii bouvieri*		Sensitive	S2
Amphibians				
Great Plains Toad	*Bufo cognatus*		Sensitive	S2
Northern Leopard Frog	*Rana pipiens*		Sensitive	S1
Plains Spadefoot	*Spea bombifrons*		Sensitive	S3
Reptiles				
Greater Short-horned Lizard	*Phrynosoma hernandesi*		Sensitive	S3
Milksnake	*Lampropeltis triangulum*		Sensitive	S2
Snapping Turtle	*Chelydra serpentina*		Sensitive	S3
Spiny Softshell	*Apalone spinifera*		Sensitive	S3
Western Hog-nosed Snake	*Heterodon nasicus*		Sensitive	S2

Note:
Source: Montana Natural Heritage Program (MTNHP 2009)

[1] **LE** - **Listed endangered:** Any species in danger of extinction throughout all or a significant portion of its range (16 U.S.C. 1532(6)).

LT - Listed threatened: Any species likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range (16 U.S.C. 1532(20)).

DM - **Recovered, delisted, and being monitored:** Any previously listed species that is now recovered, has been delisted, and is being monitored.

XN - **Nonessential population:** An experimental population of a listed species reintroduced into a specific area that receives more flexible management under the Act.

C - Candidate: Those taxa for which sufficient information on biological status and threats exists to propose to list them as threatened or endangered. We encourage their consideration in environmental planning and partnerships; however, none of the substantive or procedural provisions of the Act apply to candidate species.

PS - Partial status: Status in only a portion of the species' range. Typically indicated in a "full" species record where an infraspecific taxon or population, that has a record in the database has ESA status, but the entire species does not.

PS:Value - **Partial status:** Status in only a portion of the species' range. The value of that status appears in parentheses because the entity with status is not recognized as a valid taxon by Central Sciences (usually a population defined by geopolitical boundaries or defined administratively, such as experimental populations).

PS:C. **- Partial Status – Candidate**: Designated as a Candidate in the Western US Distinct Population Segment (DPS) (subspecies *occidentalis*).

Sensitive - Denotes species listed as sensitive on BLM lands.

Special Status - Denotes species listed as endangered or threatened under the ESA.

Montana Species of Concern are defined as vertebrate animals with a state rank of S1, S2, or S3. Vertebrate species with a rank indicating uncertainty (SU), a "range rank" extending below

the S3 cutoff (e.g., S3S4), or those ranked S4 for which there is limited baseline information on status are considered Potential Species of Concern. Because documentation for invertebrates is typically less complete than for vertebrates, only those ranked S1 or S2 are included as SOC. Invertebrates with a range rank extending below S2 (e.g., S2S3) are included as SOC only if their global ranks are G2G3 or G3, or if experts agree their occurrence in Montana has been adequately documented. Other invertebrates of concern with global ranks other than G1, G2, or G3 and with state ranks below S2 or range ranks extending below S2 (e.g., S3S4) are treated as Potential Species of Concern. Rank definitions and qualifiers are as follows:

- Rank Definition
  - **S1** At high risk because of **extremely limited** and/or **rapidly declining** population numbers, range, and/or habitat, making it highly vulnerable to global extinction or extirpation in the state.
  - **S2** At risk because of **very limited** and/or **potentially declining** population numbers, range, and/or habitat, making it vulnerable to global extinction or extirpation in the state.
  - **S3** Potentially at risk because of **limited** and/or **declining** numbers, range, and/or habitat, even though it may be abundant in some areas.
  - **S4** Apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining.
- Qualifiers
  - **B Breeding** - Rank refers to the breeding population of the species in Montana. Appended to the state rank, *e.g. S2**B**,S5N = At risk during breeding season, but common in the winter*
  - **M Migratory** - Species occurs in Montana only during migration.

3.7.3.5 Mammals

3.7.3.5.1 Black-Tailed Prairie Dog (BLM Sensitive)

The USFWS recently evaluated the status of the black-tailed prairie dog and determined that listing the black-tailed prairie dog as either threatened or endangered is not warranted at this time (Federal Register /Vol. 74, No. 231 / 12- 3-09). Ongoing threats are: (1) conversion of native prairie habitat to cropland;(2) urbanization;(3) oil, gas, and mineral extraction;(4) habitat loss caused by loss of prairie dogs; and(5) livestock grazing, fire suppression, and weeds.

According to the Montana Prairie Dog Working Group (2002), the black-tailed prairie dog population in Montana is fragmented, and prairie dogs have been extirpated from local areas such as Richland County, most of Carter County, and portions of other counties. Despite this reduction in prairie dog distribution, the state still has substantial numbers of black-tailed prairie dogs.

In the planning area, black-tailed prairie dogs occur in grassland habitats. The potential exists for increased prairie dog populations based on the amount of grassland habitat available. Grasslands cover approximately 12,159,081 acres (all ownerships) or about 47 percent of the area. There are 166 known prairie dog towns in the planning area; 69 (41.6 percent) of which occur on public lands (Table 3-28). Long term trends in prairie dog abundance in the area are unknown.

Table 3-28 Black-tailed Prairie Dog Acreage in the Planning Area

Year/Source	BLM	State	Private / Other	National Wildlife Refuges	Total
2004 Survey	7,098	3,364	15,412	1,399	27,273
% of Total Acreage	26%	12%	57%	5%	100%

3.7.3.5.2 White-Tailed Prairie Dog (BLM Sensitive)

The USFWS reviewed a petition to list the white-tailed prairie dog under the ESA and determined that listing is not warranted at this time (Federal Register / Vol. 75, No. 104 / June 1, 2010).

White-tailed prairie dogs generally are found in desert grassland and shrub grassland habitats with moderate slopes at altitudes ranging between 5,000 and 10,000 feet. White-tailed prairie dogs are susceptible to rapid population declines resulting from flea-borne sylvatic plague. In addition, historic and current activities, including shooting, poisoning, and habitat conversion have affected white-tailed prairie dog populations. White-tailed prairie dog towns occur only in southern Carbon County. There has been a noticeable decline in white-tailed prairie dog towns from the 1970s to the early 2000s as illustrated in Table 3-29 below. Definite reasons for the decline are unknown, although it is speculated that sylvatic plague has been the primary cause.

White-tailed prairie dog towns located during surveys from 1975-1977 and in 2003 and 2005 are shown in Table 3-29. The list for each survey year is in no particular order.

Table 3-29 White-tailed Prairie Dog Acreage in the Planning Area

Colony ID	Colony* Size		
	1975-1977 (acres)	2003 (acres)	2005 (acres)
1	5 – 10	40.5	40
2	2	13	12
3	74 – 84	15	23
4	20	22.5	10
5	Undocumented	18.5	18.5
6	2.5	10	14.6
7	69 – 99	—	4.2
8	10 – 20	—	72
9	79	—	6
10	49 – 79	—	53

11	39.5 – 59	—	—
12	2.0 – 9	—	—
13	2.5	—	—
14	1 – 2.5	—	—
15	2.5 – 10	—	—
Total Colonies Total Acres	15 colonies 692	6 colonies 120	10 colonies 253

Note:
*"Colony" is used interchangeably with "town" when referring to prairie dog locations and size.
Sources: 1984 RMP and Backlog Consultation dated May 8, 2008 with the USFWS.

3.7.3.5.3 Gray Wolf (Federally Delisted and BLM Sensitive)

On April 2, 2009, the final rule was published that identified the Northern Rocky Mountain population of gray wolf (*Canis lupus*) as a distinct population segment (DPS) and to revise the List of Endangered and Threatened Wildlife by removing most of the gray wolves in the DPS. This rule complies with that directive. This action is effective May 5, 2011. (**Federal Register** / Vol. 76, No. 87 / Thursday, May 5, 2011). Currently, the gray wolf population is managed by Montana Fish, Wildlife, and Parks.

The gray wolf is present in the planning area and is discussed because of its presence on public lands. Two identified wolf packs occasionally range onto public lands along the Beartooth Mountain front**.**

3.7.3.5.4 Grizzly Bear (Listed Threatened)

Grizzly bears prefer remote forest habitats with low road density and minimum human disturbance (Map 21 – Grizzly Bear Habitat). The planning area is not in a grizzly bear Recovery Zone, as designated by the USFWS in the 1993 Grizzly Bear Recovery Plan (USFWS 1993); however the perimeter of the grizzly bear range is adjacent to public lands along the Beartooth Mountain foothills. Grizzly bears may be present as migrants throughout the planning area. A 10-year-old male grizzly bear with a history of killing livestock was euthanized after it was captured for killing cattle southeast of Red Lodge, Montana. The 400-pound bear was caught in a culvert trap Friday, September 9, 2011, on the Sunlight Ranch near the upper forks of the Bear Creek Basin. There are BLM managed public lands in this area. (http://billingsgazette.com/news/state-and-regional/montana/article_49387a6c-de3b-11e0-9d9e-001cc4c002e0.html#ixzz1YVmiUBz7)

3.7.3.5.5 Lynx (Listed Threatened)

Canada lynx are classified as a furbearer in Montana; however, currently there is no trapping season for them. In Montana, lynx are found in mountain and forest regions. East of the Continental Divide the subalpine forests inhabited by lynx occur at higher elevations (5,413 to 7,874 feet) and are mostly species of fir. Secondary habitat is intermixed Englemann spruce and Douglas-fir with lodgepole pine as a major seral species (Ruediger et al. 2000). Throughout their range, shrub-steppe habitats may provide important linkage habitat between the primary habitats described above (Ruediger et al. 2000).

There have been no Lynx Analysis Units designated on public lands in the planning area. However, there is some potential habitat above the 6,000 foot elevation in the Meeteetse Spires and Pryor Mountain areas adjacent to the USFS lands. Only lynx linkage habitat areas are identified on Map 22 – Lynx Habitat.

3.7.3.5.6 Black-footed Ferret (Listed Endangered)

The black-footed ferret was listed as an endangered species in 1967, under a precursor to the Endangered Species Act (ESA 1973). The main causes of the species decline included habitat conversion for farming, intentional efforts to eliminate prairie dogs and disease (USFWS 2000). Black-footed ferrets depend almost exclusively on prairie dog colonies for food, shelter, and denning (Henderson et al. 1969, Forrest et al. 1985).

Historically, black-footed ferrets ranged throughout the non-mountainous portion of Montana in areas that supported prairie dogs, their primary prey. The black-footed ferret was thought to be extirpated from virtually its entire range by the 1970s due to habitat loss, prairie dog eradication, disease, and shooting. The species now exists at 17 reintroduction sites across 8 States, Canada, and Mexico (2 of the 19 reintroduction sites no longer have a ferret population) http://www.fws.gov/mountain-prairie/species/mammals/blackfootedferret/ Last updated: April 5, 2011. Reintroduced populations do not occur in the planning area; the closest populations are in the Northern Cheyenne Indian Reservation. As shown in Table 3-28 and Table 3-29, prairie dog town concentrations or complexes large enough to support black-footed ferret populations are not currently present in the planning area. The largest concentrations of prairie dog towns exist in Wheatland County, Montana. Additionally, black-footed ferrets are not documented in this area.

3.7.3.5.7 Wolverine (BLM Sensitive)

Wolverines occur in coniferous forests in the planning area. There is the potential for wolverines to utilize the planning area, especially large, contiguous areas. The planning area does not provide the required snow depths for denning due to lower elevations, although the large home range of wolverines would allow occasional migratory occurrences in the planning area. Montana Fish, Wildlife and Parks trapping records from 1974-2013 indicate three known occurrences of wolverines in the Region 5 area (similar to the Billings Field Office planning area boundary). The trapping occurrences were in Rockvale community area (Lower Clark's Fork of the Yellowstone) (2003 – private land), Morrisy Narrows in the Little Belt Mountains in 2004, and the Bounder River (2004) about 45 miles south-southwest of Big Timber, Montana. The last two locations are on U.S. Forest Service managed land.

3.7.3.5.8 Bats

The Pryor Mountains support the most diverse bat fauna in Montana. Ten bat species are known to be present, and additional species are possible (Hendricks et al., 2004).

Townsend's Big-eared Bat (BLM Sensitive)

The occurrence of Townsend's big-eared bat has been documented in Montana and the planning area. Townsend's big-eared bats were captured at two caves in the Pryor Mountains and a new bluff site in the Bull Mountains (Hendricks et al., 2004).

Spotted Bat (BLM Sensitive)

Spotted bat vocalizations were recorded at eight nesting sites in the Pryor Mountains and at one location in the Bull Mountains (Hendricks et al., 2004). There is only one other location documented in Montana (MFG, 2011).

The most immediate management action that can benefit this species (and other bat species as well) is protection of water sources in arid regions where this bat is present and water sources are limited. Open waste sumps, and similar hazardous standing water bodies associated with oil and gas fields, could present a significant hazard to Pallid Bats and other bat species as these energy resources are exploited (MFG, 2011).

Pallid Bad (BLM Sensitive)

A pallid bat was captured at a site along the base of the Pryor Mountains where the species was first discovered in Montana in 1978 (Hendricks et al., 2004). There is one other location documented in Montana in Rosebud County (MFG, 2011).

3.7.3.5.9 Meadow Jumping Mouse (BLM Sensitive)

Small mammal surveys have not been conducted in the BIFO. The meadow jumping mouse prefers areas of dense cover in mesic habitats, such as along stream and marshes. Specimens have been collected in Big Horn County, Montana (Foresman, 2001).

3.7.3.5.10 Birds

Bald Eagle (BLM Sensitive)

Since the federal delisting of the bald eagle on July 9, 2007 (USFWS, 2007), the species continues to be protected under the Bald and Golden Eagle Protection Act. Bald eagles are large, primarily fish eating raptors, although they also consume waterfowl and carrion. Bald eagles nest and roost near large bodies of water, including lakes, reservoirs, and large rivers. Nest and winter roost sites typically are located in large trees adjacent to water. Bald eagles commonly nest along the Yellowstone, Clarks Fork, and Stillwater rivers in the planning area.

There is one nest site on BLM lands in the planning area. This nest site is the Nibbe bald eagle nest territory, near Pompeys Pillar, upriver from Bundy Bridge. According to MTFWP and BLM maps, there are 10 nest sites along the Yellowstone, Clarks Fork of the Yellowstone, and Stillwater rivers adjacent to or in one mile of BLM lands. Additionally, short term concentrations of up to 100 bald eagles have been documented at Pompeys Pillar.

Whooping Crane

The whooping crane was listed as an endangered species in 1967, under a precursor to the ESA (1973). The main cause of the species decline was conversion of pothole and prairie habitat for agriculture and shooting. Current threats to wild cranes include collisions with manmade objects such as power lines and fences, shooting, predators, disease, habitat destruction, severe weather, and a loss of two thirds of the original genetic material.

Whooping cranes are not known to breed in the planning area or any other portion of Montana. Whooping cranes from the Aransas-Wood Buffalo NP occur as transient/migrant species known to fly through Montana during both spring and fall migrations. The planning area is

located on the extreme western edge of the central migration pathway. Data on whooping cranes in the state is limited. There were no sightings from 1996-2002, and the only historic sighting prior to 1991 was on the very eastern edge of the planning area (Lenard, S. et al., 2003). Bird sightings have generally been in marshy areas and grain and stubble fields as well as wet meadows and wet prairie habitat (Montana Field Guide 2009).

Mountain Plover (BLM Sensitive)

The mountain plover is associated with shortgrass prairie/grasslands (especially those that are heavily grazed and are on level or gently sloping areas), and they regularly occupy prairie dog towns. Intensive grazing is thought to be beneficial to the birds because they prefer areas with extremely short vegetation and a high percentage of bare soil. Records indicate that mountain plovers have declined in abundance in Montana over the past century, possibly due to increased irrigated agriculture and/or prairie dog control (Montana Field Guide 2009). Limited mountain plover surveys have been conducted in the planning area; however, it has been documented that mountain plovers are nesting in the shortgrass prairie in the foothills south of the Snowy Mountains. In addition, breeding has been documented in southern Carbon County (FaunaWest Wildlife Consultants, 2006).

Long-billed Curlew (BLM Sensitive)

Long-billed curlews are found across Montana between March and September. Putnam and Kennedy (2005) identify shortgrass prairie, mid-grass prairie, sage-steppe, and prairie potholes as preferred breeding habitats in the state. Long-billed curlews prefer expansive, open, level to gently sloping or rolling grasslands with short vegetation, such as shortgrass or recently grazed mixed-grass prairie. During migration, birds use agricultural fields, grazed pastures, wetlands, and mudflats (Fellows and Jones, 2009).

Observations of long-billed curlews in the field office have been more prevalent in the short grass prairie areas in the foothills of the Snowy, Little Belt, and east side of the Beartooth Mountains. These areas have only scattered tracts of public land and are mostly private lands.

Conservation concerns include habitat loss (sod busting, weed invasion, general conversion of prairie land to other uses), breeding habitat in the state that is either fragmented, unprotected, or mismanaged, and/or human directed disturbance to grassland habitats (impacts of cattle grazing, roads, and adjacent land activities, pesticide application, and draining of wetlands) (Montana Comprehensive Fish and Wildlife Conservation Strategy 2005).

Greater Sage Grouse (BLM Sensitive)

On March 5, 2010, the USFWS determined that the greater sage grouse was to be listed as warranted, but precluded by other higher priority species, and therefore is a Candidate species under the ESA.

Greater sage grouse use a variety of shrub-steppe habitats throughout their life cycle and are considered obligate users of several sagebrush species (USFWS 2005). Nest sites are generally under sagebrush cover. In the early brood rearing period, birds remain near the nest site and typically move to moist habitats (riparian areas, wet meadows) during the late brood rearing period. During winter, the birds rely exclusively on sagebrush for forage and cover. In the state of Montana, the greater sage-grouse population declined sharply from 1991 to 1996, then

increased through 2000 (Montana Sage Grouse Working Group 2004). Primary ongoing threats to greater sage-grouse include loss, fragmentation, and deterioration of habitat from such factors as the spread of noxious weeds, infrastructure development, oil and gas (O&G) development, wildfire, and conifer invasion (USFWS 2005). Wildfire has been the largest factor affecting habitat loss in the planning area. All other factors are minor when acreage affected is considered on BLM lands. Private lands have been more affected from habitat conversion through dryland farming whereas BLM lands are not affected. Rangeland allotment boundary and pasture fences have caused some mortality of sage grouse where they were located near lek sites and habitat. Data is not available, although it should be analyzed in the future, to identify priorities for marking problem fences.

The planning area includes approximately 3.68 million acres (all ownerships) of greater sage-grouse habitat and 19 known active lek sites, including approximately 336,000 acres (nine percent) on BLM public lands (Table 3-30).

Table 3-30 Greater Sage Grouse Habitat and Lek Sites in the Planning Area

Habitat/Distribution	BLM	State	Private	Other Miscellaneous	Total
Total occupied habitat (acres):	336,479	219,199	3,078,179	53,223	3,687,080
**Number of known active lek sites	19 (27 total; 8 inactive)	11 (15 total; 4 inactive)	220	3	265

Note:
* Acreage data derived from draft habitat maps from MTFWP.
**Lek site data is from MTFWP.

BLM public lands comprise 9 percent of the total occupied greater sage-grouse habitat in the planning area. Using long term averages of male counts on 20 leks from 1981-2007, the average male count was 672. The 2008 count was 19.5 percent below the long term average or about 542 males. Other BLM GIS data indicate that the planning area contains 265 known active greater sage-grouse lek sites. On public lands, there are 19 active and 8 inactive (27 total) lek sites. Public lands comprise 7 percent of the total leks in the planning area.

There are 30 lek sites on Federal mineral estate. According to the Reasonable Foreseeable Development (RFD) scenario for oil and gas development, there are 103 leks in Moderate Potential development areas and 122 leks in Low Potential development areas (Map 124).

Sage grouse core areas are designated by MTFWP. BLM designated Priority Habitat Management Areas (PHMA), Restoration Areas (RA), and General Habitat Management Areas (GHMA) with consideration for several factors such as, core or key area designations, lek sites, population densities, habitat suitability, habitat disturbances, habitat fragmentation, and land ownership (Map 168 – Greater Sage-Grouse Habitat Core Areas). Please refer to the Glossary for descriptions of the three Sage Grouse Habitat areas.

Montana Audubon and the National Audubon Society have identified two Important Bird Areas (IBAs) in the planning area. Musselshell and Bridger sage-steppe areas are 3.060,736 and 358,302 acres respectively. The Bridger sage-steppe area is entirely in Carbon County and the Musselshell IBA has acreage in Musselshell and Golden Valley counties in the field office area

and four other counties outside of the field office area. The IBAs were identified to accentuate the management of these areas for the conservation of sage grouse and other sagebrush obligate species. Refer to: http://www.mtaudubon.org/birds/sageiba.html .

The range of the greater sage-grouse in North America has been divided into seven sage-grouse management zones based on populations within floristic provinces (Stiver et. al. 2006). The floristic provinces are areas within which similar environmental factors influence vegetation communities (Knick and Connelly 2011). The Billings Field office is bisected by two greater sage-grouse management zones; the Great Plains Management Zone (MZ1) and the Wyoming Basins Management Zone (MZ2). Most of the planning area lies within MZ1; however the majority of the sage-grouse habitat managed by the BLM in the planning area lies within the extreme northern portion of MZ2 (Figure 3-11). The following discussion of the landscape context of the planning area related to greater sage-grouse describes MZ1 since that is where the majority of the planning area is located and the issues and descriptions of MZ1 are mostly the same as those that would be described for the northern portion of MZ2 found in the planning area.

Greater sage-grouse habitats in Management Zone 1 (MZ1) were historically a function of the interaction of physical factors (e.g., climate, soils, geology, and elevation), and natural disturbance factors (e.g., fire, grazing, drought) that allowed sagebrush to persist on the landscape. These physical and natural factors combined to produce an interspersion and juxtaposition of different habitats that included large expanses of sagebrush patches favorable for greater sage-grouse occupation. The sagebrush species associated with greater sage-grouse habitat in MZ1 is primarily Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*). Other shrubs present may include basin big sagebrush (*Artemisia tridentata ssp. tridentata*), silver sagebrush (*Artemisia cana*), greasewood (*Sarcobatus vermiculatus*), saltbush (*Atriplex* species), rubber rabbitbrush (*Ericameria nauseosa*), green rabbitbrush (*Chrysothamnus viscidiflorus*), and antelope bitterbrush (*Purshia tridentata*) and overall shrub cover is less than 10 percent (Montana Field Guide 2011). Perennial herbaceous components typically contribute greater than 25% vegetative cover and consist mostly of rhizomatous and bunch-form grasses, with a diversity of perennial forbs (Montana Field Guide 2011). The dominant grass in this system is western wheatgrass (*Pascopyrum smithii*) and sites may include other species such as Indian ricegrass (*Achnatherum hymenoides*), blue grama (*Bouteloua gracilis*), Sandberg's bluegrass *(Poa secunda*), or bluebunch wheatgrass (*Pseudoroegneria spicata*) (Montana Field Guide 2011). Dryland sedges such as threadleaf sedge (*Carex filifolia)* and needleleaf sedge (*Carex duriuscula*) are very common and important in the eastern distribution of this system in Montana and Wyoming (Montana Field Guide 2011). Common forbs include Hood's phlox (*Phlox hoodii*), sandwort (*Arenaria* species), prickly pear (*Opuntia* species), scarlet globemallow (*Sphaeralcea coccinea*), purple prairie clover (*Dalea purpurea*), gayfeather (*Liatris punctata*), and milkvetch (*Astragalus* species) (Montana Field Guide 2011). Big sagebrush is easily killed by fire at all intensities, and when exposed to fire, plants do not resprout (Wright et al. 1979). In southwestern Montana, Wambolt and others (2001) found that fire in big sagebrush is stand replacing, killing or removing most of the aboveground vegetation, and that recovery to pre-burn cover (of sagebrush) takes at least 20 years. In Montana, Wyoming big sagebrush may require a century or longer to recover from fire (Lesica et al. 2005). Big sagebrush occurs on level to gently rolling plains, plateaus, sideslopes and

toeslopes, and as small and large patches in dissected landscapes such as breaks (Montana Field Guide 2011).

Land ownership throughout MZ1 is predominantly private (70%). Ownership of the remaining range of the greater sage-grouse in MZ1 is 68% private and 13% state or other federal ownership (not including the Fort Peck and Fort Belknap Indian Reservations), with 83% of the federal lands in the range of greater sage-grouse in MZ1 managed by BLM.

Sage-grouse populations have declined in portions of MZ1 through wholesale loss of habitat as well as through impacts to birds on the remaining habitat through disturbance and direct mortality. The most pervasive and extensive change to the sagebrush ecosystems in MZ1 is the conversion of nearly 60% of native habitats to agriculture (Samson et al. 2004). The conversion was facilitated by the Homestead Act of 1862 in the United States and the Canada Dominion Act of 1872 (Knick 2011). Under the Homestead Act, nearly 1.5 million people acquired and plowed over 309,000 sq. mi. (800,000 km^2) of land, primarily in the Great Plains (Samson et al. 2004). The impacts of land conversion in the late 1800s and early 1900s were probably greatest for sagebrush habitats nearest perennial water sources in MZ1.

Much of the direct habitat loss from conversion to agriculture has occurred primarily in the far northwestern and northeastern portions of the management zone (Knick et al. 2011). Cropland currently cover nearly 19% of the MZ and 91% of the MZ is within 6.9 km of cropland (Knick et al. 2011) (Figure 3-12). Recent interest in bio-fuel production and high prices for small grains has resulted in an increase in the conversion of native grasslands or lands formerly enrolled in the Conservation Reserve Program (CRP) to cropland, further emphasizing the importance of BLM lands and associated private lands managed for grazing to maintain large blocks of native grassland and shrubland habitats.

Converting native grasslands to agricultural lands not only resulted in a direct loss of habitats for native wildlife, it began a process of habitat fragmentation. Habitat loss is exacerbated when fragmentation reduces the size and/or isolates remaining habitat patches below the size thresholds necessary to support components of biological diversity or blocks the movement of animals between habitat patches. As large contiguous blocks of habitat are dissected into smaller blocks, they became more isolated from one another by dissimilar habitats and land uses. Adverse impacts from fragmentation can occur to individual plant and animal species and communities. The impacts of habitat fragmentation to biological resources can occur on multiple scales and can vary by species and the type of fragmentation. Individual species have different thresholds of fragmentation tolerance; greater sage-grouse (*Centrocercus europhasianus*) have large spatial requirements and eventually disappear from landscapes that no longer contain large enough patches of habitat while smaller birds like the Sprague's pipit (*Anthus spragueii*) can persist in landscapes with smaller patches of habitat because their spatial requirements are smaller.

Changes in vegetation can also result in the loss and fragmentation of native habitats. The conversion of large acreages of sagebrush to predominately grassland communities results in the direct loss of sagebrush habitat and can also fragment remaining habitat for sagebrush-dependent species, such as the greater sage-grouse. Roads and OHV use can promote the

spread of noxious weeds through vehicular traffic and noxious weed infestations can further exacerbate the fragmentation effects of roadways. Irrigation water has also supported the conversion of native plant communities to hayfields, pasture, and cropland, thereby fragmenting sagebrush habitats. Excessive grazing can result in the demise of the most common perennial grasses in this system and lead to an abundance cheatgrass or Japanese brome (Montana Field Guide 2011).

The remaining sagebrush habitats in MZ1 are mostly managed as grazing lands for domestic livestock. Domestic livestock function as a keystone species in the MZ through grazing and management actions related to grazing. These actions do not preclude wildlife and vegetation, but they do influence ecological pathways and species persistence (Bock et al. 1993). The effects of grazing on sagebrush habitats in this management zone are much different than effects noted in the Great Basin since the landscape throughout MZ1 is adapted to withstand grazing disturbance (Knick et al. 2011). Historically large numbers of bison (*Bos bison*) moved nomadically through the MZ in response to changes in vegetation associated with drought, past grazing, and fire. Grazing by bison occurred in large areas as huge herds moved through, and the impacts of these herds on the vegetation, soils, and riparian areas were probably extensive. The interval between grazing episodes may have ranged from one to eight years (Malainey and Sherriff 1996). Bison were replaced with domestic livestock in the late 1800s. The intensity and duration of grazing in the MZ increased as domestic livestock numbers and annual grazing pressure increased. The high intensity grazing probably increased the density and perhaps the distribution of sagebrush in the MZ particularly when combined with a concurrent reduction in the amount of fire on the landscape. Grazing on public lands was unregulated until the passage of the Taylor Grazing Act in 1934. Since the passage of the Taylor Grazing Act, range conditions have improved due to improved grazing management practices and livestock operations related to decreased livestock numbers and the annual duration of grazing. In addition, the BLM has applied Standards for Rangeland Health since 1997 to enhance sustainable livestock grazing and wildlife habitat while protecting watersheds and riparian ecosystems. However, developments to facilitate grazing management often include elements detrimental to sage-grouse. Perhaps the most pervasive change associated with grazing management in sage-grouse habitats throughout the MZ is the construction of fencing and water developments (Knick et al. 2011) (Figure 3-13). Barbed wire fences contribute to direct mortality of sage-grouse through fence collisions (Stevens 2011) and water developments may contribute to increased occurrence of West Nile Virus in greater sage-grouse (Walker and Naugle 2011). Water developments are particularly prevalent in the north central portion of the MZ (Figure 3-14). Additional habitat modifications associated with grazing management include mechanical and chemical treatments to increase grass production, often by removing sagebrush (Knick et al. 2011).

Other major land uses in the MZ include energy development (primarily oil and gas development), and urbanization and infrastructure. Oil and gas development in the MZ has occurred throughout the MZ but is concentrated in the southern portions (Powder River Basin) the north (Bowdoin Field) and the south and east (Williston Basin) (Figure 3-15). Oil and gas development includes direct loss of habitat from well pad and road construction as well as indirect disturbance effects from increased noise and vehicle traffic. Oil and gas developments directly impact greater sage-grouse through avoidance of infrastructure, or when development

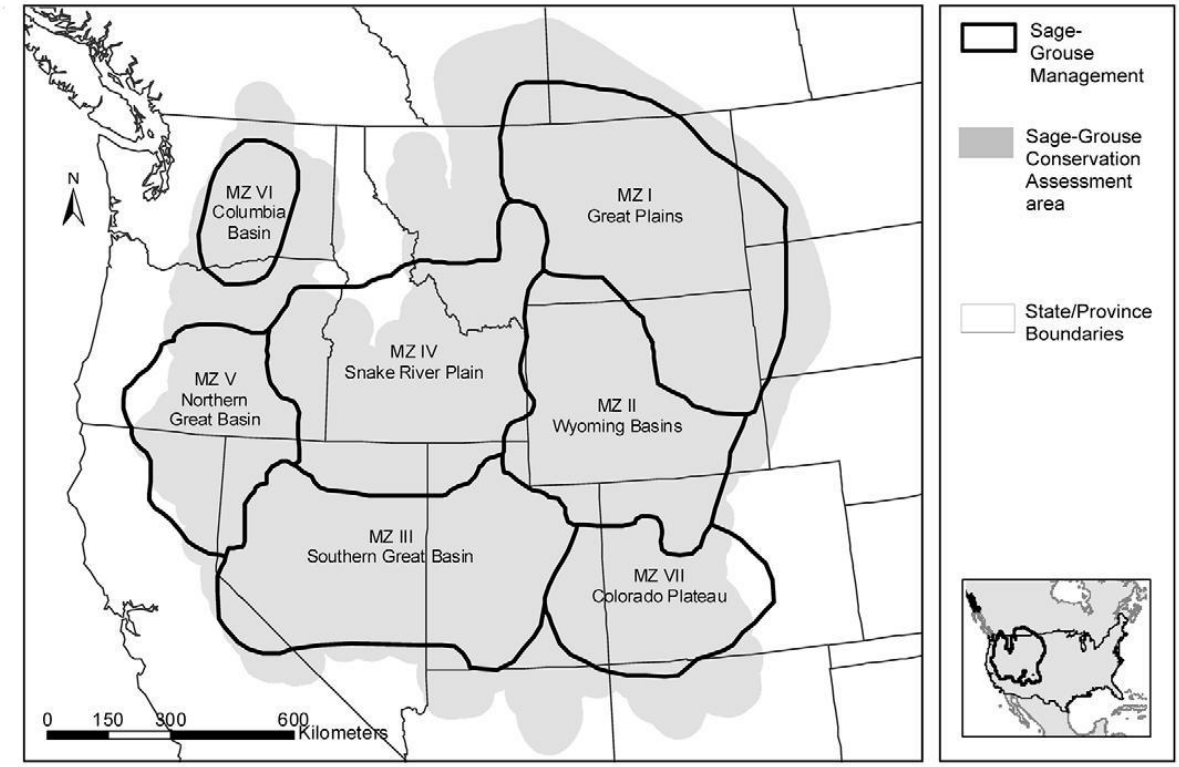
affects survival or reproductive success. Indirect effects include changes to habitat quality, predator communities, or disease dynamics (Naugle et al, 2011).

Currently nearly 16% of the MZ is within 3km of oil and gas wells, a distance where ecological effect is likely to occur (Knick et al 2011). Much of the current oil and gas development is occurring on private lands with little or no mitigation efforts, which elevates the ecological and conservation importance of sage-grouse habitat on public lands.

Urbanization and infrastructure development in MZ1 has also impacted greater sage-grouse habitat. Development at population centers and subdivisions or smaller ranchettes and associated buildings, roads, fences, and utility corridors has also contributed to habitat loss and fragmentation in portions of the MZ. Current estimates suggest about 16% of the MZ is within 6.9 km of urban development, although MZ1 generally has lower population densities and lower rates of population increases compared to the other management zones (Knick et al 2011). Infrastructure development effects to greater sage-grouse habitats in MZ1 are primarily related to highways, roads, powerlines and communication towers, with nearly 92% of the MZ within 6.9km of a road, 32% within 6.9km of a powerline and 4% within 6.9km of a communication tower (Knick et al. 2011) (Figure 3-16). Increased recreation and OHV use on lands in the MZ are also thought to impact greater sage-grouse habitats, but have not been studied (Knick et. al. 2011).

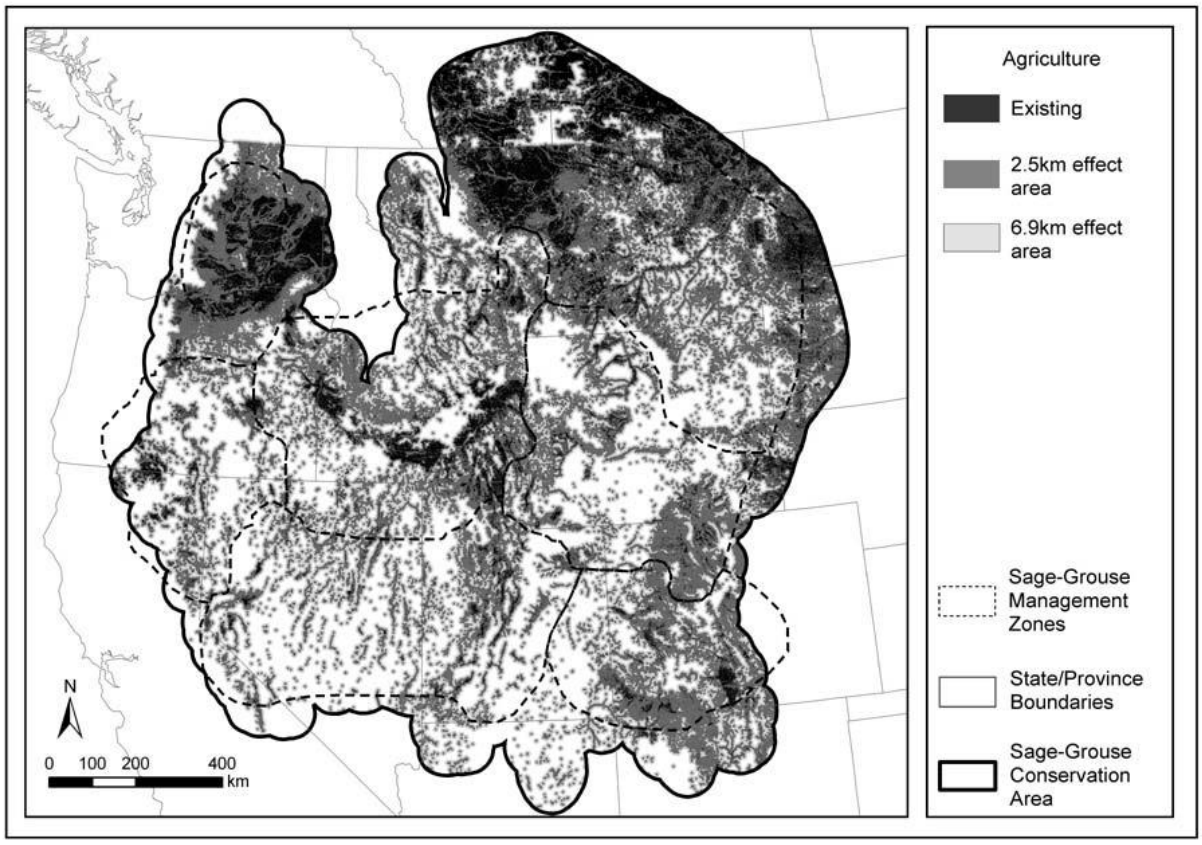
The cumulative and interactive impact of multiple disturbances and habitat loss has influence the current distribution of greater sage-grouse in MZ1. The cumulative extent of human caused changes, the human footprint, on sage-grouse habitat in MZ one is highest at the northern edge of the MZ but occurs throughout the MZ (Leu and Hanser 2011) (Figure 3-17). Population centers for greater sage-grouse in MZ1 (Dohertly et al. 2011) generally correspond to areas lacking a high human footprint and some of these areas have been designated as core areas by Montana Fish, Wildlife, and Parks (Montana Fish, Wildlife and Parks 2010). Greater sage-grouse range in MZ1 is overall very similar to portions of the range where sage-grouse have been extirpated i.e. areas with high human footprints, mostly because of the abundance and distribution of sagebrush in the MZ (Wisdom et al. 2011) suggesting that sage-grouse in MZ1 are more vulnerable to declines than other portions of the sage-grouse range.

Figure 3-11 Sage-Grouse Management Zones in the Western U.S. and Canada



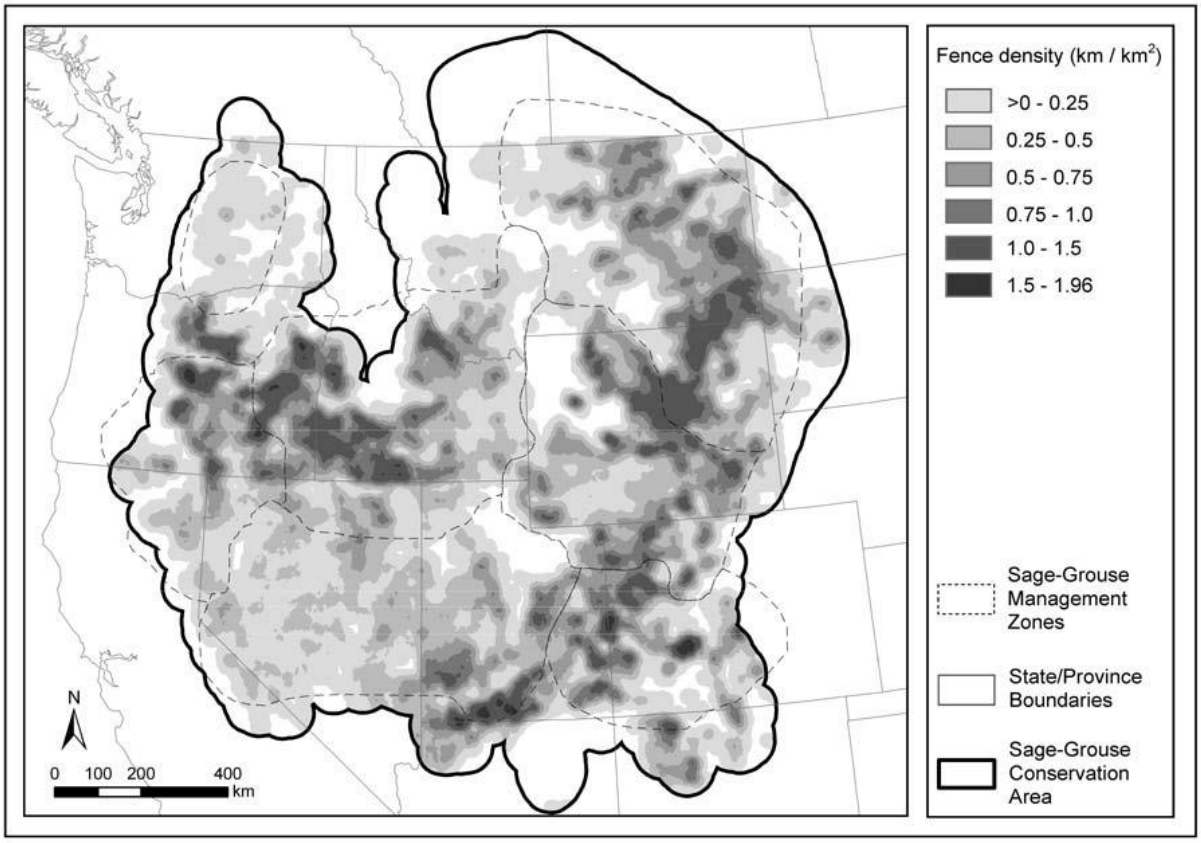
(Western Association of Fish and Wildlife Agencies' Sage-grouse Conservation Planning Framework Team 2006, http://sagemap.wr.usgs.gov/ftp/sab/SG_MgmtZones_ver2_20061018.txt)

Figure 3-12 Agricultural Lands within the Sage-Grouse Conservation Area



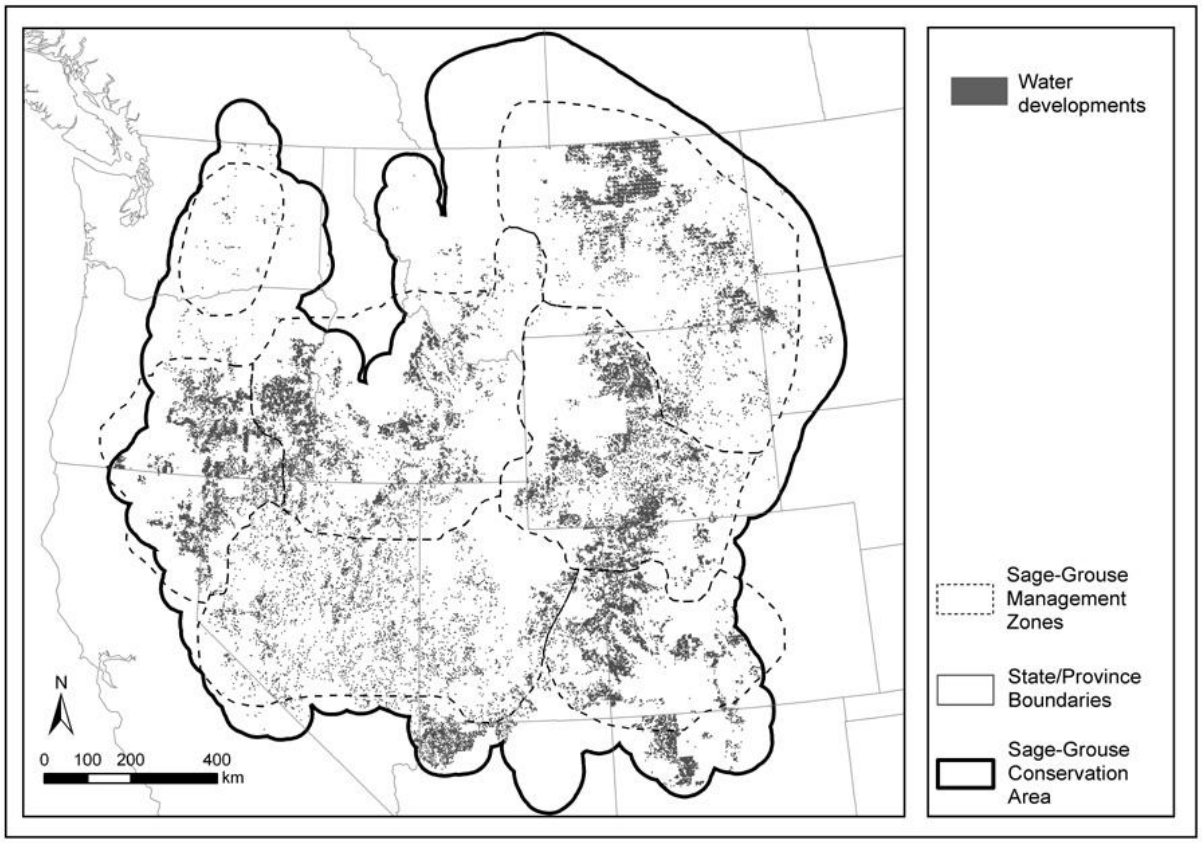
(From Knick et al. 2011). Agricultural lands within the Sage-Grouse Conservation Area. Mapped land cover depicts primarily croplands although pasture was included in the agriculture category (Landfire 2006).

Figure 3-13 Linear Density of Fences on Public Lands in the Sage-Grouse Conservation Area



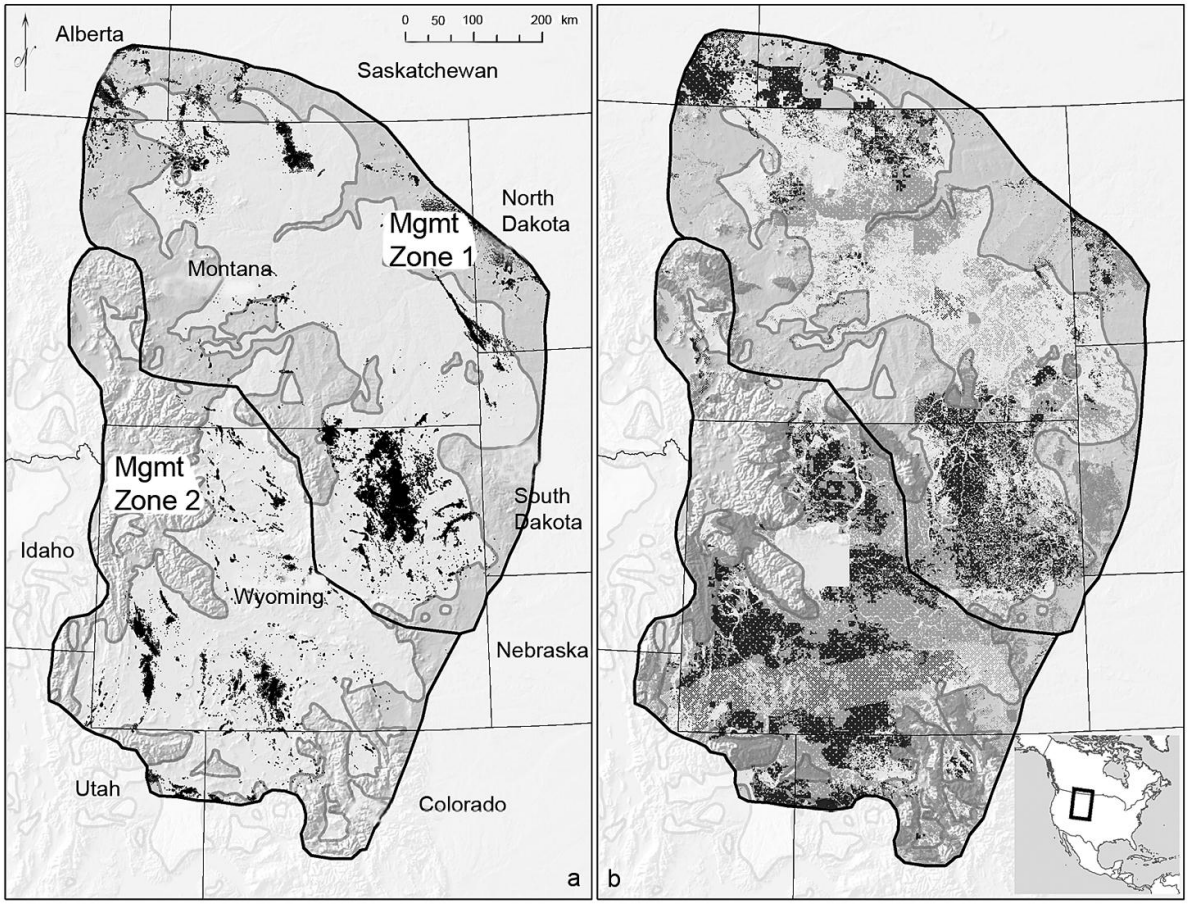
(from Knick et. al. 2011). Linear density (kilometers/kilometers2) of fences (estimated from allotment and pasture boundaries) on public lands in the Sage-Grouse Conservation Area (GIS coverages obtained from United States Bureau of Land Management Geocommunicator).

Figure 3-14 Water Developments on Lands Managed by the US Bureau of Land Management



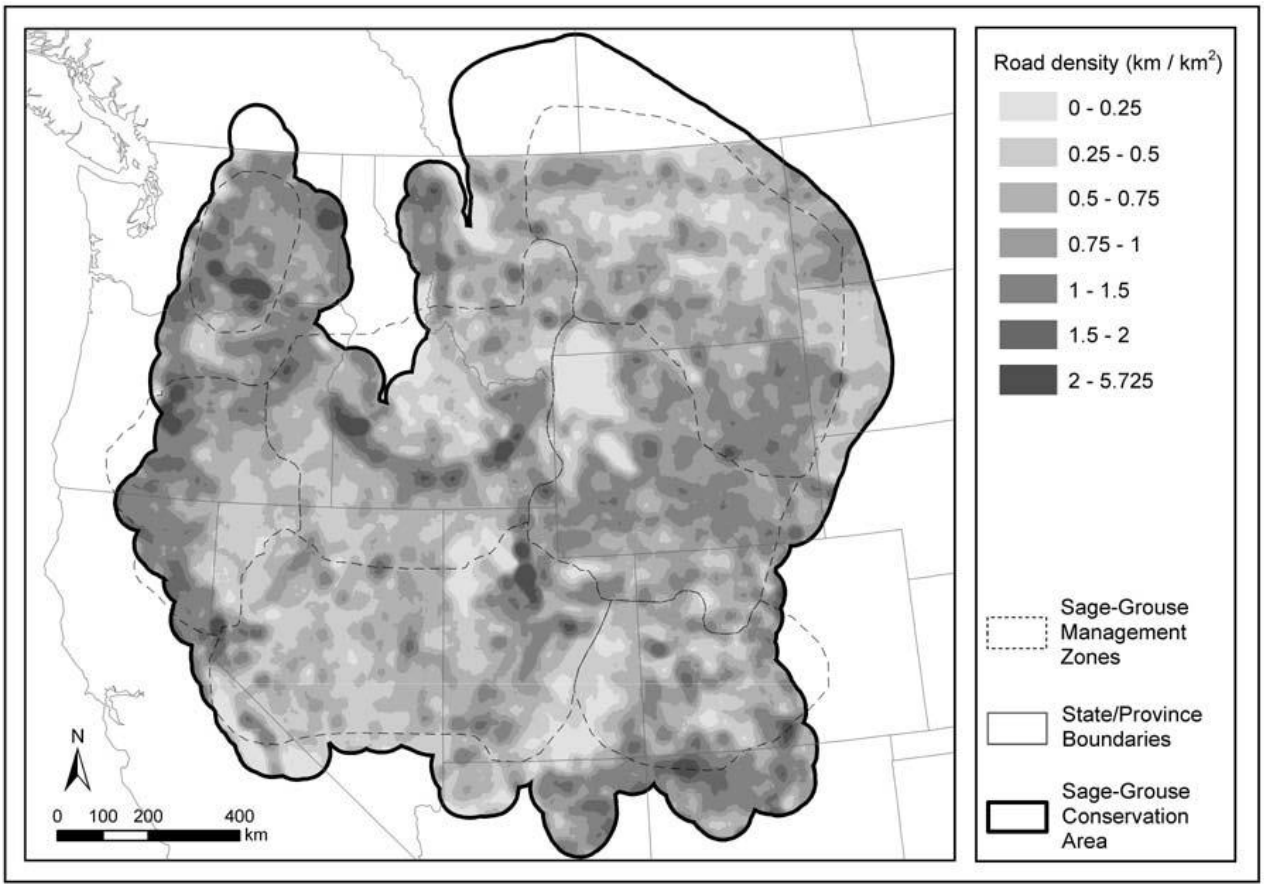
(from Knick et al. 2011). Water developments on lands managed by the US Bureau of Land Management (United States Bureau of Land Management Range Improvement data base). Locations of water development are recorded to the nearest 2.59 km2.

Figure 3-15 Locations of Producing Oil and Gas Wells within Sage-Grouse Management Zones I and II



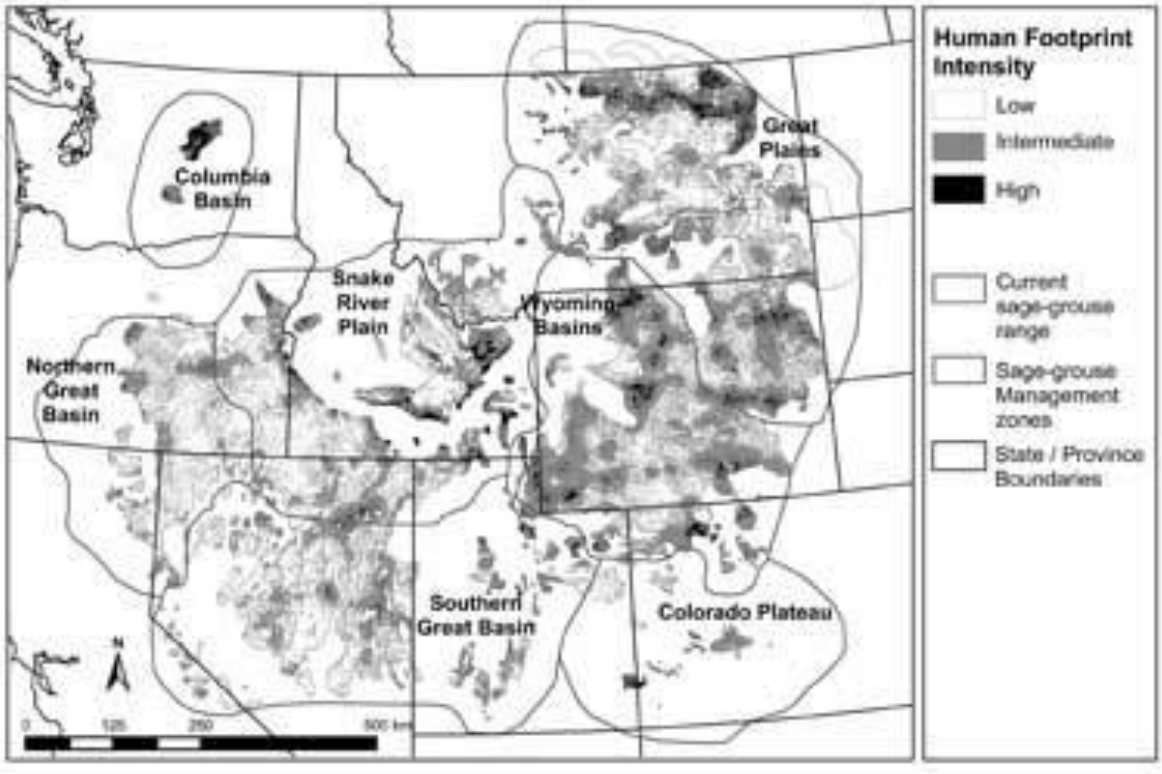
(from Naugle et al 2011). (A). Locations of producing oil and gas wells within sage-grouse management zones I and II (Connelly et al. 2004). Range of Greater Sage-Grouse (Schroeder et al. 2004) within management zones is shown in gray. (B). Federal mineral estate is shown in gray. Authorized leases from the federal mineral estate in the US and Canada are shaded black. Leases were authorized for exploration and development on or before 1 June 2007 for each state except Utah (1 May 2007). Leases in Canada were authorized for development on or before 29 January 2008 in Saskatchewan and 4 April 2008 in Alberta. A swath of authorized leases across southern Wyoming appears lighter in color because mineral ownership is mixed.

Figure 3-16 Contoured Secondary Roads in the Sage-Grouse Conservation Area



(From Knick et al. 2011). Contoured secondary roads in the Sage-Grouse Conservation Area (density [kilometers/kilometers2] within an 18-km radius) (GIS coverages obtained from United States Census Bureau).

Figure 3-17 Spatial extent of Three Human-footprint-intensity Classes for the Conterminous US within the Current Range of Sage-Grouse and Sage-Grouse Management Zones



(from Leu and Hanser, 2011). Spatial extent of three human-footprint-intensity classes for the conterminous US within the current range of sage-grouse and sage-grouse management zones (Stiver 2006). Human-footprint-intensity classes are low (class 1–3; Leu et al. 2008), intermediate (class 4–6), and high (class 7–10).

Predators

Predation is one of five specific ESA listing criteria; however the USFWS did not identify predation as a significant threat to sage-grouse populations in their 2010 decision to list the species as warranted for protection under the Endangered Species Act. The USFWS acknowledged that increasing patterns of landscape fragmentation are likely contributing to increased predation on the species and identified two areas, neither in Montana [North Dakota, South Dakota] (southwestern Wyoming and northeastern Nevada), where predators may be limiting sage-grouse populations because of intense habitat alteration and fragmentation. Despite the USFWS document stating that predation is not a significant threat to sage-grouse populations in Montana [North Dakota, South Dakota], the public remains concerned about the influence of predators on sage-grouse conservation.

Predators are part of the ecosystem and they have always preyed upon sage-grouse. Predators that prey on sage-grouse tend to be generalists that take prey opportunistically but do not focus solely or preferentially on sage-grouse (Hagen 2011). Predators of juvenile and adult sage-grouse are commonly coyote, red fox, American badger, bobcat, golden eagles, and several

other species of raptors (Schroeder and Baydack 2001; Hagen 2011). Younger birds can also be taken by common ravens, northern harriers, ground squirrels, and weasels. Nest predators include coyote, American badger, common raven and black-billed magpie (Schroeder and Baydack 2001; Hagen 2011). Smaller predators of sage-grouse, such as red fox or skunks, can also serve as prey to larger predators such as coyotes.

Historically, predator control programs in North America were designed to protect domestic livestock, not wildlife (Hagen 2011). Predator control as a tool to manage grouse populations was rarely recommended historically, even for threatened and endangered populations in altered or fragmented habitats (Patterson 1952, Schroeder and Baydack 2001). It is likely the termination of widespread predator control in the early-1970s has influenced changes in predator abundance observed anecdotally by the public in recent years (Montana Sage Grouse Working Group 2005). Maintaining and enhancing intact ecosystems of sufficient size and quality to support a particular species is of greater ecological value and sustainability than an alternate approach that relies heavily on human intervention (e.g., artificial feeding, predator control, animal husbandry, zoos). The former approach works with the natural system that is adapted to working as an interconnected resilient network. The latter approach is costly, temporary, risks variable results, and is not likely to avert an ESA listing (United States Department of Interior 2010).

Human altered landscapes have contributed to significant increases over historical numbers in some predator abundances, particularly red fox and ravens (Coates and Delehanty 2010, Sauer et al. 2012). The influx of predators in altered sagebrush habitat can lead to decreased annual recruitment of sage-grouse (Schroeder and Baydack 2001, Coates 2007, Hagen 2011). Sage-grouse in altered systems are also typically forced to nest in less suitable or marginal habitats where predators can more easily detect nesting birds (Connelly et al. 2004). In Strawberry Valley, Utah, low sage-grouse survival was attributed to an unusually high density of red fox that were attracted to the area by anthropogenic activity (Baxter et al. 2007). Holloran (2005) attributed increased nest depredation rates on sage-grouse to high corvid abundance in western Wyoming; the latter was influenced by anthropogenic structures associated with natural gas development. In the same area, Bui (2009) found ravens used road networks, fences, power lines, and other infrastructure associated with development. Bui et al. (2010) also detected a negative association between raven presence and sage-grouse nest and brood fate. Coates and Delehanty (2010) found increased raven density in northeastern Nevada was associated with decreased sage-grouse nest success, especially in areas with lower shrub density. Habitat fragmentation, infrastructure, weather, urban development, and improper grazing can increase predation pressure on sage-grouse. Sage-grouse populations demonstrate annual and cyclic fluctuations, which are influenced by weather patterns such as drought and the composition and abundance of predators (Montana Sage Grouse Working Group 2005). Montana populations appear to cycle over approximately a 10-year period under existing habitat conditions and the current combination of weather and predation (Montana Sage Grouse Working Group 2005; Montana Fish, Wildlife and Parks, unpubl. data). Longer term trends in sage-grouse population abundance and distribution can be a function of habitat loss or deterioration (Garton et al. 2011).

The majority of Montana's sage-grouse populations are expected to persist over the next 100 years, if habitat conditions remain consistent, which suggests Montana's populations are

relatively stable (Garton et al. 2011). Sage-grouse are part of the sagebrush grassland ecosystem that comprises an interlinked web of plant and animal species, including herbivores and carnivores. As one of many prey species in sagebrush habitats, sage-grouse are adapted to predation and in unaltered systems will persist indefinitely with predation pressure (Hagen 2011). The influence of predation on sage-grouse population dynamics only becomes a problem when vital rates, especially nest, chick, and hen survival, are consistently reduced below naturally occurring levels (Taylor et al. 2012). Naturally-occurring variability in vital rates is a function of annual variation in conditions (e.g., weather, vegetation cover quality, predator abundance) and is expected with a species that shows cyclic tendencies. Based on a number of research projects, reported vital rates for sage-grouse populations in Montana vary within range-wide estimates, suggesting predation rates are within the range of normal variability (Table 3-31).

Good quality and quantity of habitat reduces predation pressure and quality habitat is essential for sage-grouse population stability. Predator management can provide beneficial short-term relief to localized sage-grouse populations where predation has been identified as a limiting factor for population stability. Predator control is managed cooperatively by Animal and Plant Health Inspection Service (U.S. Department of Agriculture) Wildlife Service, FWP, and the USFWS. Federal laws, such as the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act, limit options for managing avian predators.

Recent predator control programs designed to benefit sage-grouse have had mixed results (United States Department of Interior 2010, Hagen 2011). In Strawberry Valley, Utah, fox removal appeared to increase adult survival and productivity but inference is limited because a control area was not included to compare changes in demographic rates, which were coincidentally increasing across the region during the study period (Baxter et al. 2007). Coyote control, however, appeared to have no effect on nest success or chick survival in Wyoming (Slater 2003). In fact, removal of coyotes can lead to a release of otherwise suppressed medium-sized predators, such as red fox, which tend to be more effective predators of sage-grouse nests and individuals (Mezquida et al. 2006). Ongoing control efforts of mammalian and avian predators (except raptors) in southwestern Colorado designed to increase recruitment in a small population of Gunnison's sage-grouse may be showing some success but sample sizes are extremely low (5 chicks monitored/year; Colorado Parks and Wildlife, pers. comm.). There are 13 displaying males currently in this population and cost of monitoring and control has totaled $267,000 over 5 years (Colorado Parks and Wildlife, pers. comm.), bringing in to question the sustainability of this program. Raven removal in northeastern Nevada resulted in short-term reductions in raven populations; however, other individuals re-populated the vacated habitat within a year (Coates 2007). Badger predation may also have compensated somewhat for decreases in raven numbers (Coates 2007). Predation by ravens on sage-grouse in southwestern Wyoming was attributed primarily to territorial pairs, not groups of juveniles, sub-adults, and non-breeding birds (Bui et al. 2010). Thus, the removal of raven groups at foraging sites is unlikely to influence sage-grouse nest success, and the removal of territorial pairs will likely have only short-term effects until the habitat is re-occupied by a new pair.

Table 3-31: Sage-Grouse Vital Rates in Montana

Vital Rate	Range-wide Rates[1]	Montana Rates	Years of Montana Study	Location	Reference
Nest success	15 – 86%	64%	1969 - 1972	Petroleum Co.	Wallestad and Pyrah 1974
		28 - 43%	2004 - 2005	Musselshell and Golden Valley Co.	Sika 2006
		35 – 61%	2001 - 2003	S. Phillips Co.	Moynahan et al. 2007
		53 – 61%	2007 - 2008	Milk River Basin	Tack 2009
		59%	2011 - 2012	Musselshell and Golden Valley Co.	Berkeley, unpubl. data[2]
Chick survival	12 – 50%	33 – 38%	2007 - 2008	Milk River Basin	Tack 2009
		12%	2011 - 2012	Musselshell and Golden Valley Co.	Berkeley, unpubl. data[2]
Hen survival	37 – 78%	25 – 96%[3]	2001 – 2003	S. Phillips Co, Montana	Moynahan et al. 2006
		94% (nesting season) 84 – 93% (late summer)	2004 - 2005	Musselshell and Golden Valley Co.	Sika 2006
		55 – 91% (spring/summer) 84 – 92% (over winter)	2007 - 2008	Milk River Basin	Tack 2009
		59%	2011 - 2012	Musselshell and Golden Valley Co.	Berkeley, unpubl. data

[1]Range-wide estimates from Connelly et al. 2011.
[2] Spring and early summer weather during 2011 and 2012 were subject to historic extremes of high precipitation in 2011 and severe drought in 2012, which likely affected nest and chick survival rates.
[3]25% annual survival in 2003 was attributed to a WNv outbreak and severe winter conditions; annual survival in 2001-2002 averaged 96%.

Burrowing Owl (BLM Sensitive)

Burrowing owls are widely distributed east of the Continental Divide in Montana. They are typically associated with open grasslands and commonly use abandoned mammal burrows for nest sites. Burrowing owls are opportunistic feeders and their diet varies seasonally. There are several observations of burrowing owls in the field office that are closely related to the presence of prairie dog towns or ground squirrels. Populations appear to have declined, possibly due to the reduction in prairie dog populations.

Brewer's Sparrow (BLM Sensitive)

Brewer's sparrows are sagebrush obligate species that prefer sites with high shrub cover and large patch size (Ashley and Stoval 2004). Their open cup shaped nests are typically found in live sagebrush. These sparrows occur in the planning area and were intensively studied in the southern BiFO area and their breeding habitat has been documented (Chalfoun 2006).

Golden Eagle (BLM Sensitive)

In Montana, golden eagles eat primarily jackrabbits, ground squirrels, and carrion. They sometimes prey on deer and antelope fawns, small mammals, waterfowl, and grouse. Golden eagles nest on cliffs, in large trees, or occasionally on artificial structures such as power poles. Golden eagles are protected by the Bald and Golden Eagle Protection Act (BGEPA). Due to low snow fall levels and open winters in the northern Big Horn Basin, (or southern Carbon County), there is documented evidence of wintering golden eagles in the area. Threats to their populations are disturbance to nests, power pole electrocutions, and secondary lead poisoning from consuming prey shot with lead bullets.

Chestnut-collared Longspur (BLM Sensitive)

The Montana distribution for chestnut-collared longspurs is east of the Continental Divide on native mixed-grass and tall and shortgrass prairies. Chestnut-collared longspurs arrive on Montana breeding ground in late April and first clutches are initiated in early to mid-June. Flocking occurs as nesting ends in mid-August, and migration begins in early September. The majority of Montana Natural Heritage Tracker observations are from the northern and western area of the field office with one in Carbon County. Only two to three observations are from public land, with the remaining sightings occurring on private lands.

Loggerhead Shrike (BLM Sensitive)

Loggerhead shrikes breed throughout much of eastern Montana in a variety of habitats such as grassland prairies with scattered trees, riparian areas, woody draws, or cultivated land with shelterbelts. In Montana grasslands and shrub steppe, loggerhead shrikes tend to select areas with a significant presence of shrubs and forbs (Dechant et al. 1998). Loggerhead shrikes have been documented in the planning area (Lenard et al. 2003).

McCown's Longspur (BLM Sensitive)

Montana provides a large portion of the available breeding habitat for McCown's longspurs. They can be found throughout Montana, east of the Continental Divide. There is indirect evidence of breeding in northern Musselshell County (Lenard et al., 2003).

Sage Thrasher (BLM Sensitive)

Sage thrashers are sagebrush obligate, as they are common inhabitants of shrub-steppe communities dominated by big sagebrush. Nest site selection is specific, as most nests are located in or beneath sagebrush plants with high foliage and branch density (MPIF 2000). Dense patches of large sagebrush plants and low densities of exotic plants also seem to be an important habitat characteristic for sage thrashers. Documented breeding habitat occurs in the planning area (Lenard et al. 2003).

Sprague's Pipit (BLM Sensitive)

In Montana, Sprague's Pipit nest sites were in grasslands primarily with native grasses of intermediate height and density, with little bare ground or clubmoss and few shrubs, and in nest patches with greater litter cover and depth, while avoiding areas with prickly pear cactus cover (Map 25) (Dieni and Jones 2003). There is indirect evidence of breeding in the northern part of the planning area (Lenard et al., 2003)

Ferruginous Hawk (BLM Sensitive)

The ferruginous hawk occurs in grassland and shrublands throughout the planning area during the spring, summer, and fall. Ferruginous hawks often nest on the ground, lone trees, topographic high points, or cliffs. They typically occur in areas with abundant prey, most often grassland rodents and lagomorphs (Johnsgard 1990). This species is considered sensitive to disturbance during the nesting period, and nest sites have been documented in Musselshell County.

Peregrine Falcon (BLM Sensitive)

The peregrine falcon is a mid to large sized falcon associated with a variety of habitats during the spring, summer, and fall seasons. Nesting habitats for this species include cliffs, canyons, or other secure topographic features typically near larger water bodies and an abundant prey base. Peregrine falcons have five known nest sites in the planning area. Three of these sites are on BLM lands. This species was delisted from the federal endangered species list in 1999.

Northern Goshawk (BLM Sensitive)

The northern goshawk, a large bird of prey is a seasonal migrant in the planning area. Nesting habitats are generally in coniferous forests, and northern goshawks often forage throughout the forest, including aspen stands, meadows, and forest openings. The limited amount of suitable forested areas in the planning area indicates that few nesting northern goshawks are present. No known active nests occur in the planning area.

Swainson's Hawk (BLM Sensitive)

The Swainson's hawks breeds throughout Montana, generally nesting in river bottom forests, brushy coulees, and shelterbelts. They hunt in grasslands and agricultural areas, especially along river bottoms (Montana Field Guide 2011). Two nest locations were recorded during a raptor survey (Centmont Bioconsultants, 2005).

Blue-gray gnatcatcher

Breeding habitat in Montana is restricted to open stands of Utah juniper (*Juniperus osteosperma*) and limber pine (*Pinus flexilis*) with intermixed big sage (*Artemisia tridentata*). All nests found have occurred 0.8 to 1.7 meters above ground in Utah juniper or big sage growing on the lower slopes or bottoms of canyons (P. Hendricks unpublished data The northern Bighorn Basin that extends into Carbon County is the northern most extension of their breeding range (MFG, 2011).

Montana Audubon identified an Important Bird Area (IBA) in the planning area at Bear Canyon in the foothills of West Pryor Mountain, near the Wyoming border. The area is four square miles, and the Utah juniper supports breeding populations of more than a dozen species

on the Montana Priority Bird Species List. The area also has the highest known number of nesting blue-gray gnatcatchers among the foothill canyons in the area and the only documented breeding occurrence of blue-gray gnatcatchers in Montana. Refer to:
http://www.audubon.org/bird/iba - National Audubon Society.

Baird's Sparrow (BLM Sensitive)

Baird's Sparrows prefer to nest in native prairie; however structure may ultimately be more important than plant species' composition. Nesting may take place in tame grasses (nesting has been observed in crested wheat, while smooth brome is avoided) (Sutter 1998). This sparrow has also been found to use drier areas during unusually wet years and wet areas during unusually dry years (Casey 2000). Because a relatively complex structure is so important for nesting, areas with little or no grazing activity are required (MFG, 2010.

Black Tern (BLM Sensitive)

Black Tern breeding habitat in Montana is mostly wetlands, marshes, prairie potholes, and small ponds. However, several breeding locations are on manmade islands or islands in manmade reservoirs. Across all Montana sites where Black Terns are present, approximately 30 percent to 50 percent of the wetland complex is emergent vegetation. Vegetation in known breeding colonies includes alkali bulrushes, canary reed-grass, cattail, sedge, rush, reed, grass, *Polygonum* spp., *Juncus* spp. and *Potamogeton* spp., indicating a wide variety of potential habitats. Water levels in known breeding localities range from about 0.5 m to greater than 2.0 m with most having depths between 0.5 m and 1.0 m (MTNHP 2003; Montana Field Guide [Retrieved on February 4, 2010, from http://FieldGuide.mt.gov/detail_ABNNM10020.aspx]). The only historic breeding records documented in the southern area of the BiFO (Lenard et al., 2003).

Bobolink (BLM Sensitive)

Nests are built in tall grass and mixed-grass prairies, and this species prefers "old" hay fields with high grass-to-legume ratios (Montana Field Guide, [Retrieved on February 4, 2010 from http://FieldGuide.mt.gov/detail_ABPBXA9010.aspx]). Indirect evidence of breeding in BiFO has also been documented (Lenard et al., 2003).

Great Gray Owl (BLM Sensitive)

Little specific habitat information for Montana is currently available, as systematic surveys for Great Gray Owls have not been done. Great Gray Owls are, however, known to use lodgepole pine / Douglas-fir as habitat in Montana. Habitat information from other Great Gray Owl sources state that their habitat is dense coniferous and hardwood forest, especially pine, spruce, paper birch, poplar, and second-growth, especially near water. They forage in wet meadows and coniferous forest and meadows in mountainous areas (Montana Field Guide [Retrieved on February 4, 2010 from http://FieldGuide.mt.gov/detail_ABNSB12040.aspx]). Breeding records have been documented in the BIFO (Lenard et al., 2003).

Red-headed Woodpecker (BLM Sensitive)

With no systematic surveys completed in Montana, little is known about Red-headed Woodpecker habitat in the state. When this species have been observed, they are usually found along major rivers with associated riparian forest. They may also be found in open savannah

country, as long as adequate ground cover, snags, and canopy cover can be found. Large burn areas may also be utilized by the species (Bent 1939, Ehrlich et al. 1988; Montana Field Guide [retrieved on February 4, 2010 from http://FieldGuide.mt.gov/detail_ABNYF04040.aspx]).

3.7.3.5.11 Amphibians

An inventory of amphibians and reptiles in the BiFO was undertaken and completed in 2006. This inventory recorded where reptiles were located within the region (Vitt et al., 2006). This was the most recent inventory for herps in the Field Office, although numerous other observation locations are available from other sources, such as, "Amphibians and Reptiles Of Montana," Werner et al. 2004.

Great Plains Toad (BLM Sensitive)

There is documented occurrence of this species in Yellowstone County; however inventories did not find adults or larvae in Carbon County (Vitt et al., 2006).

Northern Leopard Frog (BLM Sensitive)

The northern leopard frog occupies riparian and wetland habitats and typically is found in cattail marshes and beaver ponds in the plains, foothills, and montane zones up to 9,000 feet above mean sea level in the planning area. Adults feed on tadpoles, insects, and other invertebrates. With the exception of the desert and foothills area west of the Pryor Mountains, leopard frogs occur throughout the study area (Vitt et al., 2006).

Plains Spadefoot (BLM Sensitive)

There are documented occurrences of plains spadefoot in 15 locations in the planning area. All locations consisted of open areas in and around shallow stock ponds surrounded by friable soils, but at significant distances from any water source (Vitt et al., 2006).

3.7.3.5.12 Reptiles

Greater Short-horned Lizard (BLM Sensitive)

Lizards are typically found in sagebrush shrublands with areas of bare ground and a low density of sagebrush. This species was documented at six locations in the BiFO during the inventory (Vitt et al., 2006).

Milksnake (BLM Sensitive)

Milksnake habitat is typically rocky hillsides in grassland and shrubland areas. The inventory found seven locations for this snake in the BiFO (Vitt et al., 2006).

Snapping Turtle (BLM Sensitive)

Snapping turtle occur in large rivers and adjacent ponds, lakes, and wetlands. Several records exist in eastern Big Horn County and one record in northeastern Yellowstone County. Additional trapping will be necessary to determine whether populations exist in the Yellowstone River farther upstream from the confluence with the Big Horn River(Vitt et al., 2006).

Spiny Softshell (BLM Sensitive)

This species inhabits large rivers and water bodies and in the BiFO, they are known from the Yellowstone, Musselshell, and Clark's Fork of the Yellowstone rivers. One spiny softshell turtle was documented in Yellowstone County (Vitt et al., 2006).

Western Hog-nosed Snake (BLM Sensitive)

These snakes are typically found in open habitats with friable soils (i.e., sand) along river banks and floodplains. A few scattered records exist in Big Horn, Stillwater, Yellowstone, and Musselshell counties.

3.8 Fisheries Habitat and Special Status Species

Management of fish species and populations in the planning area is regulated and overseen by the MTFWP. The USFWS is responsible for providing regulatory oversight for all species that are listed or proposed for listing as threatened or endangered under the Endangered Species Act (ESA). The BLM is charged with conserving and/or enhancing aquatic habitat and riparian areas on BLM administered lands, as well as protecting water quality that is necessary to support the fish and aquatic wildlife populations (amphibians and aquatic insects).

The BiFO management direction is to work cooperatively with USFWS and MTFWP to establish programs that are consistent with ecologically sound and sustainable practices, conserve and enhance high quality aquatic habitat, protect native aquatic species, and enhance game fishing opportunities. In the planning area, the USDA Custer National Forest is also an integral partner in managing sensitive species on shared aquatic habitats. The continuity between managing fish populations and aquatic habitat requires a close working relationship among the agencies to be effective.

The aquatic resources of the planning area include fish and aquatic macro-invertebrates and their habitats. These habitats consist of rivers and streams, springs, seeps, and lakes or reservoirs that provide year round (perennial) or seasonal (intermittent) habitat for a variety of fish species, aquatic macro-invertebrates, and aquatic plant communities (Map 26 – Red and Blue Ribbon Streams). Water quality is a key indicator of environmental conditions for fish and aquatic habitats. Other elements critical to aquatic habitat and suitable fish habitat, including riparian habitat, are water volume, water temperature, and the presence/absence of non-native competitors. The BLM uses its surveys and those done by DEQ and MTFWP to assess the abundance, distribution, and health of fish populations and aquatic habitat in the decision area.

According to MTFWP surveys, 43 species of fish are present in the planning area (Table 3-32). Of these species, 28 are indigenous and 15 species are introduced. Most are warm water species

that live in the lower Yellowstone and Musselshell rivers; only a few are coldwater species that live in the mountain streams.

Table 3-32 Native and Non-Native Fish Species Occurring in the Planning Area

Native	Scientific Name	Non-Native	Scientific Name
Bigmouth buffalo	*Ictiobus cyprinellus*	Blackhead bullhead	*Ictalurus melas*
Brassy minnow	*Hybognathus hankinsoni*	Black crappie	*Pomoxis nigromaculatus*
Brook stickleback	*Culaea inconstans*	Brook trout	*Salvelinus fontinalis*
Burbot	*Lota lota*	Brown trout	*Salmo trutta*
Channel catfish	*Ictalurus punctatus*	Common carp	*Cyprinus carpio*
Emerald shiner	*Notropis atherinoides*	Green sunfish	*Lepomis cyanellus*
Fathead minnow	*Pimephales promelas*	Largemouth bass	*Micropterus salmoides*
Flathead chub	*Hybopsis gracilis*	Pumpkinseed	*Lepomis gibbosus*
Freshwater drum	*Aplodinotus grunniens*	Rainbow trout	*Oncorhynchus mykiss*
Goldeye	*Hiodon alosoides*	Smallmouth bass	*Micropterus dolomieu*
Lake chub	*Couesius plumbeus*	Spottail shiner	*Notropis hudsonius*
Longnose dace	*Rhinichthys cataractae*	White crappie	*Pomoxis annularis*
Longnose sucker	*Catostomus catostomus*	Yellow bullhead	*Ictalurus natalis*
Mottled sculpin	*Cottus bairdi*	Yellow perch	*Perca flavescens*
Mountain sucker	*Catostomus platyrhynchus*	Walleye (unknown)	*Stizostedion vitreum*
Mountain whitefish	*Prosopium williamsoni*		
Northern pike	*Esox lucius*		
Northern red-bellied dace	*Phoxinus eos*		
Plains minnow	*Hybognathus placitus*		
River carpsucker	*Carpiodes carpio*		
Sand shiner	*Notropis stramineus*		
Sauger	*Stizostedion canadense*		
Shorthead redhorse	*Moxostoma macrolepidotum*		
Smallmouth buffalo	*Ictiobus bubalus*		
Stonecat	*Noturus flavus*		
Western silvery minnow	*Hybognathus argyritis*		
White sucker	*Catostomus commersoni*		
Yellowstone cutthroat trout	*Onchornynchus Clarki bouvieri*		

Note:
Source:

3.8.1 Coldwater Species

Higher elevation waters located in the Pryor Mountains and Beartooth Mountain Front support coldwater fish, including the Yellowstone cutthroat trout (YCT), classified as a sensitive species by the BLM and an S2 state classification (at risk of local extinction). The emphasis of BLM habitat management is to protect and enhance native species habitat, such as for the YCT (Maps 27, 28). In the decision area, Crooked, Bad Canyon, and Piney creeks are strongholds of isolated, genetically pure populations of YCT. Table 3-33 shows the total miles of fish bearing water in the decision area.

Table 3-33 Fish Bearing Streams in the Decision area

Stream Name	Miles	Sensitive Species	Cold/Warm
Bad Canyon Creek	5.1	YCT	Cold
Bear Creek	2.4		Warm
Boulder River (MF)	0.25		Cold
Boulder River (WF)	0.5		Cold
Bridger Creek SF	2		Warm
Bridger Creek Spring	0.5		Warm
Clarks Fork River	3.85		Warm
Crooked Creek	3.5	YCT	Cold
Musselshell River	0.5		Warm
Piney Creek	0.33	YCT	Cold
(unnamed Creek at PP)	0.5	Sauger	Warm
Sage Creek	3.78		Warm
Stillwater River	1		Cold
Willow Creek	1		Warm
Yellowstone River	18.25	Sauger/Pallid	Warm/Cold

Note:
Source:

3.8.2 Warmwater Species

Lower elevation streams across the planning area support a diverse population of warm water fish. Sauger, walleye, smallmouth bass, and channel catfish are the prized game fish of the system. Special status species include the BLM sensitive sauger, a rare occupant of the Yellowstone River and the Clarks Fork of the Yellowstone in the planning area.

Due to the fragmented nature of BLM ownership in the planning area, fisheries management activities are limited to providing the best riparian conditions possible and maintaining high levels of aquatic and riparian protection from other resource uses, including recreation, grazing, and fuels extraction. State water quality laws dictate planning in these disciplines, and the BLM adopted Standards and Guidelines for Livestock Grazing Management help to ensure riparian proper functioning condition (PFC).

Riparian vegetation is an important factor in maintaining aquatic resource conditions. Riparian vegetation provides in stream habitat for fish, adds structure to the banks, reduces erosion, moderates water temperatures, and is a source of organic nutrients for the system. Riparian vegetation moderates flows by reducing runoff to the stream and stores water for later release. As riparian habitats degrade, erosion and sedimentation increase and streams widen and become shallower. Temperature fluctuations increase and oxygen content can reach critically low levels. These factors collectively reduce or degrade available fish habitat. Protecting riparian habitats and restricting water quality degradation on BLM lands does not ensure aquatic health, because the majority of the streams are flowing through multiple ownerships before they reach BLM parcels.

The BiFO has limited aquatic resources. Fish bearing streams, lakes, and reservoirs are rare, with only 15 perennial fish bearing streams and no lakes or reservoirs on public lands that support game fish (Montana Fish Information System [MFISH] website). There are only a handful of reservoirs, with partial BLM ownership, that support populations of non-game fish; however, the Montana Fisheries Information System reports no lakes or reservoirs in the decision area that support sport fisheries. The small, unnamed reservoirs that support small non-game fish populations are not listed in Table 3-33 because they are impoundments of the streams that are listed. However, the importance of these resources does not diminish due to their limited stature, but actually increases due to the rarity. Aquatic resources (fisheries or non-fisheries related) are important natural resources, especially in the arid or semi-arid environments found in the planning area. Wildlife, livestock grazing, and farming are all dependent on water or riparian habitat, which make up a small percentage of the landscape. Therefore, the limiting factors of these land uses are riparian and aquatic resources.

3.8.3 Fisheries Management

Management of fish species and populations is regulated and overseen by MTFWP. The BiFO is charged with conserving and/or enhancing aquatic habitat and riparian areas as well as protecting water quality necessary to support fish and aquatic wildlife populations (amphibians and aquatic insects). Management guidance for enhancing riparian and wetland ecosystems has contributed to fisheries management, just as riparian health and water quality are directly related to fisheries health.

Water quality is a key indicator of environmental conditions for fish and aquatic habitats. Other elements critical to aquatic habitat and suitable fish habitat, including riparian habitat, are water volume, water temperature, and the presence/absence of non-native competitors. The BLM uses its surveys and those done by DEQ and MTFWP to assess the abundance, distribution, and health of fish populations and aquatic habitat in the planning area.

Some native fish species populations and habitats have declined in the past due to natural disturbances (drought), habitat alteration, poor water quality, lack of water quantity, and hybridization with or competition from with non-native species.

3.8.4 Non-Native Invasive (Nuisance) Aquatic Species

Aquatic Nuisance Species (ANS) are non-indigenous plant or animal species that threaten diversity and abundance of native species, the ecological stability of aquatic systems, or commercial, agricultural, and recreational activities dependent on said systems.

MTFWP has assembled and prioritized a list of aquatic nuisance species that are either established in Montana or have a high potential to invade Montana waters. MTFWP has also developed the Aquatic Nuisance Species Management Plan (2002) which addresses prevention of invasion, mitigation of impacts for species already present, and other measures to control ANS. There are currently 26 species of plants and animals on the MTFWP ANS list (Table 3-34) with only 7 listed as present in Montana. Priority classes are defined below.

- **Priority Class 1 –** These species are not known to be present in Montana, but have a high potential to invade and there are limited or no known management strategies for these species. Appropriate action for this class includes prevention of introductions and eradication of pioneering populations.
- **Priority Class 2 –** These species are present and established in Montana and have the potential to spread further and there are limited or no known management strategies for these species. These species can be managed through actions that involve mitigation of impact, control of population size, and prevention of dispersal to other water bodies.
- **Priority Class 3 –** These species are not known to be established in Montana and have a high potential for invasion and appropriate management techniques are available. Appropriate management for this class includes prevention of introductions and eradication of pioneering populations.
- **Priority Class 4 –** These species are present and have the potential to spread in Montana but there are management strategies available for these species. These species can be managed through actions that involve mitigation of impact, control of population size, and prevention of dispersal to other water bodies.

Table 3-34 Aquatic Nuisance Species in the Planning Area

Species		
Common Name	**Scientific Name**	**Priority Class**
Fish		
Big Head Carp	*Hypophthalmichthys nobilis*	1
Grass Carp	*Ctenoparyngodon idella*	1
Black Carp	*Mylopharyngodon piceus*	1
Silver Carp	*Hypophthalmichthys molitrix*	1
Round Goby	*Neogobius melanostomus*	1
Ruffe	*Gymnocephalus cernuus*	1
Tench	*Tinca tinca*	1
Zander	*Sander lucioperca*	1
Northern Snakehead	*Channa argus*	1
Crustaceans		
Rusty Crayfish	*Orconectes rusticus*	1
Spiny Waterflea	*Bythotrephes cederstroemi*	1
Molluscs		
Zebra Mussel	*Dreissena polymorpha*	1
New Zealand Mud Snail	*Potamopyrgus antipodarum*	2
Mammals		
Nutria	*Myocastor coypus*	1
Parasites / Pathogens		
Whirling disease	*Myxobolus cerebralis*	2
Heterosporosis		1
IHN Virus		1
Asian Tapeworm	*Bothriocephalus acheilognathi*	3
Plants		

Species		
Common Name	**Scientific Name**	**Priority Class**
Egeria	*Egeria densa*	1
Hydrilla	*Hydrilla verticillata*	1
Eurasian Watermilfoil	*Myriopyllum spicatum*	3
Curley Pondweed	*Potamogeton crispus*	4
Flowering Rush	*Butomus umbellatus*	4
Purple Loosestrife	*Lythrum salicaria*	4
Salt Cedar	*Tamaricaceae spp.*	4
Yellow Flag Iris	*Iris pseudacorus*	4

Note:
Source: MTFW; (http://fwp.mt.gov/fishing/guide/ANS/priorityClasses.html)

All the species listed above can have profound ecological impacts, generally disrupting the natural food chain or impairing ecosystem and native species health. Riparian systems and water bodies are vulnerable to nuisance species invasion due to the transport of boats, road runoff, human associated activities, and other mechanisms. The spread of nuisance species is usually rapid and hard to control because of the connectivity and movement associated with rivers and aquatic systems in general.

3.8.5 Fisheries Special Status Species

Special status species are species listed as threatened or endangered under the Endangered Species Act (ESA), species proposed or candidates for listing, species designated as sensitive by BLM, and state listed species. These species require particular management attention due to population or habitat concerns. Rules and regulations describing BLM requirements in managing Special Status Species are described in Section3.7.3.3 (Wildlife Special Status Species) page 3-74.

The BiFO is responsible for managing fisheries habitat in the decision area, while management of fish species is overseen by state and federal wildlife management agencies. The MFWP manages resident fish populations. The USFWS provides regulatory guidance for all fish species that are listed or proposed for listing under the ESA.

Fisheries habitat includes perennial and intermittent streams, lakes, and reservoirs that support fish through at least a portion of the year. Fisheries habitats in the planning area encompass portions of six large watersheds: the Bighorn River, Boulder River, Clark's Fork of the Yellowstone River, Musselshell River, Yellowstone River, and the Stillwater River.

Special status species are native taxa that are at risk due to declining population trends, habitat threats, restricted distribution, and other factors. Three special status fish species have been identified in the planning area, the Northern Redbelly X Finescale Dace, the sauger, and the YCT.

3.8.5.1 Northern Redbelly X Finescale Dace (BLM Sensitive)

This fish was placed on the special status species list due to its rarity and unusual form of genetic reproduction (MFISH). In Montana, northern redbelly dace are fairly widespread east of the Continental Divide. Finescale dace have been found in the Milk River drainage in the Cypress Hills, just north the Canadian border, well removed from the planning area (MFISH).

Further inventory is needed to better define *Phoxinus spp.* distribution in Montana. Due to difficulties of field differentiation, it is likely that some waters thought to contain only northern redbelly dace may also have the hybrid. *Phoxinus spp.* is not extremely common in Montana. Dr. Robert Bramblett (MFISH) has conducted surveys on 43 prairie streams of the Missouri and Yellowstone rivers and identified *Phoxinus spp.* at just three sites, one of which contained the hybrid. Few prairie streams in Montana have the clear pool-type habitat preferred by this hybrid. Due to the limited distribution and knowledge of this species, it is important to reduce impacts to its known habitat. In the Billings Field office decision area, eight streams have been identified with populations of this species. The streams do not fall in the decision area, however drainage from BLM administered lands do contribute to some of the streams. Managing for healthy riparian areas and quality water resources on BLM managed public lands will help to reduce impacts on the Northern Redbelly X Finescale Dace populations should they occur in the decision area (www.fisheriessociety.org/AFSmontana/RedbellyHybrid.html).

3.8.5.2 Sauger (BLM Sensitive)

Sauger populations throughout Montana have fallen dramatically. In the main stem of the Yellowstone River, distribution is now considered limited to downstream of Rosebud Creek and is rare or absent in other portions of the river and its major tributaries.

Sauger, known to be a migratory species, is heavily dependent on unimpeded access to the wide diversity of physical habitats present in large river systems. The Yellowstone River system has many barriers impeding fish passage, some in the main stem and many throughout the tributaries. The need to travel throughout a system to find suitable habitats for various life stages, coupled with competition from non-native walleye (*Sander vitreum*), are likely the two dominating factors in the sauger's decline. BLM ownership and influence on the main stem Yellowstone and Clarks Fork of the Yellowstone rivers is fragmented. For example, of 147 Yellowstone river miles in the planning area, BLM manages 18.55 miles, the majority of which is limited to small stretches of a single river bank. The Billing Field Office has little influence over the factors that impact sauger viability, with managing for overall watershed health being the primary objective to provide functioning riparian conditions and quality water resources (www.fisheriessociety.org/AFSmontana/Sauger.html).

3.8.5.3 Yellowstone Cutthroat Trout (BLM Sensitive)

In its historical range, this subspecies is considered a species of special concern or a sensitive species by many state and federal agencies and organizations. In 1998, it was petitioned for listing as a threatened species under the ESA; however this petition was rejected in February 2001 (Maps 27 and 28).

YCT numbers have declined in distribution and abundance throughout its range. A survey of biologists (AUTHOR 1996) concluded that in Montana, YCT occupied 32 percent of their historical range. Most remaining indigenous populations in Montana inhabit headwater streams and the upper Yellowstone River. It is also estimated that only 10 percent of the historically occupied fluvial habitat still contains genetically pure populations (May 1998). (www.fisheriessociety.org/AFSmontana/Yellowstone.html)

Non-native fish species are generally considered the greatest threat to the persistence of YCT. Displacement of native fish species by brown trout, brook trout, and hybridization with rainbow trout have been thoroughly documented in the region. Habitat fragmentation from irrigation diversion, culvert barriers, and other manmade obstacles has also contributed to the downfall of YCT.

In the past decade, several projects have been designed to specifically enhance sensitive fish species populations on public lands in the planning area.

3.8.5.3.1 Bad Canyon Creek

The BLM partnered with MTFWP and the Custer NF to stabilize and enhance a fish barrier on Bad Canyon Creek. The barrier would isolate a genetically pure YCT population in BLM and FS waters, blocking the upstream passage of non-native brown trout that thrive in lower Bad Canyon Creek and the Stillwater River.

3.8.5.3.2 Crooked Creek

In 2007, the BLM partnered with MTFWP and the Custer NF to protect eight miles of pristine YCT habitat from invasion by non-native brown trout which are present in the lower reaches of Crooked Creek. The project included an engineered barrier designed to block fish passage and withstand 100 year flood events for an indefinite time. A subsequent MTFWP project removed all brown trout from the isolated reach, allowing the aboriginal YCT population to expand uninhibited from non-native competition.

3.8.5.3.3 Piney Creek

The MTFWP and BLM began planning a project on the BLM administered Piney Creek waters to enhance pool and over wintering habitat for an imperiled, isolated population of YCT. This population is limited to approximately 1¼ miles of cold, clean spring water that runs from the Custer NF through BLM and private land and then onto state land, where it is diverted into an irrigation system. Barring dewatering and upstream pollution sources, riparian health is the most significant limiting factor to aquatic resources and good water quality.

To manage fish and special status fish species habitat, the Bureau of Land Management follows guidelines from land planning efforts and regulatory plans and guidance established:

Best management practices, state, and federal guidance concentrate on protecting riparian habitat and function as well as water quality. A clear establishment of the importance of riparian health is critical in understanding the connectivity between riparian vegetation, water quality and quantity and fisheries resources.

3.9 Wild Horses and Pryor Mountain Wild Horse Range

The wild horse and burro program is unique to the BLM as it is the only program where the BLM is responsible for both the land resources and the animal. Perhaps no other program within the BLM receives as much public interest and scrutiny than the wild horse and burro program. The health, nutrition, and well-being of the animals are closely watched and criticized by numerous individuals and organizations interested in wild horses. These groups present unique opportunities for cooperative and collaborative partnerships as well as manufacturing controversy.

The Billings Field Office is home to one herd of wild horses located within the Pryor Mountain Wild Horse Range (PMWHR). The PMWHR is located approximately 50 air miles south of Billings, Montana and nine air miles northeast of Lovell, Wyoming. It occupies an area of 37,494 acres in northern Big Horn County, Wyoming and southeastern Carbon County, Montana.

The exact origin of the wild horses within the PMWHR is not entirely known, though there is much supposition. Many claim the horses are descendants of animals the Crow or Shoshone Indians got from the Spanish or other tribes in contact with the Spanish. The Crow had horses in the early 1700s and inhabited the Pryor Mountains before European settlement. Others claim the horses have been there forever. Wild horses within the Bighorn Basin were well documented by the early 1900s. Most likely, the wild free-roaming horses inhabiting the PMWHR are descendants of numerous founding stock.

Genetic tests conducted between 1992 and 2009 by Dr. Gus Cothran identified the Pryor horses as descendants of New World "Spanish" breeds (saddle type horses) descendent from light riding and racing breeds and related to European Iberian breeds. The Pryor horses carry a rare allele variant Qac that is traced back to original New World "Spanish" type horses that were developed from the original Spanish and Portuguese (Iberian) horses that were brought to the Americas. This has resulted in confirmation by many members of the public that this is a unique herd of wild horses and fears that this herd and its genetic make-up could be lost. Wild horses from other wild horse herds were periodically introduced, but this practiced ended in the early 1990s.

Generally, wild horse use tends to shift with forage and water availability and elevation accessibility. Wild horses tend to live in bands or older horses may live solitary. The typical band is led by one dominant mare that controls the day to day activities, unless the stallion feels threatened and moves the band out of an area. A band can range in size from one mare and one stallion to numerous mares and one stallion with their progeny. A bachelor band is typically comprised of young males (though older males may join which have lost their band) that are not yet mature enough to build a band and defeat rival stallions for mares or steal a mare. Typically but not exclusively young males tend to be displaced from the family band upon reaching breeding age.

The PMWHR (Map 29 – Pryor Mountain Wild Horse Range) is a diverse and complex area; topographically, geologically, ecologically and land tenure. It varies in environment and elevation from a sagebrush/salt-shrub dominated cold desert at about 3,850 feet in the Wyoming portion, to a subalpine setting with subalpine fir and open meadows in at the

northernmost portion within Montana at about 8,750 feet. The majority of the range within Montana is a semi-arid cold desert. The area is composed of private, United States Forest Service, National Park Service, and BLM administered lands (see Appendix Q regarding Montana administration of the Wyoming portion of the PMWHR). There are several overlapping designations, including all or portions of three BLM WSAs, one NPS WSA, and one Forest Service recommended wilderness. The other designations are the East Pryor ACEC and the Crooked Creek Natural Area. There are numerous sensitive plants and animals, rare geologic formations, numerous caves, vertebrate and invertebrate fossil beds, high occurrence of archeological resources and American Indian spiritual sites. The area is highly prized for (non-wild horse related) recreational activities. As a result, special management considerations are required to address resource conflicts, be consistent with other agencies' policies or plans, and conform to regulations and laws.

The PMWHR was initially designated by order of the Secretary of the Interior in 1968 (Appendix Q). At that time, the PMWHR encompassed BLM and NPS lands only within Montana. In 1969, another Secretarial Order added approximately 6,400 acres of lands (both BLM and NPS) in Wyoming to the PMWHR. In December 1971, the Wild Free-Roaming Horses and Burros Act became law. The management and protection of all unclaimed wild horses and burros was delegated to the secretaries of the Interior and Agriculture. The BLM and USFS were charged with administration of the Act. In 1974 and 1975, the range was expanded pursuant to authority contained in the Wild and Free-Roaming Horses and Burros Act which directed the BLM and Forest Service to manage wild horses "where presently found." (Map 30 – Herd Area Map)

Adjustment to the range occurred once again in 1984 with the temporary inclusion of the Sorenson Extension (using two five year special use permits) from the Bighorn Canyon National Recreation Area (BCNRA) and closure of the administrative pastures for gathering purposes.

In 1990, the last adjustment occurred when the Sorenson Extension was not reauthorized by BCNRA. This resulted in the present boundary that encompasses 37,494 acres (24,595 acres of this area is BLM administered lands).

3.9.1 Population and Resource Management

The BiFO protects, manages, and controls wild horses within the PMWHR under the authority of the 1971 Wild Free-Roaming Horses and Burros Act (as amended by Congress in 1976, 1978, and 2004). One of the BLM's key responsibilities under the Wild and Free-Roaming Horse and Burro Act (as amended) is to manage for a "thriving natural ecological balance" (TNEB). This mandate is typically achieved by balancing the wild horse population within the available resources through the appropriate management level (AML) to protect the range from deterioration while maintaining multiple-use relationships.

The long term average population of wild horses has been 159 wild horses. The population has varied from 87 wild horses to 195 wild horses. In 1978 an ice storm and limited forage resources resulted in a large die-off resulting in the lowest documented population wild horses. Gathers and removals have been the most widely used tool to achieve a TNEB. Removals historically have occurred on average every other year. Over 600 wild horses have been

removed from the PMWHR since its establishment. Once an animal is removed it is typically offered for adoption. Every wild horse removed from the PMWHR has been placed.

Since 2001 fertility control has been utilized. Fertility control vaccine has been applied from a total of 5 mares in a year to currently 70-80% of the mare population. In 2003 and 2004 there was a loss of the nearly the entire foal crops. This has been attributed to predation and to poor forage production from drought that may have resulted in low milk production of lactating mares. The absolute cause was not definitively determined.

The Pryor Mountain Herd Management Plan (HMAP) (HMAP, BLM-MT-PT-84-019-4321/June 1984) and the Billings Resource Area Management Plan (September 28, 1984) established an initial stocking rate (appropriate management level) for the range at 115-127 wild horses. The 1984 HMAP also identified managing for "Pryor characteristics", which include aspects such as selection for a younger herd or even sex ratio. The HMAP was revised in July 1992 and re-established the appropriate management level (AML) at 85-105 adult horses (MT-025-2-18).

The PMWHR HMAP and Environmental Assessment issued May 2009 made a management shift to focus on habitat enhancement through range projects (waters, fences and riparian), and management of vegetative communities. The population management would utilize gathers, fertility control, and natural controls to maintain an appropriate management level (AML) of 90-120 wild horses (excluding foal crop). Within the population itself the management focus is to conserve traits, genetic diversity, maintaining Spanish characteristics, and bloodlines within the herd.

A wild horse population above the appropriate management level (AML) resulted in the same areas of the PMWHR being over-utilized annually. The result is deterioration of range resources and reduced carrying capacity of the land. Conversely mid-slope areas, within the PMWHR have remained relatively un-impacted by wild horse grazing. Many areas of the PMWHR are unavailable for grazing due to slope (cliffs) or provide little or no forage due to the type of ecological site potential such as the mountain mahogany belt and the Douglas-fir forest. If the PMWHR had uniform use the potential carrying capacity in 1984 was determined to be 179 wild horses. Since that time in 2004 the potential carrying capacity was determined to be 142 wild horses a reduction in potential capacity of 37 wild horses or 444 animal unit months. (Map 29 – Pryor Mountain Wild Horse Range)

3.10 Cultural and Heritage Resources

Cultural resources are definite locations of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional, cultural, or religious importance to specified social and/or cultural groups. Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identification, protection, and utilization for public benefit.

Cultural resources are assessed for integrity or as having unique qualities that make the resources eligible for the National Register of Historic Places (NRHP), which provides for

management and protection of these resources. There are three main standards that a cultural resource must meet to qualify for listing on the NRHP: age, integrity, and significance. To meet the age criteria, the resource generally must be at least 50 years old. To meet the integrity criteria, the resources must possess integrity of location, design, setting, materials, workmanship, feeling, and association. Finally, the resources must be significant according to one or more of the following criteria:

- **Criterion A –** Be associated with events that have made a significant contribution to the broad patterns of our history; or
- **Criterion B –** Be associated with the lives of persons significant in our history;
- **Criterion C –** Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- **Criterion D –** Have yielded, or may be likely to yield, information important in prehistory or history.

3.10.1 Cultural History Overview

The Billings Field Office planning area is situated within the area known as the Northwestern Plains, although portions of the area also include the eastern slope of the Rocky Mountains (Beartooth Range) and several island mountain ranges, including the Pryor Mountains, Crazy Mountains, Big Snowy Mountains, Little Snow Mountains, and Bull Mountains. The prehistory and history of the Northwestern Plains generally include five cultural periods: Paleoindian, Middle Prehistoric, Late Prehistoric, Protohistoric, and Historic. Within the prehistoric periods are various complexes, phases, and sub-phases.

3.10.1.1 Paleoindian (11,500 B.P. to 7,500 Before Present [B.P.])

Paleoindian groups were nomadic and traveled over large areas to hunt big game (e.g., mammoth) using heavy thrusting or throwing spears tipped with stone points. Climatic conditions during the early part of the period were cooler than today, but became warmer and possibly drier towards the end of the period. Populations were small and sites were occupied on a short-term basis. Dominant projectile point styles appear to have been a number of large, concave-based, lanceolate forms. Some of the points were fluted. Several point types have been named (Clovis, Folsom, Goshen, Midland, Plainview), and cultural complexes or phases often have been named on the basis of the point style. During the end of the Paleoindian period, the development of two separate economic strategies begins to appear on the Northwestern Plains. One included broad-spectrum hunting and gathering in the mountains while the other was a communal bison hunting pattern on the open plains.

3.10.1.2 Middle Prehistoric (7,500 B.P. to 1,800 B.P.)

The early part of the Middle Prehistoric (8,000 to 5,500 B.P.) occurred during a relatively dry climatic episode referred to as the Altithermal. Early Middle Prehistoric populations moved

into mountain, foothill, and river valley regions where resources were abundant and tended to concentrate in areas with dependable water sources. Subsistence strategies generally are similar to late Paleoindian groups, with an emphasis on big game hunting. Projectile point styles generally are smaller than Paleoindian forms and often incorporated broad side notches. A significant technological innovation, the spear thrower or atlatl, replaced thrusting spears during the early Middle Prehistoric.

During the middle of the period (5,500 B.P. to 3,000 B.P.) groups began to adopt increasingly specialized subsistence and settlement strategies. The regional climate shifted from the hot and dry conditions of the Altithermal to the Sub-boreal climatic episode of cool and moist conditions. The improved climatic conditions led to increased resource availability, which in turn led to increases in the number of sites and an expansion in geographical distribution to access seasonal resources. Prehistoric people of this time exploited big game such as bison, elk, and bighorn sheep, and smaller animals such as foxes, birds, and rabbits. Grinding slabs and manos, in addition to roasting pits and cooking hearths, indicate an increase in plant resources. Projectile points take on a range of forms from the un-notched McKean lanceolate to side-notched, corner-notched, and corner-removed Duncan and Hanna variants.

Cool and wet conditions associated with the Sub-altithermal climatic episode occurred during the transition to the late Middle Prehistoric (3,000 B.P. to 1,800 B.P.). Settlement and subsistence strategies are similar to the middle period, with bison as the main focus of hunting. The atlatl and dart remain as the weapon of choice, but McKean complex points are replaced by several varieties of corner-notched styles associated with the Pelican Lake complex. Near the end of the late Middle Prehistoric, medium to large side-notched projectile points associated with the Besant complex begin to replace Pelican Lake forms. Besant people developed highly specialized communal hunting techniques and also were the first cultural group to have constructed and used ceramic vessels. Groups continued to occupy river valley and foothill settings, while also devoting more time and attention to the prairies. This change of focus is illustrated by the adoption of communal hunting techniques and development of the tipi.

3.10.1.3 Late Prehistoric Period (1,800 B.P. to 200 B.P.)

The Late Prehistoric Period is characterized by an increased specialization toward upland living and utilization of open prairie resources, including bison and pronghorn. Prehistoric populations lived in the upland areas for most of the year, specifically on bluff edges and high terraces overlooking river or creek valleys. Smaller social groups or family units used lowlands and forested areas for shorter intervals to collect plants and gather wood for tipi poles, and for quarrying and seasonal hunting. At this time, the introduction of the bow and arrow occurs, as well as a more widespread though still relatively rare use of pottery.

Cultural complexes associated with this period are Avonlea and Old Womens. During the Avonlea (1,450 B.P. to 950 B.P.), the use of the bow and arrow became more widespread, with an increased focus on bison as a primary resource. Communal bison hunting was the main economic pursuit of Avonlea people, and bison trapping in thaws, breaks, and corrals were favored strategies. Avonlea points have low and very shallow side notches and typically have concave bases.

The basic adaptation of the Old Womens phase (1,050 B.P. to 200 B.P) was an extreme specialization on upland living and communal hunting of upland game animals, principally bison. Old Womens points are side notched, but corner-notched, tri-notched, and un-notched styles also are present. Groups using Old Womens points still carried out special purposes and activities in lowland resources and locations; but the vast majority of sites are in open upland spots, which indicate a commitment to year-round occupation. The use of tipis is more common during this phase compared to the Avonlea phase.

3.10.1.4 Protohistoric Period (200 B.P. to 50 B.P.)

The Protohistoric Period is characterized by non-Indian immigration, trade of European items (e.g., glass beads, brass pendants, musket balls), and the introduction of the horse and guns. Of all the trade items, the horse had the greatest impact on Native American cultures. With acquisition of the horse, groups were not tied to upland living for their main subsistence, which led to larger winter villages in lowland valleys. The increased opportunity to chase bison herds on horseback also led to a decline in communal bison drives.

The main subsistence strategy during this period still was bison hunting, but other options were available. Trading for goods and transporting goods by horse allowed for economic opportunities not previously possible to the tribes. Trapping and fur trading also became a subsistence alternative for some tribal groups. Guns were available through the trading posts established along many of the major rivers; however, a muzzle-loading firearm was difficult to reload on horseback, so the bow and arrow was used more often for hunting. During this time, metal points replaced many of the previous stone projectile points.

3.10.1.5 Historic Period (A.D. 1700 to the present)

The Historic Period distinguishes itself from previous periods with the introduction of mining, railroads, homesteading, farming, and ranching. A relatively large influx of people to the area also occurred during this time, as well as a concentrated land use that initially involved agricultural activity. Early expeditions and campaigns that mapped the land did so in order to provide a guide for land expansion and to expand communication and commerce to the Pacific Coast. Early missionaries and the Lewis and Clark expedition were followed by trappers, traders, pioneers, miners, and homesteaders. This focus on land ownership and intensive use of the environment dramatically changed the landscape. Consequently, the native populations became displaced and eventually were moved onto reservations.

The Homestead Act of 1862 offered free government land to all American citizens and provided farmers with 160 acres of land for a filing fee after fulfilling a five-year period of "proving-up." Contrary to the advertisements, the soil was poor and the seasons were dry. As a result, irrigation was necessary. New techniques for dry farming allowed for some farming and ranching success; however, most ranches and farms required large amounts of water, which resulted in the development of dams and diversions to supply water for these industries. Various phases of homesteading acts and land offerings continued to draw people into the area.

In 1869, the first transcontinental line (Union Pacific-Central Pacific) traveled over the old Oregon-California Trail. The rail line facilitated movement west and transport of goods east; it also put more pressure on the land to provide goods for markets. A total of 44 million acres

were granted to the railroad. Of those, 17 million were in Montana territory, making the railroad the second largest landowner in the state after the federal government. Since railroads were granted large tracts of land for construction purposes, the railroad companies sold these tracts off to businesses and individuals interested in settling the area. Many banks and land holding companies bought large tracts of railroad land, and in turn sold them to prospective farmers. In September 1877, five bands of Nez Perce fleeing the U.S. Army passed through the planning area followed by several elements of the U.S. Calvary.

The need for oil and gas soon developed, and in Montana many of the earliest discoveries did not result from drilling, but rather by witnessing natural oil seeps. The first significant oil field in the planning area was discovered in 1915. In addition, small coal mines and fields were opened in the area to accommodate mining industries, and then later for the coal-fired, steam-powered railroads. Coal is now Montana's leading energy resource. Currently, these industries are the primary users of the land, along with growing tourism and residential use.

3.10.2 Site Types

Cultural resources in the planning area have been classified according to one or more site types. Site types are groupings of sites with similar physical or cultural characteristics. Complete information may not be readily available during the original recordation to determine the functional or cultural site type. Consequently, some sites may be re-categorized after additional research. Sites fitting into more than one category usually are more complex and have more information potential than do single-category sites. At the broadest level, cultural resources are categorized as either prehistoric or historic.

3.10.2.1 Prehistoric Site Types

Prehistoric sites can be associated with one or more broad thematic periods: Paleoindian, Middle Prehistoric, Late Prehistoric, and Protohistoric. There are prehistoric sites within the planning area from each period. Table 3-35 lists the prehistoric site types documented in the planning area.

Table 3-35 Prehistoric Site Types

Site Type	Description
Tipi Ring, Stone Circles, and Ring Sites	This is a relatively common site type in the planning area and includes circles of stones interpreted as having been used to hold down tipi lodge covers. Tipi rings are conjoining stones in circular to ovoid configurations. Some large circles or ovals, which may not actually represent domestic lodges, may be evidence of medicine lodges, dance lodges, and other ceremonial or specialized structures.
Conical Timber Lodge	Conical timber lodges are often stand-alone structures made of a ring of upright poles around a central post with wood and bark inlayed between the uprights. Few artifacts typically are associated with the lodge and the use of the lodge is unknown.
Lithic Scatters/Chipping Stations	The term "lithic scatter" is very broadly applied to a range of sites containing stone cultural material. These may be sites representing the remains of limited chipped stone tool manufacture or repair, generally viewed as having temporary or short-term use and low information value, or sites with a greater variety of artifacts, features, and attributes, as well as unknown depositional characteristics.

Table 3-35 Prehistoric Site Types

Site Type	Description
Fire Hearths, Roasting Pits, and Fire-cracked Rock	Those sites with any combination of these features include lithic scatters and tipi ring sites. Hearths are remains of a feature where humans purposely used fire. This includes clay or rock-lined fire pits, ash pits, roasting pits, ash stains, and fire-cracked rock concentrations or scatters.
Cairns and Rockpiles	This site type includes piles of rocks ranging in size from a few stones to larger cairns up to three meters in diameter. The function of cairns and rockpiles has not been clearly demonstrated; however, some argue that larger cairns may have served as ceremonial or other important functions such as burials and trail markers, and to commemorate people or events. Functions of smaller cairns are even less apparent, though clusters of cairns may represent effigies.
Rock Alignments	Rock alignments generally are linear, straight to curving arrangements of piled stone and of various lengths. Some alignments are known to be part of communal animal kill sites and are referred to as drive lines which were used to steer animals in the direction of the kill site. The function of other shorter linear alignments is not clear.
Communal Kill Sites	These sites are noted as ambush game drives, buffalo jumps, bison pounds or traps, or other kill sites including processing areas. The sites primarily are defined by the occurrence of high numbers of animal bone, generally in a bone bed, and a high density of hunting and butchering tools in the artifact assemblages.
Vision Quest Structures and Medicine Wheels	Vision quest sites and medicine wheel sites are considered linked to ceremonial and religious activities. The sites typically are a u-shaped or oval stone feature forming low enclosures. Vision quest sites often are found on prominent parts of the landscape, such as mountains, bluffs, hills, cliffs, rock outcrops, and buttes. Medicine wheels also are structures constructed of piled and placed stones and have at least two of the three general elements: 1) a central stone cairn; 2) one or more concentric stone circles; and/or, 3) two or more stone lines radiating outward from a central point.
Eagle Catching Pits/Traps, Battle Pits, Other Pits, Lookouts, and Fortifications	These site types are defined by reference to the ethnographic and ethnohistoric record, which constitutes the basis of their inferred function. Descriptions of eagle-catching techniques also are recorded in ethnographies and ethnohistoric documents, and their descriptions often are used to infer function of some features based on form and location.
Lithic Procurement Sites/Quarries	Lithic procurement sites are classified under the site type headings of bedrock or surface quarry. Bedrock quarries are defined by the existence of bedrock exposures at the sites; whereas, surface quarries are defined by areas where lithic material occurs as “free rock” in cobble, nodular, or pebble form. Primary chert quarries tend to be located along the sides of mountains where the material is found in outcrops. Any material that was carried into an area by a natural agent is a secondary quarry, such as basalt found in ancient and present-day river beds.
Rockshelters/Caves	Rockshelters consist of a rock outcrop or large boulder that provides shelter from wind, sun, rain, and other elements.
Rock Art Sites	Aboriginal rock art sites include petroglyphs (incised or pecked images) and pictographs (painted images). Rock art is found on rock outcrops, cliffs, or rock shelters, but also is found on irregular boulders that range in size from a half meter to several meters in diameter.
Other Rock Structures, Circular Walls	Piled, stacked, or placed stone features described as unusual or unlike known feature types are included in this category. Features described as possible rings, circles, or vision quests also are included in this category.
Trails	Documentation of actual use of a trail or trail system during prehistoric time is difficult, and evidence used to support such use is often circumstantial. Documented use of a trail during historic times often is used to argue use during the prehistoric times. Some linear arrangements of cairns may mark trail systems. Linear clusters or concentrations of archaeological sites along

Table 3-35 Prehistoric Site Types

Site Type	Description
	prominent landforms (e.g., high ridges, river valleys) may indicate prehistoric trail use.

3.10.2.2 Historic Site Types

Historic sites are cultural resources with a period of significance between approximately A.D.1700 to the present. Since features such as ditches, fences, and houses cannot be understood or interpreted outside the functional complex of which they are a part, historic resources are grouped into several themes. Table 3-36 lists the historic site types documented in the planning area.

Table 3-36 Historic Site Types

Site Type	Description
Ranching	The ranching theme includes features resulting from the raising of domestic livestock, such as fences, water developments, cabins, corrals, outbuildings, roads, foundations, cattle camps, and sheepherder monuments.
Farming	The farming theme includes features resulting from raising crops, such as wells, windmills, barns, sheds, cisterns, farm implements, canals, ditches, and residences.
Mining	The mining theme includes features resulting from exploration and extraction of mineral resources such as shafts and adits, drill sites, prospect holes, tailing dumps, waste rock piles, ore bins, loading chutes, residences, and other buildings.
Transportation	The transportation theme includes features resulting from attempts to transport people or goods, such as abandoned rail lines, railroad grades, construction camps, bridges, roads, trails, and remains of river navigation.
Government Management	The government management theme includes features resulting from government attempts to manage the land and its resources. Many of these features are the result of Civilian Conservation Corps activities in the 1930s. These include dams, fences, land treatments or manipulations, spring developments, roads, fire lookouts, culverts, and bridges.
Military	The military theme includes features resulting from increased conflicts with native populations and trafficking of trade goods, such as military fort sites, supply depots, and fur trading posts.

3.10.3 Cultural Resource Existing Conditions

A total of 1,072 cultural resources inventories have been conducted within the planning area covering 335,363 acres (approximately 4.5 percent of the planning area). These inventories include Class I (files search) and Class III (pedestrian) inventories, site testing, evaluation of NRHP eligibility, and mitigation of adverse effects through data recovery or other forms of mitigation. Most recently, the BLM completed a Class I overview of the planning area that reviewed and summarized past cultural resources investigations, the numbers and kinds of recorded resources, and cultural resources management directions (Harris et al. 2009). The information presented in this section is primarily derived from the Class I overview.

Investigations to date have recorded a total of 3,255 cultural resource sites within the planning area. This results in an average of 0.009 total sites for approximately every acre inventoried or

6.3 sites per square mile for all inventoried acres in the planning area. Of the 3,255 sites, 1,440 are prehistoric and 1,775 are historic. The distribution of the prehistoric sites recorded in the planning area averages 0.004 sites per every acre surveyed or 2.8 sites per square mile inventoried. Lithic scatters are the most numerous prehistoric site type followed by tipi ring sites and then petroglyphs. For historic sites, the average is 0.005 sites per acre inventoried or 3.4 sites per square mile inventoried. The most common historic site types include residences followed by homesteads/farmsteads, railroads/stage routes, and Euroamerican sites.

Of the 3,255 cultural resources sites recorded in the planning area, a total of 846 sites are located on BLM-administered lands. Site density is 5 sites per square mile. The dominant historic site types include homesteads/farmsteads, followed by Euroamerican sites, railroads/stage routes, and residences. For prehistoric sites, lithic scatters are the dominant site type with petroglyphs a distant second.

3.10.3.1 Cultural Resource Condition and Trend

The condition and trend of cultural resources in the decision area vary considerably as a result of the diversity of terrain, geomorphology, access and visibility, and past and current land use patterns. Since recorded sites are manifested by discovery of exposed artifacts, features, and/or structures, they are easily disturbed by natural elements such as wind and water erosion, natural deterioration and decay, as well as animal and human intrusion, and development and maintenance activities. Based on limited site monitoring, the site conditions in the decision area are considered to be trending downward. Indications of active vandalism or collecting (i.e., unauthorized digging and "pothunting") have been observed in limited instances. Archaeological and historic sites are known to be deteriorating from a variety of causes. Many sites are deteriorating from natural causes and many others from the illegal activities of artifact collectors. Inadvertent damage from construction projects also impacts resources. Collectively, these agents have adversely affected and continue to adversely affect many known cultural resources.

3.10.3.2 Cultural Resource Consultation and Current Management

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, requires BLM and other federal agencies to take into account the effects of their undertakings on historic properties (i.e., cultural resources listed or eligible for listing on the NRHP), and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the ACHP. The BLM first determines whether an action is an undertaking, which is defined in Section 106 as a type of activity that could affect historic properties. If the undertaking has the potential to affect historic properties, the BLM must consult with the State Historic Preservation Office (SHPO) to determine the effects and develop appropriate mitigation. If BLM determines that the undertaking would not affect historic properties, then the agency has no further Section 106 obligations.

The BLM National Programmatic Agreement (NPA) among the BLM, ACHP, and National Conference of SHPOs defines the manner in which the BLM will meet its responsibilities under the NHPA. Day-to-day operations are based on the protocols that local BLM offices develop in

each state. In Montana, the State Protocol Agreement between the BLM and Montana SHPO defines how the BLM and SHPO will interact and cooperate under the NPA and provides direction for implementing the NHPA. The BLM 8140 Manual also provides direction for protecting cultural resources from natural or human-caused deterioration and for recovering significant cultural resource data to mitigate adverse effects of proposed undertakings, in accordance with the State Protocol Agreement.

3.10.4 Native American Concerns

Ethnographic resources are associated with the cultural practices, beliefs, and traditional history of a community. Examples of ethnographic resources include places in oral histories or myths, such as particular rock formations, the confluence of two rivers, or a rock cairn; large areas, such as landscapes and viewscapes; sacred sites and places used for religious practices; social or traditional gathering areas, such as dance areas; natural resources, such as plant materials or clay deposits used for arts, crafts, or ceremonies; and places and natural resources traditionally used for non-ceremonial uses, such as trails or camping locations.

3.10.5 Ethnographic Overview

Tribes that historically occupied the planning area are believed to have entered the area during the Protohistoric Period. American Indian tribes likely present in the planning area during this period include the Cheyenne, who had reached the Black Hills by about 1780 and continued to move westward into eastern Montana. The Cheyenne originally were woodland dwellers and later became semi-sedentary agricultural people associated with the ancestors of the Mandan, Arikara, and Hidatsa. Later, the Cheyenne moved westward and became nomadic buffalo hunters on the plains. In the mid-1830s, the Cheyenne divided into northern and southern groups. The Southern Cheyenne split off to trade European goods with whites at Bent's Fort in southeast Colorado, while the Northern Cheyenne formed an alliance with the Sioux and engaged in battles against the Shoshone and Crow.

Other American Indian groups at times occupied portions of the planning area during the Protohistoric Period including the Eastern Shoshone, who occupied eastern Montana during the 1600s and 1700s. By the 1700s, the Gros Ventre and Arapaho were in western North Dakota and likely ranged through extreme eastern Montana. By the 1750s, the Gros Ventre and Blackfeet acquired the horse and guns and began pushing the Eastern Shoshone southward. With acquisition of the horse, the Blackfeet also ventured into the northern part of the planning area. The Kiowa were present in the Black Hills area in the 1500s, but eventually were pressured southward and westward by the Cheyenne, Arapaho, and Lakota Sioux. By 1790, the Kiowa had moved well south of the planning area into the Arkansas River area.

The Crow tribe has the strongest association with the planning area, which lies within their traditional homeland. In the 1500s, the Crow and their close relatives, the Hidatsa, moved west to the Missouri River in present-day North Dakota. Around 1600, the Crow separated from the Hidatsa and entered into what is now Montana. The Crow occupied the Powder and Tongue River valleys, as well as the Yellowstone valley as far west as present-day Livingston. By the 1800s, the Crow were divided into the River Crow, who lived north of the Yellowstone River

in the Musselshell and Judith basins, and the Mountain Crow, who occupied the area south of the Yellowstone, particularly the Absaroka and Big Horn mountains.

One reservation, the Crow Indian Reservation, is adjacent to the planning area. Most members of the Crow tribe live on or near the reservation. The Crow Indian Reservation covers 2.2 million acres between the Wolf, Bighorn, and Pryor Mountains. U.S. Census and Tribal Enrollment records indicate there are 11,357 enrolled tribal members. Of these tribal members, 8,143 live on the reservation. Area schools, the tribal administration, the Bureau of Indian Affairs, Crow/Northern Cheyenne Indian Health Services, and private business are the primary employers on the reservation. The tribe itself owns a number of stakes in natural resources, including land, sand, gravel, water, timber, coal, oil, and methane gas.

3.10.6 Traditional Cultural Properties

3.10.6.1 Background

This plan differentiates among prehistoric cultural resources, historic cultural resources, and tribal heritage resources. Planning for historic and prehistoric cultural resources is discussed in other sections of this plan. This section deals with tribal heritage resources as defined under various authorities, including but not limited to the Federal Land Policy Management Act, the American Indian Religious Freedom Act, Executive Order 13007, the Native American Graves Protection and Repatriation Act, and the National Historic Preservation Act. Under these authorities, the BLM has the responsibility for managing tribal heritage resources, in part, by considering them in land use planning and environmental documentation, and mitigating, where possible, impacts to places or resources important to contemporary American Indians and federally recognized tribes.

Slight differences in definitions among the authorities notwithstanding, these resources can be generally defined as places or resources associated with cultural practices or beliefs of a living community that are rooted in a tribal community's oral traditions or history, and are important in maintaining the continuing cultural identity of the community. In practice, this means identifying, evaluating, and managing: a) ethnohistoric sites, b) traditional use areas, c) sacred sites and ceremonial sites, and d) traditional cultural properties.

Since tribal heritage resources are defined culturally by the people and groups that value them, these resources can only be identified and managed in consultation with the people infusing them with cultural value. In the final analysis and decision making, BLM has the legal authority to determine how these resources will be managed and what, if any, mitigation will be used to avoid unnecessary or undue impacts to these resources.

3.10.6.2 Tribal Consultation

As defined in BLM Manual section 8120, Tribal Consultation is a process of 1) identifying and seeking input from appropriate tribal governing bodies, 2) considering their issues and concerns, and 3) documenting the manner in which the input affects the specific management decision(s) at issue. Federally recognized tribal governments with interests in the planning area include the Blackfeet Nation, the Chippewa Cree Tribe, the Comanchee Tribe, the Crow Tribe,

the Fort Belknap Indian Community (Assiniboine and Gros Ventre), the Fort Peck Tribes (Sioux and Assiniboine), The Kiowa Tribe, the Northern Cheyenne Tribe, the Three Affiliated Tribes: Mandan, Hidatsa, and Arikara, the Spirit Lake Sioux Tribe, the Standing Rock Sioux Tribe, the Turtle Mountain Band of Chippewa, the Lower Brule Sioux Tribe, the Rosebud Sioux Tribe of Indians, the Oglala Sioux Tribe, the Eastern Shoshone Tribe, and the Northern Arapahoe Nation. In areas near the Nez Perce (Nee-Me-Poo) National Historic Trail (NPNHT), the following three tribes associated with the Nez Perce have interests in the planning area; Nez Perce, Confederated Tribes of the Umatilla Indian Reservation, and the Confederated Tribes of the Colville Indian Reservation.

It is important to note that consultation is a good faith effort to identify tribal issues, seek tribal input, and consider the result. There is no requirement for the Billings Field Office to do more than this and no requirement for tribes to respond to Billings Field Office's consultation efforts. The legal requirements of NEPA and other authorities seek information on many areas of tribal knowledge (cultural, religious, or traditional) that are highly confidential and not readily revealed to outsiders. At the land use planning level, tribes are reluctant to share information when they cannot see a direct threat to places and resources they value. These, and other factors, limit the available information on specific locations that could benefit from management attention. As a result, the Billings Field Office must base management on limited information, resulting in a more programmatic approach to prescribing management actions on the basis of sites and resource types.

3.10.6.3 Traditional Cultural Properties

The concept of traditional cultural property has created confusion when dealing with tribal heritage resources because it is commonly used to refer to all types of tribal heritage sites in all legal contexts. The term traditional cultural property was coined in National Register Bulletin 38 to refer to a property that may be eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that: a) are rooted in that community's history, and b) are important in maintaining the continuing cultural identity of the community (Parker and King 1989). Places that may be of traditional cultural importance include, but are not limited to: a rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents; locations associated with the traditional beliefs of an American Indian group about its origins, cultural history, or the nature of the world; or locations where American Indian religious practitioners go, either in the past or the present, to perform ceremonial activities based on traditional cultural rules or practice (Parker and King 1989) and ancestral habitation sites; trails; burial sites; and places from which plants, animals, minerals, and waters possessing healing powers or used for other subsistence purposes, may be taken.

Bulletin 38 has been interpreted to mean that all tribal heritage sites are traditional cultural properties and by definition eligible for the National Register. However, the Bulletin does not assert that all traditional cultural properties are eligible and it describes a process by which they can be determined to be eligible. In fact, the 1992 amendment to the National Historic Preservation Act clarified policy so that "properties of traditional religious and cultural importance to an Indian tribe may be determined to be eligible for inclusion on the National Register." Although the term traditional cultural property is not found in the National Historic

Preservation Act, or its implementing regulations, it has become important for determining eligibility for compliance with Section 106 of the National Historic Preservation Act.

There are regulatory limitations on the National Register eligibility (such as the requirement that a property be a definite location of human activity; with discernible exact boundaries; and be at least 50 years old) that limit its value in a general planning context. Because of this, the concept of traditional cultural properties will be used here only when tribes have specifically identified a resource as a traditional cultural property. This is not to say that the resources discussed here are not eligible for the National Register and thus not subject to Section 106 of the National Historic Preservation Act. They may well be eligible even if not identified as a traditional cultural property by a tribe and subject to Section 106 as a traditional cultural property.

Within the decision area, several locations that are of traditional religious and cultural interest to tribes have been identified through coordination with tribal governments and American Indian individuals with cultural affinity to the decision area. None of the locations were specifically identified as traditional cultural properties and none have been determined eligible for the National Register as traditional cultural properties through consultation with the State Historic Preservation Office. These same locations may meet other criteria as significant ethnohistoric sites, or they may deserve consideration under the American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, or Executive Order 13007. No traditional cultural properties have been nominated but the lack of nomination does not preclude such nominations being advanced in the future.

Properties that have achieved significance only within the 50 years preceding their evaluation are not eligible for inclusion in the NRHP unless "sufficient historical perspective exists to determine that the property is exceptionally important and will continue to retain that distinction in the future." This is an extremely important criteria consideration with respect to traditional cultural values. The fact that a property may have gone unused for a lengthy period of time, with use beginning again only recently, does not make the property ineligible for the NRHP.

A Traditional Cultural Property is eligible for the NRHP only if it meets one or more of the National Register criteria. However, traditional cultural properties are usually listed under Criterion A or occasionally Criterion B for their association with historical events or broad patterns of events. Recognizing a place as eligible for the NRHP as a Traditional Cultural Property or as anything else, does not change its significance, it merely requires that the significance and value of the property be systematically considered in planning and in consultation with those who value it.

No extensive search was made to identify traditional communities other than American Indian; however, no Traditional Cultural Properties have been identified from other communities.

3.10.6.4 Traditional Cultural Properties Existing Conditions

Within the decision area, several geographic locations have been identified through coordination with tribal governments; however, the geographical locations either do not meet the NRHP eligibility criteria for Traditional Cultural Properties or they have not been

evaluated. These geographic locations may meet other criteria as significant ethnohistoric sites, or they may deserve consideration under the American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, or Executive Order 13007 (Sacred Sites). No Traditional Cultural Properties have been formally documented and/or evaluated within the decision area.

3.10.6.5 Traditional Cultural Properties Condition and Trend

Since there are no Traditional Cultural Properties formally documented and/or evaluated within the decision area, no information on condition or trend of such properties is available.

3.11 Paleontological Resources

The BLM has authority to manage and protect paleontological resources under the Paleontological Resources Preservation Act (PRPA) of 2009 (P.L. 111-011 Title VI Subtitle D). PRPA directs the BLM to manage, protect, and preserve paleontological resources using scientific principles and expertise as well as provide for public education and awareness, scientific research, curation, and other proactive efforts.

With the passage of PRPA, the BLM now has official direction from Congress to manage paleontological resources. Prior to this, the BLM's Paleontological Resource Management policy was guided by internal policies and directives (that were subject to change) and governed by vague language in NEPA (1969) and FLPMA (1976). The BLM's Paleontological Resource Management policy, which pre-dates PRPA, is outlined in Manual Section 8270 and Handbook H-8270-1. Some portions of the documentation are superseded by BLM Instruction Memorandums: specifically IM 2008-009 supersedes Handbook section II.A.2 and IM 2009-011 supersedes Handbook sections III.A and III.B.

Paleontological resources are defined in the Paleontological Resources Preservation act as "any fossilized remains, traces, or imprints or organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth…," excluding archaeological and cultural resources (P.L. 111-011, Title VI, Subtitle D, Section 6301 et. seq.). The distribution of paleontological resources is directly related to the distribution of sedimentary geologic units exposed on the ground surface, and this relationship allows prediction of fossil potential on a formation-wide scale.

The term "fossil" refers to the remains of traces of an organism preserved by natural forces in the earth's crust. It does not include what are commonly known as "fossil fuels" such as coal, bitumen, lignite, or tar sands. Fossils are integrally associated with specific geologic formations and may occur throughout those formations. For this reason, the condition of paleontological resources is directly linked to soil and landform stability.

A Class I Overview of the BLM Billings Resource Management Plan Area: including portions of Big Horn, Carbon, Golden Valley, Musselshell, Stillwater, Sweet Grass, Wheatland, and Yellowstone Counties, Montana and portions of Big Horn County, Wyoming; Volume 2: Paleontological Resources (Hanna 2009) was written as part of this RMP/EIS. This Class I overview of paleontological resources reviewed published literature and museum records forms as the primary foundation for the paleontological overview.

3.11.1 Paleontological Overview

Paleontological resources consist of fossil-bearing rock formations containing information that can be interpreted to provide a further understanding about Montana's past. Fossil-bearing rock units underlie the entire planning area. While fossils are relatively rare in most rock layers, there are seven geologic rock units within the planning area that do contain significant fossil material. Rock units that are known to contain fossils are the Tullock and Ludlow Members of the Fort Union Formation, the Judith River, Hell Creek, Morrison and Cloverly Formations, the Lakota Sandstone Formation, and the White River Group.

The Morrison, Hell Creek, Cloverly, and Lakota Sandstone formations are noted for the occurrence of dinosaur fossils. The Bridger Fossil Area ACEC, a 575-acre site located in Carbon County on BLM administered surface, contains outcrops of both the Cretaceous Period Cloverly Formation and the Jurassic Period Morrison Formation. Outcrops of the Morrison Formation within the Bridger Fossil Area ACEC have yielded the fossil remains of numerous juvenile and subadult sauropods. The Bridger Fossil Area ACEC is one of two listed National Natural Landmarks within the Billings Field Office area.

The Judith River Formation preserves the fossil record from ancient environments including shallow oceans, deltas, rivers, freshwater swamps and lakes. The Judith River Formation contains the fossil remains of plants as well as many animal species including mollusks, fish, amphibians, lizards, small mammals, dinosaurs, and other reptiles.

The Cretaceous Period Hell Creek Formation preserves the fossil record of a subtropical to tropical environment that was characterized by low plains interrupted by broad swampy bottoms and deltaic areas. Fossil remains from the Hell Creek Formation include a wide variety of plants, mollusks, fish, amphibians, reptiles, birds, small mammals, and dinosaurs. Fossil dinosaur remains include *Triceratops, Anatosaurus, and Tyrannosaurus.* The fossil record of plant and animal communities found within the Hell Creek Formation varies between low moist areas and the drier, upland plains environments that were present in the past. The Castle Butte ACEC, located in Yellowstone County within the Billings RMP area, contains outcrops of the Hell Creek Formation, which are noted for their paleontological resources.

The contact between the Cretaceous Period Hell Creek Formation and the Paleocene Tullock/Ludlow Member of the Fort Union Formation marks an important event in time. This contact represents a time of worldwide extinction for many animals, most notably the dinosaurs, and the beginning of the rapid evolution of mammals. The fossil record from the Fort Union Formation contains evidence of ancient environments that include streamside swamps, bottomlands, and well-established river courses. Fill within ancient river channels contains fossils of fresh water clams and snails. The Tullock/Ludlow Member is the primary fossil-bearing unit of the Fort Union Formation and contains fossils of turtles, fish, reptiles and mammals.

The Tertiary Period White River Group is considered an important source of fossil mammals. Although the White River Group outcrops in the planning area, the majority of the fossil-bearing areas are in the Dakotas.

3.11.2 The Fossil Record

A fossil is defined as the remains, trace, or imprint of a plant or animal that has been preserved in a geologic context. With proper collection and study, paleontological resources allow the reconstruction of past life on Earth. Fossilization is the exception rather than the rule, and fossils are inherently rare.

3.11.2.1 Vertebrate Fossils

Vertebrate fossils can occur as isolated elements, bonebeds, or individual skeletons. Isolated elements are by far the most common and include complete to partial bones and teeth. Bonebeds are concentrations of vertebrate remains (bones and teeth) in a discrete geologic layer. They can contain a wide variety of species or predominantly one species, and remains can be disarticulated, partially articulated, or fully articulated.

Microvertebrate concentrations are also called vertebrate microfossil localities or "microsites." Microsites are concentrations of small pieces of disarticulated material that are usually more resistant to weathering and transport (e.g. teeth, scales, scutes, and compact bone).

3.11.2.1.1 Vertebrate Trace Fossils

According to BLM definitions, vertebrate trace fossils are considered to be vertebrate remains: "Vertebrate Fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites, gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities." Eggshells and eggs have also been classified as vertebrate trace fossils.

3.11.2.2 Nonvertebrate Fossils

Nonvertebrate fossils can occur alone or in association with vertebrate remains, and include invertebrates, plants (paleobotanicals), and nonvertebrate trace fossils. Plant fossils occur as leaf compressions and impressions, petrified wood, seeds, cones, spores, pollen, and amber. Nonvertebrate trace fossils include plant casts and molds (e.g. root casts, seed molds) and invertebrate traces.

3.11.2.3 Paleontological Localities

A total of 501 paleontological localities are documented to occur in the Billings Field Office planning area. The paleontological resources occur in all counties, and the 501 documented localities are distributed as follows:

- Big Horn, Montana = 3
- Big Horn, Wyoming = 31
- Carbon = 240
- Golden Valley = 15
- Musselshell = 45
- Stillwater = 8
- Sweet Grass = 65
- Wheatland = 69
- Yellowstone = 25

Land ownership is known for 446 of the 501 documented paleontological localities, which is as follows:

- BLM = 184
- BLM/private = 13
- State = 17
- State/private = 5
- Private = 227

Legal descriptions for the remaining 55 localities were either unavailable, unknown, or could not be determined. The majority of paleontological documented in the Billings Field Office planning area for which land ownership is known occur on private surface ownership.

Of the 501documented paleontological localities, 380 are vertebrate fossil localities and 121 are nonvertebrate (invertebrate or paleobotanical) localities. Some vertebrate localities may also contain invertebrate, paleobotanical, or trace fossil material.

3.11.2.4 Potential Fossil Yield Classification

The Potential Fossil Yield Classification (PFYC) system (WO-IM-2008-009) is used to classify paleontological resource potential on public lands in order to assess possible resource impacts and mitigation needs for federal actions involving surface disturbance, land tenure adjustments, and land-use planning. This classification system is based on the potential for the occurrence of significant paleontological resources in a geologic unit and the associated risk for impacts to the resource based on federal management actions. It uses geologic units as base data.

The PFYC system predicts the potential occurrence of paleontological resources based on the distribution of geologic units. This is possible because the potential for paleontological resources is directly related to the distribution of sedimentary geologic units exposed on the ground surface. Consequently, this relationship allows the prediction of fossil potential on a formation –wide scale. Each formation contains its own suite of fossil types, and can be classified according to its potential fossil yield as Class 1, Class 2, Class 3, Class 4, or Class 5 (Table 3-37).

Table 3-37 Potential Fossil Yield Classification

PFYC Class	Potential
Class 1	Very Low Potential for Paleontological Resources
Class 2	Low Potential for Paleontological Resources
Class 3	Moderate (3a) or Unknown Potential (3b) for Paleontological Resources
Class 4	High Potential for Paleontological Resources
Class 5	Very High Potential for Paleontological Resources

Assignment of these classes provides a foundation for general management decisions and new project planning, by indicating what level of management concern is warranted. The PFYC system can also be used to predict if proposed projects should include paleontological resource assessment or mitigation. Table 3-38 breaks out the PFYC acres for the planning area, BLM administered surface, and BLM administered federal mineral estate (also see Map 35).

Table 3-38 Potential Fossil Yield Classification Acres

	Class 1	Class 2	Class 3a	Class 3b	Class 4	Class 5
PFYC Acres Billings Field Office Planning Area	582,841.7	2,814,621.8	2,463467.0	399,230.5	162,746.4	4,207,664.2
PFYC Acres BLM Administered Surface	8,349.4	110,430.9	62,696.4	20,421.7	10,941.5	216,910.6
PFYC Acres BLM Administered Federal Mineral Estate	46,754.5	143,442.5	125,503.2	37,115.3	18,939.4	297,154.5

The potential for paleontological resources is directly related to the distribution of sedimentary geologic units exposed on the ground surface, and this relationship allows prediction of fossil potential on a formation-wide scale. Sedimentary geological deposits of Precambrian (Proterozoic Period), Paleozoic (Cambrian, Ordovician, Devonian, Mississippian, Pennsylvanian, and Permian periods), Mesozoic (Triassic, Jurassic, and Cretaceous periods), and Cenozoic (Tertiary and Quaternary periods) age occur within the BLM Billings Field Office planning area boundaries. Each geologic unit contains it own suite of fossil types, and is classified according to its paleontological potential using the BLM's Potential Fossil Yield Classification (PFYC) system. These classes provide a foundation for general management decisions, and new project planning, by indicating what level of management concern is warranted (Table 3-39).

Table 3-39 Geologic Formations Present in the Planning Area

Formation Age	Formation Name	Management Concern	Potential Fossil Yield Classification
Precambrian Belt Supergroup	Helena Formation	Moderate	Class 3
	Wallace Formation	Very low	Class 1
Cambrian	Flathead Formation	Low	Class 2
	Wolsey Formation	Moderate	Class 3
	Meagher Formation	Moderate	Class 3
	Park Formation	Moderate	Class 3
	Pilgrim Formation	Moderate	Class 3
	Snowy Range Formation	Moderate	Class 3
	Grove Creek Formation	Moderate	Class 3
Ordovician	Bighorn Dolomite	Moderate	Class 3(b)
Devonian	Maywood Formation	High	Class 4
	Three Forks Formation	Moderate	Class 3
	Beartooth Butte Formation	High	Class 4
	Jefferson Limestone	Moderate	Class 3(b)
Mississippian	Charles Formation	Low	Class 2
	Kibby Formation	Low	Class 2
	Mission Canyon Formation	Moderate	Class 3
	Lodgepole Formation	Moderate	Class 3
	Otter Formation	Moderate	Class 3
	Heath Formation	Very High	Class 5
Pennsylvanian	Amsden Group	Moderate	Class 3
	Alaska Bench Formation	Moderate	Class 3(b)
	Devils Pocket Formation	Low	Class 2
	Quadrant (Tensleep) Formation	Low	Class 2
Permian	Phosphoria Formation	High	Class 4
Triassic	Chugwater Formation	Low	Class 2
	Dinwoody Formation	Moderate	Class 3
Jurassic	Ellis Group (undivided)	High	Class 4
	Piper (Gypsum Spring) Formation	Moderate	Class 3
	Rierdon (lower Sundance) Formation	High	Class 4
	Swift (upper Sundance) Formation	Moderate	Class 3(b)
	Morrison Formation	Very High	Class 5
Cretaceous	Cloverly/Kootenai Formation	Very High	Class 5
	Fall River Sandstone	Moderate	Class 3(a)
	Greenhorn Formation	Low	Class 2

Table 3-39 Geologic Formations Present in the Planning Area

Formation Age	Formation Name	Management Concern	Potential Fossil Yield Classification
	Carlile Formation	Moderate	Class 3
	Thermopolis Shale	High	Class 4
	Mowry Shale	Moderate	Class 3(a)
	Telegraph Creek Formation	Moderate	Class 3(b)
	Livingston Group	Moderate	Class 3
	Belle Fourche Shale	Moderate	Class 3(a)
Cretaceous *(continued)*	Frontier Formation	Moderate	Class 3
	Niobrara Formation	Moderate	Class 3(a)
	Eagle Sandstone	Moderate	Class 3(a)
	Claggett Shale	Moderate	Class 3(a)
	Judith River Formation	Very High	Class 5
	Bearpaw Shale	Moderate	Class 3(a)
	Hell Creek (Lance) Formation	Very High	Class 5
	Lennep Formation	Moderate	Class 3
Tertiary	Sedimentary deposits	High	Class 4
	Wasatch Formation	Moderate	Class 3(a)
	Fort Union Formation	High	Class 4
Quaternary-Tertiary	Terrace deposits	Moderate	Class 3
Quaternary	Alluvium	Moderate	Class 3
	Glacial deposits	Low	Class 2
	Glacial lake deposits	Moderate	Class 3(a)
	Cave deposits	High	Class 4

3.11.2.5 Paleontological Resource Condition and Trend

Paleontological localities are areas of known paleontological resources with defined boundaries, usually associated with excavation and data recovery efforts (e.g., Mother's Day Site, Crooked Creek Natural Area, Crooked Creek Natural Area National Natural Landmark, Bridger Fossil Area ACEC, and Bridger Fossil Area National Natural Landmark). A comprehensive paleontological inventory has not been carried out for the decision area; nevertheless, academic and private industry personnel have studied paleontological resources in various contexts. At least 40 groups and institutions from the 1850s to present have collected fossils in the planning area. Fossils recovered from these localities represent a diverse array of paleobotanicals, invertebrates, and vertebrates. Scientific activity has occurred during the past several years, and there are currently active paleontological use permits issued for the public lands in the planning area.

The BLM identifies the following use or value categories for paleontological sites: scientific, educational, and recreational. BLM permit requirements emphasize the scientific value of vertebrate remains, and a permit is required for collection of vertebrate remains and trace fossils. In addition, a permit is required for the collection of scientifically significant invertebrate and plant paleontological resources. In conjunction with their scientific use, some educational uses of vertebrate fossils are appropriate. For example, many BLM Paleontological Resources Use Permit holders involve students during data collection, specimen recovery, and preparation. Federally owned fossils can also be used in exhibits or as teaching aids. All paleontological resources remain federal property whether in situ or in a museum collection. Collection of any paleontological resources on BLM managed public lands cannot occur without a permit. The exception is for casual collecting of common invertebrate and plant paleontological resources on BLM managed lands for recreational purposes. Casual collecting is defined by the PRPA as the collecting of a reasonable amount of common invertebrate and plant paleontological resources for non-commercial personal use, either by surface collection or the use of non-powered hand tools resulting in only negligible disturbance to the earth's surface and other resources. However, some fossilized nonvertebrates and plants are rare or exceptionally preserved and require a permit for collection.

Potential threats to paleontological resources include natural erosion, and various anthropogenic activities, such as ground disturbance and illegal collection/excavation.

3.11.2.6 Paleontological Resource Management on Public Lands

The increasing economic value of fossils puts paleontological resources on public lands at risk, and unauthorized collection of vertebrate fossils is becoming more common. The badlands of Montana are remote and rugged, and public lands in these areas are often targeted by unauthorized collectors. The scientific integrity of paleontology is compromised more every year, as specimens are often hastily excavated and permanently removed from the scientific realm, ending up in private collections. As the sale of fossils continues and their economic value increases, there is a heightened urgency for protection and management of paleontological resources on public lands. Fines for theft of public property ($500) have not been much of a deterrent for illegal collection activities on public lands. However, recent passage of the PRPA should help deter such activities, as it standardizes and significantly increases criminal penalties for theft of fossils from federally owned lands and provides for civil penalties concurrently.

3.12 Visual Resources

The management system for visual resources begins with a process which evaluates landscapes according to three factors: scenic quality/visual appeal, sensitivity/public concern for scenic quality, and distance from the observer.

It is important to note that Visual Resource Management (VRM) is based on human perceptions and expectations in the context of the existing landscape. In order to meet its responsibility to maintain the scenic values of the public lands, BLM has developed a VRM system that addresses the following:

- Different levels of scenic values require different levels of management. For example, management of an area with high scenic value might be focused on preserving the existing character of the landscape, and management of an area with little scenic value might allow for major modifications to the landscape. Determining how an area should be managed first requires an assessment of the area's scenic values.
- Assessing scenic values and determining visual impacts can be a subjective process. Objectivity and consistency can be greatly increased by using the basic design elements of form, line, color, and texture, which have often been used to describe and evaluate landscapes, to also describe proposed projects. Projects that repeat these design elements are usually in harmony with their surroundings; those that don't create contrast. By adjusting project designs so the elements are repeated, visual impacts can be minimized.

While there are BLM guidelines for the visual resource inventory (BLM Manual H-8410-1) and determining visual contrast ratings (BLM Manual 8431), the guidance provided is general in nature in order to enable application to different ecosystems and social climates. The inventory and management of visual resources addresses BLM Administered Surface Lands only.

3.12.1 Visual Resources Management

Once inventoried, Landscapes are then placed into one of four VRM classes to determine appropriate techniques and strategies for maintaining visual quality, each of which has its own management objectives:

Class I Objective: The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention. It would be very difficult to get a new project approved in this class, unless it is completely shielded from view.

Class II Objective: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. New projects can be approved if they blend in with the existing surroundings and don't attract attention (i.e., small-scale picnic area or primitive campground in valley shielded from view that blends with natural appearance).

Class III Objective: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. New projects can be approved that are not large scale, dominating features (i.e., geothermal powerplant or major mining operation would not be approved).

Class IV Objective: The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements. Most new projects would likely be approved in regards to a VRM perspective.

Scenic quality is an essential component of most recreation activities. A recent survey of out of state visitors conducted by The University of Montana's Institute for Tourism and Recreation Research (ITRR) indicated the majority of respondents (over 50 percent) visited Montana for its uncrowded, wide open spaces, and mountains and streams. Additionally, of those surveyed, driving for pleasure (45 percent) was the primary attraction, and wildlife viewing was close behind at 30 percent.

There are many areas in the BiFO decision area that possess a high degree of scenic quality and a high level of visual sensitivity. In general, high scenic quality in the BiFO occurs in locations where the area has varied topography, unique geology, and striking vistas. High visual sensitivity areas are those with a high degree of visitor interest and public concern for an area's visual resources, an area's high degree of public visibility, and the level and type of public use.

The BiFO conducted an inventory of the scenic quality of much of the individual land parcels it manages in 2007, but does not have a complete landscape wide inventory. Table 3-40 displays current VRI classes, associated objectives, and the number of BLM administered surface acres for each class. This information represents findings from the VRI; VRM classes will be (re)assigned through the RMP process.

Table 3-40 VRM Classes and Acreage

Current VRM Classes and Acreage	
VRM Class I (includes Special Areas – WSAs)	28,714 acres
VRM Class II	13,507 acres
VRM Class III	391,113 acres
VRM Class IV	816 acres

By policy, VRM Class I areas are designated for all WSAs in the decision area. These areas are remote with limited access and have no developed facilities. For areas rated VRM Class I, modifications to the landscape should not be evident or attract attention, and the landscape's natural appearance should be preserved.

Some areas adjacent to the WSAs in the Pryor Mountains maintain a VRM Class II management class. These areas are typically rated high in the inventory process because of their scenic qualities. The Weatherman Draw and Meeteetse Spires ACECs and Bad Canyon are also managed at the VRM Class II level for their unique scenic quality. The VRM Class II areas are managed to retain the landscape's existing character. Activities or modifications to the area should not be evident or attract attention from the casual observer. Changes should repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Most of the BiFO decision area landscape transitions from largely grass and sage covered rolling hills to more rugged sandstone outcrop features. These areas are scattered among private, local, state, and federally owned lands. Ponderosa pine and junipers break up the landscape. While these areas possess some natural beauty, they are not unique and are managed as VRM Class III. Levels of change in VRM Class III areas should be moderate, and management activities may attract attention but should not dominate a casual observer's view or detract from the existing landscape.

The Bridger Fossil Area ACEC and Petroglyph Canyon ACEC are currently managed as VRM Class IV. AVRM Class IV rating is generally reserved for areas where the visual intrusions dominate the viewshed, but are in character with the surrounding landscape (areas such as rural communities, multiple subdivisions, and mining developments) not as in this case, landscapes in a generally natural condition being managed for fragile and rare resources.

3.12.2 Visual Resource Management Analysis Process

To properly assess the contrasts between a proposed and the existing Landscape situation, it is necessary to break each down into the basic features (i.e., landform/water, vegetation, and structures) and basic elements (i.e., form, line, color, and texture) so that the specific features and elements of a project that cause contrast on a landscape can be accurately identified.

The following general criteria and factors are used when rating the degree of contrast:

Degree of Contrast	Criteria
None	The element contrast is not visible or perceived.
Weak	The element contrast can be seen but does not attract attention.
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape.
Strong	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

The following factors apply when applying the criteria:

1. *Distance*. The contrast created by a project usually is less as viewing distance increases.

2. *Angle of Observation*. The apparent size of a project is directly related to the angle between the viewer's line-of-sight and the slope upon which the project is to take place. As this angle nears 90 degrees (vertical and horizontal), the maximum area is viewable.

3. *Length of Time the Project Is In View*. If the viewer has only a brief glimpse of the project, the contrast may not be of great concern. If, however, the project is subject to view for a long period, as from an overlook, the contrast may be very significant.

4. *Relative Size or Scale*. The contrast created by the project is directly related to its size and scale as compared to the surroundings in which it is place.

5. *Season of Use*. Contrast ratings should consider the physical conditions that exist during the heaviest or most critical visitor use season, such as snow cover and tree defoliation during the winter, leaf color in the fall, and lush vegetation and flowering in the spring.

6. *Light Conditions*. The amount of contrast can be substantially affected by the light conditions. The direction and angle of lighting can affect color intensity, reflection, shadow, from, texture, and many other visual aspects of the landscape. Light conditions during heavy periods must be a consideration in contrast ratings.

7. *Recovery Time*. The amount of time required for successful revegetation should be considered. Few projects meet the VRM management objectives during construction activities. Recovery usually takes several years and goes through several phrases (e.g., bare ground to grasses, to shrubs, to trees, etc.).

8. *Spatial Relationships*. The spatial relationship within a landscape is a major factor in determining the degree of contrast.

9. *Atmospheric Conditions*. The visibility of projects due to atmospheric conditions such as air pollution or natural haze should be considered.

10. *Motion*. Movement such as waterfalls, vehicles, or plumes draws attention to a project.

The level of contrast is compared to the objectives for the approved VRM Class. For comparative purposes, the four levels of contrast (i.e., none, weak, moderate, and strong) roughly correspond with VRM Classes I, II, III, and IV, respectively. This means that a "strong" contrast rating may be acceptable in a Class IV area but probably would not meet the VRM objectives for a Class III area. In making these comparisons, the cumulative effect of all the contrast ratings must be considered. Certain combinations of ratings may indicate there is a stronger overall contrast that the individual ratings show. For example, several "moderate" ratings when viewed in combination may warrant an overall "strong" rating. This is a judgment call that is made by resource specialists.

3.13 Fire Ecology and Management

Fire is a natural phenomenon. Vegetation communities in the planning area have adapted to the presence or absence of wildfire over several thousand years. Geographic, topographic, elevational, and climatic variances throughout the planning area provide a range of conditions in which fire has historically (from 200 to 400 years ago) affected vegetation differently. Consequently forests, woodlands, and rangelands throughout the planning area have adapted to fire.

Wildfire risk is predicted to increase due to a combination of climate change effects on temperature, precipitation, and wind. Together, these climate characteristics affect fuel availability and fuel moisture content. In Montana, the increase in median annual area burned is predicted to be an increase of 241 percent to 515 percent (Climate Change Supplementary Information Report for the Montana, North Dakota and South Dakota Bureau of Land Management, 2010).

3.13.1 Wildfire Occurrence

Yearly fire occurrence data for the BiFO is available from 1984 to 2010 (Map 36 – Wildland Fire Locations). Between 1984 and 2010, 336 fires occurred on public lands in the planning area. Approximately 60 percent of the fires were lightning caused, and 40 percent were human caused. These fires typically occurred between May and August. Human caused fires were usually associated with main travel corridors and occurred year round at various intensities. Multiple fires have also occurred on the same day.

The number of fires in the planning area varies from year to year and is dependent on the amount of moisture associated with lightning producing thunderstorms. Natural fire return intervals for lower to middle elevation communities comprise approximately 84 percent of the BiFO planning area, and high elevation communities make up another 16 percent of the area. Fire size fluctuates from year to year depending on the availability of the primary fire carrier. Annual grasses and brush are the primary fire carriers in the lower to middle elevations, and their growth is dependent upon precipitation received during the late winter and spring months. At higher elevations, primary fire carriers are pine needles and litter. Table 3-41 identifies only fires that occurred on BLM lands. While the majority of the planning area experiences primarily Class A, B, and C fires, the area has a history of large fire activity. Ten Class E and F fires ranging from 300 to 54,000 acres have been recorded. Table 3-42 shows causes of fires between 1894 and 2010, and Table 3-43 provides information on large-scale fire activity in the planning area from 1999-2010.

Table 3-41 Fires by Class Size

Fires by Class Size		1984-2010
Class	**Size**	**Number of Fires**
A	<.25 acres	63
B	.25 – 10 acres	115
C	10 – 100 acres	77
D	100 – 300 acres	32
E	300 – 1,000 acres	18
F	1,000 – 5,000 acres	13
G	> 5,000 acres	7
Control	No control acres reported	11
	TOTAL	**336**

Note:
Source: https://www.nifc.blm.gov/cgi/WfmiHome.cgi

Table 3-42 Fires by Cause

Fires by Cause	Number of Fires 1984-2010
Human	159
Natural	177
TOTAL	**336**

Note:
Source:

Table 3-43 Fire Activity in the Planning Area Since 2000

Year	Fire Name	Acres (all ownerships)
2000	Twin Coulee	3,000
2002	Steamboat Butte	3,000
2002	Cow Creek	5,500
2002	Red Waffle	6,000
2003	Hobble	36,180
2004	Pine Hill	2,022
2005	Cottonwood Creek	3,485
2006	Bundy Railroad	91,897
2006	Suanders	3,150
2006	Emerald Hills	3,900
2006	Pine Ridge	121,687
2006	Jungle	36,000
2006	Derby	199,500

Year	Fire Name	Acres (all ownerships)
2007	Chi Chi	17,954
2008	Dunn Mountain	102,383
2010	Stump Gulch	9,870

Note:
Statistics from http://dnrc.mt.gov/FireReports and https://www.nifc.blm.gov/cgi/nsdu/FireReporting.cgi

3.13.2 Fuels Treatments

Fuels treatments such as prescribed burns are developed to reduce fuels and meet resource objectives in wildland urban interface (WUI) areas and non-WUI areas. A combination of mechanical, hand, and fire treatments are used to accomplish these objectives. The principle objective is to reduce risk from wildfire to life, property, critical infrastructure, and natural resources in wildland urban interface areas. Priority of fire management activities would be placed on fuels reduction in WUI areas in conjunction with completed county wildfire protection plans (CWPPs). All counties within the planning area have developed CWPPs. The principal objective of these CWPPs is to reduce the risk from wildfire to life, property, critical infrastructure, and natural resources in the WUI areas. As directed by the Healthy Forests Restoration Act of 2003 (HFRA), these plans identify and prioritize areas for hazardous fuel reduction treatments. This legislation allows the BLM to work cooperatively with counties to consider the priorities of local communities as hazardous fuel reduction and forest management projects are being developed and implemented. Table 3-44 summarizes fuels reduction work in the decision area.

Table 3-44 Fuels Treatments from 2003-2010

Treatment Type	Acres/year (2003-2010)	Contract/Federal	Cost/Acre	Totals/Year
Mechanical Treatment (WUI & Non-WUI)	651	50% Contract 50% Federal	$400/acre $300/acre	$130,200 $ 97,650
Prescribed Fire WUI	395	Federal	$15/acre	$ 5,925
Prescribed Fire Non-WUI	1,095	Federal	$20/acre	$ 21,900
TOTAL	**2,141**			**$255,675**

3.13.3 Fire Regimes and Condition Causes

Fire regimes address the nature of disturbance by fire by describing historic intensity, frequency, and effect on vegetation. Knowledge of fire regimes is a critical component in managing landscapes and analyzing changes in fire frequencies and intensities. Table 3-45 lists the natural fire regimes by which vegetation is classified in the BiFO. Natural fire return intervals for lower-to-middle elevation communities' compose approximately 84 percent of the field office and high elevation communities make up 16 percent of the field office. Categorization of vegetation types by fire regimes was based on information provided in Section 3.3.5 – Vegetative Communities and Section 3.4.5 - Forestry.

Table 3-45 Fire Regime Classifications and BiFO Estimated Acreage

Fire Regime	Fire Return Interval	Severity Level	BiFO
I	0 – 35 Years	Common Surface Fire	68,366 acres or 16%
II	0 – 35 Years	Stand Replacement Fires High Severity	
III	35 – 100+ Years	Mixed Severity Fires	358,924 acres or 84%
IV	35 – 100+ Years	Stand Replacement Fires High Severity	
V	200+ Years	High Ratio of Stand Replacement Fires	

Note:
Source: BLM BiFO Fire Management Plan (2004)

3.13.4 Frequency Fire Intensity Estimated

Related to fire, vegetation conditions are evaluated by the degree of departure from fire regimes that a specific vegetation community demonstrates. Departure from fire regimes is indicated by changes to key ecosystem components (species composition, structural stage, stand age, canopy closure, and fuel loadings). Degree of departure is ranked using three condition classes that categorize vegetation communities by evaluating the difference between their historic fire regime and related indicating characteristics, and their current condition and its indicating characteristics. Basically, fire regime "condition classes are a qualitative measure describing the degree of departure from historical fire regimes" (Schmidt K.M. et al. 2002). Table 3-46 illustrates the estimated acreage of vegetation in the planning area in each condition class.

Table 3-46 Fire Regime Condition Class Description and BiFO Estimated Acreage

Condition Class	Percent Deviation from Natural	BiFO Area (estimated acres)
I	0 – 33%	21,879 acres or 5%
II	34 – 66%	109,825 acres or 26 %
III	67 – 100%	295,586 acres or 69%

Note:
Source: BLM BiFO Fire Management Plan (2004)

3.13.5 Condition

Areas in Condition Classes 2 and 3 are of most concern because they often need management intervention before allowing fire to return naturally.

3.14 Wilderness Characteristics

Pursuant to the section 201 of the Federal Land Policy and Management Act of 1976 (FLPMA), 43 U.S.C. § 1712(c), the BLM, does have the authority to conduct inventories for characteristics associated with the concept of wilderness and to consider management of these values in its land use planning process.

Some key points to this management direction are:

- Protection of wilderness characteristics is a high priority for BLM and is an integral component of the BLM's multiple use mission
- BLM can establish management prescriptions to protect wilderness characteristics and manage these lands through the planning process unless it is determined that impairment is appropriate and consistent with other laws and other resource considerations
- The BLM has an obligation to maintain wilderness resource inventories and must keep them current

Thus, this section addresses lands outside existing WSAs that have been identified as having wilderness characteristics.

Non-WSA lands with wilderness characteristics are those that have the appearance of naturalness and outstanding opportunities for solitude or primitive and unconfined recreation, and also comprise an area of 5,000 acres, or areas less than 5,000 acres that are contiguous to designated wilderness, WSAs, or other administratively endorsed for wilderness management lands, or, in accordance with the Wilderness Act's language, areas "*of sufficient size as to make practicable its preservation and use in an unimpaired condition, including roadless islands*." BLM used the same criteria for determining wilderness characteristics as in the 1979 wilderness inventory. The 5,000-acre value was helpful to BLM in making preliminary judgments, but it was not considered a limiting factor. The size criterion of 5,000 acres was applied only to standalone units, that is, units not contiguous with other federal lands previously determined to possess wilderness characteristics (e.g., WSAs and NPS and USFS lands that are administratively endorsed for wilderness).

Units contiguous with federal lands with wilderness characteristics were evaluated for all wilderness characteristics found in the inventoried area. The presence of outstanding levels for opportunities for solitude or primitive recreation was evaluated as well. Detailed information about non-WSA lands with wilderness characteristics is part of the administrative record for this Draft RMP/EIS (See Appendix K for details).

The wilderness characteristics review process involved a BLM interdisciplinary team that reviewed available information and followed up with field trips where necessary. The BLM interdisciplinary team evaluated information provided by the public about these areas, their on-the-ground knowledge of these areas, information in case files and field files, master title plats, aerial photos, GIS data layers, and field inspections, and determined that all or parts of several areas have wilderness characteristics.

In summary, the BiFO does not manage any congressionally designated wilderness areas and does manage four WSAs. Beyond these, currently, the BiFO manages five tracts as non-WSA lands with wilderness characteristics (Map 42).

In the Wilderness Review, there were several areas greater than 5,000 contiguous acres of BLM-administered lands that met the Lands with Wilderness Character evaluation criteria. Tracts of public lands adjacent to the Bighorn Tack-on, the Burnt Timber, and the Pryor

Mountain WSAs were analyzed and found to possess wilderness character. An area including recently acquired lands adjacent to and including the Meeteetse Spires ACEC, also met the criteria, as did a parcel adjacent to the Gallatin/Custer National Forest known as the Bad Canyon Unit. A stand-alone land tract, the Weatherman Draw Unit, most of which is currently designated as an ACEC was also found to possess wilderness characteristics. Summarized below is a description of each inventory unit.

3.14.1 Pryor Mountain Unit

Much of the lands were initially inventoried as portions of what became two separate WSAs, the Pryor Mountain and the Big Horn Tack-On WSAs. At the time human impacts were recorded which eliminated them from consideration. Other lands were acquired after the initial inventory was concluded:

A portion of Tract 1 was previously inventoried and found to possess wilderness values, but another portion of this Tract (T. 8 S., R., 28 E., Section 16 – 640 acres) was acquired after the inventory and had not been previously evaluated. Some lands (154 acres) in Section 1 have also never been inventoried since they were previously isolated by the acquired lands. This parcel is approximately 2,873 acres in size. This parcel is separated from The Pryor Mountain WSA by an established road (Sykes Ridge Road) but is adjacent to the Big Horn Tack-On WSA to the south and lands administratively endorsed for wilderness designation by the NPS in the Bighorn Canyon National Recreation Area to the southeast. Private lands form the northern boundary and the west boundary is a combination of a vehicle road, private lands, and Custer National Forest lands.

Tracts 2 and 3 (T., 9 S., R 28 E., Section 16 - 640 acres) were not previously inventoried for wilderness character since they were acquired after the inventory effort. They were subsequently recommended for potential wilderness designation in the Montana Statewide Wilderness Study Report (1991) and were noted as being outside the WSA. Tract 2 is approximately 497 acres in size. It is adjacent to the Pryor Mountain WSA to the west, south and north, while the Sykes Ridge road forms the boundary to the east. Tract 3 is approximately 143 acres in size. It is adjacent to the Big Horn Tack-On WSA on the north, east, and south sides. The west side is the Sykes Ridge road.

Tracts 4, 5 and 7 were recommended for wilderness designation in the Montana Statewide Wilderness Study Report (1991) and were noted as being outside the WSAs. However, they were not inventoried for wilderness character.

Tract 4 is approximately 445 acres in size. The parcel boundary is formed by vehicle routes on all sides. It was initially unclear whether the two boundary routes were roads, trails or a combination of both. If either vehicle route were found not to be a road, then the tract would be adjacent to the Pryor Mountains WSA or the Big Horn Tack-On WSA.

Tract 5 is an irregular shape and the boundary is formed by a combination of vehicle routes and a ROW. It is approximately 512 acres in size with 224 acres in Wyoming and 288 acres in Montana. The Pryor Mountain WSA is located to the west and the Big Horn Tack-on WSA is located to the east. It was initially unclear whether the two routes were roads or trails or a combination of both. If either one of the two boundary vehicle routes were determined to be a

way, then the tract would be adjacent to the Pryor Mountains WSA or the Big Horn Tack-On WSA. BLM has determined that the vehicle route to the east is not a road and that the Tract is adjacent to the Big Horn Tack-On WSA.

Tract 7 is located adjacent to the Pryor Mountains WSA on the north, east, and south. The west side boundary is a county road (Burnt Timber Road). It is approximately 327 acres in size.

Tracts 6 and 8 were previously inventoried by BLM and found to lack wilderness character. It was noted in the Final Decision, Montana Wilderness Inventory, (1980), that the lands now in Tract 6 had a power line, a portion of a stock trail, a vehicle routes used to view wild horses, and some small uranium mining scars. Tract 6 is located adjacent to the Pryor Mountains WSA to its north. It is approximately 1,074 acres in size and is completely within Wyoming. The boundary is either a county maintained road or a powerline ROW to the south, east, and west.

The lands now in Tract 8 were noted as having extensive uranium mining scars and other development impacts. Tract 8 is located adjacent to the Pryor Mountains WSA on the north, east, and south. The western boundary is a county road (Burnt Timber Road). The Tract is approximately 269 acres in size.

In this effort, BLM determined that the lands, with the exception of Tract 4, taken together with the adjacent and contiguous BLM WSA lands and NPS lands recommended for wilderness designation, meet the size exception criteria. The lands have minimal intrusions, as noted above, and are substantially in a natural condition, with the exception of small portions of Tracts 1 and 5, which have been excluded from the Inventory Unit. All of Tract 8 still has extensive mineral development and exploration impacts and lacks naturalness.

There is abundant vegetation screening and topographical aspects which taken together with minimal vehicle use, which is also restricted to designated routes outside of the inventory tracts, and general low use numbers offers challenging recreational opportunities for hiking, climbing, wildlife viewing, and hunting. There are numerous natural limestone caves and karsts which offer a range of caving opportunities and which are advertised.

The tracts, especially when considered with the adjacent WSAs and NPS lands, offer expansiveness and sequestration of an outstanding level. The lands possess the following significant resources documented in the Billings RMP and the Montana Statewide Wilderness Report (1991): wildlife, plant, geology, scenery and cultural.

The wild horse herd is a significant attractant and is known internationally. All wild horse management operations conducted on the PMWHR have been analyzed for potential impacts to wilderness values through the development of NEPA documents. None have caused detrimental effects. The occasional removal of the wild horses occurs when the population exceeds its carrying capacity and begins to damage the natural condition so the operation is considered to have beneficial aspects for the wilderness values. Similarly, the construction of the localized water developments spreads the wild horse population throughout the area and reduces potential adverse impacts throughout the range.

3.14.2 Burnt Timber Canyon Unit

The initial study area in the 1979 effort included public lands in Wyoming as well as public lands in Montana. Initially the entire area was found to be lacking wilderness characteristics, but upon appeal it was revaluated and a central core area was eventually designated as the Burnt Timber Canyon WSA in 1991.

The new inventory addressed the public lands adjacent to the WSA, which were the lands in Montana, found to be lacking wilderness values in the earlier effort. The adjacent public lands in Wyoming were not re-inventoried.

Tract 1, approximately 1,816 acres in size, is adjacent to the Burnt Timber Canyon WSA on its west side, separated from it by a very primitive vehicle route which is mostly unused, except on a random basis by OHVs. This route is naturally rehabbing but can be found and followed. The rest of the west side boundary is a combination of private/public lands. The east side boundary is formed by the Burnt Timber Road. Tract 1 is less than 5,000 acres in size but is adjacent to the WSA and thus qualifies for evaluation under the size exception at BLM Manual 6310.

Tract 2, approximately 5,388 acres in size, has the Cottonwood Creek road as its western boundary, while the east side is adjacent to the Burnt Timber Canyon WSA. This boundary is a combination of a primitive vehicle route which is mostly unused, except by OHVs and which is naturally rehabbing, and private/public lands. The southern boundary is the Montana/Wyoming state line. Tract 2 is more than 5,000 acres in size and is also adjacent to the WSA and thus qualifies for evaluation under BLM Manual 6310. 3.1.4.

Tract 1 has less vehicle use on the previously identified vehicle routes, with the exception of the portion of the vehicle route which BLM has chosen to continue to use for its administrative access to the water development. This vehicle route also forms a portion of the southeastern boundary of the Burnt Timber Canyon WSA, and with its continued use effectively bisects the Inventory Tract into two (2) separate parcels.

The northern portion of Tract 1 has residual human impacts from the historical mining operations on it as well, which are still visible since they are located along the foreground of the Burnt Timber road and from many points within the local area. Although the northeastern boundary of the WSA (a vehicle route) is naturally rehabbing it still serves as a definable boundary. This parcel of 1,113 acres lacks wilderness characteristics, while the remaining 703 acres located south of the WSA, east of the private lands of the Tillett Ranch, and west of Burnt Timber Road does possess wilderness characteristics. (An exception is the small portion isolated by the Road ROW in the southwestern corner which lacks wilderness characteristics.) These 898 acres possess the same wilderness values found on the adjacent WSA lands to its north and are in essentially a natural condition, have outstanding opportunities for solitude and primitive recreation, and have significant supplemental resources present.

With exception of the small portion isolated by the ROW powerline running to Tillett Ranch (12 acres), all of Tract 2 was found to be in essentially a natural condition, have outstanding opportunities for solitude and primitive recreation, and have significant supplemental resources present. The vehicle routes identified in the earlier inventory have much less usage and are naturally rehabbing to the extent that they do not impair wilderness resources and do not cut the

Tract into smaller pieces and thus eliminate it from further consideration, as they did previously. The conditions have changed from the previous inventory for this Tract. This area totals 5,375 acres.

3.14.3 Meeteetse Unit

The lands have not been previously evaluated; when the prior inventory was conducted the private/public land ownership was more broken up, and several roads were more routinely used. Since then some additional private lands have been acquired and several roads have fallen into disuse and are naturally rehabbing. The result is that a block of public lands was analyzed for their wilderness characteristics.

During initial Wilderness Inventory a preliminary staff review identified these lands as meeting the size requirement (over 5,000 acres) but probably mostly lacking naturalness due to the presence of roads, and lacking opportunity for solitude and primitive recreation on most of the lands due to lack of topography and vegetation screening. However, it was noted that a small portion of the area did have potential for further in-depth evaluation, if some private lands were acquired.

Subsequent to private land acquisition in 2009, this land was acquired and it and the larger BLM lands are the area which is the subject of the following formal review and analysis as a Wilderness Character Inventory Unit. The boundaries are as follows: The western boundary is a combination of private lands and National Forest Service; the southern and northern boundaries are private lands and Montana State lands, and the eastern boundary is private lands. The southern boundary is also the Wyoming/Montana State line.

The Meeteetse Spires Trail and several other vehicle routes which have been determined to be roads bisect portions of the unit into separate parcels. These are identified on the field map, in the road inventory files, and described here:

Tract 1: 23.4 acres in size. Isolated from the rest of unit by Meeteetse Trail, less than 5,000 acres in size and thus lack wilderness character. This parcel will not be considered further.

Tract 2: 977 acres in size. Isolated from the rest of unit by Meeteetse Trail and a vehicle route determined to be a road, less than 5,000 acres in size and thus lack wilderness character. This parcel will not be considered further.

Tract 3: 373 acres in size. Isolated from the rest of unit by Meeteetse Trail and a vehicle route determined to be a road, less than 5,000 acres in size and thus lack wilderness character. This parcel will not be considered further.

Tract 4: 87 acres in size. Isolated from the rest of unit by a vehicle route determined to be a road, less than 5,000 acres in size and thus lacks wilderness character. This parcel will not be considered further.

Tract 5: 3,841 acres in size. Isolated from the rest of unit by a vehicle route determined to be a road, less than 5,000 acres in size and thus lacks wilderness character. Additionally, the parcel has a number of other vehicle determined to be roads or vehicle routes which receive routine use, lacks vegetation and topographical screening. This parcel will not be considered further.

Tract 6: 356 acres in size. Isolated from the rest of unit by a vehicle route determined to be a road, less than 5,000 acres in size and thus lacks wilderness character. This parcel will not be considered further.

Tract 7: A very small parcel of 0.6 acres in size in a corner of the unit isolated by Meeteetse Road from the rest of the public lands. It is less than 5,000 acres in size. This parcel will not be considered further.

Tract 8: Approximately 2.9 acres in size in a corner of the unit and isolated from the rest of the unit by a vehicle roué determined to be a road. It is less than 5,000 acres in size and lack wilderness character. This parcel will not be considered further.

Tract 9: Approximately 10,809 acres in size. This large, central region of the unit has a number of vehicle routes which are somewhat noticeable and used on at least an occasional basis, as well as most of the private land inholdings. Several range developments and their access routes are also visible from a distance due to topography and lack of vegetation screening. This parcel will not be considered further.

Tract 10: The remainder of the unit, approximately 2,149 acres along the west side of the unit, has man-made facilities and structures which are substantially unnoticeable and which do not detract from the surrounding environment. Vehicle routes #2 and #3 are minor, naturally rehabbing, and do not substantially attract casual attention. Vehicle route #1, the route to the cabin, is not open to the public except as a non-motorized trail. It is visible within the view shed of the canyon which it goes up, however.

Of the entire Unit, only the lands in Tract 10 are considered to have wilderness characteristics, and these do not meet the size criteria. However, the boundary does provide the opportunity to manage it as a separate unit, so the staff feels that the exemption criteria apply. The boundary is set as being the Forest Service/BLM on the west, private lands on the south, and the east has a combination of Montana State lands and the Meeteetse Road, vehicle the north boundary is private lands. The lands have minimal intrusions, as noted above, and are substantially in a natural condition. There is abundant vegetation screening and topographical aspects which taken together with minimal vehicle use and general low use numbers offers challenging recreational opportunities for hiking, climbing, and hunting. The lands possess the following significant resources: wildlife, plant, geology, scenery and possibly cultural.

Note: the vehicle route leading to the BLM cabin (vehicle route #1) and the immediate area surrounding the cabin (approximately 3 acres in size) will be cherry-stemmed from the unit as well, for administrative purposes and since they are existing intrusive impacts. This will further enhance the wilderness character of the unit by removing the major human intrusion in the unit

3.14.4 Bad Canyon Unit

The unit is bordered by private lands on all sides except the west, which are National Forest lands of the Custer National Forest. These lands are not recommended by the Forest Service for designation as a Wilderness Area. The lands in the unit are less than the minimum size criteria (approximately 2,036 acres), and although the unit is configured in a long and relatively narrow shape which by itself may not usually lend itself to wilderness management, in this case the

canyon within the unit can be managed by itself, or the entire unit including the canyon and some other lands along private/public land boundaries.

The lands are located in all or portions of T. 4 S., R. 16 E., sections 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15. All are public lands. There are no private land in-holdings present.

There is no motorized access to this parcel. The BLM does have a non-motorized ROW across private lands and there is an undeveloped and primitive non-motorized trailhead located on the south side of the unit.

The area has been extensively timbered with scenic geological formations.

The riparian corridor is in a natural condition, with few invasive species present. A portion of the river segment has had a natural barrier slightly modified for protection of natural resources (fish Species) but this is substantially un-noticeable (see attached photos).

Bad Creek contains a stable population of Yellowstone Cut-throat trout, which is a native species, listed as endangered, and is a supplemental feature for the unit. The lands are important habitat for Grizzly Bear. The riparian corridor serves as an important wildlife migration corridor.

The trout, and the natural scenery, attract an unknown number of casual recreationists, mostly from the local communities, but the location is advertised as a destination in several publications regionally. There are no known commercial recreation operators. All recreational use is primitive in nature. The surrounding private lands have strictly restricted access as well.

A portion of the unit was previously burned in a wild fire, but is naturally rehabbing. Evidence of fire suppression activities is minimal.

There is abandoned motorized vehicle route which enters the unit from the west across Forest lands. It is naturally rehabbing and is not open for use and has not been for some time. There is one vehicle route which accesses the lands from the south. It is maintained only by the passage of vehicles and is not open to general use across private lands. This route has received only occasional use related to grazing in the past.

There is plentiful vegetation and topographical screening for an outstanding level of solitude. The area has significant geological, riparian, wildlife, and scenery resources which provide an outstanding level of primitive recreation attractions and experiences. The opportunity for this kind of recreation is further enhanced by the administrative lack of motorized access across the private lands.

3.14.5 Weatherman Draw Unit

The lands are bordered by a combination of roads including Cottonwood Creek Road, a railroad line, private lands, and Montana State lands. This inventory boundary was slightly different than the initial inventory effort due to land acquisition and some change in use patterns recognized by staff as altering the area. This also resulted in two private land parcels being established as inholdings. These two inholdings are not included in this analysis.

Weatherman Draw contains significant historic, cultural, and scenic values. There is currently a Weatherman Draw Archaeological District in place within the ACEC, but this archaeological district is only for the rock art. This district consists of 80 separate rock art sites. The ACEC currently covers approximately 4,365 acres. In addition to the rock art and prehistoric habitation sites, the Weatherman Draw ACEC and surrounding area contain historic coal mines (found both in and outside of the ACEC), historic homesteads, evidence of native American (Crow) horse traps/corrals, vision quest and sacred sites (which are still in use) and historic graffiti.

The unit meets the size criteria (11,603 acres), but the current conditions on the ground do not support the earlier decision that the unit lacks naturalness. The lands have been closed to motorized vehicle use. The visual impacts do not attract the notice of a casual observer. The vehicle routes are not being used except for non-motorized primitive recreation and are naturally rehabbing. The area does offer a high level of solitude and primitive recreation. There are supplemental resources present. The unit does meet the conditions for further consideration for Wilderness Character.

3.14.6 Yellowstone River Islands Unit

The Yellowstone River flows northeast through Montana from its source in the southern Absaroka range in Wyoming to its junction with the Missouri River in North Dakota. The Billings Field Office includes approximately 150 miles of this river between Springdale and Custer, Montana. The inventory identified and evaluated 10 individual islands or groupings of small islands which are partially or wholly administered public land islands on the Yellowstone River.

Island 1: Located in T. 1 S., R. 13 E., Section 8, found west of the community of Big Timber. The island is approximately 3.8 acres in size and is composed of all public lands. The lands are located adjacent to the southern bank of the river and it appears to be essentially a sand bar with limited low-lying vegetation scattered on it. There are no trees.

Island 2: Located in T. 1 N., R. 14 E., Section 19, found just west of the community of Big Timber. It is a total of 113 acres in size, of which approximately 77 acres are public lands. This island is dominated by a mature cottonwood gallery with an understory of willows and wetland communities. The island is noted for its mature subspecies (or possible separate species) of mature willows. These trees are under review by the "Champion Tree Project" for potential cloning.

The island has been used occasionally by a commercial fishing guide operation under permit by BLM and it also receives casual recreational visitation. Both types of recreational activity groups use it regularly as a camping destination.

There are no vehicle routes on the island and the only access is by boat. The BLM review located some two-track vehicle use accessing the island from a southwestern point (private lands) and the staff believes it may have been associated with the range operation on private lands which has driven onto the public lands as required. This does not appear to be a regular occurrence. There are no range developments.

On private lands there is a historic cabin (unused) which is known locally as French's Cabin after a previous owner. Its construction and use dates are unknown. The vegetation community is in good condition due to the system of range operations and has very little invasive species present. There has been no agriculture.

Island 3: Located in T. 3 S., R. 21 E., Section 9. Four small islands grouped together, all with similar vegetation: mature cottonwoods and wetland plant communities (sedges, grasses, etc.) Anecdotal evidence of Invasive Tamarisk species present as well. The islands are located just west of the community of Columbus and approximately 45 miles west of Billings.

Island A is approximately 2.3 acres total size – all public lands managed by BLM.
Island B is approximately 2: 3.8 acres total size – 2.5 acres BLM and 1.3 acres private.
Island C is approximately 3.4 acres total size – 1.8 acres BLM and 1.6 acres private.
Island D is approximately 10.1 acres total size – 8.2 acres of BLM and 1.9 acres private.

Island 4: located in T. 2 S., R 24 E., Section 13. This parcel is adjacent to the Sundance Recreation Area and is near the junction point of the Clarks Fork of the Yellowstone River and the main course of the Yellowstone River. It is a total of 81 acres, of which 34 acres are BLM. The vegetation is mature cottonwoods and wetland plant communities. The island is situated between BLM Recreation Area and a developed Montana State Fishing Aces site. The Sundance Recreation Area is a popular year-round destination for the local community and there is a developed parking lot with a restroom and walking trails which lead to the river.

Island 5: Located in T. 1 S., R. 25 E., Section 25. This parcel is a small portion of a larger island and is the western point (upstream side) of the island. The total island size is approximately 313 acres of which 9 acres are BLM.

Island 6: Located in T. 1 S., R 26 E., Section 2. This island is part of the Four Dances Natural Area ACEC managed by the BLM. It is located in mid channel in the downtown section of Billings and is in close proximity to an oil refinery, a powerhouse, and Interstate Highway 90. The total size is 23 acres, of which 12 acres are BLM. The island is dominated by a cottonwood gallery with a wetland community understory of willows, sedges and lush grasses. There is a powerline which bisects the island and which has two tower pylons, a large amount of rip rap along the river bank for bank protection. A large amount of vegetation has been removed along the course of the power line as well.

Island 7: Located in T. 1 N., R 27 E., Section 8. This island has two separate BLM parcels. It is located east of Billings by the community of Lockwood. The approximate total size of the island is 152 acres, of which the two BLM parcels are 16 acres and 28 acres. The island is dominated by a cottonwood gallery with wetland plant community understory, including willows, sedge, rush and other riparian obligate species.

Island 8: Located in T. 3 N., R. 30 E., Sections 19 and 20. This island is known locally as Bundy Island. A portion of the island has an old and naturally rehabbing agricultural field on it. This field is readily apparent and is not in a natural condition. The approximate total BLM

lands are 80 acres and 24 acres. Besides the agricultural area, the island is dominated by a mature cottonwood gallery and wetland communities. There is a fishing access site, administered by MT FWP, on the eastern tip of the island that receives high levels of use. There is a camp site and a vault toilet at the site.

Island 9: Located in T. 3 N., R 30 E., Sections 21 and 22. This island is known locally as Pompeys Pillar Island. It is just downstream from the Pompeys Pillar National Monument. The approximate size of the island is 165 acres, of which 105 acres are managed by BLM. This island is dominated by a grassy field surrounded by a mature cottonwood gallery and wetland plant communities. The immediate area, including Pompeys Pillar National Monument, is well known as a birding mecca. There is a bald eagle nest on this island and it is used extensively by hikers and hunters, accessed through PPNM and by river boat.

Island 10: Located in T. 4 N., R33 E., Section 7. This island is located just west of the community of Custer and is near 7 Mile Flat. The total size of the island is approximately 84 acres, of which 19 acres are BLM. Vegetation comprises willows, tamarisk, and immature cottonwoods on BLM, but there is a mature cottonwood gallery on the privately owned portion of the island.

Determination:
Islands 1, 5 and 7 were determined to not be islands due to course changes by the Yellowstone River. These units were determined not to meet the criteria for further evaluation.

Island 6 was found to have a number of significant man-made disturbances and it is considered not to be in a natural condition. IT also has no ort little opportunity for solitude and no natural features. It does have primitive recreation opportunities. This unit does not have wilderness characteristics.

Island 8 was determined to have significant man-made impacts on it which have reduced the natural condition. It does have primitive recreation occurring on it, but has limited opportunity for solitude. No special features were identified. The island does not possess wilderness characteristics.

Island 9 was found to have a number of human impacts, while it offers high values primitive recreation opportunities. The lands do have some but not an outstanding level for solitude. There are special features present and these have been recognized and protected through the ACEC designation. The island does not possess wilderness characteristics.

Islands 3 and 4 were determined to have natural conditions, and offer, by their geographic location and vegetation screening, both an outstanding opportunity for solitude and primitive recreation opportunities. This unit does have wilderness characteristics.

Island 2 was found to be in a natural condition, have opportunity for primitive recreation and solitude, and possess special features. The island possesses wilderness characteristics.

3.14.7Clark's Fork of the Yellowstone River Islands Unit

The Clark's Fork of the Yellowstone River (sometimes called the Clark's Fork River) is a tributary of the Yellowstone River and is approximately 150 miles (241 Km) long in the U.S. states of Wyoming and Montana.

It rises in the southern Montana, in the Beartooth mountains of the Gallatin National Forest, approximately 4 miles (6 Km) northeast of the community of Cooke City and southwest of Granite Peak. It flows southeast into the Shoshone Nation al Forest in northwest Wyoming, east of Yellowstone National Park, then northeasterly back into Montana. The river passes the communities of Belfry, Bridger, Fromberg and Edgar, and joins the Yellowstone River approximately 2 miles (3 Km) southeast of the town of Laurel, Montana.

The inventory identified and evaluated 4 individual islands or groupings of small islands which are partially or wholly administered public land islands on the Clark's Fork of the Yellowstone River.

Island 1: located near the community of Bridger, Montana in T. 7 S., R. 23 E., Section 4. The island is approximately 2 acres in size. The island is adjacent to property owned and managed by the State of Montana as a Fishing Access Site (FAS). The State has improved access and has installed a developed parking area and boat launch. There was anecdotal evidence that with fluctuating water levels, human access along the shoreline expands and contracts, with some motorized uses possible during low levels. There is no evidence of overnight camping on the lands.

There is no commercial grazing occurring on the island. The main vegetation is an over story of Russian Olive, cottonwood and willow.

The channel separating the island from the Montana State property is in the process of silting up and it is uncertain that the property still constitutes an island.

Island 2: Located in T. 3 S., R 24 E., Section 18. There are two islands located in close proximity to each other and they are found just downstream (north) of the community of Bridger, Montana. The southern island is approximately 6 acres in size and the north island is approximately 8 acres in size. Both islands are located adjacent to property along the west bank of the river which is owned by the United States Fish and Wildlife Service and managed as a Wildlife Production Area. There is no motorized access.

There is no commercial grazing under permit occurring on either island.

Both islands have had invasive weed treatments conducted in the past and will continue to have retreatments if necessary. The vegetation currently comprises a Cottonwood, Russian olive, and willow complex.

It does have a high level of wildlife diversity due to the wetland management practices of the Fish and Wildlife Service on the adjacent property.

Island 3: Located in T. 2 S., R 24 E., Section 23. The island, which is approximately 30 acres in size, is located south east of the junction of State Highway 310 and State Highway 212 at the community of Rockvale, Montana. The public lands are on the north half of the island and comprise approximately 13 acres in size.

The entire island burned during a wildland fire event in FY 2012. There was a major suppression effort involving the use of mechanized equipment and although much of the visible impacts were rehabbed post fire there are still visible effects readily apparent over the entire island.

Domestic goats were brought to the island in FY 2012 and FY 2013 to control an infestation of leafy spurge. Russian olive dominates the over story with some cottonwood and wetland plant communities in the understory.

A large man-made structure, the east side of a major water diversion structure (the Rockvale Ditch) which provides agricultural water to surrounding farms and ranches, is anchored on the northern side of the island.

There are nesting sand hill cranes present. The other wildlife species known to be located there are common to the riverine corridor.

Island 4: Located at T. 1 S., R 23 E., Section 4, this island is located in the Sundance Lodge Recreation Area and is just upstream from the junction of the Clark's Fork of the Yellowstone River and the Yellowstone River. The island was estimated as having a total of 5 acres, of which 2 acres are lands managed by the BLM. The vegetation is mature cottonwoods and wetland plant communities. Sundance Lodge Recreation Area is a popular year-round destination for the local community. There are developed recreation facilities including a parking lot, trails, signage, and a restroom. There are the remnants of expensive farmland operations found throughout the land parcel. The Recreation Area is also the intersection of the congressionally designated Nez Perce National Historic Trail and the Lewis and Clark National Historic Trail.

Determination:
The BLM staff review concluded that Island 1 of the Clark's Fork of the Yellowstone River was not separated from the river banks due to silting in of the channel. (While it was also agreed by the staff that conditions may change with river events in the future). This unit does not meet the criteria for evaluation and is not evaluated further.

The BLM staff review has determined that island 4 in the Clark's Fork of the Yellowstone River is no longer separated from the reminder of the public land (Sundance Lodge Recreation Area) since this original river channel has changed course. This unit does not meet the criteria for evaluation and is not evaluated further.

The BLM staff also determined that Island 3 in the Clark's Fork of the Yellowstone River had substantive man-made impacts resulting from the recent fire, the rehab efforts, and the water diversion structure with its associated structures and access needs, which taken together has

cumulatively reduced the naturalness level throughout the island. There is a level of opportunity for solitude and primitive recreation, but not of an outsizing level. There are special features present. This unit does not have wilderness characteristics.

Island 2 was determined to have had a substantive impact from human management actions and was not is an essentially natural condition. There is a high but not outstanding level of primitive recreation and opportunity for solitude. This unit does not have wilderness characteristics.

3.14.8 Bear Creek Unit

From generally flat prairie on the west and north, the Bear Creek unit rises to low bentonite domes and ridges in the center section. There is a north-south running canyon (petroglyph canyon) in the eastern region of the unit. This area is designated as an Area of Critical Environmental Concern (ACEC) for its significant cultural resources.

Vegetation is sparse and composes mostly common range grasses, sagebrush species and some very scattered scrub timber. The lands are managed as Visual Resource Management (VRM) Class III and were inventoried as having a scenic quality rating of Class C, the lowest rated quality class.

Much of the unit does appear to be in a natural condition, especially the rougher terrain of the central and south eastern sections. However there are previously operated, existing and proposed mineral operations all along the southern boundary and this area is not in a natural condition.

There is some screening provided by terrain but little or none is provided by vegetation. Although human use levels appear to be very low through most of the year in the unit, with the exception of localized areas like the ACEC, the opportunity for solitude is not of an outstanding level in most parts of the unit, but is present in other portions. Sights and sounds of human use can be readily observed for some distance in much of the unit due to lack of topography and vegetation screening, as well as the existence and use on some of the vehicle routes.

There are outstanding opportunities for primitive recreation due to the presence of prehistoric carving on the cliffs of Petroglyph Canyon ACEC in the eastern portion of the unit. Although not well known or advertised, this region does have primitive recreation (exclusively day-use hiking) currently occurring on it and users appear to come from local, regional, and possibly national regions. There are commercial outfitters offering guided tours of the area and there may be unauthorized guide services operating as well. The BLM has not, but may in the future, be required to actively manage this activity if use levels continue to increase.

The BLM has eliminated the active mining areas along the southern boundary of the unit, as these impacts are visible and are not natural. The BLM has also adjusted the western boundary to exclude the areas and sites found there which are also not in a natural condition.

The BLM staff then evaluated the practicality of two separate alternative boundaries;

The most western boundary being a point-to-point line from the southwestern ¼ corner point of the Montana State lands (Section 16) in a southwesterly direction until it leaves public lands towards the corner point of Sections 19, 20, 29 and 30, T 9 S., R 26 E, and the other being a combination of a little used vehicle route (PM 1063), and fence lines which run southwesterly and then southerly until they reach the edge of the mining disturbance in Section 28. The staff chose the more westerly boundary because although it is a more difficult boundary, it includes approximately 1050 acres of relatively undisturbed lands.

The revised unit meets the size criteria (5,659 acres in size)

Within this new boundary, the staff evaluation revealed that current conditions have changed since the initial inventory in 1979. The lands have been either closed to all use or restricted to administrative OHV use since 2001. The visual impacts of human disturbance can sometimes attract the attention of the casual observer but do not dominate the view. The majority of the designated vehicle routes in this area are not being used on a regular basis, only occasionally, and are in some cases already naturally rehabbing due to lack of any recent use. There are supplemental values present.

The entire unit does not meet the conditions for consideration as possessing Wilderness Characteristics. There are approximately 5,659 acres which possess wilderness character, while approximately 3,271 acres do not. The portion of the unit which does possess wilderness character will be considered in the RMP.

3.15 Cave and Karsts Resources

The BLM has not conducted a formal inventory of cave resources; however, inventories by other individuals and entities identified numerous caves, principally in the Pryor Mountains. These inventories provide general locations, physical descriptions, and low detail maps (Campbell 1978 and Elliot 1963). The BLM does not promote, publish, or release information on cave locations to the general public.

Caves administered by the BiFO include Mystery Cave, Sykes Cave, Four-Eared Bat Cave, Frogg's Fault Cave, Royce Cave, Salt Lick Cave, Snow Drift Cave, and Four by Four Cave. While Mystery Cave is generally recognized as meeting the definition of a significant cave (below), the other caves have not been inventoried to evaluate significance. Currently there are no cave management plans for significant caves in the decision area.

The Federal Cave Resources Protection Act of 1988 provided for protection of cave resources on federally managed lands. Provisions in the act charge the DOI to issue regulations that define what constitutes significant caves and identify and list significant caves on federally managed lands. The legislation also defines prohibited acts and criminal penalties for violation of the law.

Caves may be found in a variety of geological formations including sedimentary rocks and volcanic lavas. Karst landforms, including sinkholes, sinking streams, resurgences, and other

features develop in association with limestone and dolomite. Carbonate rock outcrops like these are prominent in the planning area, primarily in the Pryor Mountains of Carbon County and the Snowy Mountains in Golden Valley County. Karst features are likely in the narrow band of upturned Madison Group limestone beds that flank the east and north face of the Beartooth Mountains. There is potential for caves in this narrow band, however, if cave development occurred prior to the uplift of the Beartooth Plateau the subsequent tectonic activity probably collapsed any caves. There is a potential for redevelopment of caves in the limestone "palisades area" in the vicinity of the community of Red Lodge, Montana. Numerous caves have been described in the Pryor Mountains of Carbon County. See Map 46 for Cave and Karst locations.

The Pryor Mountains have several distinct fault bounded blocks dipping to the south or southwest with elevations ranging from 4,000 to above 8,000 feet. The Lodgepole, Mission Canyon, and Upper Madison formation carbonates outcrop in the middle and upper elevations. Elliot (1963) describes all caves forming in the Upper Madison limestone. Campbell (1978) describes, "*Nearly every cave … is in the upper 100 feet of the Mission Canyon Formation*." More than 40 Caves have been found in the Pryor-Bighorn area, with at least eight of these located on public lands. Some caves may have been developed in the Upper Madison limestones beneath a cap of Pennsylvanian Tensleep sandstone. These caves may only be revealed as a consequence of mining in the area.

Mystery Cave is located in the PMWHR in Carbon County, Montana. The 1984 RMP stated, "The BLM's cave management policies do not allow indiscriminate entrance into Mystery Cave without a BLM guide" (BLM 1984). During the 1990s, access restrictions for Mystery Cave were relaxed, and currently access is permitted to limited groups who provide personal identification information and a responsible group leader. Between November and May bats hibernate in the cave and, consequently, access is restricted during this time of year. No other caves in the BiFO decision area currently receive active management.

The 1984 RMP EIS provided minimal guidance for cave management or the protection of karst resources. Guidance was restricted to the policy of limiting access to Mystery Cave without a BLM guide and limiting access to a season from June through October, ostensibly because this was the period when weather and road conditions allowed guides to access to the cave. No mention was made of protection of bat hibernacula or any other reason for limiting access by season.

The Federal Cave Protection Act of 1988 (FRCPA, PL 100-691) directed that Federal lands be managed in a manner which protects and maintains, to the extent practical, significant caves.

The objectives of the BLM Cave and Karst Resources Management program found in Manual Section 8300 are to:

- Carry out the direction provided by the Federal Cave Resources Protection Act of 1988 (FCRPA, PL 100-691) and the FCRPA Implementation Regulations at 43 CFR, Part 37, Cave Management.
- Manage cave and karst systems to protect and maintain their biologic, geologic, mineralogic, paleontologic, hydrologic, cultural, educational, scientific,

recreational values and other cave values from damage; and ensure that they are maintained for the use of the public, both now and in the future.

- Establish surface and subsurface management practices and policies that are adequate to ensure long-term protection for cave and karst systems. Address cave and karst resources and issues in all appropriate management plans including recreation, wildlife, watershed, or other multi-resource activity plans and, as applicable, in NEPA documents.
- Ensure the listing of caves meeting the significance criteria and the confidentiality of cave locations.
- Promote consistency among Federal agencies with cave management responsibilities, where appropriate; and facilitate the efficient and effective exchange of information between Federal, State, and local agencies, private organizations, research institutions, and individuals concerned with the management, protection, or scientific investigation of cave resources.

It is current BLM policy, as articulated by the "stay out, stay alive" campaign, to discourage the public from entering underground features (caves, karsts, and abandoned mines) on public lands, as they risk injury or death, as well as potentially increase the risk of transferring White Nose Syndrome among vulnerable bat populations. Despite the high risk, a number of the local caves are known, some are advertised as specialty destinations for cavers, and some do receive use by cavers and casual users.

3.16 Resource Uses

This section provides information on the current condition of resource uses that could be affected by the revised RMP alternatives described in Chapter 2. Resource uses discussed in this RMP include:

- Energy and mineral resources
  - Coal
  - Fluid minerals (oil, gas, geothermal)
  - Locatable minerals (gold, silver, copper, etc.)
  - Mineral materials (sand and gravel)
- Forestry and woodland products
- Realty, Cadastral Survey, and Lands
  - Land tenure, adjustment, and access
  - Rights-of-way, leases, and permits
  - Withdrawals
- Livestock grazing
- Recreation and visitor services
- Trails and travel management
- Renewable energy

- Transportation and facilities

3.17 Energy and Mineral Resources

Mineral resources managed by the federal government are categorized by statute, and the mineral categories below are used to manage mineral resources on federally administered lands.

Leasable minerals are those leased to individuals for exploration and development. They are acquired by applying to the federal government for a lease to explore and develop the minerals. Leasable minerals are subdivided into two classes, fluid and solid. Fluid minerals include geothermal resources and associated by-products, oil and gas, oil shale, native asphalt, oil impregnated sands, and any other material where oil is recoverable by special treatment after the deposit is mined or quarried. Solid leasable minerals are specific minerals such as coal and phosphates. These minerals are acquired through the following: the Mineral Leasing Act of 1920, as amended and supplemented, Mineral Leasing Act for Acquired Lands of 1947, as amended, and the Geothermal Steam Act of 1970, as amended (AGI 1997).

Saleable Minerals or Mineral Materials are common variety minerals that may be obtained through a free use permit by federal, state, and local governments and qualified nonprofit groups. Sales for common variety minerals must be obtained by commercial and private entities. Examples include sand, gravel, pumice, petrified wood, and common dimension stone. Saleable minerals are regulated by the Federal Materials Act of 1947 and the Multiple Surface Act of 1955.

Locatable Minerals are all minerals subject to exploration, development, and production under provisions of the Mining Law of 1872. Locatable minerals include both metallic and non-metallic minerals such as gold, silver, specialty clays, and zeolites.

3.17.1 Solid Leasable Minerals

BLM considers proposals for developing federal leasable minerals (coal, phosphate, sodium, potash, sulfur, oil shale, native asphalt, and solid and semisolid bituminous rock) on a case by case basis. Site specific environmental analysis is required to lease these minerals. While occurrences of solid leasable minerals are present in the decision area, no significant production of these minerals, with the exception of coal, is currently underway or anticipated.

3.17.1.1 Coal

Coal beds are present at various stratigraphic intervals within the coal fields that are located in the planning area, including the Cretaceous Eagle, Judith River, Hell Creek and the Paleocene Fort Union Formations (Map 47). The Judith River and Hell Creek Formations contain coal which is generally thin (less than 2 feet thick) and often has a high content of volcanic ash, lowering its quality. These formations crop out (are present at the surface) in western Musselshell and Yellowstone counties and in northern Carbon County. Due to the lack of geologic data, the development potential for coal beds occurring in these two formations is unknown.

Within the planning area, coal has been historically mined from beds occurring in the Eagle and Fort Union Formations. The only coal that is currently being produced in the planning area is from the Fort Union Formation in the Bull Mountain coal field near Roundup, Montana. Following, is a description of the geology, historical production, and coal resource development potential of the coal fields which occur in the planning area. The coal resource estimates stated in this document are just "estimates."

3.17.1.1.1 Bridger and Joliet-Fromberg Coal Fields

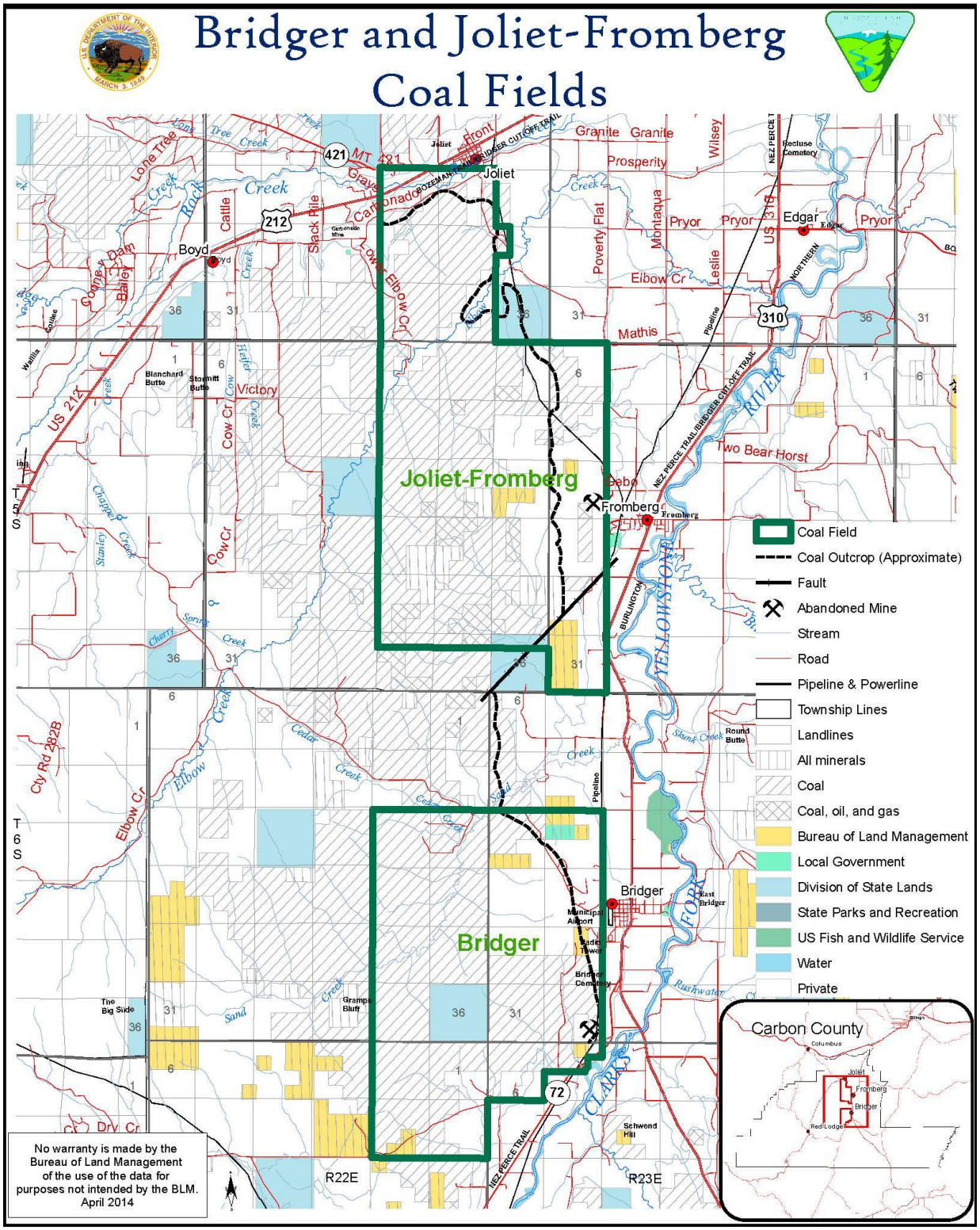
The coal-bearing Eagle Formation crops out over a large area in the planning area, forming rimrocks along the Yellow¬stone and Clarks Fork River valleys. In the southern part of the planning area (Carbon County), coal occurs in the middle (shale) member of the Eagle Formation. Coal resources occur in an area bounded on the north by Rock Creek and on the south and east by the Clarks Fork River (see Figure 3-18). Shale or "bone" (shaley coal) partings within the Eagle Formation coal horizon separate the coal into as many as three distinct beds. The position of these partings within the coal horizon influenced how the coal was mined and impacted its overall quality.

The Fromberg fault offsets the Eagle Formation outcrop effectively divid¬ing the coal resource into two separate coalfields; the Bridger and Joliet/Fromberg (Cannon, 1986). Underground mines were opened in this area in the late 1800s. The primary coal bed crops out along an approximate north-south line from Joliet to a point about two miles southwest of Fromberg, where it has been displaced by the fault (Figure 3-18). The coal bed is subbituminous to bituminous in grade and ranges in thickness from 12 to 65 inches, with partings of shale or carbonaceous shale (Knappen and Moulton, 1931). The coal bed is locally called the Bridger coal because of past production of the coal from mines at Bridger, Montana. However, several small mines were opened west of Fromberg. The mines shut down in the 1930s. Although no total production figures are available, over 100,000 tons were produced in 1907.

The coal resources for the Bridger coal field can only be estimated with a high degree of uncertainty. There has been no recent exploration in the coal field and the only production records are from coal mines that were abandoned nearly 100 years ago. The coal field encompasses approximately 13,720 acres, of which, 10,240 acres are federally owned (Figure 3-18). If the measured thickness of 4 feet of coal is consistent throughout the coal field, the total estimated coal resource is approximately 100 million tons (75 million tons federal). If conventional (room and pillar) underground mining is employed, approximately 50%, or 38 million tons of federal coal are recoverable.

There has been some recent interest expressed in federal coal in the Joliet-Fromberg coalfield. A group of investors obtained leases on private mineral lands near the coal outcrop and lease options from some surface owners overlying federal coal resources. It was also reported that some exploratory drilling had occurred on private mineral lands. Federal coal ownership forms nearly a solid block of coal-bearing lands approximately 8 miles long and 3 to 4 miles wide located 0.5 mile inside the outcrop.

Figure 3-18 Location of the Bridger and Joliet-Fromberg Coal Fields



In 1982, the BLM conducted a Known Recoverable Coal Resource Area study in the Joliet-Fromberg coalfield. These studies were conducted in areas where federal coal has high to moderate development potential through surface or underground mining methods. The area of prospective surface minable coal encompasses approximately 1,360 acres, of which 320 acres are federal. Coal resources within that area were estimated at 13 million tons (approximately 2 million tons federally owned). Applying a 90% recovery rate, over 2 million tons of federal coal are potentially surface mineable.

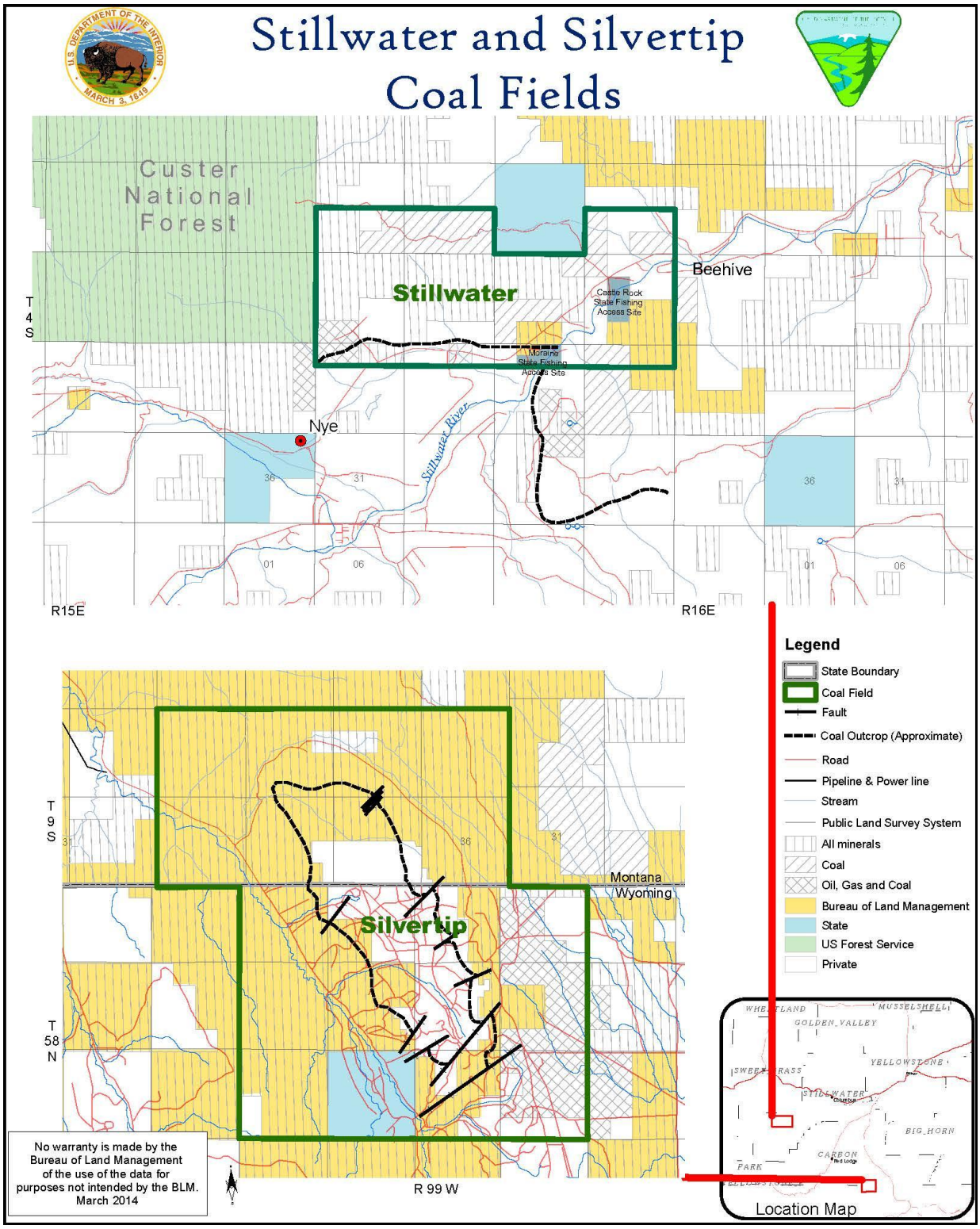
The area of prospective underground minable coal in the Joliet-Fromberg coal field is much larger. Approximately 8,680 acres of federally owned coal occurs in this area. Approximately 69 million tons of coal has been identified (46 million tons federal coal). Assuming that room and pillar underground mining would be employed, 50% of the coal, or approximately 34 million tons (23 million tons federal coal) would be potentially recoverable.

3.17.1.1.2 Silvertip and Stillwater Coal Fields

The Silvertip and Stillwater coal fields (Figure 3-19) are relatively small and are located in the extreme southern and southwestern part of the planning area. These coalfields also contain coal from the shale member of the Eagle Formation. The coal is fairly uniform, averaging approximately 4 feet thick in two or three beds, separated by shale partings. Only small quantities of coal were produced from either field, though many prospects were noted on older topographic maps, and some may still be visible on the surface. The only potential for renewed development in these fields would be small quantities for local domestic use, which is unlikely. Potential coal development in the Silvertip coalfield may conflict with production from the Elk Basin oil field, which also occupies a similar area.

Federal ownership of coal is scattered in the Stillwater coal field. However, the coal outcrop in the Silvertip field occurs almost entirely within federal ownership. An accurate estimate of the recoverable coal resources within these coal fields has not been made.

Figure 3-19 Location of the Stillwater and Silvertip Coal Fields



3.17.1.1.3 Red Lodge-Bearcreek Coal Field

The Red Lodge-Bearcreek coal field contains coal from the Fort Union Formation. Within the coal field, nine separate coal beds occur within an 825 foot stratigraphic interval of the middle member of the formation (Roberts and Rossi, 1999). Figure 3-20 provides a generalized stratigraphic column of the coal-bearing middle member of the Fort Union Formation in the Red Lodge-Bearcreek coal field.

The coal field is approximately 16,320 acres in size and is located in southern Carbon County (Figure 3-21). The areal extent of the coal field is limited on the east and north by the line of outcrop, on the south by the gradual thinning of the coal beds, and on the southwest by the Beartooth thrust fault. West of Rock Creek, the coal lies in a narrow, steeply dipping zone which terminates against the Beartooth fault (Woodruff, 1909). Small geologic structures interrupt the general southwesterly dip of the strata. Several thin igneous dikes cut the strata, but they did not interfere with past coal production. The coal field includes the Red Lodge and Bearcreek mining districts, which are separated by a high topographic ridge.

There is a long history of coal mining in the Red Lodge and Bearcreek areas. The first mine opened near Red Lodge just prior to 1882, but up to 1889, operations were conducted on a small scale (Woodruff, 1909). Production increased from 232,000 tons in 1886 to over 1 million tons by 1917. Most of the coal was used by the Northern Pacific Railway, though some went to the Anaconda smelter near Butte, Montana. Around 1924, demand for this coal began to diminish due to competition from the open pit mine at Colstrip, Montana. In 1932, the mines closed. Over 11 million tons of coal had been produced, entirely by underground, room and pillar mining. Coal was also mined under the town of Red Lodge.

Mining in the Bearcreek area progressed a little behind the Red Lodge area. Production was very limited until the railroad from Bridger to Bearcreek, Montana was completed in 1906. At least eight mining companies were operating in the area in the early 1900s. Production peaked in the early 1920s and began to decline in 1926 due to competition from oil and gas. World War II provided impetus for increased production, but after the war, production again declined. After abandonment of the Bearcreek-Belfry railroad spur in 1953, only small scale mining and trucking of coal to Red Lodge kept the field from closing entirely. Eventually, all mining activity ceased. Total production from the district was approximately 13 million tons. The Beartooth Coal Company, owned by Portland General Electric, reopened the Brophy underground mine in 1980. That year, over 7,000 tons of coal was produced. Due to labor problems and a soft coal market, the mine shut down.

Federal coal ownership in the Red Lodge-Bearcreek coal field consists of approximately 16,320 acres, primarily located in the south and southwestern portions of the coal field (Figure 3-21). An accurate estimate of the federal coal resource in this area has not been made due to the lack of geologic data. However, in an evaluation of six coal beds, each greater than 4 feet thick in the Bearcreek district, Rawlins (1986) estimated that the total Fort Union Formation coal resources in this area may exceed 700 million tons. Approximately half of this estimate would be potentially recoverable by conventional underground mining methods. Should longwall mining be used, the potential coal recovery rate would be higher. Longwall mining is a form of underground coal mining that is more productive than conventional room and pillar mining. It involves the removal of a large block of coal in a series of slices. The longwall

panel (the block of coal that is being mined) is typically 0.25 miles in width and several thousand feet long. Mining large blocks of coal in this manner facilitates a higher recovery rate of the coal resource.

In late 2013, it was reported by the Montana Department of Environmental Quality (MDEQ) that a private company completed an exploration drilling program on non-federal coal in the Bearcreek area.

Figure 3-20 Generalized stratigraphic column showing Fort Union Formation coal beds in the Red Lodge-Bearcreek coalfield. Stratigraphy adapted from Woodruff 1909, Rawlins 1986, and Roberts and Rossi 1999

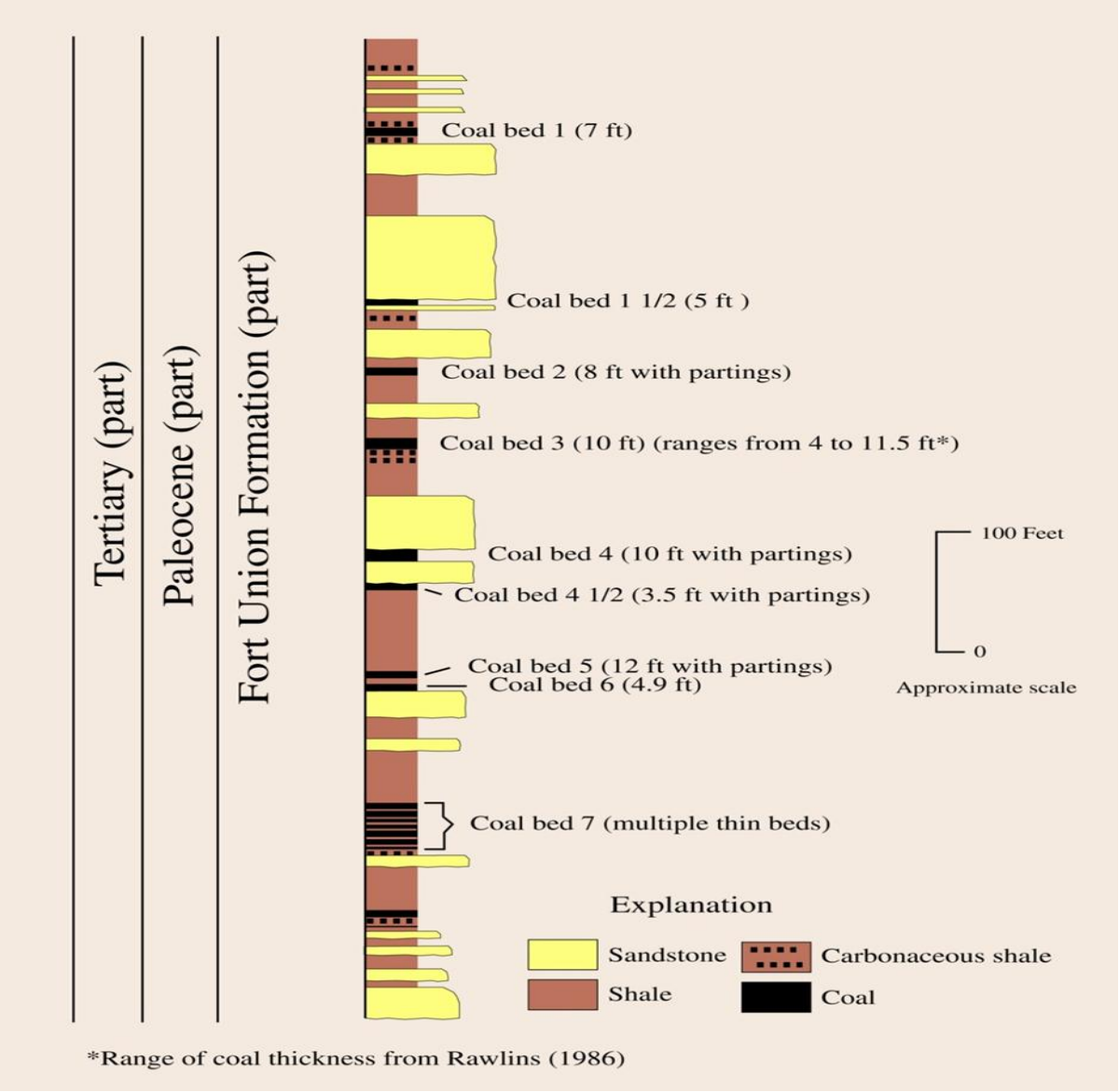
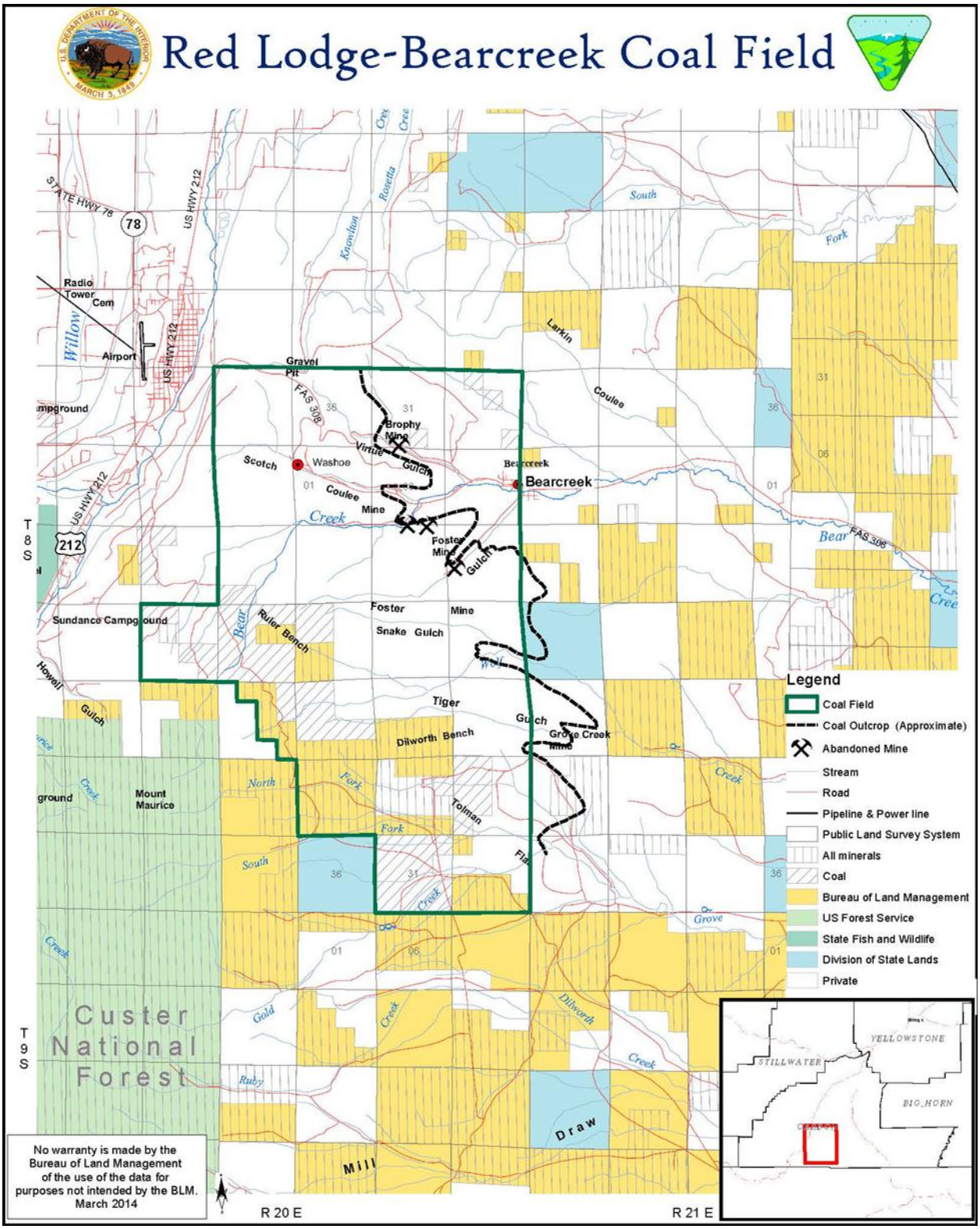


Figure 3-21 Location of the Red Lodge-Bearcreek Coal Field



3.17.1.1.4 Bull Mountain Coal Field

The Bull Mountain Coal Field occurs within the Bull Mountain Basin which is located in south-central Montana (Figure 3-22). The basin is an asymmetrical, shallow synclinal trough that trends generally 140° southeast and plunges approximately 0.8° toward the northwest. Regional dips of 1° to 4° inward toward the axis of the syncline are common. The area of coal-bearing rocks is roughly elliptical in shape, about 50 miles long and 30 miles wide with its long axis oriented roughly east-west (Woolsey and others, 1917).

The Bull Mountain Coal Field contains coals that occur in the upper portion of the Tongue River Member of the Fort Union Formation. Twenty-six coal beds have been mapped and named (Figure 3-23). Most of the beds are lenticular, showing a wide variation in thickness and areal extent (Woolsey and others, 1917). Coal beds may be thicker in some parts of the coal field, and either thinner, or absent in other parts of the coal field. Connor (1989) reported that coal in the Bull Mountain Coal Field ranges in apparent rank from subbituminous A to high volatile bituminous C.

Coal mining in the Bull Mountain Coal Field came into prominence in 1906-1907 following the construction of the Pacific coast extension of the Chicago, Milwaukee & St. Paul Railway (Woolsey and others, 1917). Prior to that, there was only a small amount of coal being produced in the area primarily for local use. Soon after the railway was completed, mining began on a large scale in the Roundup bed in the northwest part of the coal field. Most of the 40 million tons of coal produced from this bed was from underground mines located near Roundup and Klein, Montana.

3.17.1.1.5 Mammoth Coal Bed

The only coal currently being mined in the Bull Mountain Coal Field is from the Mammoth bed which occurs near the middle of the Tongue River Member of the Fort Union Formation (Figure 3-24). The Mammoth is probably the most consistent (thickness) and laterally extensive coal bed in the Bull Mountain Coal Field. The coal bed averages approximately 9 feet thick. The Rehder bed (1.5 to 4 feet thick), which directly overlies the Mammoth bed, coalesces with the Mammoth in the central and eastern portion of the coal field. In these areas, the combined bed, also referred to as the Mammoth bed, averages 13 to 14 feet thick and can attain a thickness up to 16 feet. Along the outcrop of the Mammoth bed, the coal is often found burned due to natural causes such as spontaneous combustion, lightning strikes or wildfires. However, in some areas, it appears that the burning did not progress very far in from the outcrop.

Due to its consistent thickness and significant areal extent, the Mammoth coal bed can be developed through both surface and underground mining methods. Since the structure of the coal bed in the coal field is relatively level, overburden depth on top of the coal, inward from the outcrop, increases as a direct function of topography. Therefore, in areas inside the Mammoth outcrop (Figure 3-25), where the overburden overlying the Mammoth bed is minimal due to subtle (flat) topography, it may be economic to mine the coal bed using surface mining methods a significant distance beyond the outcrop. However, other factors such as coal quality, market conditions, and the amount of coal burned at the outcrop may influence this

distance. Beyond the surface mining limit, additional coal could be recovered by employing coal auger or highwall mining methods.

Figure 3-22 Location of the Bull Mountain Basin, south-central Montana. Basin extent is drawn at the Lance-Fort Union Formation boundary. "K" denotes Cretaceous rocks and "T" denotes Tertiary rocks (from Stricker, 1999)

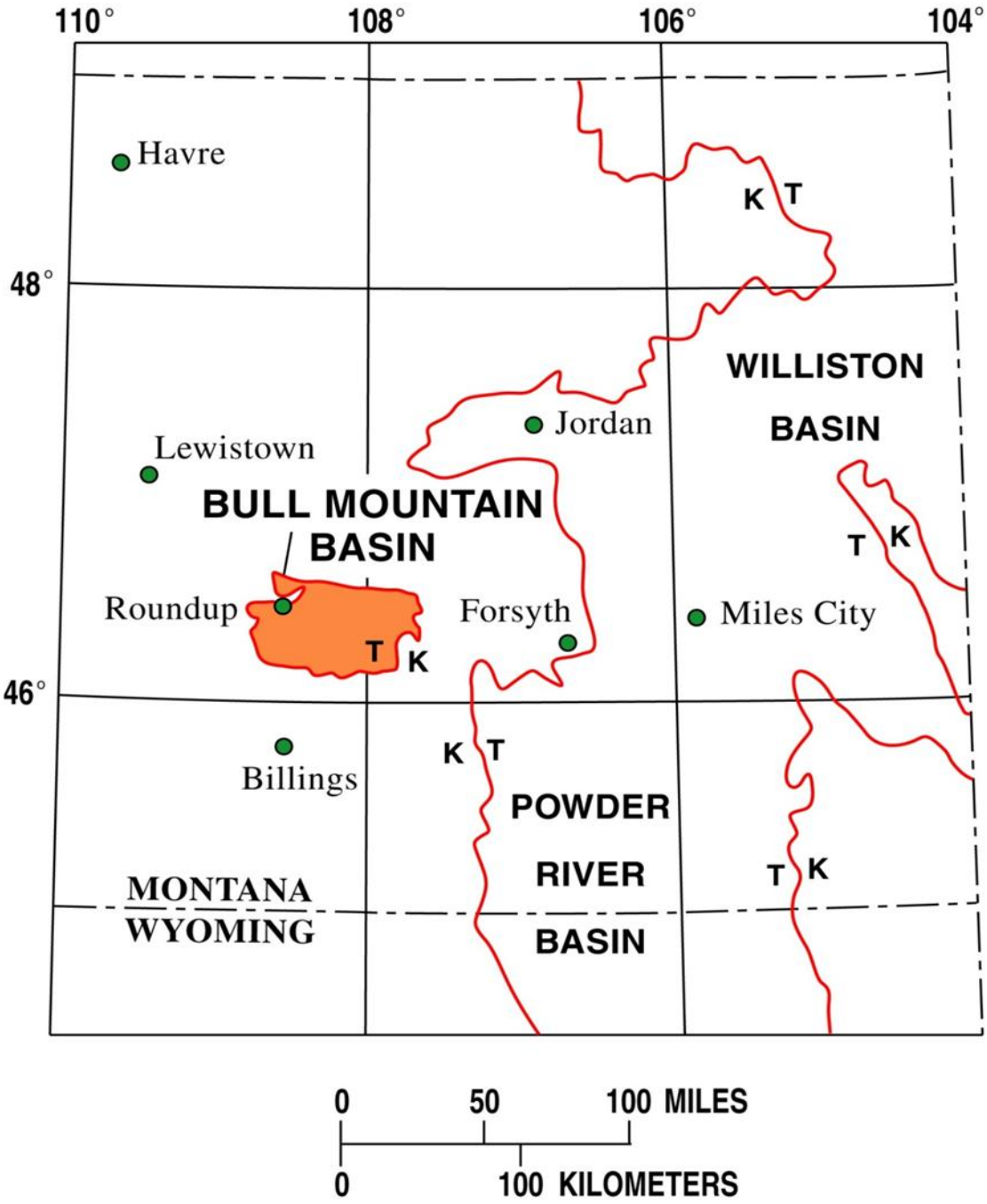
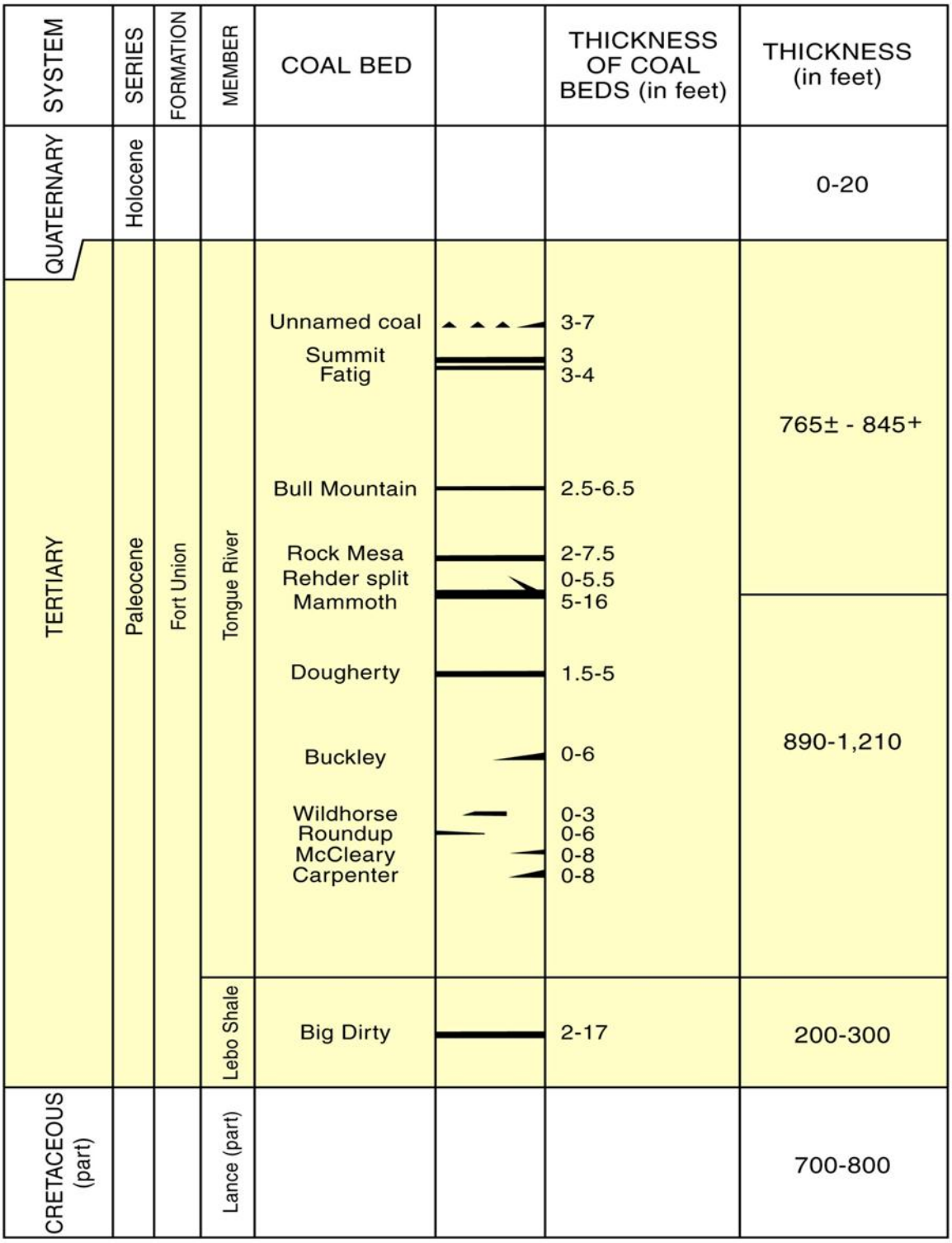


Figure 3-23 Generalized coal stratigraphy showing the principal coal beds in the Bull Mountain Basin. Stratigraphy modified from Woolsey and others 1917, Connor 1989; and Stricker 1999



Highwall mining is a method of surface coal mining that originated from auger mining. The method differs in that continuous miners, rather than augers, are used to bore an entry into the coal bed of a highwall left behind in a surface mine after coal removal has been completed. Screw conveyors positioned behind the continuous miner transport the cut coal from deep within the bed up to an outside stockpiling area. Another primary difference in a highwall mining operation is that it is carried out by remote control at the surface where an operator located in a cabin uses a television camera to monitor and control the progress of the continuous miner machine

Using a 10:1 (overburden thickness to coal thickness) strip ratio cutoff, the area of potential surface minable Mammoth coal encompasses approximately 25,000 acres (11,000 acres federal) resulting in an estimated 580 million ton (250 million ton federal) coal resource (see Figure 3-25). Employing a 90% surface mining recovery rate, approximately 522 million tons (270 million tons federal) of Mammoth coal are recoverable in the Bull Mountain Coal Field. Figure 3-25 shows the approximate area of surface minable Mammoth coal in the Bull Mountain coalfield at a less than 10:1 strip ratio. Table 3-47 provides the surface minable Mammoth coal resource estimate:

Table 3-47 Surface Minable Mammoth Coal Resource Estimate

Surface Minable Mammoth Coal Resource Estimate*			
Resource Ownership	**Non-Federal**	**Federal**	**Total**
Acreage	14,000	11,000	25,000
Million Short Tons	330	250	580

* Coal thickness **>** 2 feet thick considered minable (includes Rehder coal bed), assumes 12.5' average coal thickness, coal density = 1,873 tons/acre-foot, acreage values are approximate.

The area of potential underground minable Mammoth coal encompasses approximately 32,000 acres resulting in an estimated 605 million ton coal resource. Federal coal ownership constitutes approximately 12,000 acres resulting in an estimated 228 million ton coal resource within the Bull Mountain Coal Field. Approximately 50% of this coal could be recoverable utilizing a conventional room and pillar mining technique. Utilizing a longwall mining technique, an additional 30% of the coal resource may be recovered. Data used in estimating the Mammoth coal bed resource were obtained from Burlington Northern Coal Company.

Figure 3-24 Outcrop of the Mammoth coal bed in the Bull Mountain Coal Field

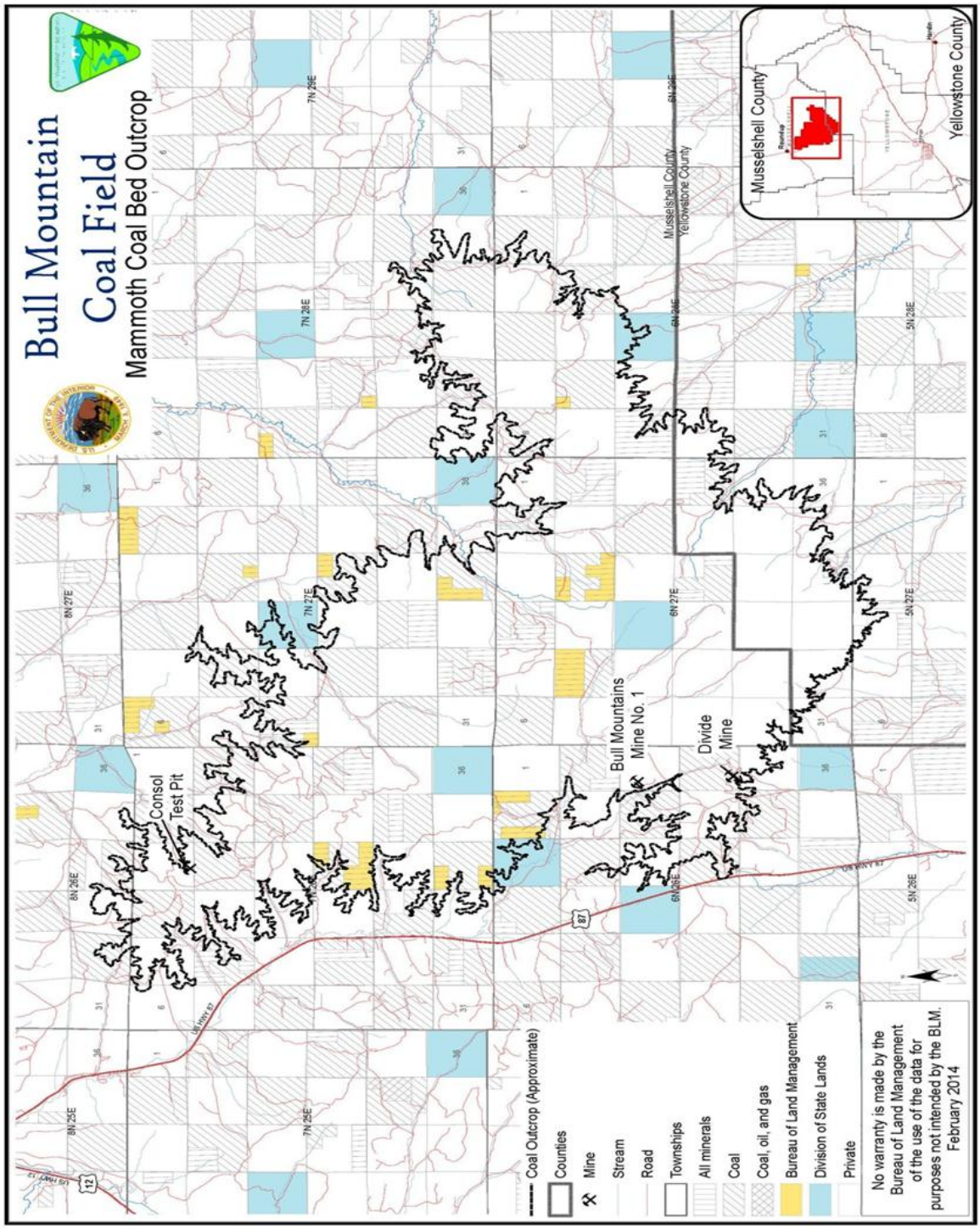


Figure 3-25 Mammoth coal bed – Approximate surface mining area < 10:1 strip ratio

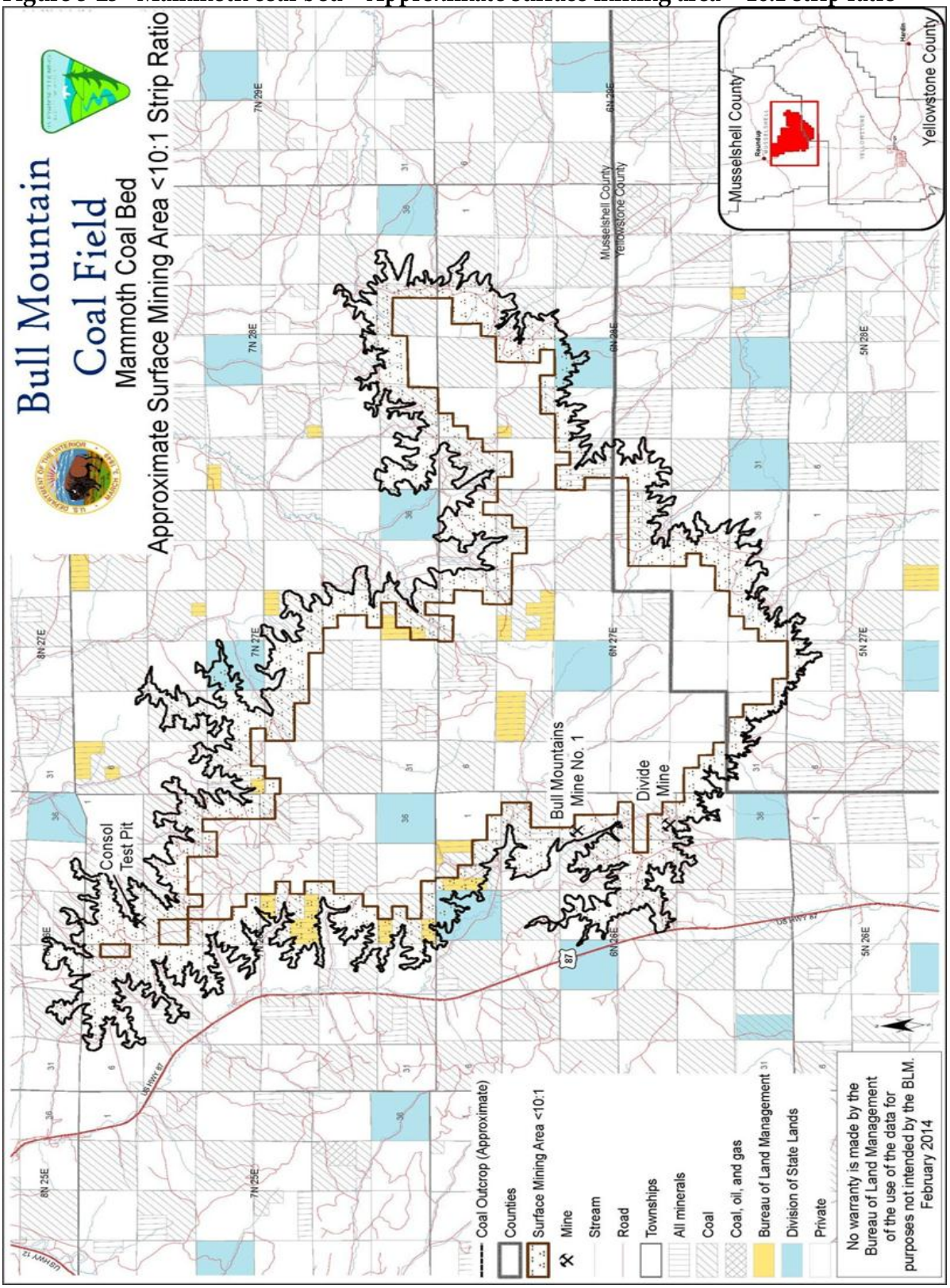


Table 3-48 Underground Minable Mammoth Coal Resource Estimate

Underground Minable Mammoth Coal Resource Estimate*			
	Non-Federal	**Federal**	**Total**
Acreage	20,000	12,000	32,000
Million Short Tons	377	228	605

* Assumes 10 foot average coal thickness, coal density = 1,873 tons/acre-foot, acreage values are approximate.

The total Mammoth coal resource estimate is shown in Table 3-49:

Table 3-49 Mammoth Coal Resource Estimate

Mammoth Coal Resource Estimate*			
	Non-Federal	**Federal**	**Total**
Acreage	34,000	23,000	57,000
Million Short Tons	707	478	1,185

* Include potential surface and underground mining areas

Although the Mammoth coal bed was heavily prospected between 1910 and 1920, very little development occurred during the early part of the 20th century. The inaccessibility of the coal bed at that time may have limited its development. The PM Coal Company opened a small underground mine in the Mammoth bed in 1932 that produced Burlington Northern Railroad-owned coal until 1973. In 1973, PM Coal Company opened the PM surface mine which produced 15,000 to 25,000 tons of coal per year from the Mammoth bed.

The Divide Coal Company had operated an underground mine in the Mammoth bed for many years on privately owned coal (Table 3-48). In 1962, the company was issued a Federal lease (M-052647) and began mining federal coal. The mine was converted from an underground mine to a surface operation in 1972 (the company felt it could not economically comply with the Federal Coal Mine Health and Safety Act of 1969). The Divide Coal Company was mining in the direction of the abandoned underground mine.

In the early 1970s, Consolidation Coal Company and the Montana Bureau of Mines and Geology completed various investigations on the quantity and quality of the Mammoth coal bed and a regional hydrology study in the Bull Mountain area. Consolidation Coal Company opened a test pit in the Mammoth bed in the northwestern part of the coal field in 1971 (Table 3-49). To determine its suitability for generating electricity, approximately 50,000 tons of coal was mined as a pilot project. The company also wanted to test several reclamation techniques. Although the coal proved suitable for use in coal-fired utilities, no further coal development occurred.

Louisiana Land and Exploration Company also conducted coal investigations in the Bull Mountain Coal Field and began undertaking environmental and economic feasibility studies in 1979, with the hope of obtaining a permit to underground mine Burlington Northern-owned

coal. The company withdrew its application in late 1981 after determining that new development was economically unfeasible.

Meridian Land and Minerals Company (a wholly owned subsidiary of Burlington Northern) had expressed interest in exchanging federal coal rights for Burlington Northern coal rights in the Bull Mountain Coal Field with the intention of consolidating their coal holdings. Two land exchanges occurred with the BLM, one in 1991 and the other in 1993.

A stumbling block to coal mining in the Bull Mountain Coal Field was the lack of rail service. The Burlington Northern Railroad had purchased the Milwaukee Road right-of-way between Slayton and Gage, Montana. Therefore, the construction of a spur to that line would be required to provide access to the coal field. Other forms of transportation to carry large volumes of coal from the coalfield were impractical.

In the late 1980s, Meridian Land and Minerals Company acquired the rights to mine the Mammoth bed in the area and also purchased the PM Mine. In 1989 and 1990, they permitted and mined a surface test pit adjacent to the underground mine (Bull Mountains Mine No. 1) and extracted approximately 180,000 tons of coal for test burn purposes. In 1990, they also submitted a permit application to the Montana Department of Environmental Quality (MDEQ) for reopening the existing Bull Mountains Mine No. 1 (Figure 3-24) and was issued a state mine permit in 1993. Since that time, the permit has been transferred to several ownership entities and was acquired by Signal Peak Energy (SPE) in 2008. In 2008, SPE also submitted an application to the BLM to acquire the federally-owned coal reserves on five lease tracts. The lease tracts, totaling 2,679.76 acres, contain an estimated 61.4 million tons of in-place coal reserves in the Mammoth coal bed.

In 2009, SPE successfully amended their state mine permit to incorporate both continuous and longwall underground mining methods. A 35-mile rail line was constructed connecting the mine to the Burlington Northern/Santa Fe mainline track near Broadview, Montana. In 2012, the BLM conducted a lease sale for the federal coal tracts and SPE was the successful bidder for federal lease MTM 97988. In 2013, some of this federal coal was mined during longwall development work. The Bull Mountains Mine No. 1 is currently producing coal at a 10 million ton per year rate. In 2013, SPE also conducted exploration drilling to evaluate the surface mine development potential of the Mammoth bed in areas adjacent to their underground mining area. An application to explore for federal coal and private coal underlying federal surface lands was also submitted to the BLM that year.

On December 19, 2014, the National Defense Authorization Act of 2015 was signed into law. Section 3077 of this act, the Northern Cheyenne Lands Act authorizes the conveyance of approximately 10,000 of federal coal located in Big Horn and Mussellshell counties to Great Northern Properties Limited Partnership (GNP). In turn, GNP will convey all of its coal and iron ore interests underlying the Northern Cheyenne Reservation to the Tribe.

The eighteen federal coal tracts conveyed to GNP in Mussellshell County comprise approximately 7,952 acres located within the Bull Mountain Coal Field (Figure 3-26). The tracts contain approximately 41.4 million tons of saleable coal in the Mammoth coal bed (Norwest Corporation, 2014). Several of these tracts occur within SPE's Bull Mountains Mine No. 1 mine plan area.

3.17.1.1.6 Carpenter and McCleary Coal Beds

The Carpenter and the McCleary coal beds may also have the potential to be developed in the Bull Mountain Coal Field. The Carpenter bed occurs approximately 450 feet above the Lebo Shale Member of the Fort Union Formation (Figure 3-27). These coal beds have the potential to be developed in the northeastern part of the Bull Mountain Coal Field, in an area that is located south of Melstone, Montana. Between 1907 and 1909, these beds were mapped by the United States Geological Survey (USGS) and numerous outcrops were measured in the Carpenter and Lost Horse Creek drainages. An 8 foot 2 inch thick outcrop of the Carpenter bed was measured in the Carpenter Creek drainage (Woolsey and others, 1917). In this drainage, the McCleary bed occurs approximately 50 feet above the Carpenter bed and coal outcrops measured by the USGS in that area ranged between 3 to over 4 feet in thickness (Woolsey and others, 1917).

In 2006, Carpenter Creek, LLC began the process to permit and develop a surface mine that also considered highwall mining in the Carpenter Creek area. The company had indicated that there was sufficient resource present in the two coal beds to warrant development of a surface mine and possibly an underground mine. The company submitted a mine permit application to the MDEQ to develop a test pit in the McCleary and Carpenter coal beds on private coal within this area. The company also indicated that future development could possibly include federal coal using both surface and underground mining methods. In 2010, Great Northern Properties (GNP) assumed control of the mine permitting effort. It was reported by the MDEQ that GNP conducted exploration drilling in that area in 2011 and 2012.

Although the BLM does not possess sufficient geologic data to provide a resource estimate for the Carpenter and McCleary coal beds in the Carpenter Creek drainage area, early USGS field mapping data and recent industry interest suggest that these two beds may constitute a resource that could be developed either by surface or underground mining methods. The size of the resource would be dependent upon the thickness and lateral continuity of the coal beds.

The area located southeast of Carpenter Creek, on the south side of the divide that separates the Yellowstone and Musselshell drainages, may have the potential to support development of the McCleary bed coal bed. Early USGS field data indicated that the McCleary bed outcrops in T. 8 N., R. 31 E. The bed crops out in the extreme northern part of the township above the head of Cabin Creek and continues down the creek approximately two miles to the southeast, and then turns southwest, extending through the head of Alkali Creek, and across the Weed Creek drainage (see Figure 3-26). Nine McCleary coal bed sections were measured which ranged in thickness between 2 feet 5 inches to 8 feet 8 inches (Woolsey and others, 1917). However, along the McCleary bed outcrop through the northern half of the township, the thickness ranges from almost 7 feet to over 8 feet. The underlying Carpenter coal bed in the northern portion of the township is significantly burned. The thickness and extent of the burn may indicate the presence of a relatively thick coal bed in this area, beyond the extent of the burn.

Figure 3-26 Location of Federal Coal Tracts Conveyed to Great Northern Properties Limited

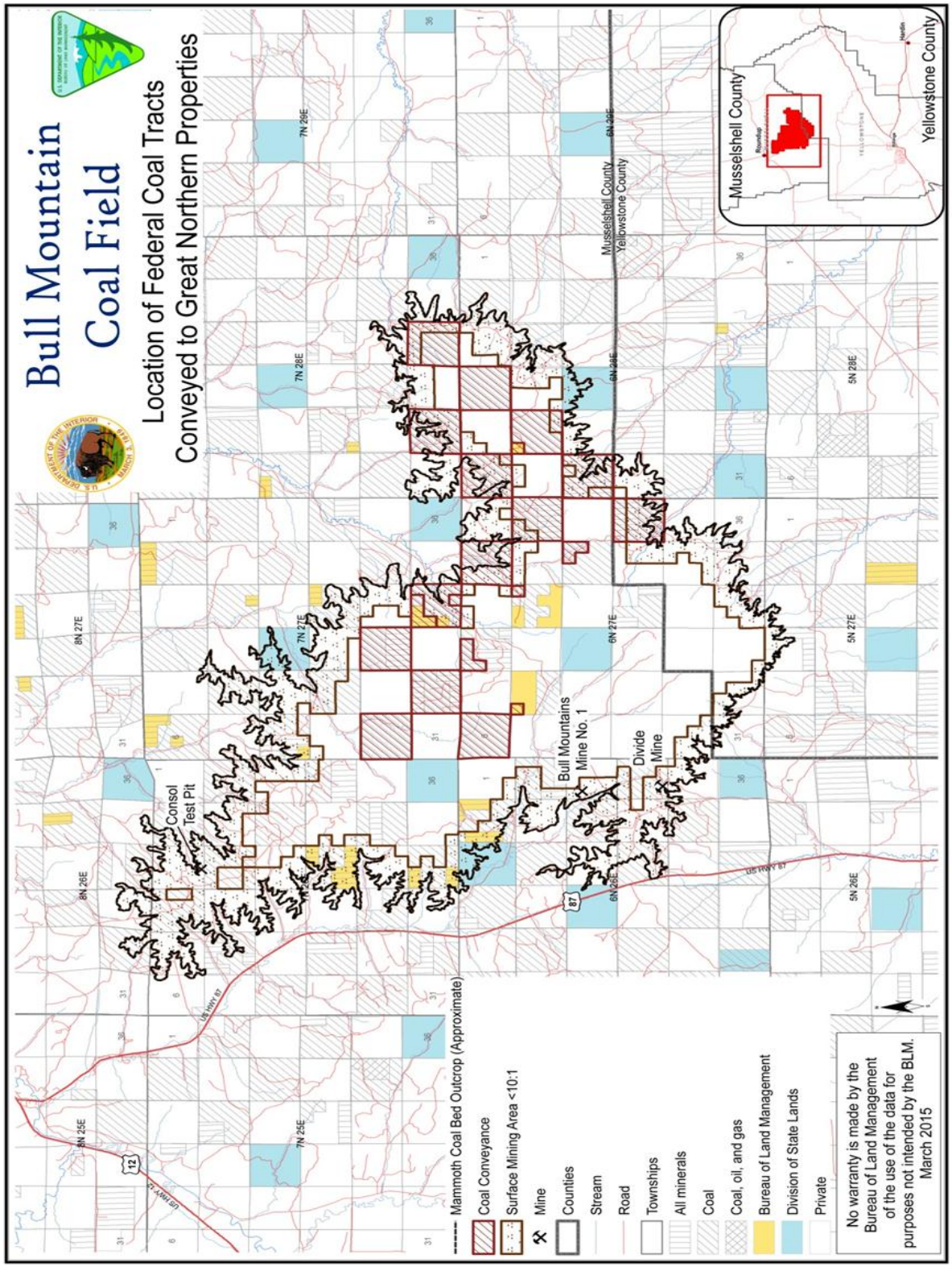
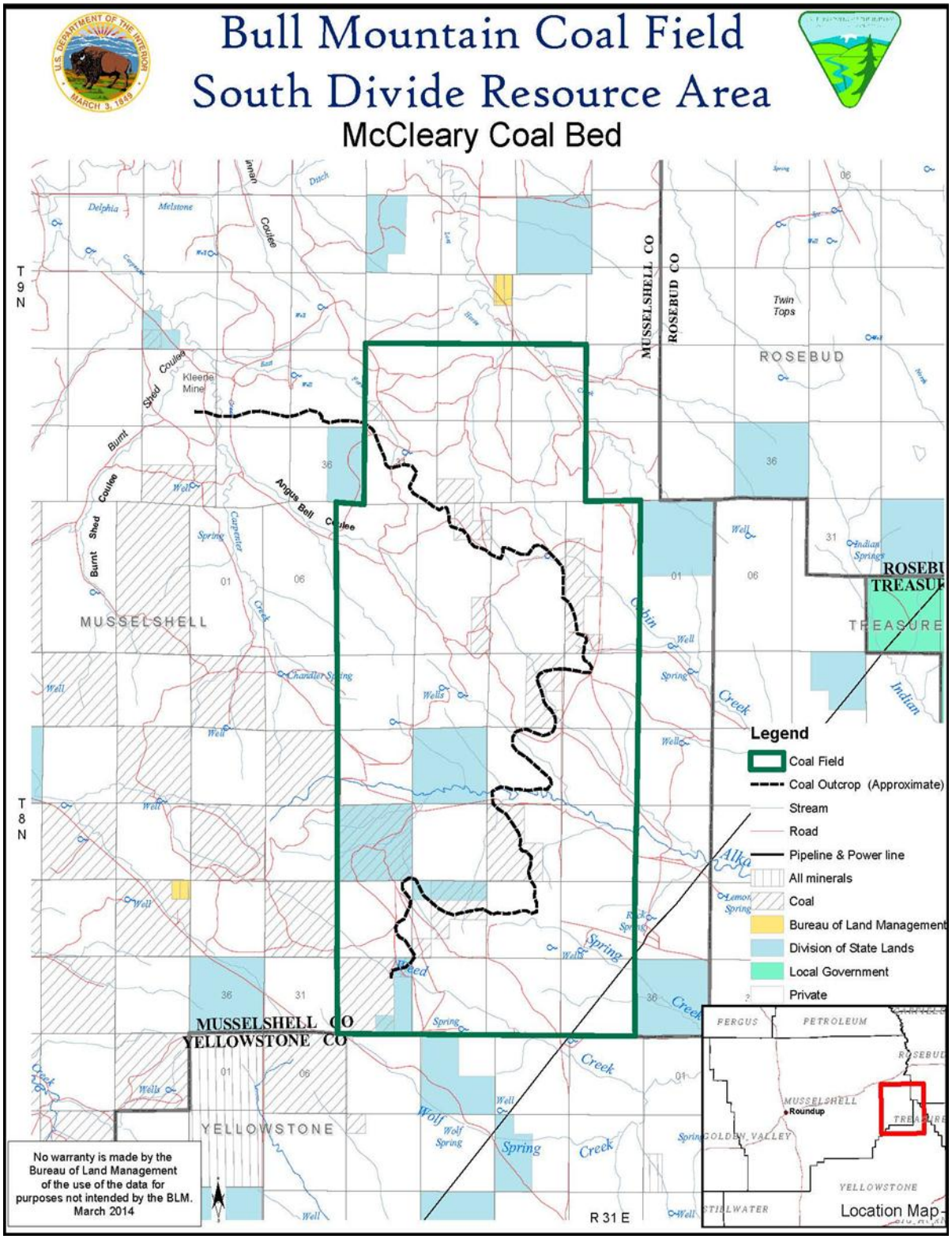


Figure 3-27 McCleary Coal Bed Outcrop in the South Divide Resource Area, Bull Mountain Coal Field



In 1982, the BLM conducted a Known Recoverable Coal Resource Area study of the McCleary seam in this area, which is referred to as the South Divide Resource area. These studies were conducted in areas where federal coal has high to moderate development potential through surface or underground mining methods. At South Divide, the area of surface mineable coal totals approximately 5,640 acres, of which 1,280 acres are federally owned (see Figure 3-27). Coal resources within that area were estimated to be 43 million tons (9 million tons federal). At a 90% recovery rate, over 8 million tons of federal coal in the McCleary coal bed is considered recoverable. The corresponding area of underground minable coal covers approximately 3,120 acres, containing an estimated 26 million tons of coal. The federal ownership in this area is 400 acres, resulting in approximately 2 million tons of mineable resource. Assuming the coal would be mined by room and pillar method, 50%, or 1 million tons would be recoverable. Should longwall mining be used, the coal recovery rate would be higher.

3.17.1.1.7 Summary

Future coal development will likely occur in the Bull Mountain Coal Field and may occur in the Red Lodge-Bearcreek Coal Field. The presence of coal processing and transportation facilities at SPE's Bull Mountains Mine No. 1 may play a role in this increased development in this coal field. Coal from the Bull Mountain Coal Field will continue to be shipped to domestic power plants and exported overseas for electricity generation. Future coal development in the planning area may increase as a result of the completion of export facilities located on the west coast of the United States. In addition, transportation and coal quality advantages enhance the export marketability of coal in the planning area. It is also possible that future coal leasing activity could support coal conversion technologies such as in-situ gasification or coal-to-liquids projects.

Although recent coal exploration activities have been conducted in the Bull Mountain and Red Lodge-Bearcreek coal fields, additional exploration efforts will be required to further evaluate the development potential of the coal resource in these areas. Applications for federal coal exploration licenses and coal leasing will be evaluated by the Billings Field Office.

3.17.1.1.8 Coal Resource Objectives and Planned Actions

The Billings Field Office planning area will be open for federal coal exploration license applications. Licenses to mine federal coal for domestic use will be available as long as production does not annually exceed 20 tons. Federal coal leasing by application (LBA) will remain available for both underground and surface mining considerations. The unsuitability criteria will be applied to the lease application area and a plan amendment to the current RMP will be prepared if necessary. Prior to approving exploration licenses, licenses to mine (domestic), and coal lease applications, a project-specific environmental review document will be prepared to assess impacts and develop mitigation measures.

The federal coal leasing decisions that were made in the previous RMP will be brought forward and adopted in this RMP:

- All federal coal that is minable by underground methods is suitable for further consideration for leasing or exchange, pending further study. Within the planning area, potential coal resource underground mining development areas occur in the Bull Mountain Coal Field located in Musselshell and Yellowstone counties and in the Red

Lodge-Bearcreek Coal Field located in Carbon County. The coal unsuitability criteria will not be applied to the lands comprising the coal application area until a site-specific mine plan is filed that details the proposed locations of surface facilities.

- Within the planning area, surface coal mining development areas occur within the Bull Mountain Coal Field and are suitable for further consideration for leasing or exchange, pending further study. Within this area, federal coal with a strip ratio less than 10:1, that can be mined by surface methods must first be screened to determine their development potential, surface owner opposition to mining, the presence of unacceptable environmental conflicts (unsuitability criteria), and multiple use conflicts in accordance with the four coal screens. The application of the coal screens also includes the consideration of the unsuitability criteria.

In 1984, surface owners of land overlying federal coal in the Bull Mountain Coal Field in the Mammoth and McCleary beds (South Divide Resource Area) were consulted to determine their preference for or against leasing their land for surface mining. Due to the significant amount of time that has elapsed since the consultation was conducted, it was decided not to include that data in the RMP.

Federal coal lease applications and exchange proposals will be considered on a case-by-case basis. The coal screening process will be applied to future lease application areas that have surface mine development potential.

3.17.1.1.9 Decision Rationale

This action was selected because it will enable the BLM to comply with the multiple use mandates established by FLPMA and the 43 CFR 1600 regulations governing multiple use planning. Furthermore, it will allow the BLM to comply fully with the Surface Mining Coal Reclamation Act (SMCRA) and the 43 CFR 3400 regulations established to govern the federal coal management program. Although development of federal coal resources by surface mining methods will be allowed in the Bull Mountain Coal Field, underground mining will be encouraged, because it is less environmentally disruptive. The decision to implement a 10:1 1 (overburden thickness to coal thickness) stripping ratio cutoff limit was based on the premise that it may limit the size of the surface mine.

3.17.2 Fluid Minerals

3.17.2.1 Geothermal Energy

Geothermal energy is derived from heat in the earth's crust that is released as hot water and steam. Due to a variety of geologic processes, geothermal resources underlie substantial portions of many western states, including lands in the BiFO planning area. However, there is presently only a very low level of interest in developing Montana's federally owned geothermal resources. The US Geological Survey (Williams 2008) gave eastern Montana a low favorability rating for the occurrence of geothermal resources in the planning area.

Geothermal resources in the planning area are classified as low temperature (less than 194^{o}F); there are at least six known thermal springs or warm drill holes in and immediately adjacent to

the planning area with measured temperatures ranging from 103°F to 165°F (Montana DEQ 2007). There are no geothermal power plants in Montana because there are no identified high temperature resources in the state. The BLM has received only two inquiries about development of federal geothermal resources in Montana (both in western Montana) since 1979. There are no inventoried direct use facilities using geothermal heat in the planning area (Geo-Heat Center 2008).

3.17.2.2 Oil and Gas

Oil and gas fields are scattered throughout the BiFO planning area with fields primarily concentrated in northern Musselshell County and southern Carbon County (Big Snowy uplift and Elk Basin areas). The only county in the planning area with no production is Wheatland County. Map 48 – identifies active oil and gas fields and development in the planning area.

The first drilling in Montana occurred near the 'Cruse' oil seeps, in Carbon County, in about 1890. Drilling occurred along strike (northwest-southeast) to the Beartooth Mountain front. Only small volumes of low gravity oil were reportedly produced.

The Elk Basin area in Carbon County experienced early development as an extension of the Wyoming portion of the field. The first drilling occurred about 1915; this activity pre-dated the Mineral Leasing Act of 1920. At that time, oil was developed as a placer mineral on mining claims located under the General Mining Act of 1872, as amended by the Petroleum Placers Act of 1897. Many of these petroleum placers went to patent (became private land).

Further drilling occurred as operators attempted to expand the known producing area along the axis of the Elk Basin anticline. Field limits were extended to the northwest, with the later discoveries at Elk Basin Northwest, Clarks Fork, the Clarks Fork North and Clarks Fork South fields. In the same time frame (1910s-1920s), exploration occurred at the Dry Creek Dome in central Carbon County. Natural gas was discovered there in 1919 and extended into Golden Dome in 1962.

In Big Horn County, the Soap Creek Oil Field was discovered in 1920 and then expanded by new drilling as recent as 2005. The Hardin Gas Field was discovered in 1928 and expanded as a result of new drilling into the 1930s, with the most recent well drilled in 1975.

Early prospecting for oil was concentrated around geologic structures that were exposed at the surface. These structures, often called "Sheepherder Anticlines", were believed to be indicators of potential oil reservoirs in subsurface structures. Most of the early exploration and development occurred in proximity to these exposed anticlines and domes. Many O&G fields are still identified by these surface structures (i.e., Golden Dome, Gage Dome, and Dean Dome). Often, the earliest wells drilled in these structures were not drilled deep enough and did not achieve a discovery.

Many other anticlines were 'breached' by erosion that exposed the reservoir rock leaving only stained or bleached rock as indications of the past presence of oil. This is the case on the east flank of Red Dome in Carbon County. Here, the Triassic Chugwater Formation red beds have zones of sandstones that are gray; the oil, while it was in the rock, prevented the oxidation of the iron in the rock matrix and cement.

The first drilling in Musselshell County was not successful; however by 1920, oil was discovered in the Heath Lime at Devil's Basin field. By the end of 1921, oil had been discovered in the Soap Creek field in Big Horn County and the Lake Basin field in Stillwater County. Mosser Dome field in southwestern Yellowstone County opened in 1936.

In the 1940s, additional oil fields were discovered in Musselshell County, including Gage Dome, Ragged Point, Big Wall, and Melstone. All were surface structures ('Sheepherder Anticlines') with the oil found in Mississippian carbonate rocks (Amsden, Kibbey, Heath, and Tyler Formations). New fields were discovered in surface structures (Ivanhoe, Stensvad, Delphia, Hawk Creek, Hiawatha, Keg Coulee, Pole Creek, Mason Lake), and existing fields were expanded into the 1960s. Similarly, exploration of the surface structure at Wolf Springs resulted in an oil discovery in Yellowstone County in 1955 and at Weed Creek in 1967.

The first gas production in Sweet Grass County occurred when the Six Shooter Dome field was discovered in 1947. First production in Golden Valley County occurred with the discovery of gas in the Big Coulee field in 1948. Later that year oil was discovered in Golden Valley's Woman's Pocket and Devil's Pocket fields.

In 1953 the Ash Creek field in southern Big Horn County was discovered, with oil produced from the Upper Cretaceous Shannon-Formation. The Mackay Dome and Roscoe Dome fields, in southern Stillwater and Carbon Counties, respectively, were discovered in the late 1950s. Both produce from Lower Cretaceous sandstones.

In the 1970s, the Rapelje gas field in Stillwater County was discovered. Two oil price shocks in the 1970s resulted in a quadrupling of the price of oil over a four year period from around $3.00 per barrel in mid-1973 to over $12.00 per barrel in 1977. The Islamic Revolution in Iran in 1979 sent oil prices still higher, with the price peaking at over $38.00 per barrel in 1981.

The rapid increase in the price of oil resulted in a rush of new prospect generation. Even prospects that had a low probability of finding product were drilled. Conservation and new discoveries led to in an increased supply while demand was falling, resulting in a price collapse, with oil in Montana falling below $10.00 per barrel in early 1986. For the rest of the 1980s, the BLM allowed operators to leave their wells 'shut in' (in a non-producing status). This policy allowed operators to maintain their wells without having to operate them at an economic loss.

In 1992 the BLM terminated the shut in policy and issued new regulations that provided for a reduced royalty rate for oil properties that averaged less than 15 barrels of oil per well per day (so-called 'stripper wells/properties'). The royalty rate reduction (RRR) was intended to reduce operators' operating costs and encourage the greatest ultimate recovery of oil. The BLM anticipated that operators would take advantage of this incentive and work over existing wells to restore or increase production at these properties. The RRR would be recalculated every year, and could fall further if the average production rate continued to decrease. The regulation was in effect for about 14 years and terminated effective February 1, 2006 (when the oil price exceeded the threshold established in the regulation).

In 2008, there were 48 active O&G fields in the planning area, as listed in Table 3-50. The earliest discovery date for a field presently producing is Elk Basin in 1915. The last new field

discovery was in 1991, when the Gray Blanket (Big Horn County) and Sixshooter Dome Fields (Stillwater and Sweet Grass counties) were established.

Table 3-50 Active Oil and Gas Fields in the Planning Area

Field	County	Discovered	Oil	Gas
Gray Blanket	Big Horn	1991	X	
Lodge Grass	Big Horn	1964	X	
Soap Creek	Big Horn	1921	X	
Soap Creek, East	Big Horn	1977	X	
Toluca	Big Horn	1983		X
Waddle Creek	Big Horn	1983		X
Clarks Fork	Carbon	1954	X	X
Dry Creek	Carbon	1929	X	X
Dry Creek (Shallow Gas)	Carbon	1975		X
Dry Creek, Middle	Carbon	1958	X	X
Dry Creek, West	Carbon	1976	X	X
Elk Basin	Carbon	1915	X	
Elk Basin, Northwest	Carbon	1964	X	
Golden Dome	Carbon	1953	X	X
Big Coulee	Golden Valley	1954		X
Big Gully	Musselshell	1976	X	
Big Wall	Musselshell	1948	X	
Delphia	Musselshell	1967	X	
Devil's Basin	Musselshell	1920	X	
Gage	Musselshell	1944	X	
Hiawatha	Musselshell	1967	X	
Howard Coulee	Musselshell	1974	X	
Ivanhoe	Musselshell	1956	X	
Jim Coulee	Musselshell	1971	X	
Keg Coulee	Musselshell	1960	X	
Keg Coulee, North	Musselshell	1960	X	
Kelley	Musselshell	1966	X	
Little Wall Creek	Musselshell	1981	X	
Little Wall Creek, South	Musselshell	1975	X	
Mason Lake	Musselshell	1964	X	
Melstone	Musselshell	1948	X	
Melstone, North	Musselshell	1976	X	
Ragged Point	Musselshell	1956	X	
Ragged Point, Southwest	Musselshell	1973	X	

Table 3-50 Active Oil and Gas Fields in the Planning Area

Field	County	Discovered	Oil	Gas
Stensvad	Musselshell	1958	X	
Tinder Box	Musselshell	1988	X	
Willow Creek, North	Musselshell	1970	X	
Winnett Junction	Musselshell	1973	X	
Big Coulee	Stillwater	1954		X
Dean Dome	Stillwater	1966	X	
Fiddler Creek	Stillwater	1952	X	
Lake Basin	Stillwater	1924	X	X
Sixshooter Dome	Stillwater	1991		X
Sixshooter Dome	Sweet Grass	1991		X
Crooked Creek	Yellowstone	1985	X	
Weed Creek	Yellowstone	1966	X	
Wolf Springs	Yellowstone	1955	X	
Wolf Springs, South	Yellowstone	1984	X	

Note
Sources: Montana Board of Oil and Gas (2007), Tonneson (1985).

On October 14, 2008, the Automated Fluid Mineral Support System (AFMSS) databases for the Miles City and Worland field offices were queried for the number of federal wells in the BiFO planning area boundaries. (Worland was queried because it has administrative control over certain wells in Carbon County). The AFMSS databases show the totals as referenced in Table 3-51.

Table 3-51 Federal Wells in the BiFO Planning Area

Type of Well	Number of Wells
Drilling wells	1
Producing gas wells	9
Producing oil wells	59
Water injection wells	5
Shut in oil wells	1
Temporarily abandoned wells	7

In 2007, federal O&G production in the planning area totaled 277,532 barrels of oil and 147,325 million cubic feet of gas. Table 3-52 provides a county by county breakdown of production.

Table 3-52 Federal Oil and Gas Production in the BiFO Planning Area

County/Area	2007 Total Oil Production (Barrels)*	2007 Oil Production: Federal Minerals (Barrels)**	Percent of Total Oil Production from Federal Minerals	2007 Gas Production (mcf) [a]	2007 Natural Gas Production: Federal Minerals (mcf) [b]	Federal Percent of Total Gas Production	Federal Gas Plant Products (NGLs)	Fiscal Year 2008 Disbursements [b]	BLM Leased Acres
Montana	34,857,704	3,838,294	11	120,768,222	32,161,818	0.27			
BiFO Planning Area	686,221	277,523	40	15,768,779	147,325			1,743,058	158,544
Big Horn	61,559		0	13,062,106	3,934,325			0	3,934
Carbon	457,110	271,696	59	1,952,657	147,325	0.08	1,466,773	1,566,019	48,941
Golden Valley	0		0	94,673		0		24,222	17,903
Musselshell	144,731	4,995	3	6,601		0		122,513	54,842
Stillwater	0		0	583,553		0		24,133	21,612
Sweet Grass	0		0	69,189		0		0	4,309
Wheatland	0		0	0		0		707	1,023
Yellowstone	22,821	832	4	0		0		5,464	8,183

Note:
[a] Source: Montana Board of Oil and Gas (2007)
[b] Source: Mineral Management Service (2008)

3.17.3 United States Geological Survey Oil and Gas Assessments

The United States Geological Survey (USGS) completed nationwide assessments of O&G resources in 1995. Since then, it has issued a new assessment for a number of provinces including the Powder River Basin, Big Horn Basin, and North Central Montana Province.

3.17.3.1 1995 USGS Assessment

The planning area is located in the Rocky Mountains and Northern Great Plains Region, as defined by the USGS in its 1995 National Assessment of United States Oil and Gas Resources (USGS 1995). Portions of southwest Montana, north central Montana, Bighorn Basin, and Powder River Basin provinces are in the planning area (Map 167- USGS Oil and Gas Provinces 1995 Boundaries).

The Southwest Montana Province lies north and northwest of Yellowstone National Park and east and southeast of the Cordilleran Thrust Belt in the southwestern part of the Rocky Mountain Foreland in southwestern Montana. This province includes all of Sweet Grass and Stillwater counties and western Carbon County. All or portions of four conventional plays in this province are located in the planning area. The 1995 assessment defined a play as a set of known or postulated oil and (or) gas accumulations sharing similar geologic, geographic, and temporal properties such as source rock, migration pathway, trapping mechanism, and hydrocarbon type. Conventional accumulations are discrete deposits, usually bounded by a downdip water contact, from which natural gas or oil can be extracted using conventional techniques (USGS Circular 1118 1995).

A small portion of the North-Central Montana Province lies in the planning area. It includes all of Golden Valley, Musselshell, Wheatland, and Yellowstone counties and a small part of Big Horn County. The area of the province in the planning area is bounded by the Crazy Mountains Basin to the southwest and the Powder River Basin to the southeast. The province has been actively explored for oil since it was discovered in adjoining Alberta, Canada, in 1903. Portions of 10 conventional and unconventional plays are found in that portion of the Province in the planning area. Unconventional accumulations are a broad class of oil or gas deposits of a type (such as gas in "tight" sandstones, gas shales, and coal bed natural gas) that historically have not been produced using traditional development practices. Such accumulations include most continuous accumulations which are hydrocarbon accumulations pervasive throughout large areas that are not significantly affected by hydrodynamic influences (USGS Circular 1118 1995).

Portions of the Big Horn Basin Province extend north from Wyoming into Carbon County, Montana. The first fields in this Province were discovered in 1906 and 1907. As noted above, the first oil well drilled in the state was in the Elk Basin field in 1915 in Carbon County. Portions of 10 conventional plays associated with this province occur inside planning area boundaries.

A portion of the Powder River Basin Province lies in Big Horn County, Montana, in the planning area. The Powder River Basin is a major inter-montane basin of Laramide origin in the northern Rocky Mountains that occupies northeastern Wyoming and a small portion of

southeastern Montana. The basin makes up the majority of the surrounding Province. The Powder River Basin is a deep, northerly trending, asymmetric, mildly deformed trough, approximately 250 miles long and 100 miles wide. Its structural axis is close to the western side. The thickness of the sedimentary section exceeds 18,000 feet along the basin axis. The basin is one of the richest petroleum provinces in the Rocky Mountains. The first discovery in the basin was in Wyoming in 1887. Portions of five conventional and one hypothetical conventional plays are found in that portion of the Province inside planning area boundaries. Portions of one unconventional (coal bed natural gas) play are found in the planning area.

3.17.3.2 Subsequent USGS Assessments

Since completing the 1995 Assessment, the USGS has reassessed the Powder River Basin, the North-Central Montana, and the Big Horn Basin provinces that partially overlap the planning area.

The existing assessment for the Powder River Basin Province was revisited in both 2002 and 2006. In neither case did the boundaries of the Province change. The 2002 assessment addressed the potential for undiscovered resources in continuous O&G accumulations in the Powder River Basin. The assessment was based on geologic elements such as hydrocarbon source rocks, reservoir rocks, and hydrocarbon traps in four Total Petroleum Systems (TPS) identified in the basin by the USGS. In the original version of the assessment published in 2002, the USGS identified portions of two assessment units (AUs) in the Tertiary-Upper Cretaceous Coal-Bed Methane TPS in the planning area. It also identified one AU, the Shallow Continuous Biogenic Gas AU in the Cretaceous Biogenic Gas TPS in the planning area (USGS Fact Sheet 146-02, 2002). The USGS reassessed the conventional resources of O&G in the Powder River Basin in 2006 (USGS Fact Sheet 2006-3135, 2006). A TPS consists of all genetically related petroleum generated by a pod or closely related pods of mature source rock. Particular emphasis is placed on similarities of the fluids of the petroleum accumulations. Plays as described in the 1995 Assessment are established primarily according to similarities of the rocks in which petroleum accumulations occur. The AUs are more closely associated with the generation and migration of petroleum than plays (USGS, DDS-69-D, 2005).

In May 2008, the USGS finished a reassessment of the undiscovered biogenic gas resources in the North-Central Montana Province. For this assessment, it increased the area of the Province to include most of the eastern two-thirds of Montana including portions of the planning area. Work on this assessment began in 2000 as part of the national O&G assessment project. The assessment was based on the general geologic elements used to define a TPS. Using that geologic framework, the USGS defined the Cretaceous Judith River through Belle Fourche Biogenic Gas TPS with seven associated AUs (USGS Fact Sheet 2008-3036, 2008).

In June 2008, the USGS released a new assessment of undiscovered O&G resources of the Bighorn Basin Province in Wyoming and Montana, covering about 6.7 million acres. Portions of two TPSs are in that portion of the Province in Montana. The first of these TPSs is the conventional Phosphoria TPS made up of one AU. The other is the Cretaceous-Tertiary Composite TPS. Parts of two AUs that contain coal bed natural gas occur in the Montana portion of the Bighorn Basin Province (USGS Fact Sheet 2008-3050, 2008).

3.17.4 Federal Drilling Activity

Federal drilling activity for the last 18 years is shown in Table 3-53. Total activity is consistently low in any one year. Total drilling activity on all ownerships in the planning area is shown in Table 3-54. Activity has remained stable on all ownerships since 1989.

Table 3-53 Summary of Federal Wells Drilled in the Last 18 Years

Year	Drilled Producing Well	Drilled Dry Hole
2007	1	0
2006	0	0
2005	0	0
2004	0	1
2003	0	1
2002	0	0
2001	5	5
2000	3	2
1999	1	1
1998	0	0
1997	0	0
1996	0	2
1995	0	2
1994	0	1
1993	0	2
1992	0	0
1991	2	1
1990	2	6
TOTALS	**14**	**24**

Note:
Source: AFMSS 2009

Table 3-54 All Well Types, All Ownerships in the Planning Area

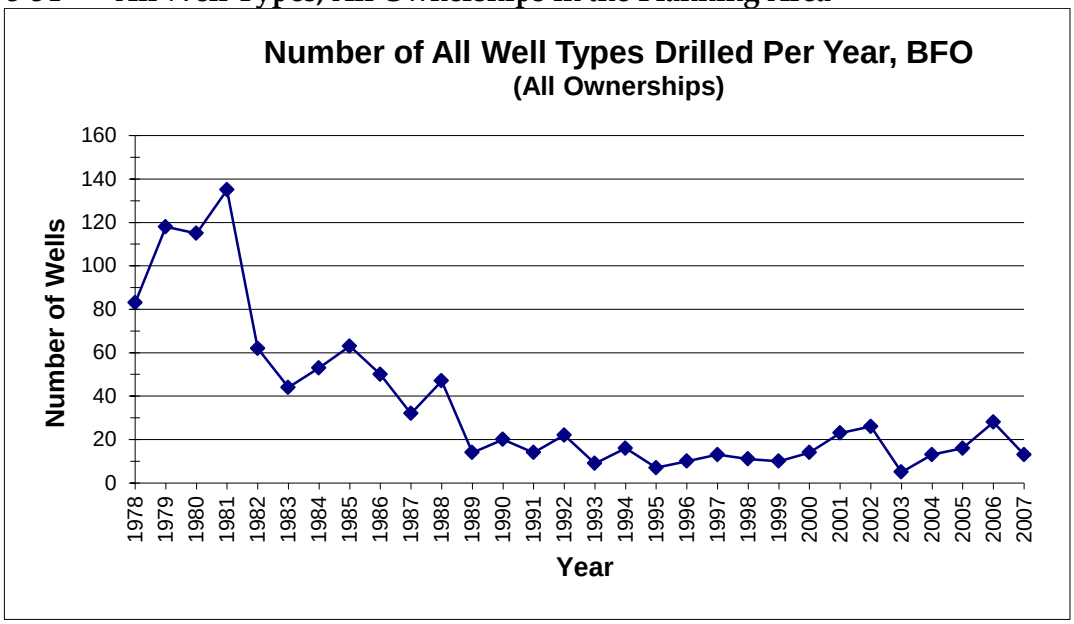


Table 3-53 and Table 3-54 were copied from the reasonably foreseeable development (RFD) scenario for the Billings RMP depict the drilling history for BiFO.

3.17.4.1 Existing Federal Leases

There are a total of 235 active leases in the planning area covering 145,988.55 acres. This is approximately 16 percent of the federal O&G estate in the planning area.

3.17.4.2 Well Spacing

Before development drilling begins, a well spacing pattern must be established. The State of Montana establishes well spacing patterns for both exploratory and development wells (field spacing) which the BLM generally adopts after (the BLM participates in all hearing of the Montana Board of Oil and Gas Conservation). Spacing unit size is established to provide for the most efficient and economic recovery of O&G from a reservoir. Normal well spacing statewide ranges from 40 to 640 acres, depending on discovery well characteristics such as porosity, permeability, pressure, composition, depth of formations, etc.

3.17.4.3 Unitization and Communitization

Unit and communitization agreements can be formed in the interest of conservation and to allow for the orderly development of O&G reserves. An exploratory unit is used for the discovery and development of the field in an organized and efficient manner. A unit agreement provides for the recovery of O&G from the land as a single consolidated entity without regard to separate lease ownerships. A unitization agreement provides for the allocation of production among all interest owners. No exploratory units are located in the planning area. Five secondary units are located in the planning area boundary.

A communitization agreement combines two or more leases (federal, state, or fee) that otherwise could not be independently developed in conformity with established well spacing patterns. The leases in a spacing unit share in the costs and benefits of the well drilled in the spacing unit. Fifteen communitization agreements covering 3,654 acres are located in the planning area.

3.17.4.4 Projected Reasonably Foreseeable Development for Oil and Gas

The following information is summarized from the Reasonable Foreseeable Development (RFD) Scenario for oil and Gas for the Billings Field Office (Montana/Dakotas Bureau of Land Management, 2010). Map 49 identifies the areas with Low or Moderate levels of forecasted drilling activity. There are no identified areas of High forecasted drilling activity (greater than 5 wells drilled per year). Areas of Low Drilling activity are forecasted to have *no more than one* well drilled per township per year. Areas of Moderate Drilling activity are forecasted to have between *one and five* wells drilled per township per year. The 'Moderate' potential areas were delineated from the extent of existing O&G fields and the resource plays that may encourage further drilling activity. The 'Low' potential areas are lands that have been sparsely explored, have no established production, and are not in identified geological structures (especially surface-exposed structures that have drawn past drilling activity). Map 167 shows the RFD for the Billings Field Office overlaid with the federal mineral estate.

It is likely that forecast drilling activity levels will be somewhat higher than the levels of the past 20 years. For the 20 year forecast period of the RMP, the BLM anticipates an *average of 20 wells to be drilled per year* (versus 17 wells drilled per year from 1989-2008). Some of the new drilling will be in wildcat areas in the Crazy Mountains Basin play. There are fewer Federal minerals in Sweet Grass and Wheatland Counties than in the other counties in the BiFO. Federal conventional and unconventional, including coalbed natural gas (CBNG) wells will average *three to four* wells per year.

CBNG development in the BiFO is forecast to occur in either the Bull Mountain Basin or in the Bighorn Basin. The BLM does not anticipate that CBNG exploration and development in the BiFO would have the same intensity as does the CBNG development in the Powder River Basin. Compared to the Powder River Basin, coals in the above-described fields are:

- Thinner
- Higher rank, with likely higher adsorbed gas levels
- More deeply buried
- Drilling and development likely would have a lower well density
- There would likely be a single well per spacing unit (no thick, stacked coals)
- The coals are generally too deep below the surface to supply groundwater for most domestic and agricultural purposes
- Groundwater in the coals likely has higher salinities and would not be suitable for domestic or agricultural purposes

In contrast to the Powder River Basin CBNG development, the BLM expects that produced water volumes associated with CBNG development in the BiFO would be similar to conventional O&G development, having lower volumes and higher salinities. It is probable that the produced water would be reinjected into a subsurface aquifer that already has high salinities, or would be allowed to evaporate in lined pits.

The BLM does not anticipate that CBNG drilling and development would result in any different environmental impacts than conventional drilling and development. In contrast to the Powder River Basin (PRB), coals in the Big Horn and Bull Mountains Basins are at greater depths. Operators would drill using conventional drilling rigs and conventional drilling techniques, so the area disturbed would be similar to conventional wells. The coal beds generally are not sources of fresh water for domestic or agricultural purposes (underground sources of drinking water). Produced water would be disposed of in a similar manner as water from conventional reservoirs – most likely reinjection into horizons bearing water of similar or lower quality. The coals are higher grade and would have greater volumes of adsorbed CBNG than PRB coals. Because there aren't thick, stacked coal beds, there would likely be only one well drilled per well pad. For these reasons, the BLM believes it is not necessary to assess CBNG drilling separately from other drilling activity.

3.17.4.5 Well Completion and Stimulation

After the well is drilled, if necessary, testing operations would commence. If testing indicates the presence of an economic level of oil and/or gas, the well would be completed for production. Typical completion operations would involve setting and cementing the production casing to the total depth of the well. There are also instances where casing is set at the top of the target zone, and the formation is completed in the open hole.

After the proper casings are set, wells are often treated to improve the recovery of hydrocarbons by increasing the rate and volume of hydrocarbons moving from the natural oil and gas reservoir into the wellbore. In many instances, the well(s) would not give up commercial volumes of oil or gas unless they were stimulated. These processes are known as well-stimulation treatments, and they are designed to create new fluid passageways in the producing formation or remove blockages within existing passageways. They include fracturing, acidizing, and other mechanical and chemical treatments often used in combination. The results from the different treatments are additive and often complement each other, which makes it possible to introduce fluids carrying sand, or other small particles of material into the newly created crevices to keep the fractures open when the pressure is relieved. This increases the flow rate and volume of reservoir fluids that move from the producing formation into the wellbore.

Water produced during drilling, hydraulic fracturing, and completion operations is contained in a lined pit or in steel tanks on location. The water can be disposed of by trucking it to an authorized disposal pit, allowing the water in the lined pit to evaporate within required timeframes, through subsurface injection, or treated and reused to drill or complete another well. The disposal of water generated during drilling and completion operations in an injection or disposal well requires permit(s) from the primacy state or Environmental Protection Agency

(EPA). See the Fluid Minerals Operations and Procedures Produced Water section for details on primacy. A NEPA analysis is prepared for all requests concerning disposal of water generated from federal wells and in accordance to federal and state regulations.

After completion operations are finished, wellhead equipment consisting of various valves and pressure regulators are installed to control the oil or gas flow to the production facilities and allow safely shutting in the well under any conditions.

3.17.4.6 Hydraulic Fracturing

Hydraulic fracturing has been utilized by the oil and gas industry since the late 1940s. Within the planning area, hydraulic fracturing, in conjunction with horizontal drilling described above, has allowed for development of unconventional zones that were once considered uneconomical, like the Bakken and Three Forks Formations in the Williston Basin area.

Hydraulic fracturing is a technique used to create additional space and connecting existing fractures and existing rock pores with newly created fractures that are located in deep underground geologic formations. The induced space allows the rock to more readily release oil and natural gas so it can flow to the surface via the well bore that would otherwise be uneconomical to develop. Wells that undergo hydraulic fracturing may be drilled vertically, horizontally, or directionally and the resultant fractures induced by the hydraulic fracturing can be vertical, horizontal, or both. The typical steps of hydraulic fracturing can be described as follows:

1. Water, sand and additives are pumped at high pressures down the wellbore.
2. The liquid goes through perforated sections of the wellbore and into the surrounding formation, fracturing the rock and injecting sand or other proppants into the cracks to hold them open.
3. Experts continuously monitor and gauge pressures along with the volume of fluids and proppants, while studying how the sand reacts when it hits the bottom of the wellbore; slowly increasing the density of sand to water as the frac progresses.
4. This process may be repeated multiple times, in "stages" to reach maximum areas of the wellbore. When this is done, the wellbore is temporarily plugged between each stage to maintain the highest water pressure possible and get maximum fracturing results in the rock.
5. Frac plugs are drilled or removed from the wellbore and the well is tested for results.
6. The water pressure is reduced and fluids are returned up the wellbore for disposal or treatment and re-use, leaving the sand in place to prop open the cracks and allow the oil/gas to flow to the well bore.

Fracturing fluid is typically more than 98 percent water and sand, with small amounts of readily available chemical additives used to carry the proppant and control the chemical and mechanical properties of the water and sand mixture. Proppant, consisting of synthetic or

natural silica sand, may be used in quantities of few hundred tons for a vertical well to a few thousand tons for a horizontal well. The amount of water needed to fracture a well in the planning area depends on the geologic basin, the formation, and depth and type of well (vertical, horizontal, directional), and the proposed completion process. The amount of water used to hydraulic fracture a Bakken or Three Forks well is approximately 2-4 million gallons of water per well (EPA, 2012).

Several sources of water are available for hydraulic fracturing in the planning area. The *Fluid Minerals Operations and Procedures Appendix* contain further details on sources of water that could potentially be used for hydraulic fracturing or drilling operations. The use of any specific water source on a federally administered well, requires the proposal be reviewed and analyzed through the NEPA process for BLM approval during the APD stage to ensure compliance with Montana water laws and federal regulations.

Before hydraulic fracturing takes place, all surface casing and some deeper, intermediate zones are required to be cemented from the bottom of the cased hole to the surface in accordance to Onshore Oil and Gas Order No.2, MBOGC rules and regulations, and API standards. The cemented well is pressure tested to ensure there are no leaks and a cement bond log is run to ensure the cement has bonded to the casing and the formation.

MBOGC regulations also ensure that all resources including groundwater are protected. The MBOGC regulations require new and existing wells, which will be stimulated by hydraulic fracturing, must demonstrate suitable and safe mechanical configuration for the stimulation treatment proposed. If the operator proposes hydraulic fracturing through production casing or through intermediate casing, the casing must be tested to the maximum anticipated treating pressure. In accordance with MBOGC Rule 36.22.1015 operators are required to disclose and report the amount and type of fluids used in well stimulation to the Board or, if approved by the Board, to the Interstate Oil and Gas Compact Commission/Groundwater Protection Council hydraulic fracturing web site (FracFocus.org).

3.17.4.7 Locatable Minerals

Federal minerals in the decision area are available for exploration and development unless previously withdrawn. Table 3-55 shows the number of active claims by county in the planning area. The surface management program for locatable mineral exploration and development is administered under federal regulations (CFR 3809) and an MOU between the Department of Natural Resources and Conservation (DNRC) and BLM. Locatable mineral activities in WSAs are administered under the 43 CFR 3820 regulations. When a Plan of Operations is submitted, it includes a reclamation plan for the project area.

Mineralization occurrences are often associated with veins and fracture zones located near the margins of igneous dikes and intrusions. In the past, the USGS and the former US Bureau of Mines have examined various prospects and reported finding deposits that contain values for copper, lead, zinc, zeolites, uranium, niobium, zirconium, thorium, titanium, sulfur, tantalum, beryllium, lithium, cerium, and vermiculite. These mineral occurrences are considered to be uneconomic and marginal in value.

There are currently two approved 3809 mine plans for bentonite. Development potential for additional bentonite, gypsum, uranium, and limestone exist in the decision area. Locatable minerals related mining activity consists of two active bentonite mines, located in Carbon County. Two mining companies have both patented and unpatented claims for bentonite located on the west and southwest flanks of the Pryor Mountains in southern Carbon County. American Colloid and Wyo-Ben Incorporated (Wyo-Ben) have 151 unpatented placer claims encompassing over 3,000 acres.

American Colloid produced approximately 485,000 tons of bentonite during 2008 with a value of around $60.00 per ton. The company has operated under a State of Montana Mining and Reclamation Plan since 1972. Under federal surface management regulations (43 CFR 3809), this plan was accepted by BLM in 1981. American Colloid has since patented 3,584 acres and has an additional 3,739 acres of unpatented federal claims, for a total of 7,323 acres in their permit. Wyo-Ben produces bentonite from patented and unpatented claims under their plan which was approved in 1999. It currently produces an average of 32,000 tons per year from its Montana operations.

3.17.4.8 Mineral Materials

There are 15 active sites for mineral materials (sand, gravel, clay, stone, scoria and borrow materials) in the planning area. Mineral material permits by county in the planning area are shown in Table 3-55. Saleable mineral production in the decision area was 6,500 cubic yards for a value of $3,250 from 100 acres of federal land.

BLM would dispose of salable minerals on unpatented mining claims only for a public purpose when no reasonable alternative exists. Salable mineral sites would have an approved mining and reclamation plan and an environmental analysis prior to being opened. Mineral material would be sold at a fair market value to the public, but would be free to state, county, or other local governments when used for public projects. Mineral material sales would be processed on a case by case basis.

Saleable minerals in the decision area consist of sand, gravel, clay, building and decorative stone, scoria, and borrow materials which is used for road and other construction activities. Common fill that cannot be separated from the soil at the surface may be considered as being a right associated with the surface estate. BLM issues permits for the sale of surface materials under the Materials Act in the same manner as mineral materials associated with the subsurface rights.

Table 3-55 Claims and Saleable Mineral Permits in the Planning Area

County	Lode Claims	Placer Claims	Saleable Minerals permits
Big Horn	0	0	2
Carbon	82	151	12
Golden Valley	0	0	0
Musselshell	0	0	0
Stillwater	613	11	1
Sweet Grass	380	2	0
Wheatland	0	0	0
Yellowstone	0	0	0
Total	**1,075**	**164**	**15**

Note:
Source:

Most of the sand and gravel mining operations in the planning area are on private lands containing alluvial gravel deposits. Some topographically higher terrace gravel deposits exist on federal lands, however these are not as easily accessible as the alluvial valley deposits. Average annual production of sand and gravel from federal lands in the planning area is on the order of 5,000 to 10,000 cubic yards with a current unit royalty value of $0.50 per cubic yard (current market value [2008]).

Building and decorative stone is abundant throughout the planning area. Decorative stone is primarily a commercial type referred to as "moss rock," or a lichen covered sandstone. There are no active permits for the removal of decorative stone in the planning area; however, an average of 100 tons per year could be expected to be produced at scattered locations throughout the planning area. The unit royalty value of moss rock is approximately $20 per ton (2008 current market value). However, this rate can vary.

Some small amount of building stone and rip rap are produced from a community pit on federal land located near Warren, Montana. The stone is normally purchased in small volumes of a ton or less with a market value (2008) of $7.50 per ton. There are about 10 small sales annually from the site, with each sale averaging one ton.

3.18 Forestry and Woodland Products

The demand for wood products in the BIFO decision area is widely variable. Incidental amounts of non-forest special products have been sold in the past and have included wildings and mushrooms

3.18.1 Forest and Woodland Communities

Forest and woodland communities in the planning area are discussed in some detail in the Vegetative Communities Section.

3.18.2Wood Products

Most forested lands in the BIFO decision area occur in small isolated parcels with poor access, small volume, and limited economic value. Consequently, the sale and harvest of wood products has been chiefly through small negotiated sales. Most sales are identified through public demand, where access is limited and harvest is occurring on adjacent private lands. Volumes sold in the BIFO have averaged less than 50 thousand board feet (MBF) per year over the last decade as shown below in Table 3-56.

Table 3-56 Wood Products Harvested and Sold in the Planning Area (1994-2008)

Wood Product	Volume/15 Years	Average/Year	Average Price/Unit	Monetary Total
Saw timber: Douglas-fir, lodgepole & ponderosa pine	1,261 MBF	84 MBF	$ 76/MBF	$ 95,380
Pulp wood	990 MBF	66 MBF	$ 1.70/MBF	$ 1,683
Post and pole	3025 ea	202 ea	$ .52 ea	$ 1,582
Biomass	300 tons	20 tons	$ .01/ton	$ 3
Juniper	16,530 lbs	1,102 lbs	$ .05/lb	$ 100
Fuel wood	479 cords	32 cords	$ 5.00/cord	$ 400
Christmas trees	0	0		

Note:
Averages reflect 15 years 1994-2008.
Weight factor (computed for burned dry timber) = 12.0lbs/bdft.
Source: BLM 1984

Market price dictates the demand for saw timber and wood products. While there are limited markets for forest products within the decision area, there are markets in western Montana. Current market value for forest products plays a pivotal role in determining when forest products can be economically transported to markets outside of the planning area.

Wildfires are occurring more frequently and with greater intensities, thereby affecting larger areas of forested lands. The past two years have seen larger volumes of saw logs, pulp, and biomass removal as a result of salvage operations in response to large wildfires. Fuel wood sales average approximately 32 cords per year. Historically, few existing markets for pulpwood and biomass have existed. Those markets that are available are generally small and unstable, with low market prices and high transportation costs. However, during the last two years, markets have been available. The type of forest products available in the decision area include, but are not limited to:

- Saw logs
- Posts and poles
- Pulp
- Decorative tree boughs
- Christmas trees
- Fuelwood

3.19 Realty, Cadastral Survey, and Lands

Public land policy in the United States fundamentally changed with passage of FLPMA, which directed that "public lands be retained in federal ownership, unless as a result of the land use planning procedure provided for in this Act, it is determined that disposal of a particular parcel will serve the national interest…". The Realty, Cadastral Survey, and Lands program is a support program for all other resources and resource uses in the planning area with a goal to manage public lands to support resource program goals and objectives, provide for public land uses in accordance with applicable laws and regulations while protecting sensitive resources and improving public land management through land tenure adjustments. As such, the program responds to requests for ROWs, permits, leases, withdrawals, and land tenure adjustments from outside entities.

The BiFO manages 434,154 acres of surface land and 889,497 acres of split estate land in eight counties. Split estate lands are lands where the federal government owns the mineral rights, and the surface rights belong to a different owner. Table 3-57 provides a detailed assessment of land ownership in the planning area.

Table 3-57 Land Status by County

County	Ownership (in acres)		
	BLM Public Lands (in Planning Area)	BLM Federal Mineral Estate (in Planning Area)	Other Surface Owners (private, state, other federal)
Big Horn, MT	7	1.016	2,572,759
*Big Horn, WY	4,298	4,298	0
Carbon	220,556	341,376	1,319,729
Golden Valley	7,943	44,360	755,843
Musselshell	101,247	226,905	1,197,198
Stillwater	5,504	58,348	1,154,905
Sweet Grass	15,893	75,240	1,191,450
Wheatland	1,333	21,437	913,802
Yellowstone	77,373	116,516	1,695,307
TOTAL	**434,154**	**889,497**	**10,803,310**

3.19.1 Land Tenure Adjustments and Access

Land ownership (or land tenure) adjustments are those actions that result in the disposal of BLM land and/or the acquisition of non-Federal lands or interest in lands. The FLPMA is the primary authority the BLM uses to make land tenure adjustments such as under Section 203 for sales, Section 205 for acquisitions, Section 206 for exchanges, and Section 209 for mineral conveyances. Other authorities, such as the R&PP Act also provide for disposal. For the purpose of addressing the land tenure adjustments in this planning effort, three categories

related to land tenure adjustments were developed and are described below (note: the 1984 BiFO RMP Record of Decision only addressed Retention (Category I) and Disposal (Category III).

- **Category I:** Retention would include all Special Designations (including ACECs, WSAs, national historic trails, national monuments, etc.), lands with wilderness characteristics, archeological sites and/ or historic districts, and lands acquired through LWCF. Lands in Category I would not be transferred from BLM management by any method for the life of the plan.
- **Category II:** Retention/Limited Land Ownership Adjustment (no land disposals through sale) lands in Category II would not be available for sale under Section 203 of FLPMA. However, lands in this category could be exchanged for lands or interest in lands. Some public lands in Category II may contain resource values protected by law or policy. If actions cannot be taken to adequately mitigate impacts from disposal of those lands, those parcels would be retained.
- **Category III:** Disposal (land ownership adjustments, including sale) lands generally have low or unknown resource values or are isolated or fragmented from other public land ownerships making them difficult to manage. Public land parcels in this category are relatively smaller in size (typically 160 acres or less). A listing of the legal descriptions of these disposal parcels can be found in Appendix J. These parcels have been found to potentially meet the sale criteria of section 203(a)(1) of FLPMA and could be made available for sale, however, exchange could have priority over disposal by FLPMA sale.

Table 3-58 shows how lands administered in the BiFO planning area are currently allocated by land tenure category.

Table 3-58 Land Tenure Category Acreage

Current Land Tenure Adjustments	Acres	Percentage of Planning Area
Retention	27,207	6.3%
Disposal	6,329	1.5%

Note:
Source: BLM 1984 ROD

Table 3-59 Land Exchanges, Acres Disposed/Acquired

Exchange	Serial Number	Date	Acres Disposed	Acres Acquired	Geographic Name
Bull Mountain	MTM-080345	Feb. 1991	3,673.16 (coal)	7,700.26	Grove Creek
Thaut	MTM-080893	May 1994	320	639.6	Shepherd Ah-Nei
Altman	MTM-084895	Nov. 1997	7,411.80	379.4	Sundance Lodge
Cub Creek	MTM-087795	Dec.1998	16,510.92	4,212.33	Cub Creek
Larsen	MTM-088157	Feb. 1999	2,155.89	765	Four Dances
Total Acres			**30,071.77**	**13,696.59**	

3.19.2 Disposals

Appendix J identifies tracts and legal descriptions from the 1984 RMP (BLM 1984) decision for disposal, as well as those lands identified for disposal by alternative. Since the 1984 RMP (BLM 1984) decision, 22 of the 36 disposal tracts identified have been patented into private ownership. These disposal tracts were conveyed by the above-referenced land exchanges (Table 3-59), with the exception of 2 tracts, totaling 50 acres, which were disposed by direct sale. The Land Tenure Proposal Summary in Appendix J is adjusted to reflect the current management.

The FLPMA requires that public land be retained in public ownership unless, as a result of land use planning, disposals of certain parcels are warranted. Public land must be sold at not less than fair market value and must meet specific FLPMA sale criteria, including:

- Because of its location or other characteristics, it is difficult and uneconomic to manage as public land and is not suitable for management by another federal department or agency; or
- It was acquired for a specific purpose, and the tract is no longer required for that or any other federal purpose; or
- Disposal would serve important public objectives, including possible community expansion and economic development, which cannot be achieved prudently or feasibly on land other than public land and which outweigh other public objectives and values such as recreation and scenic values which would be served by maintaining such tract in federal ownership.

All disposal actions must be coordinated with appropriate landowners and authorities, and each disposal action requires a site specific environmental analysis under the National Environmental Policy Act (NEPA). If a disposal is federally legislated, if is exempt from NEPA review.

3.19.3 Exchanges

Trading lands or interests in lands (or exchanges) are the means by which land acquisitions and disposals occur. Exchanges may be made for land or interests in land owned by corporations, individuals, or government entities, and they are voluntary and discretionary transactions with willing land owners (exceptions are congressionally mandated or judicially required exchanges). Land exchanges must be in the best interest of the public and conform to applicable BLM land use plans (LUPs). Further, exchanges are done on a value-for-value basis, based on the fair market value as determined by the Department of Interior Office of Valuation Services.

3.19.4 Acquisitions

Land acquisitions may be pursued as an important component of the BLM's land management strategy. Lands and interest in lands are acquired to provide the following:

- Improve natural resource management through consolidation of federal, state, and private lands
- Secure key property necessary to protect endangered species, promote biological diversity, increase recreational opportunities, enhance wildlife habitat, provide access to public waters and public land, and preserve archaeological and historical resources
- Implement specific acquisitions authorized or directed by acts of Congress

Special appropriations approved by Congress, generous donations from concerned citizens, and funding through the Land and Water Conservation Fund have all played a critical role in shaping the acquisition program, as shown in Table 3-60.

Table 3-60 Land Acquisitions/Donations

Name	Serial Number, Date	Acres Acquired	Funding Source
Pompeys Pillar	MTM-080383, Nov. 1991	366	Special Appropriation
Weatherman Draw	MTM-098616, Dec. 2008	615	Donation
Meeteetse Spires	MTM-099053, Jan. 2011	560	LWCF
Total Acres Acquired		**1,541**	**All Sources**

3.19.5 Rights-of-Way, Leases, and Permits

There are more than 300 existing ROWs encumbering more than 11,000 acres in the decision area, as shown in Table 3-61. These ROWs authorize construction, operation, and maintenance of roads, railroads, power lines, renewable energy sites, communication sites, water and irrigation facilities, O&G pipelines, and other uses. ROWs have been granted to other federal agencies, the state of Montana, numerous counties, corporations, and individuals. Annually, over the past 10 years, the BiFO has processed between 8 and 10 new ROW applications or amendments to existing ROW grants.

Table 3-61 Existing ROWs in the Decision Area

Existing Authorization	Number	Acres
ROW temporary use permits	6	12.6
ROW Roads (acquired, 44LD513 and re-conveyed)	70	1,110.5
Federal Aid Highway, sections 107 and 307	20	1,146.7
ROW roads RS-2477	1	98.1
ROW railroads	2	96.9
ROW power lines and sites	53	478
ROW power lines for irrigation projects, acquired and reconveyed lands	19	220.8
Renewable energy wind site testing and monitoring	1	6,097

ROW reclamation project	8	17.9
Communication sites (FLPMA, 1911, Federal and 44LD513)	9	4.7
ROW telephone	42	405.7
ROW water facility and irrigation	22	701.2
ROW oil and gas pipelines/facilities	49	881.1
ROW (other FLPMA, Bundy Fishing Access and DEQ air monitoring site)	2	4.1
ROW roads (other federal – USFS)	21	429.1
TOTAL	**325**	**11,704.4**

Note:
Source: Data based on LR2000 report for authorized ROW, dated December 12, 2008.

ROW actions are the most common form of authorization to permit public land usage by commercial, private, or other governmental entities. A ROW grant is an authorization to use a specific piece of public land for specific facilities for a specific period of time. Section 501 of FLPMA authorizes the BLM to issue ROWs over, upon, under, or through BLM public lands for linear and site facilities necessary for transportation and transmission. ROWs for transporting oil and gas products across public lands are authorized under the authority of the Mineral Leasing Act of 1920.

Historically, most ROWs on BLM public lands in the planning area involved roads, O&G development, electrical transmission, and communication sites. In recent years however, access roads and utilities associated with private land development have become more common. This is especially true in the Grove Creek area in Carbon County, where the land ownership pattern is scattered with private subdivided lands.

Wind and solar renewable resource production is permitted by ROWs through the Realty, Cadastral Survey, and Lands program and are discussed in the Renewable Energy section of this chapter..

3.19.6 Utility Corridors

Section 368 of the Energy Policy Act of 2005, PL 109-58 (H.R. 6), enacted August 8, 2005, directs the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate, under their respective authorities, corridors on federal land in 11 western states for oil, gas, and hydrogen pipelines, as well as electricity transmission and distribution facilities. The Designation of Energy Corridors on Federal Land in the 11 Western States Programmatic Environmental Impact Statement (EIS) ROD was approved on January 14, 2009, and amended the 1984 RMP. The BiFO corridor segment is designated as 79-216, a corridor 3,500 feet wide and 5.2 miles in length for multimodal uses, meaning overhead electric transmission and/or pipelines. The corridor follows the existing Express pipeline located east of Warren, Montana and runs from the Wyoming state line in a northwesterly direction into Montana. The preliminary EIS amended selected RMPs, including the 1984 RMP.

Utility corridors are preferred routes for transportation and transmission facilities. Identification of corridors does not preclude location of transportation and transmission facilities in other

areas if environmental analysis indicates these facilities are compatible with other resource values and objectives. Further, identification of corridors does not mandate that transportation and transmission facilities will be located there if they are not compatible with other resource uses, values, and objectives in and near the corridors or if the corridors are saturated. Each ROW application is reviewed and analyzed using the environmental data that exist for the area as a basis to evaluate compatibility with existing uses and resource values.

3.19.7 Leases, Permits, and Easements

The BiFO currently has no leases in effect nor any easements granted. Two different land use permits authorizing commercial filming and apiary (beekeeping) on public land are, however, in effect. Approximately three short term use permits are issued annually, mostly for PMWHR commercial filming projects.

Leases, permits, and easements provide for use of public lands by the private sector, state, and local governments where uses conform to LUPs and cannot be achieved prudently or feasibly on land other than public lands. Section 302(b) of FLPMA authorizes BLM to issue leases, permits, and easements for the use, occupancy, and development of public lands. Any use not specifically authorized under other laws or regulations and not specifically forbidden by law may be authorized under this authority. Authorized uses include residential, agricultural, industrial, and commercial facilities.

The BLM has rarely issued easements. An easement is usually issued to restrict land use on a parcel of federal land to benefit an adjacent private land area. Such public land restrictions are usually undesirable and are rarely sought by private interests. Leases and permits are more common. Permits, authorized under 43 CFR 2920, are typically for short-term use not to exceed 3 years. Easements, for example a road, are long-term non-possessory and non-exclusive uses. Federal agencies (other than BLM) are specifically excluded from authorization of leases, permits, and easements under Section 302 of FLPMA. However, federal agency use of public lands can be authorized by ROW, withdrawal, or interagency agreement.

Under the authority of Section 501 of FLPMA, the BLM issues leases, permits, and ROWs for enduring surface disturbing uses of public lands that are not in the scope of the mining laws and regulations.

3.19.8 Communication Sites

Communication sites are land areas where communications equipment and facilities such as cellular, television, private mobile radio service, and radio are situated. These sites house equipment for multiple users, primarily other government agencies including federal, state, and county. The only commercial communications sites are north of Pompeys Pillar, held by the Burlington Northern Santa Fe Railway; and Wall Creek located north of Roundup and held by Mid-Rivers Telephone Cooperative, Inc. The remaining 3 communications sites are Bridger, Tin Can Hill, and Four Dances. These sites provide communications for federal, state, and local government only. In the fall of 2008, communication site plans were completed for all 5 of the communication sites in the decision area. These sites, however, have not been officially designated as communications sites under the existing RMP.

The location of communication sites is subject to exclusion and avoidance areas. The purposes of the communication site plans include the following:

- Selected management strategy
- Location of new facilities and no build zone
- Access requirement
- Use of existing facilities, shared building/tower space
- Multiple use terms and conditions
- Areas closed or excluded from communication site development

Designating sites provide direction for the following:

- Management direction/philosophy and objectives
- Management constraints (technical limitations, noise floors, compatible uses)
- Electronic conflicts (frequencies and power)
- Environmental concerns (soil stability, earthquake and avalanche hazards, T&E species, migratory birds, cultural and historical)
- Site coverage and area served (population zones for rental purposes).

Several initiatives have been directed to federal agencies regarding telecommunications carriers. These initiatives include:

- President's Executive Memorandum, dated August 10, 1995, states, "1. (a) agencies shall make available Federal government buildings and lands for the siting of mobile service antennas in accordance with: Federal, State, and local laws and regulations"
- Telecommunications Act of 1996
- General Service Administration Bulletin 1997

3.19.9 Airport Grants and Leases

The Airport and Airways Improvement Act of September 3, 1982, provides for the conveyance or lease of lands to public agencies for airport and airway purposes. The act requires the lease or conveyance of public lands deemed by the Secretary of Transportation to be necessary for airport and airway purposes, unless the lease or conveyance would unreasonably interfere with the programs of the Secretary of the Interior. There are no airport grants on public lands in the planning area.

3.19.10 Recreation and Public Purpose Leases and Conveyances

The BiFO administers four patents covering 297 acres and one expired Recreation and Public Purpose (R&PP) lease which is currently being reclaimed (Table 3-62). There are no pending applications at this time.

Table 3-62 Recreation and Public Purpose Leases in the Planning Area

Current Patents	Use	Acres
City of Billings	Sanitary Landfill	160
Hillcrest Foundation	Natural Area Park	119.47
City of Billings	Methane Gas Monitoring Site	17.45
Huntley Water and Sewer	Water Pump House	0.08
TOTAL		**297**

Note:
Source: BLM 1984

The Recreation and Public Purpose Act authorizes BLM to lease or convey public lands to state and local governments and to qualified nonprofit organizations for recreation or public purpose uses. Lands are leased or conveyed for less than fair market value or at no cost for qualified uses. Examples of typical uses under the act are historic monument sites, campgrounds, schools, city and county parks, public works facilities, and hospitals. The land involved must be used for an established or definitely proposed project, and the lessee or patentee must commit to a plan of physical development, management, and use as well as certain other requirements before a lease or patent is issued. Usually, lands are first leased until development is substantially completed, at which time a patent may be issued.

The BLM periodically reviews areas leased or conveyed under the R&PP Act to ensure continued compliance with the terms and conditions. A lease may be terminated or title to patented land may revert to the United States if the entity involved is not complying with the terms.

3.19.11 Withdrawals

Withdrawals are formal land designations that set aside, withhold, or reserve federal lands for a specific public use. Withdrawals accomplish one or more of the following:

- Transfer total or partial jurisdiction of federal land between federal agencies
- Close federal land from operation of all or some of the public land laws and/or mineral laws
- Dedicate federal land to a specific public purpose

There are three major types of withdrawals:

1) Administrative withdrawals made by the president, Secretary of the Interior, or other authorized officer of the federal government's executive branch.

2) Congressional withdrawals legislated by Congress.

3) Federal Power Act (FPA) or Federal Energy Regulatory Commission (FERC) withdrawals: power project withdrawals established under the authority of the

FPA of June 10, 1920. Administrative withdrawals are the most common type of withdrawal in the BiFO decision area.

The BLM is responsible for reviewing and making recommendations to designate, revoke, or extend withdrawals. Only the Secretary of Interior, however, has the authority to take action. Table 3-63 shows the areas and associated acreage currently withdrawn from mineral entry in the decision area.

Table 3-63 Areas Currently Withdrawn from Mineral Entry

Area Withdrawn	Acres
Weatherman Draw T. 8 S., R. 24 E., PMM sec. 20, S½SE¼, SE¼SW¼ sec. 29, E½, E½ W½.	600
Petroglyph Canyon T. 9 S., R. 26 E., PMM sec. 35, lots 2, 3, 6, 7, SW¼ NE¼, SE¼NW¼.	240
Britton Springs Cabin and Corral T. 58 N., R. 95 W., 6th PM sec. 20, N½SW¼NW¼.	20
Crooked Creek Natural Area T. 58 N., R. 95 W., 6th PM sec. 28, NW¼.	160
Pompeys Pillar National Monument T. 3 N., R. 30 E., PMM sec. 21, lots 23-27 inclusive.	51
Four Dances Natural Area ACEC T. 1 N., R. 26 E., PMM (see case file for legal land description)	765

Note:
Source: BLM

3.19.12 Land Classifications

Land classification is a process required by law for determining the suitability of public lands for certain types of disposal or lease or for retention and multiple use management.

Some land classifications also close public lands from operation of all or some of the public land laws and/or mineral laws. Land classifications are not considered formal withdrawals; however, they can amount to de facto withdrawals, especially where segregation is involved.

Section 7 of the Taylor Grazing Act of 1934 is now the only existing land classification authority. Before the passage of FLPMA in 1976, all BLM land disposal or lease actions required classification. Since FLPMA, Section 7 classifications are required only for the following disposal/lease authorities outside Alaska:

- Recreation and Public Purpose Act
- State selections
- Desert Land Act

- Indian Allotment Act
- Carey Act

It should be noted that Section 7 classifications, including those made prior to FLPMA, remain in full force and effect until modified or terminated. Also, classifications made under now repealed authorities such as the Small Tracts Act of 1938 and the Classification and Multiple Use Act (C&MU) of 1964 continue in full force and effect until modified or terminated.

In accordance with a Washington Office directive dated June 18, 1981, the 1984 RMP instructed that all C&MU classifications be examined and, if possible, revoked by the end of fiscal year (FY) 1983. The C&MU classifications for the BiFO were reviewed and revoked in accordance with this directive.

There are currently no pending applications or requests for R&PP leases or patents in the decision area. Since 1984, there has been no activity involving state selections, Desert Land Act, Indian Allotment Act, or the Carey Act.

3.19.13 Trespass

Trespass actions involve use, occupancy, and development of the public lands without specific authorization or which exceed the established thresholds of an authorization or of casual use. Casual use is defined by the regulations in 43 CFR 2920.0-5(k) as:

> *(k) Casual use means any short term non-commercial activity which does not cause appreciable damage or disturbance to the public lands, their resources or improvements, and which is not prohibited by closure of the lands to such activities.*

Trespass actions can cause unmitigated damage to public lands and natural resources, and it is the BLM's responsibility to protect the public's best interest in regard to its managed lands. Trespass actions also result in a loss of revenue (rental) to the Federal government. Trespass has been an ongoing problem in the BiFO, and when trespass actions go undetected or are identified and not immediately addressed, there is no incentive to cease trespass activity and no deterrent to further trespass action.

Some known trespass activities include placement of apiaries (beehives); indiscriminate dumping of trash, debris, and household wastes; farming/irrigation of public land; road construction; and construction of other utility related features. Agriculture trespass and trash dumping are the most common type, with numerous small acreages involved. The BiFO prefers to resolve and rehabilitate trespassed agricultural lands rather than authorize their use under a 2920.

The BiFO typically resolves one to three cases each year, with some situations being resolved at the lowest informal level. Other situations may call for more formal resolution including action from BLM law enforcement. Trespasses may involve considerable expense for a Cadastral Survey land survey to determine property boundaries, rehabilitation of agricultural trespass areas, and dump clean ups. In trespass situations that demand legal resolution, the BiFO has demonstrated resolve in working with the DOI Field Solicitor and the US Attorney.

There are currently no trespass situations identified in the decision area that would require the use of a FLPMA section 203 direct sale for resolution. Every effort is made to use good judgment and restraint in resolving trespass situations at the lowest level possible with the goal of converting the trespasser into a cooperator and respecting the current public land boundaries.

Trespass resolution involves cessation of the unauthorized use, occupancy, or development and may require removal of the unauthorized facilities or appropriate authorization of that use. Three considerations are included in trespass abatement.

- Payment of administrative costs to resolve the trespass.
- Payment of fair market value for the period of unauthorized use
- Rehabilitation and restoration of affected public lands

3.20 Livestock Grazing

Livestock grazing addresses domestic animal grazing in the decision area and is authorized on BLM administered lands by the Taylor Grazing Act of 1934, the Federal Land Policy Management Act of 1976 (FLPMA), and the Public Rangelands Improvement Act of 1978. For example, the Taylor Grazing Act creates Section 3 lands and Section 15 lands. Section 15 lands are disconnected, non-contiguous tracts that are not contained in grazing districts. Section 3 lands are located in grazing districts and are administered by the Secretary of the Interior through a system of preferential grazing permits.

Approximately 421,627 acres of BLM administered public land in the BiFO planning area are in grazing allotment boundaries and are managed in accordance with the 1984 RMP (BLM 1984) (see Range Allotments - Map 122). There are 5,961 acres that are not allotted, and this acreage includes small isolated parcels outside existing allotment boundaries and areas in allotment boundaries with no permitted livestock grazing. Livestock that graze on BiFO managed lands are primarily cattle with some sheep and domestic horses. Relative numbers of these types of livestock have not varied much over the past 10 years.

There are 382 grazing allotments in the decision area. In addition to BLM public land, these allotments may contain other lands (USFS, state, and private). There are 310 grazing authorizations for these allotments. Total permitted use is 62,619 animal unit months with 7,746 animal unit months in suspension. An animal unit month (AUM) is the amount of forage needed to feed a cow, one horse or five sheep for one month. Total permitted numbers change frequently due to conversions of the class of livestock and changes in allotment or livestock management. Three hundred (97 percent) of the authorizations are for cattle grazing. Seven authorizations are for horse/burro grazing, and three authorizations are for sheep.

3.20.1 Bureau of Land Management Grazing History

The Bureau of Land Management (BLM) manages large areas of Public Lands in the western United States. The history of the BLM began in 1934.

The General Land Office (GLO) managed grazing of public lands outside forest perimeters prior to 1934. Comprehensive management of these lands was initiated in 1934 when Congress

passed the Taylor Grazing Act. The Grazing Service was established with the implementation of the Act. Specific tasks within the Act included: establishment of a permit system, organization of grazing districts, fee assessment, and consultation with local advisory boards. In 1946, the Grazing Service was combined with the General Land Office to create the BLM.

In the late 1960s and early 1970s, a shift in public attitude regarding the use of public land emerged. Congress passed the National Environmental Policy Act (NEPA) in 1969, directing land managers to consider the environmental consequences of activities on federal lands. As a result of the NEPA and the Natural Resources Defense Council (NRDC) v. BLM decision in 1973, Environmental Impact Statements (EISs) were prepared for every resource area administered by the BLM. One purpose of these EISs was to address the status of grazing and to develop an approach to meet long term goals of grazing on public land.

In 1976, Congress passed the Federal Land Policy Management Act (FLPMA) which requires that public domain lands be managed for multiple-use. FLPMA also reaffirmed BLM's authority to reduce livestock numbers if necessary. FLPMA also provided for the preparation of Allotment Management Plans (AMPs) in consultation, coordination, and cooperation with permittees for each grazing permit. This requirement integrated the development of AMPs into the permit process. The Public Rangeland Improvement Act (PRIA), passed by Congress in 1978, established a grazing fee formula that sets and adjusts annual fees for grazing on public domain land.

In 1986, a management approach was initiated with the goal of monitoring the long term and short term effects of grazing. The objective of monitoring was to provide a long term database that would allow for the identification of specific problem areas and management actions necessary to correct those problems. The method implemented was an "allotment evaluation" process with a 3 to 5 year data compilation interval.

In August of 1995, new regulations were enacted that changed methods and administrative procedures used by the BLM in its management of public lands. Commonly referred to as Rangeland Reform '94, these regulations directed the establishment of standards and guidelines to "achieve properly functioning ecosystems for both upland and riparian areas." In addition, these regulations changed how the BLM manages and permits grazing allotments.

Grazing Standards and Guidelines for Montana/ Dakotas were approved by the Secretary of the Interior on August 12, 1997.

Management Eras (Mid-1960s to 1980)

The "adjudication" of BLM grazing permits occurred over a period of approximately fifteen years, from the mid-1950s into the late-1960s. Adjudication consisted of establishing the extent of historical grazing on allotments and included a review of the following factors:

Priority Use - Priority use meant establishing priority grazing use prior to the Taylor Grazing Act. All priority period use claims were subject to validation and constituted a primary permit preference limitation.

Base Property Production - All BLM Districts imposed a minimum base property requirement, predicated either on land or water. Such assets as privately owned base property, hay fields, hay

stacks, pastures, and water rights were inventoried. Privately owned water flows were measured, and production was calculated. If the existing grazing allocation exceeded the maximum allowable base property production ratio, the grazing permit was subject to reduction.

Public Land Carrying Capacity - During the adjudication period, a one-point-in-time carrying capacity survey was conducted of all grazing allotments. After meeting the first two tests, if the existing grazing allocations exceeded the surveyed carrying capacity, the grazing permit was subject to reduction. If the carrying capacity met the permitted numbers no AUM reductions were realized.

The collective results of applying these three limiting factors determined the amount of "adjudicated grazing privileges." Adjudicated permits were also referred to as "Base Property Qualifications" that were subject to change and refinement as further site specific information became available. The adjudicated grazing permits also included a number for historical suspended AUMs. Suspended AUMs were those AUMs above the number of adjudicated AUMs that had historically been grazed on BLM lands.

After the adjudication process ended, the formal implementation of "grazing management" began by the BLM. Grazing management systems were developed and incorporated into allotment management plans (AMPs). As AMPs were implemented, a second round of grazing permit adjustments generally occurred. This management phase was well underway by the mid-1960 and progressed until the mid-1970s when the NRDC lawsuit required a shift in management toward the development of environmental impact statements.

Most AUM reductions during this period were based on results of BLM Soil-Vegetation Inventory Method (SVIM) surveys, reported in the earliest grazing EISs. Protests from the range livestock industry and professional range management specialists caused the SVIM process to be reevaluated and it was demonstrated that one-point-in-time surveys could not be used to calculate rangeland carrying capacity in an accurate and consistent manner. The BLM issued a decision discontinuing SVIM surveys and began a program based on utilization and vegetation trend monitoring. Resultant monitoring data are used to evaluate whether or not grazing practices have been successful at meeting objectives established in resource management plans, rangeland program summaries, and AMPs.

(BLM initiated a selective management process to prioritize expenditures of limited range management funds. Allotments were grouped into categories according to their resource potential, current management status, and complexity of resource issues. Allotments classified as "I" were to be managed to Improve current condition; allotments classified as "M" were to be managed to Maintain satisfactory conditions; allotments classified as "C" were to be managed Custodially while protecting existing resource)

Management Era (1980 to Present)

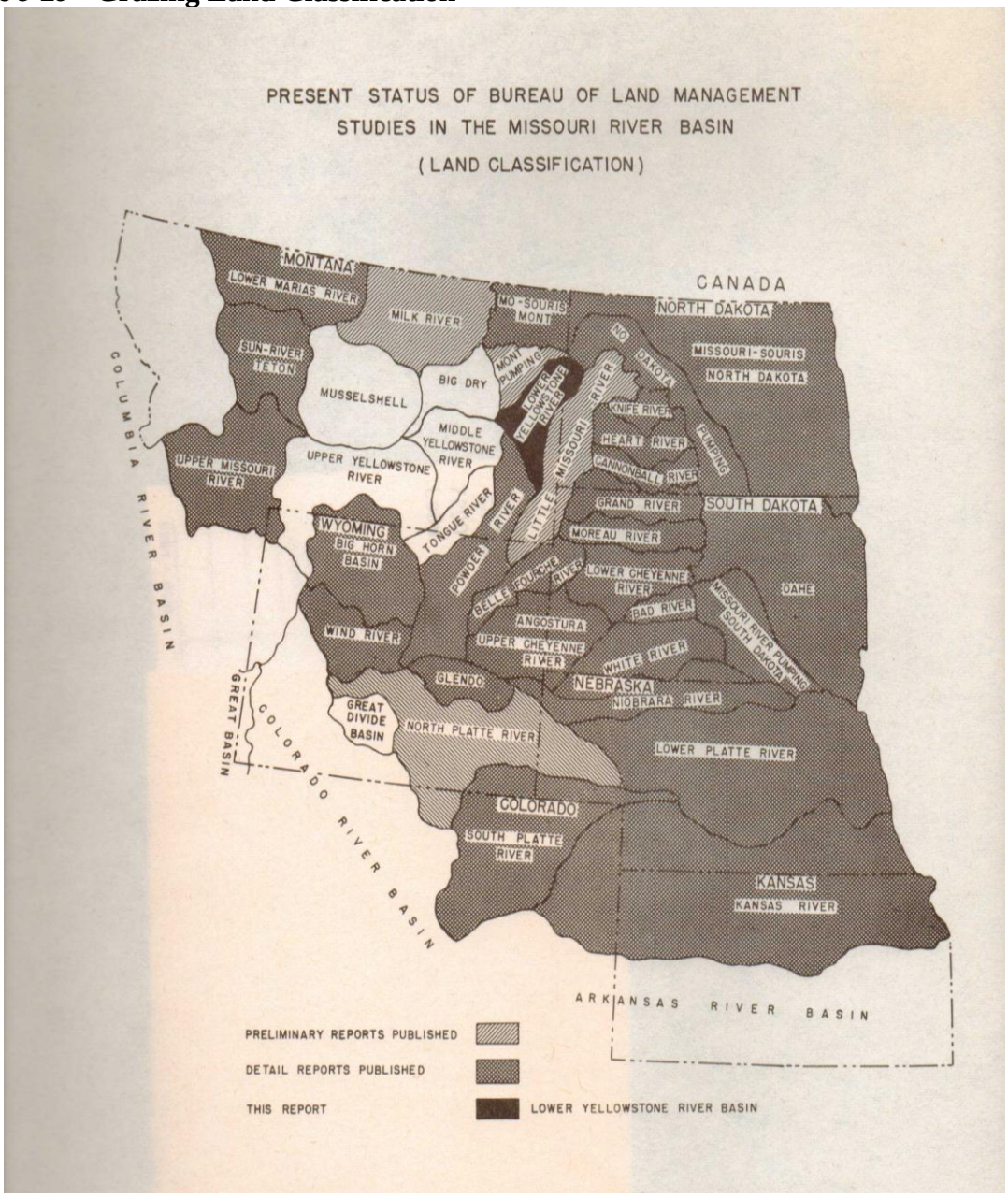
In 1986, the BLM Washington office issued Instruction Memorandum-1986-706). This memorandum instructed that monitoring evaluations be conducted of all "I" and "M" management category allotments. Each allotment evaluation would result in either grazing agreements, issuance of grazing decisions, or documentation to the allotment file concerning

grazing management. Allotment evaluations were performed as monitoring results for a five-year period became available. These evaluations summarize vegetation condition and trend, and provide data so personnel may interpret how the current livestock use, wild horse use, precipitation, wildfire, and other factors influence vegetation changes. Each allotment evaluation concluded with specific management recommendations. Management changes were implemented in the years following evaluation, either through agreement or decision. Management actions included reduction in livestock numbers, changes in grazing management such as implementation of a grazing system, or a change in season of use.

In August of 1995, new regulations were enacted. These regulations directed the establishment of standards and guidelines to "achieve properly functioning ecosystems for both upland and riparian areas." Although, actions to revise these regulations have been initiated, litigation has prevented any significant changes from taking place.

From 1956 through 1972, the BLM conducted a classification of public lands within the Miles City Field Office (Figure 3-28). These are typically referred to as the "Missouri River Basin Surveys". From this effort eight separate reports were generated, which provided the grazing use by Animal Unit Months (AUMs) for all BLM lands at the time of survey.

Figure 3-28 Grazing Land Classification



The process to estimate the available forage for livestock grazing was conducted by trained individuals and involved intensive vegetation sampling (clipping, weighing, and ocular estimation). The BLM, in cooperation with grazing advisory boards, used the information to make adjustments so the AUMs allocated to a grazing permit. This cooperative effort resulted in decrease, increase, or no change being implemented for every grazing permit in the field office. These changes were implemented in a timely manner and completed prior to 1975.

The BLM organization regarding the Billings Field Office has varied in the past. Prior to 1983, the Billings Field Office was part of the Lewistown District. In 1984, the Billings Field Office

became part of the Miles City District. The Billings Field Office was part of the Miles City District until 1998. In 1999, the Billings Field Office became a stand-alone field office and currently remains a stand-alone field office.

Throughout the multiple organizational changes, the Billings Field Office boundary (Planning Area) has remained relatively unchanged. However, small changes have occurred. In the 1960s, the grazing administration on several grazing allotments near the Montana/Wyoming state line was transferred to the BLM Wyoming Cody Field Office. Included in this transfer were approximately 29,000 acres of public land and 2,237 AUMs.

In 1984, while the Billings Field Office was still part of the Miles City District, the current Record of Decision (ROD) for the Billings Resource Management Plan was signed. This ROD authorized 62,437 AUMs annually. Any reductions in livestock use would be phased in over five years, according to the BLM grazing regulations which were substantiated by monitoring and consultation. Since this ROD was signed, some reductions were made either by permitting, by operator request, or voluntary preference reductions in actual use. The 1992 Range Program Summary (RPS) reflects total active preference for the Billings Field Office of 58,324 AUMs or approximately 93 percent of the AUMs initially authorized in the 1984 ROD. Additionally in 2011, the Billings Field Office billed 49,413 AUMs. This represents 79 percent of the AUMs authorized by the 1984 ROD (82 percent if you take the WY CFO off the ROD authorization total).

3.20.2 Grazing Permits and Leases

Grazing use in a designated allotment is authorized through issuance of grazing permits or leases. Permits and leases and attendant activity plans describe livestock class, intensity, duration, and timing of grazing as well as fences, water developments, and other range improvements to be installed. Permitted use is defined as the total number of AUMs in a grazing allotment that BLM has allocated for livestock use. Table 3-64 shows each county's acreage by preference codes. Grazing preference can only be used by qualified operators that own or control land suitable as base property. BLM analyzes effects of proposed grazing according to the NEPA process and prepares an appropriate environmental document prior to permit issuance or renewal. Most permits and leases are valid for a period of 10 years.

The resource demand by domestic livestock is considered to be the total of current authorized (permitted) use (62,619AUMs) and suspended use (7,746 AUMs). Suspended AUMs reflect a temporary withholding from active use, through a decision issued by the authorized officer or by agreement, of part or all of the permitted use in a grazing permit or lease.

Table 3-64 Summary AUMs by County and Preference Code in the Planning Area (Calendar Year 2008)

Number of Permitted & Suspended AUMs by County		Section 03	Section 15	Total
Big Horn	Permitted	39	103	142
	Suspended	24	0	24
Carbon	Permitted	13,435	279	13,714
	Suspended	2,086	0	2,086

Golden Valley	Permitted	100	32	132
	Suspended	0	0	0
Musselshell	Permitted	24,822	1,143	25,965
	Suspended	822	0	822
Stillwater	Permitted	0	897	897
	Suspended	0	0	0
Sweet Grass	Permitted	0	2,485	2,485
	Suspended	0	63	63
Wheatland	Permitted	6	186	192
	Suspended	5	0	5
Yellowstone	Permitted	11,028	318	11,346
	Suspended	4,695	51	4,746
Total Sum of County Permitted		**49,430**	**5,443**	**54,873**
Total Sum of County Suspended		**7,632**	**114**	**7,746**
Grand Total		**57,062**	**5,557**	**62,619**

Note:
*Numbers may vary due to fluctuations in permitted AUMS in calendar year and query parameters.
Source: USDI Bureau of Land Management, Rangeland Administrative System

Details of management may be incorporated into an Allotment Management Plan that becomes part of the lease or permit. These plans include grazing instructions specified to meet resource condition, sustained yield, multiple uses, economic, and other objectives.

The BLM authorizes permittees to use the land for grazing by establishing an allocated amount of forage a permittee may graze on an allotment (this is referred to as "active use"). A permittee may enter temporary non-use status when operators do not wish to graze for financial, operational, or related reasons or where resource conditions do not allow for grazing. Alternatively, if excess resource is available as a result of favorable weather and good growth conditions, the BLM may temporarily authorize the permittee to graze in excess of the established level of use. If the permittee chooses to allow another operator to graze livestock on their permitted allotments, livestock control agreements must be filed with and approved by the BLM Authorized Officer.

3.20.3 Range Health Standard Assessments

The Montana/Dakota's Standards for Rangeland Health and Guidelines for Livestock Grazing Management (BLM EIS, 1997) addressed resource conditions for soils, riparian systems, upland vegetation, wildlife habitat, T&E species, and air and water quality (BLM, 1997).

Resource conditions on each allotment are evaluated through assessment and monitoring. From these assessments, potential impacts of grazing are evaluated in the context of standards for rangeland health and guidelines for grazing administration. A BLM interdisciplinary team evaluates allotments in accordance with established rangeland health standards and guidelines. Standards are descriptions of desired conditions of the biological and physical components and characteristics of rangeland. Guidelines are management approaches, methods, and practices intended to achieve a standard. Refer to Appendix S for number of allotments and acres under each category (i.e. Meeting All Standards, Not Meeting Standards, But Making…etc.)

Allotment evaluations include identification of factors influencing resource conditions. Where current grazing management practices or levels of grazing on public lands are a significant factor in failure to achieve rangeland health standards, BLM has until the next grazing season to begin implementing corrective actions.

Corrective actions may include adjustment to grazing duration, timing, intensity, forage utilization, or installation or implementation of range improvement projects. Permittees, interested public, and other agencies are consulted and actions are analyzed according to the NEPA process prior to implementation of corrective actions.

3.20.4 Guidelines for Grazing Management

Guidelines for grazing management include methods and practices deemed appropriate to ensure standards can be met, or that significant progress can be made, toward meeting standards. Guidelines are BMPs, treatments, techniques, and implementation of range improvements that help achieve rangeland health standards. Guidelines are flexible and are applied in site specific situations. Guidelines may be adapted or changed when monitoring or other information indicates the guidelines are not effective or a better means of meeting applicable standards exists.

The grazing regulations under 43 CFR 4180.2(e) requires that minimum state or regional guidelines must address the following:

- Maintain or promote adequate amounts of vegetative ground cover
- Maintain or promote subsurface soil conditions
- Maintain, improve, or restore riparian-wetland functions
- Maintain or promote stream channel morphology
- Maintain or promote appropriate kinds and amounts of soil organisms, plants and animals
- Promote the opportunity for seedling establishment
- Maintain, restore, enhance water quality
- Restore, maintain or enhance threatened and endangered (T&E) habitat
- Restore, maintain, enhance T&E candidate and special status species' habitat
- Maintain or promote native populations and their communities
- Emphasize native species in the support of ecological function
- Only incorporate the use of non-native plant species when native species are not available or are incapable of achieving proper functioning condition.

3.20.5 Range Improvement Projects

Range improvements are installed and projects are implemented to improve condition or facilitate resource management. Most range improvements in the decision area consist of items such as fences, wells, and spring developments. Fences are used to keep permittees' livestock separate, control seasonal use, and prevent grazing in selected areas. Water improvements help improve livestock distribution and alleviate pressure on natural water sources and provide water for some wildlife species.

Range improvements can be authorized on public land under a Cooperative Range Improvement Agreement or Range Improvement Permit. Cooperative Range Improvement Agreements are used to authorize permanent structural improvements such as fences, wells and reservoirs, and assign maintenance responsibilities to the permittee/lessee. Range Improvement Permits only authorize installation of removable improvements such as livestock handling facilities. Proposed projects funded by BLM are prioritized based on evaluation of the need and costs as they relate to expected benefits. All improvements are constructed according to BLM standards and specifications.

The BLM will apply for new water rights for water sources on BLM land under the same state laws and regulations as all other appropriators; except in cases where water use is specifically protected by federal law or executive order. Within the decision area, BLM filed 722 water right claims. These sources include springs, pothole lakes, reservoirs, and wells. Private parties and other government entities filed an additional 45,320 water rights claims within the decision area. Most of these claims have been reviewed by the Montana Water Court or published for public review to date. For Adjudication Claims, Permits and Total Water Rights by county within the decision area, refer to Appendix U.

3.20.6 Prohibited Acts

Permits or leases and preference may be canceled and civil penalties may be applied as a result violating grazing rules. The BLM is responsible for monitoring use on the land it administers.

3.20.7 Factors Influencing Grazing

A variety of environmental, economical, and social factors are considered in planning decisions related to livestock grazing. Grazing management is adjusted during permit and lease renewal and in response to these factors when appropriate. These factors may influence grazing management in the planning area.

3.21 Recreation and Visitor Services

Federal lands in the planning area provide a broad spectrum of outdoor opportunities that give visitors a range of recreational choices with few regulatory constraints. Recreational opportunities are offered to the public on all BLM administered lands in the planning area where legal access exists.

Approximately 300,000 visitors use public lands in the planning area each year. Primary recreational activities include big game hunting, trapping, hiking, camping, backpacking,

picnicking, wildlife and landscape viewing, OHV riding, horseback riding, mountain biking and organized group events. The BLM's Recreation Management Information System (RMIS) report for 2010 listed camping as the most popular outdoor activity in the BiFO; hiking was second, and big game hunting was third. Detailed information on recreational activities in the planning area is shown in Table 3-65.

Table 3-65 Planning Area Visits and Visitor Use Days by Primary Recreation Activities

Recreation Activity	Visits	Percentage of Total	Total Visitor Days
Big Game Hunting	40,777	18.7	60,505
Hiking	40,804	18.7%	60,545
Camping	42,494	19.5%	63,052

Note:
Source: BLM RMIS, FY 2010

These diverse recreation uses occur in both dispersed and concentrated recreational settings and vary from primitive to developed opportunities. Travel preferences are also variable as recreationists seek both non-motorized and motorized opportunities. The RMIS reports indicate that most recreation activity in the decision area is associated with dispersed land based use. Two areas in the BiFO decision area are managed specifically for all terrain vehicle (ATV) and motorcycle use (South Hills and a portion of Shepherd Ah-Nei Areas). Two areas in the BiFO decision area are managed specifically for non-motorized day use (Sundance Lodge SRMA and Four Dances Natural Area SRMA/ACEC.

User conflicts have increased with increased recreational use. This is often due to differing expectations and incompatible activities.

BLM Manual 8320 directs the BLM to designate recreational units known as special recreation management areas (SRMAs), extensive recreation management areas (ERMAs), and Public Lands Not Designated (PLND). All public lands within the Field Office will receive one of these classifications in the RMP.

A Special Recreation Management Area (SRMA) is an area with a commitment to provide specific recreational activities and opportunities. These areas usually require a higher level of recreation management. Each SRMA has a distinct primary set of objectives, recreation opportunities, and character settings, as well as a corresponding and distinguishing management strategy. The 1984 RMP (BLM 1984), which designated no SRMAs, was amended in 2001 to add two SRMAs to the decision area: Four Dances Natural Area and Sundance Lodge Recreation Area.

Lands not designated as an SRMA but which have non-specialized recreational use are managed as extensive recreation management areas (ERMAs). ERMAs are a location where recreation is dispersed and does not require intensive management (although such areas may contain recreation sites). While recreation is not the primary management objective for ERMAs, it is an important consideration. This type of undirected or dispersed recreation management affords visitors the opportunity to create their own experience without services or developed recreational facilities. These areas are characterized by a natural resource setting and a diversity of recreation opportunities.

All other lands not designated as a SRMA or an ERMA are lands where recreation is not emphasized, however recreation activities may occur in equal emphasis with other resources and activities except on those lands closed to public use. The PLND lands are managed to allow recreation uses that are not in conflict with the primary uses of these lands and have minimal recreation program investment.

3.21.1 Four Dances Natural Area ACEC and SRMA

Four Dances Natural Area is on a plateau located two miles east of downtown Billings and is bordered on the east by Coburn Road and on the west by the Yellowstone River. The plateau is edged with cliffs that drop 200 to 500 feet to the Yellowstone River (Map 85).

The BLM acquired the Four Dances Natural Area in 1999. Through cooperative efforts of the landowners, the Yellowstone River Parks Association, and the BLM, 784 acres of undeveloped open space in Billings came into public ownership. Approximately 7,000 recreationists visit the area annually. Four Dances is designated an SRMA and ACEC. BLM's objectives for the site are the protection of open space and natural and cultural resources while providing dispersed and low level facility infrastructure for public recreation in Billings. This area provides a unique opportunity for the public to easily access public lands in an urban area.

Recreation opportunities include wildlife viewing, hiking, nature photography, and opportunities for environmental education. This area is for non-motorized day use only. For protection of ACEC values and public safety, the area is closed to horseback riding, use of fireworks, hang gliding, rock climbing, paint ball activities, the discharge of firearms, and exercising pets off leash. Improvements include an interpretive kiosk, vault toilet, host site parking pad, some trail-side benches, and a parking lot. Only day use is allowed.

3.21.2 Sundance Lodge Recreation Area SRMA

Sundance Lodge Recreation Area is located near the confluence of the Clarks Fork of the Yellowstone and the Yellowstone rivers. The site includes about 380 acres of river bottom intermingled with the irrigated hay lands. Sundance Lodge was a working ranch before the BLM acquired it in 1997. The Nature Conservancy, the Yellowstone Chapter of Pheasants Forever, and the BLM combined efforts to acquire the land. The area provides dispersed recreation experiences near the communities of Laurel and Billings, public access to the Clarks Fork of the Yellowstone, and wildlife habitat protection (Map 84).

An agreement with MTFWP and the Yellowstone Chapter of Pheasants Forever enables them to assist BLM with management of the property.

Recreational opportunities include wildlife viewing, environmental education, photography, hiking, biking, and horseback riding on designated roads and trails. Trails in the Sundance Lodge Recreation area provide access while protecting fragile riparian resources from overuse. Accessibility for all visitors allows for a greater sense of personal freedom through increased recreational opportunities. Archery hunting and limited shotgun hunting is available through a block management program with MTFWP. Only day use is allowed. Overnight camping is only allowed through special use permits for special events approved by the BLM. Motorized

vehicle use is not allowed. Improvements to the site include a loop parking and turn around, kiosk, and vault toilet.

3.21.3 Other Recreation Management Areas

The following sites in the decision area were not designated as SRMAs or ERMAs in the 1984 RMP or subsequent planning efforts; however, the areas provide a variety of recreational opportunities and receive slightly heavier visitor use than other BLM-administered lands in the planning area. Funding and personnel have been directed to these areas over the years to provide visitor services, manage recreation user conflicts, and protect resources for the purpose of providing specific "structured" recreation opportunities. Most are essentially being managed as ERMAs at this time, while the Shepherd Ah-Nei Recreation Area is being managed at a level commensurate with an SRMA. These areas will be addressed in a range of management actions to enhance visitor services and protect resources.

3.21.3.1 Acton Recreation Area

The Acton Recreation Area is comprised of 3,697 acres and is located approximately 18 miles north of Billings, Montana. This public land area is one of the few that is easily accessible to recreationists who enjoy non-motorized off road activities such as mountain biking and horseback riding. Approximately 7,000 visitors use the area annually. The Acton Recreation Area is open to camping, hiking, horseback riding, and mountain biking, and the entire area is closed to shooting except during seasons established by MTFWP. Acton provides multiple possibilities for year round use. A small kiosk and identification sign are the only improvements at the site (Map 86).

The 1984 RMP identified 133 acres at the Acton Recreation Area that could be developed for environmental education opportunities for local schools. However, demand for this type of outdoor experience for local schools using specifically designated developed locations, has diminished in the past 10 years, and no further development has occurred.

3.21.3.2 Asparagus Point Area

Asparagus Point is comprised of 158 acres and is located 12 miles east of Roundup, Montana. Camping, fishing, and some hunting occurs at the site, however use has not increased substantially over the past several years. It is located on the Musselshell River and is the only public access point for its entire length in the BiFO. There are limited facilities (an access road, directional and site signing, fencing, and a kiosk which were mostly destroyed in the flood of 2011. At this time no determination has been done on rebuilding the site since engineering and financial estimate is required (Map 87).

3.21.3.3 Pryor Mountains Area

The Pryor Mountains area is comprised of approximately 81,227 acres and is located approximately 60 miles south of Billings and provides a wide variety of recreation opportunities. The PMWHR and Pryor Mountain, Burnt Timber Canyon, and Big Horn Tack-On Wilderness Study Areas (WSAs), as well as the East Pryor ACEC, the Crooked Creek

Natural Area, and the Crooked Creek Natural Area National Natural Landmark are all in the Pryor Mountain area.

More than 100,000 visits to the Pryor Mountains are recorded each year, presumably because of their close proximity to urban areas and the range of recreation activities and experiences accessible there. Viewing the wild horse herd is one of the Pryor Mountain's largest draws. Visitation to the area is especially heavy during late spring when foals are born and through the summer months when horses are in the high open meadows. Other recreation opportunities include hiking, backcountry camping, and viewing wildlife. Other seasonal activities include upland bird and big game hunting, cross country skiing, and snowmobiling. Motorized use is limited to designated roads. A primitive cabin is available for overnight use on a first come, first served basis. There are a number of caves which attract recreational users (Map 89).

3.21.3.4 Shepherd Ah-Nei Recreation Area

Shepherd Ah-Nei Recreation Area, comprised of 4,680 acres, is located about 30 miles northeast of Billings, and is an important outdoor recreation resource in the planning area. The entire area is closed to shooting except during hunting seasons established by MTFWP. Visitor opportunities include horseback riding, hiking, mountain bike riding, nature study, hunting, and OHV riding.

For management purposes, the recreation area has been separated into three smaller management areas. Each area provides unique recreation opportunities (Map 91).

- **Area 1 (976 acres)** was closed to full sized vehicles in 1985, and current use includes ATVs, motorcycles, mountain biking, hunting in season, and hiking. An additional 640 acres was acquired in 1994 to expand the area. In 2005, the BiFO completed a travel management plan for the area, and 50 miles of trail were designated "open." Improvements include a graveled parking lot, handicapped accessible vault toilet, kiosk, fee station, and unloading ramp. Motorized users are required to purchase a permit to use the area, and all fee receipts are used for site administration and maintenance to enhance visitor experience.

- **Area 2 (452 acres)** is located across the road (west) from Area 1 and is closed to motorized use. The 1984 RMP (BLM 1984) identified 77 acres for environmental education opportunities for local schools; however interest in this type of outdoor experience has diminished, and nothing further was done. A parking lot, rustic picnic tables, cooking grill, and restroom are located in the northern portion of Area 2.

- **Area 3 (3,212 acres)** is also on the west side of the road and allows motorized use by special recreation permit on existing roads. Permits can be purchased annually or at the fee station for a single day use. Two walk through gates provide access for foot traffic and horseback riders.

3.21.3.5 South Hills Area

The South Hills area is comprised of 1,357 acres and is located two miles south of Billings and east of Blue Creek Road on the upper level of a large bentonite deposit. Approximately 2,500 recreationists visit the site annually. South Hills is the only area in the BiFO managed as "open," where motorized cross country travel is allowed. The riding area is open for motorcycle use only (Map 93).

Access to the South Hills riding area is through a small parking area bordered on the west by Old Blue Creek Road and on the north by private land. Riverfront Park, an Environmental Education Conservatory, and developing residential areas are either adjacent to or one quarter mile from the parking lot. A site sign and barrel barriers are the only improvements on site. The parking lot and entrance to the riding area is in need of engineering and reconstruction to address erosion, user safety, and accessibility.

Users have established unauthorized/illegal access routes to the riding area. Access is obtained by riding up extremely steep terrain to the open riding area above. Legal access routes have become rutted and unsafe, and unauthorized access points created by users are dangerous.

The riding area is adjacent to two large subdivisions. Conflicts between recreationists and residents are frequent and result from competing recreational expectations. The 1984 RMP (BLM 1984) decision closed a 70 acre portion of the area to provide a noise buffer to the adjacent residential area and closed 237 acres to all motorized use. The decision also closed the remaining area to all four wheeled vehicles, including ATVs. Currently, unauthorized use is occurring in the buffer area resulting in complaints about noise and dust. In one area, property damage resulted from a mud flow from the parking lot following a heavy downpour.

3.21.3.6 17 Mile Area

The area has good local access with a county maintained road along the southern side of the parcel and Montana State Highway 87 along the east side. It is located approximately 17 miles north of Billings, the largest community in Montana and is 2,080 acres in size (Map 95).

The 17 Mile area is a popular and traditional destination for recreational shooting. It has good terrain features with shooting distances ranging from approximately 100 yards to over 500 yards in places, and the backstop is a butte rim with elevations of 50 feet in height. Although surrounded by private lands, there are no buildings within 1.25 miles and they are located in the opposite direction which shooting is occurring. There are no other recreational uses and the area is not grazed commercially.

Previously, this area was the focus of management issues including unsafe shooting practices, littering, and the shooting of animals. BLM management effort to date has included a temporary closure, installation of several kiosks for resource and safety information, public information and outreach, cleanups, and regular visits by BLM staff. Currently community volunteers and users regularly clean the site of shooting debris.

The BiFO has determined that recreational shooting continues to be popular on public lands, and public demand for safe, legal places to shoot remains high. Responding to public requests, BLM staff usually direct recreational shooters to the 17 Mile site.

3.21.3.7 Horsethief Recreation Area

The recreational area is located approximately 5 miles west of the community of Roundup, Montana. It is approximately 12,261 acres in size. The main activity is dispersed recreation. The BiFO has installed two kiosks for public information and access education. The Horsethief Recreation Area is open to camping, hiking, horseback riding, mountain biking, and hunting (Map 97).

3.21.3.8 Yellowstone River Corridor

The Yellowstone River flows northeast through Montana from its source in the southern Absaroka range in Wyoming to its junction with the Missouri River in North Dakota. The Billings Field Office includes approximately 150 miles of this river between Springdale and Custer, Montana. There are numerous small parcels along the banks and 10 islands managed by BiFO along its course. Typically the western islands have willow and old growth vegetation with an understory of shrubs and grasses. As one progresses eastwards, cottonwoods predominate, but willows, thick shrubs, and even open meadows of range grasses are found. Invasive species such as Salt Cedar, etc., have established themselves all along the river corridors. The small land parcels typically have rolling hills with mixed vegetation and steep bluffs along the banks of the river (Map 99).

Interstate Highway 90 and the mainline of the Northern Pacific Rail Road parallel the Yellowstone River for much of the distance, but not always right by the river and there are rolling hills and curves in the road and Rail Road courses. The islands do provide outstanding opportunities for primitive recreation since access is limited to boat only and the Yellowstone River is a popular fishing destination. However, the Yellowstone River is open for motorboat use, which is a semi-primitive activity. User numbers are not known. Access from the shore is sometimes restricted by private land access issues. The BLM has no developed recreation sites or boat launch sites.

The Yellowstone River varies in width from 74 feet (23 m) to 300 feet (91 m), so fishing is normally done by boat. Mainly, anglers seek Burbot, Channel Catfish, Paddlefish, Sauger, Smallmouth Bass, and Walleye.

The area under consideration for potential SRMA designation varies by Alternative. In Alternative B it is not considered, except for a small portion known as Bundy Island (98 acres) which in Alternative B is considered separately. In Alternative C and Alternative D it is 6,311 acres.

3.21.3.9 Bundy Island

Located in T. 3 N., R. 30 E., Sections 19 and 20. There are two separate islands in close proximity. They are both known locally as Bundy Island. A portion of the larger island has an old and naturally rehabbing agricultural field on it. The approximate total of BLM lands are 80 acres and 24 acres although it varies with river flow (Map 101).

In Alternative B, it is included as a separate SRMA proposal. In Alternative C, Bundy Island is included in the proposed Mill Creek/Bundy Island SRMA, while in Alternative D it is included in the Yellowstone River SRMA.

3.21.3.10 Bundy Island/Mill Creek

In Alternative C, this area includes Bundy Island, described, above, and includes a large tract of public lands (approximately 34,241 acres) adjacent to it and extending to the north. It is used as a dispersed recreational area, popular with hunters and is also a Travel Management Area (TMA) (Map 100)

3.21.3.11 Elk Basin

Elk Basin is located in T.9 S., R. 23 E., approximately 8 miles southeast of the community of Belfry, Montana. The general area is broadly defined by Silvertip Road on the west, Long Draw road (CW 2066) on the east, and the Montana/Wyoming border on the south. In the RMP it is considered to be a component of the Sub-Region III – Silver Tip region of the Cottonwood/Weatherman Draw TMA.

This area provides a challenging single-track trail system for both casual and commercial Motorcycle travel. Most of these routes have been user-created. Not all of the motorcycles routes have been included in the Cottonwood/Weatherman Draw TMA decision since not all single-track routes have been mapped or evaluated. The BLM has a Primitive Staging area with minimal facilities on Silver Tip Road and generally directs users to the area, weather conditions permitting.

Although the land use somewhat overlap, OHV use does not generally intrude into the Elk Basin oil and gas field operations – riders have their own courses north of the main oil and gas field area.

The BLM has not addressed the additional existing single-track routes but will do so as they are mapped and evaluated in the follow-on Cottonwood/Weatherman Draw TMA Implementation Plan. Currently, the BLM has grouped all single track OHV Trails which have been evaluated through inventory and NEPA analysis in this area as routes CW 1EB2084, CW 1EB2085, and CW 1EB2086. These routes are shown on the Travel Maps (maps 135, 136, and 137) for the Cottonwood/ Weatherman Draw TMA.

In this area the management objectives are to provide for access and motorized recreational opportunities with an emphasis on minimizing impacts to fragile and erosive soils, sage grouse and sage grouse habitat, and other resource values.

3.21.4 Special Recreation Permits

As authorized by 43 CFR 2932, five types of uses exist for which a special recreation permit (SRPs) is required: commercial use, competitive events, organized groups, vendor permits, and recreation use in special areas. Permits are issued to manage visitor use, protect natural and

cultural resources, and provide a mechanism for accommodating commercial recreational uses. As noted above, the Shepherd Ah-Nei Recreation Area charges an Individual Recreation Use Permit (ISRP), for access to a portion of the unit.

The BiFO currently administers 16 commercial SRPs, one competitive event permit, and one non-competitive organized event. Permitted activities include big game and upland bird hunting, horseback riding, guided tours, photography workshops, motocross racing, camping, and hobby rocket launching. In addition, several new applications are received annually for additional commercial, competitive, or organized group events. All permits are processed on a case by case basis with preference given to existing permit holders. Permit lengths depend on activities proposed, the area, and the past record of the potential permittee. Permits may be issued for periods ranging from one to ten years.

During the past five years, applications for SRPs have gradually increased 60 percent, with requests for guided tour applications increasing substantially. Applications for ranch based guided horseback tours and motorized tours for wildlife photography in the Pryor Mountains are requested more frequently than other types. Organized groups, primarily scout groups, frequently request permits to camp on public lands. These permits are usually for overnight campouts for 20 people or less. Fees collected for these special use permits are used to offset administrative costs, monitor approved activities, and protect recreation resource values for future use. The total amount collected each year varies by actual use. The Shepherd Ah-Nei ISRP averages approximately $9,000/year while the other SRPS average approximately $2,000.00/year

3.22 Trails and Travel Management

Travel and transportation are an integral part of almost every activity that occurs on BLM public lands. There are numerous routes in the BiFO decision area that connect remote locations to roads. These routes are often unpaved and unimproved, typically consisting of native material such as dirt, gravel, or sand. Approximately 993 miles of routes/ways in the BiFO have been identified.

Existing roads and trails, some of which are user created, provide access to public recreation management areas where most recreation activities take place on public lands in the planning area. However, the public land ownership pattern in the BiFO is highly fragmented, resulting in access difficulties and potential conflict. Conflicts over access can take place whenever ownership is fragmented, along waterways, or where prime resource values occur and recreation or other user demands are high. Even where access exists, the lack of boundary markers and adequate maps often contribute to confusion about access and can result in conflicts among the public, public land administrators, and the owners of associated or intermingled private lands.

Public expectations and demand for motorized and non-motorized recreation has changed substantially since completion of the 1984 RMP (BLM 1984) and the Montana, North Dakota and portions of South Dakota OHV EIS/ROD (January 2001). Advances in motorized and non-motorized recreation travel technology and use have increased the public's ability to traverse conditions and terrains not previously envisioned. In addition, OHV use provides access for non-motorized recreational purposes, and employees of government agencies, ranchers, timber

companies, energy companies, and utility providers use OHVs to access and maintain the infrastructure required for the continued operation and maintenance of their facilities.

Most OHV use in the planning area consists of recreational use of ATVs, motorcycles, and other full sized trucks and vehicles. Participation in these recreation activities varies by season, topography, vegetative cover, and number of people taking part in the activity. Public lands in the planning area provide a wide range of high quality OHV opportunities that vary from backcountry to concentrated use areas. In general though, most OHV use occurs on designated roads and trails in the decision area (BLM et. al. 2001).

Motorized OHV use was identified as a planning issue because of concerns related to potential resource degradation that may result from high levels of use (BLM et al. 2001). General estimates of OHV use in the planning area are shown below in Table 3-66. These estimates indicate that the number of trucks used in off highway applications increased 13 percent between 1990 and 1998. ATVs and motorcycles were considered a separate group; however those numbers increased by 156 percent from 1990 to 1998.

Table 3-66 Estimated Number of Vehicles Used Off-Highway in Montana (1990-1998)

Year	Trucks	ATVs and Motorcycles	Total
1990	24,162	7,399	31,561
1991	23,930	8,404	32,334
1992	24,706	10,020	34,726
1993	26,193	11,729	37,922
1994	26,584	13,165	39,749
1995	26,919	14,072	40,991
1996	26,941	15,352	42,293
1997	27,308	16,898	44,206
1998	27,423	18,953	46,376

Note:
Source: BLM et al. 2001.

Regional recreational use projections indicate that by 2015 the number of ATVs/motorcycles and trucks per year could be 36,249 and 36,797, respectively (BLM et al. 2001). These data suggest OHV use is one of the fastest growing activities in Montana. With the registration of OHVs increasing annually, OHV use is expected to increase on all Montana public lands, including in the planning area.

The BLM uses three primary designations to manage OHV use on public lands: open, limited, and closed. Open designations provide for public driven use and include designated areas and trails where OHV use is subject to operating regulations and vehicle standards set in BLM Manual 1626. Intensive use areas are generally defined as public lands with no restrictions where OHVs are allowed.

Limited and closed designations help protect natural resources and minimize conflicts among various public land users. The limited designation includes areas and trails where OHV use is

subject to restrictions, such as limiting the number or types of vehicles allowed, dates, and times of use (seasonal restrictions), or limiting use to existing and designated roads and trails. The closed designation includes areas and trails where OHV use is permanently or temporarily prohibited (BLM et al. 2001).

The 1984 RMP (BLM 1984) attempted to meet OHV use demand on public land while protecting watershed and visual resources and minimizing conflict among OHV users, adjacent landowners, and permit holders. In January 1999, the BLM and the USFS prepared the Off Highway Vehicle Environmental Impact Statement and Proposed Plan Amendment for Montana, North Dakota, and Portions of South Dakota (OHV EIS) (BLM et. al. 2001). The OHV EIS considered various ways to minimize the potential for resource damage from cross country OHV use. In June 2003, BLM signed the Record of Decision (ROD) for the OHV EIS, which amended the 1984 RMP (BLM 1984). This decision limited motorized travel to existing roads and trails on BLM managed lands in Montana and the Dakotas and became the current standard for establishing management directions related to OHV use on BLM administered lands in Montana, North Dakota, and South Dakota.

The ROD prohibits all wheeled, motorized, cross country travel, including big game retrieval, unless otherwise stipulated. In the absence of other travel plan direction, motorized travel is restricted to existing established roads and trails. Wheeled motorized cross country travel associated with personal use permits is not allowed, unless permitted at the local field office. Overall, a small percentage of the total recreational OHV use in the planning area occurs cross country, suggesting a low frequency of motorized wheeled cross country travel. Much of the motorized wheeled cross country use in the planning area occurs during the fall hunting season (BLM et al. 2001).

Persons with disabilities may be allowed to travel on OHVs in otherwise closed areas on a case by case basis. This requires a request to the BiFO to initiate the exception. Motorized wheeled cross country travel is allowed for any military, fire, search and rescue, or law enforcement emergency. The ROD also directed BLM to identify and complete site specific travel plans to designate roads and trails available for motorized use. The ROD includes snowmobile use as a component of OHV use.

The 1984 RMP (BLM 1984), the OHV EIS (BLM et al. 2001) and, for some locations, travel management plans completed in April 2007, set forth these objectives to address motorized use in the decision area:

- In a travel management plan completed in April 2007, Acton Recreation Area designated 6.5 miles of roads open or limited, and closed areas where unauthorized use was occurring.
- OHV use in Asparagus Point Recreation Area was limited to the main access road and parking area (BLM 1984).
- In a travel management plan completed in May 2005, 640 acres of the Shepherd Ah-Nei Recreation Area were designated for authorized use only. Authorized use was defined as BLM employees and persons holding a grazing lease. Motorized use in the northern part of the recreation area west of CA Road

(approximately 3,090 acres) was limited to approximately 44 miles of designated roads and trails and authorized use. The southern part (approximately 500 acres) was designated open with the provision that in the event of excessive damage, it could be closed to OHV use entirely. Six miles of trails were designated closed.

- A 70-acre area in the South Hills would be permanently closed to all vehicle use (to provide a buffer zone), and a 1,200 acre portion of the area would be closed to use by four wheeled vehicles (open to motorcycles only).
- In a travel plan completed in February 2008, approximately 50 miles of roads in the Horsethief Area were designated open, and areas where unauthorized use was occurring were closed to motorized use.
- The BLM temporarily restricted motorized vehicle use in the Tin Can Hill parcel for resource concerns.
- A selected number of single-track motorized trails in Elk Basin were designated solely for the use by motorcycles and were analyzed through a site-specific NEPA process. The remainder of the area and a multitude of single-track motorcycle trails are currently under review for Sage Grouse management considerations, and the ultimate decision on all of these routes will be set by these considerations and addressed through the Cottonwood/Weatherman Draw TMA implementation plan.

A Federal Register Notice published in September 2001 updated and corrected errors in the September 25, 1979 and August 4, 1987 road designations based on decisions from the 1984 RMP (BLM 1984). The following roads in the Pryor Mountains were designated open:

- Bear Canyon Ridge Road (#1030)
- Bear Canyon Road (#1014)
- Bent Springs Road (#1039)
- Burnt Timber Ridge Road (#1018)
- Crooked Creek Road (#1017)
- Dandy Mine Road (#1034)
- Demi John Flat Road (#1035)
- East Horsehaven Road (#1030)
- East Petroglyph Canyon Road (#1020)
- Gyp Spring Road (#1015)
- Helt Road (#1016)
- Inferno Canyon Road (#1050)
- Lower timber Ridge Road (#1048)
- Miller Trail Road (#1046)
- Red Pryor Mountain Road (#1022)
- Stockman Trail (#1013)

- Sykes Road East Loop (#1033)
- Sykes Ridge Road (#1019)
- Sykes Spring road (#1052)
- Timber Canyon Road (#1049)
- Timber Ridge Road (#1047)
- Water Canyon Road (#1051)
- West Horsehaven Road (#1021)
- West Petroglyph Canyon Road (#1036)

The Nez Perce National Historic Trail auto routes consist of three-season, all weather roadways ranging from county-maintained high-standard gravel segments to portions of State and Interstate Highways. Nez Perce National Historic Trail signs have been posted along the primary auto route and two alternate segments. Auto Tour guides have been created for the Nez Perce National Historic Trail (NPNHT) by the USFS, the administering agency for the NPNHT. The auto tour guides are available as pamphlets with maps and graphics. Designation of these routes as "Auto or Adventure Tour Routes" by the NPNHT conveys no new regulation in this RMP.

3.23 Renewable Energy

As demand for clean and viable energy to power the nation increases, the occurrence and availability of renewable energy sources on public lands is an important consideration in land management planning. Solar, wind, biomass, geothermal, and hydroelectric power are considered renewable energy resources. It is the BLM's general policy, consistent with the National Energy Policy of 2001, the Energy Policy Act of 2005, the BLM Energy and Mineral Policy (August 26, 2008), and the more current Secretarial Order No. 3285 (March 11, 2009), to encourage renewable energy development in acceptable areas.

Market trends and market value determine the pace and magnitude of proposals to develop renewable energy. The importance of renewable energy sources in the planning area may increase as nonrenewable energy prices increase and as the need for energy grows. Demand for renewable energy is illustrated most recently by the increase in project proposals for various renewable energy technologies throughout the west on both public and private lands. Some of the obstacles to development include a lack of transmission infrastructure for delivery of electricity, difficulties in negotiating power purchase agreements, uncertainty in federal and state regulatory policy and incentives, and acquisition of financing in a challenging economic climate.

In cooperation with the U.S. Department of Energy's National Renewable Energy Laboratory (NREL), the BLM assessed renewable energy resources on public lands in the western United States, including Montana (BLM and DOE 2003). The assessment reviewed the potential for concentrated solar power (CSP), photovoltaic (PV), wind, biomass, and geothermal energy on BLM, BIA, and Forest Service lands in the west. Hydropower was not addressed in the BLM/NREL report. According to the BLM/NREL report, the Billings Planning Unit is rated

among the top 25 BLM planning units for wind resource potential, with portions of the planning area exhibiting Class 5 winds (BLM and DOE 2003).

The Western Governors' Association also embarked on a study with the U.S. Department of Energy to define Renewable Energy Zones in the Western interconnection. The results of this effort are documented in the Western Renewable Energy Zones (WREZ) Phase 1 Report (June 2009). The report identifies geographic areas labeled Qualified Resource Areas (QRAs) based on quantification of energy potential and distance to transmission (Western Governors' Association and DOE, 2009). Based on the QRA information as well as additional consideration of sensitive resources and agency protective designations, a map using the concept of "hubs" that visually represent areas that may be the most cost-effective for development was produced as part of the study. One of the three "hubs" identified in Montana in the WREZ Phase 1 Report lies within the boundaries of the BiFO.

The following discussion outlines the affected environment for all types of renewable energy resources in the planning area. However, since wind energy has the greatest potential for development in the planning area, it is discussed in more detail than the other renewable resources throughout this document.

3.23.1Wind

The 2003 assessment conducted by BLM in cooperation with the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) rated the Billings Planning Unit among the top 25 BLM planning units for wind resource potential, with portions of the planning area exhibiting Class 5 winds (BLM and DOE 2003). Subsequently, the Final Programmatic Environmental Impact Statement (PEIS) on Wind Energy Development on BLM administered lands in the Western United States was released in June 2005 (BLM, 2005) and evaluated the potential environmental and socioeconomic impacts associated with wind energy development on BLM administered lands in 11 western states over the next 20 years (2005 to 2025). The December 2005 Record of Decision (ROD) based on the PEIS analysis amended 52 land use plans, including the 1984 Billings RMP, with the establishment of BMPs to be used when evaluating and authorizing wind energy applications. The ROD also excluded ROW authorizations for wind facilities on BLM-administered lands in Areas of Critical Environmental Concern (ACECs) and in areas that are part of the National Landscape Conservation System (NLCS), including designated Wilderness, Wilderness Study Areas (WSAs), National Monuments, National Conservation Areas (NCAs), Wild and Scenic Rivers, and National Historic and Scenic Trails. Subsequently, the policy contained in the 2005 ROD on ACECs has been revised to defer to the decisions contained in local land use planning documents containing management prescriptions for ACECs.

As a result of this amendment and current policy, wind energy facilities are currently excluded from four WSAs, segments of the Nez Perce and Lewis and Clark National Historic Trails, the Pompeys Pillar National Monument, and six of the seven areas currently managed as ACECs in the BiFO planning area.

The potential for utility scale wind energy development in the planning area is based on methods used in the Final Programmatic EIS on Wind Energy Development (BLM, 2005). Areas are grouped by wind power class derived from 50 meter wind data mapped by the

NREL. Wind power classes are divided into seven classes: Poor, Marginal, Fair, Good, Excellent, Outstanding, and Superb. For purposes of analysis, the seven wind power classes are further grouped into three distinct levels: High, Moderate and Low potential for wind power resources (see Maps 151 and 152).

Table 3-67 outlines the number of acres in the BiFO in Wind Class 1 through 7. Class 1-2 wind are considered low, Class 3 winds exhibit moderate potential, and Class 4 through 7 are considered high potential areas. Table 2-5 in Chapter 2 identifies the number of acres of high, moderate, and low potential excluded from development under current management, as well as the other alternatives.

Table 3-67 Wind Potential in the Billings Field Office in Comparison to All Ownership

Wind Power Class & Resource Potential	Acres of BiFO*	Percent of BiFO	Acres of High, Moderate, and Low	Percent of BiFO	Acres in All Ownerships across the Planning Area*	Percent of All
Class 1—Poor	56,648	13%	220,242	51%	1,024,065	9%
Class 2—Marginal	163,594	38%			4,076,827	38%
Class 3—Fair	146,057	34%	146,067	34%	3,657,997	34%
Class 4—Good	44,220	10%	63,547	15%	1,191,761	11%
Class 5—Excellent	12,710	3%			401,611	4%
Class 6—Outstanding	4,052	1%			243,258	2%
Class 7—Superb	2,565	<1%			205,316	2%

Note:
*This does not include 4,298 acres of BLM land in Wyoming administered by BiFO

In the BiFO, the areas with the greatest wind potential (Class 4 through 7) are located south of Bridger, extending to the Wyoming state line, and on scattered parcels in western Stillwater and Sweet Grass Counties.

In addition to wind power classifications, other elements influence the potential for wind energy development in the planning area. Proximity to transmission lines as well as available capacity on them is a major factor in the siting of wind facilities. Adverse impacts to other resources and resource programs can also affect operation and siting. Large wind turbines affect the visual landscape and can be considered a visual intrusion. Another key consideration is the presence of special status species and potential impacts to both the species and habitat from wind development. In the BiFO, concerns with sage grouse, golden eagles and other raptors, migratory birds, and bats as well as cultural and paleontological resources pose challenges to wind development.

The BLM currently processes wind energy ROW applications under its Wind Energy Development Policy (WO IM 2009-043). On a national basis, BLM continues to develop and refine policy and guidance on wind energy planning and development. Only one (1) wind right-of-way grant has been authorized in the BiFO. In 2003, the BiFO approved construction,

operation, and maintenance of a meteorological tower within a 6,097 project area on BLM-administered land to collect wind data to assess wind resources and development opportunities in an area southeast of the town of Bridger. The grant was renewed once, and the "met" towers were removed in 2010, with no subsequent development application. Issues with transmission and the inability to negotiate lease agreements on private lands appear to present challenges to wind development in this area. On a broader scale, indications are that industry may be avoiding siting on public land given the potential to encounter resource constraints and associated time and resources necessary to address public land issues and processes.

Wind farms in Montana mainly occupy private lands, though some include State of Montana school trust lands. Commercial wind ventures currently generating electricity range from the smallest, with 6 turbines producing 9 megawatts at the Horseshoe Bend facility in Cascade County, to the largest with 140 turbines producing 210 megawatts at the Glacier I/ II facility between Cutbank and Shelby (Montana DEQ, 2011). Closer to the planning area, proposals for 40 turbines producing 100 megawatts and 44 turbines producing 79 megawatts are under consideration in Sweet Grass County.

Currently, no applications are pending in the BiFO for either wind site testing and monitoring (met towers) or development (wind farms).

3.23.2 Solar Resources

The 2003 assessment conducted by BLM in cooperation with the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) did not rate the BiFO among the top 25 planning units for solar resource potential, either for concentrated solar power (CSP), or photovoltaic (PV) technologies (BLM and DOE 2003). Solar energy on BLM land is currently being studied in a six-state area in the Southwest (Arizona, California, Colorado, Nevada, New Mexico, and Utah). The BLM and U.S. Department of Energy released a Draft Programmatic EIS for the six-state area in December 2010. The study includes BLM lands with solar insolation levels greater than 6.5kWh/m^2/day and slopes of less than 5%. There are no locations in the planning area that receive the solar insolation levels considered necessary for development of a viable commercial facility based on current technologies. As a result, the potential for development of utility scale solar facilities in the planning area is not likely. To date, the BiFO has not had any expressions of interest in developing solar resources for commercial power production on BLM lands. Due to the unlikelihood of commercial solar development in the planning area, allocations and management related to solar development is not addressed further in this planning document.

The BLM currently processes solar energy ROW applications under its Solar Energy Development Policy (WO IM 2007-097). In the unlikely event applications for solar energy projects are received, the BiFO would apply the policy direction, BMPs, mitigation, and other management directives outlined in BLM's solar program.

3.23.3 Biomass Energy and Resources

Biomass power is generated from the energy in plants and plant-derived materials, such as food crops, grassy and woody plants, residues from agriculture or forestry, and the organic

component of municipal and industrial wastes. Biomass can be used for direct heating (e.g., burning wood in a fireplace or wood stove) and for generating electricity, or it can be converted directly into liquid fuels to meet transportation energy needs.

The BiFO has not received any applications or authorized any biomass facilities for commercial power production. Lack of available transmission, transportation costs to deliver feedstock, and high costs per kilowatt for electrical generation all pose challenges for biomass energy generation facilities. However, options may exist in the BiFO for biomass utilization. Generally, production of biomass resources in the BiFO would result from management of forests and woodlands as guided by BLM's forestry program. Use of small diameter wood products or residue is currently encouraged when possible. See the Forest and Wood Products section for additional discussion.

In the event a biomass energy generation facility is proposed on BLM lands, such a proposal would be processed under the Realty, Cadastral Survey, and Lands right-of-way regulations.

3.23.4 Geothermal

Geothermal resources are typically underground reservoirs of hot water or steam beneath the surface of the earth. Geothermal energy is produced when this steam or heat is used to turn a turbine to create electrical energy. Geothermal steam and hot water naturally discharge at the earth's surface in the form of hot springs, geysers, mud posts, or steam vents. Geothermal resources also include subsurface areas of hot, dry rock.

The Final Programmatic EIS for Geothermal Leasing in the Western United States evaluates various alternatives for allocating lands as being closed or available for geothermal leasing and analyzes stipulations to protect sensitive resources. The ROD for the Geothermal Programmatic EIS (BLM and USFS 2008) amended existing plans, including the 1984 Billings RMP, to facilitate geothermal leasing on federal mineral estate. In the BiFO, 149,410 acres are open to leasing and 6,768 acres are closed. No electrical production via geothermal resources was projected from any specific areas in the BiFO.

Additional information on geothermal resources can be found in the Energy and Minerals, section. Any proposals for geothermal development on BLM-administered lands would be processed under leasing regulations for geothermal resources, and stipulations, mitigations measures, and BMPS outlined in the ROD for the Geothermal Programmatic EIS would be applied as appropriate.

3.23.5 Hydroelectric

Hydroelectric power is generated through use of the gravitational force of falling or flowing water. There is no specific policy guidance or direction for the development of hydroelectric facilities on BLM-administered land as a renewable energy resource. Proposals for hydroelectric power development on any federal lands would generally be authorized under FERC authority in consultation with BLM on mandatory license provisions for BLM-administered lands, based on provisions of the Federal Power Act, as amended. While the potential for construction of major hydroelectric facilities in the BiFO is limited given the lack of major flowing water resources under BLM jurisdiction, the potential for smaller hydro-

pumping projects may exist in certain areas. While interest in these types of projects is increasing as an avenue to "firm" electricity generated from wind, the BLM has not received applications for any type of hydroelectric power authorizations on BLM-administered land in the planning area.

Specific allocations and management related to new hydroelectric development is not addressed further in this planning document.

3.24 Transportation and Facilities

This section describes transportation facilities and their maintenance as well as other types of facilities administered by the BLM. Travel routes/designations are addressed in the Travel Management section (Section 3.3.4). The BLM's transportation system is critical for management of its public lands. Transportation facilities and access provide people the opportunity to use and travel to and through specific lands in the BiFO planning area, as well as provide for BLM-administrative use of BLM public lands and facilities.

Most of the larger tracts of public lands have legal public access via existing federal, state and county roads. Many smaller tracts of public lands do not have legal access. In most cases, such parcels do not have resource values/demands that justify the costs for acquiring access to these isolated parcels (refer to Appendix J – Land Tenure for information on considering land exchanges and/or acquisitions with regard to access). There are some situations where road segments to and within these parcels are important for a given resource use or to provide through access to other lands and are therefore included in the transportation plan.

3.24.1 Federal Roads, Airports, and Railways

A network of federal, state, and county roads provides access throughout the planning area. Traffic volumes on the network are highly variable with the highest volumes found on major roadways in or near the larger communities. Primary federal roads in the planning area include Interstate 90, which bisects the planning area and runs between Hardin and Big Timber, and Interstate 94, which runs between Billings and the area east of Pompeys Pillar NM. These interstate highways carry traffic throughout the region and from surrounding states.

Rail travel through the planning area began with the construction of the Northern Pacific Railway in the early 1880s. The federal government subsidized developing rail lines with substantial land grants that were, in turn, developed for mineral, agricultural, and tourist potential. Currently, passenger service is not available in planning area. The nearest passenger service is an Amtrak stop in Malta, 212 miles north of Billings. Freight service is provided on several main track lines by the BNSF Railway Company.

Billings Logan International Airport is situated just north of Billings. The airport was constructed in 1928, and passenger service began in 1933. The airport services eight airlines flying to multiple destinations, including Canada. Regular commercial air service is not available in any other town in the BiFO planning area.

3.24.2 State and County Roads

There are six state highways located in the planning area. Over the past decade the Montana Department of Transportation has upgraded several of these highways, as shown in Table 3-68.

Table 3-68 State Highway Conditions in the Planning Area

Highway	Upgraded
Highway 87 from Billings to Roundup	Yes
Highway 310 to Bridger and Warren	Yes, to the Wyoming state line
Highway 78 to Absarokee	Yes
Highway 212	No
Highway 12 from Melstone to Harlowton	No
Highway 72 Belfry South	Yes
Highway 72 Belfry North	Pending 2010 contract letting
Highway 310 from Bridger to the Wyoming State Line	In progress

Note:
Source: BLM 1984

The planning area is connected by a network of county roads. County roads vary from a 30 foot graveled running surface with regular maintenance to native surface roads with a 10 foot running surface and minimal maintenance. State and county system roads (depending on road class) are usually constructed and maintained to higher standards than BLM roads and provide the primary arterial collector road systems for access to and through BLM lands. These state and county system roads are not maintained by the BLM.

3.24.3 BLM Roads

There are 216 miles of BLM roads exist in the BiFO decision area, as shown in Table 3-69. BLM roads provide public, agency, and permittee access to and through public lands. Reasonable administrative access is made available to persons engaged in valid uses such as mining claims, mineral leases, livestock grazing, and recreation. Most BLM road usage is defined as casual.

BLM conducts trails and travel management planning to identify areas where foot, mechanized, and motorized vehicle travel is appropriate, restricted, or not allowed. For comprehensive travel management information, refer to Section 3.21.

FAMS now shows:

- Roads – 201 miles
- Primitive roads – 14 miles
- Administrative sites – 8
- Recreation sites – 10
- Bridges – 2
- Dams – 5

Table 3-69 Roads in the Decision Area

Segment Name	Segment Length (Miles)	Primitive Road (Yes/No)
00301 – Acton Road	3.6	N
00301 – Acton Road	3.8	Y
00302 – Shepherd Road	0.2	N
01001 – Cottonwood Road	20.4	N
01002 – Hatcher Pass	2.5	N
01003 – Bobcat Pass	4.6	N
01004 – Hunt Creek Road	4.2	Y
01005 – Cub Creek Road	9.88	N
01006 – Long Draw Road	7.25	Y
01008 – East Basin Road	5.85	Y
01009 – Goblers Knob Road	3.85	Y
01010 – Williams Draw Road	6.05	Y
01010 – Williams Draw Spur Road	2.15	Y
01011 – Hollenbeck Draw Road	7.4	N
01013 – Stockman Trail Road	2.05	Y
01014 – Bear Canyon Road	8.2	N
01015 – Gyp Springs Road	7.6	N
01016 – Helt Road	13.55	N
01017 – Crooked Creek Road	6.6	N
01018 – Burnt Timber Ridge Road	1.2	N
01018 – Burnt Timber Ridge Road	6.9	N
01019 – Sykes Ridge Road	17.25	N
01021 – Horse Haven Road	6.5	Y
01022 – Red Pryor Road	3.0	N
02301 – Asparagus Point Road	0.5	N
1043 – Sand Springs Road	2.0	Y
1044 – Williams Draw Spur Road	1.5	Y
1038 – Cub Creek/Long Draw Ridge Road	4	Y
1037 – Cub Creek Loop Road	2.5	Y
1042 – Jones Reservoir Road	0.75	Y
1041 – Bear Canyon Spur Road	0.5	Y
1031 – Bear Canyon Ridge Road	1.0	Y

Segment Name	Segment Length (Miles)	Primitive Road (Yes/No)
1032 – Bear Canyon Ridge Spur Road	0.75	Y
1030 – East Horse Haven Road	1.25	Y
1034 – Dandy Mine Road	2	Y
1035 – Demijohn Flat Road	2.75	Y
1036 – West Petroglyph Canyon Road	1.5	Y
1040 – East Petroglyph Canyon Road	1.0	Y
1033 – Sykes Ridge Loop East Road	2.0	Y
2301 – Asparagus Point	0.5	Y
2302 – Steamboat Butte Road	2.5	Y
0304 – Shepard Road Spur	0.09	Y
0305 – Four Dances Road	0.1	Y
0306 – South Hills Parking Area Road	0.01	Y
0307 – Sundance Lodge Road	0.05	Y
1045 – Robertson Draw Road	8.0	Y
1039 – Bent Springs Road	2.5	Y
1046 – Miller Trail Road	3.0	Y
1047 – Timber Ridge Road	2.0	Y
1048 – Lower Timber Ridge Road	0.75	Y
1049 – Timber Canyon Road	1.5	Y
1050 – Inferno Canyon Road	1.5	Y
– Water Canyon Road	1.0	Y
2305 – North Willow Creek Road	9.5	Y
0310 – Acton Spur, W Road	2.0	N
0311 – Acton Spur, NE Road	0.75	N
0312 – Acton Spur, SE Road	1.75	N
TOTAL	**216.08**	

Note:
Source = AMS

3.24.4 Road System Maintenance

BLM maintains its roads under standards set forth in BLM 9100 Manual to protect resources, accommodate users, and maintain its investment. Road system maintenance has focused on maintaining major recreational access roads, which generally receive most of the traffic volume. The BiFO maintains on an average about 118 miles of roads and 98 miles of primitive roads in the decision area, depending on road conditions and funding availability. Road

maintenance generally consists of blading or grading and is usually performed in the summer or fall. Additional corrective maintenance or water drainage work (installation of culverts, drains, or other water management devices) is performed as needed, such as after periods of heavy rainfall. There is no snow removal on BLM roads. Gates and cattle guards on the road system are constructed and maintained using available funds from multiple programs.

3.24.5 Facilities

Facilities for administrative purposes facilitate land management responsibilities at several locations within the decision area. All facilities/sites are maintained and upgraded as needed to achieve management objectives for safety, resource protection, and quality recreational experiences. Facilities found to not meet agency needs or which are contributing to resource impacts, are considered for redesign, relocation, closure, or decommission to minimize adverse impacts or conserve funding. Existing facilities are inspected on an established schedule in accordance with the Bureau's Condition Assessment guidance.

The BLM BiFO currently has five developed administrative sites for BiFO staff to store equipment, supplies, and to prepare to work on field oriented tasks. These administrative sites include:

- **The Billings Fire Dispatch Center (located at the Billings Airport).** This site includes a complex of full service buildings housing year round and seasonal field office fire program staff; dispatch center with technical communications equipment; fire fighting vehicles, warehouses, and equipment. The site also serves as a regional service, operations, training, and support center for interagency operations. The BLM leases the land at this site.

- **The Pompeys Pillar Administrative Site.** This site is located at the Pompeys Pillar National Monument (the administrative site excludes the Pompeys Pillar Interpretive Center and the associated recreational facilities (e.g., trails, parking lots, etc.). The site provides support for Pompeys Pillar National Monument operation and for some of the nearby public lands outside of the Monument. There are several buildings which include a warehouse, pump house, and a water treatment system. The BiFO staff uses the buildings for storage, operation, and repair of equipment, construction tasks, and maintenance of the recreation facilities.

- **The Britton Springs Administrative Site.** This site is located on public lands at the south end of the Pryor Mountains and is adjacent to the Pryor Mountain WSA and Pryor Mountain Wild Horse Range. The site consists of corrals, a building for temporary quarters, several outbuildings for storage of feed and supplies. It is mostly used only as a base for temporary operations associated with the local area, which is both remote and at the far end of the field office.

- **The Four Dances Natural Area ACEC Administrative Site.** This site is located on public lands at the Four Dances Natural Area in Billings, and includes a small parking pad with overhead pavilion and includes culinary water and septic. It is used seasonally and provides housing and a contact station for a

small staff for local recreational operations. It is a cooperative management site with a non-federal agency partner.

- **The Sundance Lodge Administration Site.** This site is located on public lands in the community of Laurel and is adjacent to the BiFO Sundance Lodge Recreation Area. The site consists of a storage yard for large supplies and equipment, a warehouse and work shop. It is used as the principle work and storage site for the BiFO staff for non-fire purposes and has year-round access.

In the future, new facilities determined to be necessary for permanent, short- or long-term use as part of the Agency mission would be constructed subject to NEPA and approved engineering standards. Consideration would be given to use demands, location, safety, funding, and resource constraints when determining the type of facility necessary.

3.25 Special Designations

This section provides information on the current condition of special designations that could be affected by the revised RMP alternatives described in Chapter 2. Special designations discussed in this RMP include:

- Pompeys Pillar
  - National Monument
  - National Historic Landmark
  - Area of Critical Environmental Concern
- Areas of Critical Environmental Concern (ACECs)
  - Bridger Fossil Area ACEC
  - Castle Butte ACEC
  - East Pryor ACEC
  - Four Dances Natural Area ACEC
  - Meeteetse Spires ACEC
  - Petroglyph Canyon ACEC
  - Stark Site ACEC
  - Weatherman Draw ACEC
- Wilderness Study Areas
- Wild and Scenic Rivers
- Pryor Mountain Wild Horse Range
- National Historic Trails

3.26 Pompeys Pillar

Pompeys Pillar is an area of critical environmental concern (ACEC), a National Monument (NM), as well as a National Historic Landmark (NHL), and is an identified Lewis and Clark National Historic Trail high potential historic site and a high potential route segment. The

exceptional qualities Pompeys Pillar possesses and an explanation of management processes is described below. The L&CNHT section adjacent to Pompeys Pillar NM is addressed in more detail in Section 3.31 – National Historic Trails of this document.

3.26.1 General Overview

Pompeys Pillar is a massive sandstone outcrop that rises approximately 127 feet on the banks of the Yellowstone River, approximately 30 miles east of Billings. The monument's premier location at a natural ford in the Yellowstone River, and its geologic distinction as the only major sandstone formation in the area, have made Pompeys Pillar a celebrated landmark and outstanding observation point for more than 11,000 years of human occupation. Hundreds of markings, petroglyphs, and inscriptions left by visitors have transformed this geologic phenomenon-into a living journal of the American West.

On January 17, 2001, Pompeys Pillar was designated a national monument under the authority of Section 2 of the Antiquities Act. Fifty-one acres of federally owned land were set apart and reserved as Pompeys Pillar National Monument for the purpose of protecting the ethnographic, historic, and archaeological values associated with the massive sandstone outcrop known as Pompeys Pillar.

Prior to being designated a National Monument, Pompeys Pillar was officially designated a National Historic Landmark (NHL) in 1965. In 1991, the BLM acquired the NHL and adjacent land, totaling 366 acres. The total area currently being managed as Pompeys Pillar is 474 acres; the additional 107 acres being an adjacent island in the Yellowstone River that is also under BLM administration.

Ownership of the mineral estate has not been established due to the complexities arising from the multiple ownerships previous to BLM acquisition. To the extent that the federal government owns the minerals at Pompeys Pillar National Monument, they are withdrawn through the Presidential Proclamation signed January 17, 2001.

3.26.2 National Monument

Approximately 51 acres at Pompeys Pillar was designated a National Monument (NM) by executive proclamation of the President (Appendix W) in January 2001 for the purpose of protecting the historic and cultural objects described below. This was accomplished through Section 2 of the Antiquities Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431). Section 2 states,

> *"The President of the United States is authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with proper care and management of the objects to be protected. When such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tract, or so much thereof as may be necessary for the proper care and management of the object, may be relinquished to the Government, and the*

> *Secretary of the Interior is hereby authorized to accept the relinquishment of such tracts in [sic] behalf of the Government of the United States."*

Ethnographic and archaeological evidence indicates that Pompeys Pillar was a place of ritual and religious activity. Hundreds of petroglyphs on the face of the rock, noted by Clark in his journal, reflect the importance of the site to early peoples. The Crow people, dominant residents of the region when Clark passed through, refer to Pompeys Pillar in their language as the "Mountain Lions Lodge," and it figures prominently in Crow oral history. Pompeys Pillar also includes the markings and signature of a host of characters from the pioneer past, including fur trappers, Yellowstone River steamboat men, frontier army troops, railroad workers, missionaries, and early settlers. In 1873, Lieutenant Colonel George Armstrong Custer and his men camped at its base, where they came under attack by Sioux warriors.

3.26.3 National Historic Landmark

National Historic Landmarks (NHL) are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States. In 1965, Pompeys Pillar was officially designated a NHL primarily because of the significance of William Clark's signature panel. The boundary includes approximately 6 acres above the 2,890 foot contour level. In 1983, the same site was listed on the National Register of Historic Places (NRHP) as a significant cultural property (Appendix W). A significant cultural property is a property or a place that is eligible for inclusion on the NRHP because of its association with cultural practices and beliefs that are rooted in the history of a community and are important to maintaining the continuity of that community's traditional beliefs and practices. Pompeys Pillar fulfills both of these descriptions for multiple Native American populations. The Pompeys Pillar NHL is located entirely within the Pompeys Pillar NM boundary.

3.26.4 Area of Critical Environmental Concern

The BLM designated Pompeys Pillar an ACEC in 1996 to protect its cultural and historic resource values. Pompeys Pillar served as an important landmark and traveler register during the exploration and fur trade period and is an important physical reminder of the nineteenth century's westward movement of Euro-American culture. In addition, the Pompeys Pillar property has been and remains a rich habitat for fish and wildlife resources. The wildlife species present there are typical of the riverine environment of the middle Yellowstone Valley in the early nineteenth century. Pompeys Pillar ACEC (432 acres) includes Pompeys Pillar NM (51 acres), designated in 2001, and Pompeys Pillar NHL (six acres) designated in 1965. Table 3-70 provides a summary of special designations at Pompeys Pillar.

Table 3-70 Pompeys Pillar Designations and Rationales

Designation	Acreage	Rationale for Designation
National Monument (NM)	51	Cultural and historic values
National Historic Landmark (NHL)	6 +/-	Cultural and historic values
Area of Critical Environmental Concern (ACEC)	432	Cultural and historic values

Three management zones were delineated as part of the Pompeys Pillar ACEC designation to achieve various management objectives, based on ensuring the historic setting and enhancing the visitors' experience: the Historic Zone (90 acres), Historic Zone – Developed (110 acres), and General Management Zone (270 acres).

The RMP planning area for Pompeys Pillar encompasses about 432 acres. Map 170 – Pompeys Pillar Management Zones identifies the various designations and management zones at Pompeys Pillar. Based on public involvement and the environmental setting, Pompeys Pillar was divided into three distinct separate management zones. A brief description of the management zones, character/setting of each zone, and the types of infrastructure currently available and/or allowed in each zone is below.

3.26.4.1 Historic Zone

Management objectives of this 29-acre zone are to provide visitor access to Clark's signature and other historic inscriptions and rock art and enhance the visitors' experience through providing landscapes that appear similar to the natural setting Clark viewed in 1806. Landscape modifications would be the minimum necessary for visitor safety and protection of the signature and other rock art. Current facilities in the Historic Zone include a picnic area, sidewalks, contact station, boardwalk to Clark's signature and to the top of the pillar, concrete trail with interpretive signage, gravel entrance road and parking area, electronic surveillance equipment, and vault toilets.

3.26.4.2 Historic Zone - Developed

Management objectives of this 54 acre zone are to provide an area where most facilities would be placed. Facilities in this zone are designed to enhance visitor experiences through interpretation and visitor services. Current facilities include an interpretive center; outdoor amphitheater; paved parking, entrance road and drop off loop; picnic area; and interpretive displays.

3.26.4.3 General Management Zone

Management objectives of this 349 acre zone are to improve and/or maintain wildlife habitat condition, enhance dispersed recreation opportunities, and utilize agriculture to further general management. These include weed control, soil stabilization, and provision of a food source for wildlife. A Cooperative Habitat Agreement between Montana Fish, Wildlife, and Parks, Pheasants Forever, and the BLM Billings Field Office exists in the General Management Zone with the objective of improving habitat for introduced species such as ring-necked pheasants, Merriam's turkey, and other wildlife.

3.26.5 Current Land Usage at Pompeys Pillar National Historic Landmark and National Monument

Current uses at Pompeys Pillar mainly focus on the historic/cultural recreational experiences for visitors. Pompeys Pillar is used extensively for education by regional schools. Pompeys Pillar is located adjacent to an interstate highway and, as a result, continued and possibly increased use by motorists traveling through the region may occur. The interpretive trail system, outdoor amphitheater, and scenic views offer outstanding opportunities for both local and non-resident visitors.

Pompeys Pillar ACEC also offers exceptional recreational activities, including hunting, in the general management zone. Wildlife viewing, photography, and dispersed recreational opportunities (i.e. hunting) are among the most frequently-used visitor uses. There are few public land opportunities along the Yellowstone River with good physical and legal access. The recent acquisition of the Yellowstone Wildlife Management Area and Yellowstone River State Park by MTFWP, across the river, also provides outstanding recreational opportunities. It is likely that the recreational use at Pompeys Pillar ACEC will increase. Access for motorized and non-motorized boating opportunities will likely be a publicly-driven demand as river use increases. Lands surrounding and/or adjacent to the Pompeys Pillar planning area are important to preserving the historic and cultural viewshed.

3.27 Areas of Critical Environmental Concern

The ACEC designation is an administrative designation used by the BLM that is accomplished through the land use planning process. It is unique to the BLM in that no other agency uses this form of designation. The Federal Land Policy and Management Act states that the BLM will give priority to the designation and protection of ACECs during the development and revision of land use plans.

BLM regulations (Title 43 Code of Federal Regulations Subpart 1610) define an ACEC as an area "within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards." Private lands and lands administered by other agencies are not included in the boundaries of ACECs. ACECs differ from other special management designations (e.g., wilderness study areas) in that designation by itself does not automatically prohibit or restrict other uses. In order to be designated, special management beyond standard provisions established by the plan must be required to protect the relevant and important values. Further information about these criteria is presented in Appendix E.

3.27.1 National Natural Landmark

A National Natural Landmark (NNL) is a nationally significant natural area designated by the Secretary of the Interior. To be nationally significant, a site must be one of the best examples of a biotic community or geologic feature in its natural region. Examples of this natural diversity

include terrestrial and aquatic ecosystems, features, exposures, and landforms that record active geologic processes as well as fossil evidence of biological evolution.

There are two National Natural Landmarks on BLM managed public land within the BiFO decision area, Bridger Fossil Area NNL and Crooked Creek NNL (located in Wyoming).

3.27.2 Laws, Regulations and Policies

Section 202(c)(3) of the FLPMA mandates the BLM give priority to the designation and protection of ACECs in the development and revision of land use plans. BLM Manual 1613 describes the process to nominate ACECs and screen areas for their suitability or ACEC designation. The BLM's planning regulations (43 CFR 1610.7-2) establish the process and procedural requirements for designating ACECs in RMPs and RMP amendments.

3.27.3 Existing ACECs

Currently nine ACECs exist in the planning area, including Pompeys Pillar (Section 3.4.2 – Pompeys Pillar) for a total of 37,896 acres. A summary of all the ACECs and the values they protect is in Table 3-71, and more detailed information for each ACEC is provided below. The values for which these ACECs were designated are still present and require continued management attention (Map 159).

Table 3-71 ACECs in the Planning Area

ACEC	Year Designated	BLM Public Land (in acres)	Values
Bridger Fossil Area	1999	577	Paleontology
Castle Butte	1999	184	Cultural resources
East Pryor Mountains	1999	29,550	Scenic, geologic, Wild horses, wildlife habitat, cultural, paleontological, vegetation
Four Dances Natural Area	2002	784	Cultural and historic resources, scenery, natural hazards
Meeteetse Spires	1999	965	Vegetation, scenery
Petroglyph Canyon	1999	240	Cultural resources
Pompeys Pillar*	1996	432	Cultural and historic resources (1, 2, and 3)
Stark Site	1999	799	Cultural resources
Weatherman Draw	1999	4,365	Cultural resources
Total	**9 ACECs**	**37,896**	

Note:
*Addressed in Special Designations Section
Source: BLM ACEC amendment 1999
http://www.blm.gov/style/medialib/blm/mt/blm_programs/planning/billings_rmp/amendments.Par.94086.File.dat/acecEA.pdf

3.27.3.1 Bridger Fossil Area ACEC

Bridger Fossil Area was designated in 1999 primarily to protect the paleontological values of the area. The area consists of three separate tracts, one with public access. The Bridger Fossil National Natural Landmark (161 acres), designated in 1973, is located entirely within the Bridger Fossil Area ACEC. The entire NNL (161 acres) has been withdrawn from mineral entry. Located in Carbon County, Montana, the area includes the fossil remains of *Deinonychus antirrhopus*, a highly predaceous carnivorous dinosaur from the Cretaceous Cloverly Formation. Interpretation of the anatomy and habits of this creature led to ideas about the warm-bloodedness of dinosaurs, and possible close relationship to modern birds. A bone bed in the Jurassic Morrison Formation contains the remains of numerous juvenile and subadult sauropods. The Museum of the Rockeis, Montana State University and the Cincinnati Museum Center - Geier Collections and Research Center (Vertebrate Paleontology) have both conducted long term studies at this site. The area is also used extensively for the collection of invertebrate fossils and as an outdoor classroom.

Exposures of the Late Jurassic Morrison and Early Cretaceous Cloverly Formations in this area have yielded fossils of rare dinosaur taxa. While fossil localities dating to this time period exist elsewhere, the quality, concentration, and kinds of fossils present on public lands in the Bridger Fossil Area can provide an outstanding record of the environment and a glimpse of terrestrial life during those periods.

In addition, the area includes the most fossiliferous exposures of the Cloverly Formation in northern Wyoming and southern Montana. *Deinonychus* and *Tenontosaurus*, rare dinosaur species have been documented here, as well as an extremely rare concentration of dinosaur egg and embryonic remains. These specimens may hold the answer to central questions in dinosaur research, regarding dinosaur physiology and behavior.

To conserve the Bridger Fossil Area ACEC for future scientific study, the area is managed according to the following management prescriptions (1999). Livestock grazing is allowed, while ROWs, mineral material sales and permits, and O&G leasing are not allowed. Underground explosives for geophysical exploration for O&G are not allowed. Other geophysical exploration methods for O&G are allowed if the method does not damage the paleontology resource. If monitoring indicates fossil damage as a result of a geophysical activity, it will no longer be allowed. Off-road vehicle use is limited to designated roads and trails. Noncommercial collection of common invertebrate and plant fossils is allowed. The area is managed per VRM Class IV objectives.

3.27.3.2 Castle Butte ACEC

Castle Butte in Yellowstone County is a remarkable topographic feature. The butte is composed of relatively soft, friable, bedded sandstones of the upper Cretaceous Hell Creek Formation. Paleontological resources, including paleobotanical fossils, are found in the area as well. Castle Butte is a remarkable topographic feature with access from an adjacent county road and is locally well known. It has been known to Euro-Americans since the late 19th Century. Site 24YL0418 at Castle Butte is eligible for the National Register of Historic Places.

The BLM acquired the 105 acres containing Castle Butte in 1974 as part of a land exchange. However, in this exchange, the BLM only acquired the surface state, the mineral estate remains private.

Castle Butte was designated as an ACEC in 1999 due to its cultural values, such as rock art. The ACEC consists of three sites: 24YL0418: 160 rock art panels (77 prehistoric and 83 historic graffiti); 24YL0759: a bison kill processing area and occupation site; and 24YL0760: a multi-component open occupation site. All of the rock art panels are actively weathering to some degree, and in several instances, elements in the panels can no longer be seen. Some panels are threatened by large blocks that periodically drop from the face of the cliffs as erosion of the butte progresses, the most recent occurring in 2012. Blocks of the sandstone butte located on the north side of Castle Butte dropped during spring 2012. These blocks contained both pictographs and petroglyphs (panels 92, 93, 94, 95, and 96).

With the aim of documenting the rock art, the University of North Dakota and Minot State University conducted an intensive inventory of the rock art panels in 1991 (site 24YL0418). The University of Washington excavated portions of site 24YL0759 in 1989 and 1990.

Association of rock art motifs on the butte with specific ethnic groups still present in the northern plains suggests it may be considered a significant site to contemporary Native Americans in addition to its research value. Because of their excellent preservation and well as the large numbers of individual rock art panels, Castle Butte will continue to be important in investigations into the ethnohistory of the Northern Plains.

Castle Butte is one of the premier rock art sites of the Northwestern Plains. Information from the site has been used by a number of prominent rock art investigators in constructing and debating an understanding of the sequence of regional rock art styles in use on the Northwestern Plains and elsewhere in the High Plains from Alberta to Texas, particularly for the early historic period. The quality, quantity, and concentration of rock art, as well as the potential for relative and absolute dating, make this site more than locally significant. Information on this site has been widely published in professional journals and monographs.

To conserve the exceptional rock art for future generations to study and enjoy, the area is managed according to the following management prescriptions (1999). Livestock grazing and range improvements are allowed. Fire is managed with conditional fire suppression. Wood product sales are not allowed. Geophysical exploration for O&G is not allowed on the significant cultural resource sites. Geophysical exploration is allowed (surface methods and vibroseis) in the remainder of the area. The mineral estate at Castle Butte ACEC is privately owned. Additionally, ROWs are allowed when they avoid the significant cultural resource sites. Off-road vehicle use is limited to designated roads and trails. The area is managed per VRM Class III objectives.

3.27.3.3 East Pryor Mountain ACEC

This area, located in Carbon County, Montana and Big Horn County, Wyoming, contains several important areas/designations within and overlapping the ACEC boundary: the Pryor Mountain Wild Horse Range; the Burnt Timber Canyon, Pryor Mountain, and Big Horn Tack-On WSAs; the Crooked Creek Natural Area (2,101 acres); and the Crooked Creek Natural Area

National Natural Landmark (300 acres), designated in 1966. The Crooked Creek Natural Area and the Crooked Creek NNL are located entirely within the East Pryor ACEC. The ACEC, designated in 1999, has many diverse habitat types and associated wildlife species. The area is rich with paleontological and cultural resources, including early Cretaceous land vertebrates (one of only two localities in North America) in the lower elevations of the ACEC and Native American vision quest sites in the higher elevations of the ACEC. Although vegetation was not one of the characteristics for which the East Pryor Mountain ACEC was designated, sites of several BLM sensitive plants occur in the ACEC.

In 1966, when the Crooked Creek NNL was designated, the area was known as one of only two localities in North America which had produced early Cretaceous land vertebrates. Important primary finds of early Cretaceous dinosaur specimens were made here by paleontologists from Princeton University in the late 1940s and by workers from Yale University in the 1960s. Fauna first identified at the Crooked Creek NNL include a primitive hadrosaur, a small and large carnivorous dinosaur, a sauropod, an ankylosaur, and an ornithopod dinosaur. The primitive hadrosaur and the small of the two carnivores were recovered as essentially complete skeletons. These fossil bearing Cretaceous deposits are the type-site for eight species and ghree genera of early Cretaceous dinosaurs.

The Burnt Timber Canyon, Pryor Mountain, and Big Horn Tack-On Wilderness Study Areas (WSAs) were recommended for wilderness designation in the Montana Statewide Wilderness Study Report, Volume II (BLM, 1991).

The Pryor Mountain Wild Horse Range (PMWHR) encompasses the majority of the three WSAs. The wild horse range is located in the southeastern portion of Carbon County, Montana and extents into the northern portion of Big Horn County, Wyoming. The range is bordered on the north and west by the Custer National Forest, on the south by private lands, and on the east by Big Horn Canyon National Recreation Area. The PMWHR was created by order of the Secretary of the Interior on September 9, 1968.

The area has many diverse habitat types and associated species of wildlife coexisting with a herd of wild horses. The primary big game species are mule deer, Rocky Mountain bighorn sheep, and black bear. Upland game birds include blue grouse and pheasant. Three species of bats occur within the East Pryor ACEC: Townsends' Big-Eared Bat, Pallid Bat, and Spotted Bat. The area contains caves that provide summer and winder habitat for bats

Crooked Creek is the only active fishery in the area supporting species of brook, rainbow, and cutthroat trout. Yellowstone Cutthroat trout may be isolated in the upper portions, representing a pure genetic strain with high intrinsic value.

To conserve the area for wild horse and paleontological values, provide recreational use and enhance fish and wildlife habitat, the East Pryor ACEC is managed according to the following management prescriptions (1999). Fire is managed with conditional fire suppression. Wood product sales, ROWs, livestock grazing and geophysical exploration for O&G are not allowed. Off-road vehicle use is limited to the designated vehicle ways. Locatable minerals are withdrawn from entry. Mineral material sales and permits, and O&G leasing are not allowed. Noncommercial collection of common invertebrate and plant fossils are allowed. The area is managed per VRM Class II objectives.

3.27.3.4 Four Dances Natural Area ACEC

Four Dances Natural Area ACEC, designated in 2002, is located two miles east of downtown Billings and is bordered on the east by Coburn Road and on the west by the Yellowstone River. The BLM acquired this property in 1999. When the BLM acquired this property, the Yellowstone River Parks Association nominated the area as an ACEC.

The location of Four Dances Natural Area ACEC marks the downstream end of the Coulson Bottom plain. The high sheer sandstone cliffs that form the western edges of Four Dances Natural Area ACEC are also a notable landmark in the Yellowstone Valley. Numerous references to the area exist in both Crow and Hidatsa oral literature.

The aboriginal Crow name for the cliffs is "*Annishshisoopash*", translated as "*Place of Four Dances*". The cliff is traditionally recognized as a fasting site used by Four Dances, a prominent Crow warrior in the 1830s, during the heyday of the Rocky Mountain fur trade and the intertribal Plains wars. Four Dances took his name from the vision he received while fasting at this place. Four Dances' name refers to the dancers who appeared to him in four different places during his vision. Four Dances went from his fasting place to achieve a great Crow victory over the Lakota. Crows visited Four Dances' fasting place until about the turn of the century.

The majority of the property is a plateau 200-500 feet above the Yellowstone River, which command views of many important traditional Crow sites and offers great potential for interpretation of many historical and aboriginal sites. The lower end of Coulson Bottoms was favored for Crow camps in the eighteenth and nineteenth centuries. Major fords crossing the Yellowstone and an important pass to the uplands north of the valley were both located here. The pass to the north was documented by Lieutenant James Bradley in 1876, when he passed through with Crow scouts on the way to discover the defeated Custer troops at Little Bighorn.

In the twentieth century, internationally known cowboy artist and author, Will James periodically worked on the Snook Ranch which included the Four Dances property. Will James used a small cabin overlooking the Yellowstone Valley as a retreat. This cabin remains intact on the Four Dances Natural Area ACEC and appears much as it did in James' time. James was instrumental in perpetuating the myth of the American West and the image of the cowboy as the quintessential American character. The best known of James' works includes Smoky the Cowhorse (1926). Smoky the Cowhorse won the Newbery Medal for children's literature in 1927 and the Lewis Carroll Shelf Award in 1965.

The Four Dances Natural Area ACEC is directly across the river from Coulson City, a late nineteenth century steamboat landing and the precursor to Billings. Coulson City was built just across the river from what was then the Crow Reservation (the reservation boundary was adjusted to the east in 1891). A segment of the historic Meeteetse to Billings stage and freight road also appears to have crossed the northeast corner of the Four Dances Natural Area ACEC.

The cliffs on the Four Dances site were also noted by William Clark when he floated past in 1806. His manuscript maps refer to them as "Yellow Cliffs". A few days later Sergeant Pryor and his party crossed the Yellowstone with the expedition's horse herd just below the cliffs.

To the extent that the BLM owns the mineral estate at Four Dances Natural Area ACEC a regulatory withdrawal on the mineral estate is in place on the 784 acres. The current management of Four Dances Natural Area ACEC consists of the following (2002). It is an avoidance area for land use authorizations (ROWs). Uses and practices would be consistent with the Deed of Conservation Easement. A restricted quantity of ROWs, temporary use permits and land use authorizations are available if the actions are consistent with the ACEC objectives. Land Tenure: No land sales, R&PPs, conveyances or long term leases for habitation or industrial use. Off-Highway vehicle use: OHV use (including bicycles) limited to administrative or authorized use only. No snowmobiles and no off-road vehicle use. Visual Resource Management: Class III. It is closed to oil and gas leasing, exploration, and development, withdrawn from locatable mineral and solid leasable mineral development, and mineral material sales are not allowed. Fire Suppression: Appropriate management response to wildfire would be aggressive fire suppression; including use of natural barriers and hand constructed fire lines; use of bulldozers and retardant avoided unless approved by authorized officer. Fuels Management: Prescribed fire would be used to reduce hazardous fuels and meet other resource objectives. Allowed only during favorable smoke dispersal conditions with stable atmospheric conditions. Fuel wood cutting/wood product sales: wood product sales permits would not be issued. Commercial timber harvest not allowed. Timber management for the safety and enhancement of other values would be practiced in the woody draws, on the islands, and along the Yellowstone River bottom. Livestock Grazing: Only authorized to meet other resource objectives consistent with ACEC designation. Grazing must meet Standards and Guidelines. Buffalo grazing is not permitted. Noxious/Invasive weed treatments: Treatments may include any combination of herbicide application, burning, grazing and the use of insects or pathogens. The use of chemicals would be minimized. Hunting/target shooting: No discharging of firearms. Archery hunting may be allowed if deemed necessary by MTFWP (authorization from BLM required). Special Recreation Permits: Authorizations would be required or timing and locations would be specified for events such as cross country races. Some limitations on use by the general public may be required to facilitate Native American religious activities. These would be limited to specific time periods and specific portions of the property. Recreation: Day use area only. Closed to horseback riding, use of fireworks, hang gliding, rock climbing, paint ball, discharging of firearms, and exercising pets off leash. Wildlife: Special management and priority would be given to protecting falcon eyries by restricting human activity along the rims that might adversely affect the nesting birds. Non-ACEC values may be adjusted as necessary. (Map 85 – Four Dances Natural Area ACEC/SRMA)

3.27.3.5 Meeteetse Spires ACEC

Meeteetse Spires ACEC, designated in 1999, is located in Carbon County, Montana, at the base of the eastern slopes of the Beartooth Mountains. The Meeteetse Spires are in the rain-shadow of the Beartooth Mountains and exhibit an extremely abrupt change in annual precipitation from nearly 26 inches on the western boundary to six inches in the east (Lesica, 1998). The terrain slopes steeply, dropping from 7,200 feet to5,600 feet. The spires are formed by a tilted layer of sedimentary rocks at the edge of the Beartooth Uplift and are remnants of upturned Madison limestone.

Meetseetse Spires ACEC is in the vicinity of recreation areas near Red Lodge. Hikers, climbers, and sightseers use the area during the spring and summer. In the fall, hunters use the Meeteetse Spires ACEC intensively.

Meeteetse Spires was dedicated as a Centennial Preserve on October 7, 1989, through the efforts of The Nature Conservancy and the BLM. The Preserve was created to protect the spectacular scenery and natural beauty of the Spires and the ecological habitat for two rare plant species. The area is drained by nearly a dozen perennial and intermittent streams which flow eastward from the mountain front to form the Grove Creek and Wolf Creek drainages.

Variations in moisture have affected soil development which determines the plant communities in the area. *Shoshonea pulvinata* and *Townsendia spathulata*, occur at higher eleveations. A rare plant species, *Shoshonea pulvinata* is known in only three location in Montana and fewer than 12 locations globally (Lesica, 1998). It is a candidate for listing as a federal endangered species. *Townsendia* was considered rare in Montana, but in the 1993 Pryors Botanical Study conducted by the Montana Natural Heritage Program indicated that *Townsendia* was widely distributed throughout the Pryor Mountains and did not warrant sensitive listing. It is also found in two western Montana counties (Beaverhead and Broadwater) and in Wyoming. (Map 171 -- Meeteetse Spires ACEC).

To protect and enhance the rare plant *Shoshonea pulvinata* and conserve this scenic area for recreational use, the area is managed according to the following management prescriptions (1999). An easement across state land (T. 8 S., R. 20 E., Section 36) has been obtained. Fire is managed with conditional fire suppression. Selected timber harvests may be periodically necessary to protect the area's overall resource value. Livestock grazing, except for sheep, is allowed. Wood product sales, ROWS, O&G leasing, and mineral material sales and permits are not allowed. Locatable minerals will be withdrawn from entry. In the sensitive plant area, geophysical exploration for O&G is not allowed by any method. On the remaining area, geophysical exploration is accessed by air only. Exploration is shot holes and above-ground shots. Vibroseis is allowed. Off-road vehicle use is limited to designated roads and trails, yearlong, in the entire area. The area is managed per VRM Class II objectives.

3.27.3.6 Petroglyph Canyon ACEC

Petroglyph Canyon ACEC is in southern Carbon County, Montana, along the Montana/Wyoming stateline. It is a late prehistoric rock site (24CB0601) listed on the National Register of Historic Places on November 20, 1975. The site consists of 38 panels of petroglyphs and represents the northernmost extension of an art style not commonly found in Montana. Human figures dominate the artwork. Materials recovered in excavations at the base of the panels include chipped stone tools, flaking debris, and charcoal. Radiocarbon dating of the charcoal resulted in the dates 850 +/- 50 BP and 1270 +/- 125 BP. Although there is no absolute association between these dated cultural levels and the petroglyphs, the ages have been tentatively used to establish the relative age of the *en toto* pecked style. Based on the proximity of the cultural debris to the rock art, tentative ages of 1,200 to 850 years were suggested for the *en toto* pecked style.

The majority of the petroglyphs were made by pecking through the dark rock varnish to expose the lighter colored interior stone. The practice of removing all the interior of each petroglyph,

as opposed to simply pecking away an outline of each figure, is used as one of the criteria in establishing a type of petroglyph known as the *en toto* pecked style. Petroglyphs in this style were through to be part of a continuous tradition that lasted through at least four centuries.

In 1983 the each panel (1-38) at Petroglyph Canyon was photographed using a series of filters/lenses then using a low level aerial photograph, every boulder or rock face containing rock art was identified with a corresponding panel number.

Petroglyph Canyon ACEC is segregated from appropriation under the agricultural land laws, from sales under Section 2455 of the revised statutes, and from operation of the mining laws. It was withdrawn from mineral entry, but not from mineral leasing March 7, 1988.

To conserve this area for future generations to study and enjoy, the area is managed according to the following management prescriptions (1999). Wood product sales, ROWs, O&G leasing and geophysical exploration for O&G are not allowed. Livestock grazing and range improvement are allowed. Locatable minerals are withdrawn from entry through a regulatory withdrawal on the entire 240 acres. It is closed to off-road vehicle use.. The area is managed per VRM Class IV objectives.

3.27.3.7 Pompeys Pillar ACEC

Pompeys Pillar ACEC is discussed in Section 3.4.2 – Pompeys Pillar.

3.27.3.8 Stark Site ACEC

The Stark Site ACEC is located in western Musselshell County, Montana. The area is a complex of sites used for bison impoundment and processing, occupations, burials, a rock shelter, rock art, and historic remains. Of the 26 sites recorded, 21 are considered eligible for nomination to the National Register of Historic Places (Map 171).

The Stark Site Complex has the potential to yield significant information on Native American societies of the Northwestern plains from the Plains Archaic period to the early Historic period.

The complex of sites in the area includes evidence for the repeated impoundment, slaughter, and processing of bison over a long period of time. Included are seven separate bison bone bed deposits, each representing a kill and processing episode; a number of open occupation sites with artifacts, hearth features, and buried deposits; and a small rock shelter with rock art and with the potential for buried occupation deposits. At least two human burials have been removed from the area.

When originally recorded in 1972, one of the bison kill and processing sites yielded ceramic sherds similar to types found in late prehistoric contexts on the Missouri River in North Dakota. Limited excavation was subsequently conducted by Montana State University. Material culture remains from the Stark Site include flaked stone tools, groundstone, bone and shell artifacts, and pot sherds. The presence of this rare (for central Montana) and exotic artifact type (pot sherds), suggests that these people may have been among the earliest Crow to move into the area after splitting off from North Dakota agricultural groups. The opportunity to investigate the activities of late prehistoric Plains nomad societies at a time when they were initially

entering the area is unusual and may be quite significant, not only for an understanding of Crow and Hidatsa ethnohistory, but for understanding the ethnohistory of numerous other groups who entered the North American Plains in late prehistoric and historic time.

Although bison kill and butchering sites on the Northwestern Plains are not uncommon, the Stark Site complex represents the greatest density of such sites known on public lands in southcentral Montana. The presence of both kill and processing sites dating over a considerable span of time provides the opportunity to compare hunting and related strategies by various groups using the site over differing time periods.

To conserve this area for future generations to study and enjoy, the area is managed according to the following three management prescriptions (1999). Livestock grazing and range improvements are allowed. Fire is managed with conditional fire suppression. Wood product sales, ROWs, and mineral material sales and permits are not allowed. O&G leasing is allowed with a No Surface Occupancy stipulation. Geophysical exploration for O&G is not allowed on the significant cultural resource sites and is allowed (surface methods and vibroseis) in the remainder of the ACEC. Off-road vehicle use is limited to designated roads and trails. The area is managed per VRM Class III objectives.

3.27.3.9 Weatherman Draw ACEC

Weatherman Draw ACEC in Carbon County, Montana, contains rare archaeological resources. Weatherman Draw contains the largest collection of polychromatic pictographs known in the Northern Plains. Petroglyphs are also found in the ACEC. The area has implications for the understanding of prehistoric rock art throughout the North American Great Plains and Rocky Mountain region.

Weatherman Draw is also an area of high religious importance for many Native Americans. The Blackfeet, Comanche, Crow, Eastern Shoshone, Kiowa, Northern Arapaho, Northern Cheyenne, Standing Rock Sioux, Spirit Lake Sioux, Yankton Sioux, Nez Perce, Leech Lake Ojibwe, and the Fort Peck Assiniboine and Sioux are just some of the Native American communities who place high religious significance on this area. The Weatherman Draw area is still being used for religious purposes by many tribes.

There has been almost 80 years of work in the Weatherman Draw area. The intriguing thing about this is that the initial work was driven towards finding and recording rock art. In that period most of the large panels were recorded and Loendorf focused his famous studies on the Valley of the Shields. This seminal work triggered emphasis on the rock art in the area by other archaeologists. The focus on rock art tended to skew the data set towards one aspect of the prehistoric use of the area.

By 2001, over 85 sites had been recorded within the ACEC boundaries, including 39 rock art sites, 29 prehistoric occupation sites, 14 historic rock inscriptions, and 4 historic camps/mines/homesteads.

Beginning in 2004, the BLM Billings Field Office entered into a ten year agreement with Western Wyoming Community College to undertake a Class III cultural resource inventory of the Weatherman Draw ACEC plus an additional 8,000 acres of BLM managed public lands

surrounding the ACEC (expanded ACEC area). This research has focused on determining the nature of the cultural landscape. More to the point, it has focused on the settlement and spatial patterns of the area, studying all the sites in conjunction with the ecozones in which they are located to get a better understanding of the cultural landscape. All portions of the cultural landscape are being studied; from the aboriginal rock art, vision quest sites, and occupation sites to the historic homesteads and opportunistic coal mines.

There was a great deal of controversy over the 1985 and 1987 oil and gas lease sales in which two leases were purchased for the Weatherman Draw area by Blackford Energy. Neither of these leases included stipulations that restricted surface occupancy. In 1993, BLM received an Application for Permit to Drill (APD) for four wells within the Weatherman Draw area. By law, BLM can deny the APD only if it violates the lease stipulations or applicable laws. The BLM initiated an environmental assessment which revealed significant cultural properties within the proposed drilling area. The BLM determined that tribal consultation was required under provisions of Section 106 of the National Historic Preservation Act.

As part of the tribal consultation (1994), the BLM consulted with tribes in Montana and Wyoming. Four tribes identified the area as having significant traditional religious values and ongoing religious use. Blackford Energy applied for a suspension, which the BLM granted.

In 1995, the BLM proposed to designate the Weatherman Draw area as an ACEC. Blackford Energy issued a position that the proposed designation in no way affected their rights to drill since their leases predated the designation. BLM agreed, but postponed a decision on the APDs pending review and public comment.

In 1996, Blackford Energy transferred its leases to Anschutz Exploration. Anschutz submitted an APD on two Blackford locations and indicated that a second APD could be filed, depending on test results of the first well. A second APD is filed. The BLM conducted an analysis to review the two well proposals and potential production of each well.

In 1997, BLM received official consultation from the seven tribes of the Medicine Wheel Coalition, requesting no permits to drill be issued in Weatherman Draw due to the sacred nature of the locality. BLM determined that drilling must be allowed under the conditions of the original lease (valid existing rights), however still delayed issuance of the permit pending resolution of the Sacred Site conflict.

In 1998, Anschutz threatened a lawsuit if BLM did not issue a permit.

In 1999, Weatherman Draw ACEC is designated (4,268 acres) with specific management prescriptions to protect the ACEC values. However the 1985 and 1987 oil and gas leases in Weatherman Draw are valid and existing rights. BLM concluded an EIS would be needed to study impacts related to production. Anschutz withdrew its original proposal and submitted another APD for a single exploratory well. BLM decided that the area known as Cottonwood Creek, which includes many Historic Properties, should receive a sample cultural resource inventory prior to the issuance of any new lease in the vicinity. Three new proposed oil and gas leases were deferred pending completion of this inventory and subsequent recommendations. The selected acreage included both public lands and split estate lands (private surface and federal mineral estate) located outside the ACEC boundary. The BLM's

objective was to locate the tracts containing high cultural resource values which would aid in the formulation of protective stipulations to be applied to the deferred leases.

In 2000, a letter writing campaign by the Sierra Club promoted much public involvement. Public comment reached its peak and Senator Conrad Burns (R-MT) gets involved. Anschutz modified its original APD to a single exploratory well. BLM and Anschutz agreed that if the well is a producer, no further permits will be issued. Anschutz Energy is issued a permit to drill a single exploratory well in Weatherman Draw under stringent restrictions and a one million dollar mitigation bond.

In 2001, BLM's decision is appealed to the IBLA (Interior Board of Land Appeals) by a coalition consisting of the National Trust for Historic Preservation (NTHP), Sierra Club, and 10 Native American tribes. The coalition appears before congress and Representative Nick Rahall (D-WV) introduces the "Valley of the Chief's Native American Sacred Site Protection Act of 2001" (HR2085). The bill failed in committee. The coalition entered into negotiations with Anschutz and offered alternative drilling locations in tribal lands. Anschutz agreed to delay drilling pending agreement.

In 2002, Anschutz agreed to donate its leases to the NTHP. The NTHP agreed to drop its court challenge.

In 2003, the first lease expired. The final report detailing the results of the Cottonwood Creek cultural inventory was received by the BLM in January 2003. Based on the data derived from the report, the BLM recommended the area immediately surrounding Weatherman Draw be withdrawn from mineral leasing and be included in an expanded Weatherman Draw ACEC.

In 2004, funding was received to begin the cultural inventory of Weatherman Draw ACEC and the surrounding area (identified as the proposed expanded ACEC). In 2005, the last existing lease in Weatherman Draw expired.

In 2008, 615 acres of private land, which included the parking area at the west entrance of Weatherman Draw, was offered for sale. The 615 acres of land was purchased by a Billings resident who then donated it to the BLM in order to keep the public access open to the Weatherman Draw ACEC. The sale and transfer of the land to the BLM became final in December 2008.

To conserve this area for future generations to study and enjoy, the area is managed according to the following management prescriptions (1999). Livestock grazing is allowed. Fire is managed with conditional fire suppression. ROWs associated with valid existing O&G lease rights are allowed with restrictions. Other ROWs are not allowed. Range improvements are allowed when they do not conflict with the ACEC values. Locatable minerals are withdrawn from mineral entry on 600 acres through a regulatory withdrawal. Wood product sales and mineral material sales and permits are not allowed. O&G leasing are allowed with a No Surface Occupancy stipulation with no waiver, exception, or modification provisions. The area is closed to geophysical exploration for O&G. Motorized vehicle use is limited to authorized use only. The area is managed per VRM Class II objectives.

3.28 Wilderness Study Areas

There are four Wilderness Study Areas (WSAs) in the Planning Area, as set forth in Table 3-72. These areas are Big Horn Tack-On, Burnt Timber Canyon, Pryor Mountain, and Twin Coulee.

Table 3-72 WSAs in the Planning Area

WSA Name	WSA Number	Total Acreage	Acres Recommended for Wilderness	Acres Recommended for Non-Wilderness
Big Horn Tack-On	MT-067-207	2,689	2,470	
Burnt Timber Canyon	MT-067-205	3,516	3,430	
Pryor Mountain	MT-067-206	15,590	12,575	
Twin Coulee	MT-067-212	6,836	0	6836

Note:
Source: BLM 1984

BLM Manual 6330 (Management of BLM Wilderness Study Areas) states:

> "…*Wilderness preservation is part of the BLM's multiple-use mandate, and the wilderness resource is recognized as one of the array of resource values considered in the land-use planning process."*

The original wilderness review process outlined under Section 603 of FLPMA had three phases: inventory, study, and reporting to Congress. Public involvement was encouraged in all phases of the process, with opportunity provided for comment, participation, and review. The wilderness inventory was conducted from 1978 to 1980, and excluded Alaska and Oregon and California Grant Lands Act of 1937 (O&C Act) lands managed primarily for timber production. The original inventory focused on roadless areas of public lands of 5,000 acres or more and on roadless islands, but also included areas of less than 5,000 acres that had wilderness characteristics in association with contiguous roadless lands managed by another agency, and areas of less than 5,000 acres that had wilderness characteristics and could practicably be managed to keep those characteristics in an unimpaired condition. Additional WSAs were designated through the BLM land use planning process under the authority of Sections 201,202, and 302 of FLPMA after the reports to Congress were completed in 1993.

Pursuant to the Wilderness Act of 1964, Section 2(c), "wilderness" is defined 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 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; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an*

unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."

The FLPMA of 1976 directs the BLM to inventory and study its roadless areas for wilderness characteristics. An area must have the following characteristics to be designated a WSA:

- **Size –** Public lands that are roadless and of at least 5,000 acres in area or of a manageable size
- **Naturalness –** Generally appears to have been impacted primarily by the forces of nature
- **Opportunities –** Provides outstanding opportunities for solitude or primitive and unconfined types of recreation

WSAs also often have special qualities, such as ecological, geological, educational, historical, scientific, and scenic values.

FLPMA mandated that the BLM would inventory and study its lands for their wilderness suitability within 15 years and, based on that review the Secretary of the Interior would forward his/her wilderness recommendations to the President. Recommendations for the BiFO planning area were included in the Montana Statewide Wilderness Study Report released in September 1991 (USDI-BLM 1991b). The Secretary of the Interior and President signed recommendations and forwarded them to Congress before the end of that year. As a result of the inventory and study the four existing WSAs were recommended in the 1984 RMP (BLM 1984).

Only Congress can designate the WSAs established under Section 603 of FLPMA as wilderness or release them for other uses. Therefore, the status of existing WSAs will not change as a result of the BiFO planning process and RMP revision. WSAs will be reevaluated to ensure current management and uses are compatible with the intent of their designation. The BLM's management policy is to continue resource uses on lands under wilderness review in a manner that maintains suitability for preservation as wilderness.

BLM Manual 6330 (Management of BLM Wilderness Study Areas), directs Agency management of WSAs until Congress acts on designation. If Congress designates the areas as wilderness, they would be managed according to the Wilderness Act of 1964, as amended, Public Law 88-577 (16USC 1131-1136). If Congress releases them from wilderness consideration, the areas would be managed as prescribed under the existing RMP management direction.

3.28.1WSAs in the Planning Area

3.28.1.1 Big Horn Tack-On WSA

Big Horn Tack-On is a narrow strip of land about nine miles long and less than one-half mile wide with 2,470 acres in Montana and 80 acres in Wyoming. The WSA is located between Sykes Ridge Road on the west and the BCNRA to the east.

This WSA is primarily in a natural state with a few dispersed, but fairly well screened, human intrusions. These consist of uranium exploration pits; a wild horse trap in the north along the west boundary road; vehicle ways, one in the north and one in the south; and the power line on the southeast (Map 161 - Burnt Timber WSA, Big Horn Tack-On WSA and Pryor Mountain WSA).

3.28.1.2 Burnt Timber Canyon WSA

The area encompasses an extremely rugged and isolated portion of Crooked Creek Canyon, which has remained relatively free of modern human influences. The WSA is predominantly natural and offers outstanding opportunities for solitude and primitive recreation.

The major drainage, Crooked Creek, supports a genetically pure strain of native cutthroat trout. The creek is not considered an outstanding fishery because the trout are small, and dense brush restricts ready stream access. However, native trout species here have a high intrinsic value and, in 2007, the BLM installed a fish barrier in the upper reaches of Crooked Creek to protect this species (Map 161 - Burnt Timber WSA, Big Horn Tack-On WSA, and Pryor Mountain WSA).

3.28.1.3 Pryor Mountain WSA

The Pryor Mountain WSA is 12,575 acres and contains some of the most rugged, isolated portions of the Pryor Mountains. The wide expanses and topographic screening in this area offer outstanding wilderness values. This unit is in the heart of the PMWHR and the free roaming wild horse herd enhances the wilderness characteristics of the area. Human activity is well distributed throughout the WSA. Vegetation and topographic screening significantly limit any detraction from the WSA's extensive natural setting. There are 4,352 acres of the Pryor Mountain WSA which are located in Big Horn County, Wyoming (Map 161 - Burnt Timber WSA, Big Horn Tack-On WSA and Pryor Mountain WSA).

3.28.1.4 Twin Coulee WSA

The Twin Coulee WSA is 6,870 acres located on the southeast flank of the Big Snowy Mountains in Golden Valley County, Montana. It consists of steep mountainous topography with several deeply incised drainages. Most of the WSA is made up of a mixed coniferous forest with bunch grasses for an understory. Elevations range from 5,500 to 7,600 feet. (Map 160 – Twin Coulee Wilderness Study Area).

3.29 Wild and Scenic Rivers

Congress enacted the Wild and Scenic River Act (WSR Act) on October 2, 1968 to provide a national policy for preserving and protecting selected rivers and river segments in their free-flowing condition for the benefit of present and future generations. Section 5(d)(1) of the WSR Act) (Public Law 90-542; 16 US Code 12711287) directs federal agencies to consider potential wild and scenic rivers in their planning processes. To fulfill this requirement, the BLM inventories and evaluates rivers when it develops or revises an RMP for public lands in a specified area.

A Wild and Scenic River (WSR) study process has two main components: the eligibility phase and the suitability phase. The eligibility phase is conducted during the RMP data gathering stage, and the suitability phase is done during formulation of the draft and proposed RMP.

As part of its RMP process, the BiFO conducted the initial inventory and study processes provided for under the Act. The Final Wild and Scenic River Eligibility Report describes the methodology and process used to identify river segments, assess their eligibility, and for eligible segments, assign a preliminary classification (Ecosystem Management Inc. 2009). The study was completed in April 2009 and is included in Appendix R – Final Wild and Scenic River Eligibility Report. The Eligible Wild and Scenic River Segments map shows eligible river segments in the decision area.

This study considered only BLM administered lands along streams and rivers. Private, state, and other federally administered lands were not part of the study. Currently, no rivers or river segments in the decision area are managed under the Act.

3.29.1 Eligibility Phase

Currently, only the eligibility phase of the WSR process is complete. The eligibility phase is undertaken to identify eligible river and stream segments and assign tentative classifications to each. A wide variety of internal and external sources are considered when identifying potentially eligible rivers. The BLM applies standard criteria to identified segments to determine eligibility. A river segment must be free flowing and possess at least one river related value considered outstandingly remarkable to be eligible.

As part of the land use planning process for the RMP, the BiFO interdisciplinary team analyzed all river and stream segments that may be eligible for inclusion in the National Wild and Scenic River System (NWSRS). This included screening rivers to identify those with BLM surface ownership. In addition, BLM coordinated with other federal and state river administering agencies and consulted applicable source listings such as the NPS Nationwide Rivers Inventory and the American Rivers Outstanding Rivers List. These initial screening and identification efforts resulted in a list of 78 rivers or river segments in the decision area that required further consideration in the inventory process. Fourteen of the 78 were identified for further study. Additional reviews focused on whether these segments met the free-flowing criteria and contained any outstandingly remarkable values, as defined in the WSR Act.

Of the 14 segments, seven were determined eligible because they contained one or more outstanding or remarkable criteria, as defined by BLM Manual 8351. The seven segments that met the eligibility criteria and corresponding resource values are shown in Table 3-73 (Map 162).

Table 3-73 Wild and Scenic Rivers and River Segments Eligibility

River or Creek Name	Total Segment Length Including Non-BLM Lands (miles)	Portion of Segment Occurring on BLM Lands (miles)	Free Flowing Determination	Scenic	Recreation	Geological	Fish	Wildlife	Historic	Cultural	Other
Bad Canyon	5	4.5	Y				X				
Bear Canyon	1.6	1.6	Y		X			X		X	
Crooked Creek (above fish barrier)	1.59	1.59	Y	X	X		X			X	
Crooked Creek (below fish barrier)	1.56	1.56	Y	X	X					X	
Gyp Springs	.46	.46	Y						X	X	
Piney Creek	.16	.16	Y				X				
Yellowstone River-Pompeys Pillar	4.46	4.19	Y		X	X			X	X	

Note:
Source: Data extracted from Ecosystem Eligibility Report, 2009, Appendix R.

The seven waterway segments in the decision area that were identified as meeting the eligibility criteria are tentatively classified as wild, scenic, or recreational.

3.29.2 Suitability Phase

The purpose of the suitability phase is to determine whether eligible river segments are suitable for inclusion in the NWSRS per the WSR Act criteria. The suitability evaluation does not result in official designation; it is only a suitability determination for designation. The BLM cannot administratively designate a stream into the NWSRS through a planning or other agency decision. Only Congress or, in some instances, the Secretary of the Interior may designate a wild or scenic river segment. Water protection strategies and measures to meet the purposes of the WSR Act will be the responsibility of Congress in any legislation proposed. Rivers that do not meet suitability would be dropped from further consideration and managed according to the objectives outlined in this RMP.

The suitability phase is conducted as part of the RMP revision process and addressed in a range of alternatives.

3.30 Pryor Mountain Wild Horse Range (PMWHR)

See Wild Horses Section 3.9 for PMWHR information.

3.31 National Historic Trails

National Historic Trails are a congressionally designated trail that is an extended, long-distance trail, not necessarily managed as continuous, that follows as closely as possible and practicable

the original trails or routes of travel of national historic significance. The purpose of a National Historic Trial is the identification and protection of the historic route and the historic remnants and artifacts for public use and enjoyment. A National Historic Trail is managed in a manner to protect the nationally significant resources, qualities, values, and associated settings of the areas through which such trails my pass, including the primary use or uses of the trail.

National Historic Trails, especially high potential sites and segments, are managed and protected in accordance with the National Trails System act, Section 106 of the National Historic Preservation Act, the National Landscape Conservation System Act, Executive Order 13195, and BLM IM-2009-215.

To qualify for designation as a national historic trail, a trail must meet the following criteria:

- Have been established by a historic use and have historical significance as a result of that use
- Have historic use of the trail that has had a far and reaching effect on broad patterns of American culture
- Has significant potential for public recreational or historical interest.

National Historic Trails are managed in accordance with the National Trails System Act of 1968, as amended (16 USC 1241-1251) to recognize the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass, including the primary use or uses of the trail and according to their respective comprehensive management plans. The Nez Perce NHT Comprehensive Management Plan was completed in 1990 and is currently under plan revision at this time (2014). The Lewis and Clark NHT Comprehensive Management Plan was completed in 1982. In 2012, the Lewis and Clark NHT completed a Foundation Document, which is a formal statement of the Trail's core mission that provides basic guidance for all planning and management decisions

The Bureau of Land Management guidance further provides that National Historic Trails (NHT) should be managed to promote preservation, public access, travel opportunities, enjoyment, and appreciation of National Trails for present and future generations as a component of the National Landscape Conservation System or the National Trails System.

The BiFO manages several segments of two National Historic Trails. These include segments along the Lewis and Clark National Historic Trail (L&CNHT) and the Nez Perce National Historic Trail (NPNHT) (Map 166 – National Historic Trails).

The BiFO manages approximately 12 miles of the Nez Perce (Nimíipuu or Nee-Me-Poo) National Historic Trail. The BiFO also manages the portion of trail on public land along the Clarks Fork of the Yellowstone River and north toward the Bear's Paw Mountains. The trail stretches from Wallowa Lake, Oregon, to the Bear's Paw Battlefield near Chinook, Montana. It was designated as a National Historic Trail in 1986. This route was used in its entirety only once; however, components of the route were used for generations prior to and after the 1877 flight of the Nez Perce.

The BiFO manages approximately seven miles of the L&CNHT that primarily follows the Yellowstone River through the planning area. Most public lands along the river trail are inaccessible except for 2.2 miles near Pompeys Pillar National Monument. The L&CNHT section adjacent to Pompeys Pillar NM is addressed in more detail in Section 3.4.2 - Pompeys Pillar of this document.

3.32 Social and Economic Conditions

3.32.1 Social Conditions

3.32.1.1 Attitudes and Social Trends

This section focuses on the attitudes and social trends that affect BLM land management. This information is important to land management decision makers because the trends and attitudes can affect relationships between the agency and its constituents, the ability to successfully implement plans, and the potential impacts to individuals and communities (both in the geographical sense and communities of interest.)

Changes in the management of BLM-administered lands are just one aspect of a broader debate in environmental and resource management occurring locally, nationally, and globally. Commodity, amenity, environmental quality, ecological, recreation, and spiritual are all social land and natural resource values. While the emphasis on the commodity value of public lands has been prevalent in the past, a recent study examining public attitudes toward ecosystem management in the United States found "generally favorable attitudes toward ecosystem management (defined as maintaining and ensuring sustainability) among the general public." (Bengston, Xu, and Fan 2001)

In the rural West, in places where land use has been relatively unrestricted, some individuals and groups have expressed concern regarding the control and management of BLM-administered lands. People with these concerns feel that government officials and environmental advocacy groups that do not have a true understanding of the lands or local residents who depend upon these lands for income and recreation drive changes in BLM land management. Of particular concern is the loss of current land uses such as livestock grazing and OHV use. People with these concerns seek to balance what they consider environmental extremism with economic and human concerns, and they may feel that local elected officials, with whom they are more closely in touch on a daily basis, are better equipped to make decisions about BLM-administered lands.

The Billing Field Office is located in an area where there is a significant amount of federal land ownership. In addition to BLM administered lands, the planning area counties include parts of several National Forests, the Bighorn Canyon National Recreation Area, the Little Bighorn National Monument, several small National Wildlife Refuges and Yellowstone National Park. Some members of the public do not readily differentiate between the various federal land management agencies so that activities by other federal agencies may affect the public's views of the BLM. General attitudes toward the federal government, in some cases unrelated to specific BLM activities, may also influence attitudes toward the BLM.

Some of the major trends affecting BLM's land management of the Billings Field Office area are:

1) The increasing popularity of BLM land for recreation. A comprehensive report on recreation by Cordell et al. (1999) indicates that demand in the Rocky Mountain West for

recreation activities will increase substantially by the year 2020, with non-consumptive wildlife activities, sightseeing, and visiting historic places increasing the most.

2) Concern regarding access to BLM-administered land and the loss of public access to some private land is adding pressure on BLM-administered lands. These changes, linked to the pursuit of a quality recreation experience, occur for a variety of reasons, which include the purchase of lands for private use, leases to outfitters for exclusive use, and closure of private land and roads to avoid problems of safety, fire, fences, weed, litter, and open gates.

3) An aging population is another trend occurring in the nation and Montana; in 2009, 14.6 percent of the population in the planning area was 65 or older, compared to a nationwide figure of 13.0 percent. For the state as a whole, the percentage of population 65 or older is expected to increase to about 25 percent by 2025. The percentage of people 65 or older is actually increasing more rapidly in states like Montana because young people are more likely to leave for advanced education, military service, and employment opportunities not available locally.

4) An increase in year round and vacation homes in the wildland urban interface (WUI) which has led to an increase in human caused ignitions and greater demands for resources necessary to suppress fire.

3.32.1.2 Population

3.32.1.2.1 Montana, Wyoming, and the Planning Area

The planning area includes eight counties in south central Montana and two counties contiguous to the Montana counties in north central Wyoming. The Montana Counties are Big Horn, Carbon, Golden Valley, Musselshell, Stillwater, Sweet Grass, Wheatland and Yellowstone, and the Wyoming Counties are Big Horn and Park. The Wyoming Counties are included because the Billings Field Office administers over 4,000 acres in Big Horn County, Wyoming as part of the Pryor Mountain Wild Horse Range, and some economic activity related to Carbon County mineral development occurs in Park County, Wyoming (Table 3-74).

In 2010, the Montana state population was 989,415 persons across a 145,552 square mile land area. This represented a 9.7 percent increase from 2000. Population density was an average of 6.8 persons per square mile, compared to a national figure of 87.3. In 2009, 14.6 percent of all Montana residents were 65 years and older compared to a national figure of 13.0 percent. Based on 2005-2009 data, 90 percent of persons over 25 in Montana were high school graduates compared to 85 percent for the country as a whole. In 2009, 15.0 percent of the state population had incomes below the poverty level compared to a figure of 13.8 percent nationwide.

The Montana portion of the planning area had a population of 191,118 in 2010, which was about 19 percent of the total population of the state. This figure represented an 11.6 percent increase from 2000 which was slightly higher growth than for the state as a whole. Population density was an average of 9.4 persons per square mile which was higher than for the state as a whole. The influence of Yellowstone County, home to Billings which is the largest city in Montana, is obvious in these figures. Nearly 77 percent of the planning area population was

located in Yellowstone County, population density in Yellowstone County was 56.2 compared to 0.8 to 4.9 in the other counties, and the growth rate for Yellowstone County was higher than for all the other Montana planning area counties.

In 2009, 16.3 percent of the Montana planning area population was 65 years or older compared to a Montana figure of 14.6 with the oldest populations being in the more rural counties. Based on 2005 to 2009 data, an average of 89.9 percent of persons over 25 in the planning area were high school graduates with the highest figure being in Yellowstone County. In 2009, 16.3 percent of the planning area counties had incomes below the poverty level with the level being highest in Big Horn County. The percent American Indian in 2010 was 9.0 percent with the figure being highest in Big Horn County where the Crow Reservation is located.

As mentioned previously, the largest community in the Montana part of the planning area is Billings in Yellowstone County, with a 2010 population of 104,170. There are nine other incorporated areas in the planning area with 2010 populations greater than 1,000: Lockwood 6,797 (Yellowstone County), Laurel 6,718 (Yellowstone County), Hardin 3,505 (Big Horn County), Red Lodge 2,125 (Carbon County), Columbus 1,893 (Stillwater County), Roundup 1,788 (Musselshell County), Big Timber 1,641 (Sweet Grass County), Crow Agency 1,616 (Big Horn County) and Absarokee 1150 (Stillwater County). In addition, there are numerous other incorporated and unincorporated communities in the planning area that function with independent and/or shared services including water districts, sewer districts, and school districts.

In 2010, the Wyoming state population was 563,626 persons across a 97,100 square mile land area. This represented a 14.1 percent increase from 2000. Population density was 5.8 persons per square mile, compared to a national figure of 87.3. In 2009, 12.3 percent of all Wyoming residents were 65 years and older compared to a national figure of 12.9 percent. Based on 2005-2009 data, 91.1 percent of persons over 25 in Wyoming were high school graduates compared to 84.6 percent for the country as a whole. In 2009, 10.2 percent of the state population had incomes below the poverty level compared to a figure of 14.3 percent nationwide.

The Wyoming portion of the planning area had a population of 39,971 in 2010, which was about 7 percent of the total population of the state. This figure represented a 6.8 percent decrease from 2000 which was about half the growth rate for Wyoming as a whole. In 2009, 17.2 percent of the Wyoming planning area population was 65 years or over compared to a Wyoming figure of 12.3. Based on 2005 to 2009 data, an average of 90.0 percent of persons over 25 in the planning area were high school graduates with the higher figure being in Park County. In 2009, 10.5 percent of the planning area counties had incomes below the poverty level which was slightly higher than the state figure. The percent American Indian in 2010 was 0.8 percent which was lower than the state figure of 2.4 percent.

There are five incorporated communities with a population greater than 1,000 in the Wyoming portion of the planning area. These include: Cody 9,520 (Park County), Powell 5,373 (Park County), Lovell 4,604 (Big Horn County), Greybull 1,879 (Big Horn County) and Basin 1,269 (Big Horn County). In addition there are numerous other incorporated and unincorporated

communities that function with independent and/or shared services including water districts, sewer districts, and school districts. Some of the communities in both Big Horn and Park Counties are affected by mineral development occurring in the Montana Counties.

Table 3-74 Demographic and Social Information for the Montana and Wyoming Planning Area Counties

Demographic and Social Information for the Montana and Wyoming Planning Area Counties													
	Big Horn (MT)	Carbon (MT)	Golden Valley (MT)	Musselshell (MT)	Stillwater (MT)	Sweet Grass (MT)	Wheatland (MT)	Yellowstone (MT)	Big Horn (WY)	Park (WY)	Planning Area MT/ WY	State of MT	State of WY
2010 Population	12,865	10,078	884	4,538	9,117	3,561	2,168	147,972	11,668	28,205	191,183/ 39,971	989,415	563,626
% Change 2000-2010	1.5	5.5	-15.2	0.9	11.3	1.2	-4.0	14.4	1.8	9.4	11.6/ 6.8	9.7	14.1
Persons Per Sq. Mi. (2010)	2.6	4.9	0.8	2.4	5.1	2.0	1.5	56.2	3.7	4.1	9.4/ 3.9	6.8	5.8
Net Migration (2000-2009)	-1,077	347	2	219	405	39	-175	10,026	NA	NA	978**	42,980	NA
% Age 65 & Over (2009)	9.7	17.4	15.8	18.7	16.4	18.5	20.5	14.0	17.2	17.2	16.3/ 17.2	14.6	12.3
% White (2010)	31.4	97.2	94.0	96.1	96.8	96.6	95.8	90.7	94.4	95.6	87.3/ 95.0	89.4	90.7
% American Indian (2010)	64.3	0.8	1.0	1.3	0.8	0.4	0.5	4.0	0.9	0.6	9.0/ 0.8	6.3	2.4
% HS Grad Persons 25 & Over (2005-2009)	82.4	91.1	89.2	83.9	91.4	86.3	87.6	91.0	88.3	92.1	89.9/ 90.0	90.4	91.1
Median Household Income (2009)	$32,223	$41,952	$30,424	$33,382	$53,637	$41,993	$28,730	$47,139	$22,675	$47,264	$38,685/ $34,969	$42,222	$54,400
% Persons Below the Poverty Level (2009)	24.0	12.1	21.7	20.5	9.3	11.5	19.5	11.7	10.6	10.4	16.3/ 10.5	15.0	10.2

NA indicates information not available
*Montana Planning area includes the 6 Montana Counties; Wyoming Planning area includes the 2 Wyoming Counties
**Includes only the Montana Counties
Source: 2010 Quickfacts, Bureau of the Census

3.32.1.2.2 Montana County Information

Big Horn County, Montana

Big Horn County, located in the southern part of the planning area, is the home of the Crow Indian Reservation (covering 64 percent of the county). The tribal headquarters are located in the county at Crow Agency. The county also contains a small part of the Northern Cheyenne Indian Reservation, part of the Bighorn Canyon National Recreation Area, and the Little Bighorn Battlefield National Monument. The U.S. Bureau of Reclamation operates a major water project, Yellowtail Dam, in the county. The county population was 12,865 in 2010, an increase of 1.5 percent since 2000. Hardin, the county seat, had a 2010 population of 3,505. Other smaller communities include Crow Agency, Lodge Grass, Busby and Fort Smith. In 2007, Big Horn County had 695 farms and ranches with 369 (53%) of the principal operators identifying farming and ranching as their primary occupation. The number of farms and ranches increased 19 percent between 2002 and 2007 while the amount of land in farms increased by 3 percent and the average size of the farm declined by 13 percent to 4,172 acres. There are 7 acres of BLM administered surface land and 1.016 acres of BLM administered mineral estate in Big Horn County.

Carbon County, Montana

Carbon County, located in the southwestern part of the planning area, has more BLM administered surface acreage and mineral estate than any other planning area county. Located at the base of the Beartooth Mountains, it has become a tourist destination and is home to the beginning of the Beartooth All-American Road and Scenic Highway, Red Lodge ski resort, most of the Bighorn Canyon National Recreation Area and part of the Pryor Mountain Wild Horse Range. The county population was 10,078 in 2010, an increase of 5.5 percent since 2000. Red Lodge, the county seat, had a population of 2,125 in 2010. Other smaller communities include Belfry, Bridger, Fromberg and Joliet. In 2007, Carbon County had 715 farms and ranches with 335 (47%) of the principal operators identifying farming and ranching as their primary occupation. The number of farms and ranches increased 2 percent between 2002 and 2007 while the amount of land in farms increased by 5 percent and the average size of the farm increased by 4 percent to 1,110 acres. There are 220,556 acres of BLM administered surface land and 341,376 acres of BLM administered mineral estate in Carbon County. Activities on BLM administered lands include oil & gas leasing and production, bentonite production, recreation use, livestock grazing and rights-of-way.

Golden Valley County, Montana

Golden Valley is located in the north central part of the planning area. It is bordered by the Big Snowy Mountains to the north, and the Musselshell River runs through the center of the county. Golden Valley County is the least densely settled county in the planning area and lost the most population (proportionately) in the prior decade. The county population was 884 in 2010, a decrease of 15 percent since 2000. Ryegate, the county seat, had a population of 214 in 2010. In 2007, Golden Valley County had 153 farms and ranches with 96 (63%) of the principal operators identifying farming and ranching as their primary occupation. The number of farms and ranches increased 9 percent between 2002 and 2007 while the amount of land in farms increased by 2 percent and the average size of the farm declined by 7 percent to 4,391 acres.

There are 7,943 acres of BLM administered surface land and 44,360 acres of BLM administered mineral estate in Golden Valley County. Activities on BLM administered lands include oil & gas leasing and production, recreation use, and livestock grazing.

Musselshell County, Montana

Musselshell County, which has an active underground coal mine in the Bull Mountains, is located in the northeastern part of the planning area. It has the second most BLM administered surface acreage and mineral estate of any county in the planning area. The county population was 4,538 in 2010, an increase of 1 percent since 2000. Roundup, the county seat, had a population of 1,788 in 2010. In 2007, Musselshell County had 373 farms and ranches with 190 (51%) of the principal operators identifying farming and ranching as their primary occupation. The number of farms and ranches increased 10 percent between 2002 and 2007 while the amount of land in farms increased by 17 percent and the average size of the farm declined by 6 percent to 3,038 acres. There are 101,247 acres of BLM administered surface land and 226,905 acres of BLM administered mineral estate in Musselshell County. Activities on BLM administered lands include oil & gas leasing and production, recreation use, coal mining, timber production and livestock grazing.

Stillwater County, Montana

Stillwater County is located in the southwestern part of the planning area and is home to the Stillwater Mine, currently the only operating platinum/ palladium mine in the United States. The county population was 9,117 in 2010, an increase of 11.3 percent since 2000. Columbus, the county seat, had a population of 1,893 in 2010. Other smaller communities include Absarokee, Park City, Reed Point and Rapelje. In 2007, Stillwater County had 635 farms and ranches with 290 (46%) of the principal operators identifying farming and ranching as their primary occupation. The number of farms and ranches increased 15 percent between 2002 and 2007 while the amount of land in farms decreased by 4 percent and the average size of the farm decreased by 16 percent to 1,350 acres. There are 5,504 acres of BLM administered surface land and 58,348 acres of BLM administered mineral estate in Stillwater County. Activities on BLM administered lands include oil & gas leasing and production, timber production, recreation use, livestock grazing and rights-of-way.

Sweet Grass County, Montana

Sweet Grass County is located in the western part of the planning area and is surrounded by the Absaroka, Beartooth, and Crazy mountains. The county population was 3,561 in 2010, an increase of 1.2 percent since 2000. Big Timber, the county seat, had a population of 1,641 in 2010. In 2007, Sweet Grass County had 355 farms and ranches with 177 (50%) of the principal operators identifying farming and ranching as their primary occupation. The number of farms and ranches decreased 1 percent between 2002 and 2007 while the amount of land in farms decreased by 6 percent and the average size of the farm decreased by 6 percent to 2,289 acres. There are 15,893 acres of BLM administered surface land and 75,240 acres of BLM administered mineral estate in Sweet Grass County. Activities on BLM administered lands include oil & gas leasing and production, timber production, recreation use, livestock grazing and rights-of-way.

Wheatland County, Montana
Wheatland County is located in the northwest part of the planning area and is home to new wind farm development. Wheatland County is the second least densely settled county in the planning area and lost the second most population (proportionately) in the prior decade. The county population was 2,168 in 2010, a decrease of 4 percent since 2000. Harlowton, the county seat, had a population of 997 in 2010. In 2007, Wheatland County had 137 farms and ranches with 75 (55%) of the principal operators identifying farming and ranching as their primary occupation. The number of farms and ranches declined 16percent between 2002 and 2007 while the amount of land in farms declined by 2 percent and the average size of the farm increased by 16 percent to 6,002 acres. There are 1,333 acres of BLM administered surface land and 21,437 acres of BLM administered mineral estate in Wheatland County. Activities on BLM administered lands include livestock grazing.

Yellowstone County, Montana
Yellowstone County is located in the central part of the planning area and is the major trade and service center for south central Montana and north central Wyoming. It is by far the most densely settled county in the planning area. The county population was 147,972 in 2010, an increase of 14.4 percent since 2000. Billings, the county seat, had a population of 104,170 in 2010. In 2007, Yellowstone County had 1,407 farms and ranches with 538 (38%) of the principal operators identifying farming and ranching as their primary occupation. The number of farms and ranches increased 10 percent between 2002 and 2007 while the amount of land in farms increased by 3 percent and the average size of the farm declined by 6 percent to 1,148 acres. There are 77,373 acres of BLM administered surface land and 116,516 acres of BLM administered mineral estate in Yellowstone County. Activities on BLM administered lands include oil & gas leasing and production, recreation use, livestock grazing and rights-of-way.

3.32.1.2.3 Wyoming County Information

Big Horn County, Wyoming
Big Horn County, Wyoming, is located along the Montana-Wyoming border directly south of Carbon and Big Horn Counties, Montana. It is home to part of the Pryor Mountain Wild Horse Range (PMWHR), the Pryor Mountain Wild Mustang Center (PMWMC) and part of the Bighorn Canyon National Recreation Area. The county population was 11,668 in 2010, an increase of 1.8 since 2000. Basin, the county seat, had a population of 1,269 in 2010. Lovell, with a 2010 population of 4,604, is the largest community in Big Horn County and the location of the PMWMC. There are 4,303 acres of BLM administered surface land and mineral estate in Big Horn County. Activities on BLM administered lands include livestock grazing and recreation on the PMWHR. In addition, some communities in this county are affected by mineral development on BLM administered land in the adjacent Montana counties.

Park County, Wyoming
Park County, Wyoming, is located directly south of Carbon County, Montana.
The county population was 28,205 in 2010, an increase of 9.4 percent since 2000. Cody, the county seat with a 2010 population of 9,520, is a gateway community to Yellowstone Park which comprises a large part of the county. There are no acres of Billings RMP administered surface or subsurface land in this county. However, some communities are affected by mineral development on BLM administered land in the adjacent Montana counties.

3.32.1.3 Potentially Affected Groups and Individuals

Discussions of potentially affected groups and individuals in the BiFO planning area are included to facilitate an assessment of social effects that may occur. The groups listed below are residents, recreationists, or others who have direct relationships to management of BLM lands:

- Ranchers/ livestock permittees
- Recreationists (participants in motorized and-motorized activities)
- Groups and individuals who prioritize resource protection
- Groups and individuals who prioritize resource use
- Wild horse advocates
- American Indian tribes

These groups are not mutually exclusive, and examples of households that fit into more than one category are likely.

In many cases, social effects are described in terms of quality of life, which could include the quantity and quality of available resources (recreation opportunities) and resolution of problems related to resource activities. Other less tangible beliefs that may affect quality of life include: individuals having a sense of control over the decisions that affect their future and individuals feeling that the government strives to act in ways that consider all stakeholders' needs.

3.32.1.3.1 Ranchers/Livestock Grazing Permittees

Ranching is an important part of the history, culture, and economy of the study area. In 2007, there were almost 4,500 farms and ranches in the Montana part of the planning area. Many livestock operators in the planning area graze livestock on public lands (both BLM and National Forest lands). Ranchers face many challenges today that include changes in federal regulations, economic issues, aging ranching populations and changing land use. Ranchers and grazing permittees may face increasingly stressful social situations as they try to balance their traditional lifestyles with demands from government agencies and other public land users such as recreationists. In addition, the absentee ownership of base property associated with the allotments has increased, as has the number of permittees that do not rely on livestock grazing for their primary source of income. Some permittees have shifted the focus of their management to wildlife habitat improvement and recreation. Others have diversified their income by seeking supplemental work off the ranch, providing outfitting and guest ranch services, and/or diversifying their output. These changes in the types of permittees that run livestock have resulted in the diversification of perspectives among the permittees.

Ranchers and livestock grazing permittees in the planning area offered the following comments/concerns during scoping: maintain motorized access to administer allotments, maintain availability of forage and AUMs, range condition, a desire to purchase BLM inholdings within ranches, concern with public use of leased areas, and trespass across private ground to access public lands.

3.32.1.3.2 Recreationists

Outdoor recreation is a component of most lifestyles in the planning area. According to University of Montana research, Montanans take more leisure trips than the United States average (MFWP 2008). The substantial recreational opportunities for fishing, hunting, hiking, horseback riding, OHV use, and sightseeing are important elements of the overall quality of life for planning area residents. Recreationists represent very diverse groups of people, and changes in recreation management can affect people who engage in the various activities differently based on need and preference. Due to the diversity of recreation activities, recreationists tend to organize into interest groups. Examples of these would be hunters, OHV users, horse riders, etc. Most recreational activities have at least one organization that advocates for their particular activity. The Montana Statewide Comprehensive Outdoor Recreation Plan outlined key issues based on statewide surveys and other research (MFWP 2008). The following are some of the key issues relevant to BLM-administered lands in the planning area:

- a need for continued access to, and maintenance of, rural and backcountry trails and use areas for hiking, biking, skiing, equine and motorized (OHV, snowmobile) recreation;
- a need for increased miles and maintenance of urban and rural trails and access for water-based recreation.; and
- insufficient quality and quantity of recreation facilities for youth.

Outfitters and guides use recreational opportunities in the planning area for economic gain. Some outfitters and guides are ranchers or farmers who use recreation as a means to achieve economic diversification. Others operate full-time or seasonal outfitter businesses and employ some local residents as guides, while still others are permanent full-time guides who have their own local and non-local clients.

Comments from recreationists during scoping included: more access for preferred activities including horseback riding, mountain biking, and winter activities, increased hunting opportunities, signing to identify public lands, education of users, adequate law enforcement, address user conflicts, and place high value on open places and scenery. Motorized recreationists wanted motorized opportunities to be maintained, improved trails, loop trails, and volunteer opportunities. Non-motorized recreationists wanted solitude and tranquility and were concerned about illegally created roads and resource damage from motorized use.

3.32.1.3.3 Groups and Individuals Who Give a High Priority to Resource Protection

Various individuals and groups at the local, regional, and national levels are interested in the ways BLM manages public lands. Many of these concerns regard wildlife and wildlife habitat, special status plant species and habitat, water quality, and visual quality. They value BLM-administered land for wildlife, recreation, education, scenic qualities, wilderness, and open space, among other reasons. Their concerns include preserving healthy ecosystem and plant communities, protection of rare plant species, need for designating more ACECs, and the effects of oil and gas development, wind energy, residential development on adjacent lands and motorized access.

3.32.1.3.4 Groups and Individuals Who Give a High Priority to Resource Use

Many individuals and groups are concerned about limitations on the availability of public lands for commercial uses, such as livestock grazing and mineral or energy development. They indicate that the public lands have to be managed to be as productive as possible and the survival of local economies and local communities depend upon these industries. Some of the comments received during scoping indicated concerns about stipulations, restriction and delays on oil and gas development, support for wind energy development and timber harvest, and a desire for reasonable access.

3.32.1.3.5 Small Communities

Small communities can be tied to BLM and public lands in a variety of ways. Local businesses and governments depend upon BLM employees to support businesses and public services, while use of public lands for recreation activities, livestock grazing, minerals or energy development, and other activities can provide economic and leisure-time opportunities. Area residents are concerned about young people and families leaving the area to seek employment elsewhere, declining farm populations, local business closings, and lack of funds for public services resulting from the declining tax base.

Comments received during scoping include: want to see new economic opportunities for jobs, tax revenue for schools, services and infrastructure, concern about increasing residential development, concerns with non-locals overriding local interests, and private property rights on lands adjacent to public lands.

3.32.1.3.6 Wild Horse Advocates

Various individuals and groups at the local, regional and national level are very interested in the welfare of the wild horses on the Pryor Mountain Wild Horse Range. A visitor center, the Pryor Mountain Wild Mustang Center is located in Lovell, Wyoming, and the herd and range are an important part of that community's identity. Comments received during scoping included: want to see the wild horses and their areas left alone, people from all over the world and all walks of live come to see the horses---and spend their money, promote the use of land so the herd can sustain larger numbers, end roundups, work with NPS and USFS to expand the range, and provide responsible viewing opportunities for the public.

3.32.1.3.7 American Indian Tribes

Two Reservations are located in the vicinity of the Billings RMP planning area: the Crow Reservation in Big Horn County, Montana, and the Northern Cheyenne Reservation that is located directly to the east of the Crow Reservation in Rosebud County, Montana. Other federally recognized tribes in and adjacent to Montana with an affinity to the planning area include:

- Fort Peck Indian Reservation, Montana (Assiniboine and Sioux Tribes)
- Blackfeet Indian Reservation, Montana (Blackfeet Tribe)
- Rocky Boy's Indian Reservation, Montana, (Chippewa-Cree Tribe)
- Fort Belknap Reservation, Montana (Fort Belknap Indian Community)

- Wind River Reservation, Wyoming (Eastern Shoshone and Northern Arapaho Tribes)
- Cheyenne River Indian Reservation, South Dakota (Cheyenne River Sioux Tribe)
- Rosebud Indian Reservation, South Dakota (Rosebud Sioux Tribe)
- Pine Ridge Indian Reservation, South Dakota (Ogalala Sioux Tribe)
- Fort Berthold Indian Reservation, North Dakota (Three Affiliated Tribes)
- Turtle Mountain Indian Reservation, North Dakota (Turtle Mountain Band of Chippewa)
- Spirit Lake Indian Reservation, North Dakota (Spirit Lake Sioux Tribe)
- Standing Rock Indian Reservation, North Dakota & South Dakota (Standing Rock Sioux Tribe)
- Fort Hall Indian Reservation, Idaho (Shoshone-Bannock Tribes)
- Nez Perce Tribe
- Confederated Tribes of the Umatilla Reservation
- Confederated Tribes of the Colville Indian Reservation
- Kiowa Tribe

American Indian traditionalists have maintained connections to places containing edible and medicinal plants, rock art, grave sites, and places used for tree platform "burials," mineral and plant products used in rituals or for paints, and vision quest stations. They are also interested in visiting the sites of battles, old trading posts, and ghost towns to learn more about these aspects of their history. Currently, through a project led by Big Horn Canyon National Recreation Area in cooperation with the Northern Cheyenne and Crow tribal colleges, young American Indians are participating in archeological excavation as a means of maintaining connections to their tribal history and acquiring marketable skills.

Concerns received during scoping included protection for: edible and medicinal plants, rock art sites, grave sites, mineral and plant products used in rituals or for paints, and vision quest sites.

3.32.1.3.8 Indian Trust Resources

Indian Trust Resources are legal interests in assets held in trust by the federal government for federally recognized Indian tribes or nations or for individual Indians. These assets may be real property, physical assets, or intangible property rights. Examples include land, minerals, water rights, hunting and fishing rights, other natural resources, money, or claims. Federal laws and guidance that may apply to Indian Trust Resources in the conditions of the RMP include, but are not limited to, the American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, Indian Sacred Sites, and Secretarial Order 3206. Indian Trust Resources located on the Crow and Northern Cheyenne Indian Reservations are managed and protected by the tribes. Indian Trust Resources located on lands administered by the BLM are managed and protected by the BLM; however, no Indian Trust Resources have been identified on BLM administered lands in the planning area. However, the Montana/Dakotas BLM currently holds ownership of a number of water rights held in trust for the Crow Tribe. The BLM acquired these trust resources as a result of land exchanges that occurred under the Crow

Boundary Settlement Act. The water rights are currently located on lands owned by the Crow Tribe.

3.32.1.3.9 Tribal Treaty Rights

Laws, Regulations, and Policies

BLM coordination or consultation with Native Americans, as it pertains to treaty rights and trust responsibility, is conducted in accordance with the following direction:

- Bureau Handbook H-8120-1 – General Procedural Guidance for Native American Consultation (December 3, 2004). Executive Order No. 13084 – Consultation and Coordination with Indian Tribal Governments, May 14, 1998.
- Government-to-Government Relations with Native American Tribal Governments (Memorandum signed by President Clinton; April 29, 1994).
- Order No. 3175 – Departmental Responsibilities for Indian Trust Resources (Section 2 of Reorganization Plan No. 3 of 1950 – 64 Stat. 1262; November 8, 1993).

Treaties are negotiated contracts made pursuant to the Constitution of the United States and are considered the "supreme law of the land." They take precedence over any conflicting state laws because of the supremacy clause of the Constitution (Article 6, Clause 2). Treaty rights are not gifts or grants from the United States, but are bargained-for concessions. These rights are grants-of-rights from the tribes, rather than to the tribes. The reciprocal obligations assumed by the Federal government and Indian tribes constitute the chief source of present-day Federal Indian law.

The federal government has a unique and distinctive political relationship with federally recognized Indian tribes. It is defined by treaties, statutes, executive orders, judicial decisions and agreements and differs from relationships with state and local governments or other entities. It has given rise to a special federal trust responsibility, involving the legal responsibilities and obligations of the United States toward Indian tribes and the application of fiduciary standards of due care with respect to Indian lands, tribal trust resources and the exercise of tribal rights.

The United States and represented agencies, including the BLM, have a special trust relationship with Indian tribes because of these treaties. As a Federal land managing agency, the BLM has the responsibility to identify and consider potential impacts of BLM plans, projects, programs, or activities on Indian trust resources (e.g., fish, game, and plant resources– see **Glossary**). When planning any proposed project or action, the BLM must ensure that all anticipated effects on Indian trust resources are addressed in the planning, decision, and operational documents prepared for each project. The BLM also has the responsibility to ensure that meaningful consultation and coordination concerning tribal treaty rights and trust resources are conducted on a government-to-government basis with federally recognized tribes.

Native American Indians inhabited north-central Montana, including the lands now managed by the Billings Field Office, for thousands of years prior to European contact. They hunted, fished, gathered plant foods, buried their dead, and conducted religious ceremonies on lands

within the planning area since time immemorial. The lands managed by the Billings Field Office are within the historical use area/aboriginal territories of the Crow Tribe of the Crow Reservation, the Northern Cheyenne Tribe of the Northern Cheyenne Reservation, the Eastern Shoshone of the Wind River Reservation in Wyoming, and the Shoshone-Bannock of the Ft. Hall Reservation in Idaho. All tribes continue to express interest in and concern over, public lands and cultural/natural resources within the planning area.

During the 1850s and 1860s, treaties were negotiated with the tribes in the northwestern United States in order to acquire Indian lands for homesteading. The settlement of the northwestern United States by non-Indians led to the collapse of the Tribal Nations as they were previously known, including their economic, social, cultural, religious, and governmental systems.

Examples of these treaties include the *Treaty of Ft. Laramie with Sioux, etc., 1851*. On September 17, 1851 a treaty was signed at Ft. Laramie, Indian Territory, between the United States and many of the Plains Indian Tribes including the Sioux, Cheyenne, Arapaho, Crow, Assiniboine, Gros Ventre, Mandan, and Arikara. Article 2 of the treaty states, "The aforesaid nations do hereby recognize the right of the United States Government to establish roads, military and other posts, within their respective territories*"*. Article 5 of the treaty delineated the boundaries of established "territories" for each of the tribes, and further stated, "It is, however, understood that, in making this recognition and acknowledgement, the aforesaid Indian nations do not hereby abandon or prejudice any rights or claims they may have to other lands; and further, that they do not surrender the privilege of hunting, fishing, or passing over any of the tracts of country heretofore described."

Subsequent treaties established formal reservations. On May 7, 1868, at Ft. Laramie, Dakota Territory, the Crow Tribe and the United States signed the *Treaty with the Crows, 1868.* In accordance with the treaty, the tribe relinquished ownership to millions of acres of land in Montana and Wyoming territories to the United States, and was guaranteed a permanent homeland which has become known as the Crow Reservation in south central Montana. Article 4 of the treaty also states, "The Indians herein named agree, when the agency-house and other buildings shall be constructed on the reservation named, they will make said reservation their permanent home, and they will make no permanent settlement elsewhere, but they shall have the right to hunt on the unoccupied lands of the United States so long as game may be found thereon, and as long as peace subsists among the whites and Indians on the borders of the hunting districts."

On May 10, 1868, at Ft. Laramie, Dakota Territory, the Northern Cheyenne and Northern Arapaho tribes and the United States signed the *Treaty with the Northern Cheyenne and Northern Arapaho, 1868.* In accordance with the treaty the tribes relinquished ownership to millions of acres of land, and was guaranteed a permanent homeland, "And they do solemnly agree that they will not build any permanent homes outside of said reservations, and that within one year from this date they will attach themselves permanently either to the agency provided for near the mouth of Medicine Lodge Creek, or to the agency about to be established on the Missouri River, near Fort Randall, or to the Crow agency near Otter Creek, on the Yellowstone River, ... and it is hereby expressly understood that one portion of said Indians may attach

themselves to one of the afore-mentioned reservations, and another portion to another of said reservations, as each part or portion of said Indians may elect." Article 2 of the treaty also states, "And the Northern Cheyenne and Arapaho Indians do hereby relinquish, release, and surrender to the United States, all right, claim, and interest in and to all territory outside the two reservations above mentioned, except the right to roam and hunt while game shall be found in sufficient quantities to justify the chase."

On July 3, 1868, the Eastern Band Shoshone and Bannock Tribes and the United States signed the *Treaty with the Eastern Band Shoshoni and Bannock, 1868*, commonly known as the Fort Bridger Treaty (15 Stat. 673). In the Fort Bridger Treaty, the Tribes relinquished ownership of approximately 20 million acres to the United States, and were guaranteed a permanent homeland, which has become known as the Fort Hall Indian Reservation in southeastern Idaho. Article 4 of the treaty also retains the Tribes' rights to hunt, fish, and gather natural resources, and provides other associative rights necessary to effectuate these rights on the unoccupied lands of the United States.

Since the BLM manages portions of the "unoccupied lands" that are within the traditional use areas of these tribes, the BLM has a trust responsibility to provide the conditions necessary for Indian tribal members to exercise their treaty rights. Treaty rights in the planning area are extended not only to the tribes within and adjacent to the planning area, but also to other federally recognized tribes, which may have treaty language that extends their rights to lands in this area.

Currently, no Native American tribes are dependent on commodity resources from lands managed by the Billings Field Office for their economic livelihood. Tribal treaty rights pursued on public lands within the Billings Field Office may include gathering various natural resources for both cultural/religious and medicinal purposes. Currently, there is little specific information available on the exact species sought or locations used by Native Americans exercising their treaty rights within the boundaries of the planning area. Areas and natural features within the planning area may also be used for ceremonial/religious purposes in accordance with the American Indian Religious Freedom Act. However to date, there have been no areas or resources formally identified as Traditional Cultural Properties (TCPs).

3.32.1.3.10 **Environmental Justice**

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, states "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations…" (Executive Order 12989) (Table 3-75).

Minority populations as defined by Council on Environmental Quality (CEQ) guidance under the National Environmental Policy Act (CEQ 1997) include individuals in the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population is identified where "(a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of

the affected area is meaningfully greater…" (CEQ 1997). Additionally, "[a] minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ 1997). Low-income populations are determined by the U.S. Census Bureau based upon poverty thresholds developed every year.

U.S. Census data is used to determine whether the populations residing in the study area constitute an "environmental justice population" through meeting either of the following criteria:

- At least one-half of the population is of minority or low-income status; or
- The percentage of population that is of minority or low-income status is at least 10 percentage points higher than for the entire State of Montana (for the counties in Montana) or the entire State of Wyoming (for counties in Wyoming).

Data for the identification of low-income is from the U.S. Census Bureau, Small Area Income and Poverty Estimates (SAIPE). The SAIPE program produces yearly single year poverty estimates for states, counties, and school districts and is considered the most accurate for these geographic scales, especially for areas with populations of 65,000 or less (U.S. Census 2014). Minority populations are identified using the U.S. Census Population Estimates program which provides estimates for the resident population by age, sex, race, and Hispanic origin at the national, state and county scales. Total minority population refers to that part of the total population which is not classified as Non-Hispanic White Only by the U.S. Census Bureau. By using this definition of minority population, the percentage is inclusive of Hispanics and multiple race categories and any other minority single race categories. This definition is most inclusive of populations that may be considered as a minority population under EO 12898. Estimates from SAIPE and the Population Estimates program are used in federal funding allocations.

For this planning effort the identification of environmental justice populations is conducted at the county level due to the large geographic area. The 2013 data provided in Table 3-75 indicates that there are both minority and poverty populations in Big Horn County, Montana that meet the criteria to be identified as environmental justice populations. American Indians make up a majority of the population in Big Horn County, Montana, in part due to the Crow Reservation being located there. Overall, the planning area does have at least one county that meets the criteria for environmental justice populations and therefore outreach and collaborative efforts with these environmental justice populations should be conducted.

Table 3-75 Environmental Justice Information for the Planning Area by County, 2013

	Race Alone[1]								
Geography	% White	% Black or African American	% American Indian and Alaska Native	% Asian	% Native Hawaiian and Other Pacific Islander	% Two or More Races[1]	% Hispanic or Latino[1]	% Total Minority[2]	% Poverty, All Ages[3]
Montana	89.5%	0.6%	6.5%	0.8%	0.1%	2.5%	3.3%	13.0%	16.1%
Big Horn County, MT	31.6%	0.4%	64.8%	0.5%	0.0%	2.7%	5.0%	70.3%	27.6%

Carbon County, MT	96.9%	0.4%	1.1%	0.4%	0.0%	1.2%	2.3%	5.1%	12.6%
Golden Valley County, MT	95.1%	0.3%	1.0%	0.7%	0.0%	2.8%	4.0%	8.1%	19.6%
Musselshell County, MT	95.7%	0.5%	1.5%	0.3%	0.0%	1.9%	3.2%	6.9%	17.0%
Stillwater County, MT	96.4%	0.3%	1.0%	0.4%	0.0%	1.9%	3.2%	6.3%	9.5%
Sweet Grass County, MT	96.8%	0.2%	0.6%	0.6%	0.0%	1.8%	1.7%	4.7%	12.2%
Wheatland County, MT	95.5%	0.4%	0.8%	0.5%	0.0%	2.8%	1.7%	6.0%	19.7%
Yellowstone County, MT	91.5%	0.8%	4.3%	0.7%	0.1%	2.7%	5.1%	12.6%	12.9%
Wyoming	92.7%	1.7%	2.6%	0.9%	0.1%	1.9%	9.7%	15.9%	10.9%
Big Horn County, WY	95.4%	1.5%	1.3%	0.5%	0.0%	1.3%	8.8%	12.5%	11.2%
Park County, WY	95.4%	1.5%	0.8%	0.8%	0.1%	1.5%	5.8%	9.9%	10.0%

Note:

Sources: [1] U.S. Census Bureau, Population Division, 2014

[2]Total minority is calculated from the above data source using the formula: (total population minus non-Hispanic White only population) divided by total population.

[3]U.S. Census Bureau, Small Area Income and Poverty Estimates (SAIPE) Program, 2014.

3.32.2 Economic Conditions

The area of local economic influence consists of eight counties in south central Montana (Big Horn, Carbon, Golden Valley, Musselshell, Stillwater, Sweet Grass, Wheatland, and Yellowstone) and two counties (Big Horn and Park) in north central Wyoming. The ten-county area of economic influence in Montana is referred to as the "local economy."

BLM-administered lands consist of approximately 434,154 surface and 889,479 subsurface acres for which the BLM makes land use decisions covered by this RMP. A majority of the BLM-administered surface lands and minerals, as well as related land uses, are located in Carbon and Musselshell Counties. BLM administered lands within the Planning Area accounts for approximately four percent of the total land area, and BLM-managed mineral estate accounts for about eight percent of the mineral estate within the planning area boundaries. Table 3-76 and the Land and Realty section of this chapter provide a detailed assessment of land and mineral ownership in the planning area by county.

During the last century, ranching, farming, mining, oil and gas development, transportation, and the emergence of Billings as a regional trade and service centers have all been important factors in the local social and economic history of the area. Billings, near the center of the Planning Area is the largest population, business, and service center in the planning area and the state. Two major travel corridors, I-90 and I-94, converge in Billings, which also has the largest airport, medical center, business, and shopping hub in the state and region.

3.32.2.1 Demographic and Economic Characteristics and Trends

The following section provides a summary of economic indicators that could be affected by BLM management actions. Potential economic effects associated with the proposed RMP revision include anticipated changes in employment, income, public revenues, economic dependency, and economic stability. The information in this section is presented to help clarify economic issues, describe relevant economic trends, and to provide context for potential economic impacts.

The Planning Area covers about 12 percent of Montana's land area; contains 19 percent of the state's population, 20 percent of the state's employment, and 21 percent of the state's personal income. About 70 percent of the state's industries are in the planning area's economy. Golden Valley County has the fewest industries and is the least diverse, while Yellowstone County has the most industries and is the most diverse (Table 3-77).

Table 3-76 BLM Surface and Mineral Estate and Major BLM Land/Mineral Uses within the Billings RMP Planning Area (in acres)

County	BLM Public Lands (surface)	BLM Percent of Total Surface	BLM- Federal Mineral Estate	BLM Percent of Total Mineral Estate	Major Population Center(s) and BLM Land/Mineral Uses
Big Horn, MT	7	0%	1.015	0%	Hardin
Big Horn, WY	4,298	NA	4,298	NA	Recreation, livestock grazing
Carbon Co.	220,556	13%	341,380	38%	Red Lodge, oil/gas leasing and production, bentonite production, recreation use, livestock grazing, rights-of-way, chemical limestone production
Golden Valley	7,943	1%	44,360	5%	Livestock grazing, oil/gas leasing and production, recreation
Musselshell	101,247	7%	226,885	26%	Roundup, recreation use, coal mining, oil/gas leasing and production, livestock grazing, timber
Stillwater	5,504	0%	58,359	7%	Columbus, recreation, oil and gas leasing and production, timber, rights-of-way, livestock grazing
Sweet Grass	15,893	1%	75,229	8%	Big Timber, , recreation, oil and gas leasing and production, timber, rights-of-way, livestock grazing
Wheatland	1,333	0%	21,433	2%	Harlowton
Yellowstone	77,373	4%	116,517	13%	Billings, Laurel, recreation use, livestock grazing, rights-of-way, oil and gas leasing
Park, WY	NA	NA	NA	NA	Cody, Powell
Planning Area	434,154	4%	889,479	8%	Billings, Laurel, Cody, Powell, Red Lodge, Columbus, Hardin, and Round Up, oil/gas leasing and production, bentonite production, recreation use, livestock grazing, rights-of-way

Note:
Source: BLM Annual Report (2008)

Table 3-77 Selected Economic Statistics, 2012

County	Area (Sq. Miles)	Employment	Number of Industries/ Sectors	Average Household Income	Total Personal Income (millions)
Montana	145,556	634,895	344	$84,562	$37,562
10-County Area	27,904	155,363	252	$92,563	$9,457
Big Horn, MT	5,003	6,486	111	$84,725	$361
Carbon	2,052	5,250	134	$76,540	$367
Golden Valley	1,177	640	47	$88,781	$35
Musselshell	1,870	2,540	100	$65,787	$145
Stillwater	1,798	5,412	122	$84,977	$342
Sweet Grass	1,858	2,672	107	$68,087	$112
Wheatland	1,426	1,286	75	$69,765	$67
Yellowstone	2,640	103,727	225	$94,977	$6,281
Big Horn, WY	3,137	7,042	123	$82,283	$397
Park, WY	6,943	20,307	161	$104,407	$1,350

Note:
Source: IMPLAN (2012)

3.32.2.2 BLM Land and Mineral Uses that Affect the Local Economy

Local economic activity and desired economic conditions are influenced by BLM land use decisions and associated land uses. Surface and mineral estate and major BLM land/mineral uses by county are displayed in Table 3-76. The following narrative description summarizes major BLM land and mineral uses within the planning area.

3.32.2.2.1 Livestock Grazing and Production

Ranching is an important part of the history, culture, and economy of the Planning Area. Grazing is allowed on BLM lands for the purpose of fostering economic development for private ranchers and ranching communities by providing ranchers access to additional forage (GAO, Sept. 2005). Livestock grazing on BLM lands is authorized on an annual basis. Authorized (actual) use of AUMs varies from year to year due to factors such as drought, wildfire, financial limitations on operators, grazing transfers, and implementation of grazing management to improve range conditions.

Between 1999 and 2009, billed grazing use averaged 42,931 Animal Unit Months (AUMs) per year. BLM issues grazing permits and leases to about 310 livestock operators in the planning area. Livestock grazing on BLM lands involves livestock operators who have Section 3 grazing permits (i.e., grazing on public lands within grazing districts, BLM Manual 1373.12) and Section 15 grazing leases (grazing on public lands outside the original grazing district boundaries). On public domain lands, 50 percent of revenues from Section 15 grazing fees on public domain lands are distributed to the state/counties; 12.5 percent of grazing fees from Section 3 permits are distributed to the state/counties. On lands acquired under the Bankhead Jones Land Utilization Act (LU lands), 25 percent of grazing revenues are distributed to the counties. Approximately 74 percent of the public lands administered by the BLM are public domain lands; 24 percent are acquired lands administered under the Bankhead Jones Land Utilization Act. Annual revenues to the federal government average about $62,000 given a 2013 BLM grazing fee of $1.35 per AUM plus 6.5 percent for late fees, surcharge, transfer fees etc.; annual payments to the counties would average about $10,000. Average annual billed livestock grazing between 1999 and 2009 is shown in Table 3-78.

Table 3-78 Average Annual Authorized Livestock Grazing Use (AUMs), Billing Years 1999-2009

	Section 3*	Section 15**	Total	Cattle/Horses	Sheep/Goats
11-Year Average	38,334	4,597	42,931	42,771	160

Note:
Source: Range Administration System, 2010
* Section 3 of the Taylor Grazing Act concerns grazing *permits* issued on public lands *within* the grazing districts established under the Act.
** Section 15 of the Taylor Grazing Act concerns issuing grazing *leases* on public lands *outside* the original grazing district boundaries.

BLM contributes about one percent of the total livestock forage needs in the planning area. BLM's forage contribution is greatest in Musselshell, Carbon, and Yellowstone counties; however, in none of these counties does the BLM contribution exceed five percent of total forage needs.

Cattle are the most prevalent class of livestock that graze on BLM land, although sheep, horses, and burros are authorized to graze in 10 allotments. Livestock operations are primarily cow/calf operations. Most calves are born in late winter through spring on private lands. Cattle are turned out to graze as cow/calf pairs. Calves have historically been weaned in the fall or early winter and most leave the region to be grown out and/or fed in other parts of the US. At weaning, most cows have been taken to winter pasture where they remain until they calve the following year. An estimated 83 percent of total cattle and calves inventory within the planning area are marketed each year (2007 Census of Agriculture).

Roughly 70 percent of all agricultural products marketed are livestock related and the BLM provides less than one percent of the total forage requirements for the livestock inventory within the planning area. By assuming a direct relationship between the percent of agricultural products that are livestock-related and the percent of agricultural related employment that is associated with livestock production, it is estimated that BLM livestock grazing contributes about 71 total jobs to the local economy. It is estimated that about $974,000 in total wage and proprietor's income is related to BLM livestock grazing within the planning area (IMPLAN 2012).

BLM's grazing fee is established by formula and is generally lower than fees charged by the other agencies or private ranchers who set fees to obtain the market value of forage.

Livestock operations in the planning area often involve large tracts of land and ranchers depend on a mix of private and federal lands to graze cattle seasonally. None are wholly dependent on forage coming from public lands.

To qualify for a BLM grazing permit/lease, an operator must be able to accommodate his/her livestock for a specified period of time on private land owned or controlled (base property) apart from the public land (43 CFR 4110). It is rare for dependence on public land forage to exceed 50 percent, and many operators depend on public lands for less than 20 percent of their total forage needs. However, operations may depend heavily on forage from public lands during a specific season (operators graze public land in the spring through fall for five to seven months and winter their livestock on base property).

BLM grazing permits are valuable to livestock producers because the grazing fees are very favorable, and land is often available when private hay meadows is being grown to provide forage for the winter. The 2013 BLM grazing fee of $1.35 is considerably lower than the 2013 private statewide average of $21.00 per AUM (USDA, National Agricultural Statistics Service, 2014).

Access to BLM grazing may be important to area livestock producers even though additional management costs are usually incurred to use these lands. According to a 2005 Government Accounting Office (GAO) report on livestock grazing, "Fees charged by private ranchers and state land agencies are higher than the BLM and Forest Service fees because, generally, ranchers and state agencies seek to generate grazing revenues by charging a price that represents market value for that land and/or the services provided."

3.32.2.2.2 Mineral Development and Production

Federal mineral activities include oil and gas leasing and production, mineral materials (sand and gravel and decorative stone), and some unpatented bentonite claims. Mining of private minerals include these same minerals as well as coal, sand and gravel, and platinum group minerals. Aggregated mining sectors (industry sectors 20-30) support approximately 6,060 total jobs and $498.0 million in labor income within the planning area (IMPLAN 2012). About 47 percent of the jobs and labor income in the mining sectors are associated with oil and gas related activities and 53 percent of the employment and income is associated with the other mining sectors (IMPLAN, 2012). The Stillwater mine (platinum and palladium) and Bull Mountains Mine No.1 (coal) are the largest mines in the planning area. The amounts of federal minerals and the dependency of local economies on BLM-managed federal mineral production vary among the counties.

3.32.2.2.3 Oil and Gas

In March 2011, BLM had leases in effect covering 149,829 acres within the Billings Field Office boundaries. Annual lease rent is paid on 133,885 acres that are not held by production on leases with oil/gas being produced from one or more wells. Lease rent was not paid on 15,955 acres that were held by production. Instead, royalties are paid on oil and gas production from these leases. Leasing has been deferred on additional acres pending completion of the RMP and site specific environmental review. More Federal leases and more acres were leased in Carbon County than any other county in the Planning Area.

In 2011, leasing and production of federal minerals occurred in every county within the planning area except Big Horn and Wheatland (USDI, ONRR, 2011). Most Federal oil production occurs in Carbon County; with much smaller amounts in Musselshell, Stillwater, and Yellowstone Counties. The only reported natural gas production from Federal minerals within the Planning Area also occurs in Carbon County. While some gas production from Federal minerals does occur in Big Horn County, Montana, this comes from the mineral estate managed by the Miles City BLM office that is not part of this RMP.

Local oil and gas exploration, development, and production as well as gas pipeline transmission industry all support jobs and income in the local economy. Local contractors, as well as regional firms from Miles City and Park County, Wyoming, provide most of the contract services to local oil and gas fields. Between 1990 and 2008, there has been an average of one producing well and one dry hole drilled annually on federal minerals within the Planning Area. Currently there are 9 producing gas wells and 60 producing oil wells.

A portion of the revenues collected by the federal government is distributed to the state and counties. The amount that is distributed is determined by the federal authority under which the federal minerals are being managed. The leased acres changes daily as leases expire and other parcels are leased. Generally, within the planning area, public domain federal minerals account for about 58 percent of the acres leased; Bankhead-Jones lands account for about 41 percent of acres leased; and the other authorities for acquired minerals account for less than 1% of federal leased acres (BLM, LR 2000).

Forty-nine percent of these federal leasing revenues from public domain minerals are distributed to the state and the state distributes 25% back to the counties (Title 17-3-240,

Montana Code Annotated). Twenty-five percent of the federal leasing revenues are distributed to the counties on federal minerals administered under the Bankhead-Jones Act.

3.32.2.2.4 Coal

Currently there are no mines producing coal from federal minerals. However, Signal Peak Energy applied in 2008 to lease approximately 61 million tons of federal coal beneath 2,680 acres about 10 miles southeast of Roundup straddling Musselshell and Yellowstone counties. The federal coal in question is within the company's existing mine plan and would be mined along with adjacent, nonfederal coal. Signal Peak is operating an underground mine that is expected to produce an annual average of 11.910 MM tons per year and has an expected life of 16 years. There is an estimated 37 million tons of recoverable federal coal.

Revenues associated with federal coal production would include coal lease bonus bids, annual rent, Abandoned Mine Reclamation Tax, Black Lung Disease Tax, production royalties, Montana Coal Severance Tax, Montana Resource Indemnity Trust Tax, and the Local Gross Proceeds Tax.

3.32.2.2.5 Other Minerals

Other federal minerals produced include sand and gravel (average 6,500 cu. yd/year @ $0.75/yd3); building stone (average 10 tons/yr. @ $7.50/ton); and bentonite (average 517,000 tons/year @ $60/ton). No revenues in the form of leases, rents, or federal or state royalties are collected on the production of these minerals. However, Montana has a Montana Bentonite Production Tax that is equal to $1.50 per ton of bentonite produced. Production of federal bentonite generates an estimated $396,000 for this tax annually. After 2014, 77.95 percent of this tax revenue will be disbursed to the counties of production (Title 15-39-101 MCA). Currently, an estimated $309,000 of this is disbursed to Carbon County per year. Mining platinum-group metals at the Stillwater mine involves private minerals and is not related to BLM mineral management.

3.32.2.3 Economic Contributions

Total employment and labor income related to BLM managed minerals averages about 193 jobs and almost $9.3 million per year in labor income. Aggregated mining sectors (industry sectors 20-30) support approximately 6,060 total jobs and $498 million in labor and proprietor income within the 10-county local economy (IMPLAN 2012). About half of the jobs and income are associated with oil and gas exploration, development, and production (IMPLAN 2012). The amounts of federal minerals and the dependency of local economies on that production vary among the counties. Carbon County has the only federal natural gas production and the largest amount of federal oil production.

Mineral and energy development is closely linked to fiscal conditions of local governments and school districts through contributions to local property-tax base, oil/gas production taxes, and federal mineral royalty payments on production from public mineral estate. Federal oil and gas leases generate a one-time lease bid as well as an annual rental. The bonus bid averaged $12.54 per acre (2005-2010); lease rental is $1.50 per acre per year for the first five years and $2.00 per acre per year thereafter. Annual lease rentals continue until one or more wells are drilled

that result in production and associated royalties. Half of these federal leasing revenues are distributed to the state and the state distributes a portion back to the counties.

Oil and gas production in Montana is not subject to ad valorem, or property taxes; rather it is subject to production taxes. Federal oil and gas royalties generally equal 12.5 percent of the value of production. With production from public domain minerals, half of these royalties are distributed to the state, of which 25 percent is distributed back to the county of production (Title 17-3-240, MCA). Twenty-five percent of the royalties are distributed to the counties on federal minerals administered under the Bankhead-Jones Act. The annual average revenue from oil, gas, and bentonite production disbursed to the counties is about $890,000.

3.32.2.4 Recreation Use

The economic influence of recreation use is related to the amount of recreation use on public lands and related local expenditures for such items as gasoline, lodging, meals, and supplies. To understand the local/regional economic influence of recreation use, it is important to understand what recreation activities occur on public lands because local/regional expenditures vary depending on the type of activity, whether the recreation use is from local residents or non-local residents, and whether the activity involves overnight stays. Local/regional expenditures related to recreation use support local/regional employment and labor income (standard economic indicators). Generally, employment related to recreation and tourism tends to be seasonal and relatively low paid, with a high portion of the labor force self-employed. The recreation opportunities available in the Planning Area play an important role in the quality of life of some local residents, as well as attracting visitors from elsewhere in the state and region. BLM public lands in the Planning Area received an estimated 218,000 recreation visits in FY 2010. Pompeys Pillar National Monument received an additional 43,500 visits in FY 2010 (BLM, RMIS, 2010).

Nature-related recreation activities on BLM lands, e.g. fishing, hunting, and other wildlife related recreation use account for 30 percent of total use; non-motorized related recreation, e.g. backpacking, bicycling, camping, caving, hiking, horseback riding, photography, and picnicking account for about 60 percent, and motorized-related recreation, e.g. driving for pleasure and OHV use account for about 10 percent of total use. Recreation and tourism is not classified or measured as a standard industrial category. Components of recreation and tourism activities are instead captured in other industrial sectors, primarily the retail sales and services sectors. It is assumed that recreation-related expenditures would be split among the following economic sectors: lodging, restaurants, groceries, gas/oil, other transportation, activities, admissions/fees, and souvenirs.

An annual total of 261,500 local and non-local visits support an estimated 136 local jobs and $3.9 million in labor income within the local economy. Government revenues received from the recreation program are associated with recreation use permits issued. In Fiscal Year 2009, recreation use permits and associated total annual federal revenue was about $47,000. None of these revenues from the Billings Field Office and Pompeys Pillar National Monument are distributed to the state or counties.

Pompeys Pillar National Monument (PPNM): PPNM received an estimated 36,000 visits in 2009. This included about 1,800 school children and 26,600 other visits when the interpretative

center was open during the summer tourist season. It is estimated that PPNM received an additional 7,500 visits after hours and during the off season. Based on a BLM survey conducted in 2009, it is estimated that 65 percent of visitors are non-local (those visitors living more than 50 miles from the site). Average party size for non-local visits was 2.7 people and average expenditure per party trip was $307.77. Visitor use fees collected at PPNM in Fiscal Year 2009 were about $35,000.

The estimated annual economic contribution to Yellowstone County of total annual visitation at PPNM is $1.79 million in total non-resident expenditures, 27 total jobs, and $822,000 in labor and proprietor's income. The estimated annual economic contribution from BLM management in 2009 was 16 total jobs and $467,000 in total labor and proprietor's income in Yellowstone County. The combined estimated annual economic contribution from visitation and BLM management to Yellowstone County is 43 jobs and $1.289 million in labor and proprietor's income. This is less than one tenth of one percent of Yellowstone County employment and income.

3.32.2.5 Timber Harvest

Timber harvest from BLM lands within the Planning Area is relatively small. Forest products harvested and sold are summarized in Table 3-79. Four percent of revenue from salvage sales and from timber sales on public domain lands goes to the state.

Table 3-79 Forest Products Harvested and Sold in the Billings Field Office (1994-2008)

Forest Product	Unit	Total Volume	Average/Year	Average Price/Unit	Total
Saw timber: Douglas-fir & lodgepole pine	ccf	2,522	180	$ 38/ccf	$95,380
Pulp wood	ccf	1962	131	$ 1.00/ton	$150
Post and pole	ccf	23.675	2		
Biomass	ccf	14,400	960	$ .01/ton	$3.00
Juniper	lbs	16,530	1,102	$ .05/lb	$100
Fuelwood	ccf	12	1	$ 5.00/cord	$400
Christmas Trees	ea	0	0		

3.32.2.6 Realty, Cadastral Survey, and Lands Actions

InIn 2007, the BLM issued or renewed eight rights-of-way for infrastructure in support of economic activities within the Planning Area. Year 2007 is representative of the annual BLM rental revenues received for federal rights-of-way. These rights-of-way covered almost 6,097 acres and the BLM received about $22,000 in rental income. Types of rights-of-way and amount of rental income by type are presented in Table 3-80. The most common types of rights-of-way were for oil and gas pipelines and power lines which generate the most rental income. None of these revenues are distributed to state, county, or local governments. It is

important to recognize that while these rights-of-way may not generate much rental revenue, they do support infrastructure that is very important to local economic activity.

Table 3-80 Federal Rights-of-Way Revenues by Type

Type	Annual Rental Income	Number of ROWs	Total Acres
Power Lines	$2,281	8	120
Telecommunication Lines	27	2	1
Roads/Highways	232	5	10
Communication Sites	1,800	1	<1
O & G Pipelines	11,119	18	643
Water Facilities	86	4	4
Wind Energy	6,097	1	6,097
Total	**$21,642**	**39**	**6,877**

Note:
Source: Lands & Realty Database (LR2000)

3.32.2.7 Direct BLM Contributions to Area Economic Activity

Billings Field Office operations and management make a direct contribution to area economic activity by employing people who reside in the area and by expending dollars on other non-personnel needs. Management of BLM lands and resources is carried out by professional and administrative employees who are stationed in Billings and Pompeys Pillar. In FY 2010, the Billings Field Office (including Pompeys Pillar National Monument) had 30 permanent employees and 8 other than permanent; the BLM spent $3.3 million for labor and $4.3 million on operations. Total expenditures for the Field Office (including Pompeys Pillar) were about $7.6 million. Annual public revenues from visitor fees collected by the BLM at Pompeys Pillar were about $35,000 and annual fees at Shepherd Ah-Nei were about $9,000.

3.32.2.8 Ecosystem Restoration

Major activities associated with ecosystem restoration include treatment of invasive species and pest management, hazardous fuels treatments, and fire suppression and emergency stabilization.

3.32.2.8.1 Weed Treatments

Economic effects of invasive species and their treatments are related to their influence on range productivity, wildfire risk, and attractiveness for recreation and ultimately on how these impacts affect local employment, income, and government revenues. Between 2003 and 2007, about 9,660 acres of public lands were treated at a cost of $200,200. This averages about 1,932 acres per year at an average cost of $40,038 per year. The treatment costs average about $20.72 per acre. A portion of these funds are made available to counties for weed treatments. This amounts to an annual average of about $30,000 to counties per year.

3.32.2.8.2 Fire Suppression and Fuels Treatments

The cost of wildfire suppression within the Planning Area depends on the number and size of fires. Most wildfires are controlled in the initial attack, when they are relatively small. However, weather conditions, terrain, vegetation, and proximity to populated areas all contribute to the cost of fire suppression. In FY 2008, BLM spent almost $1.6 million on wildfire suppression ($388,000 labor and $1.2 million operations; BLM, Financial Management Information System, 2008). Operations costs associated with emergency stabilization following fire suppression were about $13,000. Since then, fire suppression costs have been considerably less. Restoration/fuel reduction efforts in Montana reduce fire hazard, improve ecological conditions of forested areas, and result in economic benefits that exceed the costs of reducing hazardous fuels (Keegan et.al., 2002). Table 3-81 is a summary of average annual fuel treatments and costs for the Billings Field Office.

Table 3-81 Fuels Treatments (2003-2008)

Treatment Type	Acres/Year (2003-2008)	Contract/ Force Account	Cost/Acre	Totals/Year
Mechanical Treatment (WUI* and Non-WUI)	651	50% Contract 50% Force Account	$400/acre $300/acre	$130,200 $97,650
Prescribed Fire WUI	395	Force Account	$15	$5,903
Prescribed Fire Non-WUI	1,095	Force Account	$20	$21,900
Totals	**2141**			**$255,653**

Note:
*Wildland Urban Interface (WUI)

3.32.2.9 Payments to Counties

Payment to counties from BLM land management activities and public land and minerals uses are displayed in Table 3-82. Payments in lieu of taxes (PILT) and disbursement of mineral payments are the largest revenues that go to the counties. PILT payments are made to counties to compensate for federal lands that are exempt from local property taxes. Payment amounts are based on a complex formula that considers, among other things, revenue sharing from the previous year, county population, and acreage of a county in federal ownership. BLM portion of 2010 PILT payments to the eight counties in the Planning Area amounted to almost $620,000.

The Office of Natural Resource Revenue disburses a portion of the revenue received for mineral lease bonuses, rents, royalties and other mineral related revenues to the State of Montana. Montana redistributes a portion of these revenues to the counties of production. The revenues disbursed to the eight Montana counties in the Planning Area is about $580,000 per year. A portion (77.95 %) of the Montana Bentonite Production Tax is distributed to counties of production. Based on recent past production, the average is about $309,000 per year.

An estimated average annual $224,000 has been provided to local governments and entities through community assistance agreements to reduce the risk of wildfire to communities.

Total annual payments to counties average about $1.7 million per year. These payments support about 27 jobs and $1.2 million in labor income (IMPLAN, 2012) within the local economy.

Table 3-82 Annual Payments to Counties from BLM-Related Land/Mineral Uses

Weed Treatments	BLM Portion of 2010 PILT	Grazing Fees (average annual)	Mineral Payments (average annual)	Community Assistance	Total (average annual)
$30,000	$618,639	$9,572	$889,312	$223,589	$1,771,112

3.32.2.10 Employment and Income

Table 3-83 displays the current role of BLM-related contributions to the area economy by major BLM program area. The contributions are greater in some counties (generally where there are more public lands and minerals and resource uses) and less in others. Table 3-84 displays the current role of BLM-related contributions to the local economy. BLM-related contributions include 527 jobs which is 0.34% of the jobs in the local economy.

Table 3-83 Billings BLM Related Employment, and Income by Major BLM Program Area

Resource/Program Area	BLM-Related Jobs	BLM-Related Income ($1,000)
Grazing	71	$974
Minerals	193	$9,310
Recreation (including Pompeys Pillar)	136	$3,895
Timber	<1	$26
Payments to States/Counties	27	$1,198
BLM Expenditures	100	$6,895
Total Resource Management	527	$22,298

Note:
Source: IMPLAN 2012

Table 3-84 Current Role of BLM-Related Contributions to the Area Economy

Employment			Labor Income (thousands of 2009 dollars)		
Employment (Area Total)	BLM-Related	BLM Share of Total (%)	Income (Area Total)*	BLM-Related	BLM Share of Total (%)
155,363	527	0.34%	6,697,590	$22,298	0.33%

Note:
Source: IMPLAN 2012