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J.S. Department of the Interior
Bureau of Land Management
Worland District Office

Bighorn Basin Resource Area

June 1996

FINAL
Environmental Impact Statement
Grass Creek Planning Area
Resource Management Plan
Volume 1 of 2



The Bureau of Land Management is responsible for the balanced management of the public lands and resources and their various values so that they are considered in a combination that will best serve the needs of the American people. Management is based upon the principles of multiple use and sustained yield; a combination of uses that take into account the long term needs of future generations for renewable and nonrenewable resources. These resources include recreation, range, timber, minerals, watershed, fish and wildlife, wilderness and natural, scenic, scientific and cultural values.

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Wyoming State Office

P.O. Box 1828

Cheyenne, Wyoming 82003-1828

Dear Reader:

Enclosed for your review is the final environmental impact statement (EIS) and proposed resource management plan (RMP) for the Grass Creek Planning Area of the Bighorn Basin Resource Area. This document presents the Proposed RMP for managing public lands and resources in the planning area. The Proposed RMP is a refinement of the preferred alternative presented in the draft EIS published in January 1995.

Chapter 5 of this final EIS includes BLM's responses to public comments on the draft EIS. One of the best ways to see how the EIS has changed is to read these responses. (For an index of topics covered by responses, see New Table 24.)

All parts of the Proposed RMP may be protested by parties who participated in the planning process and who have an interest which is or may be adversely affected by the approval of the resource management plan (43 CFR 1610.5-2). Protests may only involve issues raised during the planning process. Protests should be sent to the Director (480), Bureau of Land Management, Resource Planning Team, MS 314LS, 1849 C Street N.W., Washington, D.C., 20240. Protests must be postmarked within 30 days after the Environmental Protection Agency publishes the filing notice for this final EIS in the *Federal Register*. The protests should include the following information:

The name, mailing address, telephone number, and interest of the person filing the protest.

A statement of the issue(s) being protested.

A statement of the part(s) of the plan being protested.

A copy of all documents addressing the issue(s) that were submitted during the planning process by the protesting party, or an indication of the date the issue or issues were discussed for the record.

A concise statement explaining why the proposed management plan is believed to be wrong.

To facilitate protests, parties are also encouraged to submit a statement describing the interest which is or may be adversely affected by the approval of the resource management plan.

At the end of the 30-day protest period, the Proposed RMP, excluding any portion under protest, will become final. Approval will be withheld on any portion of the plan under protest until final action on the protest has been completed. Any significant change made as a result of a protest will be made available for public review and comment before it is approved.

I want to personally thank those who have participated in the planning process for this resource management plan. I hope your involvement will continue as we move forward to implement and monitor the plan and manage the public lands and resources in the Grass Creek Planning Area.

Sincerely,

State Director

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FINAL
ENVIRONMENTAL IMPACT STATEMENT
 and
PROPOSED
RESOURCE MANAGEMENT PLAN
 for the
GRASS CREEK PLANNING AREA
 in the
BIGHORN BASIN RESOURCE AREA
WORLAND DISTRICT
Worland, Wyoming

prepared by:

**U.S. Department of the Interior
Bureau of Land Management
Worland District Office**

June 1996

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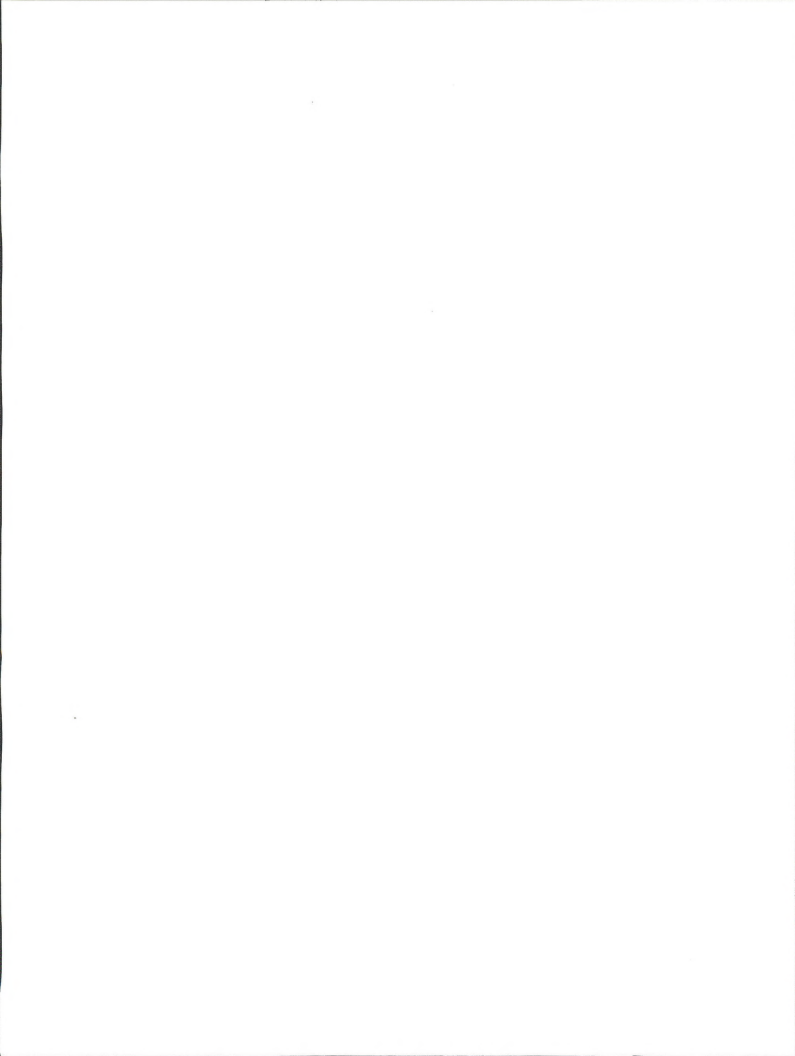


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SUMMARY

INTRODUCTION

This final environmental impact statement (EIS) describes the proposed Grass Creek Resource Management Plan (RMP) and its environmental consequences. This proposed plan is for the future management of public lands in a portion of the Bighorn Basin Resource Area of the Worland District of the Bureau of Land Management (BLM). The planning area comprises approximately 968,000 acres of BLM-administered public land surface and 1,171,000 acres of BLM-administered federal mineral estate. (BLM-administered public land surface is referred to as "public land" in this document.)

This final EIS is not a complete reprinting of the material presented in the draft EIS that was released in January 1995. For example, not all maps and tables have been reprinted from the draft EIS. The page-sized maps contained in this final EIS show the general management direction associated with the proposed Grass Creek RMP and in some cases the location of important resources. (With the exception of Map 12, the page-sized maps do not distinguish between private, state, and federal lands, however, it must be remembered that proposed RMP decisions would only apply to the approximately 968,000 acres of BLM-administered public land surface and 1,171,000 acres of BLM-administered federal mineral estate cited above.) More detailed maps are on file in the Bighorn Basin Resource Area office. The information on these maps is dynamic and subject to change as new information and data are acquired.

PUBLIC INVOLVEMENT SINCE JANUARY 1995

After the draft EIS for the Grass Creek RMP was published in January 1995, the BLM held five open houses. Later, BLM extended the public comment period for one month (through May 7, 1995) and held a public hearing where forty-eight people testified. Other formal and informal meetings were held with members of the ranching and minerals industries and with representatives of local governments, including task groups representing Big Horn, Hot Springs, Park, and Washakie counties, and with other interest groups and agencies.

A summary of comments generated from these meetings during the public comment period is on file in the Worland District Office.

A total of 494 comment letters, 48 hearing testimonies, and 81 petition signatures were received on the

draft EIS. These and the comments taken at meetings and open houses were used in making corrections and needed changes to the Preferred Alternative (of the draft EIS) in developing the proposed Grass Creek RMP. These comments and the BLM's responses are included in Chapter 5 of this document.

During the public comment period on the draft EIS, the Grass Creek Resource Area was administratively merged with the Washakie Resource Area to form the Bighorn Basin Resource Area. A resource management plan had been completed for the Washakie Resource Area in 1988. When the Grass Creek RMP is approved, broad resource management planning and management direction will be complete for the Bighorn Basin Resource Area. Both the Washakie and Grass Creek RMPs will be kept current through minor maintenance or through amendments and revisions, as the demands on public lands and resources change, as the land and resource conditions change, or as new information is acquired.

DEVELOPMENT OF THE PROPOSED RMP

The proposed Grass Creek RMP was developed by making adjustments to the Preferred Alternative presented in the draft EIS. In addition, the planning team has revised some of the analysis in the draft EIS, based on public comments, and included new information. The most notable changes are summarized below. A complete description of the proposed Grass Creek RMP is in Revised Table 2 of Chapter 2.

The following are changes to the management actions in the Preferred Alternative of the draft EIS.

OFF-ROAD VEHICLE MANAGEMENT

- Motorized vehicle use in the Badlands Proposed Special Recreation Management Area would be limited to "existing" roads and trails rather than "designated" roads and trails.

RECREATION MANAGEMENT

- The Red Canyon Creek area would not be designated a special recreation management area.
- With a new management objective, BLM would attempt to maintain the current opportunities for "semi-primitive" nonmotorized recreation (on about 62,270 acres) in the planning area.

SUMMARY

WILD HORSE MANAGEMENT

- The Fifteenmile Wild Horse Herd Management Area would not be expanded, although the existing herd area would be retained as in Alternative A of the draft EIS.

SPECIAL MANAGEMENT AREAS

- The Fifteenmile Creek Watershed and Meeteetse Draw areas would not be proposed for designation as areas of critical environmental concern (ACECs).
- Public lands immediately north of the South Fork of Owl Creek (for a distance of about 13 miles along the stream starting at Rock Creek) would be added to the Upper Owl Creek Proposed ACEC. These additional public lands would be closed to mining claim location and development, under the Proposed RMP, and would continue to be off-limits for other surface-disturbing activities as described in the Preferred Alternative.

[Based on internal review, the acreage of the Upper Owl Creek Proposed ACEC has been revised to 16,300. Map 12 at the end of Chapter 2 shows the revised ACEC boundary and the public lands it contains.]

The following are modified analyses, new material, and clarifications.

CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES

- An expanded cultural resources section in Chapter 3 describes traditional values (custom and culture) associated with Native American beliefs, ranching, recreation, and oil and gas development.

FIRE

- The anticipated use of prescribed fire has been increased from 9,000 to 11,000 acres. (See Revised Table 15.)

MINERALS—GAS AND OIL

- The anticipated levels of exploratory drilling have been varied by 50 percent in two alternatives to provide a better comparison of economic impacts. (See Revised Table 15 and New Appendix 5.)
- Fiscal contributions of the oil and gas industry, consisting of royalties and taxes, have been quantified. (See New Appendix 5.)

RECREATION

- Recreation use estimates have been revised from about 3 to 4 percent annual growth to about 1 percent annual growth. (See Revised Table 15.)

VEGETATION

- New information in Chapter 3 describes cooperative efforts to control noxious weeds.

WILDLIFE

- New information describes wildlife seasonal habitat, in New Appendix 6, and habitat fragmentation, in Chapter 3.

GLOSSARY AND REFERENCES CITED

- These have been updated and expanded.

APPENDIXES: (*Appendixes 1, 2, and 4 from the draft EIS have not been reprinted but continue to be part of the EIS's analysis.*)

- Revised Appendix 3, "Livestock Grazing"—This appendix has been revised and reprinted in part.
- New Appendixes—New appendixes on economics (New Appendix 5) and mitigation measures (New Appendix 6) are included in this document.

Chapter 5 also describes the comments received in letters and public hearing testimony on the draft EIS and BLM's responses to those comments.

ABBREVIATIONS

ACEC	area of critical environmental concern
AMP	allotment management plan
APHIS	Animal and Plant Health Inspection Service, U.S. Department of Agriculture
AUM	animal unit month
BLM	Bureau of Land Management, U.S. Department of the Interior
BOR	Bureau of Reclamation, U.S. Department of the Interior
BP	before present
CFR	code of federal regulations
CRM	coordinated resource management
DEQ	Department of Environmental Quality, State of Wyoming
DPC	desired plant community
EIS	environmental impact statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy and Management Act
FS	Forest Service, U.S. Department of Agriculture
FWS	Fish and Wildlife Service, U.S. Department of the Interior
GABS	grazing automated billing system
HRM	holistic resource management
MBF	thousand board feet
MMBF	million board feet
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NNL	National Natural Landmark
NPS	National Park Service, U.S. Department of the Interior
NRCS	National Resource Conservation Service, U.S. Department of the Interior [formerly the Soil Conservation Service (SCS)]
ORV	off-road vehicle
RMP	resource management plan
SCORP	State Comprehensive Outdoor Recreation Plan
SRMA	special recreation management area
USDA	U.S. Department of Agriculture
USDI	U.S. Department of the Interior
USGS	U.S. Geological Survey, U.S. Department of the Interior
VRM	visual resource management
WGFD	Game and Fish Department, State of Wyoming



CHAPTER 1

PURPOSE AND NEED

INTRODUCTION

This is a final environmental impact statement (EIS) for the proposed Grass Creek Resource Management Plan (Proposed RMP). The area being considered is the Grass Creek Planning Area of the Bighorn Basin Resource Area in the Bureau of Land Management's (BLM's) Worland District.

The draft EIS for the Grass Creek RMP, published in January 1995, documented the description of the alternatives that were analyzed for the planning area and the anticipated consequences of those alternatives. The draft EIS, and the public comments submitted on that document, provided the basis for developing this final EIS and the proposed Grass Creek RMP.

[This final EIS is not a complete reprinting of the material presented in the draft EIS. However, the final EIS is a complete document containing new and revised chapter narratives, maps, tables, and appendixes. Generally, it should not be necessary to refer to the draft EIS to understand the final EIS. In this final EIS, the maps, tables, and figures are printed at the end of each chapter or appendix, to improve the narrative flow and assist reader comprehension.]

The Proposed RMP considers other federal agencies', local and state governments', and Native American tribes' land use and resource management plans, programs, and policies. When approved, the Grass Creek RMP will be consistent with these to the extent practical.

An RMP is developed, maintained, and amended by a planning process which is based on section 102(c) of the National Environmental Policy Act of 1969 (NEPA), and implements section 202 of the Federal Land Policy and Management Act of 1976 (FLPMA). The planning process is guided by BLM regulations in Title 43 of the Code of Federal Regulations, part 1600 (43 CFR 1600) and the Council on Environmental Quality regulations in 40 CFR 1500.

The BLM's planning is conducted in three phases. For the Grass Creek RMP, a BLM planning team reviewed applicable Executive Orders, laws, regulations, policies, and directives. The BLM State Director also provided specific guidance for the RMP's development. These requirements were followed in conducting the planning effort and preparing the draft and final EIS documents.

Now, with the public's help, the BLM's Worland District will prescribe overall land use and resource man-

agement, serving as the general management guidance for BLM-administered public land surface (hereinafter referred to as public lands) and BLM-administered mineral estate in the planning area. The published RMP will represent the completion of this second phase.

The last phase will be activity planning. Compared to the RMP, activity planning will provide more detailed analyses and decisions for implementing the RMP and addressing management concerns in smaller geographical areas, and evaluating projects on a daily basis.

After completion, the Grass Creek RMP will be kept current through minor maintenance, or through amendments and revisions, as the demands on public lands and resources change, as the land and resource conditions change, or as new information is acquired.

The purpose for developing the Grass Creek RMP is to provide needed changes in BLM's current management direction for the planning area. The current BLM land use plan for the planning area is the 1983 Grass Creek Management Framework Plan. Policy and management changes have occurred since then (including the need to comply with the National Environmental Policy Act), requiring an updated, comprehensive, and environmentally adequate management guide for the BLM-administered public lands and resources.

The RMP is developed through an environmental analysis process which is documented in an EIS. The EIS describes the anticipated consequences of current management. It also describes alternatives to current management and their consequences. This provides the basis for developing an RMP that resolves land use and resource issues associated with current management.

Until the Grass Creek RMP is completed, daily management decisions will continue to be based on the area's management framework plan. The Grass Creek RMP will supersede the management framework plan and other general planning-decision documents for the planning area.

DESCRIPTION OF THE PLANNING AREA

The planning area for the Grass Creek RMP is the former Grass Creek Resource Area of the BLM Worland District. (In April 1995, the Grass Creek and Washakie resource areas were merged to form the Bighorn Basin Resource Area.) The planning area includes portions of Big Horn, Hot Springs, Park, and Washakie counties in

PURPOSE AND NEED

northwestern Wyoming. (See Map 1 at the end of this chapter.) Table 1, on land and mineral ownership in the Grass Creek Planning Area, identifies the areas that Grass Creek RMP decisions will cover and areas that Grass Creek RMP decisions will not cover.

Within the planning area boundary, there are varied and overlapping land and mineral ownerships. There are a few thousand acres of land administered by other federal agencies, and other lands and minerals owned and administered by private individuals and by local and state governments. Providing management for the surface of these lands is not within BLM's jurisdiction and, in certain instances, management of the federal minerals under these lands is not an objective of the RMP. For example, the Grass Creek RMP will not include any management decisions for withdrawn federal lands administered by the Bureau of Reclamation (BOR). Therefore, any BLM administrative responsibilities for these lands, such as grazing or mineral leasing, are handled individually and are guided by the BOR's policies, procedures, and plans and in accordance with cooperative agreements between the two agencies. (With the exception of Map 12, the page-sized maps in this final EIS do not distinguish between private, state, and federal lands, however, it must be remembered that proposed RMP decisions would only apply to the approximately 968,000 acres of BLM-administered public land surface and 1,171,000 acres of BLM-administered federal mineral estate, as described in Table 1.)

PLANNING CRITERIA AND PLANNING ISSUES

PLANNING CRITERIA

Guidelines were established to assist in development of the RMP. These are ground rules, or planning criteria, that serve to:

- identify the scope and parameters of the final EIS for the interdisciplinary planning team, the BLM managers, and the public; and
- insure that planning is focused on planning issues.

Planning criteria are based on standards prescribed by laws and regulations; guidance provided by the BLM Wyoming State Director; results of consultation and coordination with the public, other agencies and governmental entities, and Native American tribes; and analysis of information pertinent to the planning area.

The planning criteria focus on the preparation of alternatives and analysis of their effects, and guide

selection of the Preferred Alternative and Proposed RMP.

Environmental impact statements are not intended to be encyclopedic. Therefore, this final EIS does not contain detailed background information that was used in the course of the planning effort and in developing this document. It also does not reiterate all laws, regulations, policies, standards, and guidelines used by the BLM in administering the public lands. Some examples of background information and important directives that were used are listed below and can be made available upon request.

- A biological assessment concerning threatened or endangered and candidate species and a list of plants and animals addressed.
- Vegetative treatment guidelines for the control of noxious weeds.
- A list of the comments responded to in each letter, petition, and hearing testimony received during the official public comment period.

General Criteria

The following were considered in one or more of the alternatives.

- The need for designating special management areas, such as Areas of Critical Environmental Concern (ACECs), and their potential management.
- Management of significant cultural, historic, and paleontological resources.
- The protection and enhancement of riparian areas.
- The protection of habitat for threatened, endangered, sensitive, and other important wildlife and plants.
- Whether public lands along rivers and streams are suitable for wild and scenic river designation.
- Enhancing livestock grazing with practices that are compatible with other resource management objectives.
- Identification of lands suitable for minerals exploration and development, off-road vehicle (ORV) use, rights-of-way construction, and other activities that may result in surface disturbance.
- Identification of lands where rights-of-way construction and other surface disturbances would be avoided.
- Opportunities for enhancing recreation.
- Opportunities for land exchanges that could be useful in meeting goals for resource manageability and public access.

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The following potential effects were addressed.

- Effects of opening or closing BLM lands to development.
- Effects of surface-disturbing activities on air quality, cultural resources, recreational opportunities, watershed, and wildlife resources.
- Effects of land sales or exchanges, livestock grazing, and ORV use.
- Economic impacts of land use restrictions on livestock grazing, minerals exploration and development, recreation, and timber harvesting.
- Effects on the diversity of plant and animal species.

Answers to the following questions guided selection of the Preferred Alternative.

- What restrictions are needed to protect resources and keep lands and resources available for public use?
- Before restricting development, was the potential for occurrence of energy and mineral resources considered?
- Is there consistency with land use and resource management plans, programs, and policies of other federal agencies, state and local governments, and Native American tribes?
- Does consistency with other land use and resource management plans, programs, and policies improve the management of ecosystems that cross administrative boundaries?
- Does the Preferred Alternative sustain the productivity and diversity of ecosystems and provide for human values, products, and services?

Criteria for Special Situations

Biological Diversity

Biological diversity is the variety of life and its processes. Although vastly complex, it includes some measurable distinctions like genetic differences within and among species, species variations, associations of species with each other and their environments, and the patterns and linkages of these biological communities across geographical areas. (Keystone Center 1991.)

Inventory, monitoring, research, data management, and information sharing are needed for understanding the elements of biological diversity that exist in the Grass Creek Planning Area. There is a need to identify biologically diverse areas and conserve their richness of

native plant and animal species. The FLPMA mandates inventory of the public lands and the use of inventories in management. According to the Keystone Center, BLM's multiple-use management of public lands promotes biological diversity because, under this management, a variety of ecologic stages of habitat are developed and maintained, each with its particular plant and animal community. Also, the variety of landscapes and habitat types making up the public lands provides naturally for biological diversity.

The BLM policy requires that habitats be managed with emphasis on biological communities and natural systems to ensure self-sustaining populations and an abundance and diversity of wildlife, fish, and plant resources on the public lands; and that rare, vulnerable, and representative habitats, plant and animal communities, and natural systems be conserved.

Development of Mitigation Needs

When the four alternatives in the draft EIS were formulated, each included mitigations to protect or reduce adverse effects to resources that may be caused by surface-disturbing and other disruptive activities. These measures vary by alternative in the type or degree of protection provided. This variation in protective measures provides a basis for comparing mitigation effectiveness among the alternatives. For example, if a protective measure in one alternative is inadequate or too restrictive, the measure is modified in another alternative. The comparisons are then used to develop the mitigation needs for the Proposed RMP.

Protective measures are applied as conditions of land and resource use: (a) to minimize soil movement; (b) to minimize disturbance of vegetation in sensitive areas such as riparian areas; (c) to protect important cultural and paleontological resources, recreational values, and wildlife resources; and (d) to protect visual quality. Each alternative describes the protective measures used in that alternative.

Protective requirements can be changed to address specific projects and plans after the RMP is approved. Requirements can be removed if the protected resource no longer exists (a raptor nest becomes inactive) or if the location of an activity is changed to avoid a protected resource. Protection not identified in the RMP could also be added as necessary, if these new requirements are consistent with the RMP and would not interfere with valid existing rights.

New Appendix 6 describes opportunities for applying mitigation measures to surface-disturbing and disruptive activities in the Grass Creek Planning Area.

PURPOSE AND NEED

Ecosystems and Ecosystem Management

An ecosystem is an intricate group of organisms within their environmental communities, working as an ecological unit or natural system. Plants and animals, including humans, are a part of this dynamic process of living and nonliving interaction. The BLM's mission is to efficiently manage these ecosystems.

Ecosystem management is a process that considers the total environment. It requires the skillful use of ecological, economic, social, and managerial principles in managing ecosystems to produce, restore, or sustain ecosystem integrity and desired conditions, uses, products, values, and services over the long term. Management of individual components of ecological systems for immediate needs is tempered or expanded to responsible management centered on long-term goals and objectives targeted to the entire ecological system. The principles of ecosystem management, used in BLM's day-to-day management of the public lands and resources, include recognition that people and their social and economic needs are an integral part of ecological systems. It is consistent with the BLM's mission and direction under the FLPMA and it is supported by other laws guiding the BLM's mission.

Effective ecosystem management will be incorporated into implementation of the Grass Creek RMP, into site-specific implementation plans, and into daily management decisions.

Leasable Minerals Potential

The occurrence potential of leasable minerals (like oil, gas, tar sands, geothermal energy, coal, and coal bed methane) was estimated in the draft EIS.

The Grass Creek Planning Area has from low to high potential for the occurrence of oil and gas; low to moderate potential for coal, coal bed methane, and geothermal energy; and low potential for tar sands. Information on mineral occurrence potential and records of past minerals activities were used to estimate what types and amounts of future mineral development would take place in the planning area. Estimates of reasonably foreseeable mineral development were used to aid in the analysis of environmental consequences. Although exploration for leasable minerals could involve all of these resources, production during the next 15 years is anticipated primarily for oil and gas.

Locatable Minerals Potential

The occurrence potential and reasonably foreseeable development scenarios of locatable minerals were

estimated in the draft EIS, just like they were for leasable minerals.

The locatable minerals bentonite, gypsum, sulfur, titanium, and uranium are known to occur in the planning area. Exploration and filing of mining claims for these minerals would likely take place. However, actual mining during the next 15 years is anticipated only for bentonite.

Withdrawals and Classifications

Withdrawn or classified public lands sometimes cannot be sold or exchanged, and may be closed to land uses like the staking and development of mining claims. These restrictions on land uses, known as segregations, remain in effect until the withdrawal or classification is terminated. If a withdrawal or classification is terminated, new land uses could take place.

While developing the draft EIS, the planning team considered the anticipated effects of terminating about 180,700 acres of coal and phosphate classifications and reviewed management options for the lands, including the possible establishment of new protective withdrawals. The Grass Creek RMP will not include decisions for withdrawn or classified federal lands administered by other federal agencies.

Wild and Scenic Rivers

In the course of conducting the planning effort, public lands along all waterways in the planning area were reviewed to determine their eligibility to be considered for inclusion in the National Wild and Scenic River System. No public lands were found to meet the eligibility criteria. Appendix 1 in the draft EIS described the review process and the specific criteria that were used.

Wilderness

Wilderness management and recommendations on wilderness designation are not addressed in this final EIS. Wilderness management, related to four wilderness study areas in the Grass Creek Planning Area, is addressed in the Grass Creek/Cody Wilderness EIS published in August 1990. Pending a decision by Congress on designation of these areas, the Owl Creek, Bobcat Draw Badlands, Sheep Mountain, and Red Butte Wilderness Study Areas will be managed under the BLM's "Interim Management Policy and Guidelines for Lands Under Wilderness Review" (BLM Manual 8550).

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Should Congress designate part or all of any of the areas as wilderness, the management of the designated areas will be consistent with the designation alternative described in the Grass Creek/Cody Wilderness EIS, or as otherwise specified by Congress. Wilderness management site-specific activity plans will be developed for any designated wilderness areas. Management of any wilderness study areas or parts of wilderness study areas that are not designated as wilderness will be consistent with the nondesignation alternative described in the Grass Creek/Cody Wilderness EIS, or otherwise consistent with the approved Grass Creek RMP. The congressional decisions, for either designation, partial designation, or nondesignation of the wilderness study areas as wilderness, will be incorporated into the Grass Creek RMP and, if necessary, the RMP will be amended.

PLANNING ISSUES

The process for developing an RMP begins with identifying the issues (40 CFR 1501.7; 43 CFR 1610.4-1).

Issues express concerns, conflicts, and problems with the existing management of public lands. Frequently, issues are based on how land uses affect resources. Some issues are concerned with how land uses can affect other land uses, or how the protection of resources affect land uses.

The following planning issues were identified through public scoping and BLM's analysis of current management in the Grass Creek Planning Area:

Issue 1: Vegetation Management

Many land uses and resources depend on vegetation. There is a general concern for guarding against excessive removal of vegetative ground cover in the planning area. Reductions in vegetation and undesirable changes in plant composition can affect forage availability, wildlife habitat, and overall plant and animal diversity. Surface-disturbing activities associated with the physical movement of vegetation and soil by equipment or vehicles, for things like the construction of roads, rights-of-ways, structures and other facilities, can accelerate erosion and affect water quality and soil

productivity. Heavy use of forage by livestock, wild horses, and wildlife could also reduce vegetative ground cover and cause harm to resources. The challenge is to protect resources but still allow uses or activities that support the local economy such as oil and gas development, mining, ORV travel, livestock grazing, and timber harvest.

Issue 2: Special Management Area Designations

There are concerns about too many restrictions on the uses of public lands because of special management area designations. There are also concerns about the need for special management emphasis or protection of unique or sensitive lands and resources. In some places, unique resources and biological diversity are in danger of being lost; in other places, special management may be required to protect a natural process or ecosystem, or protect the public from natural hazards. These areas may be suitable for management emphasis and for designation as areas of critical environmental concern (ACECs), special recreation management areas (SRMAs), or wildlife habitat management areas.

Issue 3: Public Land and Resource Accessibility and Manageability

There are concerns that some public lands and resources are too accessible and susceptible to damage from overuse. There are also concerns that some public lands and resources are not accessible enough. The value of some lands and resources are enhanced by their accessibility and manageability. Most lands and resources need to be relatively accessible and manageable to be used and enjoyed; there must be public and administrative access so uses and management actions can occur. Some of these resources on the public lands are oil and gas, timber, wildlife, and recreational opportunities. There are also resources that could be damaged or destroyed by too much access or by access at an inappropriate time. Some of these are soils, vegetation, cultural resources, paleontological resources, visual resources, and wildlife. Management of the public lands should protect the quality of these resources, while maintaining resource accessibility.

**Table 1
Land and Mineral Ownership in the Grass Creek Planning Area**

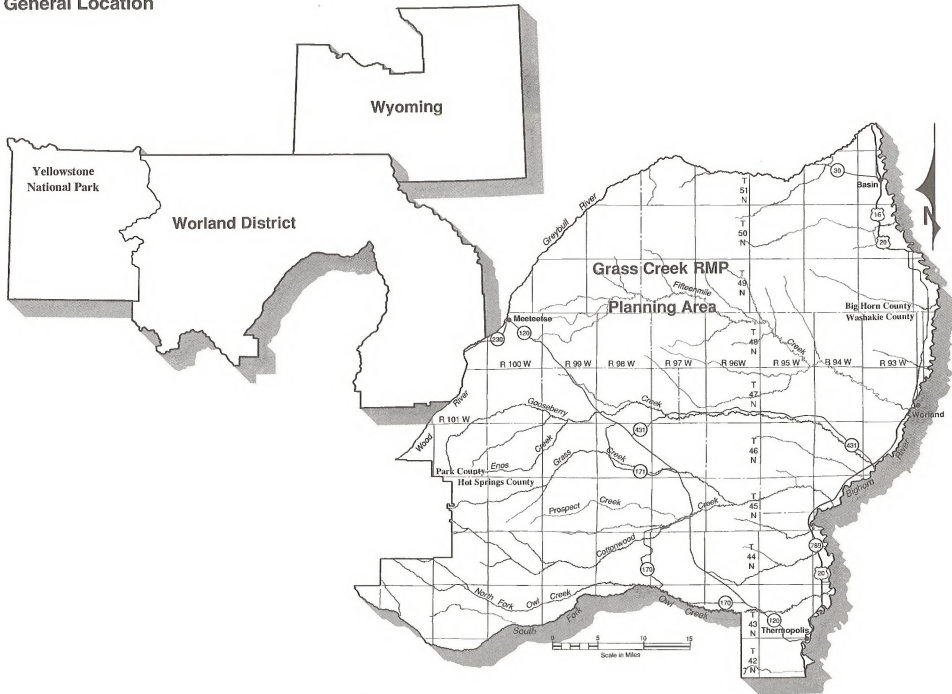
Areas the Grass Creek RMP Decisions WILL COVER		Approximate Acreage
A.	Areas where BLM administers both the federal land surface and the federal minerals under those lands. ¹	960,000
B.	Areas of BLM-administered federal land surface where the minerals under those lands are owned by private individuals, the state of Wyoming, or local governments. ²	8,000
C.	Areas of BLM-administered federal minerals where the surface of those lands is owned by private individuals, the state of Wyoming, or local governments. ³	211,000
Total BLM-administered federal land surface to be covered by RMP decisions. (A + B)		968,000
Total BLM-administered federal minerals to be covered by RMP decisions. (A + C)		1,171,000
Areas the Grass Creek RMP Decisions WILL NOT COVER		
D.	Areas where the federal land surface is administered by the Bureau of Reclamation and the federal minerals under those lands are administered by the BLM.	4,700
E.	Areas where the land surface and the minerals under those lands are both owned by private individuals, the state of Wyoming, or local governments and the BLM has no administrative authority.	302,000
Total Surface Acres of All Lands in the Grass Creek Planning Area (A + B + C + D + E)		1,485,700

¹ Throughout the final EIS, these BLM-administered federal lands will be called "public lands." According to FLPMA, sec. 103(e), "The term 'public lands' means any land and interest in land owned by the United States within the several States and administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except--(1) lands located on the Outer Continental Shelf; and (2) lands held for the benefit of Indians, Aleuts, and Eskimos."

² The surface of these lands will also be described as "public lands" in this final EIS, although BLM will make no planning or management decisions for the minerals.

³ The interest in these lands administered by BLM consists of the minerals. These will not be called "public lands" in this final EIS but BLM's interest will be described as "BLM-administered minerals" or "BLM-administered mineral estate."

Map 1
General Location





CHAPTER 2

DESCRIPTIONS OF THE ALTERNATIVES INCLUDING THE PROPOSED RESOURCE MANAGEMENT PLAN

DEVELOPING ALTERNATIVES

This part of a final EIS describes the alternatives that have been developed and analyzed during the planning process. Each alternative represents a complete and reasonable land use plan (that is, alternative RMP) which could guide future management of public lands and resources in the planning area. Each alternative includes combinations of public land uses and resource management practices that respond to the planning issues. One alternative represents "no action," which is actually the continuation of current management. Other alternatives provide a range of choices or management options for solving problems associated with current management. Problems that exist under current management were identified by the interdisciplinary planning team and through public participation.

This chapter describes four resource management plan alternatives, including BLM's Proposed RMP.

Documenting the comparisons of the differences among the alternatives is required by the BLM resource management planning regulations and the Council on Environmental Quality's regulations, all based on NEPA. Documenting the analysis of the effects associated with each alternative is also required. The analyses of Alternatives A, B, and C, with help from the public, enabled BLM managers to develop the Proposed RMP.

Alternative A, the "no action" alternative, would continue current management practices on the basis of existing land use plans.

Compared to Alternatives A and C, Alternative B would reduce the level of land use restrictions while emphasizing timber and livestock forage production, developed forms of recreation, and vehicle access.

Compared to Alternatives A and B, Alternative C would have higher levels of land use restrictions and would emphasize wild horse management, wildlife habitat enhancement, and the interpretation of historic and cultural resources.

The BLM's Proposed RMP generally would place greater emphasis on protection of the natural environment compared to Alternatives A and B and would prescribe fewer restrictions on land use than Alternative C. The Proposed RMP was developed to balance

production of commodity uses with protection of the environment.

OTHER MANAGEMENT OPTIONS CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The following management options were considered as possible ways to resolve the planning issues, but were eliminated from detailed study because they were unreasonable or not viable because of technical, legal, or other constraints.

ELIMINATION OF LIVESTOCK GRAZING

The elimination of livestock grazing from all public lands in the planning area was considered as a possible method of resolving some of the planning issues related to vegetative resources. However, the planning team and managers determined that the "no grazing" alternative should be eliminated from detailed study for the following reasons.

In general, resource conditions on public lands in the planning area, including range vegetation, watershed, and wildlife habitat are not the result of livestock grazing alone and are not in a state of such poor condition or downward trend that they cannot be maintained or enhanced or that would warrant elimination of livestock grazing on the public lands.

Also, western rangeland ecosystems evolved in concert with grazing by large herbivores, such as buffalo. There are ecologists who say that a reasonable level of livestock grazing is important for maintaining the health of these ecosystems.

Public comments received during the scoping process and during preparation of the draft EIS indicated a general acceptance of livestock grazing on the public lands, provided such grazing is properly managed.

Because of fragmented landownership in the planning area, it is highly unlikely that livestock grazing could be eliminated. Either land exchanges to "block up"

ALTERNATIVES INCLUDING THE PROPOSED RMP

public lands or extensive fencing would be needed to exclude livestock from public lands. It is doubtful that enough exchanges with private landowners could be accomplished to sufficiently "block up" public lands, and the amount of fencing needed to exclude livestock would disrupt wildlife movement and restrict public access. Also, elimination of livestock grazing would adversely affect social, economic, and cultural values in the planning area.

Therefore, it would be neither reasonable nor necessary to prohibit livestock grazing throughout the planning area.

ELIMINATION OF TIMBER HARVESTING

Possible elimination of all timber harvesting on public lands in the planning area was considered. However, the 14,000 acres of BLM-administered forestlands capable of sustaining forest production need to be harvested over time to maintain a healthy, vigorous forest. Because fire and, to an extent, disease have been eliminated by human influence, the harvesting of forest products helps sustain the ecological processes that maintain the healthy condition of the forest. Finally, harvesting forest products is consistent with BLM's multiple-use management policy and closure to these activities would be unreasonable and unnecessary.

ELIMINATION OF OIL AND GAS LEASING

Closing the planning area to oil and gas leasing was considered to resolve conflicts with other resource uses. Public comments received during issue identification and development of planning criteria indicated general acceptance of oil and gas development, provided it is properly managed. It was further pointed out that, in most cases, oil and gas exploration and development can take place in a manner that avoids unacceptable impacts to other resources in the planning area.

In addition, most of the planning area is covered by federal oil and gas leases and portions of the area are developed (including the public lands within 26 oil and gas fields). Eliminating federal oil and gas leasing in the entire planning area would be "over-kill" because resource conflicts tend to be located in specific areas, not areawide.

This option was eliminated from further analysis because it would be contrary to BLM policy that, with the exception of congressional withdrawals, public lands

would remain open and available for mineral exploration and development, unless doing otherwise is clearly in the national interest. That policy was stated in the first annual report of the President (in April 1982) under the National Materials and Minerals Policy, Research, and Development Act of 1980.

In addition, eliminating federal oil and gas leasing in the entire planning area would be directly contrary to the BLM's multiple-use management mandate in FLPMA and would also be unreasonable and unnecessary.

USE OF ONLY OIL AND GAS STANDARD LEASE TERMS AND CONDITIONS

A management option was considered that would replace all specific mitigation measures cited in the draft EIS with the minimum level of mitigation defined in section 6 of the standard oil and gas lease form. Under the Proposed RMP, about half the planning area would be subject only to these standard lease terms and conditions; however, some reviewers of the draft EIS requested that BLM rely solely on standard lease terms and conditions throughout the planning area.

The consideration of this option demonstrated that unacceptable impacts could occur to sensitive or important lands and resources. An example would include big game animals being forced off crucial winter ranges during periods of severe winter conditions and high stress. During severe winters, elk and other big game animals rely on crucial winter habitat for their survival. Sometimes the areas are needed for up to six months at a time. If the animals are disrupted or forced to leave during a severe winter because of increased human activity, all those animals could be sacrificed.

Under standard lease terms and conditions the BLM would be able to delay lease development for 60 days. However, a longer delay would require the support of an environmental analysis and the finding that unnecessary or undue degradation would occur without the delay.

As indicated in New Appendix 6, crucial winter habitat areas are not necessary for big game survival each and every year. The BLM would allow oil and gas development activity if weather conditions are mild and big game animals can move to adjacent habitat areas. Therefore, a seasonal mitigation requirement would not always be applied to proposed oil and gas activities or may be applied for only a part of the crucial winter period, even if the requirement is attached to the oil and gas lease along with the standard lease terms and conditions.

ALTERNATIVES INCLUDING THE PROPOSED RMP

It is Wyoming BLM policy to apply consistent mitigation measures for specific resource needs and circumstances. If the BLM were to rely solely on standard lease terms and conditions, we would not be adequately disclosing information on anticipated mitigation needs. When sensitive or important resources have been identified through public involvement in the RMP, the failure to disclose necessary mitigation strategies for these same resources would represent a failure to comply with NEPA.

For these reasons, the option of using only standard oil and gas lease terms and conditions for all BLM-administered lands in the planning area was eliminated from further analysis.

MAXIMUM OR UNCONSTRAINED ALTERNATIVES

Alternatives and general management options that proposed maximum development, production, or pro-

tection of one resource at the expense of other resources were not analyzed in detail. The purpose of the RMP is to provide multiple-use management direction for the planning area. Generally, promoting a single land or resource use by eliminating all others does not meet the objectives of the BLM's multiple-use management mandate and responsibilities. However, the alternatives analyzed in detail do include various considerations for eliminating or maximizing individual resources or uses in specific areas where conflicts would otherwise exist.

ALTERNATIVES ANALYZED IN DETAIL

The four alternatives analyzed in detail in the Grass Creek final EIS are described and compared in Revised Table 2. Table 3, from Chapter 2 of the draft EIS, has not been reprinted. The information contained in that table has been expanded, clarified, and corrected in New Appendix 6.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
AIR QUALITY MANAGEMENT	MANAGEMENT OBJECTIVE: Maintain or enhance air quality, protect public health and safety, and minimize emissions resulting in acid rain or degraded visibility.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	MANAGEMENT ACTIONS: BLM-initiated or authorized actions, such as the use of prescribed fire, would avoid violation of Wyoming and national air quality standards. This would be accomplished through the coordination of BLM-managed activities with the Wyoming Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (EPA).	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Requirements would be applied to authorized actions on a case-by-case basis to alleviate air quality problems. These requirements could include such things as limiting emissions and covering conveyors.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Air quality standards are monitored by the Wyoming DEQ. Air quality permits would be obtained from DEQ before prescribed fires are set on public land. Smoke and pollution would be minimized as described in the <i>Smoke Management Guidebook</i> (BLM 1985).	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">AIR QUALITY MANAGEMENT (Continued)</p>	<p>The BLM would coordinate with the Wyoming DEQ and the EPA on developing air quality standards and guidelines as needed.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p align="center">CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES MANAGEMENT</p>	<p>MANAGEMENT OBJECTIVES: Protect and preserve important cultural, paleontological, and natural history resources. Expand opportunities for scientific and educational uses of these resources. (See Map 2.)</p>	<p>Same as Proposed RMP.</p>	<p>Protect and conserve significant cultural, paleontological, and natural history resources in response to proposed surface-disturbing activities. Showcase the history of traditional prehistoric and historic land uses.</p>	<p>Same as Proposed RMP.</p>
	<p>Protect and study rock art in the Meeteetse Draw area. Expand public education and interpretation in the area, if appropriate, following additional consultation with Native Americans and the preparation of environmental analyses.</p>	<p>Protect, study, and expand the interpretation of rock art in the Meeteetse Draw area.</p>	<p>Protect rock art when necessary in response to proposed surface-disturbing activities.</p>	<p>Same as Alternative A.</p>
	<p>MANAGEMENT ACTIONS: Site-specific inventories for cultural resources would be required before the start of surface-disturbing activities. Adverse effects on significant resources would be mitigated, or the resources themselves would be avoided by surface-disturbing activities.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES MANAGEMENT (Continued)</p>	<p>Sites listed on the National Register of Historic Places would be appropriately protected. Investigations of violations of the Archaeological Resources Protection Act would be conducted.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The BLM's consultation with the Advisory Council for Historic Preservation and the State Historic Preservation Office would be consistent with a cultural resources programmatic agreement signed in 1994.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Rock art, as well as prehistoric and historic archaeological sites and districts associated with specific time periods or cultures, would be managed for scientific, public, and sociocultural use. General areas would be managed for research, with emphasis on interpreting former ecosystems. Specific sites or areas would be preserved for future study and use.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The Legend Rock Petroglyph Site would be managed for public education in cooperation with the state of Wyoming.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>A cooperative management agreement would be pursued with private landowners to enhance and conserve the Legend Rock Petroglyph Site.</p>	<p>A land exchange would be pursued with private landowners to enhance and conserve the Legend Rock Petroglyph Site.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES MANAGEMENT (Continued)</p>	<p>In the Meeteetse Draw area, interpretive sites would be developed to highlight rock art, making use of scenic overlooks and interpretive signs and trails, if warranted, following additional consultation with Native Americans and the preparation of environmental analyses.</p>	<p>In the Meeteetse Draw area, interpretive sites would be developed to highlight rock art, making use of scenic overlooks and interpretive signs and trails.</p>	<p>No similar action.</p>	<p>Same as Alternative A.</p>
	<p>Additional public access would be pursued in the Meeteetse Draw area, if warranted, following consultation with Native Americans.</p>	<p>Additional public access would be pursued in the Meeteetse Draw area to enhance management and public education.</p>	<p>No similar action.</p>	<p>Same as Alternative A.</p>
	<p>To protect Native American cultural values, the construction of rights-of-way would be avoided on public lands in the Meeteetse Draw area.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Portions of the town of Gebo and adjacent coal mining areas on public land would be managed for preservation and interpretation of cultural and historic values. Management could include actions like development of an interpretive road loop.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES MANAGEMENT (Continued)</p>	<p>Other cultural resource interpretive sites would be developed, making use of scenic overlooks, signs, and walking trails. Sites could include rock art and historic trails such as the Thermopolis to Meeteetse Trail, the Fort Washakie to Red Lodge Trail, the Mexican Pass Trail, and the Jim Bridger Trail.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>As appropriate, specific sites on public lands would be managed for their traditional Native American cultural values.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Historic resources in ten oil and gas fields would be managed for scientific and public use. The purpose would be to improve knowledge of the historic significance of the fields and facilitate the approval of future development and reclamation activities. The following fields would be included: Hamilton Dome, Grass Creek, Little Buffalo Basin, Walker Dome, Enos Creek, Golden Eagle, Gooseberry, Hidden Dome, Little Grass Creek, and Gebo.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES MANAGEMENT (Continued)</p>	<p>Adverse effects would be avoided on public lands and resource values listed in National Park Service (NPS) inventories of possible National Natural Landmarks (NNLs). These lands and resources include paleontological and scenic values at Tatman Mountain and in the badlands north of Wyoming Highway 431.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Important paleontological resources would be managed for scientific and public use.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Potential effects on paleontological resources would be considered in site-specific environmental analyses before the authorization of surface-disturbing activities. As appropriate, site-specific inventories would be required where significant fossil resources are known or anticipated to occur.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Closing lands or restricting uses to protect paleontological resources would be evaluated case-by-case.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Surface-disturbing and disruptive activities associated with the construction and use of interpretive sites and facilities would be subject to appropriate mitigation measures as described in New Appendix 6.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
FIRE MANAGEMENT	<p>MANAGEMENT OBJECTIVE: The objectives of the fire program are to: (1) cost-effectively protect life, property, and resource values from wildfire; and (2) use prescribed fire to achieve multiple use management goals.</p>	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	<p>MANAGEMENT ACTIONS: Limited suppression (see Glossary) of wildfire would take place on lands north and east of Wyoming Highway 120 and lands east of Hamilton Dome, bordered by Wyoming Highways 120 and 170. These limited suppression areas total about 744,400 acres of public land. (See Map 3.)</p>	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	<p>Fires in limited suppression areas would be monitored to insure they do not threaten state or private lands, property, oil and gas fields, important riparian habitat, or human life.</p>	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	<p>Full suppression (see Glossary) would be used on fires spreading to within 0.25 mile of state or private lands, property, oil and gas fields, important riparian habitat, or human life.</p>	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	<p>Full suppression of wildfire would take place on the remaining public lands, comprising about 223,600 acres.</p>	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>FIRE MANAGEMENT (Continued)</p>	<p>The locations and applications of these fire suppression categories may periodically vary as adjustments and revisions are made to the Worland District and the Grass Creek Planning Area fire management plans.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The Grass Creek Planning Area Fire Management Plan would be maintained and revised, as necessary, and implemented. The plan would address ecological areas (see Glossary) for fire management based on fire ecology studies, and would establish desired plant community and landscape goals that promote biological diversity. The plan would also address specific applications of prescribed fire to meet resource objectives.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Travel restrictions would limit the use of fire vehicles to existing roads and trails on public lands near the Legend Rock Petroglyph Site and surrounding Wardel Reservoir. Other travel restrictions would be considered in future activity planning.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The construction of fire lines would be avoided if natural fire breaks can be used.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
FIRE MANAGEMENT (Continued)	The use of bulldozers generally would be prohibited in riparian and wetland areas, in areas of significant cultural resources or historic trails, and in important wildlife birthing areas.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Fire retardant drops by air tankers would be prohibited within 200 feet of water.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Prescribed fire would be used to accomplish resource management objectives. These objectives include use of fire to rehabilitate old timber sale areas and recycle nutrients to the soil, reduce hazardous fuels, remove trees infested by the mountain pine beetle, rid timber sale areas of slash, maintain certain age classes of trees, improve timber stand diversity and productivity, improve riparian areas, modify sagebrush stands to benefit wildlife habitat, reestablish and invigorate aspen stands, improve watershed values, and remove sagebrush, juniper, and limber pine to increase livestock forage production.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	When prescribed fires are planned, the potential for habitat fragmentation would be evaluated. Actions that would disrupt or divide habitat blocks, other than temporarily, would be avoided.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
FIRE MANAGEMENT (Continued)	When prescribed fire and mechanical or biological treatments can be used effectively to manage vegetation, they would be preferred over chemical treatments.	Same as Proposed RMP.	Priority would be given to the most cost-effective types of vegetative treatments.	Chemical treatments would be prohibited.
	Surface-disturbing and disruptive activities associated with all types of fire management would be subject to appropriate mitigation measures as described in New Appendix 6.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
FORESTLAND MANAGEMENT	MANAGEMENT OBJECTIVE: Maintain and enhance the health, productivity, and biological diversity of forest and woodland ecosystems. A balance of natural resource benefits and uses would be provided, including opportunities for commercial forest production.	Same as Proposed RMP.	Maintain and enhance the health and productivity of forest ecosystems with an emphasis on commercial forest products.	Maintain and enhance the health and biological diversity of forest and woodland ecosystems with an emphasis on noncommercial resources.
	MANAGEMENT ACTIONS: Road construction for harvesting timber or for conducting forest management practices would be prohibited on slopes greater than 25 percent, unless site-specific environmental analyses demonstrate that adverse effects can be mitigated or avoided.	Same as Proposed RMP.	Same as Proposed RMP.	Road construction for harvesting timber or for conducting forest management practices would be prohibited on slopes greater than 25 percent.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>FORESTLAND MANAGEMENT (Continued)</p>	<p>Skidder-type yarding would be prohibited on slopes greater than 45 percent. Other logging operations on slopes steeper than 45 percent would be limited to technically, environmentally, and economically acceptable methods such as cable yarding.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Emphasis for silvicultural practices and timber harvesting would be placed on areas where forest health is the primary concern (including forests that are infested by mistletoe or mountain pine beetles). Forest management areas are shown on Map 4.</p>	<p>Same as Proposed RMP.</p>	<p>Emphasis for silvicultural practices and timber harvesting would be placed on areas where timber stands have reached their rotation age (of 120 to 160 years).</p>	<p>Emphasis for silvicultural practices and timber harvesting would be placed on producing forest stands for wildlife thermal cover.</p>
	<p>A variety of forest silvicultural and cutting methods would be used such as clearcutting, shelterwood, individual tree selection, and various regeneration treatments.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Severely mistletoe-infested stands would be clearcut. Stagnated and overstocked pole timber stands would be thinned if there is a chance that they would respond with further growth and produce wildlife thermal cover.</p>	<p>All mistletoe-infested, stagnated, and overstocked pole timber stands would be clearcut.</p>	<p>Same as Alternative A.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">FORESTLAND MANAGEMENT (Continued)</p>	<p>Overstocked seedling, sapling, and pole stands would be precommercially thinned on up to 800 acres to increase timber production and improve long-term wildlife thermal cover.</p>	<p>These types of stands would be precommercially thinned on about 200 acres to increase timber production.</p>	<p>These types of stands would be precommercially thinned on about 800 acres to increase timber production.</p>	<p>These types of stands would be precommercially thinned on about 800 acres to improve long-term wildlife thermal cover.</p>
	<p>All harvest areas would be regenerated by natural or artificial means consistent with BLM policy. If at the end of fifteen years any clearcut area fails to regenerate naturally, planting and other methods would be used to assure regeneration unless converting vegetation to another type is the objective.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Emphasis for silvicultural practices and timber harvesting would be placed on conifer stands to increase the viable component of aspen, when possible. Other methods to improve aspen would include use of prescribed fire, noncommercial thinning of conifers, and fencing of aspen stands to protect from wildlife and livestock use.</p>	<p>Same as Proposed RMP.</p>	<p>Emphasis on silvicultural practices and timber harvesting would be placed on conifer stands to enhance sawtimber production. Aspen improvement would not be emphasized.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>FORESTLAND MANAGEMENT (Continued)</p>	<p>In important seasonal wildlife habitat areas, clearcuts generally would not exceed 300 yards (approximately 15 acres) in any direction. Wildlife escape cover would be maintained by keeping a corridor of timber around, or on one or more sides of, roads, clearcuts, parks, wetlands, and wallows. Trees and snags would not be cut if they provide important habitat for cavity or snag-nesting wildlife.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The BLM would evaluate the size, extent, distance from roads, and characteristics of forestland vegetation, when forest harvests are considered, to maintain or improve the effectiveness of residual wildlife security areas.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>When harvests are planned, the potential for habitat fragmentation would be evaluated. Actions that would disrupt or divide habitat blocks, other than temporarily, would be avoided.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Slash disposal would be tailored to promote reforestation, minimize erosion, and allow ease of movement for wildlife.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">FORESTLAND MANAGEMENT (Continued)</p>	<p>Forest products would be sold from limber pine and juniper woodland areas to meet public demand for posts, poles, firewood, and specialty wood consistent with wildlife habitat requirements.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Harvesting firewood on public lands along desert waterways and the Bighorn and Greybull rivers would be prohibited.</p>	<p>Same as Proposed RMP.</p>	<p>Harvesting dead and down wood on public lands would be allowed.</p>	<p>Same as Proposed RMP.</p>
	<p>Prescribed fire would be used to improve aspen stands, regenerate old age forest stands, manage for desired successional stages and forest species composition, and rehabilitate harvest areas.</p>	<p>Same as Proposed RMP.</p>	<p>Prescribed fire would be used primarily to rehabilitate harvest areas.</p>	<p>Prescribed fire would be used primarily to improve aspen stands.</p>
	<p>Surface-disturbing and disruptive activities associated with all types of forest management would be subject to appropriate mitigation opportunities as described in New Appendix 6.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">HAZARDOUS MATERIALS AND WASTES</p>	<p>MANAGEMENT OBJECTIVE: Protect public health and safety and the environment on public lands, emphasize waste reduction for BLM-authorized and initiated actions, comply with applicable federal and state laws, prevent waste contamination from any BLM-authorized actions, minimize federal exposure to the liabilities associated with waste management on public lands, and integrate hazardous materials and waste management policies and controls into all BLM programs.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p align="center"><i>General</i></p>	<p>Surface-disturbing and disruptive activities associated with all types of hazardous materials and waste management would be subject to appropriate mitigation measures as described in New Appendix 6.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>MANAGEMENT ACTIONS: For BLM-authorized activities that involve hazardous materials or their use, precautions would be taken to guard against releases into the environment. In the event of a release of hazardous materials on the public land, appropriate warnings would be provided to potentially affected communities and individuals, and precautions would be taken against public exposure to contaminated areas.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">HAZARDOUS MATERIALS AND WASTES (Continued)</p> <p><i>Hazardous Materials</i></p>	<p>Sale, exchange, or other transfer of public lands on which storage or disposal of hazardous substances has been known to occur would require public notification of the type and quantity of the substances.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Public lands contaminated with hazardous wastes would be reported, secured, and cleaned up according to federal and state laws, regulations, and contingency plans, including the federal Comprehensive Environmental Response, Compensation, and Liability Act. Parties responsible for contamination would be liable for cleanup and resource damage costs, as prescribed by law.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p>LANDS AND REALTY MANAGEMENT</p>	<p>MANAGEMENT OBJECTIVE: Support the multiple-use management goals of the various BLM resource programs; respond to public requests for land use authorizations, sales, and exchanges; and acquire access to serve administrative and public needs.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>LANDS AND REALTY MANAGEMENT (Continued)</p> <p><i>Access</i></p>	<p>MANAGEMENT ACTIONS: The BLM would pursue public access on important roads and trails listed in the BLM transportation plan. The transportation plan would be updated as necessary and implemented to provide access to large blocks of public land or to smaller parcels of land having high public values.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The BLM would maintain or improve existing opportunities for public access in the upper Grass Creek area.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Emphasis would be placed on acquisition of access to public lands on the Bighorn and Greybull rivers to enhance recreational opportunities and wildlife management.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The BLM would pursue a combination of motorized and non-motorized vehicle access in the Enos Creek, the upper Cottonwood Creek, and the upper South Fork of Owl Creek areas of the Absaroka Mountain foothills. Goals would be to provide vehicle access to the South Fork of Owl Creek to improve fishing and other recreational opportunities and to acquire foot and horseback access to the Shoshone National Forest. All access would be limited seasonally and to specific routes as appropriate.</p>	<p>Same as Proposed RMP.</p>	<p>The BLM would pursue additional motorized vehicle access in the Enos Creek, the upper Cottonwood Creek, and the upper South Fork of Owl Creek areas of the Absaroka Mountain foothills. Goals would be to provide vehicle access to the South Fork of Owl Creek to improve fishing and other recreational opportunities and to acquire vehicle access to the Shoshone National Forest.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>LANDS AND REALTY MANAGEMENT</p> <p><i>Access (Continued)</i></p>	<p>The BLM would pursue limited motorized vehicle access on roads in the Red Canyon Creek area consistent with an overall objective to emphasize primitive recreation.</p>	<p>Same as Proposed RMP.</p>	<p>The BLM would pursue motorized vehicle access on main roads in the Red Canyon Creek area.</p>	<p>No easements for motorized vehicle access would be pursued in the Red Canyon Creek area, although access for non-motorized travel would be pursued.</p>
	<p>Access to specific areas may be closed or restricted to protect public health and safety. Before access is upgraded in the vicinity of important cultural, paleontological, natural history, wildlife habitat, or other sensitive resources, the security and protection of these resources will be carefully considered.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p><i>Landownership Adjustments</i></p>	<p>Before any public lands are exchanged or sold, or before the BLM would attempt to acquire any other lands in the planning area, the BLM would consult with county commissioners and other representatives of local government in the affected areas. Other affected and interested citizens would be given opportunities to comment as well.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>About 1,220 acres would be considered for suburban expansion, community landfills, industrial and commercial development, and other public needs near the communities of Worland, Thermopolis, Meeteetse, and Basin.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>LANDS AND REALTY MANAGEMENT</p> <p><i>Landownership Adjustments (Continued)</i></p>	<p>Agricultural trespass on public land generally would be resolved by prohibiting the unauthorized use; however, land sales, exchanges, or leases could resolve agricultural trespass in some cases. Leases might be used to develop the lands as wildlife food and cover areas. Agricultural trespass is estimated to occur on about 400 acres.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>These lands would not be sold, although lease agreements would be considered.</p>
	<p>Proposals for sale, exchange, or transfer of public land would be subject to criteria described in Appendix 2 of the draft EIS. Priority would be given to landownership adjustments that meet community needs. The preferred method of adjusting landownership would be exchange.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>No proposals for landownership adjustments, other than those for community expansion, would be considered unless a land exchange were involved.</p>
	<p>Approximately 33,700 acres of public lands that are difficult or uneconomic to manage (Map 5) would have priority consideration for public sale, Recreation and Public Purposes Act lease or patent, exchange, or transfer to another agency. Proposals for the sale, exchange, or transfer of other public lands in the planning area would be considered on a case-by-case basis.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>No public lands would be considered for sale or transfer. However, all public lands in the planning area would be considered for exchange, with the condition that there be no net loss of crucial wildlife habitat on public lands.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LANDS AND REALTY MANAGEMENT <i>Landownership Adjustments (Continued)</i>	Exchanges would be pursued to improve management of important seasonal wildlife habitat areas in the upper portions of Owl, Cottonwood, Gooseberry, and Grass creeks.	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.
	Exchanges would be pursued along Gooseberry Creek, the upper portions of Cottonwood and Grass creeks, the Bighorn and Greybull rivers, and on lands where other riparian areas occur. The purposes of these exchanges would be to block up public land, enhance public access, and improve public land manageability.	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.
	A cooperative management agreement would be pursued with private landowners to enhance and conserve the Legend Rock Petroglyph Site.	A land exchange would be pursued with private landowners to enhance and conserve the Legend Rock Petroglyph Site.	No similar action.	Same as Proposed RMP.
	Cooperative agreements or land exchanges to improve wild horse management would be pursued on about 12,000 acres of privately-owned land.	Land exchanges to improve wild horse management would be pursued on about 12,000 acres of privately-owned land.	No similar action.	Cooperative agreements or land exchanges to improve wild horse management would be pursued on about 16,000 acres of privately-owned land.
<i>Rights-of-Way</i>	The planning area would be open for rights-of-way development. Proposals would be addressed on an individual basis with emphasis on avoiding certain conflict or sensitive areas.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>LANDS AND REALTY MANAGEMENT</p> <p><i>Rights-of-Way (Continued)</i></p>	<p>Two right-of-way corridors would be designated. (See Map 6.) These would be the preferred locations for placement of future rights-of-way including transmission and distribution lines and communication sites.</p>	<p>No right-of-way corridors would be designated. However, right-of-way concentration areas, including transmission and distribution lines and communication sites, would be the preferred locations for placement of future rights-of-way.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Alternative A.</p>
	<p>The construction or modification of rights-of-way along Wyo. highways 120 and 431 would be evaluated individually to assure that adverse effects on scenic values are not increased. Public lands along these routes to Yellowstone National Park would not be designated avoidance areas for rights-of-way.</p>	<p>To protect scenic values along major travel routes to Yellowstone National Park, the placement of utility rights-of-way would be avoided along Wyo. highways 120 and 431. When rights-of-way could not be avoided in these areas, they would be built to intensively mitigate adverse effects on scenic values.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Alternative A.</p>
	<p>To protect Native American cultural values, the construction of rights-of-way would be avoided on public lands in the Meeteetse Draw area.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>LANDS AND REALTY MANAGEMENT</p> <p><i>Rights-of-Way (Continued)</i></p>	No similar action.	No similar action.	No similar action.	The following areas would be right-of-way avoidance areas: elk, moose, & bighorn sheep winter and birthing areas; scenic areas identified as visual resource management (VRM) Class II areas (see Glossary); the Absaroka Mountain Foothills, and the badlands north of Wyoming 431.
	Surface-disturbing and disruptive activities associated with all types of rights-of-way construction and maintenance would be subject to appropriate mitigation measures as described in New Appendix 6.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
<i>Withdrawals</i>	All coal and phosphate classifications would be terminated and the lands would be returned to operation of the 1872 Mining Law.	All coal and phosphate classifications would be retained and those lands would remain closed to the staking of mining claims for gypsum, bentonite, and other nonmetalliferous minerals.	Same as Proposed RMP.	Same as Proposed RMP.
	A locatable mineral withdrawal would be pursued on about 1,200 acres of public land to protect recreation and wildlife values on public river tracts along the Bighorn River. (See Map 7.)	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>LANDS AND REALTY MANAGEMENT</p> <p><i>Withdrawals</i> (Continued)</p>	<p>Locatable mineral withdrawals would be pursued within 0.5 mile of the Legend Rock Petroglyph Site on about 630 acres of BLM-administered minerals, and in the immediate vicinity of rock art in the Meeteetse Draw area near Thermopolis.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>A locatable mineral withdrawal would be pursued in the Upper Owl Creek Proposed ACEC on about 16,300 acres of public land to protect scenic values, wildlife habitat, soil, and water.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
<p>LIVESTOCK GRAZING MANAGEMENT</p>	<p>MANAGEMENT OBJECTIVE: Improve forage production and range condition to provide a sustainable resource base for livestock grazing while improving wildlife habitat, watershed protection, and forage for wild horses.</p>	<p>Same as Proposed RMP.</p>	<p>Improve forage production and range condition to provide a sustainable resource base for livestock grazing.</p>	<p>Same as Proposed RMP.</p>
	<p>MANAGEMENT ACTIONS: The level of livestock grazing on public lands, when combined with all other public land uses, would not be allowed to exceed the carrying capacity of the land. (See Glossary.)</p>	<p>The level of livestock grazing on public lands would not be allowed to exceed the 1990 authorized level of 101,451 animal unit months (AUMs) per year.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Alternative A.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING MANAGEMENT (Continued)	Total forage use by domestic livestock in the Fifteenmile wild horse herd area would not be allowed to exceed 3,370 AUMs per year. Wild horses would be allocated 2,300 AUMs per year.	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.
	The current amounts, kinds, and seasons of livestock grazing use would continue to be authorized until monitoring indicates a grazing use adjustment is necessary, or an environmental assessment indicates that a permittee's application to change grazing use is appropriate.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Adjustments in the levels of livestock grazing would be made as a result of monitoring and consultation or negotiation with grazing permittees and other affected interests (including local and state governmental entities, as appropriate). Adjustments may also result from land use planning decisions to change the allocation of land uses or from transfers of public land to other agencies or into nonfederal-ownership.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING MANAGEMENT (Continued)	The level of livestock grazing may be reduced in areas with excessive soil erosion or poor vegetative condition, if identified by monitoring, or as necessary to provide for other multiple uses.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Livestock grazing monitoring intensity would vary, with higher levels occurring in "I" category allotments than in "M" and "C" category allotments. Livestock operators and other affected interests (including local and state governmental entities, as appropriate) would be asked to assist the BLM in developing objectives, in selecting key areas to monitor, and in gathering data.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Where practical, 20 public land tracts, comprising about 1,000 acres along the Bighorn River, would remain closed to livestock grazing, unless grazing is used for specific vegetation management objectives like the eradication of noxious weeds.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING MANAGEMENT (Continued)	BLM livestock grazing permittees and other interested parties, including local conservation districts, would implement management actions such as the use of grazing systems, land treatments, and range improvements. (See Glossary.) Proposal and design of these actions would normally be developed through activity and implementation plans such as allotment management plans (AMPs), coordinated resource management plans (CRM), or holistic resource management plans (HRM). The BLM would give priority to activity planning on "I" category allotments.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	The placement of salt and mineral supplements on public lands would be allowed outside riparian areas, and reclaimed or reforested areas, in locations designed to improve livestock distribution.	The placement of salt and mineral supplements on public lands would be prohibited in riparian areas and within 400 yards of water.	Same as Proposed RMP.	Same as Proposed RMP.
	Important riparian habitat areas on public lands would be fenced to control the duration and timing of livestock use, if the condition of these areas is declining and other types of grazing management do not produce a favorable response. Access to water for use by livestock and wildlife would be provided.	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING MANAGEMENT (Continued)	When prescribed fire and mechanical or biological treatments can be used effectively to manage vegetation, they would be preferred over chemical spraying.	Same as Proposed RMP.	Priority would be given to the most cost-effective types of vegetative treatments.	Chemical spraying would be prohibited.
	Grazing strategies (including the timing of grazing) would be designed to accommodate the growth requirements of "desired" species within plant communities. These strategies could also be used to control "undesirable" plants, as well.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	<p>In Salt Desert Shrub and Salt Bottom plant communities that are grazed during the growing season, grazing strategies would be designed to allow a combined forage utilization of 25 to 35 percent of the current year's growth. (Combined forage utilization includes all types of consumption or destruction of vegetation by livestock, wildlife, wild horses, insects, hail, etc.)</p> <p><i>Utilization would be measured and evaluated over time in the context of other monitoring information. Although utilization levels might vary from year-to-year, levels consistently exceeding those described would not be expected to meet watershed and other multiple-use requirements. (Also see Revised Appendix 3.)</i></p>	In Salt Desert Shrub and Salt Bottom plant communities that are grazed during the growing season, grazing strategies would be designed to allow a combined forage utilization of 30 to 50 percent of the current year's growth.	Same as Proposed RMP.	In Salt Desert Shrub and Salt Bottom plant communities that are grazed during the growing season, grazing strategies would be designed to allow a combined forage utilization of 25 to 30 percent of the current year's growth.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING MANAGEMENT (Continued)	In other plant communities that are grazed during the growing season, grazing strategies would be designed to allow a combined forage utilization of 30 to 50 percent of the current year's growth.	Same as Proposed RMP.	Same as Proposed RMP.	In other plant communities that are grazed during the growing season, grazing strategies would be designed to allow a combined forage utilization of 30 to 40 percent of the current year's growth.
	In all plant communities that are grazed when plants are dormant, a combined forage utilization of up to 60 percent of the current year's growth would be allowed.	Same as Proposed RMP.	Same as Proposed RMP.	In all plant communities that are grazed when plants are dormant, a combined forage utilization of up to 40 percent of the current year's growth would be allowed.
	In bighorn sheep habitat areas, grazing strategies would be designed so that combined utilization levels are kept near the lower end of the utilization objectives described above.	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.
	Domestic sheep grazing would be prohibited within 2 miles of bighorn sheep habitat unless conflicts can be avoided or mitigated based on site-specific analysis. Existing uses would be allowed pending site-specific analysis.	Same as Proposed RMP.	No similar action.	Domestic sheep grazing would be prohibited within 20 miles of bighorn sheep habitat unless adverse effects can be avoided or mitigated based on site-specific analysis. Existing uses would be allowed pending site-specific analysis.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING MANAGEMENT (Continued)	In elk crucial winter ranges, grazing strategies would be designed so that combined utilization levels are kept near the lower end of the utilization objectives described above.	Same as Proposed RMP.	No similar action.	In elk winter and crucial winter ranges, grazing strategies would be designed so that combined utilization levels are kept near the lower end of the utilization objectives described above.
	Water developments for livestock would be prohibited in elk crucial winter ranges unless adverse effects can be avoided or mitigated based on site-specific analysis. Existing uses would be allowed pending site-specific analysis.	Water developments for livestock would be prohibited in elk crucial winter ranges.	No similar action.	Water developments for livestock would be prohibited in elk winter and crucial winter ranges unless adverse effects can be avoided or mitigated based on site-specific analysis. Existing uses would be allowed pending site-specific analysis.
	Livestock grazing strategies, including periodic rest of pastures in elk crucial winter ranges, would be applied as necessary.	Livestock grazing strategies would be required to periodically rest pastures in elk crucial winter ranges.	Same as Proposed RMP.	Livestock grazing strategies would be required to rest pastures in elk winter and crucial winter ranges.
	Livestock grazing from May 1 through June 30 would be prohibited in elk birthing habitat unless adverse effects can be avoided or mitigated based on site-specific analysis. Existing uses would be allowed pending site-specific analysis.	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>LIVESTOCK GRAZING MANAGEMENT (Continued)</p>	<p>In moose winter and crucial winter ranges, grazing strategies would be designed so that combined utilization levels of woody riparian vegetation are between 30 and 50 percent of the current year's growth.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Livestock grazing would be managed to enhance riparian stream habitat within deer winter and crucial winter ranges.</p>	<p>Livestock grazing would be managed to enhance riparian stream habitat within deer crucial winter ranges.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Domestic sheep grazing would be prohibited on pronghorn antelope crucial winter ranges unless adverse effects can be avoided or mitigated based on site-specific analysis. Existing uses would be allowed pending site-specific analysis.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Domestic sheep grazing would be prohibited on pronghorn antelope winter and crucial winter ranges unless adverse effects can be avoided or mitigated based on site-specific analysis. Existing uses would be allowed pending site-specific analysis.</p>
	<p>Domestic horse grazing would be prohibited in or adjacent to the Fifteenmile wild horse herd area unless adverse effects can be avoided or mitigated based on site-specific analysis. Existing uses would be allowed pending site-specific analysis.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING MANAGEMENT (Continued)	Livestock grazing strategies on vegetative treatment areas would generally include: deferment of livestock use during two growing seasons following treatment with moderate use of dormant vegetation being allowed. (Also see the section on Vegetation Management--Desired Plant Communities. Vegetation treatments would be used to meet the plant objectives described in that section for each alternative.)	Livestock grazing strategies on vegetative treatment areas would generally include: rest the first year following treatments and deferment of livestock grazing through seed ripe on key species the second year.	Same as Proposed RMP.	Same as Proposed RMP.
	Surface-disturbing and disruptive activities associated with all types of range project construction and maintenance would be subject to appropriate mitigation measures as described in New Appendix 6.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
MINERALS MANAGEMENT	MANAGEMENT OBJECTIVE: Maintain or enhance opportunities for mineral exploration and development, while maintaining other resource values.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
<i>General</i>	MANAGEMENT ACTIONS: Surface-disturbing and disruptive activities associated with all types of minerals exploration and development and with geophysical exploration would be subject to appropriate mitigation measures as described in New Appendix 6.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">MINERALS MANAGEMENT (Continued)</p> <p align="center"><i>Leasable Minerals Coal</i></p>	<p>The coal screening process (as identified in 43 CFR 3420.1-4) has not been conducted in the planning area. Interest in the exploration for, or the leasing of, federal coal would be handled on an individual basis. If an application for a coal exploration license or federal coal lease is received, an appropriate land use and environmental analysis, including the coal screening process, would be conducted to determine whether the coal areas are acceptable for development and for leasing (43 CFR 3425). Existing land use plans would be amended as necessary.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p align="center"><i>Gas and Oil</i></p>	<p>The entire planning area (about 1,171,000 acres of BLM-administered mineral estate) would be open to oil and gas leasing.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>About 20,200 acres of BLM-administered mineral estate would be open to leasing with a "no surface occupancy" stipulation. (See Glossary.) The rest of the planning area would be subject to standard lease terms and conditions, and seasonal or other requirements. (See New Appendix 6.)</p>	<p>About 10,800 acres of BLM-administered mineral estate would be open to leasing with a "no surface occupancy" stipulation. The rest of the planning area would be subject to standard lease terms and conditions, and seasonal or other requirements.</p>	<p>About 360 acres of BLM-administered mineral estate would be open to leasing with a "no surface occupancy" stipulation. The rest of the planning area would be subject to standard lease terms and conditions and seasonal requirements.</p>	<p>About 144,400 acres of BLM-administered mineral estate would be open to leasing with a "no surface occupancy" stipulation. The rest of the planning area would be subject to standard lease terms and conditions, and seasonal or other requirements.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">MINERALS MANAGEMENT (Continued)</p> <p align="center"><i>Geothermal</i></p>	<p>Geothermal resources would be available for leasing in areas that are open to oil and gas leasing. Areas closed to oil and gas leasing would also be closed to geothermal leasing.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Surface-disturbing and disruptive activities associated with all types of geothermal exploration and development would be subject to appropriate mitigation measures as described in New Appendix 6.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p align="center"><i>Other Leasable Minerals</i></p>	<p>Leasing of minerals such as phosphates or sodium would be considered on a case-by-case basis.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p align="center"><i>Locatable Minerals</i></p>	<p>All coal and phosphate classifications would be terminated and the lands would be returned to operation of the 1872 Mining Law.</p>	<p>All coal and phosphate classifications would be retained and those lands would remain closed to the staking of mining claims for gypsum, bentonite, and other nonmetalliferous minerals.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Except for specific areas identified as closed, the planning area would be open to the staking of mining claims and operation of the mining laws for locatable minerals.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Plans of operations or notices of intent would be required for locatable minerals exploration and development consistent with regulations (43 CFR 3809).</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">MINERALS MANAGEMENT</p> <p><i>Locatable Minerals (Continued)</i></p>	<p>All locatable minerals actions would be reviewed to assure compliance with the BLM bonding policy for surface-disturbing activities.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>A locatable mineral withdrawal would be pursued on about 1,200 acres of public land to protect recreation and wildlife values on tracts of public land along the Bighorn River.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>A locatable mineral withdrawal would be pursued within 0.5 mile of the Legend Rock Petroglyph Site on about 630 acres of BLM-administered minerals, and in the immediate vicinity of rock art in the Meeteetse Draw area near Thermopolis.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>A locatable mineral withdrawal would be pursued in the Upper Owl Creek Proposed ACEC on about 16,300 acres of public land to protect scenic values, wildlife habitat, soil, and water.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
<p><i>Salable Minerals</i></p>	<p>Except for specific areas identified as closed, the planning area would be open to sale of mineral materials (for example, sand and gravel) and related exploration and development activities.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>No topsoil would be sold.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">MINERALS MANAGEMENT</p> <p><i>Salable Minerals</i> (Continued)</p>	<p>The Legend Rock Petroglyph Site and public lands within 0.5 mile would be closed to the sale of sand and gravel and other mineral materials.</p>	<p>Public lands within 3 miles of the Legend Rock Petroglyph Site would be closed to the sale of sand and gravel and other mineral materials.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Alternative A.</p>
	<p>The Meeteetse Draw rock art area would be closed to the sale of sand and gravel and other mineral materials.</p>	<p>Same as Proposed RMP.</p>	<p>Salable minerals materials could be developed on demand, subject to mitigation measures identified in site-specific environmental analyses.</p>	<p>Same as Proposed RMP.</p>
	<p>The sale of sand and gravel would be avoided on public lands adjoining the Greybull and Bighorn rivers.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Public lands adjoining the Greybull and Bighorn rivers would be closed to the sale of sand and gravel.</p>
<p><i>Geophysical</i></p>	<p>All parts of the planning area that are open to oil and gas leasing, exploration, and development would be open to geophysical exploration subject to appropriate mitigation requirements as described in New Appendix 6. On lands where surface-disturbing activities would be prohibited or on lands closed to ORV use (see Glossary), casual use geophysical exploration would be allowed. (Casual use for geophysical exploration is described in 43 CFR 3150.05(b).)</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
OFF-ROAD VEHICLE MANAGEMENT	MANAGEMENT OBJECTIVE: Maintain or enhance opportunities for ORV use while avoiding adverse effects of vehicle travel on other resource values.	Same as Proposed RMP.	Maintain or enhance opportunities for motorized recreation.	Same as Proposed RMP.
	MANAGEMENT ACTIONS: The Duck Swamp-Bridger Trail interpretive site and the rifle range on public land west of Worland would be designated as closed to ORV use. (See Map 8.)	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
51	Public lands near Sheep Mountain, Red Butte, Bobcat Draw Badlands, and the upper part of the South Fork of Owl Creek (about 52,460 acres) would be managed as closed to ORV use until activity planning specifically addresses ORV use in these wilderness study areas.	Public lands near Sheep Mountain, Red Butte, Bobcat Draw Badlands, and the upper part of the South Fork of Owl Creek (about 52,460 acres) would be closed to ORV use.	Same as Proposed RMP.	Same as Proposed RMP.
	ORV use would be limited to designated roads and trails and limited seasonally on about 68,000 acres of public land in the Absaroka Mountain foothills.	Same as Proposed RMP.	ORV use would be limited to designated roads and trails, and limited seasonally on about 9,500 acres of public land within part of the Absaroka Mountain foothills along the upper portion of Grass Creek.	Same as Proposed RMP.
	ORV use would be limited to existing roads and trails on about 208,600 acres of public land in the Badlands Proposed Special Recreation Management Area (SRMA).	No similar action.	No similar action.	ORV use would be limited to designated roads and trails on about 208,600 acres of public land in the Badlands Proposed SRMA.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
OFF-ROAD VEHICLE MANAGEMENT (Continued)	ORV use would be limited to designated roads and trails on about 9,000 acres of public land in the Red Canyon Creek area south of Thermopolis.	No similar action.	No similar action.	Same as Proposed RMP.
	ORV use in the Meeteetse Draw Rock Art area would be limited to designated roads and trails on about 6,800 acres of public land.	No similar action.	No similar action.	Same as Proposed RMP.
	An open area for ORV "play" would be established west of Worland on about 900 acres.	Same as Proposed RMP.	ORV open areas would be established west of Worland (900 acres) and near the town of Basin (2,780 acres).	Same as Proposed RMP.
	Unless otherwise specified, ORV use on BLM-administered public land would be limited to existing roads and trails.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	On areas designated as limited to existing roads and trails, the performance of necessary tasks requiring off-road use of a vehicle would be allowed provided resource damage does not occur. Examples of necessary tasks include constructing or repairing authorized range improvements.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
OFF-ROAD VEHICLE MANAGEMENT (Continued)	On areas designated as closed or limited to designated roads and trails, the off-road use of a vehicle on public lands would be prohibited unless the use were otherwise authorized by a permit or license. Signs would be posted and maps or brochures would be published to explain this requirement.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Driving would be prohibited on wet soils and on slopes greater than 25 percent, if unnecessary damage to vegetation, soils, or water quality would result.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Over-the-snow vehicles would be subject to the same requirements and limitations as all other ORVs until activity planning specifically addresses their use.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
RECREATION MANAGEMENT	MANAGEMENT OBJECTIVES: Enhance opportunities for primitive recreation in some areas while increasing visitor services in other areas to meet needs for more developed forms of recreation. The BLM would attempt to maintain the current opportunities (on about 62,270 acres) for "semiprimitive nonmotorized" recreation. (See Glossary.)	Maintain opportunities for primitive recreation while increasing visitor services in some areas to meet needs for more developed forms of recreation.	Increase visitor services to meet the needs for more developed forms of recreation.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">RECREATION MANAGEMENT (Continued)</p>	<p>MANAGEMENT ACTIONS: Special Recreation Management areas (SRMAs) would be designated in the Absaroka Mountain foothills, Badlands, and Bighorn River areas. All other lands would be managed in an Extensive Recreation Management Area. Recreation management areas are shown on Map 9.</p>	<p>No SRMAs would be designated. All planning area lands would be managed in an Extensive Recreation Management Area.</p>	<p>SRMAs would be designated in the Badlands and Bighorn River areas. All other lands would be managed in an Extensive Recreation Management Area.</p>	<p>SRMAs would be designated in the Absaroka Mountain foothills, Badlands, Bighorn River, and Red Canyon Creek areas. All other lands would be managed in an Extensive Recreation Management Area.</p>
	<p>Recreational uses of BLM-administered lands along the Bighorn River for fishing, hunting, and float boating would be managed under the Bighorn River Habitat and Recreation Area Management Plan. Emphasis would be placed on acquisition of access to public lands on the Bighorn and Greybull rivers to enhance recreational opportunities and wildlife management.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Roadside geologic interpretive areas would be established near the Gooseberry Badlands, Red Canyon Creek, along Wyoming Highway 120, and in other areas.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The existing Duck Swamp--Bridger Trail interpretive site would be maintained.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The Legend Rock Petroglyph Site would be managed for public education in cooperation with the state of Wyoming.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
RECREATION MANAGEMENT (Continued)	A cooperative management agreement would be pursued with private landowners to enhance and conserve the Legend Rock Petroglyph Site.	A land exchange would be pursued with private landowners to enhance and conserve the Legend Rock Petroglyph Site.	No similar action.	Same as Proposed RMP.
	Portions of the town of Gebo and adjacent coal mining areas on public land would be managed for preservation and interpretation of cultural and historic values. Management could include actions like development of an interpretive road loop or roadside turnout.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Other cultural resource interpretive sites would be developed, making use of scenic overlooks, signs, and walking trails. Sites would include rock art and historic trails such as the Thermopolis to Meeteetse Trail, the Fort Washakie to Red Lodge Trail, the Mexican Pass Trail, and the Jim Bridger Trail.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	One or more scenic interpretive road loops would be developed in the Badlands Proposed SRMA. These could involve the Fifteenmile Creek and Dorsey Creek roads and the Murphy Draw Road with overlooks at Painted Canyon and Bobcat Draw.	No similar action.	Same as Proposed RMP.	No similar action.
	The BLM would enhance opportunities for the public to view wild horses in the Fifteenmile herd area.	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
RECREATION MANAGEMENT (Continued)	Day use facilities would be established at Wardel and Harrington reservoirs. Camping sites would also be provided if demand warrants.	Same as Proposed RMP.	Same as Proposed RMP.	No similar action.
	Trailheads would be developed for foot and horse travel in the Absaroka Mountain foothills. Potential locations would include the Blue Creek Trail and sites along the North and South Forks of Owl Creek and Rock Creek.	No similar action.	Same as Proposed RMP.	No similar action.
	The BLM would pursue trailheads in the Red Canyon Creek area consistent with an overall objective to emphasize primitive recreation.	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.
	Development of a campground would be pursued near Wyoming 120 and Gooseberry Creek.	No similar action.	Same as Proposed RMP.	No similar action.
	Surface-disturbing activities, except those related to recreation development, would be prohibited at trailheads, day use areas, and other recreational sites.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Recreational sites, recreation facility development, and recreational access would be managed to maintain or improve riparian habitat.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
RECREATION MANAGEMENT (Continued)	Posting information and directional signs would be necessary in some areas. Signs would be used to promote visitor use consistent with recreation and other resource management objectives.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Surface-disturbing and disruptive activities associated with the construction and use of roads, campgrounds, interpretive sites, and other recreational facilities would be subject to appropriate mitigation measures as described in New Appendix 6.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
VEGETATION MANAGEMENT	MANAGEMENT OBJECTIVE: Maintain or improve the diversity of plant communities to support timber production, livestock and wild horse forage needs, wildlife habitat, watershed protection, and acceptable visual resources; and reduce the spread of noxious weeds.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
General	MANAGEMENT ACTIONS: Surface-disturbing and disruptive activities associated with all types of vegetation management would be subject to appropriate mitigation measures as described in New Appendix 6.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">VEGETATION MANAGEMENT Desired Plant Community (DPC) Objectives</p> <p align="center"><i>General</i></p>	<p>The following desired plant community objectives would be applied on an individual basis in consultation with land-use proponents and other affected or interested citizens. Actions required to achieve the desired plant community objectives would normally be implemented through allotment management and other site-specific activity plans, and through reclamation plans for activities like pipeline construction, oil and gas exploration, and bentonite mining.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p>Desired Plant Community (DPC) Objectives</p> <p align="center"><i>Standard Objective</i></p>	<p>On at least 600,000 acres of public lands in the planning area (not containing important wildlife habitat or commercial forestlands) the following desired plant community (DPC) objective would be used for emphasizing watershed protection and livestock grazing: (See Chapter 3 for sample descriptions of the plant communities cited below. Desired plant communities are described according to the percentages of trees, shrubs, grasses, grasslikes, and forbs within each community. Descriptions are by weight</p> <p align="center"><i>(Continued on next page)</i></p>	<p>Same as Proposed RMP.</p> <p align="center"><i>(Continued)</i></p>	<p>Same as Proposed RMP.</p> <p align="center"><i>(Continued)</i></p>	<p>Same as Proposed RMP.</p> <p align="center"><i>(Continued)</i></p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">Desired Plant Community (DPC) Objectives</p> <p align="center"><i>Standard Objective (Continued)</i></p>	<p align="center"><i>(Continued from previous page)</i></p> <p>estimate unless canopy cover percent is specified. Barren, alpine, and high gradient/rocky riparian communities are not discussed.)</p>	<p align="center"><i>(Continued)</i></p> <p>Same as Proposed RMP.</p>	<p align="center"><i>(Continued)</i></p> <p>Same as Proposed RMP.</p>	<p align="center"><i>(Continued)</i></p> <p>Same as Proposed RMP.</p>
	<p>Salt Desert Shrub: shrubs 30 to 60 percent, grasses 30 to 60 percent, forbs 5 to 15 percent, with shrubs increasing on high saline sites.</p>			
	<p>Salt Bottom: shrubs 20 to 40 percent, grasses 50 to 70 percent, forbs 5 to 15 percent.</p>			
	<p>Basin Grassland/Shrub: shrubs 10 to 20 percent, grasses 60 to 80 percent, forbs 10 to 20 percent.</p>			
	<p>Foothills-Mountain Grassland/Shrub: shrubs 10 to 30 percent, grasses 60 to 80 percent, forbs 10 to 20 percent.</p>			
	<p>Low Gradient/Alluvial Riparian Communities: <i>Canopy Composition:</i> shrubs 0 to 15 percent, grasses and grasslikes 70 to 90 percent, forbs 5 to 15 percent.</p>			

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>Desired Plant Community (DPC) Objectives</p> <p><i>Standard Objective (Continued)</i></p>	<p><i>(Continued from previous page)</i></p> <p>Intermediate Riparian Communities: <i>Canopy Composition:</i> trees and shrubs 10 to 30 percent, grasses and grasslikes 50 to 70 percent, forbs 10 to 30 percent.</p>	<p><i>(Continued)</i></p>	<p><i>(Continued)</i></p>	<p><i>(Continued)</i></p>
	<p>Desert Cottonwood Riparian Communities: <i>Canopy Composition:</i> trees and shrubs 10 to 30 percent, grasses and grasslikes 50 to 70 percent, forbs 10 to 30 percent.</p>			
	<p>Woodlands: Same as Foothills-Mountain Grassland/Shrub on areas where invasion of limber pine and juniper has occurred on deeper soils. There is no specific objective where woodlands occur on very shallow soils.</p>			
	<p>Mixed Conifer/Deciduous Forest Communities: Promote overall species and structural diversity. Promote aspen growth in some areas, consistent with site-specific objectives for resource management, including commercial forest production.</p>			

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>DPC Objectives for Forestlands</p>	<p>General Objective: Maintain and enhance the health, productivity, and biological diversity of forest and woodland ecosystems. A balance of natural resource benefits and uses would be provided, including opportunities for commercial forest production. The management of forest and woodland resources would be consistent with ecosystem management principles.</p> <p>Desired Plant Community Objective: Manage 80 percent of forestlands for hiding and thermal cover (50 percent of these stands would have thermal cover characteristics). Ten percent of the forestlands would be managed for old growth.</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>	<p>General Objective: Maintain and enhance the health and productivity of forest ecosystems with an emphasis on commercial forest products.</p> <p>Desired Plant Community Objective: Manage 60 percent of this community for hiding and thermal cover (50 percent of these stands would have thermal cover characteristics). Five to seven percent of the forestlands would be managed for old growth.</p>	<p>General Objective: Maintain and enhance the health and biological diversity of forest and woodland ecosystems with an emphasis on noncommercial resources.</p> <p>Desired Plant Community Objective: Manage 85 percent of this community for hiding and thermal cover (50 percent of these stands would have thermal cover characteristics). Twenty percent of the forestlands would be managed for old growth.</p>
<p>DPC Objectives for Bighorn Sheep Habitat</p> <p><i>Vegetation Requirements: Bighorn sheep require more grasses for winter forage and more forbs for early spring grazing.</i></p>	<p>General Objective: Manage habitat for bighorn sheep winter and spring requirements.</p> <p>Desired Plant Community Objective: <i>Foothills-Mountain Grassland/Shrub:</i> shrubs 10 to 30 percent, grasses 50 to 70 percent, forbs 10 to 30 percent.</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>	<p>No similar objective. <i>(See standard DPC objective)</i></p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>DPC Objectives for Elk Winter Range</p> <p><i>Vegetation Requirements: Wintering elk require a taller standing crop of grass to obtain forage in areas of deep snow.</i></p>	<p>General Objective: Manage for elk winter requirements on crucial winter ranges.</p> <p>Desired Plant Community Objective: <i>Foothills-Mountain Grassland/Shrub</i>: shrubs 10 to 30 percent, grasses 50 to 70 percent, forbs 10 to 30 percent <i>Woodlands</i>: On a site-specific basis, maintain or increase mature stands that provide hiding cover. <i>Mixed Conifer/Deciduous</i>: Increase acreage of aspen stands where feasible.</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: <i>Foothills-Mountain Grassland/Shrub</i>: See standard DPC. <i>Woodlands</i>: On a site-specific basis, maintain the acreage of mature stands that provide hiding cover. <i>Mixed Conifer/Deciduous</i>: Increase acreage of aspen stands where this does not conflict with timber production.</p>	<p>General Objective: Manage for elk winter requirements on winter and crucial winter ranges.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>
<p>DPC Objectives for Elk Birthing Habitat</p> <p><i>Vegetation Requirements: Lactating cow elk require a higher percentage of forbs in the late spring.</i></p>	<p>General Objective: Manage elk birthing habitat for reproductive success.</p> <p>Desired Plant Community Objective: <i>Foothills-Mountain Grassland/Shrub</i>: shrubs 10 to 30 percent, grasses 50 to 70 percent, forbs 10 to 30 percent <i>Woodlands</i>: On a site-specific basis, maintain or increase mature stands that provide hiding cover. <i>Mixed Conifer/Deciduous</i>: Increase acreage of aspen stands where feasible.</p>	<p>No similar objective. (See standard DPC objective.)</p>	<p>No similar objective. (See standard DPC objective.)</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>DPC Objectives for Moose Winter Range</p> <p><i>Vegetation Requirements: During winter and early spring, moose rely on woody vegetation that extends above the snow. Important nutrition is provided for lactating cow moose.</i></p>	<p>General Objective: Manage for moose winter requirements on crucial winter ranges.</p> <p>Desired Plant Community Objective: <i>Mixed Conifer/Deciduous and Forest Communities:</i> Increase acreage of aspen stands where feasible. <i>All Riparian Communities:</i> Maximize shrub and deciduous tree production.</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP, however, forest stands with merchantable timber would be managed for conifer production.</p>	<p>General Objective: Manage for moose winter requirements on winter and crucial winter ranges.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>
<p>DPC Objectives for Moose Birthing Habitat</p> <p><i>Vegetation Requirements: Same as above.</i></p>	<p>General Objective: Manage moose birthing habitat for reproductive success.</p> <p>Desired Plant Community Objective: <i>Mixed Conifer/Deciduous Communities:</i> Increase acreage of aspen stands where feasible. <i>Riparian Communities:</i> Maximize shrub and deciduous tree production.</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>DPC Objectives for Mule Deer Winter Range</p> <p><i>Vegetation Requirements: Mule deer rely on the high nutritional value of shrubs during the winter. With the general lack of shrub diversity in the planning area, the shrubs in riparian areas are very important for winter survival.</i></p>	<p>General Objective: Manage for mule deer winter requirements on crucial winter ranges (outside the wild horse herd area where the standard DPC would be used).</p> <p>Desired Plant Community Objective: <i>Basin Grassland/Shrub and Foothills-Mountain Grassland/Shrub</i>: shrubs 20 to 40 percent, grasses 40 to 60 percent, forbs 10 to 30 percent. Canopy openings should be less than 60 acres and shrub canopy cover should be 15 to 30 percent. <i>All Riparian Communities</i>: Enhance shrub and deciduous tree production.</p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>	<p>No similar objective. (See <i>standard DPC objective</i>.)</p>	<p>General Objective: Manage for mule deer requirements on winter, winter/yearlong, and crucial winter ranges (outside the wild horse herd area).</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>
<p>DPC Objectives for Pronghorn Antelope Winter Range</p> <p><i>Vegetation Requirements: During the winter, pronghorns require shrubs for important nutritional balance and good reproduction. However, if the sagebrush is too high, the pronghorns' ability to see predators and get through the brush is impaired.</i></p>	<p>General Objective: Manage for pronghorn antelope winter requirements on crucial winter ranges (outside the wild horse herd area).</p> <p align="center"><i>(Continued on next page)</i></p>	<p>General Objective: Same as Proposed RMP.</p> <p align="center"><i>(Continued)</i></p>	<p>No similar objective. (See <i>standard DPC objective</i>.)</p> <p align="center"><i>(Continued)</i></p>	<p>General Objective: Manage for pronghorn antelope winter requirements on winter and crucial winter ranges.</p> <p align="center"><i>(Continued)</i></p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>DPC Objectives for Pronghorn Antelope Winter Range (Continued)</p> <p><i>Vegetation Requirements: During the winter, pronghorns require shrubs for important nutritional balance and good reproduction. However, if the sagebrush is too high, the pronghorns' ability to see predators and get through the brush is impaired.</i></p>	<p><i>(Continued from previous page)</i></p> <p>Desired Plant Community Objective: <i>Basin Grassland/Shrub and Foothills-Mountain Grassland/Shrub:</i> shrubs 20 to 40 percent, grasses 40 to 60 percent, forbs 10 to 30 percent. Canopy openings should be less than 60 acres, sagebrush over 30 inches tall is undesirable, and shrub canopy cover should be 15 to 30 percent.</p>	<p><i>(Continued)</i></p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>	<p><i>(Continued)</i></p> <p>No similar objective. <i>(See standard DPC objective.)</i></p>	<p><i>(Continued)</i></p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>
<p>DPC Objectives for Sage Grouse Nesting Habitat</p> <p><i>Vegetation Requirements: Sagebrush within two miles of sage grouse leks needs to cover 20 to 40 percent of the ground. A good forb understory provides nutritious spring feed for the young.</i></p>	<p>General Objective: Manage sage grouse habitat for nesting success (outside the wild horse herd area).</p> <p>Desired Plant Community Objective: <i>Basin Grassland/Shrub and Foothills-Mountain Grassland/Shrub:</i> shrubs 20 to 40 percent, grasses 40 to 60 percent, forbs 10 to 30 percent. Ideal canopy cover of sagebrush is 20 percent. Canopy openings should be less than 100</p> <p><i>(Continued on next page)</i></p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p> <p><i>(Continued)</i></p>	<p>No similar objective.</p> <p><i>(See standard DPC objective.)</i></p> <p><i>(Continued)</i></p>	<p>General Objective: Same as Proposed RMP.</p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p> <p><i>(Continued)</i></p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>DPC Objectives for Sage Grouse Nesting Habitat (Continued)</p> <p><i>Vegetation Requirements: Sagebrush within two miles of sage grouse leks needs to cover 20 to 40 percent of the ground. A good forb understory provides nutritious spring feed for the young.</i></p>	<p><i>(Continued from previous page)</i></p> <p>feet wide. <i>Low Gradient Riparian: Canopy Composition:</i> shrubs 0 to 15 percent, grasses and grasslikes 50 to 70 percent, and forbs 20 to 40 percent. <i>Intermediate Gradient Riparian: Canopy Composition:</i> shrubs 30 to 50 percent, grass and grasslike 20 to 40 percent, and forbs 20 to 40 percent.</p>	<p><i>(Continued)</i></p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>	<p><i>(Continued)</i></p> <p><i>(See standard DPC objective.)</i></p>	<p><i>(Continued)</i></p> <p>Desired Plant Community Objective: Same as Proposed RMP.</p>
<p>Noxious Weeds</p>	<p>Noxious weeds and other undesirable vegetation would be controlled in conjunction with counties, the USDA, Animal and Plant Health Inspection Service (APHIS), and other agencies and affected interests, consistent with the <i>Wyoming Record of Decision for the Final EIS Addressing Vegetation Treatment on BLM Lands in the 13 Western States</i> (BLM 1991).</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Control of noxious weeds may include manual, mechanical, biological, or chemical methods. If herbicides are proposed for use, those with minimum toxicity to wildlife and fish would be selected. As appropriate, buffer zones would be provided along streams, rivers, lakes and riparian areas, including riparian areas along ephemeral and intermittent streams.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>Noxious Weeds (Continued)</p>	<p>Treatments would avoid bird nesting seasons and other times when loss of cover or disturbance by equipment would be detrimental to wildlife. Projects that may affect threatened or endangered plants or animals would be postponed or modified to protect the presence of these species. In such cases, the BLM would consult with the FWS as required by the Endangered Species Act.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p>VISUAL RESOURCE MANAGEMENT</p>	<p>MANAGEMENT OBJECTIVE: Maintain or improve scenic values throughout the planning area.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>MANAGEMENT ACTIONS: Visual resources would be managed in accordance with objectives for VRM classes that have been assigned to the planning area. (See Glossary.) Map 10 shows the VRM management areas.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Visual resources would be considered before authorizing land uses that may affect them. VRM requirements are applied on public lands or to BLM-approved mineral development on split-estate lands.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
VISUAL RESOURCE MANAGEMENT (Continued)	Facilities or structures such as power lines, oil wells, and storage tanks would be screened, painted, and otherwise designed to blend with the surrounding landscape.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Facilities or structures proposed in or near wilderness study areas would be designed so as not to impair wilderness suitability.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	The construction or modification of rights-of-way along Wyoming highways 120 and 431 would be evaluated individually to assure that adverse effects on scenic values are not increased.	To protect scenic values along major travel routes to Yellowstone National Park, the placement of utility rights-of-way would be avoided along Wyoming highways 120 and 431. When rights-of-way could not be avoided in these areas, they would be built to intensively mitigate adverse effects on scenic values.	Same as Proposed RMP.	Same as Alternative A.
WATERSHED MANAGEMENT	MANAGEMENT OBJECTIVES: Maintain or improve water quality to support state of Wyoming designated uses, and comply with state water quality standards. Reduce erosion by increasing ground cover, including vegetative litter, and maintain standing vegetation after grazing.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
WATERSHED MANAGEMENT (Continued)	Improve watershed condition on about 274,000 acres of public land in the Fifteenmile Creek watershed, and reduce the overall level of sediment delivery to the Bighorn River from this area.	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.
	Reverse declining trend and stabilize or improve upland vegetation on about 15,000 acres to protect watershed and other resource values.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Improve watershed condition elsewhere in the planning area, especially on uplands in poor or fair ecological condition.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	MANAGEMENT ACTIONS: The protection of watershed resources would be considered in the analysis of BLM and industry-initiated projects. As needed, watershed conservation practices (New Appendix 6) and state of Wyoming Best Management Practices would be applied.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Water wells and watershed projects that are no longer functioning or serving their original purposes would be reclaimed and abandoned as appropriate.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
WATERSHED MANAGEMENT (Continued)	The BLM may acquire mineral exploratory wells and drill holes that produce water. These acquired wells would be developed for multiple-use purposes if they meet criteria for water well conversion.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	The BLM would allow the surface discharge of produced water, if it meets state of Wyoming water quality standards.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	To obtain valid water rights, the BLM would file for the rights to water-related projects on public lands with the Wyoming State Engineer's office.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	To protect watershed values, roads and trails would be closed and reclaimed if they are heavily eroded or washed out, or if access roads in better condition are available.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	To protect watershed values, driving would be prohibited on wet soils and on slopes greater than 25 percent, if unnecessary damage to vegetation, soils, or water quality would result.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WATERSHED MANAGEMENT (Continued)</p>	<p>In accordance with the 208 <i>Statewide Water Quality Management Plan for Wyoming</i>, the BLM would cooperate with DEQ and EPA in the application of watershed conservation practices and state of Wyoming Best Management Practices to reduce sediment-caused water pollution in the Fifteenmile Creek Watershed.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>To reduce the amount of nonpoint pollution entering waterways, pollution prevention plans would be developed for actions that qualify under the "Wyoming Storm Water Discharge Program."</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Riparian area condition would be monitored and evaluated as part of site-specific activity or implementation plans. Permittees would be consulted and participate in collecting riparian information to the extent possible. Management of riparian areas that are not properly functioning would emphasize strategies identified in BLM technical references TR 1737-4 and TR 1737-6.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>About 400 acres would be planted with native grasses to improve the condition of the Fifteenmile Creek Watershed. Livestock grazing would be deferred in these areas until the desired vegetation is established.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
WATERSHED MANAGEMENT (Continued)	Surface-disturbing and disruptive activities associated with watershed management would be subject to appropriate mitigation measures as described in New Appendix 6.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
WILD HORSE MANAGEMENT	MANAGEMENT OBJECTIVE: In the Fifteenmile Wild Horse Herd Management Area (herd area), maintain free-roaming wild horses in a thriving ecological balance.	Same as Proposed RMP.	Manage the herd area for watershed and wildlife resources and livestock grazing use.	In an expanded herd management area, maintain free-roaming wild horses in a thriving ecological balance.
	MANAGEMENT ACTIONS: The herd area (Map 11) would keep its current size of about 83,130 acres.	Same as Proposed RMP.	Same as Proposed RMP.	The herd area would be increased by about 31,400 acres of public land north of the original herd area.
	The herd area would be managed for an initial herd size of at least 70 and no greater than 160 mature animals. To the extent possible, horses would be managed at the lower end of this range during periods of drought.	Same as Proposed RMP.	No wild horses would be maintained in the herd area. Horses would be placed elsewhere through adoption or transfer to other herd areas or phased out through fertility control.	Same as Proposed RMP.
	Long-term wild horse numbers would be established through monitoring, multiple-use allocations, and revision of the herd area activity plan.	Same as Proposed RMP.	No similar action.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">WILD HORSE MANAGEMENT (Continued)</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>About 0.5 mile of "let-down fence" would be installed between the original and the expanded herd areas to control the distribution of cattle and allow movement by wild horses.</p>
	<p>The Fifteenmile Wild Horse Herd Gathering Plan would be updated as necessary and implemented for roundups. Emphasis would be placed on gathering horses that wander outside the herd area or onto privately-owned lands.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Cooperative agreements or land exchanges to improve wild horse management would be pursued on about 12,000 acres of privately-owned land.</p>	<p>Land exchanges to improve wild horse management would be pursued on about 12,000 acres of privately-owned land.</p>	<p>No similar action.</p>	<p>Cooperative agreements or land exchanges to improve wild horse management would be pursued on about 16,000 acres of privately-owned land.</p>
	<p>Livestock grazing in the herd area would be limited to domestic sheep use during November through March, unless an environmental analysis indicates that another kind or time of use is appropriate.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WILD HORSE MANAGEMENT (Continued)</p>	<p>The standard DPC objective would be used in the herd management area. (See section on Vegetation Management.)</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>In the herd management area, grazing strategies would be designed to allow a combined forage utilization of 25 percent of the current year's growth, in Salt Desert Shrub and Salt Bottom plant communities that are grazed during the growing season. <i>Utilization would be measured and evaluated over time in the context of other monitoring information. Although utilization levels might vary from year-to-year, levels consistently exceeding those described would not be expected to meet watershed and other multiple-use requirements. (Also see Revised Appendix 3.)</i></p>	<p>In the herd management area, grazing strategies would be designed to allow a combined forage utilization of 30 to 50 percent of the current year's growth, in Salt Desert Shrub and Salt Bottom plant communities that are grazed during the growing season.</p>	<p>In the herd management area, grazing strategies would be designed to allow a combined forage utilization of 25 to 35 percent of the current year's growth, in Salt Desert Shrub and Salt Bottom plant communities that are grazed during the growing season.</p>	<p>Same as Proposed RMP.</p>
	<p>In the herd management area, grazing strategies would be designed to allow a combined forage utilization of 30 percent of the current year's growth in other plant communities that are grazed during the growing season.</p>	<p>In the herd management area, grazing strategies would be designed to allow a combined forage utilization of 30 to 50 percent of the current year's growth in other plant communities that are grazed during the growing season.</p>	<p>Same as Alternative A.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">WILD HORSE MANAGEMENT (Continued)</p>	<p>In the herd management area, combined forage utilization up to 40 percent of the current year's growth would be allowed in all plant communities that are grazed when plants are dormant.</p>	<p>In the herd management area, combined forage utilization up to 60 percent of the current year's growth would be allowed in all plant communities that are grazed when plants are dormant.</p>	<p>Same as Alternative A.</p>	<p>Same as Proposed RMP.</p>
	<p>Wild horses would be allocated 2,300 AUMs of forage annually.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Total forage use by domestic livestock in the herd area would not be allowed to exceed 3,370 AUMs per year.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Development of additional water sources in the herd area would be pursued to improve horse distribution and manage forage utilization.</p>	<p>Same as Proposed RMP.</p>	<p>Development of additional water sources would be pursued to benefit livestock and wildlife needs.</p>	<p>Same as Proposed RMP.</p>
	<p>Opportunities for the public to view wild horses would be enhanced in the Fifteenmile herd area.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Surface-disturbing and disruptive activities associated with wild horse management would be subject to appropriate mitigation measures as described in New Appendix 6.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
WILDLIFE AND FISH HABITAT MANAGEMENT	MANAGEMENT OBJECTIVE: Maintain or enhance riparian and upland habitat for wildlife and fish, promote species diversity, and allow the expansion of wildlife and fish where appropriate.	Maintain or enhance riparian and upland habitat for wildlife and fish, maintain or enhance habitat for wildlife populations, and promote species diversity.	Maintain existing habitat for wildlife and fish.	Same as Proposed RMP.
General	MANAGEMENT ACTIONS: The Absaroka Front Habitat Management Plan, the Bighorn River Habitat Management Plan, the Stream Habitat Management Plan, and the Reservoir Habitat Management Plan would be revised as necessary and implemented.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Annual review and environmental analysis of insect infestations would be conducted with APHIS and control measures would be performed as needed.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Surface-disturbing and disruptive activities associated with wildlife and fish management would be subject to appropriate mitigation measures as described in New Appendix 6.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WILDLIFE AND FISH HABITAT MANAGEMENT (Continued)</p> <p>Wildlife Habitat</p>	<p>To the extent possible, suitable habitat and forage would be provided to support wildlife populations defined in the 1989 WGFD Strategic Plan objectives. Requests by WGFD to change the objectives would be considered, based on habitat capability and availability.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The BLM would participate with the FWS in the evaluation and designation of critical habitat for threatened or endangered species on BLM-administered lands. If proposed surface-disturbing or disruptive activities could affect these species, the BLM would consult with the FWS as required by the Endangered Species Act.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The BLM would continue to work with the USDA Forest Service (FS), FWS, WGFD, and the Wind River Indian Reservation tribes in developing a healthy bighorn sheep herd in the Absaroka and Owl Creek mountains.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WILDLIFE AND FISH HABITAT MANAGEMENT</p> <p>Wildlife Habitat (Continued)</p>	<p>Nest sites, roosts, cottonwood trees, and other potential critical habitats related to hunting and concentration areas for bald eagles would be protected, especially along the Bighorn and Greybull rivers. As one measure to protect these habitats, firewood harvesting would be prohibited on public lands in these areas.</p>	<p>Same as Proposed RMP.</p>	<p>Bald eagle potential critical habitats would be protected, although the harvesting of dead and down wood would be allowed along the Bighorn and Greybull rivers.</p>	<p>Same as Proposed RMP.</p>
	<p>Fences on public land that are hindering natural movement of wildlife would be modified. Fence modifications would conform to standards outlined in BLM Manual Sections 1741 and 9170. Priority would be given to fences that are restricting the greater numbers of wildlife in, or near, birthing areas or crucial winter areas. Affected parties would be consulted before fence modification to ensure a mutual understanding of the need for the change and for establishing acceptable fence standards.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Fences would be constructed with the objective of maintaining or improving wildlife mobility in important habitat areas.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WILDLIFE AND FISH HABITAT MANAGEMENT</p> <p>Wildlife Habitat (Continued)</p>	<p>Animal control measures directed at coyotes and other predators would be evaluated by BLM, APHIS, and affected public land users, before implementation. Predator control would be consistent with the Worland District Animal Damage Control Plan, which is reviewed yearly.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Emphasis would be placed on acquiring access to public lands on the Bighorn and Greybull rivers to enhance recreational opportunities and wildlife management.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Exchanges would be pursued to improve management of important seasonal wildlife habitat areas in the upper portions of Owl, Cottonwood, Gooseberry, and Grass creeks.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Exchanges would be pursued along Gooseberry Creek, the upper portions of Cottonwood and Grass creeks, the Bighorn and Greybull rivers, and on lands where other riparian areas occur. The purpose of these exchanges would be to block up public land, enhance public access, and improve management.</p>	<p>Same as Proposed RMP.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WILDLIFE AND FISH HABITAT MANAGEMENT</p> <p>Wildlife Habitat (Continued)</p>	<p>Waterfowl nesting and rearing habitat would be improved on suitable reservoirs.</p>	<p>Duck nesting and rearing habitat would be improved on about 100 reservoirs to regularly produce ducklings during normal and wet years. Goose production habitat would be expanded by the modification of at least five suitable reservoirs to meet nesting and rearing needs.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>The BLM would encourage the construction of islands in reservoirs, encourage the growth of riparian vegetation by plantings and/or grazing management, and install nesting structures to manage for waterfowl production and security areas near reservoirs.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p>Fish Habitat</p>	<p>The BLM would cooperate with the WGFD and local irrigators in negotiations directed at establishing minimum pool elevations for reservoirs having fisheries potential.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Reservoirs and riparian areas would be maintained to improve or enhance potential fisheries. The BLM would encourage the design of reservoirs to enhance fisheries where potential exists.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WILDLIFE AND FISH HABITAT MANAGEMENT</p> <p>Fish Habitat (Continued)</p>	<p>Consistent with the overall management objective to maintain or enhance fisheries habitat, existing game and nongame fish habitat would be protected and BLM would consider the introduction of fish where habitat potential exists. Approximately 28 miles of stream habitat would be managed for game fish; 60 additional miles would be managed for nongame fish.</p>	<p>Same as Proposed RMP.</p>	<p>Consistent with the overall management objective to maintain existing fisheries resources, game fish habitat on about 23 miles of stream and nongame fish habitat on about 31 miles would be protected.</p>	<p>Same as Proposed RMP.</p>
<p>AREAS OF CRITICAL ENVIRONMENTAL CONCERN</p> <p>Proposed ACEC</p> <p><i>Upper Owl Creek Area</i></p>	<p>An Area of Critical Environmental Concern (ACEC) would be designated in the upper Owl Creek area on about 16,300 acres of public land. (In addition to public lands described in the draft EIS, the designation would include public lands in the canyon of the upper South Fork of Owl Creek.) The special management designation would not apply to state or private lands. (See Map 12.)</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Management would include limiting or prohibiting surface-disturbing activities and closing the area to the staking and development of mining claims to protect fragile soils, alpine tundra, important wildlife habitat, and scenic values. (Also see New Appendix 6.)</p>	<p>Management would include limiting or prohibiting surface-disturbing activities.</p>	<p>Management would include some limits on surface-disturbing activities.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 2
Comparison of Alternatives**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>AREAS OF CRITICAL ENVIRONMENTAL CONCERN</p> <p>Proposed ACEC</p> <p><i>Upper Owl Creek Area (Continued)</i></p>	<p>A detailed activity plan would be prepared for the Upper Owl Creek Proposed ACEC if BLM receives a proposal for any major surface-disturbing activity. This activity plan would include assistance from the development proponent and other affected and interested citizens to determine whether some surface occupancy could be allowed in the area. Mitigation measures considered in the analysis would include "access corridors" and "cluster development."</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
	<p>Based on an ACEC designation, a "plan of operations" would be required for all mining claim-related activities other than casual use in the upper Owl Creek area.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Same as Proposed RMP.</p>
<p>ACECs Previously Considered (in the draft EIS)</p> <p><i>Fifteenmile Creek Watershed</i></p>	<p>No ACEC would be designated in the Fifteenmile Creek Watershed.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>An ACEC would be designated in the Fifteenmile Creek Watershed on about 274,300 acres of public land. The special management designation would not apply to state or private lands.</p>







**Revised Table 2
Comparison of Alternatives**

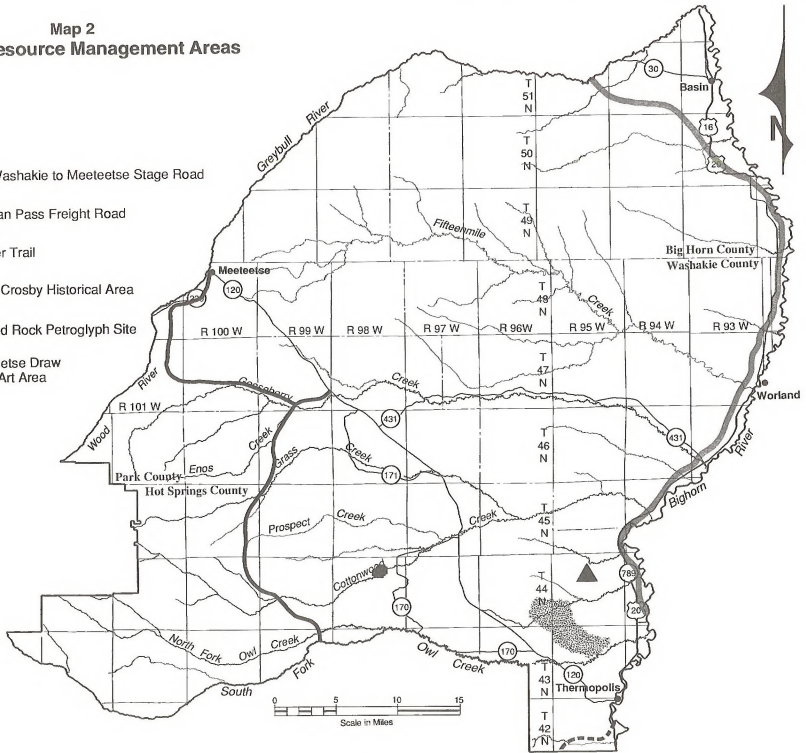
Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>AREAS OF CRITICAL ENVIRONMENTAL CONCERN</p> <p>ACECs Previously Considered (in the draft EIS)</p> <p><i>Fifteenmile Creek Watershed (Continued)</i></p>	<p>Management would include the use of watershed conservation practices, the planting of native grasses in parts of the watershed, reclamation or rehabilitation of reservoirs and sediment detention structures that are no longer serving their original purpose, and cooperative management of watershed concerns with the state of Wyoming, local government, private landowners, grazing permittees, and other affected individuals and groups.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p>ACECs Previously Considered (in the draft EIS)</p> <p><i>Meeteetse Draw Rock Art Area</i></p>	<p>No ACEC would be designated in the Meeteetse Draw Rock Art Area.</p>	<p>An ACEC would be designated in the Meeteetse Draw area to protect rock art associated with Native American cultural values on about 6,800 acres of public land. The special management designation would not apply to state or private lands.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Alternative A.</p>
<p>New ACEC Considered</p> <p><i>Badlands Area</i></p>	<p>No ACEC would be designated in the Badlands Area.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>An ACEC would be designated in the Badlands Area on about 208,600 acres of public lands, representing the same area as the Badlands Proposed SRMA.</p>

**Revised Table 2
Comparison of Alternatives**



Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>AREAS OF CRITICAL ENVIRONMENTAL CONCERN</p> <p>New ACEC Considered</p> <p><i>Badlands Area</i> (Continued)</p>	<p>Management would emphasize protection of watersheds and the development of interpretive sites and driving loops to take advantage of the area's scenic values. The BLM would also attempt to maintain the current level of opportunities for primitive recreation in the area.</p>	<p>Same as Proposed RMP.</p>	<p>Management would emphasize protection of watersheds and the development of interpretive sites and driving loops to take advantage of the area's scenic values.</p>	<p>Same as Proposed RMP.</p>
	<p>No similar action.</p>	<p>No similar action.</p>	<p>No similar action.</p>	<p>Based on the ACEC designation, a "plan of operations" would be required for all mining claim-related activities other than casual use in the Badlands Area.</p>

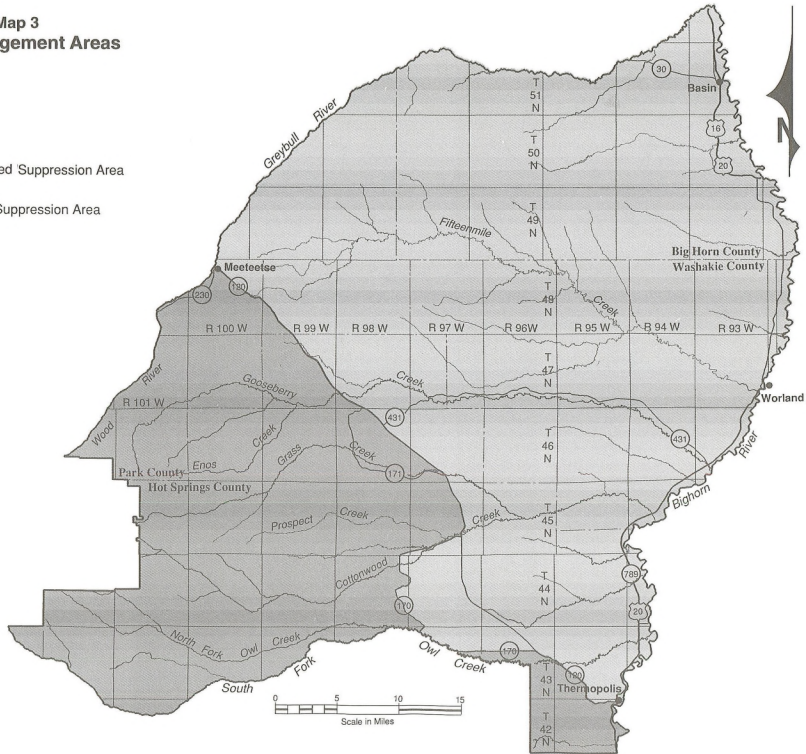
Map 2 Cultural Resource Management Areas

-  Fort Washakie to Meeteetse Stage Road
-  Mexican Pass Freight Road
-  Bridger Trail
-  Gebro-Crosby Historical Area
-  Legend Rock Petroglyph Site
-  Meeteetse Draw Rock Art Area



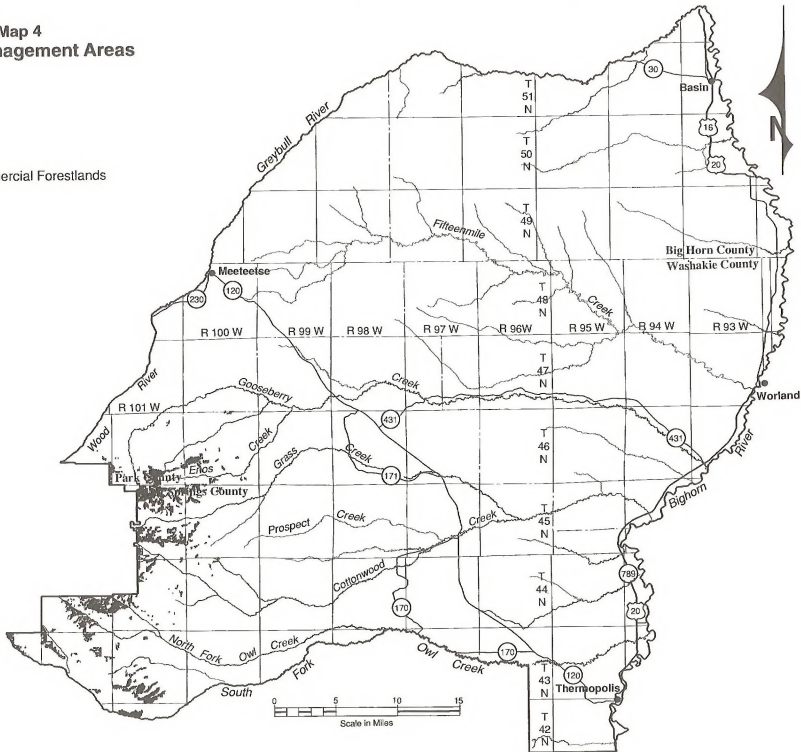
Map 3 Fire Management Areas

-  Limited Suppression Area
-  Full Suppression Area




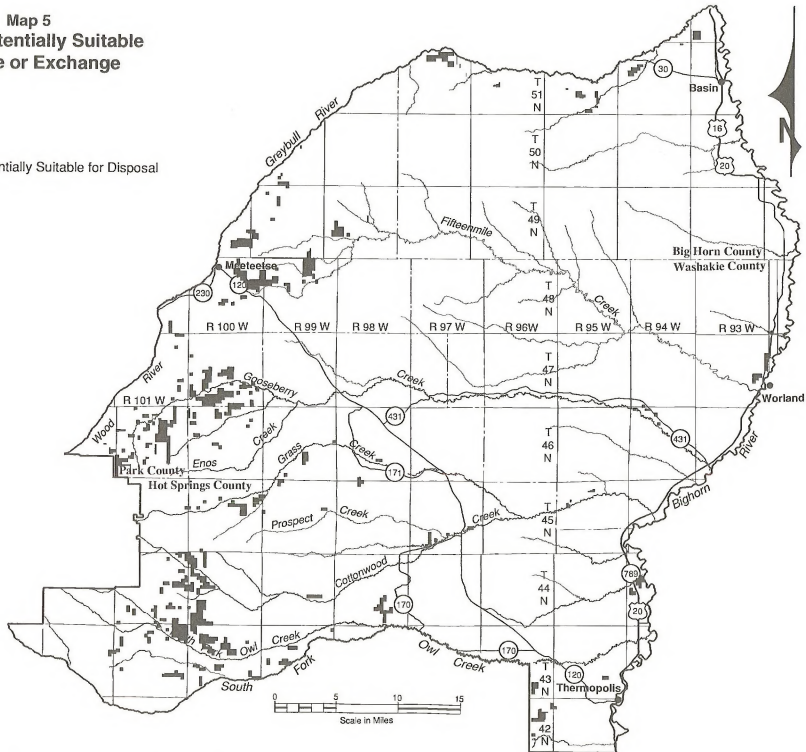
Map 4 Forest Management Areas

 Commercial Forestlands



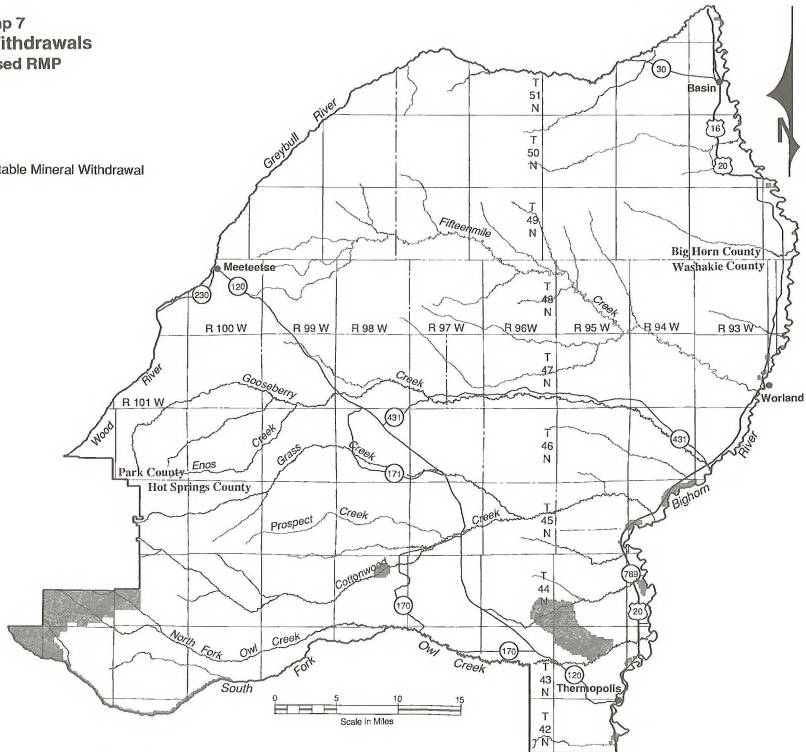
Map 5 Lands Potentially Suitable for Sale or Exchange

 Potentially Suitable for Disposal



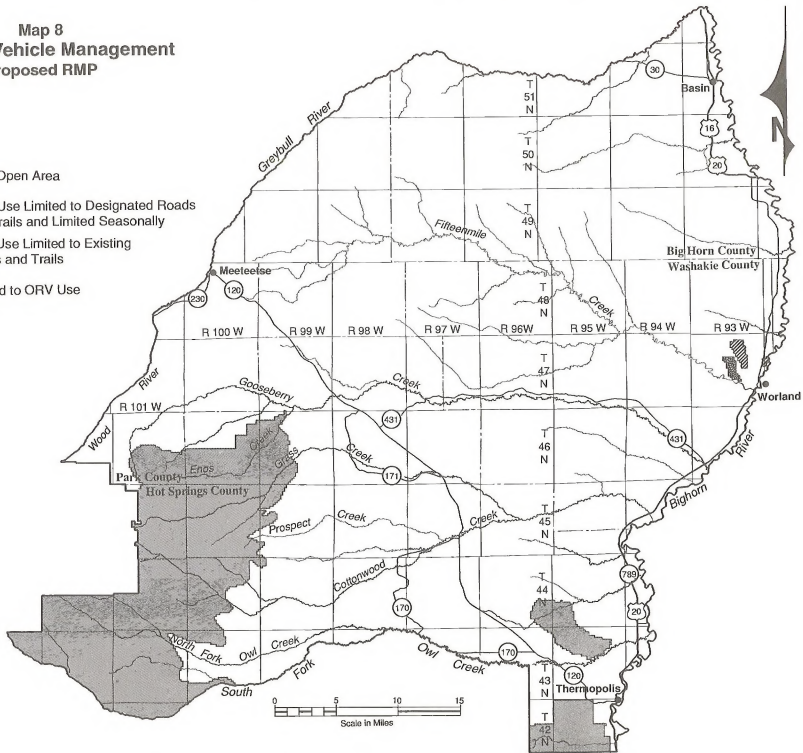
Map 7
Mineral Withdrawals
Proposed RMP

 Locatable Mineral Withdrawal



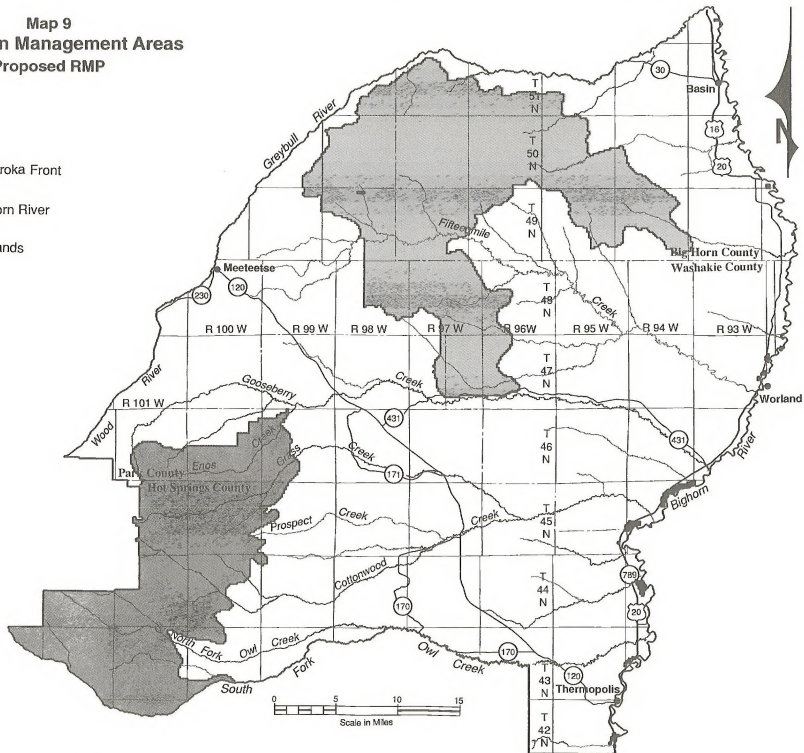
Map 8 Off-Road Vehicle Management Proposed RMP

-  ORV Open Area
-  ORV Use Limited to Designated Roads and Trails and Limited Seasonally
-  ORV Use Limited to Existing Roads and Trails
-  Closed to ORV Use






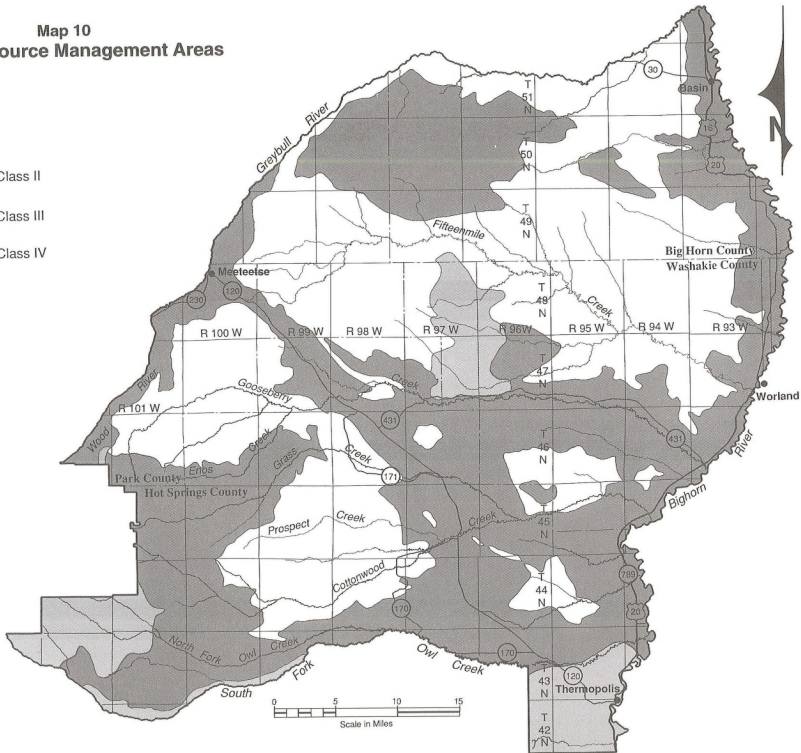
Map 9
Recreation Management Areas
Proposed RMP

-  Absaroka Front
-  Bighorn River
-  Badlands



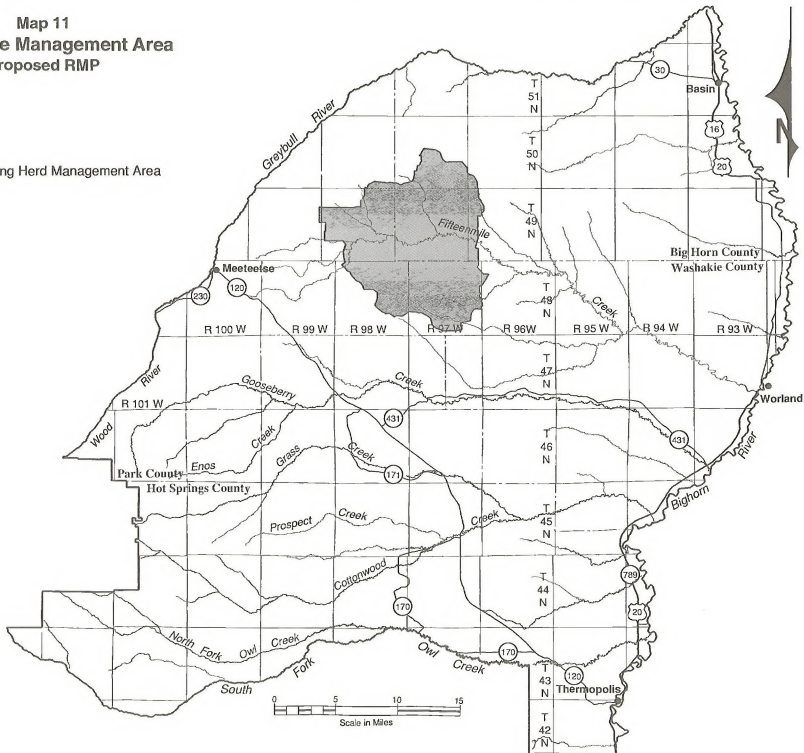
Map 10
Visual Resource Management Areas

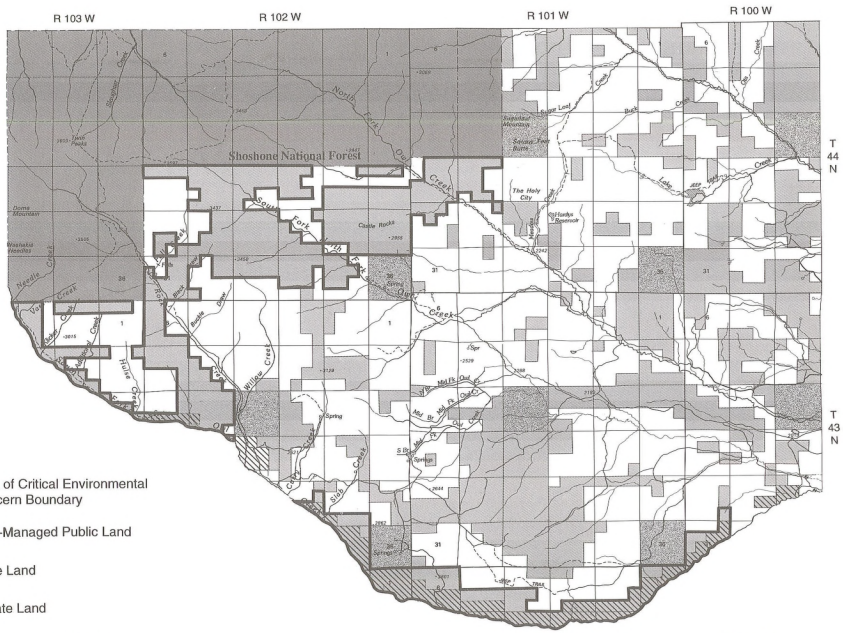
-  VRM Class II
-  VRM Class III
-  VRM Class IV









Map 11
Wild Horse Management Area
Proposed RMP

 Existing Herd Management Area





-  Area of Critical Environmental Concern Boundary
-  BLM-Managed Public Land
-  State Land
-  Private Land
-  USFS-Managed Land
-  Withdrawn Land (Power Site; Public Water Reserve; etc.)



Map 12
Proposed Area of Critical Environmental Concern



CHAPTER 3

AFFECTED ENVIRONMENT

INTRODUCTION

This chapter contains a description of the existing physical, biological, and socioeconomic characteristics of the planning area that would be affected by the alternatives described in Chapter 2. Much of this information has been summarized from reports and other material on file in the BLM's Worland District Office. Tables 4, 5, 9, 10, 11, and 14 of the draft EIS have been reprinted in this final EIS; Tables 6 and 7 have been revised for this final EIS and printed in New Appendix 5; and Tables 8, 12, and 13 of the draft EIS have not been reprinted. Revised Table 15 (Assumptions for Analysis by Alternative) is printed at the end of this chapter.

Revised Table 15 contains information on land and resource uses, production levels, and socioeconomic factors. Production levels are described for the year 1990 and compared to anticipated production at the end of calendar year 2005, or to production totals during the analysis period. In addition to describing uses and production, Revised Table 15 includes basic assumptions for determining other consequences of the alternatives. One of the changes in Revised Table 15, from the draft EIS, is that in some instances the word "would" has been replaced with "could" or "should" when projections are made about future activities and production. This is a way of highlighting these as assumptions for analysis, and not proposed management decisions.

AFFECTED RESOURCES

AIR

Potentially Affected Airshed

BLM-authorized activities taking place in the planning area have the potential to affect air quality in the Bighorn Basin and the surrounding Absaroka, Owl Creek, and Bighorn mountains.

Climate

The eastern part of the planning area is a desert which grades westward into semiarid steppe. Further west, near the Absaroka Mountains, the steppe changes with elevation into mountain grassland, forest, subalpine, and alpine areas.

The frost-free season is longest on the eastern side of the planning area, averaging 125 days between the last spring and the first autumn frost, and decreasing with

elevation to the west. At the highest elevations, the frost-free season is 25 days or less (Martner 1986).

Winds are predominantly from the northwest and west. Total annual precipitation is low, ranging from about 5 to 20 inches (NRCS 1995). Average daily temperatures range from about 15 degrees Fahrenheit in January to 74 degrees Fahrenheit in July.

Air Quality

Air quality and visibility in the planning area are generally good. The primary air pollutants include airborne dust, sulfur compounds associated with oil and gas exploration and development, and smoke and particles from fires.

The Absaroka and Washakie Wilderness Areas are Class I airsheds west of the planning area. Pollutants produced in the planning area are generally carried away from these airsheds by prevailing westerly winds.

The Cloud Peak Wilderness is a Class I airshed at least 40 miles east of the planning area in the direction of the prevailing winds.

The entire planning area is classified as a Class II airshed. This designation allows for controlled growth with some degree of air quality degradation. There are no areas where air quality standards are not being met in the planning area.

The only large air pollution point source inside the planning area boundary is a coal mine on privately-owned land in Hot Springs County. Estimated emissions from the mine in 1990 were 26 tons of particulates. Sources of air pollution adjacent to the planning area include the Highland Gas Sweetening Plant (east of Worland) and the Holly Sugar Beet Factory (at Worland).

These are classified by the Environmental Protection Agency as "major" sources (having the potential to emit 100 tons per year of a special criteria pollutant, or 250,000 tons per year total of any pollutant).

In oil and gas fields, air pollutants include hydrogen sulfide (H_2S), sulfur dioxide (SO_2), and airborne dust from construction activities and the use of haul roads.

Relatively high levels of H_2S , a highly toxic gas, are associated with oil and gas fields in this part of Wyoming. Well operators are responsible for monitoring well-site concentrations in accordance with permit conditions and reporting these levels to the Wyoming DEQ.

Particulates, nitrogen oxides, and SO_2 are generated by fires. On public lands in the planning area, up to 800

AFFECTED ENVIRONMENT

acres could be burned annually by prescribed fire, and wildfire could account for another 40 acres a year on average. About 1,000 to 2,000 acres of private farm-lands are burned annually in the planning area.

Before setting prescribed fires, the BLM uses various methods to predict smoke dispersion and determine whether Wyoming air quality standards can be satisfied.

Minor sources of airborne dust include wind erosion of soil and the use of motorized vehicles on gravel roads. Natural geothermal activity releases small amounts of SO₂.

Increasing public concern over global climate warming warrants a discussion of greenhouse gas sources. The primary greenhouse gases are carbon dioxide (CO₂), methane, nitrous oxide (N₂O), chlorofluorocarbons, and ozone (Smith 1990). Activities that produce greenhouse gases in the planning area include coal, oil, and gas production (methane, nitrogen and sulfur compounds, and carbon monoxide), use of prescribed fire (carbon dioxide, carbon monoxide, and nitrogen oxides), and livestock grazing (methane).

CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES

Cultural Resources

Cultural resources in the planning area document human occupation over many thousands of years. Cultural history in the planning area is generally believed to have begun with the arrival of the first humans at least 12,000 years before present (BP).

The planning area is in the Northwest Plains archaeological region which is defined by environmental history, human adaptations, and the use of materials and food by humans. The cultural resources in the planning area can be grouped within three broad and overlapping cultural periods: the Prehistoric, the Protohistoric, and the Historic. The traditions, characteristics, highlights, and approximate dates of these cultural periods are shown in Tables 4 and 5 (at the end of this chapter).

About 1,300 cultural resources sites associated with the three overlapping cultural periods have been formally identified and evaluated in the planning area.

Prehistoric Period Sites

Campsites and Associated Lithic Scatters. These sites include hearth features and fire-cracked rocks with scattered lithic debris and stone tools. The hearth

features indicate that these sites probably functioned as occupation and plant and animal processing areas. Other activities may be inferred for individual campsites, depending on the features and artifacts present.

Quarry/Lithic Procurement. This category includes two types of sites. The first are quarries where materials were excavated for making stone tools. The second are procurement sites where surface materials were collected. Procurement sites are more common than quarries in the planning area. At these sites, materials were tested to determine if stone tools could be produced. Artifacts such as waste flakes are common at these sites, but finished stone tools are rare.

Rock Features. These sites are often stone circles which may have been associated with tipis. The stones may have secured the edges of the tipis against the wind and rain. It is not known how other features, such as stone cairns or monuments, functioned. In some cases, a series of cairns arranged in a line may be the remains of trail markers. Single cairns may have marked caches, burials, or other important locations. Many of these cairns may have had historical uses, such as marking mining claims, fence lines, or survey locations. Another type of rock feature is the vision quest. These are usually stone arcs or walls in isolated and rugged terrain used by Native Americans for sacred purposes. Effigy figures include large figures made from stones laid on the ground. The figures often depict animals or human-like beings. The function of these figures is uncertain, however, they also may have been used for sacred purposes.

Petroglyph/Pictograph. These sites are defined by the presence of prehistoric rock art which has been inscribed into (petroglyph) or painted onto (pictograph) stone surfaces. Many of these sites are found in the planning area on sandstones in the Cloverly and Frontier formations. Current research indicates that the planning area may have one of the largest collections of petroglyph/pictograph sites in the Northwestern Plains.

Multiple-Activity Areas and Other Sites. Multiple-activity areas have similarities to campsites and quarry/lithic procurement sites. Important historic and prehistoric information can be gained on a variety of activities. Other cultural sites, such as bone beds and bone scatters, are rare and poorly understood.

Protohistoric Period Sites

Protohistoric Period sites are characterized by European or Asian trade items such as beads and other glassware, metal projectile points, metal bangles, and equestrian equipment. Associated artifacts include stone tools and pottery.

AFFECTED ENVIRONMENT

Historic Period Sites

The Historic Period is represented by cultural resources associated with the following general themes.

Farming-Ranching. The sites associated with this theme are generally ranching-related or irrigation and farming-related. These include ranch buildings, irrigation ditches, trash scatters, inscriptions, and stock herding camps and trails.

Transportation. These include trails or stage routes and bridges with associated trash scatters or inscriptions. Sites include the Bridger Trail and the Fort Washakie-to-Red Lodge stage route.

Industrial. Sites include early oil fields and coal mines with their associated mine openings, mineral production equipment, trash scatters, and inscriptions.

Overall, prehistoric sites represent about 85 percent of the total sites inventoried in the planning area. The majority of these are campsites and associated lithic scatters. Protohistoric sites represent about 1 percent and historic sites about 14 percent. About three in ten sites are eligible for listing on the National Register of Historic Places.

Traditional and Cultural Values Related to Public Lands

A traditional or cultural value is important for maintaining a group of people's traditional system of religious belief, cultural practices, or social interaction. A group's shared traditional and cultural values are sometimes abstract, nonmaterial, ascribed ideas that cannot be discovered except through discussions with members of the group. These values may or may not be closely associated with definite locations.

Pertaining to traditional values, culture, and our national heritage, section 101 the National Environmental Policy Act of 1969, as amended, states:

...it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may...preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice...

Native American Traditional Values

Federal concerns with Native American traditional values respond to the American Indian Religious Freedom Act of 1978 requiring federal agencies to evaluate their policies and procedures with the aim of protecting the religious freedom of Native Americans (Public Law 95-341 section 2).

During historic times the planning area was occupied by the Northern Arapaho, the Crow, and the Shoshone. These tribes share the belief that sacred or spiritual aspects of the environment, sites, localities, human-made features, animals, and plants should be treated with respect. Studies in the planning area have identified nine kinds of sites which are likely to have sacred attributes or traditional cultural values to Native Americans. These are: (1) rock art; (2) stone circles; (3) effigy figures, medicine wheels, very large cairns, and monumental human-like rock structures; (4) burials; (5) Sun Dance lodges; (6) vision quest structures; (7) historic battle sites; (8) trails to the Bighorn Medicine Wheel; and (9) sweat lodges. Many of these sites occur in the planning area and some are still used for ceremonies.

Ranching Traditional Values

Ranching families and their rural communities are carrying forward a significant part of the world's image of America and America's image of itself. Western ranching communities have traditional activities, social behaviors, and values that are part of the nation's historic, cultural, and natural heritage.

The traditional western ranching culture can be traced to the 1870s in the planning area. It involves both large- and small-scale production of cattle and sheep in a manner that characterizes the American West. The arid landscape, sparse forage, and severe winters require large amounts of rangeland, seasonal movements to and from high pastures, and winter feeding to support livestock. Typically, ranchers own comparatively small amounts of winter range or hay meadows and depend on federal public lands for much of their summer grazing. The work in rounding up, branding, and moving livestock has traditionally required the help of friends and neighbors and forms a strong sense of communal identity. The small towns and communities in the region deeply identify with the values associated with this tradition.

The livestock industry has an associated landscape and a series of traditional cultural features that include livestock, developed springs, wells, and watering tanks in the uplands. Fencelines, wild horse traps, corrals,

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ranch houses, sheepherding camps, shearing pens, locating chutes, grange halls and community centers, and one-room school houses are some of the other features that contribute to the traditional western ranching culture.

Recreation-Related Traditional Values

The vast public lands of the American West have helped to define and sustain traditional outdoor recreation for millions of Americans. The wide open spaces that characterize much of the planning area entice modern explorers to wander freely. Breathtakingly scenic vistas invite photographers from all over the world and provide a backdrop for pleasure driving, hiking, horseback riding, rockhounding, hunting, and fishing by tourists and local residents alike. In the Washakie County Conservation District's *Water Quality Assessment and Long Range Plan, 1995 to 2000*, county residents described access to land, recreational opportunities, open space, solitude, and quiet as among their most strongly held values.

On federal lands near the Bighorn Basin, our heritage of outdoor recreation was acknowledged eighteen years before Wyoming became a state when Yellowstone was established as the nation's first national park.

Oil and Gas Development-Related Traditional Values

People have worked in oil- and gas-related industries, associated with the development of fields such as Grass Creek, Little Buffalo Basin, and Hamilton Dome, for four generations. In some parts of the West, people in these industries are viewed as transient because of the "boom and bust" economics of mineral development. But that is generally not true in the planning area because the Bighorn Basin is a mature oil- and gas-producing area. Today, it is common to view oil and gas workers as active participants in their local communities where their presence has a stabilizing effect from a personal and economic standpoint. Not only do oil and gas workers receive attractive salaries, but their industry contributes greatly to local communities through the taxes and royalties paid on oil and gas production. Wyoming citizens benefit from the low property taxes and good schools that are largely possible because of the oil and gas industry.

There is also a synergistic relationship between oil and gas employment and ranching traditional values. Traditional ranching families are often supported by the income of a family member working in the oil and gas industry. This is especially important during difficult times. Oral histories told by elderly local residents

include accounts of keeping the family ranch during the Great Depression, because of income and loans provided by oil and gas money. It is also interesting to note that local ranching families staked many of the placer mining claims that became the earliest Bighorn Basin oil and gas fields.

Jobs related to exploration, production, and distribution of oil and gas are currently held by local residents.

Paleontological Resources

The planning area is an important paleontological area containing geologic formations with fossils from the Jurassic and Cretaceous periods (180 to 65 million years BP) and the Paleocene and Eocene epochs of the Tertiary Period (65 to 40 million years BP). These fossils include a hadrosaur discovered near Meeteetse, Wyoming, and a vast array of mammalian fossils, such as primates, bats, and rodents. The Eocene Willwood Formation contains the fossil horse, *Hyracotherium* (locally referred to as *Eohippus*), and the skeletons of the oldest primates in the world, *Cantius* and *Notharctus*. These deposits are also known for their abundance of fossil plants. The Bighorn Basin is one of the few places in the world where the fossil record is uninterrupted from the demise of dinosaurs through the early diversification of mammals.

Natural History Resources

National natural landmarks are areas having nationally significant ecological or geological features. The National Park Service studies potential landmarks and makes recommendations to the Secretary of the Interior regarding designation. In the late 1970s, three areas were proposed for further study as National Natural Landmarks: Gooseberry Badlands, East Ridge-Fifteenmile Creek Badlands, and Tatman Mountain.

Gooseberry Badlands

The Gooseberry Badlands comprise about 30,000 acres of rugged terrain. The BLM administers all public lands within the proposed landmark. Preliminary studies of the Gooseberry Badlands characterize it as an area of badlands topography rich in both natural and cultural resources. This rugged and colorful landscape is dominated by a variety of rock hoodoos, arches, castles, and mushrooms. Visual intrusions are rare.

East Ridge-Fifteenmile Creek Badlands

The East Ridge-Fifteenmile Creek Badlands encompass about 69,100 acres, although the boundaries of the

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area are not firmly established. The BLM administers all public lands in the proposed landmark.

The badlands around East Ridge and associated ridges along the upper portions of Fifteenmile, Crooked, and Timber creeks are some of the most spectacular in the central Rocky Mountains. The Eocene Willwood Formation is exposed in these intricately carved and colorful exposures.

Tatman Mountain

The Tatman Mountain area encompasses about 9,600 acres, the majority being public land, although the NPS has not firmly established the boundaries of the area. Tatman Mountain is a gravel-capped mesa where the Greybull River once flowed. This area includes Tertiary age rocks of the Eocene Tatman and Willwood formations. An excellent record of Rocky Mountain geologic history is preserved along the flanks of Tatman Mountain.

FIRE

Fire History

Where annual precipitation is greater than 10 inches, the natural fire interval on south-facing slopes varies from 10 to 50 years and from 80 to 200 years on north-facing slopes. Fire frequency is very low in the 5- to 9-inch precipitation zone.

Information on wildfires in the planning area, for the 10-year period January 1982 through December 1991, is summarized in the Bighorn Basin Resource Area planning files. During this period, a total of 26 wildfires have burned 459 acres. Individual fire size ranged from 0.1 to 100 acres, with an average of 18 acres. Thirty-eight percent of all fires were 5 acres or less and 19 percent of all fires were 1 acre or less. Fires in the planning area average three per year. Seventeen fires (65 percent) were of human or unknown origin and nine fires (35 percent) were caused by lightning. Many of the human-caused fires were related to some type of land-use activity such as ditch or debris burning.

General Fire Effects

Fire is an important component for change in forest and range ecosystems. Fire restores a balance by regulating the accumulation of organic matter and recycling carbon and other important nutrients.

Fire during the growing season of plants is usually more damaging than fire during the dormant period when root reserves are high and live tissues are less

vulnerable to damage. The season may also directly affect fire intensity.

Fire intensity is very important in shrubs and trees where crown scorch and bud damage may prevent survival even if the root system has survived the fire. This is critical in plants that don't sprout from the roots following fire, such as sagebrush. While many plants are adapted to an occasional fire, repeated fires at certain times of the year will damage fire-sensitive plants, such as Idaho fescue.

Soil moisture is a critical factor for vegetation recovery. Sufficient soil moisture protects both plants and their roots, thereby enhancing recovery. In general, grasses recover in 1 to 5 years. Sagebrush and other nonsprouting shrubs recover in 10 to 30 years, while sprouting shrubs recover sooner.

Fire has played a major role in determining the vegetative makeup of the Bighorn Basin even though wildfire is infrequent. Generally, fires promote grasses at the expense of trees and shrubs.

Fire suppression has limited the spread of both natural and human-caused fires. Grazing of fine fuels has limited the ignition and spread of wildfires. These two factors have the greatest potential to change the vegetative communities of the Bighorn Basin.

The young, tender growth after fire has high nutrient content, is more palatable, and easily accessible to livestock and wildlife. Forbs that provide an important food source for many upland game birds usually are more abundant on burned areas. Shrub resprouts are more nutritious up to three years after a burn.

Fire Effects on Vegetation Communities

Salt Bottom Community

Shrubs in this community are primarily sagebrush, greasewood, and rabbitbrush. These shrubs sometimes form canopies that can spread small wildfires along waterways. Fire in this plant community kills sagebrush and enhances greasewood and rabbitbrush; therefore, fires can decrease shrub diversity by one-third. Adjacent cottonwoods can also be killed along waterways and, for these reasons, prescribed fire is not used in this community.

Basin Grassland/Shrub Community

This plant community was identified on Map A of the draft EIS as high- and low-density sagebrush. Only the high-density sagebrush areas contain enough fuel to allow fires to spread. High-density sagebrush occurs in pockets which provide important habitat for deer, ante-

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lope, and sage grouse. Because these pockets contribute to vegetative diversity in relation to surrounding areas, fires should be avoided. Fire in this plant community generally reduces biological diversity.

Foothills-Mountain Grassland/Shrub Community

Wild and prescribed fires are important for the management of this plant community. Fuels are often sufficient to spread fire over large areas, sometimes damaging wildlife habitat and spreading to commercial forestlands, or destroying private property. For these reasons, fires are often suppressed in this plant community. But in some cases, fire fighting and grazing of fine fuels can result in a heavy canopy of sagebrush with a limited understory. Limber pine and juniper also invade. Prescribed fires are used in this community to increase plant diversity and produce more forage.

Riparian Community

Riparian communities are generally too wet to burn except during times of drought. Fire can damage young cottonwoods, however, the bark of older cottonwoods can insulate the tree against low intensity fire. By eliminating desirable woody plants, such as young cottonwoods and willows, fire reduces the diversity of riparian vegetation. Undesirable plants, like salt cedar and russian olive, sprout after a fire and become dominant. Consequently prescribed fire is seldom used in riparian areas.

Woodland Community

Limber pine and juniper woodland communities tend to occupy areas with shallow soils. The trees are often widely spaced and understories are sparse, reducing the potential for fire to spread. Only in extreme conditions of dry fuels and high winds can crown fires burn significant acreage. Prescribed fires are usually not attempted in this plant community. The woodland canopy on these shallow soils is generally considered valuable as wildlife cover.

In the absence of fire, limber pine and juniper will invade areas of deeper soils adjacent to the shallow sites described above. However, the understory vegetation on deeper soils will carry fire and the woodland canopy is periodically removed. In this way, some areas periodically change from foothills-mountain/grassland shrub to woodland, and back again, depending on the interval since the last fire. Fire can be used to promote diversity and forage production in these areas. If woodland canopy is common in the area, then prescribed fire is used to enhance forage production. Conversely, if woodland cover is rare, these sites provide wildlife cover.

Mixed Conifer/Deciduous Community

The Mixed Conifer/Deciduous community includes conifers and aspen together. Without fire or other disturbances, most aspen stands decline. Fires tend to enhance aspen but they can damage valuable resources on adjacent lands including commercial timber, wildlife habitat, and scenery. This can limit the amount of acres burned to enhance aspen.

Forest communities are obviously susceptible to wild-fire. Engelmann spruce and subalpine fir are easily killed. Douglas-fir is relatively tolerant because the bark of mature trees can insulate against low intensity ground fires. Although lodgepole pines may be killed, fires are beneficial in regenerating the trees by opening the pine cones. In this community, prescribed fire is used primarily to reduce slash from logging.

Other Vegetation Communities

Salt Desert Shrub Communities and Barren and Alpine areas rarely contain enough fuel to spread fires.

LANDS AND REALTY

Access

Legal public access is available on county roads and some BLM-maintained roads in the planning area. Access to public lands is acquired when BLM secures easements on roads crossing private or state land.

The BLM has acquired exclusive easements for public use on the Fifteenmile, Platte Pipeline, Dorsey Creek, Whistleberry Hill, Murphy Draw, Squaw Teats, and South Owl Creek roads. A total of 23 exclusive road easements have been acquired in the planning area.

Cooperative management has been established by the LU Sheep Company, the Wyoming State Board of Land Commissioners, the Wyoming Game and Fish Department (WGFD), and the Worland District BLM to provide public access on roads south and north of Grass and Enos creeks. The WGFD has acquired several public fishing and boating access easements along the Bighorn River.

Landownership

Map B in the draft EIS showed landownership patterns in the planning area. Generally, public lands are fairly well consolidated with the exception of the southwestern part of the planning area where BLM, state, and private lands are intermixed. There are several land exchange proposals currently being considered by the BLM to consolidate public lands. A recent draft proposal

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is the South Big Horn Basin Water Development Initiative that could involve the exchange of approximately 121 sections of state land for the same number of public land sections. According to Carolyn Paseneaux, a consultant for the four Bighorn Basin counties, "By exchanging state land for federal land, future irrigation development could make use of over 500,000 acre feet of Wyoming allocated water under the Yellowstone River Compact now stored in Boysen Reservoir. Total economic production activity by the land exchange and subsequent development of irrigation, is estimated at \$1,064 per acre. The direct and indirect income to producers per acre is estimated at \$310. It is estimated that the total impact to Big Horn and Washakie counties would be \$6.39 million." A portion of this proposal has been analyzed previously as the "West Side Project."

If this or a similar project is officially proposed, a separate environmental analysis will be conducted. Based on the results of this study, the Grass Creek RMP would be amended as appropriate.

Rights-of-Way

The following rights-of-way have been proposed for construction within the next five years.

1. The Altamont natural gas pipeline from Canada to Opal, Wyoming is projected to cross about 20 miles of the planning area. The pipeline will follow an existing pipeline route. The environmental analysis of this project was conducted separately by the Federal Energy Regulatory Commission (FERC) with the BLM serving as a cooperating agency. The BLM has issued a record of decision stating its intent to issue a right-of-way grant along the FERC certificated route, pending approval of a Plan of Development.
2. The Express crude oil pipeline from Canada to Casper, Wyoming is projected to cross about 20 miles of the planning area. The pipeline will follow an existing pipeline route. The final environmental impact statement was prepared by a third party contractor for the BLM and was released to the public on February 23, 1996. A Record of Decision was issued April 15, 1996, granting a right-of-way across public lands pending BLM's approval of a Plan of Development.
3. The Greybull Valley Irrigation District has proposed construction of an irrigation storage dam and resource project in the vicinity of Roach Gulch, a tributary to the Greybull River. An environmental impact statement is being prepared by a third party contractor for the BLM and the Army Corps of Engineers.
4. The Amoco proposed crude oil pipeline would extend about 10 miles along an existing pipeline route in Sand Draw west of Kirby. Resource inventories and analyses are being conducted. The right-of-way grant issuance and construction start are projected for the spring of 1996.
5. The Wyoming Gas natural gas pipeline would extend about 70 miles from Thermopolis to Greybull with spurs to Manderson and Basin. The final selection of a route is being considered and resource inventories are being conducted. The right-of-way grant issuance and construction start are projected for late summer or fall of 1996.

LIVESTOCK GRAZING

In 1990 the authorized level of livestock grazing (active preference) on public lands in the planning area was 101,451 animal unit months (AUMs). The "adjudicated" level on public lands (also known as grazing preference) was 143,140 AUMs. This amount included active preference plus a "suspended preference" of 41,689 AUMs.

In addition to public lands, grazing allotments can contain state, private, and other federal agency land. The grazing use within BLM-administered allotments could take place on all lands, regardless of ownership. These lands of various ownerships within an allotment are referred to as being "managed-in-common." In 1990, 157,375 AUMs were authorized on these managed-in-common lands within the planning area. Compared to this level, the actual number of AUMs taken for livestock grazing was 122,268. This included 72,138 AUMs on public lands, or about 59 percent of the total.

In 1990, 24,857 sheep, 81,933 cattle, and 687 horses were grazed on public lands in the planning area. A total of 102 operators grazed livestock on public lands, contributing \$134,176 to the BLM in grazing fees (based on the 1990 grazing fee of \$1.86 per AUM).

MINERALS

Figure 1 lists the geologic formations in the planning area along with their ages, lithologies, and important mineral and fossil resources.

Coal

In the planning area, coal has been mined in the Grass Creek, Gebo, and Meeteetse coal fields. Coal seams of varying thickness occur in the Cretaceous age Mesaverde and Meeteetse formations, and in the Pale-

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ocene age Fort Union Formation. These coals are interbedded with shales, sandstones, and siltstones. In some areas the coal has burned naturally and baked the overlying rock to form clinker (scoria). The only coal field currently being mined is the Grass Creek field. Coal mined from the Grass Creek coal field has an average sulfur content of 0.4 percent, an average ash content of 7.4 percent, and an average heating value of 10,970 British Thermal Units per pound (Wyoming Geological Survey 1978). In 1990, Northwestern Resources Co. produced 101,961 tons of coal from their strip mine located on private land (Wyoming, Office of the State Inspector of Mines 1991).

No coal is currently mined or leased on BLM-administered public lands in the planning area. The most recent federal coal leases were relinquished in 1986. Several coal exploration licenses were issued but these all expired in the mid-1980s.

Local interest has been expressed by Spring Creek Coal Company in developing BLM-administered coal in the Grass Creek field. The coal in this field is produced from the Fort Union Formation and is classified as sub-bituminous. It is anticipated that up to 40 acres of BLM-administered coal could be developed during the analysis period, with 5 to 10 acres disturbed annually. Anticipated coal production from BLM-administered lands could be about 50,000 tons annually beginning in 1998.

Gas and Oil

In 1990 there were 26 active oil and gas fields that produced about 5.5 million barrels of oil and 6.4 billion cubic feet of gas from the BLM-administered mineral estate. The Hamilton Dome, Little Buffalo Basin, and Grass Creek fields rank ninth, tenth, and eleventh in oil production in the state of Wyoming. The most important producing formations are the Frontier, Phosphoria, Tensleep Sandstone, and Madison Limestone. Other production comes from the Muddy Sandstone Member of the Thermopoli Shale, Amsden, Bighorn Dolomite, Cloverly, Chugwater, Dinwoody, and Mesaverde formations. There are four oil and gas prospects (or geologic "plays") in the planning area, as identified by the U.S. Geological Survey (USGS 1989). These are the Basin-Margin Anticline, Basin-Center Gas, Deep-Basin Structure, and Sub-Absaroka plays.

Locatable Minerals

Bentonite, gypsum, sulfur, and titanium are the principal locatable minerals found in the planning area.

Most of the locatable minerals occur in the southeastern portion of the planning area. Bentonite crops out

along the flanks of the Thermopoli Anticline. Bentonite is also found at Hamilton Dome and in scattered occurrences near Soapy Dale Peak and south of Putney Flat. Bentonite-bearing formations include the Cretaceous age Frontier Formation and the Mowry and Thermopoli shales.

Sulfur is found in alluvial gravels and travertine deposits associated with extinct hot springs on both flanks of the Thermopoli Anticline. Pockets of sulfur are also found in the Permian age Phosphoria Formation and the Triassic age Chugwater Formation.

Gypsum is generally confined to the Gypsum Spring and Chugwater formations which crop out around the Thermopoli Anticline. Beds of gypsum 30 to 40 feet thick have been reported. Gypsum is also associated with sulfur deposits found in the Phosphoria and Chugwater formations west of Thermopoli. Some gypsum-bearing rocks are also located northeast of Anchor Reservoir.

Titanium-bearing black sandstones are present in the Cretaceous age Mesaverde Formation. This formation is conspicuous in forming "rimrock" which encircles the Grass Creek Anticline. Titanium-bearing sandstones crop out on opposite flanks of the anticline. The titanium occurs as an oxide in association with other heavy minerals such as zircon, monazite, and iron. The Grass Creek deposit is the largest high-grade deposit in Wyoming. A less prominent outcrop of titanium-bearing sandstone, the Cottonwood Creek deposit, is 10 miles to the southeast.

Recent exploration in the area between the North and South forks of Owl Creek has indicated the presence in very small quantities of gold, silver, platinum, and rare earth minerals. The rocks being explored on the eastern slopes of the Absaroka Mountains are volcanic. Most exploration has been confined to private lands. There have been mining claims on public lands in this area, but there are none presently.

As of May 26, 1993, 734 active mining claims had been staked on public lands in the planning area although no locatable minerals were being mined. Most surface-disturbing activity has been limited to exploration and other claim assessment work such as road construction and maintenance. One bentonite pit on about 40 acres is open, but production has been suspended. It is anticipated that bentonite would be mined from one or two pits on public land starting in 1998. Annual production would average 100,000 tons.

In addition to bentonite, mining claims have been recorded for oil placers, titanium, gypsum, sulphur, gold, and platinum. Other mineral occurrences cited in the literature (Wilson 1966; Harris 1983)—but not covered

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by mining claims—were aragonite, glauconite, phosphate, travertine, uranium, thorium, and zeolites.

During the analysis period, it is anticipated that about 300 acres of disturbance would be caused by bentonite exploration and mining. About 300 acres would be disturbed by exploration activity on mining claims located for gypsum, sulphur, and titanium-bearing sandstone.

Salable Minerals

In the planning area the salable minerals are sand and gravel, flagstone, moss rock, and clinker (baked clay). These were mined from 25 pits during 1990. The most important are sand and gravel, usually found in terraces along major streams.

Flagstone and moss rock occur where hard limestones and sandstones crop out. High grade flagstone and moss rock occur in the Phosphoria, Sundance, Cloverly, and Mesaverde formations. Clinker occurs in the Mesaverde Formation associated with coal beds.

Revised Table 15 contains additional information on estimated levels of mineral exploration and development. Mineral ownership in the planning area was shown on Map C in the draft EIS.

RECREATION

The types of recreation available on public lands in the planning area include camping, hiking, sightseeing, bicycling, crosscountry skiing, horseback riding, rock collecting, hunting, and fishing. Most of the recreational use is dispersed throughout the planning area or within large geographical areas like the Absaroka Mountain foothills, the badlands north of Gooseberry Creek, and the Bighorn River. Recreational use also occurs on public lands used for off-road vehicle driving and in historic coal mining areas such as the former towns of Gebro and Crosby. Another area with high potential for recreational use, but currently having limited access, is Red Canyon Creek south of Thermopolis. Opportunities include hiking, hunting, and photographing wildlife and scenery. In the Absaroka Mountain foothills, the Grass Creek Road provides the only direct vehicle access to the Shoshone National Forest.

Compared to state and privately-owned lands in the planning area, public lands provide about 36 percent of the elk hunting, 86 percent of the pronghorn antelope hunting, 56 percent of the deer hunting, 28 percent of the moose hunting, 68 percent of the sage grouse hunting, 90 percent of the camping, and 85 percent of the off-road

driving. On public lands, about 80 percent of the recreational use is made by residents of the Bighorn Basin. Activities showing the highest percentages of nonresident use on public lands are camping, picnicking, and sightseeing. (See New Table 5-15, revised from draft EIS Tables 6 and 7, in New Appendix 5.)

Recreation Opportunities

Recreation opportunities depend on an area's setting and the kinds of activities that could take place. The planning area contains four types of opportunities: semiprimitive nonmotorized, semiprimitive motorized, roaded natural, and rural.

Semiprimitive Nonmotorized

Opportunities for semiprimitive nonmotorized recreation are available on approximately 62,270 acres of public land primarily in remote badlands and along the upper reaches of Owl Creek. These opportunities include solitude in natural environments and activities such as camping, hiking, sightseeing, nature study, hunting, fishing, and watching wildlife.

Semiprimitive Motorized

Semiprimitive motorized opportunities are available on approximately 603,150 acres of public land. These opportunities include the use of motorized vehicles in a natural environment for activities such as sightseeing, nature study, camping, hiking, hunting, fishing, and watching wildlife. Most of this activity occurs in the badlands and in the foothills of the Absaroka Mountains.

Roaded Natural

Approximately 205,580 acres of public land are available for roaded natural opportunities. These opportunities usually involve association with other people in an isolated environment. Activities include picnicking, rock collecting, wood collecting, and driving for pleasure, hunting, and fishing. Roaded natural recreation occurs mainly along gravel and dirt roads.

Rural Opportunities

Rural opportunities are available on about 97,000 acres of public land. These opportunities include association with other recreationists and often involve competitive activities, spectator sports, and bicycling. Rural recreation occurs primarily along main roads and near towns.

SOCIOECONOMICS

Statewide Profile

For the fiscal year 1997-1998 biennium, the state of Wyoming's budget will be \$3.8 billion. Nearly half of the money comes from the federal government and the minerals industry. Federal funds provide \$900 million, mineral severance taxes contribute about \$395 million, and federal mineral royalties add another \$356 million in revenue. Other contributions include interest on the permanent mineral trust fund (\$182 million) and sales and use taxes (\$608 million).

This money will be allocated by the state of Wyoming as follows: \$1.3 billion for education, \$900 million for general government, \$744 million for health and family services, \$467 million for transportation, \$281 million in taxes and royalties (returned to local governments), \$71 million for corrections, and \$65 million for water development.

According to the Consensus Revenue Estimating Group, as reported in the *Wyoming State Government Revenue Forecast FY1996 - FY2002* (Wyoming, October 1995), mineral severance budget contributions are projected to increase to about \$405 million during the fiscal year 2001-2002 biennial. Federal royalty contributions are projected to decrease to about \$342 million during 2001-2002. Assumptions used for the projections on severance tax include a steady price for oil (at \$15 per barrel), an oil production decline of about 4 percent annually, and steady increases in the price and production of natural gas.

Big Horn Basin, Four-County Profile

[New Appendix 5 provides detailed information on the economic contributions of major activities that involve public lands in the planning area. These activities are timber production; livestock grazing; coal, oil, and gas production; and recreation.]

Population

During 1990, population in the four-county area where the planning area is located totaled about 46,800, according to the Wyoming Department of Administration and Information. About one-half of this total was living in Park County. In that same year, males comprised about 50.71 percent of the area's population, and about one-quarter of the population total was 23 to 64 years old. Projections show that the population would have a similar composition in the year 1998.

Employment

The labor force averaged 26,513 in 1990 with employment at 25,173. Over half of this employment was in Park County. Annual employment in Big Horn, Hot Springs, and Washakie counties that year averaged 4,960; 2,730; and 4,288, respectively. Males account for slightly under 56 percent of the labor force in the planning area. Between 96 percent and 97 percent of the labor force is classified by race as white, with most of the remainder being Hispanic. The unemployment rate in 1990 averaged under 5 percent in all counties except Big Horn where it reached 6.6 percent. Over 54 percent of the area's unemployed were males, roughly 93 percent of which were white and about 3.5 percent were Hispanic. Native Americans represented slightly over 2 percent of the unemployed males. Of the unemployed females, about 88 percent were white, over 5 percent were Hispanic, about 1.7 percent were Native American, and about 1.5 percent were Asian American. African Americans accounted for less than 1 percent of the unemployed, either male or female. Area economic sectors employing over 2,000 people in 1990 included government (6,006), services (5,843), retail (4,017), and agriculture (2,305).

Income

Area personal income in the 1990 base year totaled \$730,705,000 with over half of this total realized by Park County. The area's total earned 1990 income reached \$464,554,000 and included government (\$120,803,000), services (\$74,950,000), mining (\$52,925,000), retail (\$44,966,000), construction (\$38,302,000), manufacturing (\$36,677,000), transportation (\$35,146,000), agriculture (\$24,232,000), wholesale (\$15,134,000), finance (\$10,644,000), and agricultural services (\$7,484,000). The average area per capita income that year was \$15,630.

Taxes and Debt

Taxes levied in 1990 totaled slightly over \$44 million of which sales and use taxes were close to \$14.2 million. With regard to the area's bonded debt, as of July 1990 and 1991, neither Hot Springs nor Park counties had any bonded debt. However, as of July 1990, Big Horn and Washakie counties had bonded debts of about \$1.65 million and \$4.54 million, respectively. By July 1991 these debts stood at about \$3.7 and \$4.2 million, respectively. The amount obligated of Big Horn County's bonding capacity rose from 14.13 percent on June 30, 1990 to 27.8 percent by June 30, 1991. Conversely, the obligated portion of Washakie County's bonding capacity declined from 72.36 percent on June 30, 1990 to

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59.57 percent by June 30, 1991. The area's expenditures on education in the 1990-91 period were \$53,628,000 while revenues to education during this same period were \$52,692,000. This deficit resulted from both Big Horn and Washakie counties spending more on education than they received in revenues for education. In contrast, both Hot Springs and Park counties received more revenue for education than they used.

Medical

While area hospitals during the 1990-1991 period experienced less than a 40 percent occupancy rate, area nursing homes had occupancies of 90 to 99 percent. The area had 57 physicians and certified assistants during this period with about 20 of these in family practice. Ten of the family practice specialists were located in Park County as were most of the other medical specialties in the four-county area.

Crime

Crimes per 10,000 population averaged 272.6 in the four-county area with Big Horn County having the lowest incidence (215.4) and Hot Springs County having the highest incidence (353.1). Leading offenses in the area were larceny, burglary, and aggravated assault.

SOILS AND WATER

Soils

The soils of the planning area are extremely variable, reflecting the differences and interactions between parent material, topography, vegetation, climate, and time. Five of the eleven soil orders have been identified in the planning area; aridisols, entisols, and mollisols predominate. Soils are light colored at low elevations and become darker with organic matter as elevation and precipitation increase. Shallow soils, less than 20 inches deep, are common in the planning area.

Parent material has a profound effect on soils in the Bighorn Basin. Many soils are formed on interbedded shale and sandstone. These soils are often high in salts and gypsum and have low productivity especially at low elevations in Salt Desert Shrub and Salt Bottom vegetative communities. As elevation and precipitation increase these soils become more developed and produce more vegetation.

Soils formed on alluvial deposits are also common in the planning area. These soils are often over 60 inches deep. The youngest alluvial soils along the major rivers and creeks are weakly developed with the original

sediment layers frequently visible. Older alluvial soils are found on gravel terraces above the Greybull and Bighorn rivers.

Landslide Potential

Along the eastern slope of the Absaroka Mountains and at Tatman Mountain, poorly consolidated soils are prone to landslides. A landslide is a down slope movement of a mass of land, soil, debris, mud, or rock under the influence of gravity. The rate of movement can be fast or slow. Soil moisture, rock type, slope angle, and earthquake potential are factors contributing to landslides (Case 1986). Types of landslides include creep, slump, earthflow, mudflow, rock fall, and debris avalanche.

The largest area prone to landslides is along the Absaroka Mountains. The soils and geology here are dominated by weak volcanoclastic rocks such as conglomerates, breccias, sandstones, tuffs, siltstones, and alluvium. Many of the slopes are steep and unstable. These factors combined with moist soils increase the potential for landslides. Slump and earthflows are the most common types in this area followed by rock falls and rock slides.

A second landslide area is Tatman Mountain in the north-central portion of the planning area. The primary types of downslope movements in this area are slumps and earthflows. Neither Tatman Mountain nor the eastern slopes of the Absaroka Mountains are considered prone to earthquakes.

Erosion

Erosion is the wearing away of the land surface by water, wind, ice, or other geologic agents and processes. Erosion is generally described as natural or accelerated. Natural erosion is the geologic erosion that occurs under natural conditions of climate and vegetation undisturbed by human activities. Accelerated erosion is the direct result of human activities. Determining where natural erosion ends and accelerated erosion begins is difficult and often controversial.

Vegetative cover is extremely important in controlling erosion. Vegetative cover also has the greatest potential for management. This cover includes live plants and organic litter. Cover intercepts precipitation reducing rain drop impact and restricts overland flow. This allows for greater infiltration and less runoff, reducing erosion.

Organic litter, in addition to being an important component of cover, contributes to the overall health of the soil by adding nutrients and improving soil structure. Improved soil structure allows soil to absorb more water.

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Research has demonstrated that at least 30 to 40 percent of the surface must be covered by vegetation to control erosion.

Upland cover is generally sufficient to control erosion where precipitation exceeds 10 inches. In the 5- to 9-inch precipitation zone, characterized by the Basin Grassland/Shrub and Salt Desert vegetative communities, cover is marginal for controlling erosion.

Where erosion has not been controlled, the formation of gullies further increases the magnitude and frequency of runoff and erosion.

The Revised Universal Soil Loss Equation (Renard et al. 1991) was used to estimate the soil loss for sheet and rill erosion associated with various land uses in the planning area. The equation does not predict the levels of two other types of erosion, gully and streambank.

Erosion rates estimated by the equation indicate that under conditions of average slope and cover, erosion on upland range sites varies from 0.1 to 2.0 tons per acre per year. This analysis further indicates that on some range sites erosion is exceeding the rate of soil formation. These range sites are the shallow loamy, loamy, and saline upland in the 5- to 9-inch precipitation zone and the shallow loamy and saline upland in the 10- to 14-inch precipitation zone. These range sites are in the Basin Grassland/Shrub, Salt Desert, and the Foothills-Mountain Grassland/Shrub vegetative communities.

Erosion in the planning area is not limited to the sheet and rill erosion predicted by the *Revised Universal Soil Loss Equation*. Based on estimates by the USGS in the *208 Water Quality Plan for the Big Horn Basin*, only 25 percent of the sediment in the Bighorn River can be attributed to sheet and rill erosion. Gully and streambank erosion would account for the remaining 75 percent. In 1990, estimated accelerated sheet and rill erosion for surface-disturbing activities and livestock grazing was about 365,010 tons per year. By comparison, the total estimated accelerated and geologic erosion from all sources (including sheet, rill, gully, and streambank erosion) is much greater. In 1990 this total estimated erosion was about 4,764,320 tons per year. It is estimated that only about 10 percent of this total erosion would be delivered to streams.

Soil Productivity

Soil productivity is the capacity of a soil to produce a specific plant or a community of plants. For rangelands, site productivity is the capability of a soil to produce a native plant community. Production, which measures productivity, is expressed as pounds per acre air-dry weight of vegetation that is grown. It ranges from 200 pounds per acre for a very shallow 5- to 9-inch precipi-

tation zone to greater than 2,300 pounds per acre in some riparian areas.

Though precipitation has a profound effect on productivity, soil plays an important secondary role. Factors affecting soil productivity are soil depth, horizon differentiation, rock weathering rates, soil organic matter, acidity, and salinity. Productivity lost through soil erosion is a long-term adverse effect.

Production can be used as an indicator of a soil's responsiveness and vulnerability. Generally, soils with higher production rates respond positively to changes in management and are not as vulnerable to loss of productivity from use. Likewise, a soil with low productivity is more vulnerable, is more easily damaged, and is less likely to respond positively to changes in management. Production can also be used as an indicator of the reclamation potential of a particular site following disturbance.

Water Resources

Groundwater

The BLM has developed approximately 63 wells from formations including the Fort Union, Mesaverde, Lance, and Willwood. These formations yield from 5 to 20 plus gallons per minute of water suitable for livestock and wildlife. Many wells are not functioning because of deterioration over time.

Surface Water

With the exception of Fifteenmile Creek, large watersheds in the planning area are perennial and have their headwaters in the Absaroka Mountains. The smaller ephemeral watersheds and Fifteenmile Creek have their headwaters in the semiarid rangeland of the basin. The percentages of public lands in watersheds and along major waterways are shown in Table 9.

Table 10 lists the uses of streams and rivers in the planning area as determined by the Wyoming DEQ, and includes DEQ's and WGFD's classification of these waters. [The DEQ's classification system is: **Class 1** = surface waters that are to be maintained at their existing quality and in which no further water quality degradation by point source discharges will be allowed. **Class 2** = surface waters, other than those classified as Class 1, that the WGFD has determined to be currently supporting game fish or to have hydrologic and natural water quality potential to support game fish. **Class 3** = surface waters, other than those classified as Class 1, that the WGFD has determined to be currently supporting nongame fish or to have the hydrologic and natural water quality potential to support nongame fish. **Class 4** =

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surface waters, other than those classified as Class 1, that the WGFD has determined to not have the hydrologic or natural water quality to support fish. The WGFD classification system is: **Class 1** = premium trout waters—fisheries of national importance. **Class 2** = very good trout waters—fisheries of statewide importance. **Class 3** = important trout waters—fisheries of regional importance. **Class 4** = low production waters—fisheries frequently of local importance but generally incapable of sustaining substantial fishing pressure. **Class 5** = very low production waters—often incapable of sustaining a fishery.]

Water quality data is limited for the planning area; however, samples collected on the major waterways from 1982 through 1986 reveal good water quality in the headwater regions with a gradual deterioration downstream. Reductions in water quality are related to increased sediment from erosion and the addition of salts, pesticides, and bacteria from erosion and other sources. Sediment in streams also reduces the life of reservoirs and water treatment facilities, degrades fisheries and recreation resources, and increases water treatment costs.

Sources of salinity in the planning area include natural contributions from saline shales and from water discharges at oil production facilities.

Bacterial contamination from human and livestock sewage is present in nearly all waters of the planning area (Wyoming, DEQ 1979). Other pollutants and toxins have occasionally been identified in the planning area in low concentrations.

A byproduct of oil production in the planning area is water. Most of the oil wells in the Bighorn Basin pump many barrels of water for every barrel of oil. This water, when separated from the oil, is usually disposed of by release into intermittent stream channels. This changes the nature of the dry channel to that of a perennial stream, with its associated riparian vegetation and wildlife values. If the produced water channel then joins a natural perennial stream, the steady supply of produced water augments the normally fluctuating flows of the stream. The receiving stream especially benefits from the added flows during dry seasons or years when natural flows would be low or nonexistent. Ranchers and farmers benefit from the additional water available for stock water or irrigation. Cottonwood Creek, Sand Draw, Coal Draw, Buffalo Creek, Grass Creek, Little Grass Creek and Gooseberry Creek are examples.

Produced water, however, is the major source of human-caused salinity in the planning area and a source of other pollutants such as radioactive material, oil and grease, and settleable solids, including iron sulfide and oil coated sediments.

There are about 40 active produced water discharges in the planning area. These have created 13 miles of riparian habitat on public lands along otherwise dry stream channels. Additionally, produced water has augmented flow on up to 200 miles of streams.

Various watershed treatments have been constructed to address erosion and sedimentation problems. The majority were constructed in the Fifteenmile Creek Watershed during the late 1950s and early 1960s. There are 34 detention dams to collect and store sediment, 21 water spreader systems to distribute runoff, and contour furrowing on 6,143 acres to reduce surface runoff. Many of these are no longer serving their original purposes.

VEGETATION

Forestland Vegetation

The planning area contains about 59,000 acres of woodlands and forestlands. Woodlands have at least a 10 percent crown cover of trees. Commercial forestlands are defined as being capable of producing 20 cubic feet of wood per acre per year of a commercial species. There are about 45,000 acres of woodlands and 14,000 acres of commercial forestlands on public lands in the planning area.

Woodlands

Most woodlands in the planning area are associations of juniper and limber pine. Generally, these woodlands are on the west side of the planning area, downslope from commercial forestlands. In these areas, woodlands are encroaching on Foothills-Mountain/Grassland Shrub and Basin/Grassland Shrub communities. Aerial photos indicate that along the upper part of Grass Creek, woodland canopy cover increased about 210 percent between 1953 and 1989, probably because of a lack of fire. In the mid-1980s, a large portion of the limber pine in the planning area was killed by a mountain pine beetle epidemic.

Commercial Forestland

Commercial forestlands in the planning area comprise five main forest types. These are mixed conifer/Douglas-fir, spruce/fir, lodgepole pine, limber pine, and aspen.

Mixed Conifer/Douglas-Fir. Most of the commercial forestland is mixed conifer/Douglas-fir covering about 7,200 acres in the planning area. The stands are typically found on north-facing ridges. There are very few young mixed conifer stands; those that exist are the

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result of past harvests. Most harvests have been of this timber type.

Spruce/Fir. Stands of Engelmann spruce and subalpine fir are found in the higher elevations of the planning area, particularly in the upper Owl Creek watershed. These stands occupy about 4,000 acres of public lands on north-facing slopes and in riparian areas.

Lodgepole Pine. Lodgepole pine stands occupy about 1,400 acres. Most of these stands originated because of fires or have regenerated on clearcuts. Those stands that regenerated from fire are now stagnated pole stands that are heavily infested with dwarf mistletoe. These stands lack diversity and can not be improved by thinning.

Limber Pine. Limber pine stands in the higher elevations occupy more productive sites than lower elevation limber pine woodlands. Higher elevation stands that contain commercial quality Douglas-fir are classified as commercial forestland. About 1,200 acres of limber pine are classified as commercial forestland.

Aspen. Aspen stands comprise a small but important part of the total forestland. There are only about 200 acres of aspen on public lands in the planning area. These stands are typically old and are being replaced by conifers.

There are many small stands of mature aspen in areas that are predominantly conifer. These mature aspen are dying, however, stands with good potential for reestablishment have been identified. Over 2,000 acres could support aspen reestablishment. Aspen stands are beneficial for livestock forage, wildlife habitat, visual, and recreational values.

Factors Affecting Forestland Condition

General Factors. About 1,300 acres of public forestland in the planning area have been disturbed during the past 100 years by fire or harvesting which would cause the stands to regenerate or convert to earlier successional stages. For commercial production, the forestland is not producing up to capacity because of stagnation, insect infestation, disease, and old age. Otherwise, these forests continue to support rich wildlife habitat and biological diversity. Historically, forest health problems in the planning area have been remedied through commercial harvesting.

Forestlands that have been harvested are concentrated in areas that are legally and physically accessible. Between 1963 and 1970, many of the easily accessible commercial stands in the planning area were harvested.

Most of these were two-stage shelterwood cuts in which some of the forest canopy was left to provide shade for the establishment of new trees. Generally, these stands are ready for the second-stage harvest to maintain their commercial productivity.

Factors Affecting Aspen. Aspen stands occur at early seral stages in the forest ecosystem. Aspen typically regenerate from root sprouts in response to a disturbance, such as fire or timber harvest, which opens the forest canopy. In addition to opening the forest canopy, fire removes conifers that can make soils too acid for aspen. In the planning area, many aspen stands have succeeded to conifers because disturbance has been reduced and young aspen trees have been browsed by wildlife and livestock.

Rangeland Vegetation

Plant Communities

Figure 2 lists vegetative communities and cites the generally "preferred, undesirable, and component" plants for each. Preferred species are those that have been identified as "key species" in previous land use plans. These plants maintain soil, water, forage, and wildlife values for a healthy ecosystem. Undesirable species are normally unwanted in the plant community, or are acceptable only in small quantities. Component species are valuable in limited quantities, but become undesirable if they replace preferred species as major components in the plant community.

Desired Plant Community (DPC)

The traditional method of evaluating rangelands is to compare the existing vegetation community to the potential natural community. Through this comparative analysis rangeland condition can be determined. While this continues to be a viable approach for evaluating rangelands, there are circumstances where the desired plant community will differ from the potential natural community. For example, on antelope winter range a desired plant community objective may be to increase the amount of existing sagebrush.

Desired plant community objectives are based on a study of existing plant communities in other areas. Throughout the RMP analysis, desired plant community objectives were varied and compared according to percentages of grasses, forbs, and shrubs for each of the plant communities discussed in Figure 2. In site-specific land use planning, composition, production, cover, frequency, and density also may be used to describe the community.

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Riparian Vegetation

Riparian areas store water, trap sediment, produce forage, and maintain biological diversity. Riparian areas are functioning properly when adequate vegetation, rocks, or large woody debris are present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality.

Proper functioning riparian areas are stable ecosystems that can be managed for many types of habitat and land uses. When a riparian area is functioning properly, a variety of desired plant community objectives can be developed. For example, the plant community objectives could vary depending on whether the area is managed for moose habitat or for cattle grazing.

Functioning-at-risk riparian areas are functioning but are unstable and vulnerable to damage; they may have a downward or an upward trend. The primary management objective for riparian areas that are functioning-at-risk is to improve the stability and resilience of the areas through changes in management. These changes are intended to produce a proper functioning condition. Functioning-at-risk riparian areas having a downward trend are a high priority for management because riparian stability and important resource values could be lost. Areas having an upward trend should be intensively monitored until they function properly.

Nonfunctioning riparian areas are those in which most resource values have been lost and the condition is stable or on a downward trend. The immediate objective for nonfunctioning riparian areas is to achieve a functioning-at-risk condition. Any type of vegetation that promotes riparian values would be desirable.

Structural Diversity and Appearance of Desired Plant Communities

Uplands. Regardless of the composition of the desired plant community an adequate standing crop of vegetation is important during all seasons of the year to maintain livestock diet quality, wildlife habitat, watershed condition, and scenic values. After grazing, some standing crop of preferred grasses should remain in open spaces between shrubs.

On big game winter ranges an adequate amount of the current year's vegetation growth should be maintained on browse species to meet the physiological needs of shrubs and to provide forage for livestock and wildlife. It is undesirable for shrub communities to be severely browsed.

Riparian Areas. Riparian communities capable of supporting woody plants such as willows and cotton-

woods should consist of individual plants in different age and height classes to provide structural diversity and to maintain healthy reproducing populations. An adequate amount of the current year's growth should be maintained on woody species to meet the physiological needs of the plants and to provide forage for livestock and wildlife in the following year. The presence of severely hedged woody species is undesirable.

An adequate standing crop of herbaceous (nonwoody) riparian plants should remain after grazing to maintain watershed condition, diet quality for livestock, wildlife habitat quality, scenic values, and other multiple use benefits of riparian areas.

Noxious Weeds

The Wyoming Department of Agriculture and the County Weed and Pest Districts have conducted systematic weed surveys in the planning area. Identified noxious weeds are Canada thistle, musk thistle, plumeless thistle, scotch thistle, perennial sowthistle, Russian knapweed, hoary cress (whitetop), common burdock, houndstongue, spotted knapweed, and leafy spurge. In 1976 an estimated 50 acres were infested with noxious weeds. Since that time Russian knapweed has infested hundreds of acres along the Bighorn River and is common along Gooseberry Creek.

Areas surrounding the Bighorn Basin, particularly in Montana, are now heavily infested with noxious weeds. Some of these weeds, such as leafy spurge and spotted knapweed, are very invasive and are readily transported to uninfested areas. These weeds prefer the better watered or irrigated lands over the more arid parts of the Bighorn Basin. Such high value lands as riparian areas, big game winter ranges, high production grazing lands, and irrigated croplands are the first areas impacted by the invasion of noxious weeds. Noxious weeds cross all land ownership and jurisdictional boundaries.

Throughout the Bighorn Basin, about 17,000 acres are infested, but inventory information is only available for about 20 percent of the Bighorn Basin, so actual infested acreage may be much larger than the current estimate.

In 1990, four Bighorn Basin Weed and Pest Districts and various governmental agencies, including the BLM, formed a group to concentrate on controlling Russian knapweed along the Bighorn River. It was soon evident that this committee needed to expand its scope to the control of all noxious weeds throughout the entire Bighorn Basin. The Bighorn Basin Exotic Plant Steering Committee was thus formed. Members include the Weed and Pest Districts for Washakie, Big Horn, Hot

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Springs, Park, and Fremont Counties; the Worland BLM District; the Bighorn and Shoshone National Forests; the Bighorn Canyon National Recreation Area; Yellowstone National Park; the University of Wyoming and the University Extension Service; Wyoming Weed and Pest Council; Bureau of Reclamation; Bureau of Indian Affairs; Agricultural Research Service; the Animal and Plant Health Inspection Service and the Wyoming Game and Fish Department.

All members of the steering committee recognize their responsibility to adjacent landowners, governmental agencies, and the general public in fighting weed problems. The steering committee also recognizes that any single agency's resources are not adequate for this task and that the sharing of resources and expertise is required to control noxious weeds.

The steering committee is providing a unified effort to develop a public awareness program, a prevention program, and a common inventory, mapping, monitoring, and reporting procedure.

There are currently two Special Weed Management Areas in the planning area. These are the Owl Creek and Bighorn River Weed Management Areas. The formation of these weed management areas has established logical boundaries that facilitate control, coordination, mapping, planning, monitoring, and public education. The goals and actions for these areas are specific to the invading weed situation; but each uses an integrated weed management program to contain or eradicate the invading weed species.

With the resources available, the Bighorn Basin Exotic Plant Steering Committee is developing an overall noxious weed action plan which includes:

1. inventory and monitoring of all lands within the Bighorn Basin to record the occurrence and spread of noxious weeds;
2. delineation of the highest priority areas for prevention of noxious weeds and aggressive control of new infestations;
3. development of strategies for initial response to new invasions of noxious weeds so they can be eliminated before they get out of control;
4. education and training for steering committee members and various cooperators on dealing with weed infestations;
5. development of a public awareness and education strategy;
6. review of land management activities for their potential to spread weeds or create conditions that are conducive to weed establishment;

7. development of weed prevention measures (best management practices) to help prevent the spread of noxious weeds; and
8. development of partnerships among groups that have a stake in the management of noxious weeds.

Many of these actions are currently underway and all members of the steering committee are sharing in the responsibility for implementation.

The Worland District weed team, in cooperation with the steering committee, is preparing a Bighorn Basin-wide weed prevention plan. This plan will be a schedule of weed prevention activities which include:

1. training for cooperating parties and BLM employees;
2. public education;
3. delineation of the highest priority areas for prevention and development for strategies for initial response to new invasions of noxious weeds so they can be eliminated before they get out of control;
4. reviewing activities on private, state and public land for their potential to spread weeds or create conditions that are conducive to weed establishment; and
5. developing weed prevention measures (best management practices) for steering committee adoption.

The BLM Worland District will be responsible for implementing planned weed prevention activities on public lands.

Special Status Vegetation

The planning area is not known to contain any designated threatened or endangered plant species or candidate species. However, there are plants that the FWS considers "species at risk" (see Glossary). These plants are generally found in locations based on geology, elevation, and climate. Some of these plants occur in large numbers in a few areas while others are rare throughout the planning area. (See Revised Table 11.)

Vegetation Inventory and Ecological Range Condition. A vegetation inventory was conducted in the planning area from June 1977 to October 1979. Ecological condition is the current vegetative composition compared to the potential natural community for an area and is synonymous with range condition. Improvement of ecological condition has traditionally been a resource condition objective. Areas where ecological condition is evaluated are called range sites. Range sites differ in their potential to produce vegetation based on soil type and precipitation.

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WILD HORSES

In the planning area wild and free roaming horses are found in the Fifteenmile Wild Horse Herd Management Area. The herd area is about 83,130 acres. About 2,300 AUMs of forage could be consumed by wild horses in a given year, while domestic livestock use averages about 1,280 AUMs in the herd area. (All of the domestic livestock are sheep.) Legally authorized livestock use is much higher than the level of actual use: The total authorized livestock grazing use in the herd area is 7,925 AUMs. Of this amount, 6,280 AUMs represent authorized use that could take place on public lands (active preference). In contrast to the authorized and average use levels, the overall recommended stocking level for livestock and wild horses in the herd area is about 5,670 AUMs, based on rangeland vegetation inventory data.

After passage of the Taylor Grazing Act, the first recorded wild horse roundup took place in October 1938 on a large area identified as "Federal Range in the area south of the Greybull River to Cottonwood Creek." (Worland District Office files).

With the passage of the Wild Horse and Burro Act of 1971, a portion of the natural range was established as the herd management area. Sometimes horses roam outside the established area. Depending on the time of the year, as many as 80 wild horses can be found outside the herd area on adjacent grazing allotments. These grazing allotments, with all or most of their lands outside the herd area, are South Tatman, Tatman Mountain Common, New Burlington, Timber Creek, and Snyder. Grazing allotments that are within, or partly within, the herd area boundary are: Dickie, Badger Basin, Pitchfork, Allen Basin, and Hunt Oil Company.

As of October 1991, there were about 158 horses in the herd management area. Each horse requires about 900 pounds of forage per month. Currently, the herd appears to be in good condition, although range conditions are generally rated as static or downward in trend.

The herd area is located in the Fifteenmile Creek watershed which is characterized by badland topography and high levels of erosion. Precipitation ranges from 4 to 12 inches per year, with an average of 7.8 inches per year.

Fifteenmile Creek is a cottonwood-lined ephemeral stream, although a few seeps are located along the creek where water may be present for extended periods of time. Generally water is a major concern in the herd area because of the low precipitation and high siltation levels, and the possibility of drought. There are eight reliable reservoirs in the area. Twenty-five additional

reservoirs hold water during part of the year. (The number of reservoirs holding water depends on the annual precipitation.) The water quality is poor because of silt levels and many of the reservoirs are not suitable for horses, wildlife, or livestock. Two water wells in or near the horse herd management area are currently not producing. The completion of additional wells in the herd management area is questionable because of the formation depths and characteristics. (Worland District Hydrologic Feasibility Study, September 1991.)

The fences between the herd area and the Snyder and the Tatman Mountain Common allotments are in good condition; however, horses routinely break portions of these fences along historically-used trails. A roundup conducted in October 1991 reflected this problem because 40 horses were gathered from these two allotments. Within five months 45 horses were again on these allotments.

The fence between the herd area and the South Tatman Allotment is in very poor condition and the horses have been using this allotment for some time. It is common to find 30 to 40 horses grazing on this allotment.

In addition to concerns about water and fences, the mixture of private and public lands in the herd area is an issue. Land exchanges to acquire privately-owned lands for public lands elsewhere, have been discussed as a possible solution.

WILDLIFE AND FISH

Wildlife

Big Game

Public lands in the planning area provide a large portion of the habitat needed for big game animals. Table 14 shows the population levels and the number of acres in crucial winter range or birthing areas. The availability of habitats is often the limiting factor for growth of big game populations. Pronghorn antelope and mule deer are heavy users of the public lands throughout the year.

Bighorn Sheep. Currently, 20 to 30 bighorn sheep may periodically use an estimated 11,800 acres of high-elevation land in the western portion of the planning area. The population moves back and forth between the Wind River Indian Reservation, the Shoshone National Forest, and a few square miles in the southwestern corner of the planning area (Map 13). In the planning area their current range is restricted to the upper portions of the South Fork of Owl Creek and Rock Creek. An interagency research proposal is focusing on population

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dynamics, seasonal movements, and habitat use to aid in future habitat improvements and expansions. Historically occupied habitat at Mudstone Ridge, Castle Rocks, and the Holy City still has the potential for bighorn sheep reintroduction.

Elk. The elk habitat in the planning area consists of about 216,000 acres of public, state, and private lands which include about 81,800 acres of crucial winter range (Map 14). The habitat supports an estimated population of 1,000 to 1,500 animals. Elk are the major migratory big game animals inhabiting the higher elevations in the western part of the planning area. Elk migrate, winter, and calve along a series of ridges separating the upper reaches of the Owl Creek, Cottonwood Creek, Grass Creek, Enos Creek, and Gooseberry Creek drainages. These ridges are characterized by dense stands of timber along their northern exposures. Hiding and thermal cover is best on these exposures. Sparse timber and sagebrush-grassland slopes and openings characterize the southern exposures and ridgetops. These are open and wind-swept in the winter and are often the best forage sites. The ridgetops are used as migration corridors and wintering habitat. Some elk remain in the planning area yearlong.

Moose. It is estimated that there are 50 moose in the planning area on about 107,000 acres (Map 15). These moose inhabit the headwaters of streams on the eastern slope of the Absaroka Mountains. Wintering moose tend to concentrate along stream bottoms and riparian areas where tender woody plants are browsed and in thick coniferous timber where snow depths are decreased. Shrubs are important forage yearlong.

Mule Deer and White-Tailed Deer. Mule deer have an estimated population of 12,000 to 13,000 animals in the planning area. Mule deer habitat is an estimated 1,453,300 acres of public, state, and private lands, of which about 396,500 acres are crucial winter range (Map 16). It is assumed that at least 50 percent of the mule deer are yearlong residents of the badlands and river bottoms. The remainder of the herds winter in the planning area and migrate to and from the Shoshone National Forest in the spring and fall. The migrant herds winter primarily in foothills below 7,500 feet. These are characterized by scattered juniper and limber pine, rocky topography, and sagebrush slopes and draws. The most important winter forage plants are Wyoming big sagebrush and other shrubs.

The migrant mule deer that use the higher elevations have slowly been recovering from a major population decline during the late 1970s. In the lower elevations resident deer in small herds use river bottoms, small streams, and badlands. The greatest diversity of important browse plants are along rivers and streams. These resident herds have remained stable or increased slightly.

White-tailed deer inhabit an estimated 77,000 acres of habitat in the planning area. This habitat is generally associated with wooded and agricultural lands along river bottoms and riparian areas of the Bighorn, Wood, and Greybull rivers; and their perennial tributaries such as Owl, Cottonwood, Gooseberry, and Fifteenmile creeks. The majority of this habitat is privately-owned, however, several public land tracts along the rivers provide good yearlong habitat.

Pronghorn Antelope. Pronghorn antelope habitat in the planning area consists of an estimated 1,327,000 acres of winter or yearlong habitat which includes 128,600 acres of crucial winter range (Map 13). This habitat supports a population of 5,000 to 6,000 animals. Pronghorn have been observed from alpine tundra in the southwestern corner of the planning area to the salt desert lowlands. Definite migratory patterns exist between winter ranges and spring/summer ranges. Across these migratory routes and near birthing areas, a few old fences form barriers to the passage of pronghorns. Crucial winter ranges are in basins at elevations from 4,000 to 6,000 feet and along benchlands where Wyoming big sagebrush dominates and snow depths are consistently shallow. Birthing areas are usually located near winter ranges. Browse is the most important kind of forage, but grasses and forbs are also important in spring and summer.

Predators and Furbearers

Black bear and mountain lion are trophy game animals that are harvested through sport hunting in the planning area. The WGFD classifies coyote, jackrabbit, porcupine, raccoon, red fox, and skunks as predaceous animals that can be harvested for predator control without a hunting license.

Beaver, badger, bobcat, muskrat, mink, and pine marten are classified as furbearers and are fairly abundant in the planning area. Predaceous animals and furbearers use a variety of plant communities, from lowland riparian and agricultural communities to conifer forests.

Small Mammals

Small mammals inhabiting the planning area include cottontail rabbits, snowshoe hares, white-tailed prairie dogs, bushy-tailed woodrats, deer mice, chipmunks, weasels, kangaroo rats, sagebrush voles, various squirrels including the thirteen-lined ground squirrel, pocket gophers, marmots, other small rodents, pikas, bats, and shrews. These animals are important food for reptiles, raptors, and other mammals. Cottontail rabbits and snowshoe hares can be harvested as small game animals.

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Birds

Neotropical Migrant Birds

The planning area provides nesting habitat for around 100 species of neotropical migrant birds. The populations of most of these species are declining because of habitat fragmentation on breeding grounds in North America and wintering areas in South America. A small fraction of the breeding grounds are in the planning area. Neotropical migrant birds include sparrows, warblers, flycatchers, and swallows. (Refer to the section on "Habitat Fragmentation" in this chapter.)

Raptors

Twenty-one species of raptors inhabit the planning area for some parts of the year. Golden eagles and rough-legged hawks concentrate in the eastern portion of the planning area during the winter.

Eleven kinds of raptors are known to breed in the planning area. Raptors, like most birds, are very sensitive to disturbance during the nesting period and are likely to abandon their nesting attempts if they are disturbed during nest building or when eggs are being laid. Raptors will tolerate some intrusion when young are in the nest. Some raptor pairs nest in the same vicinity year after year. Cliffs, rock outcrops, and sometimes shrubs or cottonwood trees are used for nesting sites by most raptors. In open country, utility poles, fence posts, isolated trees, rock outcrops, and other structures provide important hunting perches for raptors. These are often along transportation routes where raptors can be hit by automobiles while feeding on road-kills. Raptor electrocution may still be a problem on some of the older power lines but most have been upgraded to raptor-proof standards.

Upland Game Birds

There have been about 70 sage grouse leks (strutting grounds) identified in the planning area over the past 30 years. Leks are clearings in sagebrush where the birds can strut and breed with minimal threat from predators. In some sage grouse habitat areas, strutting takes place at various locations from year to year. In other areas, strutting occurs in the same place each year. Within ten days after breeding, females disperse to nesting areas which are usually within 2 miles of the lek (Map 17).

Sagebrush is vital to sage grouse as food and cover, especially during the winter and nesting periods. During spring and summer, dependable water and succulent

forage, like that found in wet meadows, are very important to hens with young broods. In addition, young birds rely almost exclusively on insects for food during the first six to eight weeks of life.

The planning area has three sage grouse complex areas: Upper Fifteenmile, Spring Gulch, and Blue Mesa. The complexes have many suitable leks and overlapping nesting habitat which might, or might not, be used by the breeding birds during any year. In these areas, it may not be necessary to protect the location of individual leks because of the adjacent habitat to which the birds can defer. However, the amount of disturbance within a complex could become a factor if that disturbance exceeds 20 percent of the total habitat.

Other upland game birds in the planning area, include chukar and Hungarian partridge, ring-necked pheasant, blue and ruffed grouse, and mourning doves.

Populations of many upland game birds were higher during the 1970s. A hard winter is thought to have been responsible for the decline.

Waterfowl and Waterbirds

Habitat for ducks and geese is found along the Bighorn and Greybull rivers, and associated with perennial streams, stock ponds, and reservoirs. The Bighorn River provides the most important waterfowl habitat such as nesting habitat for Canada geese and for a variety of ducks. The Grass Creek Reservoir Habitat Management Plan (BLM 1983) is improving reservoirs for both reproduction and fall staging habitat through fencing, planting of vegetation, and nest structure placement.

Five great blue heron rookeries have been identified in the planning area. One rookery is located on public land at Wardel Reservoir which uses a human-made structure built specifically for heron nesting.

Sandhill cranes and a variety of shorebirds are dependant on reservoirs, streams, and rivers for foraging and nesting habitats.

Reptiles, Amphibians, and Insects

Several kinds of reptiles and amphibians inhabit riparian areas around streams, rivers, small temporary ponds, and reservoirs. Grasshoppers and mormon crickets occasionally have large population increases which can reduce annual growth of vegetation in some areas. The Animal and Plant Health Inspection Service (APHIS) controls these populations when necessary.

AFFECTED ENVIRONMENT

Fish

The "Wyoming Stream Fishery Classification Map," (WGFD 1987) shows about 470 miles of perennial trout streams in the planning area. About 1.3 miles of Class 1 streams on public land in the planning area are in good or excellent fisheries habitat condition. About 90.6 miles are Class 3 and 4 streams. (There are no Class 2 streams in the planning area.) Of the Class 3 and 4 streams, 2.0 miles are in good or excellent condition, 35.9 miles are in fair condition, 10.7 miles are in poor condition, and 42.0 miles are in undetermined condition.

Twenty-eight miles of Class 1, 3, and 4 streams in the planning area contain trout populations or habitat with the potential to support trout. Most perennial streams contain a variety of native nongame fish species such as longnose dace, flathead chub, lake chub, plains killifish, silvery minnow, and fathead minnow. Nongame species provide biodiversity, forage for sport fish, a prey base for numerous birds and mammals, and are often seized for bait by fishermen or commercial bait dealers. In the planning area, 61.18 miles of streams contain fish.

Good or excellent fisheries habitat is found in the deep canyon portion of the South Fork of Owl Creek and along the upper portions of the Bighorn River. Habitat condition in most other streams is fair or poor. Fisheries habitat condition depends on flow, channel stability, riparian and watershed condition. About 70 percent of all perennial streams on public land are in a stable or upward trend, about 30 percent are in a declining trend.

Two reservoirs on public lands in the planning area contain fish. Wardel Reservoir has been stocked in the past with walleye, but irrigation demands have often reduced water levels to the extent that, in some years, the fish have not survived. It has recovered somewhat and is now producing walleye and yellow perch. The WGFD has terminated its stocking program until a minimum pool agreement can be negotiated with local irrigators.

A reservoir commonly known as Wardel East (Albert Wardel #1) is 2 miles southeast of Wardel Reservoir. A fish survey conducted in 1992 revealed that the reservoir contained a variety of nongame fish. These fish probably entered the reservoir through a ditch from Wardel Reservoir. Wardel East was constructed by an irrigator specifically for irrigation and is too shallow to support fish during normal winters. The WGFD will not pursue a stocking program for Wardel East.

Immediately upstream of Wardel Reservoir, irrigators constructed Harrington Reservoir under a right-of-way grant from the BLM. The primary purpose is the retention and management of irrigation water from the Greybull River. As a new reservoir on public land, requirements

have been placed on its operation to mitigate impacts on wildlife.

Shallow waters occupy much of the reservoir; however, the reservoir is deep enough to maintain a minimum water depth of 12 feet at the deepest part. This should insure survival of fish populations while allowing drawdowns to meet irrigation demands. The WGFD stocked Harrington Reservoir in 1994 with nongame fish and in 1995 with large mouth bass. Since water temperatures will often be warm in the shallower parts, the most practical fish for the reservoir are bass, walleye, yellow perch, and crappie. It is assumed that minnows and suckers will also colonize the reservoir through the ditch system from the Greybull River.

THREATENED, ENDANGERED, AND CANDIDATE WILDLIFE SPECIES

Threatened or Endangered Wildlife Species

Bald Eagle

Bald eagles were recently reclassified as "threatened" according to federal statute. An average of 55 bald eagles winter along Owl Creek and the Wood, Greybull, and Bighorn rivers. Roosting, perching, and potential nesting sites occur in cottonwoods and conifers along these rivers. Food sources include fish, waterfowl, and carrion. Occasionally bald eagles have been sighted during the spring and summer. One nest was discovered in 1979 near Basin, but has not been used since 1988. No roosting areas have been identified on public land within the planning area.

A bald eagle survey was conducted in the winter of 1992 by the BLM and the National Wildlife Federation. Twelve routes were followed and 53 bald eagles were seen near the planning area along the Bighorn and Greybull rivers.

Black-Footed Ferret

The last known wild population of black-footed ferrets was near the northwestern border of the planning area. One of the main habitat requirements of black-footed ferrets is an abundance of food, commonly consisting of prairie dogs. White-tailed prairie dogs can be found in areas that contain Salt Desert Shrub or Basin Grassland/Shrub vegetative communities. In the planning area, white-tailed prairie dog towns range in size from 1 to 1,000 acres. The larger colonies, between the South Fork of Fifteenmile Creek and Hillberry Rim, and east of Hamilton Dome, could be possible habitat for black-footed ferrets.

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Grizzly Bear

The threatened grizzly bear is occasionally seen on the western edge of the planning area. Recent information from the WGFD indicates that, during the past five years, grizzly bear presence has increased markedly in the Wood River and Gooseberry Creek areas. They have also been observed along the Middle Fork of Owl Creek. Grizzly bears routinely occupy habitat areas less than 20 miles west of the planning area.

Habitat in the planning area is officially classified as unsuitable, unavailable, or suitable and available but unoccupied. It is generally believed that major federal activities or programs in the planning area would not affect grizzly conservation and recovery.

Historically, most contacts between grizzlies and humans have occurred during the spring, or have been related to the use of garbage dumps and hunting camps at other times. With recovery of grizzly bear populations in the Greater Yellowstone Ecosystem and subsequent filling of open bear habitat, the potential for bear/human conflicts is likely to increase. Potential bear problems will be addressed through education, informative signs, and the design of structures and other facilities, as appropriate.

Studies of the effects of roads on grizzly bears generally have shown that bears are displaced by motorized vehicles. Significantly less use of habitat occurs within 750 feet of roads. Riparian areas are important to grizzly bears in the spring. Potential habitat for transient bears would be provided by streams in the higher elevations of the Absaroka Mountain foothills in the planning area.

Northern Rocky Mountain Gray Wolf

Experimental populations of the Northern Rocky Mountain Gray Wolf have been released into the Greater Yellowstone Ecosystem. According to federal guidelines pertaining to lands outside Yellowstone National Park, the experimental population is to be treated like a species that is proposed for listing as threatened or endangered. Any action taken by federal agencies must take these animals into consideration for conservation of the population, according to the Endangered Species Act.

If there are fewer than six breeding wolf pairs within the Yellowstone area, chronic problem wolves may be removed by the FWS, according to guidelines for the experimental population. If there are more than six breeding pairs in the Yellowstone area, a livestock operator may take wolves in order to defend livestock. A permit from the FWS and evidence of wolf harassment of livestock would be required. The FWS could remove

problem wolves from the general area. The gray wolf is not anticipated to establish packs in the planning area although individual animals might visit the area.

Peregrine Falcon

Peregrine falcons have been seen migrating through the planning area; however, no nesting has been documented. Potential nesting habitat includes cliffs near prey (such as waterfowl or pigeons) and close to surface water. The South Fork of Owl Creek, the Holy City, and Castle Rocks are potential habitat areas.

Wildlife Candidate Species and Species-at-Risk

The US Fish and Wildlife Service considers candidate species to be animals and plants for which there is sufficient information on biological vulnerability and threats to support being listed as threatened or endangered species. Species-at-risk are animals and plants for which there is sufficient information that listing as threatened or endangered may be appropriate but persuasive data on biological vulnerability and threats are not currently available.

There is potential habitat in the planning area for two candidate species (one bird and one fish) and nine species of mammals, nine species of birds, three species of fish, and three species of amphibians which are considered species-at-risk by the FWS. The candidate species are the mountain plover and the sturgeon chub. The mammal, bird, fish, and amphibian species-at-risk are the long-eared bat (*Myotis evotis*), long-legged bat (*Myotis volans*), small-footed bat (*Myotis ciliolabrum*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Plecotus townsendii pallascens*), Yuma bat (*Myotis yumanensis*), Allen's thirteen-lined ground squirrel (*Spermophilus tridecemlineatus allenii*), North American lynx (*Felis lynx canadensis*), North American wolverine (*Gulo gulo luscus*), trumpeter swan (*Cygnus buccinator*), white-faced ibis (*Plegadis chihi*), harlequin duck (*Histrionicus histrionicus*), ferruginous hawk (*Buteo regalis*), northern goshawk (*Accipiter gentilis*), western burrowing owl (*Athene cunicularia hypugae*), black tern (*Chlidonias niger*), loggerhead shrike (*Lanius ludovicianus migrans*), Baird's sparrow (*Ammodramus bairdii*), western boreal toad (*Bufo boreas boreas*), spotted frog (*Rana pretiosa*), eastern short-horned lizard (*Phrynosoma douglassi brevirostre*), flathead chub (*Platygobio gracilis*), western silvery minnow (*Hybognathus argyritis*), and plains minnow (*Hybognathus placus*). The biological assessment giving a more complete description of these species and their habitats is on file at the Bighorn Basin Resource

AFFECTED ENVIRONMENT

Area office and is available upon request. (Also see the Vegetation section of this chapter for the listing of candidate or species-at-risk plants.)

The ferruginous hawk, mountain plover, western burrowing owl, Baird's sparrow, and thirteen-lined ground squirrel might be found in Basin Grassland/Shrub and Salt Desert Shrub communities. In the higher elevations, the wolverine, lynx, goshawk, Townsend's big-eared bat, and the long-legged bat live in the Mixed Conifer/Deciduous communities. All of these animals feed on small mammals, birds, or insects. At lower elevations and in woodlands, the loggerhead shrike and small-footed bat may be found. The lakes, rivers, and wetlands may be habitat for the trumpeter swan, the white-faced ibis, the harlequin duck, the black tern, and Yuma, spotted, and long-eared bats. The western boreal toad and the spotted frog might also be found in the wetland areas. The sturgeon chub, the flathead chub, the western silvery minnow and the plains minnow may be found in large turbid streams such as the Bighorn and Greybull rivers.

Habitat Fragmentation

Habitat fragmentation occurs when a large, fairly continuous tract of one vegetation type is converted to other vegetation types with scattered fragments of the original vegetation type remaining. The remnants occupy less area, are of variable size, shape, and location, and are separated by habitats different from the original habitat (Faaborg, et al. 1992).

One species in the planning area that inhabits disturbed areas and the edges of nonfragmented habitat is the brown-headed cowbird. The cowbird is a generalist brood parasite that lays its eggs in nests of over 240 known host species, the majority of which are neotropical migrant birds. Historically, cowbirds were largely confined to mid-continental prairies where they presumably followed herds of nomadic bison. Cowbirds mainly search for seeds and insects in short grass and on bare ground and may have depended upon grazing by large ungulates to create suitable feeding conditions. Since the clearing of forests for agriculture and widespread introduction of livestock, however, cowbirds have expanded their geographical range eastward and westward as new feeding areas became available (Robinson et al. 1992).

A game animal that also uses a variety of habitats is the white-tailed deer. These animals are increasing along riparian areas throughout the planning area. Worldwide, white-tailed deer are adaptive animals that can live from humid, tropical jungle to dry, hot desert, and northern subarctic conditions. White-tailed deer are also very tolerant of people and their activities. Their

foods include grasses, forbs, and shrubs, whatever is more nutritious. Their range has been extended northward as a result of agricultural and forestry practices (Hesselton and Hesselton 1982).

The brown creeper is an example of a neotropical migrant bird that needs large, undisturbed habitat areas to survive. These birds are always less abundant in clearcuts, or partially logged forests, than in uncut areas. They have also been found to be more abundant in old-growth, rather than in mature, second-growth forests (Hutto et al. 1992).

Another animal that seems to have suffered from habitat fragmentation is the North American wolverine. Wolverines tend to be solitary and primarily restricted to forested or alpine areas that have a high diversity and abundance of big game animals. Wolverines are generally described as opportunistic omnivores in summer and primarily scavengers in winter, although they can successfully kill large animals in deep snow. Wolverines appear to be intolerant of land-use activities that permanently alter habitats, such as agriculture and urban and industrial development. The greatest impact on wolverines may not be the actual loss of habitat or the presence of humans but possibly the habitat fragmentation and access that result from land-use activities (Banci 1994).

PROPOSED AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Federal regulations (43 CFR 1610.7-2) require the identification and consideration of areas having potential for ACEC "designation and protection management" during the resource management planning process. To be designated an ACEC, an area must possess both relevance and importance. To meet the relevance requirement there needs to be present "a significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard." To meet the importance requirement, "the above described value, resource, system, process, or hazard shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to human life or property."

According to BLM Manual Section 1613, ACEC designation may be appropriate if qualities or circumstances are present that make a resource fragile, sensitive, rare, irreplaceable, endangered, threatened, or vulnerable to adverse change.

FIFTEENMILE CREEK WATERSHED AREA

Public lands in the Fifteenmile Creek Watershed were proposed for ACEC designation in the Preferred Alternative of the draft EIS.

The Fifteenmile Creek watershed drains about 274,300 acres of public lands characterized by badlands topography and desert. Within the watershed, Fifteenmile Creek extends about 50 miles from its headwaters to the Bighorn River. The size, geology, and land uses of the watershed cause Fifteenmile Creek to be the largest contributor of sediment to the Bighorn River (Wyoming, DEQ 1979). In places, the channel is deeply incised, causing tributaries to cut gullies and erode riparian areas. Starting in the 1950s, water control structures were built to reduce erosion and sediment transfer within the watershed. Most of these structures are no longer serving their original purposes and, despite advances in grazing management, sediment delivery to the Bighorn River continues to be a major concern.

Land-use management in the Fifteenmile Creek Watershed should address the overall health of riparian and upland areas. These need to function properly to stabilize the watershed. Management actions should consider how the resources and land uses of the watershed are interrelated. As a desert ecosystem, the watershed is important because of its size and sediment production, but in other ways is similar to desert watersheds throughout the planning area. Land uses within the watershed include grazing by livestock and wild horses, use of habitat by wildlife, hunting, sightseeing, and ORV use. The variety of land uses and problems will require individuals, organizations, and the BLM to respond in a cooperative way.

The watershed was considered for special management attention because its hydrologic processes are not functioning properly; it contains a Cottonwood ecosystem, providing biological diversity and necessary wildlife habitat; sediment from the watershed has adversely affected municipal water supplies, scenic quality, and recreational opportunities of the Bighorn River; and management solutions must be based on cooperation.

Broad management and resource condition objectives for the watershed are: reducing upland soil erosion and sediment delivery to the Bighorn River, restoring riparian areas on public lands to a proper functioning condition, and improving overall production of vegetation.

Under the Proposed RMP, the Fifteenmile Creek Watershed would not be designated an ACEC. The area

is considered to lack relevance and importance for ACEC designation because it is similar to other desert watersheds in the planning area. Its resources, processes, and problems differ mainly in scale. Therefore, the Fifteenmile Creek area does not represent a significant resource, natural system, or process. Another reason for not designating the area is that change is anticipated to occur slowly in a watershed this large. For that reason, the watershed is not endangered, threatened, or vulnerable to adverse change in the near future. Finally, public comments on the draft EIS have suggested that the ACEC designation, in and of itself, might have the effect of interfering with cooperative management. Whatever the reason is for this, local public opinion about the ACEC could make it difficult for BLM to establish partnerships and pursue the common-sense management necessary to improve the watershed. That cooperative management is still an important objective of the Proposed RMP.

MEETEETSE DRAW ROCK ART AREA

Public lands in the Meeteetse Draw Rock Art area were proposed for ACEC designation in the Preferred Alternative of the draft EIS.

In the Meeteetse Draw area, comprising about 6,800 acres of public land, a type of cultural site is represented that typically has traditional cultural value to Native Americans. Thirteen of these sites have been located. The Shoshone and Crow tribes have identified the area around Thermopolis, Wyoming as being likely to have sites of traditional cultural value and spiritual significance. The Crow say that one of the four lodgepoles that mark the boundaries of their territory was positioned at the Hot Springs in Thermopolis.

At least eleven petroglyphs in the Meeteetse Draw area are thought to represent shaman figures, related to the religious practices of medicine men. The figures are often well formed and have elements which indicate the spiritual nature of the people. The figures include realistic and abstract representations of humans, animals, and celestial objects.

Two stone circle sites, having traditional cultural value to the tribes, are known to exist in the Meeteetse Draw area. It is possible that these sites are the remains of sweat lodges or other structures of ritual importance.

Six sites have been evaluated for listing on the National Register of Historic Places and five of these have been determined to be eligible for listing. Seven sites that have not been formally evaluated are managed as significant sites.

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Study of Meeteetse Draw area can further an understanding of aboriginal life in the Northwest Plains. The rock art and associated sites allow a glimpse of the rituals and the past of these people.

Many of the known sites have traditional cultural and sacred value to Native Americans who may currently be using these sites for religious ceremonies. Controlled management of this area would insure Native American access to these sites in conformance with federal policy stated in the American Indian Religious Freedom Act.

At least three universities have studied several of the sites. These include the universities of Wyoming and North Dakota and Arizona State University. The physical characteristics of petroglyphs make this one of the few areas where new analytical techniques for radiocarbon dating can be successfully used.

The Meeteetse Draw area also contains valid existing mining claims for bentonite, held by Wyo-Ben, Inc. The company has expressed interest in working with the BLM and Native Americans, if additional public access and development of the area for education and interpretation are pursued.

Under the Proposed RMP, the Meeteetse Draw Rock Art Area would not be designated an ACEC. The planning team believes the resources meet ACEC designation criteria pertaining to relevance. (See the discussion above on ACEC designation criteria.) However, Native Americans have not confirmed that the resources have substantial significance and values to meet the importance requirement for ACEC designation, or that they would support an ACEC designation.

A second factor in not designating the area at this time is that the ACEC designation would highlight the area and could lead to additional public use. This additional use might result in damage to the rock art. The BLM needs to conduct additional consultation with affected Native Americans before recreation is further encouraged in the area.

To protect the rock art, the Meeteetse Draw area will be kept isolated and no additional public access will be acquired, or interpretive work undertaken, without the appropriate level of consultation with Native Americans and the preparation of environmental analyses as necessary. Presently, there is no legal public access into the Meeteetse Draw area that is practical for vehicle use. The BLM will continue periodic surveillance in the area.

UPPER OWL CREEK PROPOSED ACEC

The Upper Owl Creek Proposed ACEC is about 45 miles west-northwest of Thermopolis, covering about

16,300 acres of public land in the Absaroka Mountain foothills. (This acreage has been revised from the draft EIS.) Following the public comment period on the draft EIS, additional public lands were identified for ACEC designation in the canyon of the upper South Fork of Owl Creek and were made part of the proposal. Map 12 at the end of Chapter 2 shows the revised ACEC boundary and the public lands it contains.

The Washakie Wilderness area of the Shoshone National Forest is immediately to the west of the proposed ACEC and the Wind River Reservation borders the area on the south. Ecologically, the upper Owl Creek area is related to these adjacent lands and to Yellowstone National Park.

The public lands comprising the proposed ACEC are in a natural setting where vehicle access and development have not had a major effect. Elevations range from about 6,700 to 11,300 feet above sea level. Slopes vary from about 6 degrees on high, alpine benches, to greater than 60 degrees along windswept ridges and in the canyon of the South Fork of Owl Creek. The soils are shallow, producing sparse, tundra-like vegetation in exposed areas. These shallow soils and steep slopes have contributed to a high potential for landslides.

The precipitation ranges from 15 to 19 inches; the heaviest accumulations occur as snow during the winter with frequent and sudden thunderstorms throughout the summer. Flash floods are common. Sagebrush grasslands and riparian vegetation characterize the benches and stream bottoms, subalpine forests occupy north-facing slopes, and dry, alpine tundra or barren areas typify the ridge tops.

Endemic plants listed as species-at-risk grow in "moonscapes" where rocky, sparsely-vegetated soils support low-growing cushion plant communities. The species found in or adjacent to the proposed ACEC include Evert's waferparsnip, Wyoming tansymustard, Rocky Mountain twinpod, and shoshonea.

Recreation opportunities abound in this area for primitive activities like hiking, camping, fishing, and horseback riding. Relatively few people are encountered, enhancing the feeling of solitude. The highly scenic aspect of the area and beautiful vistas and canyons complement the primitive setting. Other common recreational pursuits are wildlife viewing and hunting, although these opportunities are limited by poor access.

The combination of inaccessibility, topography, and vegetation have made the area home to many species of animals. The ridges provide migration routes and wintering areas for elk and mule deer, as well as potential habitat for many other animals dependent upon alpine and rocky outcrops such as bighorn sheep and grizzly bears.

AFFECTED ENVIRONMENT

Moose are found in many of the stream bottoms with other riparian-dependent species like beaver, mink, black bear, and several kinds of neotropical migrant birds. The forested areas include some biologically diverse old-growth stands, providing thermal cover for wintering elk and moose, as well as habitat for pine marten and neotropical migrant birds.

Water in the canyon of the upper South Fork of Owl Creek flows into the ground on public lands to recharge important aquifers within the Bighorn Dolomite and Madison Limestone formations. This same water is pumped out of the ground at Hamilton Dome, as a byproduct of oil production, where it benefits riparian areas, wildlife habitat, and agricultural development.

Throughout this area, there are diverse cultural resources and areas important in Native American tradition.

The area also provides important fisheries habitat. Other land uses include commercial forestry and livestock grazing.

Special management attention was considered because representatives of the oil and gas industry have said they want the ability to conduct exploratory drilling in the area, despite the fact that there are currently no oil and gas leases in the area. Accordingly, the oil and gas potential of the proposed ACEC was reconsidered following publication of the draft EIS. It was determined that public lands along the South Fork of Owl Creek have low potential for the occurrence of oil and gas. The reason for this is that most of the important reservoir formations are exposed in the stream canyon and any oil or gas that was once present would have left those formations. In a similar manner, the other portions of the proposed ACEC would have low potential because the same reservoir rocks had been exposed to erosion approximately 50 million years ago. By 30 million years ago those reservoir rocks had been covered by volcanic deposits, however, the volcanic rocks are not known or anticipated to contain oil or gas.

After completion of the RMP, a detailed activity plan would be prepared for the Upper Owl Creek Area of Critical Environmental Concern if BLM receives a proposal for any major surface-disturbing activity. This activity plan would include assistance from the development proponent, and other affected and interested citizens, to determine whether some surface occupancy could be allowed in the area. Mitigation considered in the analysis would include "access corridors" and "cluster development."

The upper Owl Creek area is identified for ACEC designation in the Proposed RMP. The fragile, sensitive, and rare nature of several overlapping and ecologi-

cally-related resources, combined with significant groundwater recharge areas in the South Fork of Owl Creek, make the area both relevant and important for ACEC designation. The area is also appropriate for special management attention associated with ACEC designation because of the conflicts and adverse effects on sensitive resources that could occur if industry pursues oil and gas exploration or other kinds of development in the area. These conflicts and potential adverse effects might be overcome through the use of access corridors and new development technologies, but further study and consultation would be necessary to demonstrate how this would be accomplished.

BADLANDS AREA

Based on public comments on the draft EIS, about 208,600 acres of public lands characterized by badlands topography have been considered for ACEC designation in the development of the final EIS. These lands were identified in the draft and final EIS documents as the Badlands Proposed Special Recreation Management Area, and overlap part of the Fifteenmile Creek Watershed which was also previously considered for ACEC designation. (See Map 9 in Chapter 2.)

The badlands between Gooseberry Creek and the Greybull River in the north-central portion of the planning area comprise a rugged and colorful landscape of intricately carved rock exposures in the Eocene age Willwood and Tatman formations. The Willwood Formation is known for its rich fossil deposits including *Hyracotherium*, a North American horse (locally known as *Eohippus*), and the skeletons of the oldest primates in the world, *Cantius* and *Notharctus*. The Tatman Formation, exposed along the flanks of Tatman Mountain, is capped by one of the highest and oldest gravel terraces in the Bighorn Basin. This terrace, which marks the bed of the Greybull River during Pleistocene time, attests to the massive amount of erosion that has taken place during the past million years. Because of the scenic nature of the area, general lack of human intrusion, and important geology and paleontology, the National Park Service identified three potential National Natural Landmarks in this area during the late 1970s.

Under the Proposed RMP, the Badlands Area would not be designated an ACEC. The scenic resources, geology, and paleontology of the area are important for public enjoyment, primitive recreation, and education; however, they are not a cause for concern, or at risk of being lost or significantly degraded by surface-disturbing activities. As described in New Appendix 6, there are many ways for BLM to protect scenic values and paleontologic resources through mitigation. This mitigation will be applied in the Badlands Area in response to proposed

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land-use activities. Generally, the anticipated levels of surface-disturbing activities, including oil and gas development, would continue to be relatively low in the Badlands Area. Opportunities for primitive recreation would also be protected by BLM's management objec-

tive in the Proposed RMP to maintain those opportunities at their current levels. For these reasons, the area does not require an ACEC designation for special management attention or protection.

Table 4
Cultural Traditions and Chronology of the
Prehistoric and Protohistoric Periods

Prehistoric		
Time	Dates	Characteristics
Paleo-Indian	Prior to 7500 B.P.	Hunting and gathering associated with Pleistocene animals such as mammoth, camels, and <i>Bison antiquus</i> ; lanceolate spear points were used.
Early Archaic	8000 to 5000 B.P.	Arid climate called Altithermal; hunting and gathering associated with modern animals; large corner-notched and side-notched dart points were used.
Middle Archaic	5000 to 2500 B.P.	Sub-boreal climate similar to today's; there was greater emphasis on communal hunting and gathering; lanceolate, corner-notched, and side-notched dart points were used, as were a greater amount of ground stone tools and bone tools, compared to earlier periods.
Late Archaic	2500 to 1500 B.P.	Refinement of hunting and gathering continued; triangular corner-notched and side-notched dart points were used.
Late Prehistoric	1500 to 200 B.P.	Emphasis on communal hunting and gathering; technological innovations included the bow and arrow and pottery: These made hunting more efficient and enabled portable storage of foodstuffs.
Protohistoric		
Time	Dates	Characteristics
-----	275 to 120 B.P.	Transition from Prehistoric to Historic Periods; lifestyles of Plains Indians were altered by the availability of horses; trade items of European or Asian origin such as beads were prevalent during this period.

Table 5
Cultural Chronology of the Historic Period

Theme	Dates	Highlights
Fur Trade	1806 to 1840	John Colter entered the Bighorn Basin in 1806; two decades passed before active trapping began. In 1823 Jedidiah Smith traveled the "old Crow trail" into the Bighorn Basin on his way to the Wind River country. From 1823 to the 1840s, the area was trapped by fur trading companies. Jim Bridger visited the Bighorn Basin and later played a major role in its development. The era ends during the 1840s because the fur market collapses.
Exploration and Mining	1860 to 1879	Bridger Trail served as an important route to the Montana gold fields, avoiding hostile Sioux tribes along the Bozeman Trail. Most heavily used in 1864 when nine freight and wagon trains rolled over the Bridger trail. Limited hardrock prospecting activity occurred around 1870 and ended by 1879 because no major discoveries were made in the planning area.
Transportation and Agriculture	1871 to Present	John D. Woodruff became the first cattle rancher to settle in the region when he built a cabin on Owl Creek in 1871. He also became the first sheepman when he trailed a flock of 6,000 sheep into the Bighorn Basin in 1873. In 1884 the Rawlins to Fort Washakie Stage Road was extended to Meeteetse providing a stage and freight route between Meeteetse and Lander from 1884 to 1898. The first irrigation diversion ditch was built in the 1880s and the Big Horn Canal was built in 1905.
Energy Exploration and Development	1890 to Present	Exploration and development of coal began in the 1890s. The first coal district was established north of Thermopolis in 1898 and coal development began in 1906. In 1914 a discovery well was drilled for the Grass Creek Oil and Gas Field 35 miles west of Thermopolis. Nine other fields were developed between 1914 and 1940. The oil and gas and coal industries have played major roles in the "Boom and Bust" cycles of the area.

**Table 9
Watersheds of the Planning Area¹**

Watershed	Total Acres	Watershed		Stream System	
		Total Public Acres	Percentage of Total Acres	Total Miles	Public Miles
Perennial Waters					
Bighorn River	1,485,700	968,000	65	1,299	506
Greybull River	168,012	84,562	50	53	23
Gooseberry Creek	219,865	129,848	59	248	36
Cottonwood Creek	170,400	109,135	64	208	72
Grass Creek	88,726	50,567	57	95	9
Owl Creek	156,156	58,352	37	250	67
Intermittent/Ephemeral Waters					
Elk Creek	62,338	58,690	94	33	30
Fivemile Creek	27,692	22,571	82	21	16
Tenmile Creek	20,446	19,654	96	8	7
Fifteenmile Creek	333,381	274,273	82	293	193
Coal Draw	43,661	34,530	79	37	11
Sand Draw	30,474	25,257	83	18	13
Red Canyon Creek	7,538	4,957	66	10	6
Miscellaneous Tributaries	157,011	95,604	61	25	23

¹ Drainage areas and stream miles are for those portions of the watersheds and streams contained in the planning area.

**Revised Table 10
Uses and Classifications of Streams in the Planning Area**

KEY: CWF = cold water fishery; PWS = public water supply; LWW = livestock and wildlife watering, SCR = secondary contact (recreation); IRR = agricultural irrigation; WWF = warm water fishery

Stream Tributary(ies)	Uses	DEQ Class	WGFD Class
Bighorn River from ...			
Wedding of the Waters to Lucerne	CWF, WWF, PWS, LWW, SCR, IRR	2	1
Lucerne to Colter	CWF, WWF, PWS, LWW, SCR, IRR	2	3
Colter downstream	WWF, PWS, LWW, SCR, IRR	2	4
Greybull River	CWF, SCR, IRR, LWW	2	4
Dorsey Creek	IRR, LWW	4	5
Willow Creek	IRR, LWW	4	5
Magee Gulch	IRR, LWW	4	5
Iron Creek	IRR, LWW	2	4
Wood River	IRR, LWW	2	3
Sunshine Creek	IRR, LWW	2	4
Elk Creek	LWW	4	5
Fivemile Creek	LWW	3	5
Tenmile Creek	LWW	3	5
Fifteenmile Creek	LWW	3	5
North Fork Fifteenmile Creek	LWW	4	5
South Fork Fifteenmile Creek	LWW	3	5
Middle Fork Fifteenmile Creek	LWW	4	5
Crooked Creek	LWW	4	5
Dry Cottonwood Creek	LWW	3	5
Rock Waterhole Creek	LWW	4	5
Wilson Spring Creek	LWW	4	5
Gooseberry Creek above Wyoming 120	CWF, LWW	2	3
Gooseberry Creek below Wyoming 120	WWF, IRR, SCR, LWW	2	4
Cottonwood Creek above Hamilton Dome	CWF, LWW	2	4
Twentyone Creek	LWW	4	4
Cottonwood Creek below Hamilton Dome	IRR, LWW	4	4
Wagonhound Creek	LWW	4	4
Prospect Creek	LWW	4	4
Grass Creek above Grass Creek Oil Field	CWF, LWW, IRR	2	3
Grass Creek below Grass Creek Oil Field	IRR, LWW	4	3
Coal Draw	LWW	2	5
Sand Draw	LWW	3	5
So. Fork of Owl Creek above Anchor Reservoir	CWF, LWW, SCR	2	3
Rock Creek	CWF, LWW, SCR	2	3
So. Fork of Owl Creek below Anchor Reservoir	CWF, LWW, SCR, IRR	2	4
Red Canyon Creek	LWW	4	5

Revised Table 11

Plant Species-At-Risk Known or With Potential to Occur in the Planning Area

Common Name	Scientific Name	Known or Anticipated Locations
Fendler rock cress	<i>Arabis fendleri</i> var. <i>spatifolia</i>	Normally found in areas associated with sagebrush on rocky hills and ridges. Occurs mostly in the foothills of low mountains in Wyoming, Colorado, Nevada, Utah, New Mexico, Arizona, Texas, and Mexico.
Williams conimitella	<i>Conimitella williamsii</i>	Usually found on moist rock outcrops and cliffs, often on limestone. Endemic to the Rocky Mountains in Montana, Wyoming, and Idaho.
Owl Creek miners candle	<i>Cryptantha subcapitata</i>	Normally found on sandy-gravelly slopes and desert ridges on sandstones of the Wind River Formation. Endemic to the Owl Creek Mountains and north Wind River Basin.
Evert's waferparsnip	<i>Cymopterus evertii</i>	T. 47 N., R. 99 W., section 2. Ordinarily found on coarse volcanic soils or occasionally on sandstone, often occurs in cushion plant communities with other low prostrate forbs. Endemic to Absaroka and Owl Creek mountains.
Wyoming tansymustard	<i>Descurainia torulosa</i>	T. 49 N., R. 103 W., section 20. Commonly found in sparsely vegetated sandy slopes and the base of cliffs of volcanic breccia or sandstone. Endemic to the Absaroka Mountains and Rock Springs uplift.
Rocky Mountain twinpod	<i>Physaria saximontana</i> var. <i>saximontana</i>	Normally found on sparsely-vegetated rocky slopes of limestone, sandstone, or clay. Endemic to the Wind River and Bighorn basins.
Persistent sepal yellowcress	<i>Rorippa calycina</i>	Normally found on riverbanks and shorelines, usually on sandy soils near high water line. Occurs in North Dakota, Montana, Wyoming, and the Northwest Territories of Canada. Found in planning area around a dry reservoir along Sixmile Creek northwest of Worland.
Shoshonea	<i>Shoshonea pulvinata</i>	T. 52 N., R. 102 W., section 7. Typically found on shallow, stony calcareous soils of limestone outcrops, exposed ridgetops, and talus slopes. Endemic to southern Montana and the Absaroka and Owl Creek mountains.
Hapeman's sullivantia	<i>Sullivantia hapemanii</i> var. <i>hapemanii</i>	Ordinarily found on moist calcareous outcrops and boulders in shady canyons and streams. Occurs in southern Montana, northcentral Wyoming, and central Idaho.

NOTE: Though not considered a species-at-risk by the FWS, some plant communities contain species not commonly found in the planning area such as ponderosa pine at Wagonhound Flat and serviceberry at Hamilton Dome. These plant communities contribute biological diversity.

Table 14
Estimated Big Game Populations on Crucial Winter Range and Birthing Range, 1990

Species	Population in Planning Area ¹	Crucial Winter Range		Birthing Range		Population Trend
		Total Acres	Percent Public	Total Acres	Percent Public	
Bighorn Sheep ²	20-30	270	30	--	--	slowly increasing
Elk	1,000-1,500	81,800	33	46,000	35	stable
Moose	50	16,800	28	9,100	25	slowly increasing
Mule Deer ²	12,000-13,000	396,500	55	--	--	stable to slowly increasing
White-tailed Deer ³	--	--	--	--	--	slowly increasing
Pronghorn Antelope ⁴	5,000-6,000	128,600	69	--	--	increasing

¹ The big game population figures for 1990 are estimated.

² The WGFD did not identify birthing areas for mule deer or bighorn sheep in 1990.

³ The WGFD did not identify birthing or crucial winter ranges for white-tailed deer in 1990.

⁴ The WGFD no longer identifies birthing areas for pronghorn antelope in the planning area. Map 13 in the final EIS still shows these areas, however, base maps in the Worland District office reflect this change.

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
MISCELLANEOUS LAND USES	Protective measures would be applied as conditions of land and resource use to (a) minimize soil movement; (b) minimize disturbance of vegetation in sensitive areas such as riparian areas; (c) protect important cultural and paleontological resources, recreational values, and wildlife resources; and (d) protect visual quality.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES MANAGEMENT	About 30 percent of evaluated cultural resource sites could be found eligible for listing on the National Register of Historic Places.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	The average cultural resource site in the planning area would be about 40 acres.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
FIRE MANAGEMENT	About 600 acres of public land could be burned by wildfire during the analysis period.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Prescribed fire could be used on about 11,000 acres of public land during the analysis period as a method of managing vegetation.	Prescribed fire could be used on about 4,500 acres of public land during the analysis period as a method of managing vegetation.	Prescribed fire could be used on about 9,000 acres of public land during the analysis period as a method of managing vegetation.	Same as Alternative A.

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>FORESTLAND MANAGEMENT</p>	<p>During the 1990 base year for analysis, the timber harvest level on all lands in the planning area was 800 thousand board feet (MBF) of sawlogs, 200 MBF of posts and poles, and 50 MBF of firewood. This included 300 MBF board feet of sawlogs, 50 MBF of posts and poles, and 50 MBF of firewood harvested from public lands.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>During the analysis period, about 36 million board feet (MMBF) could be harvested from all lands in the planning area. These would comprise 31.5 MMBF of sawlogs, 3.0 MMBF of posts and poles, and 1.5 MMBF of firewood.</p>	<p>Same as Proposed RMP.</p>	<p>During the analysis period, about 40 MMBF could be harvested from all lands in the planning area. These would comprise 35.5 MMBF of sawlogs, 3.0 MMBF of posts and poles, and 1.5 MMBF of firewood.</p>	<p>During the analysis period, about 34 MMBF could be harvested from all lands in the planning area. These would comprise 29.5 MMBF of sawlogs, 3.0 MMBF of posts and poles, and 1.5 MMBF of firewood.</p>
	<p>About 6 MMBF of forest products could be harvested from public lands during the analysis period. These would comprise 4.5 MMBF of sawlogs, 750 MBF of posts and poles, and 750 MBF of firewood.</p>	<p>Same as Proposed RMP.</p>	<p>About 10 MMBF of forest products could be harvested from public lands during the analysis period. These would comprise 8.5 MMBF of sawlogs, 750 MBF of posts and poles, and 750 MBF of firewood.</p>	<p>About 4 MMBF of forest products could be harvested from public lands during the analysis period. These would comprise 2.5 MMBF of sawlogs, 750 MBF of posts and poles, and 750 MBF of firewood.</p>

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
FORESTLAND MANAGEMENT (Continued)	Annual harvest levels on public lands should remain constant during the analysis period at the 1990 level for sawlogs.	Same as Proposed RMP.	Annual harvest levels on public lands should remain constant from 1991 through 1995 for sawlogs. Harvest levels could rise in 1996 and then remain constant at the new level until the end of the analysis period.	Annual harvest levels on public lands should remain constant from 1991 through 1995 for sawlogs. Harvest levels could decrease in 1996 and then remain constant at the new level until the end of the analysis period.
	Annual harvest levels of sawlogs on private and state lands remained constant during 1991 through 1993 and should also remain constant during 1999 through 2005 at a level of about 500 MBF annually. During 1994 through 1998, harvest levels on these lands could increase sharply to about 4 to 5 MMBF of sawlogs annually. The annual harvest levels for posts, poles, and firewood should remain constant throughout the analysis period at the 1990 level.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Timber harvests and other forest treatments could affect between 1,500 and 1,900 acres of public land.	Same as Proposed RMP.	Between 1,900 and 2,250 acres could be affected.	Between 750 and 1,500 acres could be affected.
	During the analysis period, about 750 MBF of firewood could be offered for sale from limber pine and juniper woodlands on public lands.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
FORESTLAND MANAGEMENT (Continued)	About 15 miles of roads could be built or upgraded to meet planned harvest needs during the analysis period. The same mileage would be reclaimed or closed.	Same as Proposed RMP.	About 30 miles of roads could be built or upgraded during the analysis period. These roads would be closed only to protect significant resource values.	Less than 15 miles of roads could be built or upgraded during the analysis period. All roads would be reclaimed as soon as possible.
LANDS AND REALTY MANAGEMENT Access	Public easements of up to 20 miles could be obtained on about 10 to 20 roads during the analysis period.	Same as Proposed RMP.	Public easements of up to 45 miles could be obtained on about 10 to 20 roads during the analysis period.	Same as Proposed RMP.
Landownership Adjustments	During the analysis period, about 750 acres of public land could go to private ownership through mineral patents, R&PP patents, and public sale to support community expansion needs. More than 2,000 acres of public land could become private through exchanges and an equal acreage could be acquired through exchange.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
Rights-of-Way	During the analysis period, about 200 to 250 public land acres could be disturbed by pipeline rights-of-way, 80 to 120 acres by power line construction, 600 to 700 acres by road rights-of-way, and 100 to 200 acres by other types of rights-of-way construction.	Same as Proposed RMP.	During the analysis period, about 250 to 300 public land acres could be disturbed by pipeline rights-of-way, 60 to 100 acres by power line construction, 700 to 800 acres by road rights-of-way, and 150 to 250 acres by other types of rights-of-way construction.	During the analysis period, about 180 to 220 public land acres could be disturbed by pipeline rights-of-way, 120 to 160 acres by power line construction, 500 to 600 acres by road rights-of-way, and 100 to 150 acres by other types of rights-of-way construction.

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING MANAGEMENT	<p>During the 1990 base year for analysis, livestock grazing use on all lands within BLM grazing allotments was 122,268 AUMs. This actual use included 72,138 AUMs on public lands. The following livestock grazing use took place on public lands in the years before and after 1990.</p>	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	<p>43,769 AUMs in 1987 51,443 AUMs in 1988 52,484 AUMs in 1989 54,064 AUMs in 1991 54,397 AUMs in 1992 60,470 AUMs in 1993 62,163 AUMs in 1994</p>			
	<p>By the end of calendar year 2005, the estimated long-term livestock grazing use on all lands within BLM grazing allotments should be about 135,241 AUMs annually. This would include about 79,792 AUMs of livestock grazing on public lands.</p>	<p>By the end of calendar year 2005, the estimated long-term livestock grazing use on all lands within BLM grazing allotments should be about 144,321 AUMs annually. This would include about 85,149 AUMs of livestock grazing on public lands.</p>	<p>By the end of calendar year 2005, the estimated long-term livestock grazing use on all lands within BLM grazing allotments should be about 146,411 AUMs annually. This would include about 86,382 AUMs of livestock grazing on public lands.</p>	<p>By the end of calendar year 2005, the estimated long-term livestock grazing use on all lands within BLM grazing allotments should be about 117,021 AUMs annually. This would include about 69,042 AUMs of livestock grazing on public lands.</p>

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING MANAGEMENT (Continued)	Activity plans should be developed or updated for all "I" category allotments at a rate of about three per year. (About 397,700 acres were included in livestock grazing activity plans and agreements as of 1990.)	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Range projects and treatments would usually be developed or applied in "I" category allotments. It is anticipated that project development could include construction of 50 miles of fence, 20 reservoirs, 10 springs, 10 miles of pipelines and 10 wells during the analysis period.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
MINERALS MANAGEMENT <i>Leasable Minerals Coal</i>	During the 1990 base year for analysis, 101,961 tons of coal were produced from privately-owned lands in the planning area. No coal was produced on BLM-administered lands.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	It is anticipated that during the 1991 through 2005 analysis period, planning area coal production should continue to be about 100,000 tons annually. This production would all come from privately-owned lands during 1991 through 1997, but could be split evenly between privately-owned and BLM administered lands starting in 1998.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">MINERALS MANAGEMENT</p> <p><i>Leasable Minerals Coal (Continued)</i></p>	<p>It is anticipated that about 40 acres of BLM-administered coal could be developed during the analysis period.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p><i>Geothermal</i></p>	<p>No geothermal leasing or development interest has been identified in the planning area. It is anticipated that development would not occur within the analysis period.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p><i>Gas and Oil</i></p>	<p>Because of existing oil and gas lease rights, legally-binding stipulations (that identify mitigation) can only be applied as new leases are issued. Since actively producing oil and gas leases do not expire, it is assumed that oil and gas production and other ongoing and existing operations in oil and gas fields would remain unchanged by any requirements of the Grass Creek Resource Management Plan.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>During the 1990 base year for analysis, total oil production on all lands in the planning area was about 7.6 million barrels; total gas production was about 7.6 billion cubic feet.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">MINERALS MANAGEMENT</p> <p><i>Leasable Minerals Gas and Oil (Continued)</i></p>	<p>In 1990, there were 788 producing oil wells and 42 producing gas wells on all lands in the planning area. On BLM-administered lands, there were 570 oil wells and 35 gas wells. An average oil well produced 9,600 barrels of oil in 1990; an average gas well produced 161,700 thousand cubic feet of gas. There were 26 active, 4 shut-in, and 7 abandoned oil and(or) gas fields in 1990.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>During the 1990 base year for analysis, total oil production on BLM-administered lands in the planning area was about 5.5 million barrels; total gas production was about 6.4 billion cubic feet.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>During the 1991-2005 analysis period, total oil production on all lands in the planning area should be about 92 million barrels.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>During the 1991-2005 analysis period, total gas production on all lands in the planning area should be about 185 billion cubic feet.</p>	<p>Same as Proposed RMP.</p>	<p>During the 1991-2005 analysis period, total gas production on all lands in the planning area should be about 190 billion cubic feet.</p>	<p>During the 1991-2005 analysis period, total gas production on all lands in the planning area should be about 180 billion cubic feet.</p>

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">MINERALS MANAGEMENT</p> <p><i>Leasable Minerals Gas and Oil (Continued)</i></p>	<p>During the 1991-2005 analysis period, total oil production on BLM-administered lands in the planning area should be about 67 million barrels.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>During the 1991-2005 analysis period, total gas production on BLM-administered lands in the planning area should be about 156 billion cubic feet.</p>	<p>Same as Proposed RMP.</p>	<p>During the 1991-2005 analysis period, total gas production on BLM-administered lands in the planning area should be about 160 billion cubic feet.</p>	<p>During the 1991-2005 analysis period, total gas production on BLM-administered lands in the planning area should be about 152 billion cubic feet.</p>
	<p>During the analysis period, BLM-administered mineral estate should contribute about 72 percent of the oil and 84 percent of the gas production in the planning area. Within existing oil and gas fields, BLM-administered lands would comprise about 79 percent of the total mineral estate acreage.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>During 1990, the price of oil was about \$20 per barrel; the price of gas was about \$1.80 per cubic foot. During the analysis period the price of oil and gas should remain constant.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">MINERALS MANAGEMENT</p> <p><i>Leasable Minerals Gas and Oil (Continued)</i></p>	<p>About 130 development wells could be drilled in the planning area during the analysis period. (It is assumed for the economic analysis that 124 would be oil wells and 6 would be gas wells.) These would include about 100 wells authorized by BLM primarily in the Hamilton Dome, Grass Creek, and Little Buffalo Basin fields. (It is assumed for the economic analysis that 95 would be oil wells and 5 would be gas wells.)</p>	<p>Same as Proposed RMP.</p>	<p>About 135 development wells could be drilled in the planning area during the analysis period. (It is assumed for the economic analysis that 128 would be oil wells and 7 would be gas wells.) These would include about 104 wells authorized by BLM primarily in the Hamilton Dome, Grass Creek, and Little Buffalo Basin fields. (It is assumed for the economic analysis that 98 would be oil wells and 6 would be gas wells.)</p>	<p>About 125 development wells could be drilled in the planning area during the analysis period. (It is assumed for the economic analysis that 120 would be oil wells and 5 would be gas wells.) These would include about 95 wells authorized by BLM primarily in the Hamilton Dome, Grass Creek, and Little Buffalo Basin fields. (It is assumed for the economic analysis that 91 would be oil wells and 4 would be gas wells.)</p>
	<p>About 28 wildcat wells could be drilled in the planning area outside existing fields during the analysis period. The 28 wildcat wells would include about 15 wells authorized by BLM for exploration of the BLM-administered mineral estate.</p>	<p>Same as Proposed RMP.</p>	<p>About 42 wildcat wells could be drilled in the planning area during the analysis period. The 42 wildcat wells would include about 22 wells authorized by BLM for exploration of the BLM-administered mineral estate.</p>	<p>About 14 wildcat wells could be drilled in the planning area during the analysis period. The 14 wildcat wells would include about 8 wells authorized by BLM for exploration of the BLM-administered mineral estate.</p>

Revised Table 15
Assumptions for Analysis by Alternative

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">MINERALS MANAGEMENT</p> <p>Leasable Minerals <i>Gas and Oil</i> <i>(Continued)</i></p>	<p>As part of the total anticipated activity described above, it is anticipated that seven new fields could be discovered during the analysis period, on federal, state, and private lands in the planning area. Each field would be small, usually consisting of 1 well. Altogether, 9 new development wells would be drilled. (It is assumed for the economic analysis that 8 would be oil wells and 1 would be a gas well.) These new fields should produce about 522,000 barrels of oil and 9.6 billion cubic feet of gas, during the analysis period.</p>	<p>Same as Proposed RMP.</p>	<p>As part of the total anticipated activity described above, it is anticipated that 11 new fields could be discovered during the analysis period, on federal, state, and private lands in the planning area. Each field would be small, usually consisting of 1 well. Altogether, 14 new development wells would be drilled. (It is assumed for the economic analysis that 13 would be oil wells and 1 would be a gas well.) These new fields should produce about 783,000 barrels of oil and 14.4 billion cubic feet of gas, during the analysis period.</p>	<p>As part of the total anticipated activity described above, it is anticipated that 3 new fields could be discovered during the analysis period, on federal, state, and private lands in the planning area. Each field would be small, usually consisting of 1 well. Altogether, 4 new development wells would be drilled. (It is assumed for the economic analysis that 3 would be oil wells and 1 would be a gas well.) These new fields should produce about 261,000 barrels of oil and 4.8 billion cubic feet of gas, during the analysis period.</p>

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>MINERALS MANAGEMENT</p> <p>Leasable Minerals <i>Gas and Oil</i> <i>(Continued)</i></p>	<p>It is anticipated that 6 of the new fields could be on BLM-administered lands in the planning area. Each field would be small, usually consisting of 1 well. Altogether, 7 new development wells would be drilled. (It is assumed for the economic analysis that 6 would be oil wells and 1 would be a gas well.) These new fields should produce about 376,000 barrels of oil and 8 billion cubic feet of gas, during the analysis period.</p>	<p>Same as Proposed RMP.</p>	<p>It is anticipated that 9 of the new fields could be on BLM-administered lands in the planning area. Each field would be small, usually consisting of 1 well. Altogether, 11 new development wells would be drilled. (It is assumed for the economic analysis that 10 would be oil wells and 1 would be a gas well.) These new fields should produce about 564,000 barrels of oil and 12 billion cubic feet of gas, during the analysis period.</p>	<p>It is anticipated that 2 of the new fields could be on BLM-administered lands in the planning area. Each field would be small, usually consisting of 1 well. Altogether, 3 new development wells would be drilled. (It is assumed for the economic analysis that 2 would be oil wells and 1 would be a gas well.) These new fields should produce about 188,000 barrels of oil and 4 billion cubic feet of gas, during the analysis period.</p>
	<p>No large projects are anticipated that would develop coalbed methane. No interest has been expressed in mining for tar sands or asphalt.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Interest in new exploration and production technologies should increase. These would include "3D" seismic exploration, horizontal drilling, and cluster development.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">MINERALS MANAGEMENT</p> <p>Leasable Minerals <i>Gas and Oil</i> (Continued)</p>	<p>It is estimated that about 380 miles of "3D" seismic exploration would be conducted. About 60 percent of this activity would be on public lands.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p align="center">MINERALS MANAGEMENT</p> <p>Locatable Minerals</p>	<p>About 300 acres of disturbance could be caused by bentonite exploration and mining during the analysis period. An additional 200 acres could be disturbed by exploration activity on mining claims located for gypsum, sulphur, and titanium-bearing sandstone.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Bentonite could be mined from one or two pits on public land starting in 1998. Annual production should average 100,000 tons.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The number of active mining claims should decrease because of new mining claim rental fees (\$100 per claim per year, effective through 1998) and anticipated reform of the 1872 Mining Law.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p align="center">Salable Minerals</p>	<p>About 100 acres could be disturbed by exploration and mining for salable minerals on public lands during the analysis period.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
RECREATION MANAGEMENT	The trend in recreational use in the planning area should correlate to population changes within the four-county Bighorn Basin of Wyoming. That is, on a year-to-year basis, recreational use would increase or decrease at the same rate that the population goes up or down.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	During the 1990 base year for analysis, recreational use on all lands in the planning area (regardless of ownership) was about 167,525 visitor days.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	During the 1990 base year for analysis, recreational use on public lands in the planning area was about 80,375 visitor days.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Recreational use on all lands in the planning area (regardless of ownership) could reach about 185,500 visitor days annually by the end of the analysis period.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Recreational use on public lands could reach about 89,000 visitor days annually by the end of the analysis period.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
VEGETATION MANAGEMENT	Twenty percent of the lands treated with prescribed fire would be burned to control woodlands.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 15
Assumptions for Analysis by Alternative**

Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
VEGETATION MANAGEMENT (Continued)	Following a prescribed burn, vegetative production should be lower than original levels for one year. In the second growing season, grasses should increase and in the third year, total forage production and range condition should improve.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
WATERSHED MANAGEMENT	Sheet and rill erosion can adversely affect the productivity of upland vegetation. These types of erosion are predicted by the Revised Universal Soil Loss Equation (RUSLE).	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	When erosion rates exceed soil loss tolerances, vegetative production and range condition decline.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Vegetative cover and related watershed protection increase with improved range condition on loamy and sandy range sites.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Within 5 years of seeding in the Fifteenmile Creek watershed, soil loss should be reduced by 50 percent in the seeded areas. During the analysis period, about 400 acres would be seeded.	No similar assumption.	No similar assumption.	Same as Proposed RMP.



**Revised Table 15
Assumptions for Analysis by Alternative**

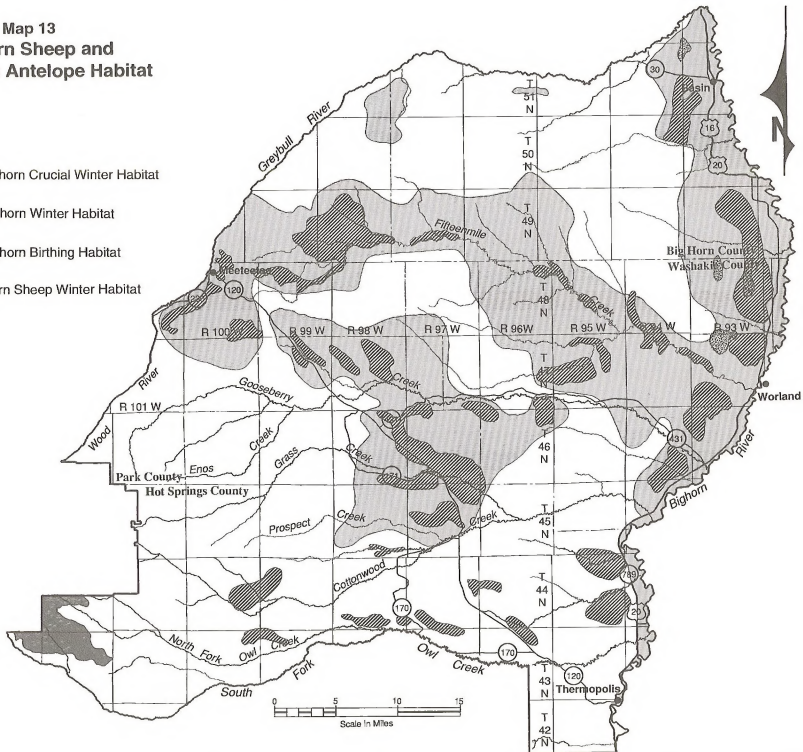
Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
WILD HORSE MANAGEMENT	One reliable water well could be obtained through land exchanges or cooperative management agreements in the herd area.	One reliable water well could be obtained through land exchanges in the herd area.	No similar assumption.	Two reliable water wells could be obtained for wild horse use through land exchanges or cooperative management agreements in the herd area.
WILDLIFE AND FISH HABITAT MANAGEMENT	Desired plant community objectives are intended to maintain or improve biological and structural diversity in vegetative communities. Meeting these objectives should, in turn, maintain or improve the biological diversity of wildlife.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Riparian habitats typically contain a disproportionate number of plant and animal species compared to other vegetative communities. Maintaining riparian vegetation would stabilize watersheds and maintain wildlife associated with riparian areas.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Timber harvest roads could reduce effective wildlife habitat by about 320 acres for every mile of new road built.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Streams with riparian areas in proper functioning condition and with stable channels have fisheries habitat at or near their full potential.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

Figure 2
Rangeland Desired Plant Communities




PLANT COMMUNITY	PREFERRED		UNDESIRABLE		COMPONENT				
SALT DESERT SHRUB: This community occupies upland sites on soils characterized by high salt content.	Gardner's saltbush Rhizomatous wheatgrass	Indian ricegrass Squirreltail	Halogeton Annual forbs	Prickly pear cactus	Bird sagebrush Burdfoot sagebrush				
SALT BOTTOM: This community occupies lowland sites often associated with stream terraces. These are often poorly drained and tend to accumulate salts.	Basin wildrye Rhizomatous wheatgrass Big sagebrush	Alkali sacaton Canada wildrye	Prickly pear cactus Salt cedar	Russian olive Chenopgrass	Greasewood Blue grama	Rabbitbrush Inland saltgrass			
BASIN GRASSLAND/SHRUB (high and low density sagebrush): This community occupies upland sites generally in the 5" to 9" precipitation zone, on well-drained sites that are not characterized by saline soils.	Bluebunch wheatgrass Needle-and-thread grass Big sagebrush	Indian ricegrass Winterfat	Larkspur Chenopgrass Prickly pear cactus	Halogeton Annual forbs	Blue grama Perennial forbs Sandberg bluegrass	Rhizomatous wheatgrass Prairie junegrass			
FOOTHILLS-MOUNTAIN GRASSLAND/SHRUB: This community occupies upland sites generally in the 10" to 14" and the 15" to 19" precipitation zones that are not characterized by saline soils.	Green needlegrass Spike fescue Idaho fescue	Bluebunch wheatgrass Needle-and- thread grass	Prickly pear cactus Blue grama	Annual forbs Larkspur	Big sagebrush Bluegrasses Threedleaf sedge Perennial forbs	Prairie junegrass Rhizomatous wheatgrass			
BARREN AND ALPINE: Barren areas include badlands and rock outcrops mostly without vegetation. Alpine communities occur above tree line.	No preferred, undesirable, or component species have been identified for these communities.								
RIPARIAN/COTTONWOOD:	<u>High Gradient/Rocky Type</u>		<u>Low Gradient/Alluvial Type</u>		<u>Intermediate Type</u>		<u>Desert Cottonwood Type</u>		
Riparian vegetation varies based on slope, soil, and other factors such as topographical confinement. Vegetation can change by location on the same stream. Four riparian types will be considered in this RMP.	These sites often comprise "chutes" with large boulders, straight V-shaped channels, and without significant floodplains. Activity plans rarely address these sites, consequently no species analysis is included for this type.		These sites are characterized by wet meadows with alluvial soils and exaggerated stream channel meanders. Broad floodplains are dominated by herbaceous vegetation. These sites are vulnerable to headcutting. Wet meadows, not directly associated with streams, are part of this type.		The majority of the perennial streams and springs in the planning area support vegetation characteristic of this type. While these sites do not have wet meadows characteristic of the low gradient type, they form functional floodplains, potentially dominated by riparian shrubs and trees. These sites are highly responsive to management actions and are vulnerable to either headcutting and channel widening, depending on the soil substrate.		Many stream channels with high water tables, but without permanent surface water support cottonwood ecosystems. These sites are complex and often difficult to interpret. Generally when these sites are in a deteriorated condition they produce no riparian vegetation.		
	<u>Preferred</u>	<u>Undesirable</u>	<u>Component</u>	<u>Preferred</u>	<u>Undesirable</u>	<u>Component</u>	<u>Preferred</u>	<u>Undesirable</u>	<u>Component</u>
	Sedges Rushes Bulrushes Willow Riparian wheatgrasses	Kentucky bluegrass Cattails Pursyleaves Dandelions Mat mully Upland vegetation	Cattails Spike top sedge Redtop Woods rose Gooseberry Biannual & perennial forbs	Sedges Rushes Bulrushes Willow Tufted hairgrass Cottonwood Alder Water birch Silverberry	KY bluegrass Red top Pussycats Dandelions Mat mully Upland vegetation	Red top Spike Top sedge Riparian wheatgrass Native bluegrass Gooseberry Woods rose Conifers Biannual & perennial forbs	Sedges Fusiles Bulrushes Canada wildrye Alkali sacaton Riparian wheatgrass Great Basin wildrye Willow Cottonwood	Annual forbs Upland veg. Tamarisk Gooseberry Woods rose Stinkbush Rabbitbrush	Redtop Spike top sedges Gooseberry Woods rose Stinkbush Rabbitbrush

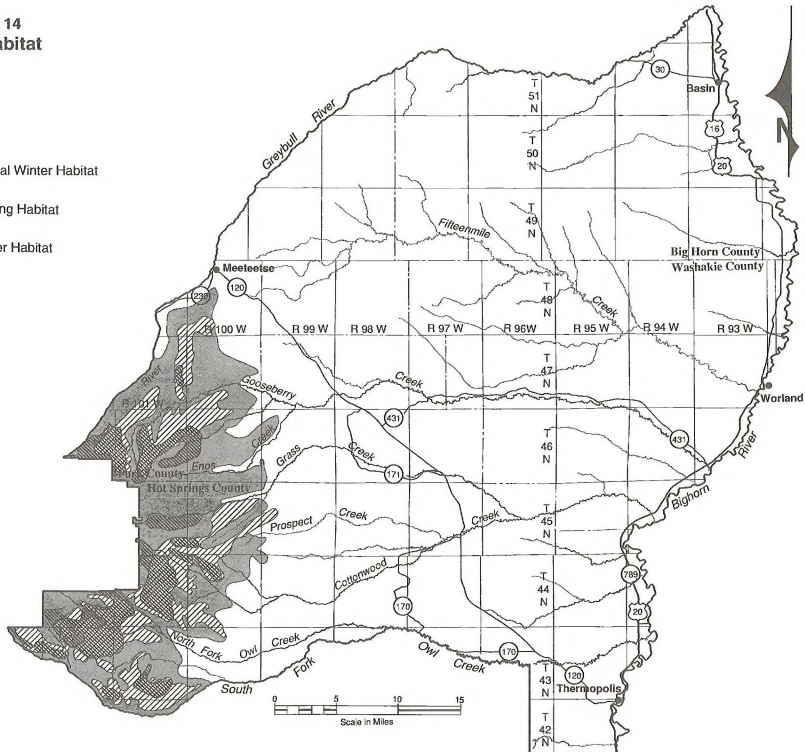
Map 13
Bighorn Sheep and
Pronghorn Antelope Habitat

-  Pronghorn Crucial Winter Habitat
-  Pronghorn Winter Habitat
-  Pronghorn Birthing Habitat
-  Bighorn Sheep Winter Habitat





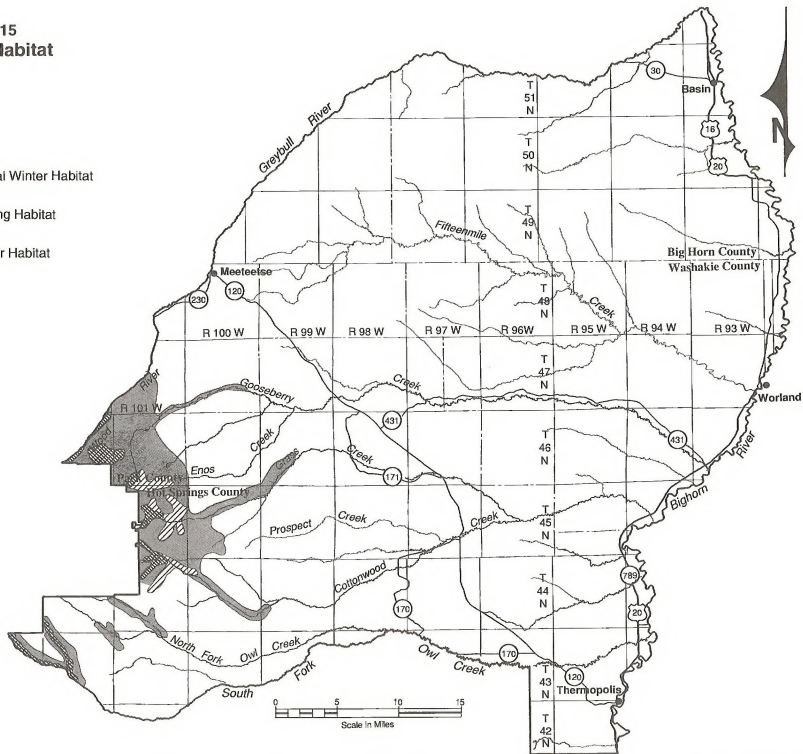
**Map 14
Elk Habitat**

-  Crucial Winter Habitat
-  Birthing Habitat
-  Winter Habitat





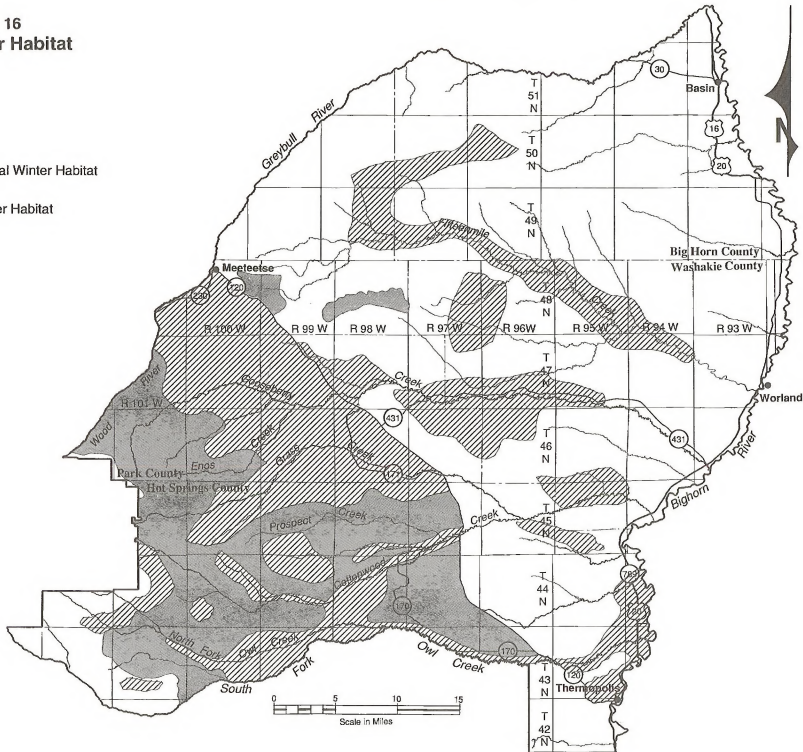
Map 15 Moose Habitat

-  Crucial Winter Habitat
-  Birthing Habitat
-  Winter Habitat



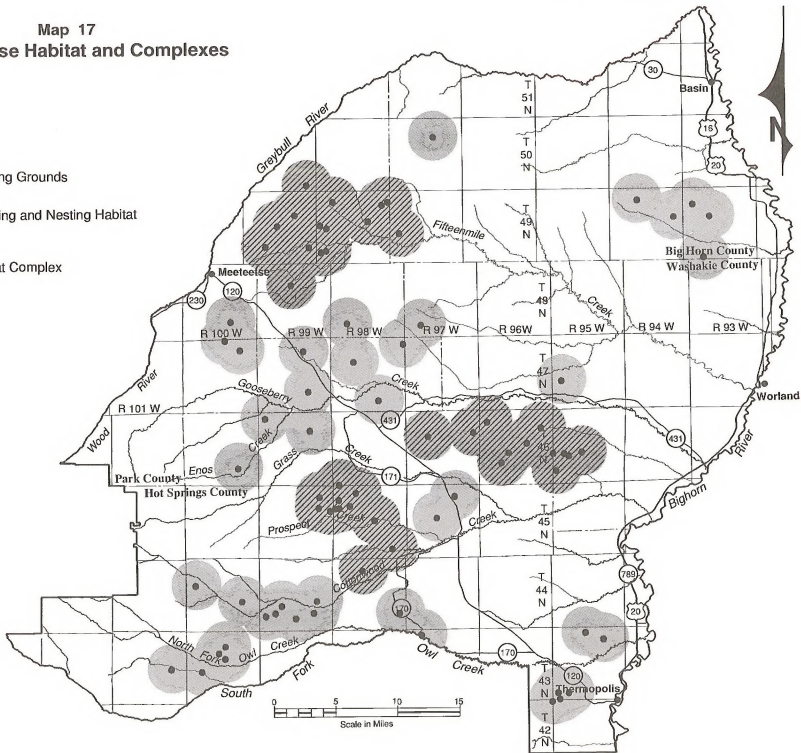
Map 16 Mule Deer Habitat

-  Crucial Winter Habitat
-  Winter Habitat



Map 17
Sage Grouse Habitat and Complexes

- Strutting Grounds
- Breeding and Nesting Habitat
- ▨ Habitat Complex





CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

The previous chapter described the physical, biological, and socioeconomic characteristics of the planning area. This chapter looks at how these characteristics of the planning area might change during an analysis period of 1991 through 2005. For each alternative, the anticipated changes are described in the following tables.

Revised Table 16 describes the consequences of the alternatives on the biological, physical, and socioeconomic factors listed in Revised Table 15 (in Chapter 3). It also summarizes the potential economic effects of the alternatives which are explained in more detail in New Appendix 5. This final EIS does not contain a separate narrative chapter to describe environmental conse-

quences. The EIS also does not reprint the general cause and effect impact relationships from the draft EIS, although these continue to be valid in most cases. (Exceptions would include corrected or clarified statements as reported in Chapter 5's responses to public comments.) The following is an example of a valid cause and effect statement from page 194 of the draft EIS: "Most activities that remove vegetation affect soils and water. The removal of vegetation leaves the soil exposed to the erosive forces of water and wind. Heavy equipment and vehicle travel cause compaction of the soil leading to a loss of productivity and increased runoff and erosion."

These statements were not reprinted in an effort to save space and printing costs and to focus the impact analysis on more quantitative effects, when possible.

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
AIR	The emission of particulate matter into the air from fires would affect air quality on a temporary and local basis. Annual emissions of particulate matter would measure about 1 to 4 tons. Short duration indirect effects to air quality and visibility would result if high winds produce dust storms in recently burned areas.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Other particulate emissions would result from surface-disturbing activities including fire control activities, vehicle travel, rights-of-way construction, mining, and oil and gas exploration and development. These adverse impacts would be unavoidable.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES	The inventory of cultural resources, and of paleontological resources in significant areas, would prevent unintentional damage to these resources from surface-disturbing activities. New information about cultural and paleontological resources would be acquired.	The inventory of cultural resources would prevent unintentional damage. New information would be acquired.	Same as Alternative A.	Same as Proposed RMP.
	Inventories conducted for proposed surface-disturbing activities would identify between 280 and 350 important cultural resource sites. Valuable scientific information would be gained. Many of these inventories would be funded by oil companies, utility companies, or by governmental agencies like the Wyoming Transportation Department.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES (Continued)</p>	<p>The BLM would issue permits for the scientific study of cultural and paleontological resources on public lands. These permits would insure that important sites are protected and new scientific information is made available to the public. The public would continue to enjoy hobby collection of common invertebrate fossils and petrified wood.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The BLM's consultation with the Advisory Council for Historic Preservation and the State Historic Preservation Office would improve and generally take less time because of new agreements.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Native American spiritual values associated with rock art would be disturbed by bentonite exploration in the Frontier Formation (where sandstones often contain rock art). Only sites of minor importance would be affected. Important sites like the Legend Rock Petroglyph Site and rock art in the Meeteetse Draw area would be protected because the lands would be closed to the staking of new mining claims.</p>	<p>Compared to the Proposed RMP there would be greater potential for disturbance of Native American spiritual values from mining claim-related disturbance.</p>	<p>Same as Alternative A.</p>	<p>Same as Proposed RMP.</p>
	<p>Opportunities for public education would increase during the analysis period because some cultural and paleontological sites would be managed for public education and interpretation.</p>	<p>Same as Proposed RMP.</p>	<p>Opportunities for public education would remain about the same during the analysis period.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES (Continued)</p>	<p>Visitor use and public awareness about cultural resources would increase at the Legend Rock Petroglyph Site and in the Gebo mining area. Visitor use would remain at low, current levels during the analysis period at the Meeteetse Draw Rock Art area.</p>	<p>Visitor use and public awareness would increase in the Meeteetse Draw Rock Art area, at the Legend Rock Petroglyph Site, and in the Gebo mining area.</p>	<p>Visitor use and public awareness would increase at the Gebo mining area. Visitor use would remain at current levels in the other areas.</p>	<p>Same as Alternative A.</p>
	<p>In areas having increased visitor use, an increase in vandalism (if any) would be minor because management of these areas would emphasize public awareness and education.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The evaluation of historic oil and gas fields would add to the public's knowledge and appreciation of multiple use and facilitate future development and reclamation.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>A few significant cultural resources would be destroyed, inadvertently, because of off-road vehicle use and other kinds of surface-disturbing activities, like mining claim exploration, where site-specific surveys for cultural resources are not required. The loss of information about these specific resources would be unavoidable.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The requirement for conducting paleontological surveys in some areas before the authorization of surface disturbances would result in the discovery of 10 to 20 fossil localities during the analysis period. Two localities would be suitable for public education and interpretation.</p>	<p>No similar effect.</p>	<p>No similar effect.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES (Continued)</p>	<p>There would be no adverse effects on public lands and resources identified by the NPS as possible National Natural Landmarks. Mitigation to protect scenic values, the use of inventories for cultural and paleontological resources, and maintaining opportunities for primitive recreation would be factors.</p>	<p>Same as Proposed RMP.</p>	<p>There would be no significant adverse effects on lands and resources identified by the NPS as possible National Natural Landmarks.</p>	<p>Same as Proposed RMP.</p>
	<p>There would be no significant adverse effects on cultural, paleontological, or natural history resources from the sale, exchange, or transfer of lands identified as potentially suitable for disposal, or from the termination of outdated coal and phosphate classifications.</p>	<p>There would be no significant adverse effects on cultural, paleontological, or natural history resources from the sale, exchange, or transfer of lands identified as potentially suitable for disposal.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>There would be no adverse effects on custom and culture, traditional values, or other elements of national heritage within the planning area.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p align="center">FORESTLAND MANAGEMENT</p>	<p>Forestland management on public lands would contribute about \$4 million to the local economy during the analysis period.</p>	<p>Same as Proposed RMP.</p>	<p>Forestland management on public lands would contribute about \$7 million to the local economy during the analysis period.</p>	<p>Forestland management on public lands would contribute about \$3 million to the local economy during the analysis period.</p>
	<p>Public lands would support about 4 jobs per year because of timber production.</p>	<p>Same as Proposed RMP.</p>	<p>Public lands would support about 6 jobs per year.</p>	<p>Public lands would support about 2 jobs per year.</p>

Revised Table 16
Comparison of Environmental Consequences

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LANDS AND REALTY MANAGEMENT <i>Rights-of Way</i>	The use of corridors and/or concentration areas for the preferred placement of rights-of-way would avoid disruption of new areas. Authorization time could be reduced because site-specific assessments of environmental impacts would make use of previous rights-of-way studies.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Because rights-of-way are already emphasized in these areas, the use of corridor designations and/or concentration areas on public lands would not additionally affect resources or land uses on adjacent private and state lands.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
LIVESTOCK GRAZING	Temporary reductions in available forage would result from surface-disturbing activities such as pipeline construction and surface mining for sand and gravel. Following reclamation of these areas, forage production would return, at least, to pre-disturbance levels.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Fire management would increase perennial grass production and grazing capacity for cattle within three years of fire disturbance.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Perennial grass production from fire management would increase the most under this alternative.	Perennial grass production would increase less than under the Proposed RMP.	Perennial grass production would increase more than under Alternative A, but not as much as under the Proposed RMP.	Same as Alternative A.

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING (Continued)	Temporary reductions in available forage, associated with the use of fire and the construction of range projects, would lead to long-term improvements in range productivity and greater forage availability for livestock and wildlife.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	There would be no significant adverse effects on livestock grazing from the sale, exchange, or transfer of lands identified as potentially suitable for disposal, or from the termination of outdated coal and phosphate classifications. Some grazing lands could be taken out of production, temporarily, by bentonite exploration or mining where those activities had been prohibited before. (This adverse effect would be unavoidable because of rights granted by the 1872 Mining Law to the owners of mining claims.) Public as well as split-estate lands with BLM-administered minerals could be affected.	There would be no significant adverse effects on livestock grazing from the sale, exchange, or transfer of lands identified as potentially suitable for disposal.	Same as Proposed RMP.	Same as Proposed RMP.
	Improvements in grazing management would increase forage available for livestock by about 8,910 AUMs, annually, on lands within BLM-administered grazing allotments.	Improvements in grazing management would increase forage available for livestock by about 8,880 AUMs, annually.	Same as Proposed RMP.	Improvements in grazing management would increase forage available for livestock by about 8,580 AUMs, annually.

Revised Table 16
Comparison of Environmental Consequences

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING (Continued)	Grazing requirements in the most important wildlife habitat areas would decrease forage available for livestock by about 8,870 AUMs, annually, on lands within BLM-administered grazing allotments. (Forage use by wildlife could also be decreased, if necessary to maintain habitat values and multiple use, through recommendations to reduce herd levels that are above state of Wyoming objectives.)	Grazing requirements in the most important wildlife habitat areas would decrease forage available for livestock by about 8,640 AUMs, annually.	No similar effect.	Grazing requirements in wildlife habitat areas would decrease forage available for livestock by about 16,540 AUMs, annually.
	About 2,300 AUMs, annually, would be allocated to wild horses. This forage would not be available to livestock.	Same as Proposed RMP.	No similar effect.	Same as Proposed RMP.
	Forage utilization objectives would decrease forage available for livestock by as much as 8,880 AUMs annually. However, decreases would not be as great, or necessary in some cases, if the season of use can be changed to winter in some allotments.	No similar effect.	Same as Proposed RMP.	Forage utilization objectives would decrease forage available for livestock by as much as 19,100 AUMs annually.
	Overall, forage available for livestock grazing should increase by about 10 percent on public lands during the analysis period, compared to the amount grazed in 1990.	Overall, forage available for livestock grazing should increase by about 15 percent.	Overall, forage available for livestock grazing should increase by about 17 percent.	Overall, forage available for livestock grazing should decrease by about 4 percent.
	Livestock grazing on public lands would contribute about \$88 million to the local economy during the analysis period.	Livestock grazing on public lands would contribute about \$92 million to the local economy during the analysis period.	Same as Alternative A.	Livestock grazing on public lands would contribute about \$82 million to the local economy during the analysis period.

Revised Table 16
Comparison of Environmental Consequences

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
LIVESTOCK GRAZING (Continued)	Employment associated with livestock grazing on public lands would increase by about 10 percent during the analysis period. About 102 jobs per year would be supported.	Employment associated with livestock grazing on public lands would increase by about 15 percent during the analysis period. About 106 jobs per year would be supported.	Employment associated with livestock grazing on public lands would increase by about 17 percent during the analysis period. About 107 jobs per year would be supported.	Employment associated with livestock grazing on public lands would decrease by about 4 percent during the analysis period. About 95 jobs per year would be supported.
MINERAL RESOURCES <i>Leasable Minerals</i> <i>Coal</i>	Potential coal development on about 40 acres of public land would require mitigation of impacts to mule deer on crucial winter ranges, if the animals congregate on these areas during severe weather. These protective measures would be temporary and would not significantly interfere with coal development.	Same as Proposed RMP.	No similar effect.	Same as Proposed RMP.
	Coal development on BLM-administered lands could contribute about \$7 million to the local economy during the analysis period, supporting about 3 jobs per year.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
<i>Gas and Oil</i>	Seasonal requirements would delay exploration for oil and gas in big game crucial winter and birthing habitat areas at times when animals are dependent on those lands for their survival or reproductive success.	Same as Proposed RMP.	No similar effect.	Same as Proposed RMP.

Revised Table 16
Comparison of Environmental Consequences

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>MINERAL RESOURCES</p> <p><i>Leasable Minerals Gas and Oil</i></p> <p>(Continued)</p>	<p>In overlapping and important crucial winter ranges, birthing habitats, and migration corridors, seasonal requirements would delay exploration for oil and gas at times when animals are dependent on those lands for their survival or reproductive success.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>These overlapping and important habitat areas would be off-limits to surface-disturbing activities, including oil and gas exploration and development.</p>
	<p>In overlapping and important crucial winter ranges, birthing habitats, and migration corridors, mitigation needs related to future oil and gas production would be planned earlier; for example, at the exploratory drilling stage. Mitigation would be more intensive than in less important habitat areas, but efficient planning would hold down costs.</p>	<p>Same as Proposed RMP.</p>	<p>No similar effect.</p>	<p>No similar effect.</p>
	<p>In the Upper Owl Creek Proposed ACEC, comprising about 16,300 acres of public land, surface-disturbing activities would be prohibited unless a detailed activity plan demonstrates that technologies such as "access corridors" and "cluster development" can effectively mitigate the impacts of proposed development. These technologies would be more costly than typical development techniques. The same requirements and effects would apply to adjacent split-estate lands (comprising less than 800 acres) were BLM administers the mineral estate.</p>	<p>In the upper Owl Creek area, about 10,000 acres of public and split-estate lands (in three blocks) would be off-limits to surface occupancy but could be drilled directionally. Compared to the Proposed RMP, exploration costs would be lower and more lands could be tested through directional drilling.</p>	<p>No similar effect.</p>	<p>In the Upper Owl Creek Proposed ACEC and on adjacent BLM-administered lands (together representing about 121,000 acres), surface-disturbing activities would be prohibited. Development costs would be high for directional drilling and some oil and gas resources would not be reached by the use of this technology.</p>

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>MINERAL RESOURCES</p> <p><i>Leasable Minerals Gas and Oil (Continued)</i></p>	<p>The development of some private lands could be affected because of BLM's "no surface occupancy" requirement in the Upper Ow. Creek Proposed ACEC and on surrounding split-estate lands where BLM administers the mineral estate. The intermingled private lands would not form blocks large enough for some kinds of oil development. Although access to private lands would not be denied, rights-of-way for crossing the proposed ACEC might require development of the activity plan described above.</p>	<p>No similar effect.</p>	<p>No similar effect.</p>	<p>Same as Proposed RMP.</p>
	<p>"No surface occupancy" requirements on new oil and gas leasing would apply to about 2,130 acres of BLM-administered mineral estate having high potential for the occurrence of oil and gas.</p>	<p>Same as Proposed RMP.</p>	<p>"No surface occupancy" requirements on new oil and gas leasing would apply to about 360 acres in high potential areas.</p>	<p>"No surface occupancy" requirements on new oil and gas leasing would apply to about 48,435 acres in high potential areas.</p>
	<p>Most of the remaining BLM-administered lands affected by "no surface occupancy" requirements have low potential for the occurrence of oil and gas.</p>	<p>Same as Proposed RMP.</p>	<p>No similar effect.</p>	<p>Most of the remaining BLM-administered lands affected by "no surface occupancy" requirements have a combination of low and moderate potential for the occurrence of oil and gas.</p>
	<p>Oil and gas development on BLM-administered lands would contribute about \$2.328 billion to the local economy during the analysis period.</p>	<p>Same as Proposed RMP.</p>	<p>Oil and gas development on BLM-administered lands would contribute about \$2.344 billion to the local economy during the analysis period.</p>	<p>Oil and gas development on BLM-administered lands would contribute about \$2.311 billion to the local economy during the analysis period.</p>

Revised Table 16
Comparison of Environmental Consequences

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>MINERAL RESOURCES</p> <p><i>Leasable Minerals</i> <i>Gas and Oil</i> (Continued)</p>	<p>Employment associated with oil production on BLM-administered lands would decrease by about 34 percent during the analysis period. This would be an unavoidable adverse impact related to declining production in aging fields. Employment associated with gas production would increase considerably (at least 130 percent), but not enough to make up for the loss of jobs related to oil production.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>By the end of the analysis period, total employment related to oil and gas development on BLM-administered lands would be about 561 jobs per year.</p>	<p>Same as Proposed RMP.</p>	<p>By the end of the analysis period, total employment related to oil and gas development on BLM-administered lands would be about 564 jobs per year.</p>	<p>By the end of the analysis period, total employment related to oil and gas development on BLM-administered lands would be about 555 jobs per year.</p>
	<p>Fiscal contributions from oil and gas development on BLM-administered lands would total about \$380 million in production royalties and taxes. This money would be shared by the U.S. Treasury, the state of Wyoming, and local communities.</p>	<p>Same as Proposed RMP.</p>	<p>Fiscal contributions would total about \$382 million in production royalties and taxes.</p>	<p>Fiscal contributions would total about \$378 million in production royalties and taxes.</p>
<p><i>Locatable Minerals</i></p>	<p>Revocation of outdated coal and phosphate classifications on about 180,780 acres would open these BLM-administered lands to the staking of mining claims and development of nonmetalliferous minerals such as bentonite and gypsum. If these minerals were mined, local communities would benefit through increased employment and revenue returned to local government from taxes.</p>	<p>The staking of mining claims and development of nonmetalliferous minerals would continue to be precluded on about 180,780 acres. There would be no increased economic benefits for local communities.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

Revised Table 16
Comparison of Environmental Consequences

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
MINERAL RESOURCES <i>Locatable Minerals</i> (Continued)	There would be no significant adverse effects on locatable mineral development from the sale or exchange of public lands, or from mineral withdrawals.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
<i>Salable Minerals</i>	The prohibition on sand and gravel mining within 0.5 mile of the Legend Rock Petroglyph Site would not affect county road work or oil and gas development.	The prohibition on sand and gravel mining within 3 miles of the Legend Rock Petroglyph Site would increase costs for county road maintenance, and for oil and gas development in the adjacent Hamilton Dome Field.	Same as Proposed RMP.	Same as Proposed RMP.
RECREATION	Recreation on public lands in the planning area would increase by about 1 percent annually during the analysis period. This would be an unavoidable effect related to overall trends in recreational demand, both statewide and nationally.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Primitive recreation such as hiking, camping, and horseback riding would increase in the Absaroka Mountain foothills by about 2 percent annually. Motorized recreation in the foothills would increase slightly less than 1 percent annually.	Same as Proposed RMP.	Primitive recreation would increase less in the Absaroka Mountain foothills than recreation dependent on motorized vehicles.	Same as Proposed RMP.
	Recreation in the Badlands would increase by about 2 percent annually. Use would include a combination of driving for pleasure, hunting, and hiking.	Recreation in the Badlands would increase by about 1 percent annually. Use would include a combination of driving for pleasure, hunting, and hiking.	Same as Proposed RMP.	Same as Proposed RMP.
	Recreation on public lands along the Bighorn River would increase about 2 percent annually.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
RECREATION (Continued)	Recreation in the Red Canyon Creek area would increase by about 2 percent annually from very low levels of use currently.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Recreation in the former mining area of Gebo would increase by about 3 percent annually.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Recreation in the Meeteetse Draw area would increase by less than 1 percent annually.	Recreation in the Meeteetse Draw area would increase by about 2 percent annually.	Same as Proposed RMP.	Same as Alternative A.
	Interpretive driving loops would benefit the local economy. Nonresident travelers could be delayed as much as two hours driving through public lands. These travelers would be likely to spend more money in Worland, Thermopolis, Cody, and other Bighorn Basin communities.	No similar effect.	Same as Proposed RMP.	No similar effect.
	Recreational opportunities would improve as public lands are consolidated through sale, exchange, and transfer. There would be no adverse effects on recreational opportunities from the termination of outdated coal and phosphate classifications.	Recreational opportunities would improve as public lands are consolidated through sale, exchange, and transfer.	Same as Proposed RMP.	Same as Proposed RMP.
	Recreation on public lands would contribute about \$21 million to the local economy during the analysis period.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Employment associated with recreational activities on public lands would increase by about 10 percent during the analysis period.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
RECREATION (Continued)	Nonresident recreation on public lands would support a minimum of 19 jobs per year by the end of the analysis period.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
WATERSHEDS	There would be no significant adverse effects on water quality from the sale, exchange, or transfer of lands identified as potentially suitable for disposal, or from the termination of outdated coal and phosphate classifications.	There would be no significant adverse effects on water quality from the sale, exchange, or transfer of lands identified as potentially suitable for disposal.	Same as Proposed RMP.	Same as Proposed RMP.
	Soil erosion from wild and prescribed fires would be high temporarily -- averaging 12 and 4.9 tons per acre, respectively -- in the season after the fire. Soil erosion would then decrease rapidly as herbaceous vegetation becomes established. Within two grazing seasons, and during the remainder of the analysis period, erosion would be less than before the fire.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	As forests and woodlands continue to increase in the planning area (even with the anticipated increased use of fire) peak stream flows and streambank erosion, related to this vegetation change, would decrease slightly.	Same as Proposed RMP.	Peak stream flows and streambank erosion, related to a small increase of forests and woodlands, would decrease the least in this alternative.	Peak stream flows and streambank erosion, related to increased forests and woodlands, would decrease the most in this alternative.
	In the ORV open area west of Worland, soil losses would be as high as 12,700 tons per year. However, this would reduce driving-related soil loss on adjacent lands by a greater amount during the analysis period.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

Revised Table 16
Comparison of Environmental Consequences

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
WATERSHEDS (Continued)	No similar effect.	No similar effect.	In the ORV open area west of Basin, soil losses would be as high as 14,500 tons per year. However, this would reduce driving-related soil loss on adjacent lands by a greater amount during the analysis period.	No similar effect.
	The use of fire combined with improved grazing management, particularly in Salt Desert Shrub and Salt Bottom vegetative communities, would reduce grazing-related soil erosion by about 12 percent by the end of the analysis period.	The use of fire combined with improved grazing management would reduce grazing-related soil erosion by about 3 percent by the end of the analysis period.	Same as Proposed RMP.	The use of fire combined with improved grazing management would reduce grazing-related soil erosion by about 19 percent by the end of the analysis period.
	Overall, the amount of soil delivered to streams would decrease by about 2 percent during the analysis period.	Same as Proposed RMP.	Overall, the amount of soil delivered to streams would decrease by about 1 percent during the analysis period.	Overall, the amount of soil delivered to streams would decrease by about 3 percent during the analysis period.
	The increasing use of water reinjection for enhanced recovery of oil and gas would cause a decline in the volume of produced water discharged to streams in the planning area. Wetland and riparian area habitat and water available for crop irrigation, livestock, and wildlife would decrease. This adverse impact, related to declining oil production, would be unavoidable.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Any oil spill reaching surface water could make the water temporarily unsuitable for agricultural, municipal, industrial, wildlife, or recreational use. The adverse effect on water quality would be unavoidable.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p align="center">VEGETATION</p> <p align="center"><i>Forestlands</i></p>	<p>The number of public land acres having aspen would increase by 200 percent.</p>	<p>Same as Proposed RMP.</p>	<p>The number of public land acres having aspen would increase by 150 percent.</p>	<p>The number of public land acres having aspen would increase by 50 percent.</p>
	<p>The number of public land acres classified as woodlands would increase by about 5 percent.</p>	<p>Woodlands would increase by about 7 percent on public lands.</p>	<p>Woodlands would increase by about 1 percent on public lands.</p>	<p>Woodlands would increase by about 6 percent on public lands.</p>
	<p>The acreage of young commercial forests on public land would increase by about 14 percent during the analysis period.</p>	<p>Same as Proposed RMP.</p>	<p>The acreage of young commercial forests would increase by about 68 percent.</p>	<p>The acreage of young commercial forests would remain unchanged.</p>
	<p>About 85 percent of the public commercial forestland would be mature or old-growth forest at the end of the analysis period.</p>	<p>Same as Proposed RMP.</p>	<p>About 77 percent of the public commercial forestland would be mature or old-growth forest at the end of the analysis period.</p>	<p>About 86 percent of the public commercial forestland would be mature or old-growth forest at the end of the analysis period.</p>
	<p>A small increase in the amount of old-growth forest would result in a corresponding increase in biological diversity. There would be some increased potential for wildfire because of the increased fuels.</p>	<p>Same as Proposed RMP.</p>	<p>There would be a decrease in the amount of old-growth forest and a corresponding decrease in biological diversity. There would be a reduced potential for wildfire because of the decreased fuels.</p>	<p>There would be an increase in the amount of old-growth forest and a corresponding increase in biological diversity. There would be an increased potential for wildfire because of the increased fuels.</p>
<p align="center"><i>Rangelands</i></p>	<p>In 1990, 34 grazing allotments had upward trends in vegetative condition on about 22,000 acres. Trend was considered to be static on 75 allotments. About 49 allotments had a downward trend on about 15,000 acres.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

Revised Table 16
Comparison of Environmental Consequences

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
VEGETATION <i>Rangelands</i> (Continued)	By the year 2005, an estimated 62 allotments would have an upward trend on about 74,400 acres.	By the year 2005, an estimated 60 allotments would have an upward trend on about 71,700 acres.	By the year 2005, an estimated 60 allotments would have an upward trend on about 71,700 acres.	By the year 2005, an estimated 92 allotments would have an upward trend on about 89,400 acres.
	Vegetative trend on the remaining allotments would be static, and declining trend associated with livestock grazing would be largely eliminated.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	The number of public land stream miles with proper functioning riparian areas would increase from 60 to 162.	The number of public land stream miles with proper functioning riparian areas would increase from 60 to 150.	Same as Alternative A.	The number of public land stream miles with proper functioning riparian areas would increase from 60 to 212.
	The number of public land stream miles with nonfunctioning riparian areas would decrease from 306 to 214.	The number of public land stream miles with nonfunctioning riparian areas would decrease from 306 to 226.	Same as Alternative A.	The number of public land stream miles with nonfunctioning riparian areas would decrease from 306 to 171.
	During the analysis period, the number of public land stream miles with riparian habitat would stay constant at about 497, or would decrease slightly because of decreased produced water discharges. Any decrease in habitat would be unavoidable.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Management options in this alternative are not likely to adversely affect known or potential threatened or endangered plant species in the planning area.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
WILD HORSES	The accomplishment of combined forage utilization and desired plant community objectives, and the use of forage allocations (2,300 AUMs annually to horses) would maintain suitable habitat for the 70 to 160 adult horses. Maintaining this herd size would also insure sufficient genetic diversity within the herd.	Same as Proposed RMP.	No similar effect.	Same as Proposed RMP.
	The consolidation of public and private lands through exchange or the development of cooperative agreements would improve wild horse management.	Same as Proposed RMP.	No similar effect.	Same as Proposed RMP.
	No similar effect.	No similar effect.	Opportunities for the public to view wild horses would be lost.	New opportunities would be available for the public to view wild horses.
	No similar effect.	No similar effect.	No similar effect.	The installation of about 0.5 mile of "let down" fence along historic horse trails would allow horses to travel throughout an expanded herd area and would keep cattle in the Tatman Common and Snyder allotments.
WILDLIFE AND FISH HABITAT <i>Wildlife Habitat</i>	The use of prescribed fire on 11,000 acres during the analysis period would improve habitat for elk, moose, and mule deer. When carefully planned, prescribed fire would improve habitat for sage grouse.	Prescribed fire would improve these habitats, but not as much as under the Proposed RMP.	Prescribed fire would improve these habitats more than under Alternative A, but not as much as under the Proposed RMP.	Same as Alternative A.

Revised Table 16
Comparison of Environmental Consequences

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WILDLIFE AND FISH HABITAT</p> <p><i>Wildlife Habitat</i> (Continued)</p>	<p>Land exchanges would improve management of seasonal habitat areas. In some instances, important riparian areas would be acquired through exchange. Habitat fragmentation would be reduced and wildlife species diversity would increase.</p>	<p>Same as Proposed RMP.</p>	<p>No land exchanges would be pursued for wildlife. Habitat fragmentation would increase if private lands are developed within habitat blocks. Diversity would decrease.</p>	<p>Same as Proposed RMP.</p>
	<p>Limits on combined forage utilization would improve habitat quality in Salt Desert Shrub and Salt Bottom plant communities, maintaining the health of mule deer and pronghorn antelope herds.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Woody riparian vegetation would increase in winter habitat areas for mule deer and moose, causing habitats to expand along stream valleys. More riparian habitat would be available for white-tailed deer, pheasants, mourning doves, and neotropical migrant song birds.</p>	<p>Same as Proposed RMP.</p>	<p>No similar effect.</p>	<p>Same as Proposed RMP.</p>
	<p>Seasonal requirements on surface-disturbing and disruptive activities would maintain habitat security in mule deer and pronghorn antelope crucial winter habitat when the animals are dependent on those areas.</p>	<p>Same as Proposed RMP.</p>	<p>The absence of seasonal mitigation in mule deer and pronghorn antelope habitats would reduce reproduction of these animals and could cause the loss of many animals when development occurs during a severe winter.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WILDLIFE AND FISH HABITAT</p> <p><i>Wildlife Habitat (Continued)</i></p>	<p>Seasonal requirements on surface-disturbing and disruptive activities would maintain habitat security in sage grouse strutting, breeding, and nesting areas when the birds are dependent on those areas. Lower levels of mitigation generally would be adequate to maintain habitat security in sage grouse complexes.</p>	<p>Seasonal requirements on surface-disturbing and disruptive activities would maintain habitat security in sage grouse strutting, breeding, and nesting areas when the birds are dependent on those areas.</p>	<p>The absence of seasonal and lower-level mitigation in these habitats would reduce sage grouse reproduction significantly when development occurs during the strutting, breeding, and nesting seasons.</p>	<p>Same as Proposed RMP.</p>
	<p>Mitigation requirements for surface-disturbing and disruptive activities in overlapping and important big game habitats and migration corridors would maintain habitat security when animals are dependent on those areas. These requirements would include the need to plan for and mitigate the effects of long-term surface-disturbing activities.</p>	<p>Same as Proposed RMP.</p>	<p>Habitat security would be the same as in the Proposed RMP for temporary disturbances, but less for longer-term activities because less consideration would be given to planning for and mitigating the effects of long-term surface-disturbing and disruptive activities.</p>	<p>These overlapping and important habitat areas would be off-limits to surface-disturbing and disruptive activities. This would maintain habitat security to the same extent as in the Proposed RMP.</p>
	<p>Off-road vehicle (ORV) use would be limited to designated roads and trails and/or limited seasonally in the Absaroka Mountain foothills. This would maintain habitat security in most big game use areas.</p>	<p>Same as Proposed RMP.</p>	<p>ORV use limitations would maintain habitat security in less than one-third of the moose, mule deer, and elk habitat areas. Some habitat fragmentation could take place.</p>	<p>Same as Proposed RMP.</p>
	<p>Habitat fragmentation could increase on elk and mule deer winter ranges north of the Absaroka Mountain foothills because ORV use would be allowed on existing roads and trails.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WILDLIFE AND FISH HABITAT</p> <p><i>Wildlife Habitat</i> (Continued)</p>	<p>An ORV open (play) area west of Worland would focus driving in an existing vehicle use area, reducing the amount of dispersed "backcountry" driving in the Fifteenmile Creek Watershed. Islands of riparian habitat would be more secure, as would upland and stream bottom mule deer and pronghorn antelope habitat.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>Meeting desired plant community (DPC) objectives would maintain necessary forage for big game animals on crucial winter ranges and birthing areas and maintain habitat for sage grouse strutting, breeding, and nesting.</p>	<p>The use of DPC objectives would maintain necessary forage for big game on crucial winter ranges and some birthing areas and maintain sage grouse habitat. Elk birthing areas would not improve through DPC objectives.</p>	<p>The use of DPC objectives would maintain necessary forage for wildlife on elk crucial winter ranges and moose crucial winter and calving areas. Other habitat areas would not improve through DPC objectives.</p>	<p>The use of DPC objectives would maintain necessary forage for big game on all winter, crucial winter, and birthing habitat areas and maintain sage grouse habitat.</p>
	<p>By accomplishing desired plant community objectives, habitat quality and security, and species diversity would increase.</p>	<p>By accomplishing DPC objectives, habitat quality and security, and species diversity would increase but not as much as in the Proposed RMP.</p>	<p>By accomplishing DPC objectives, habitat quality and security, and species diversity would increase slightly for some big game winter and birthing areas.</p>	<p>By accomplishing DPC objectives, habitat quality and security, and species diversity would increase the most in this alternative.</p>
	<p>The stability of wildlife populations would improve with increased habitat quality. In sage grouse habitat this would mean that the effects of predators (such as coyotes, foxes, eagles, and raccoons) would decrease.</p>	<p>The stability of wildlife populations would improve but not as much as in the Proposed RMP. The effects of predators on sage grouse would remain constant or decrease slightly.</p>	<p>The stability of wildlife populations would improve but not as much as in the Proposed RMP or Alternative A. The effects of predators on sage grouse would remain constant.</p>	<p>The stability of wildlife populations would improve the most in this alternative. The effects of predators on sage grouse would decrease the most.</p>

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>WILDLIFE AND FISH HABITAT</p> <p><i>Wildlife Habitat</i> (Continued)</p>	<p>There would be no significant adverse effects on wildlife habitat from the sale or transfer of lands identified as potentially suitable for disposal, or from the termination of outdated coal and phosphate classifications.</p>	<p>There would be no significant adverse effects on wildlife habitat from the sale or transfer of lands identified as potentially suitable for disposal.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p><i>Fish Habitat</i></p>	<p>Fish habitat for nongame or warm water fish would improve slightly on downstream waters because of a gradual reduction in sediment delivered to streams and rivers from public lands. Trout would also improve slightly because of improvements in riparian condition along headwater streams.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
<p>THREATENED, ENDANGERED, AND CANDIDATE WILDLIFE SPECIES</p>	<p>Bald eagle roosting, perching, hunting, and concentration habitat areas would be protected by the prohibition on cutting cottonwood trees on public lands along the Bighorn and Greybull rivers.</p>	<p>Same as Proposed RMP.</p>	<p>The cutting of dead and down wood on these public lands would disrupt bald eagles.</p>	<p>Same as Proposed RMP.</p>
	<p>Any black-footed ferrets in the planning area would be identified through searches of important prairie dog towns when surface-disturbing activities are proposed in these potential habitat areas. Mitigation of impacts would be coordinated with the FWS.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

Revised Table 16
Comparison of Environmental Consequences

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
<p>THREATENED, ENDANGERED, AND CANDIDATE WILDLIFE SPECIES (Continued)</p>	<p>Grizzly bears will continue to expand into the western portion of the planning area. As this takes place, the potential for bear problems will be addressed through education, informative signs, and the design of structures and other facilities. Bears will be able to use the available habitat. Because of greater public awareness, conflicts with humans will not increase.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>
	<p>The Northern Rocky Mountain gray wolf is not anticipated to establish packs in the planning area. However, any wolves visiting the area would benefit from improved big game habitat and the related stability of the wolves' big game prey base. Wolf predation on livestock would be less likely as a result.</p>	<p>Any wolves visiting the area would benefit from a more stable big game prey base. Wolf predation on livestock would be less likely in general, but more likely than under the Proposed RMP.</p>	<p>Big game populations would be the least stable and wolf predation on livestock would be the most likely in this alternative.</p>	<p>Big game populations would be the most stable and wolf predation on livestock would be the least likely in this alternative.</p>
	<p>The Upper Owl Creek Proposed ACEC, which includes the canyon along the upper South Fork of Owl Creek, is likely habitat for peregrine falcons. This area and its resources would continue to be protected during the analysis period by a relative lack of development, and land-use restrictions that are intended to protect a variety of important resources.</p>	<p>Same as Proposed RMP.</p>	<p>Peregrine falcon potential habitat would continue to be protected during the analysis period by a relative lack of development.</p>	<p>Same as Proposed RMP.</p>
	<p>Management options in this alternative are not likely to adversely affect known or potential threatened, endangered, or candidate wildlife or fish species in the planning area, including bald eagles, black-footed ferrets, grizzly bears, wolves, and peregrine falcons.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>	<p>Same as Proposed RMP.</p>

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
CUMULATIVE IMPACTS	Air quality would be affected by particulate emissions resulting from surface-disturbing activities including fire control activities, vehicle travel, rights-of-way construction, mining, and oil and gas exploration and development. Annual emissions of particulate matter would measure about 1 to 4 tons. These impacts would be unavoidable.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	The public would have more opportunities to learn about cultural and historic resources. The management and protection of one ACEC would be emphasized.	The public would have more opportunities to learn about cultural and historic resources. The management and protection of ACECs would not be emphasized.	Same as Alternative A.	The public would have more opportunities to learn about cultural and historic resources. The management and protection of four ACECs would be emphasized.
	Inventories conducted for proposed surface-disturbing activities would identify between 280 and 350 important cultural resource sites.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	There would be a small increase in the amount of old-growth forest and a corresponding increase in biological diversity. There would be a small increased potential for wildfire because of the increased fuels.	Same as Proposed RMP.	There would be a decrease in the amount of old-growth forest and a corresponding decrease in biological diversity. There would be a reduced potential for wildfire because of the decreased fuels.	There would be an increase in the amount of old-growth forest and a corresponding increase in biological diversity. There would be an increased potential for wildfire because of the increased fuels.
	Recreation on public lands in the planning area would increase by about 1 percent annually during the analysis period. This would be an unavoidable effect related to overall trends in recreational demand, both statewide and nationally.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
CUMULATIVE IMPACTS (Continued)	The amount of soil delivered to streams would decrease by about 2 percent during the analysis period.	Same as Proposed RMP.	The amount of soil delivered to streams would decrease by about 1 percent during the analysis period.	The amount of soil delivered to streams would decrease by about 3 percent during the analysis period.
	Genetic diversity would be maintained in the Fifteenmile wild horse herd. Horse management would be improved through land exchanges or cooperative agreements; however, management capability would be hindered because horses would continue to use some lands outside the existing herd area.	Same as Proposed RMP.	The public would lose existing opportunities to view wild horses with transfer of the horses out of the planning area. Conflicts with horse use on private lands would end and the herd area would become available for cattle grazing.	Genetic diversity would be maintained in the Fifteenmile wild horse herd. Horse management would be improved through land exchanges, cooperative agreements, and expansion of the herd area. There would be more opportunities for viewing wild horses.
	Land exchanges would consolidate seasonal habitat areas and mitigation measures would protect against some permanent disturbances. In some instances, important riparian areas would be acquired through exchange. This would reduce habitat fragmentation in the planning area.	Same as Proposed RMP.	No land exchanges to consolidate habitat would be pursued. Habitat fragmentation would increase with the development of new forest roads and emphasis on motorized recreation.	Same as Proposed RMP.
	By accomplishing desired plant community objectives, habitat quality and security, and species diversity would increase.	By accomplishing DPC objectives, habitat quality and security, and species diversity would increase but not as much as in the Proposed RMP.	By accomplishing DPC objectives, habitat quality and security, and species diversity would increase slightly for some big game winter and birthing areas.	By accomplishing DPC objectives, habitat quality and security, and species diversity would increase the most in this alternative.
	The stability of wildlife populations would improve with increased habitat quality. In sage grouse habitat this would mean that the effects of predators (such as coyotes, foxes, eagles, and raccoons) would decrease.	The stability of wildlife populations would improve but not as much as in the Proposed RMP. The effects of predators on sage grouse would remain constant or decrease slightly.	The stability of wildlife populations would improve but not as much as in the Proposed RMP or Alternative A. The effects of predators on sage grouse would remain constant.	The stability of wildlife populations would improve the most in this alternative. The effects of predators on sage grouse would decrease the most.

**Revised Table 16
Comparison of Environmental Consequences**

Affected Land Use or Resource	Proposed Resource Management Plan	Current Management Alternative A	Alternative B	Alternative C
CUMULATIVE IMPACTS (Continued)	Fish habitat for nongame or warm water fish would improve slightly on downstream waters because of a gradual reduction in sediment delivered to streams and rivers from public lands. Trout would also improve slightly because of improvements in riparian condition along headwater streams.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Management options in this alternative are not likely to adversely affect known or potential threatened, endangered, or candidate wildlife or fish species in the planning area, including bald eagles, black-footed ferrets, grizzly bears, wolves, and peregrine falcons. Management options in this alternative are not likely to adversely affect known or potential threatened or endangered plant species.	Same as Proposed RMP.	Same as Proposed RMP.	Same as Proposed RMP.
	Land and resource uses taking place on all lands in the planning area would contribute about \$3.383 billion to the local economy during the analysis period.	Land and resource uses taking place on all lands in the planning area would contribute about \$3.389 billion to the local economy.	Land and resource uses taking place on all lands in the planning area would contribute about \$3.416 billion to the local economy.	Land and resource uses taking place on all lands in the planning area would contribute about \$3.347 billion to the local economy.
	Land and resource uses taking place on only BLM-administered lands would contribute about \$2.448 billion to the local economy during the analysis period.	Land and resource uses taking place on only BLM-administered lands would contribute about \$2.452 billion to the local economy during the analysis period.	Land and resource uses taking place on only BLM-administered lands would contribute about \$2.471 billion to the local economy during the analysis period.	Land and resource uses taking place on only BLM-administered lands would contribute about \$2.424 billion to the local economy during the analysis period.



CHAPTER 5

CONSULTATION AND COORDINATION

PUBLIC PARTICIPATION

The scoping process for the Grass Creek Resource Management Plan officially began with a notice in the *Federal Register* on October 19, 1991 indicating the BLM's intention to prepare a resource management plan and requesting information on specific resources. In November 1991, representatives of the planning team made personal visits to the four Bighorn Basin county commissions, requesting county participation in the development of the Grass Creek draft RMP EIS. From 1991 through 1993, the four county commissions were again visited a total of eight times to discuss various stages in the EIS development. In May 1994, a two-day county and city government workshop was held to review the BLM's Preferred Alternative, eight months before the draft EIS was published.

Additionally, the general public was contacted through four scoping and information letters, three news releases, and two open houses. Throughout the development of the draft EIS, BLM planning team representatives held many meetings and had countless discussions with individuals about the RMP process.

After the draft EIS was published in January 1995, the BLM held five additional open houses. Three were co-hosted by local conservation districts. Later, BLM extended the public comment period for one month (through May 7, 1995) and held a public hearing at the request of several county commissioners, a state legislator, and industry groups. Forty-eight people testified at the public hearing.

During the public comment period, other formal and informal meetings were held with members of the ranching and minerals industries and with representatives of other interest groups and agencies, including the Meeteetse Conservation District, the Meeteetse Multiple Use Association, the Park County Multiple Use Association, Marathon Oil Company, the Petroleum Association of Wyoming, the Wyoming Wool Growers, the Greybull Rotary Club, the Greater Yellowstone Coalition, the Sierra Club, the Wyoming Outdoor Council, Wyo-Ben, the Wyoming State Grazing Board, the Big Horn County Planning and Zoning Commission, the Park County Planning and Zoning Commission, local congressional representatives, the governor's office, and task groups representing Big Horn, Hot Springs, Park, and Washakie counties.

A summary of comments generated from these meetings, which took place during the public comment period, is on file in the Worland District Office.

As part of the ongoing activity in consultation and coordination, the BLM prepared a biological assessment of threatened or endangered species. Results of the assessment were shared with the U.S. Fish and Wildlife Service as required by section 7 of the Endangered Species Act.

CONSISTENCY

Requirements pertaining to consistency between BLM resource management plans and other planning efforts are described in federal regulations:

...resource management plans... shall be consistent with officially approved or adopted resource related plans, and the policies and programs contained therein, of other Federal agencies, State and local governments and Indian tribes, so long as the...resource management plans are also consistent with the purposes, policies and programs of Federal laws and regulations applicable to public lands, including Federal and State pollution control laws as implemented by applicable Federal and State air, water, noise, and other pollution standards or implementation plans. (43 CFR 1610.3-2)

Coordination with other agencies, as well as consistency with their plans, was accomplished through frequent communication and cooperative efforts between the BLM and involved federal, state, and local agencies and organizations. The Wyoming Governor's Office has been supplied with 20 copies of this final EIS for review by state agencies. The RMP team has reviewed land use plans for Big Horn, Park, Hot Springs, and Washakie counties, as well as local conservation districts, to insure consistency.

Beginning in April 1995, a group of representatives from the four Bighorn Basin counties met with BLM to discuss the draft EIS and its economic impacts on local communities. A total of 14 additional meetings were held with this group. The results of these meetings were

CONSULTATION AND COORDINATION

described in more than a dozen newspaper and radio reports.

The following people (listed along with their organization or area of expertise) were on the mailing list for the four-county working group as of March 1, 1996:

Matt Brown, rancher
Byrla Carson, Hot Springs County Commissioner
Martin L. Dobson, oil company representative
Jim Foreman, rancher
Bill Gabbert, South Bighorn Basin Multiple Use Association
Bill Glanz, Washakie County Commission Chairman
Keith Hamilton, rancher
Jim Harwood, Big Horn County Planning and Zoning Commission
Allan Howard, oil industry representative
Charlie Johnstone, Park County Commissioner
Darvin Longwell, Hot Springs County Commission Chairman
Dick Loper, Wyoming State Grazing Board
Jim Magagna, state government representative
Timothy J. Morrison, Meeteetse Conservation District
Carolyn Paseneaux, consultant
R. Ray Peterson, Big Horn County Commissioner
Sean Sheehan, Northwest Wyoming Resources Council
Jim Skaggs, Hot Springs County Planner
Steve Thomas, Greater Yellowstone Coalition
Steve Trombley, Washakie County Commissioner
Jack Winninger, Park County Commission Chairman

Copies of all working group mailings were sent to:

The Honorable Jim Geringer, Governor of Wyoming
Karen McCreery, Field Representative for Senator Alan Simpson
Jackie Van Mark, Field Representative for Senator Craig Thomas
Pam Buline, Field Representative for Senator Craig Thomas
Baillie Miller, District Representative for Congresswoman Barbara Cubin

AGENCIES AND ORGANIZATIONS CONTACTED

Members of the planning team contacted numerous agencies and elected officials during development of the draft and final EIS documents. The following list is representative of the agencies and offices that indicated an interest in the Grass Creek RMP and those that have been contacted during the planning process. This list is not inclusive. A complete list is on file at the Worland District Office.

REQUIRED CONTACTS

Advisory Council on Historic Preservation, Washington, DC

Department of the Army

Corps of Engineers

Department of Energy

Department of the Interior

Bureau of Indian Affairs

Bureau of Land Management, (760), Washington, DC

Bureau of Land Management, Wyoming State Office, Cheyenne, WY

Bureau of Reclamation

National Park Service
U.S. Fish and Wildlife Service
U.S. Geological Survey

Department of Transportation

Federal Highway Administration

Environmental Protection Agency, EIS Registration Section, Washington, DC

Environmental Protection Agency, Region VIII, Denver, CO

Office of the Governor of Wyoming

Tribal Governments and Native American Leaders

OTHER CONTACTS

Federal Agencies

Department of Agriculture

Forest Service

National Resources Conservation Service (formerly SCS)

Department of the Interior

Bureau of Indian Affairs

Bureau of Land Management (other offices)

Western Area Power Administration

Federal Elected Officials

Office of Senator Alan K. Simpson

Office of Senator Craig Thomas

Office of Representative Barbara Cubin

Office of former Senator Malcolm Wallop (during scoping)

Office of former Representative Craig Thomas (during scoping)

State Agencies, Commissions, and University

State of Wyoming

Department of Environmental Quality

Department of Agriculture

Department of Commerce

Game & Fish Department

Geological Survey

Transportation Department

State Engineer

Conservation Districts

Recreation Commission

Board of Land Commissioners

Water Development Commission

University of Wyoming

Local Area State Legislators

The Hot Springs Conservation District

The Meeteetse Conservation District

The South Big Horn Conservation District

The Washakie Conservation District

Local Government

Mayors' offices of Basin, Greybull, Meeteetse, Thermopolis, Kirby, and Worland. County Commissioners of Big Horn, Hot Springs, Park, and Washakie counties

CONSULTATION AND COORDINATION

DISTRIBUTION

In addition to the agencies and offices listed above, notices, requests for comments, and copies of this document have been sent to businesses, organizations, interest groups, and individuals. Copies are available for review in the BLM offices in Cheyenne, Worland, and Cody and at the county libraries of Big Horn, Hot Springs, Park, and Washakie counties.

The mailing list for this document is also available for review at the BLM office in Worland.

COMMENTS AND RESPONSES

New Table 24 is an index of public comments on the Grass Creek draft EIS. The planning team has endeavored to respond to every substantive comment that was received. Readers should use New Table 24 for finding topics of interest and then go to the corresponding response in the narrative which follows.

Letters and public hearing testimony received during the public comment period are reproduced in New Appendix 7.

Handwritten letters have been typed verbatim to improve readability or to save space.

**New Table 24
Index of Comments and Responses**

Number	Topic
1. GENERAL -- BLM's Legal Authority	
1.1	Wyoming and U.S. Constitutions
1.2	Private Lands Along the Bighorn and Greybull Rivers
1.3	Private Lands and BLM Requirements in an Allotment
2. GENERAL -- The Draft and Final EIS Documents	
2.1	Information Provided by Commentors on the Draft EIS
2.2	Language, "May, Might, Possibly, Where Appropriate"
2.3	Glossary, References, and Index
2.1	Level of Detail, CRM, HRM, Updating the Plan
2.5	Document Format, Management Common, Alternatives and Assumptions
2.5	Plan Monitoring and Evaluation Requirements
3. GENERAL -- Ecosystem Management	
3.1	Ecosystem Conservation, Native Biological Diversity
3.2	Ecosystem Boundaries, Greater Yellowstone Ecosystem
3.3	Measuring Biological Diversity
3.4	Ecosystem Management Across Jurisdictional Boundaries
4. GENERAL -- The National Environmental Policy Act	
4.1	Custom and Culture
4.2	Public Hearing Request and Comment Period Extension
4.3	Involvement of Local People in Planning, Response to Scoping
4.4	Previous Grazing EIS Favored, Adopting Existing Management
4.6	Range of Alternatives
4.6	Impacts of BLM Decisions on Adjacent Private and State Lands
4.7	Response to Public Comments, Form Letters, Out-of-State Views
4.8	Cumulative Impacts, Other Kinds of Impacts and Relationships
4.9	No Action Alternative For Grazing, Estimates Mistaken For Decisions
4.10	No Action Alternative For Oil and Gas Leasing

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5.1	Supporting Local Economic Productivity
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5.3	Economic Projections in the Draft EIS, Rounded Numbers
5.4	Value of an AUM Compared to Recreation
5.5	Beneficial Impacts of Businesses
5.6	Adverse Economic Effects Related to Land Use Restrictions
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5.1	South Fork of Owl Creek
5.2	Wild and Scenic River Review Process
7. GENERAL -- Wilderness	
7.1	Opposition to Designating More Wilderness
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8. AIR QUALITY MANAGEMENT	
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9. CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES	
5.4	Paleontology of the Willwood Formation, Interpretive Signs
9.2	The Need to Protect Sensitive Resources From Too Much Use
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10. FIRE MANAGEMENT	
10.1	Benefits of Fire
10.2	Use of Fire to Improve Sage Grouse Habitat
11. FORESTLAND MANAGEMENT	
11.1	Forestland Management Objectives
11.2	Anticipated Harvest Levels and Forestland Health

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Number	Topic
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11.5	Firewood Cutting Along Rivers and Desert Drainages
12. LANDS AND REALTY MANAGEMENT -- Access	
12.1	Improving Public Access, Map 24, BLM's Transportation Plan
12.2	Condemnation
12.3	Access and Road Construction
13. LANDS AND REALTY MANAGEMENT -- Landownership Adjustments	
13.1	Lands For Agricultural Development
13.2	Lands For Suburban Expansion and Other Community Needs
13.3	Desert Land Entries
13.4	Land Exchange in the Wild Horse Area, Reduction of County Tax Base
13.5	Public Involvement
14. LANDS AND REALTY MANAGEMENT -- Rights-of-Way	
14.4	Impacts to Transportation Facilities
14.2	Underground Routing, Costs to Relocate Lines, Restrictions
14.3	Protection of Existing Rights, Corridors in Timbered Areas
14.4	List of Pending Rights-of-Way, Preexisting Projects, Altamont
14.5	Distribution Facilities
14.6	Construction Near Riparian Areas
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15. LIVESTOCK GRAZING MANAGEMENT	
15.1	Wetlands, Riparian Areas
15.2	Suitability, Adjustments/Reductions, Actual and Authorized Use
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15.6	Allotment Categorization Process
15.6	Utilization, Key Areas
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15.10	Subjective Visual Management Approach
15.12	Bias Against Grazing, Compatibility with Other Objectives
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16.2	Justification For Restrictions, Resources to be Safeguarded
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18.3	Access and Vehicle Limitations in the Red Canyon Creek Area
19. RECREATION MANAGEMENT	
19.1	Recreation Facilities at Wardel and Harrington Reservoirs
19.2	Recreation Projections Too High For Red Canyon Creek
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19.4	Surface-Disturbances For Recreation, Agricultural Practices
19.5	Projections on Decline of Primitive Recreation
20. VEGETATION MANAGEMENT	
20.1	Strategy on Transplanting Protected Plants
20.2	Scientific Names
20.3	Definition of Good Condition Range
20.4	Achieving Proper Functioning Riparian Areas, Checklist Method
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21. VISUAL RESOURCE MANAGEMENT	
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23. WILD HORSE MANAGEMENT	
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24. WILDLIFE MANAGEMENT	
24.1	Predation on Wildlife Reduced by Good Habitat Management
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28. SPECIAL MANAGEMENT AREAS Meeteetse Draw Rock Art Proposed ACEC	
28.1	Supervision of Recreational Use
28.2	Bentonite Mining Claims in the Area

COMMENTS AND RESPONSES

[Please see New Table 24 for an index of comments and responses. The planning team has maintained a public comment file describing the comments contained in each letter, petition, and public hearing testimony received during the public comment period. This public comment file is available for review in the Worland District Office, or can be obtained by calling or writing the Worland Office. In the summarized comments which follow, "some" refers to ten or fewer comments received on a particular topic, while "many" means more than ten.]

1. GENERAL—BLM's LEGAL AUTHORITY

- 1.1 *Comment: Many commentors expressed opposition to BLM restrictions on "Wyoming's public lands" because neither the U.S. nor the Wyoming Constitution gives BLM the authority to manage these lands in Wyoming.*

Response: We assume that the phrase "Wyoming's public lands," as used in these comments, refers to lands that are more commonly described as federal lands, owned by the American public and managed by the BLM.

Issues related to the United States and Wyoming constitutions are outside the scope of this EIS. The Grass Creek RMP is being developed under the authority of Section 202 of the Federal Land Policy and Management Act of 1976 (FLPMA). This Act clearly makes BLM responsible for land-use planning on public lands.

With FLPMA, Congress declared that the use of public lands would be addressed through a land-use planning process, which incorporates the views of the American public, and includes coordination with local and state government plans. We understand the importance of paying special attention to Wyoming citizens and their leaders in local and state government; but by law, we must consider the views of Americans living outside Wyoming as well.

We realize there are many business and community interests in Wyoming that are directly or indirectly dependent on BLM-administered public lands. We also realize that these business and community interests require long-term planning that will produce consistent and reasonable land-use management. In taking a long-term approach to public land management,

businesses and communities can more confidently invest in ranching, mining, oil and gas development, timber production, and recreation.

The intent of the Grass Creek RMP is not to restrict citizens or industries; but, when possible, to increase the productivity of the public lands, provide stability for long-term investments, and protect those same citizens and industries from arbitrary interference in their lawful business.

- 1.2 *Comment: Some commentors wanted to know why private lands along the Bighorn and Greybull rivers, and in other locations, were included on maps of the Grass Creek Planning Area, as if these lands would be administered by BLM.*

Response: Private lands along the Bighorn and Greybull rivers would not be managed by the BLM, although some of these lands are inside the planning area boundary, as shown on maps in the draft EIS. Table 1 of the draft EIS (on page 6) describes the areas the Grass Creek RMP decisions will cover and areas that RMP decisions will not cover within this planning area boundary. Please note that RMP decisions will not cover the 302,000 acres of land surface, and the minerals under those lands, where the surface and/or minerals are owned by private individuals, the state of Wyoming, or local governments.

The page-sized maps used in the draft EIS were not conducive to showing BLM-administered, private, and state lands as separate entities. Map B in the draft EIS map pocket should be used for that purpose. As in the draft EIS, the shaded areas on page-sized maps in the final EIS are not intended to imply BLM administration of any private- or state-owned land surface or mineral estate.

The RMP will establish land-use planning decisions and provide management guidance for public lands in the Grass Creek Planning Area (including the BLM-administered mineral estate). Public lands are defined as 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. In administering these lands, the BLM will endeavor to coordinate with adjacent private landowners, the state of Wyoming, grazing permittees, other users of the public lands, and any affected or interested citizens.

CONSULTATION AND COORDINATION

- 1.3 *Comment: One commentor wanted his allotments removed from "timing" limitations (shown on Map 11 of the draft EIS), off-road vehicle limitations, and from an area identified for full suppression of wildfire.*

Response: We point out that none of the limitations or designations cited in your letter apply to private lands within your BLM grazing allotments.

The BLM considers all proposals for use of the public lands on an individual basis. For example, a one-time exception to a timing limitation might be granted in response to an oil well drilling proposal, if an environmental analysis indicates that impacts would not take place, or the impacts can be mitigated in some other fashion.

The timing limitations on Map 11 of the draft EIS would not apply to grazing by livestock, but might affect the timing of project development such as reservoir construction.

The reasons for designating public lands as full suppression areas are described in detail in comment response 10.1. These include the need to prevent fires on public lands from spreading to adjacent lands and damaging private property. (For example, one of the allotments cited in the comment letter contains oil and gas development facilities.)

Regarding off-road vehicle limitations, a grazing permittee can be granted an exception to planning decisions, in his grazing allotment, that otherwise apply to all users of the public lands: If necessary for the conduct of authorized land-use activities subject to a BLM-issued permit or license, exceptions to off-road vehicle limitations could be granted following an environmental analysis.

It is important to note, also, that in areas designated as limited to "existing" roads and trails, the performance of necessary tasks requiring off-road use of a vehicle would be allowed, provided resource damage does not occur. Examples of necessary tasks would include constructing or repairing authorized range improvements. (See page 48 of the draft EIS.)

2. GENERAL—THE DRAFT AND FINAL EIS DOCUMENTS

- 2.1 *Comment: Many commentors cited useful references or provided scientific and technical*

information that helped in the environmental analysis. Others provided verifiable information on their grazing allotments or other matters of personal knowledge relating to specific lands and resources.

Response: Thank you for your assistance. We have used this information in developing the final EIS. The information was also important for updating and correcting maps and files that are used for day-to-day work. For example, some commentors provided corrected grazing information for their allotments. The new information will be incorporated into the appropriate resource area maps and files whether or not that kind of information has been reprinted in the final EIS. Outdated information in the draft EIS will not be used in making future land-use decisions.

- 2.2 *Comment: Some commentors objected to the use of the words "may, might, possibly" and "where appropriate" or other qualifiers that indicated a lack of specific knowledge as to what exists in the planning area, or a lack of resolve on how to manage important resources.*

Response: The purpose of the Grass Creek RMP is to provide overall guidance for land-use management, and to include flexibility for addressing specific situations on-the-ground. Many management decisions require site-specific evaluations and a high level of consultation and coordination with affected citizens.

The use of qualifying phrases is prudent and necessary for flexible on-the-ground multiple-use decisions, especially when additional site-specific analyses and consultation are required or warranted. The level of detail that would be needed to make irrevocable or all-encompassing decisions, in favor of any resource or land use, is generally not appropriate for use in RMPs.

In reviewing the draft EIS, the public generally expressed support for decisions being made individually, with the appropriate involvement of interested and affected citizens. These same people did not want RMP decisions to be too specific or detailed.

- 2.3 *Comment: Many commentors asked for an expanded glossary, a list of references, and an index to be printed in the final EIS. Other commentors wanted specific terms and references listed, redefined, or clarified.*

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Response: The final EIS contains an expanded glossary and list of references, and an index of comments and responses by topic. (See New Table 24.)

2.4 Comment: Many commentors wanted detailed, site-specific information and decisions in the RMP. Some commentors asked whether a coordinated resource management (CRM) plan could be developed instead of the RMP. One commentor said the draft EIS was, in effect, an allotment management plan. Others apparently worried that the RMP would not be consistent with management approaches such as holistic resource management (HRM). Others wanted to know how the RMP would be updated.

Response: As indicated in a previous response, detailed, site-specific information and decisions are generally not appropriate for use in an RMP that is intended to provide overall guidance and flexibility to address on-the-ground situations.

The BLM acknowledges that coordinated and holistic resource management can be valuable approaches to resource management in which BLM, permittees, and other affected interests attempt to solve problems in a collaborative fashion. The draft EIS cited coordinated resource management on page 38 as a method of proposing, designing, and implementing management actions such as grazing systems, land treatments, and range improvements.

In the same manner, any useful management strategy could be applied on an individual basis, if permittees and other affected interests want to cooperate and the management strategy is consistent with BLM policy. For example, the Meeteetse Conservation District "Long Range Program, Land Use Management and Resource Conservation Plan" (1994) seeks to apply an HRM model "to justify, evaluate and monitor the projects and programs of the Meeteetse Conservation District prior to, during and after their completion."

The BLM is looking forward to cooperating in various management strategies, including CRM and HRM, whenever mutually beneficial goals can be achieved.

As described on page 5 of the draft EIS, "the Grass Creek RMP will be kept current through minor maintenance, or through amendments and revisions, as the demands on public lands and resources change, as the land and re-

source conditions change, or as new information is acquired." Also see comment response 2.6.

2.5 Comment: One commentor said it was hard to follow the tables describing the alternatives. Others wanted management "common to all the alternatives" to be described elsewhere, or in some other way to highlight significant differences among the alternatives. One commentor said Table 15 was a description of alternatives, not assumptions. Some commentors said all maps and tables should be consolidated in one place.

Response: Tables 2, 3, 15, and 16 were formatted for easy comparison of the management options, constraints, assumptions, and impacts associated with each alternative, without the need for a lot of page turning. The management options that represent "management common to all alternatives" were included in Table 2 so that the description of each alternative would be complete. Many of these management options are standard operating procedures, or requirements of law, regulation, and policy that BLM must follow. To provide completeness and context, we considered it best to keep this text together. But as recommended by some commentors, the tables, figures, and maps in the final EIS have been placed at the end of each chapter or appendix so as not to interrupt the text.

Table 15 does not present decisions or descriptions of the alternatives. As the title of Table 15 indicates, it presents the quantified or qualified "assumptions" used to conduct the impact analyses of the alternatives. For example, the number of acres burned by prescribed fire, the acres of forest to be harvested, the number of barrels of oil produced, and the number of exploratory wells to be drilled are assumptions, not proposed decisions. These are projections of future activity used as a basis for the environmental impact analysis. Some of them vary by alternative to fit the different alternative themes (described on page 13 of the draft EIS).

2.6 Comment: One commentor was concerned that the draft EIS contained minimal information regarding monitoring and evaluation requirements cited in 43 CFR 1610.4-9. ("The proposed plan shall establish intervals and standards, as appropriate, for monitoring and evaluation of the plan...")

Response: As stated on page 5 of the draft EIS, "the Grass Creek RMP will be kept current through

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minor maintenance, or through amendments and revisions, as the demands on public lands and resources change, as the land and resource conditions change, or as new information is acquired."

The results of monitoring and evaluation are very important in this process of keeping the RMP current. The BLM's response to monitoring and evaluation shows how well we recognize and respond to change.

Most often, the RMP is monitored and evaluated when a proposed land-use action is considered in a site-specific environmental analysis. Among other things, this analysis helps determine whether the proposal is consistent with the RMP, or whether it represents a kind of "new information" that might warrant a plan amendment.

For example, the cumulative impacts described in an environmental analysis for a proposed land use should be compared to the reasonably foreseeable impacts analyzed in the final EIS for the RMP. When cumulative impacts begin to exceed those considered in the final EIS, this "monitoring" has demonstrated the environmental analysis for the RMP needs to be updated.

Specific monitoring and evaluation goals were also contained in the draft EIS. Evaluation criteria for land sales, exchanges, and other disposals were described on page 230 of the draft EIS. On pages 254 through 259, the monitoring plan for livestock grazing was discussed. As described in comment response 27.2, since 1986 the Worland District has conducted monitoring studies of comparative watersheds in the Fifteenmile Creek drainage basin to determine the influence of vegetation communities on runoff and erosion.

Provisions for resource monitoring and for determining the effectiveness of our management actions will also be established as part of future implementation plans.

3. GENERAL—ECOSYSTEM MANAGEMENT

3.1 *Comment:* One commentor said the planning area should be managed for "ecosystem conservation," which was defined as "...protecting the integrity of natural ecological systems with a complete complement of native biological diversity and perpetuating natural disturbance regimes on a regional scale over a time-frame of millennia."

Response: Thank you for your recommendation on redefining "ecosystem management." In our view, managing the planning area for "ecosystem conservation" in the manner advocated would require large-scale reintroductions of native plants and animals, including threatened, endangered, and candidate species, to achieve a "complete complement of native biological diversity."

Through the collection of inventory data and land-use management in the Grass Creek Planning Area, the BLM will try to identify biologically diverse areas on public lands and conserve their richness of plant and animal species, with special emphasis on conserving native species. However, we will not pursue plant and animal reintroductions on a planning area scale. Generally, the idea of reintroducing plants and animals was not supported by public comments on the draft EIS.

Natural disturbances, on the scale suggested, would require the routine and wide-spread use of fire. This might cause private investments and local economies to suffer, and probably would not be supported. While ecosystem conservation might be a laudable idea, the BLM must also recognize and consider human needs in ecosystem management.

3.2 *Comment:* Some commentors said maps were needed to show the location of ecosystem boundaries. Some cited the existence of the Greater Yellowstone Ecosystem within the western portion of the planning area.

Response: Ecosystem boundaries cannot be mapped without a definition and understanding of the particular ecosystem level, or scope of the system, being addressed. An ecosystem can be very extensive and may incorporate a vast array of plant and animal species and the processes which link them, or it may be a relatively limited system without much complexity. For example, an ecosystem might be defined on the basis of a watershed, if water quality is an issue, or upon a combination of habitats if wildlife is an issue. Because BLM often deals with impacts to vegetation, it is common to begin describing ecosystems by the plant communities they support.

If the area commonly known as the Greater Yellowstone Ecosystem were mapped, the western part of the planning area containing the alpine areas and Absaroka Mountain foothills might be included. The rest of the planning area

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might logically be called the Bighorn Basin Ecosystem. Such general boundary definition would give little guidance for management of the planning area, however.

In reality, the BLM has always managed the public lands with an awareness of ecosystems. But now, our management approach is evolving to address plant, wildlife, and human needs more comprehensively, with an understanding of the ecosystem processes that link these needs together.

- 3.3 **Comment:** *Some commentors said the draft EIS discussed management for biological diversity without providing information as to what level of biodiversity would be acceptable to BLM managers. What measurements will determine whether BLM is successful? One commentor recommended on-the-ground quantitative measurements of plant and animal populations as a guide.*

Response: As stated on page 8 of the draft EIS, "inventory, monitoring, research, data management, and information sharing are needed for understanding the elements of biological diversity that exist in the Grass Creek Planning Area." We reiterate the need to identify biologically diverse areas and conserve their richness of native plant and animal species.

In practice, we anticipate that biologically diverse areas will be identified and studied in response to proposed land-use activities. Important areas might also be identified by other agencies or private organizations. The management of these areas will be determined case-by-case, through consultation and coordination with other federal and state agencies, local government representatives, and other affected or interested citizens.

Also, the development of site-specific projects to improve public lands for multiple use has included biodiversity-related objectives that are monitored by a variety of methods. This practice will continue in the future.

Research in biologically diverse areas, or in areas that are shown to be in danger of losing biological diversity, might include on-the-ground quantitative measurements of plants and animals, as recommended.

- 3.4 **Comment:** *One commentor wanted to know how the ecosystem management approach*

would be applied to balance various BLM land uses which cross jurisdictional boundaries, and how an ecosystem management approach would differ, on-the-ground, from BLM's existing land-use plan.

Response: As stated in an earlier response, BLM has always managed the public lands with an awareness of ecosystems. We do, however, anticipate greater emphasis on developing partnerships for coordinated land use and resource management. For example, there would be fewer activity plans focusing upon a single BLM program or land use. We would look more at how geographical areas could be managed, taking into consideration all the resources and land uses that occur in the area.

When jurisdictional boundaries are crossed, the development of partnerships would be essential. The land uses would continue to be guided by the principles of multiple use on the BLM-administered public lands within the area or ecosystem being managed. On the other lands, not under BLM jurisdiction, we hope that the balance among the land uses would continue to include multiple use, as well as the other applicable management philosophies of the state of Wyoming, the U.S. Forest Service, tribal governments, and private landowners.

4. GENERAL—THE NATIONAL ENVIRONMENTAL POLICY ACT

- 4.1 **Comment:** *Many commentors expressed concern that the draft EIS had not adequately described the custom and culture of the area (including traditional values and important elements of national heritage), or that the Preferred Alternative would adversely affect these values that are protected by NEPA. Most related custom and culture to economic well-being, but one commentor said, "My custom and culture is public access..."*

Response: We have placed additional language in Chapter 3 of the final EIS describing custom and culture in the planning area. As summarized in Revised Table 16, management options contained in the Proposed RMP would have no adverse effect on custom and culture, traditional values, or other important elements of our national heritage.

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- 4.2 **Comment:** *Some commentors requested that a public hearing be held on the draft EIS. Some also requested an extension of the public comment period.*

Response: A public hearing was held on April 3 in Worland. Forty-eight people testified. The comment period was extended for 30 days to include January 7 through May 7.

- 4.3 **Comment:** *Many commentors said BLM had not adequately involved local people and their elected representatives in developing the draft EIS. Some said BLM did not respond properly to scoping comments.*

Response: Please see updated information on public involvement in Chapter 5 of the final EIS. The public involvement activities included 12 personal visits to county commission meetings between 1991 and publication of the draft EIS in January 1995, and a two-day county and city government workshop to review the BLM's Preferred Alternative, eight months before the draft EIS was published. Additionally, the general public was contacted through four scoping and information letters, three news releases, and two open houses. Throughout the development of the draft EIS, BLM planning team representatives held meetings and had countless discussions with individuals regarding the RMP process.

All comments received during scoping were summarized by the planning team and used in subsequent planning steps, such as the identification of concerns, issues, and planning criteria. The comment letters we received are on file and available for review at the Worland District Office.

- 4.4 **Comment:** *One commentor asked if the last EIS done for the planning area could be substituted for the present one, because it worked and everyone was satisfied.*

Response: We appreciate your support of previous land-use decisions and BLM's management of the Grass Creek planning area.

The only EIS covering the entire planning area was one published in 1983 for livestock grazing. Grazing decisions analyzed in that EIS became part of existing management with the publication of a livestock grazing "Record of Decision" for the Grass Creek Resource Area.

For other BLM land-use planning decisions besides grazing, there is currently no EIS. The previous management framework plan, also

published in 1983, did not include the development of an EIS as part of the planning process, although it incorporated the grazing decisions cited above. The planning process also did not include the high level of public involvement and disclosure that the National Environmental Policy Act requires for an EIS.

The 1983 livestock grazing decisions are summarized under Alternative A of the draft EIS. The other land-use planning decisions from the management framework plan comprise the remainder of Alternative A. This alternative reflects current management direction as refined through minor policy changes, on-the-ground work, and years of consultation with public land users.

As indicated on page 5 of the draft EIS, each alternative analyzed in detail represents a complete and reasonable resource management plan. Therefore, it would be possible to continue the current land-use management direction under Alternative A, or to adopt either Alternative B or C for that matter, as the new Grass Creek RMP.

- 4.5 **Comment:** *Many commentors objected that the draft EIS did not have an adequate range of alternatives. Some pointed out that 71 percent of the management options were "Same as Preferred."*

Response: Most of the management options that are "Same as Preferred" are statements of standard operating procedure derived from existing law, regulation, or BLM policy. A resource management plan must be consistent with law, regulation, and policy; so in a sense, it is not necessary for the draft EIS to contain any of these statements. However, we have found through experience, that if certain laws, regulations, and policies are not reiterated in the draft EIS, many people will ask for reassurances that these requirements won't be violated.

One example, is the second paragraph on page 15 of the draft EIS, indicating that BLM would avoid violating Wyoming and national air quality standards. Making this statement is an appropriate form of public disclosure.

There are also common sense management options that reflect the way existing policy should be carried out. For example, the planning team thought it was important to tell the public that, "Before any public lands are exchanged or sold, or before the BLM would attempt to acquire any other lands in the planning area, the BLM would

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consult with county commissioners and other representatives of local government in the affected areas." (See page 31 of the draft EIS.) Because this is a common sense approach, there was no reason to vary it among alternatives and, therefore, we repeated "Same as Preferred."

The draft EIS also identifies the "Alternatives And Management Options Considered But Eliminated From Detailed Analysis" (on pages 13 and 14). We point out that these things also contribute to the range of alternatives "considered," as required by NEPA.

In making revisions to the draft EIS, we have looked for reasonable opportunities to increase the range of management options, and have taken advantage of these when appropriate. We believe the NEPA requirement for considering an adequate and reasonable range of alternatives has been satisfied.

- 4.6 **Comment:** *Many commentors requested discussions about impacts to the value of private, state and county lands; especially lands that are intermingled with public lands.*

Response: By necessity, the Grass Creek RMP must be developed using a broad level of analysis, and it primarily contains broad management decisions. Often, the RMP does not include sufficiently detailed management decisions to affect the value of individual private and state lands that are intermingled with public lands. But where some of these effects exist, and can be estimated, we have attempted to describe them in greater detail in the final EIS.

Potential impacts to the value of intermingled lands will also be considered through the NEPA process as detailed activity plans and land uses are proposed and evaluated. These evaluations will be conducted in cooperation with adjacent landowners and affected land users.

- 4.7 **Comment:** *Many commentors were interested in knowing how public comments would be weighed in developing the Proposed RMP, and if BLM would be influenced by form letters. Many commentors wanted local people to have a major part in the decisionmaking. A few wanted to know why people from out of state should be allowed a say in what goes on in the planning area.*

Response: The BLM did not weigh comments against each other, or count votes in deciding how to develop the Proposed RMP. The National

Environmental Policy Act requires federal agencies to consider and respond to all substantive comments received on an EIS. The letters that were most helpful and useful to the planning team were those that provided information to improve the environmental analysis, or that documented the validity of a point of view.

As stated in comment response 1.1, we understand the importance of paying special attention to Wyoming citizens and their leaders in local and state government. But by law, we must also consider the views of American citizens living outside Wyoming. All American citizens have a vested interest in, and right to help develop, the planning and management decisions for the federally-owned lands and resources administered by BLM.

- 4.8 **Comment:** *Some commentors said the final EIS should contain a better description of cumulative impacts. One commentor said the EIS needed to describe (1) adverse environmental effects which cannot be avoided, (2) the relationship between short-term uses of man's environment and the maintenance of long-term productivity, and (3) any irreversible or irretrievable commitments of resources.*

Response: In the draft EIS, cumulative impacts were labeled "Alternative Summaries." In Revised Table 16, these have been properly relabeled "Cumulative Impacts," and that section has been expanded from the draft EIS. The other types of impacts and relationships have also been labeled in Revised Table 16 where the planning team identified them as existing in the planning area.

- 4.9 **Comment:** *Some commentors said that Alternative A did not reflect the current situation because of a 30 percent reduction in grazing in that alternative. Therefore, the EIS lacked a "no action" alternative as required by NEPA.*

Response: Problems with grazing are addressed individually, as described on page 36 of the draft EIS. Consistent with BLM policy, adjustments in livestock grazing are usually based on monitoring, but adjustments can also be made when requested by a grazing permittee, if an environmental analysis indicates the change is appropriate. Most often, necessary adjustments in livestock grazing are made through implementation of detailed allotment management or other activity plans developed by BLM, permittees, and other affected or interested citizens.

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Apparently the draft EIS confused some people and led many to mistake one thing for another: The assumptions for analysis, and other estimates or projections, were apparently mistaken for proposed decisions or proposed management options. Such assumptions, estimates, and projections in an environmental analysis document are required by the National Environmental Policy Act, so the public can get an idea of the potential effects of the various actions being analyzed. Some of the assumptions, estimates, and projections have been corrected and modified since the draft EIS was published, including the erroneous estimate of a 30 percent decline in grazing. These revised assumptions are in Chapter 3 and various appendices of the final EIS. They are not part of the alternatives described in Chapter 2.

Revised Table 2 of Chapter 2 in the final EIS presents the descriptions of the alternatives. The Proposed RMP in Revised Table 2 is a modification of the Preferred Alternative published in the draft EIS. The Proposed RMP, having incorporated new ideas and information from public comments, represents a common sense approach to land and resource management — one which emphasizes flexibility, and the individual treatment of on-the-ground land and resource concerns.

- 4.10 **Comment:** *One commentator asked, "When does BLM consider a no action alternative required by NEPA for each oil and gas lease action?"*

Response: Decisions on whether to lease lands within the Grass Creek Planning Area for oil and gas development will be made in the RMP. The effects of oil and gas leasing have been analyzed and summarized, consistent with NEPA, in the final EIS. This analysis serves as the basis for RMP decisions on leasing. The further analysis of each leasing proposal, with a "no action" alternative, is not required.

According to policy, the BLM will close lands to oil and gas leasing if other important land uses or resource values cannot be adequately protected, even with the most restrictive lease stipulations. After considering various stipulations in the final EIS, the planning team was unable to identify any lands in the planning area that warranted closure to oil and gas leasing.

5. GENERAL—SOCIOECONOMICS

- 5.1 **Comment:** *Many commentators said the RMP should make it easier for local residents to*

increase their economic productivity. Expanding opportunities for oil and gas development was one example given.

Response: Local residents are rightfully concerned that their local economies are intertwined with the management of the public lands. Many local jobs are tied directly or indirectly to the oil and gas or livestock industries.

However, as described later in more detail, approximately 93 percent of the economic benefits from BLM-administered lands come from the oil and gas industry, with 94 percent of that from existing, developed fields. It is important to note that the Proposed RMP will not impose new restrictions on this existing production activity. (Existing rights associated with producing oil and gas leases are explained in comment response 16.14.) Also, 98.3 percent of the planning area will be available for new oil and gas leasing, exploration, and development with surface occupancy.

On these lands that are available for exploration and development, BLM works with industry to facilitate economically important activities while protecting the environment. Environmental protection measures are applied when on-the-ground evaluations indicate they are needed, but are waived when not. New Appendix 6 describes how this process works.

The Proposed RMP also does not change, or propose to change, current grazing preferences. Any adjustments in livestock grazing will occur only after site-specific monitoring demonstrates a clear need for such adjustments.

The BLM, and the Proposed RMP, are mandated by FLPMA to operate under the principles of multiple-use management, sustained yield, and environmental integrity. These principles, while simple in theory, are obviously difficult to put into practice. Every user of the public lands naturally wants their particular use to predominate with little restriction or interference from other users. A major purpose of the Proposed RMP, or any later site-specific activity plan, is to resolve such conflicts or mitigate any adverse impacts of resource use. An equally important purpose is to protect the long-term productivity of the public lands. The Proposed RMP thus tries to protect the economic and activity interests of all current users, while minimizing conflicts and maintaining the basic soil, vegetation, and wildlife resources that future users will require.

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5.2 *Comment: One commentator compared economic contributions from grazing and recreation, then asked whether funds expended to enhance recreation are comparable to the funds spent to administer grazing, and whether these costs are comparable on a percentage basis to the economic contributions of these programs. The commentator asked if not, why not?*

Response: The most recent edition of BLM's Public Land Statistics indicates that, in 1993, the agency obligated a total of \$11,697,199 for range improvements and \$14,412,948 for construction and access, nationally. Many of the expenditures for construction and access could be considered recreation-related. As revised and documented in the final EIS, livestock grazing would represent about four percent of the local economic activity, while recreation would represent about one percent.

We believe that economic benefits and trade-offs are important to consider when land-use decisions are made. However, the BLM does not have a policy of favoring specific land uses because they may generate more money than other land uses. The U.S. Congress allocates funds to the BLM and indicates where money should be spent. And, in a general sense, the RMP also indicates where funds will be focused. For example, work in ACECs may get priority for funding because of the need for management emphasis, as identified in the RMP. But decisions on the dollar amounts, and precisely when the money would be allocated, are outside the scope of the RMP.

5.3 *Comment: One commentator asked why all lands in the planning area increase their economic contributions, on page 179 of the draft EIS, while BLM-administered lands decrease.*

Response: The referenced decrease on public lands is less than \$100,000 over a 15-year period. In representing 0.004 percent of the nearly \$2.5 billion in total contributions from public lands, as described in the draft EIS, it is not clear whether the loss is statistically meaningful.

We have, however, updated and revised the socioeconomic impacts section in the final EIS. (See New Appendix 5.) The new economic projections are now rounded to the nearest million dollars to allow comparisons to be drawn more easily.

5.4 *Comment: One commentator quoted the University of Wyoming as saying a livestock AUM is*

worth \$77.11. If a mule deer is 0.15 AUM and recreational use is free, how do local economies get reimbursed for these other land uses?

Response: The local communities are reimbursed for wildlife and recreational use by the money that is spent in our communities by hunters and other recreationists, particularly those who live outside the Bighorn Basin. There are also contributions from casual sightseers who drive the badlands with the hope of seeing wild horses. The amount of direct economic contributions to the local economy from nonresident recreation is considerable.

As much as possible, BLM tries to facilitate the coexistence of potentially conflicting land and resource uses. With the Proposed RMP, BLM has tried to protect or allow prudent use of important resources, without unnecessarily prohibiting or excessively constraining other land and resource uses. Your letter implies that livestock grazing and recreation are mutually exclusive, and that there is a resulting economic trade-off. Actually, there is no reason that the local economy can't have both the tourists' and recreationists' dollars, along with the revenues provided by grazing, mineral development, and logging.

5.5 *Comment: Many commentators said the EIS needed to describe the beneficial impacts of businesses in the planning area.*

Response: These benefits have been described from the standpoint of dollars and jobs contributed to the local economy. (See New Appendix 5.)

Regarding other potential benefits, it should be noted that when an EIS is prepared, NEPA requires that it be focused on the issues and proposed actions. If beneficial impacts, provided by businesses (or anything else) will not be affected by proposals in the EIS, it is not necessary or appropriate to describe these benefits in detail. To do so would be contrary to NEPA's requirement for a concise environmental document.

5.6 *Comment: Many commentators thought the Preferred Alternative would have an adverse effect on the local economy because of restrictions. Many encouraged BLM to maintain a low level of restrictions, or the "status quo," for economic reasons.*

Response: In this chapter we have responded to concerns about restrictions and reductions in commodity industries, such as oil and gas and

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livestock grazing, that many people worried would have a major effect on the economy. (See comment responses 5.1, 11.2, 15.12, 16.8, and 16.15 for example.) The description of economic impacts also has been modified and expanded based on public comments on the draft EIS. (See New Appendix 5.) With these modifications, analysis of the Proposed RMP does not show the reductions in land uses and economic effects that concerned so many people.

6. GENERAL—WILD AND SCENIC RIVERS

- 6.1 *Comment: Many commentors said the canyon of the upper South Fork of Owl Creek should be made a wild and scenic river.*

Response: After reconsidering the upper South Fork of Owl Creek, BLM has determined that public lands in the canyon do not meet wild and scenic river eligibility criteria. As explained in the final EIS, water in the canyon of the upper South Fork of Owl Creek flows into the ground on public lands to recharge important aquifers within the Bighorn Dolomite and Madison Limestone formations. This same water is pumped out of the ground at Hamilton Dome, as a byproduct of oil production, where it benefits riparian areas, wildlife habitat, and agricultural development. The stream deserves protection for that reason. However, the public lands do not qualify as eligible for wild and scenic river consideration on the basis of geology, because the groundwater recharge area is not rare, unusual, one-of-a-kind or unique to the area. While the geology is otherwise interesting for public education, it does not equal that of the nearby Wind River Canyon, and the opportunities for education are limited by poor access. The other important values reconsidered by the planning team were scenery and primitive recreation. The scenery and primitive recreation related to the waterway were not considered sufficiently diverse, unique, or rare to attract visitors from outside the area and therefore did not qualify as "outstandingly remarkable."

Public lands in the canyon of the upper South Fork of Owl Creek would continue to be off-limits to surface-disturbing activities under the Proposed RMP. Consistent with this requirement, the same public lands would be closed to mining claim location and development under the 1872 Mining Law, and BLM would pursue a locatable mineral withdrawal.

- 6.2 *Comment: One commentor asked for more information on the wild and scenic river evaluation process and why BLM had not given more consideration to the Wood River.*

Response: The wild and scenic river review process was described in Appendix 1 of the draft EIS. The BLM administers only about 40 acres of public land along the Wood River. (The same is true for the Greybull River.) In looking at these public lands, the planning team did not find any "outstandingly remarkable" values that would warrant a determination of wild and scenic river eligibility.

7. GENERAL—WILDERNESS

- 7.1 *Comment: Some commentors opposed the designation of more wilderness in the Grass Creek planning area.*

Response: The existing wilderness study areas in the Grass Creek planning area were already addressed in the Grass Creek/Cody Wilderness EIS (August 1990), and with that document BLM made its proposals to Congress regarding the designation (or nondesignation) of these areas as wilderness. Also, no new or additional areas were identified that would qualify for wilderness study. Therefore, the RMP will not propose the creation of any new wilderness study areas and, as stated on page 9 of the draft EIS, wilderness management and recommendations on wilderness designation will not be addressed by the Grass Creek RMP.

- 7.2 *Comment: Many commentors expressed a desire for BLM to protect all lands contained in a "conservationists' or citizens' wilderness alternative."*

Response: Letter number 312 describes a "Citizens' Wilderness Proposal for Wyoming BLM Lands" which addresses wilderness study areas and the opportunities for primitive, nonmotorized recreation in and near these areas. We assume that this is the conservationist's alternative for wilderness areas.

We understand the Citizens' Wilderness Proposal recommends wilderness designation and protection for the Sheep Mountain, Red Butte, Bobcat Draw, and Owl Creek wilderness study areas and for some adjacent lands. This proposal says that the wilderness study areas and adjacent lands should be protected for their unique and primitive resources, whether or not

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they are designated wilderness; and that the identified areas should be managed as ecosystems.

The BLM recognizes that these public lands are scenic and contain some of the best opportunities for solitude and primitive recreation in the planning area. A new management objective in the Proposed RMP is to maintain the current level of opportunities for primitive kinds of recreation, in areas shown as "semiprimitive nonmotorized" on Map 28 of the draft EIS. Although the location of these areas could vary somewhat through time, the objective would be to keep about 6 percent of the planning area (or about 62,270 acres) available for these forms of recreation.

The BLM will also attempt to keep interested citizens apprised of proposed surface-disturbing activities in areas adjacent to the wilderness study areas. As necessary, public involvement would be facilitated through formal comment opportunities. The potential impacts on wilderness suitability in nearby study areas would be evaluated.

How BLM will apply ecosystem management concepts in the Grass Creek Planning Area is described in comment responses 3.1 through 3.4.

8. AIR QUALITY MANAGEMENT

8.1 *Comment: Some commentors questioned the Preferred Alternative's stricter dust control measures.*

Response: The management option stated that dust control measures to reduce visibility impacts would be required for all construction and other surface-disturbing activities.

Our review of this management option indicates that it would be difficult to apply to some activities, including off-road vehicle use, given the definition of "surface-disturbing activity." In addition, the statement just above this one in the draft EIS, that "BLM would coordinate with the Wyoming Department of Environmental Quality (DEQ) and the Environmental Protection Agency (EPA) on developing air quality standards and guidelines as needed" would adequately cover potential dust control concerns. Therefore, the management option on dust control has been removed from the EIS.

9. CULTURAL, PALEONTOLOGICAL, AND NATURAL HISTORY RESOURCES MANAGEMENT

9.1 *Comment: One commentor provided information on the paleontology of the Willowood Formation and recommended that the geology of that formation be described on interpretive signs to be placed along highways.*

Response: Thank you for the information. It has been added to the final EIS. As you recommend, we will look for opportunities to describe the Willowood Formation and its paleontology on interpretive signs.

9.2 *Comment: One commentor reported the occurrence of unrecorded archaeological resources in the Red Canyon Creek area that are so extensive and rare that there is no way to mitigate the impacts recreational access and use would cause. The same concern was expressed for important wildlife values in the area. Other commentors expressed concern about the security of cultural, paleontological, and natural history resources in general.*

Response: Based on public comments and new information, the estimated recreational use in the Red Canyon area is lower than indicated in the draft EIS. Because of the more reasonable use estimates and the fact that much of this use would be nonmotorized, we believe that the potential adverse effects to cultural and wildlife resources in the Red Canyon area can be adequately mitigated.

At the same time, we acknowledge concerns about recreational access into the area and the fact that this access has not been fully obtained from private landowners (as pointed out in comment response 18.3). For this reason, the idea of highlighting these public lands as a Special Recreation Management Area (SRMA) has been dropped. The RMP would not designate a Red Canyon Creek SRMA, however, the other proposed management options and objectives for the area have not changed from the draft EIS's Preferred Alternative.

For other sensitive areas, it is sometimes necessary to balance the protection of important cultural, wildlife and other resources, with the need to let people view and enjoy the public lands and resources that all Americans own. The most sensitive areas can be kept isolated, and not developed. However, we generally

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believe that by informing and educating people, the protection of sensitive lands and resources can be improved.

Before access is upgraded in the vicinity of important cultural, paleontological, natural history, wildlife, or other sensitive resources anywhere in the planning area, the security and protection of these resources will be carefully considered.

- 9.3 **Comment:** *One commentor asked about a significant Sheepeater cultural site in the vicinity of Soapy Dale Peak and whether this, or other Sheepeater Indian encampments or hunting sites on public lands, would be included in a cultural resource management area.*

Response: The Sheepeater site consisted of a single, tepee-shaped structure made of poles. Because it was in danger of falling apart, the structure was dismantled and accurately reconstructed at the Washakie County Museum and Cultural Center, where it remains on display. We do not know of other Sheepeater sites on public lands in the planning area. But if similar sites are discovered, they will be managed on a case-by-case basis, with consideration given to their importance to Native Americans.

- 9.4 **Comment:** *Some commentors requested that the final EIS mention a new programmatic agreement that streamlines the "section 106" cultural resource consultation process.*

Response: The agreement is now mentioned in the final EIS.

- 9.5 **Comment:** *One commentor discussed the importance of protecting the areas around petroglyphs. Other commentors said that surface-disturbing activities should be prohibited for more than 0.25 mile around petroglyphs, or more than 0.5 mile specifically at Legend Rock.*

Response: Areas within view of Legend Rock and other rock art occurrences, such as those at Meeteetse Draw, contribute to the cultural significance of the art. This cultural significance will be considered when proposals for surface-disturbing activities are evaluated. The 0.25 and 0.5 mile buffers are used as a rule-of-thumb, established through best available information and on-the-ground experience. There may be some variation in the areas avoided, but these variations would need to include site-specific considerations and consultation with land-use applicants, tribal representatives, and other interested or affected citizens, as appropriate.

- 9.6 **Comment:** *One commentor asked whether there is a problem with hobby collection of invertebrate fossils and what areas would be available for collecting.*

Response: The rules pertaining to hobby collection of common invertebrate fossils are described in 43 CFR 8365.1-5. These rules allow the collection of "reasonable amounts" of nonrenewable resources "such as rocks, mineral specimens, common invertebrate fossils and semiprecious gemstones" for noncommercial purposes. The management option that the commentor has questioned was intended to discourage hobby collection of fossil invertebrates having significant scientific importance. Currently, we do not know if any such fossils exist in the planning area; however, if found they could be protected by the regulations cited above. Therefore, the management option is unnecessary and has been removed from the EIS.

10. FIRE MANAGEMENT

- 10.1 **Comment:** *Many commentors expressed concerns that the benefits of fire, both prescribed and wild, had been underestimated in the draft EIS.*

Response: We note that Table 15 of the draft EIS anticipated that, under the Preferred Alternative, prescribed fire would burn about 9,000 acres during the analysis period. This is twice the area historically burned under current management.

In a practical sense, there are several factors that affect the amount of prescribed fire that can be used. These include funding, manpower, weather conditions, and the availability of management options, like the capacity for resting burned areas from grazing and other land uses. The Meeteetse Conservation District has recommended that cooperative efforts be increased among the conservation district, BLM, and livestock grazing permittees to overcome some of the funding, manpower, and management limitations. The BLM welcomes this support and will pursue a greater level of cooperation.

Based on the anticipated increased support and assistance, we have revised the anticipated use of prescribed fire to 11,000 acres during the analysis period.

There are other factors to consider in identifying lands for limited or full suppression of wildfire. One of the most important is public liability,

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because wildfires can spread from BLM-administered to private or state lands and damage or destroy private property. In the Grass Creek Planning Area, the boundary between limited and full suppression areas separates predominantly blocked-up public lands in the eastern part of the planning area from intermingled public, private, and state lands in the west. Where land ownership is intermingled, BLM usually must aggressively fight wildfires on public lands because of the potential risk to nearby private structures, improvements, and land values. The public lands identified for full suppression also contain most of the planning area's oil and gas fields, with their very high property values and potential hazards.

As proposed in the draft EIS, 77 percent of the public lands in the planning area would be identified for limited suppression of wildfires. The remaining 23 percent of the public lands cannot reasonably be managed for limited suppression, without BLM accepting a significant management role and liability for intermingled private and state lands. These lands are generally south and west of Wyoming Highway 120 (and west of highway 170 near Hamilton Dome).

Having described the problems with wildfire suppression in the western part of the planning area, BLM also acknowledges that this area has the highest potential for benefits from fire. In some cases, wildfires could still be allowed to burn in this full suppression area. Through activity planning, prescribed fire locations will be identified. If wildfires strike in these "prescription" areas, they could be monitored and allowed to burn as long as property values and important resources are protected.

- 10.2 *Comment: One commentor said that fire can produce good sage grouse habitat where sagebrush is adjacent to strip meadows. This environment provides cover and rich insect populations for food, especially for the young birds.*

Response: Thank you for the information. We agree that these benefits could be achieved for sage grouse and their young in the Foothills-Mountain Grassland/Shrub vegetative community. This environment has more precipitation and a quicker vegetative response to fire. Prescribed fire for sage grouse habitat would involve narrow burn strips particularly in the bottom of upland swales adjacent to sagebrush. This option will be considered site-specifically.

11. FORESTLAND MANAGEMENT

- 11.1 *Comment: Some commentors said the forestland management objective on page 24 of the draft EIS lacked meaning because ecosystem management is not understood the same way by everyone. Also, the management objectives for Alternatives B and C should be reworded to imply emphasis because, as written, they can't be implemented. Another commentor said commercial forestry should be mentioned in the management objective for the Preferred Alternative.*

Response: We have made editorial changes to the management objectives as recommended. Also, please see comment responses 3.1 through 3.4.

- 11.2 *Comment: Many commentors said BLM's anticipated harvest levels were not high enough to improve forestland health. Other commentors stated that too much timber would be removed from lands that are part of the Greater Yellowstone Ecosystem.*

Response: Descriptions of forestland health have been revised in the final EIS to give more credit to the benefits of old-growth forests. (See comment response 11.4.)

Generally, the health of forestlands in the planning area has stayed the same or improved slightly with a harvest level of about 400 thousand board feet annually. As indicated on page 155 of the draft EIS, that was the volume of forest products harvested in 1990, and is a long-term average harvest level under BLM's current management plan.

It is important to note that this harvest level is in the table on assumptions, and is not part of the description of an alternative in Table 2. The draft EIS did not contain any management options that would impose specific harvest levels. Instead, BLM simply proposed to "Maintain and enhance the health, productivity, and biological diversity of forest and woodland ecosystems." (See page 24 of the draft EIS.) The BLM recognizes that timber harvesting, including some commercial production, is necessary for this objective to be met. But based on the types and locations of the forestland resources, the planning team chose to emphasize objectives related to forestland health, rather than setting an "allowable cut" level.

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Whatever harvest level is determined to meet that objective will be the level that is cut. Best available information indicates that 400 thousand board feet per year will maintain forestland health.

The identification of specific harvest areas, levels, techniques, and mitigation measures will be done through site-specific evaluations and in consultation with the timber industry and other affected or interested citizens. It would not be desirable or appropriate for BLM to make these determinations through the Grass Creek RMP alone.

- 11.3 **Comment:** *One commentor said BLM should consider the size and effectiveness of residual wildlife security areas as well as the size of forest cut areas. At least 250 acres of contiguous uncut timber are necessary to function effectively as security cover. They also indicated that the 200 acres of aspen on public lands, reported on page 131, underestimated aspen distribution.*

Response: Thank you for the information on effective security cover. A statement has been added to the Proposed RMP, saying that BLM will evaluate the size, extent, distance from roads, and characteristics of forestland vegetation, when forest harvests are considered, to maintain or improve the effectiveness of residual wildlife security areas.

The estimation of aspen distribution is partly a function of our inventory standards. We do not map or count stands less than five acres. This eliminates many small and isolated patches that were counted as some other timber stand type.

- 11.4 **Comment:** *Some commentors said the conclusion that biological diversity, overall forest structural diversity, and associated habitat values decline as forests grow older is a generalization. Some also said the ecological significance of maintaining old-growth forest should receive greater emphasis.*

Response: We generally agree with these comments and have modified the impact analysis in the final EIS accordingly.

In the final EIS we have defined old growth as a forest stand usually over 180 years old, characterized by (1) moderate to high canopy closure, (2) a multilayered, multispecies canopy dominated by large overstory trees, (3) a high incidence of large trees, some with broken tops and other indications of old and decaying wood, (4)

numerous large snags, and sometimes (5) a heavy accumulation of wood, including large logs on the ground.

We recognize that these environments are highly diverse biologically. For example, studies have cited an increase in bird species with increased forest stand age in mixed conifer forests of the interior Northwest; and old-growth forests are also important for the conservation of mammals like the marten, fisher, and lynx. Several of these studies are referenced in the final EIS.

- 11.5 **Comment:** *Some commentors opposed prohibitions on cutting trees on BLM-administered lands along the Bighorn and Greybull rivers and along desert waterways because this could affect people's livelihoods. One said that only the removal of standing trees should be prohibited.*

Response: We point out that firewood harvesting on these public lands has never been authorized by BLM in the Worland District. Only about 120 acres of public lands exist in the planning area that support cottonwood trees along the Bighorn and Greybull rivers. Desert cottonwoods on public lands cover somewhat more than 120 acres.

The importance of these trees for wildlife habitat was pointed out in several comment letters. The Proposed RMP will continue the prohibition on cutting cottonwoods for firewood on public lands, because of the value of both downed and standing trees for wildlife habitat and proper functioning riparian areas.

12. LANDS AND REALTY MANAGEMENT— ACCESS

- 12.1 **Comment:** *One commentor asked if the BLM is going to get public access to the shaded areas on Map 24. Another commentor wanted specific routes to be identified where BLM would acquire access. A third commentor asked why BLM has not acquired legal access on a majority of the roads identified on the Worland District Transportation Plan.*

Response: Gaining public access to the shaded areas was not our reason for showing Map 24. The areas where BLM would pursue public access are described on pages 29 and 30 of the draft EIS. These include some of the shaded portions on Map 24, however, the process of improving public access is a gradual and ongoing

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one. Requests for improved public access must be considered, on an individual basis, in relation to the need to protect sensitive resources and private property rights. In each case, coordination, consultation, and cooperation are essential. The BLM probably will not acquire public access to all areas where it is lacking, during the life of this resource management plan. The identification of specific access routes is done during activity planning.

- 12.2 *Comment: One commentor said that language in two places threatened condemnation of private property rights: On page 11, "...there must be public and administrative access so uses and management actions can occur" and on page 30 where it was stated, "BLM would pursue a combination of motorized and nonmotorized vehicle access in the Enos Creek, upper Cottonwood Creek, and upper South Fork of Owl Creek areas." Other commentors agreed with BLM's emphasis because of the importance of public access and recreation in these areas.*

Response: When possible, access would be addressed through cooperative road management agreements among private landowners, BLM, county governments, and state agencies like the Game and Fish Department and Board of Land Commissioners. An existing cooperative road management agreement, along Grass and Enos creeks, was referenced on page 109 of the draft EIS.

The Wyoming BLM's access management policy is described in a brochure (BLM/WY/GI-93/009+2300) which can be obtained from any BLM office in the state. Following a description of four access acquisition methods, the policy states:

Condemnation may also be used to acquire access when an impasse is reached in negotiations and the landowner's objections cannot be resolved through administrative remedies. **Condemnation procedures will be initiated only after all other possible means of obtaining access have been exhausted, and the access is absolutely essential for carrying the Bureau's multiple-use mandate.** [Emphasis in the original]

- 12.3 *Comment: One commentor wanted to know if improving access in the upper Grass Creek area meant that BLM would obtain access across*

private lands using existing roads, or would construct new roads. Other commentors specifically opposed the construction of new roads to improve access.

Response: In areas identified for improved access, BLM's intention is to obtain access across private lands on existing roads, by acquiring easements or by entering into cooperative agreements with private landowners and the state of Wyoming. Some improved maintenance of existing roads might be involved, however, we do not anticipate the construction of new roads. The types of public access would range from foot and horseback to motorized, depending on the area.

13. LANDS AND REALTY MANAGEMENT— LANDOWNERSHIP ADJUSTMENTS

- 13.1 *Comment: Some commentors wanted the BLM to consider transferring public lands to state or private ownership for agricultural development.*

Response: Chapter 3 of the final EIS includes new information which describes recommendations or proposals related to transfer of public lands for agricultural development. As warranted, the BLM would consider such proposals through site-specific environmental analyses and additional public participation. The Grass Creek RMP would be updated and amended as appropriate.

- 13.2 *Comment: Many commentors objected to the small amount of land considered for suburban expansion. One commentor said BLM's language that land sales and exchanges "would be considered" did not adequately assist local communities.*

Response: During development of the draft EIS, a number of land disposal actions were processed to benefit local communities in the Bighorn Basin. Presently, several landownership adjustments are now pending in the Bighorn Basin Resource Area. These include four exchange proposals, eight land sale or lease proposals, and one desert land entry application. Six of the land sale or lease proposals would benefit Thermopolis, southern Big Horn County, Ten Sleep, Greybull, Basin, and Worland by making public lands available for landfills and shooting ranges. Some of these proposals came about through BLM's scoping with county and city governments during the preparation of the Grass Creek draft EIS.

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The consideration of land sales and exchanges are ongoing duties of the BLM that don't particularly require specific mention in the Grass Creek RMP.

Public lands will be evaluated for sale or exchange if they are mentioned in future proposals for community expansion, whether or not the lands are listed in the draft EIS, final EIS, or RMP. As stated on page 32 of the draft EIS, "Priority would be given to landownership adjustments that meet community needs."

- 13.3 *Comment: Some commentors said that BLM's proposal not to consider desert land entries was illegal.*

Response: As suggested by these comments, the BLM is obligated to consider desert land applications unless the RMP establishes specific criteria and reasons for denying applications. This was not done in the draft EIS and we have therefore removed the management option.

- 13.4 *Comment: Some commentors objected to BLM "purchasing" private lands in the wild horse herd area. One commentor objected to an exchange in the herd area because it would have the effect of reducing Big Horn County's private land tax base.*

Response: The management option was not to purchase private lands. Instead, on page 33 of the draft EIS, it was proposed that, "Cooperative agreements or land exchanges to improve wild horse management would be pursued on about 16,000 acres of privately-owned lands."

The BLM will consider requests from private citizens to trade their lands for public lands. The counties will continue to be involved in this process. As stated on page 31 of the draft EIS, "Before any public lands are exchanged or sold, or before the BLM would attempt to acquire any other lands in the planning area, the BLM would consult with county commissioners and other representatives of local government in the affected areas."

Some recently considered land exchanges, requested by private citizens, have proposed trading public lands in Park County for comparably-valued private lands in Big Horn County. In these proposals, the total public land ownership would not increase, but there would be a net increase in one county and a net decrease in the other. When this type of situation causes concern, BLM will request the assistance of the

private landowner(s) and all the affected counties to determine the best approach.

- 13.5 *Comment: One commentor said that environmental analyses of proposed landownership adjustments need to include opportunities for public involvement.*

Response: Language referring to public involvement in landownership adjustments has been placed in Revised Table 2.

14. LANDS AND REALTY MANAGEMENT—RIGHTS-OF-WAY

- 14.1 *Comment: One commentor asked for a more adequate discussion of impacts to transportation facilities including state highways. Potential increases in traffic volumes, maintenance of existing facilities, and changes in philosophy concerning highway easements should be addressed.*

Response: On page 33 of the draft EIS, the Preferred Alternative stated that most of the planning area would be open for rights-of-way development, and that proposals would be addressed on an individual basis with emphasis on avoiding certain conflict or sensitive areas. The only conflict or sensitive area identified for avoidance was the Meeteetse Draw area, to protect Native American cultural values. Since most of the planning area would be open for rights-of-way development, the Grass Creek RMP should have very little effect on transportation facilities including state and federal highways.

- 14.2 *Comment: One commentor requested that BLM avoid the mandatory underground installation of electrical utility facilities as a management objective. Their view is that those who cause the higher costs of this type of construction should pay the difference. When mineral leasing is involved, the costs of relocating any utility or pipeline facility to accommodate mineral production should be borne by the lessee. However, the commentor requested that the BLM not restrict the construction of utility and pipeline facilities necessary for the exploration and production of oil and gas.*

Response: The Preferred Alternative did not require the underground installation of electrical utility lines or facilities, but neither does BLM rule that out as a possible way to mitigate environmental impacts. We appreciate your concern that underground facilities can be more expensive.

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Potential costs to the applicant and consumers, feasible routes, and mitigation of environmental effects will all be evaluated on a site-specific basis before construction.

The party who bears the cost of relocating rights-of-way because of a mineral development-related conflict would depend on who has the first rights. The standard legal practice is, "first in time, first in right." If the right-of-way existed before the mineral lease was issued, the cost of relocating the right-of-way would be the responsibility of the mineral lessee. If the right-of-way was issued after the mineral authorization, the cost of relocation would be borne by the right-of-way holder.

As identified in New Appendix 6, there will be situations when it is necessary to mitigate the environmental effects of constructing utility and pipeline facilities. The Proposed RMP maintains most of the planning area as open to rights-of-way development. Right-of-way avoidance areas are minimal and necessary to protect critical resources in specific locations. The Grass Creek RMP will not unnecessarily restrict the construction of utility and pipeline facilities.

- 14.3 *Comment: One commenter requested that when BLM sells or exchanges lands, the rights of the utilities and pipeline operators holding right-of-way easements from the private landowner, and right-of-way grants from the BLM, be protected. Also, where construction is undertaken, coordination should take place with utility and pipeline operators to prevent contact with and damage to utility and pipeline facilities. Finally, the commenter said consideration should be given to the establishment of utility corridors through timbered areas, with maintenance of cleared areas for construction.*

Response: In making landownership adjustments, including sales and exchanges, the new landowners would be subject to the prior existing rights of the right-of-way holder, whether the lands are transferred from federal to private or state ownership, or vice versa.

The suggested contact and coordination with right-of-way holders is a standard requirement of the site-specific evaluations that would precede any proposed surface-disturbing activity.

The BLM would consider combining utility development and timber production on an individual basis. However, we would not maintain cleared areas, just for the purpose of corridor

development to take place sometime in the future. The planning area's forest management areas are small and remote, lying near a wilderness area in the Shoshone National Forest. These areas have not experienced much demand for the routing of utilities.

- 14.4 *Comment: Some commentors said the list of proposed ROWs in the draft EIS needed to be updated. One commentor said the final EIS should acknowledge Altamont as a preexisting project governed by the conditions of a Federal Energy Regulatory Commission Certificate and BLM plan of development, and not governed by any new conditions of the RMP.*

Response: Language in Chapter 3 of the final EIS has been updated accordingly. The purpose of the Grass Creek RMP is not to make site-specific determinations for any proposed right-of-way project, or to revise agreements that have already been made through recent on-the-ground consultation, or other detailed studies and plans. The BLM has issued a decision that it intends to grant a right-of-way to Altamont; however, at this time a right-of-way grant has not been issued, conditions that may be attached to that grant have not been determined, nor has Altamont submitted a final plan of development for BLM approval.

- 14.5 *Comment: One commenter said the RMP needed to mention distribution as well as transmission facilities.*

Response: Language referring to distribution facilities has been placed in the final EIS. As with transmission facilities, the placement of distribution lines on public lands would be avoided in the Meeteetse Draw area. The construction of distribution facilities on public lands would also be subject to mitigation opportunities described in New Appendix 6.

- 14.6 *Comment: One commenter opposed the requirement to stay 500 feet from riparian areas, when rights-of-way are constructed.*

Response: Additional information on mitigation is contained in New Appendix 6. This requirement simply acknowledges that construction within 500 feet of riparian areas might include mitigation to reduce impacts to the environment. It does not prohibit activity within 500 feet of riparian areas or the crossing of streams and rivers. The need for mitigation would be identified through site-specific evaluations, and would involve right-of-way applicants.

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- 14.7 *Comment: One commentor wanted to know how right-of-way corridors differed from right-of-way concentration areas. Another commentor objected to private lands being shown within a proposed right-of-way corridor.*

Response: As used in the draft and final EIS documents, corridors and concentration areas are virtually the same. (See Glossary.) Both describe areas of public land where rights-of-way are concentrated, and where the placement of future rights-of-way would be favored over lands that are currently unaffected by these disturbances. The Proposed RMP's corridors would link already designated corridors in the Cody and Washakie planning areas, for the sake of administrative consistency, and to facilitate the regional development of major rights-of-way in appropriate areas.

The use of corridors and concentration areas would avoid the disruption of new areas and could speed authorization time because the assessment of potential environmental impacts, including cumulative impacts, would make use of previous right-of-way studies.

The BLM can only approve the construction of rights-of-way on public lands. Corridor designations would not apply to adjacent private or state lands. Because rights-of-way are already concentrated in these areas, corridor designations on public lands are not anticipated to affect resources or land uses on the adjacent private and state lands.

15. LIVESTOCK GRAZING MANAGEMENT

- 15.1 *Comment: One commentor said the draft EIS made only brief mention of wetlands in conjunction with cattle grazing and it was not clear where these wetlands are located or what, if any, impact would be caused by the proposed management.*

Response: The draft EIS used the term "riparian area" virtually synonymously with "wetland," because riparian areas are one form of wetland, and the two are ecologically related. However, in addition to riparian areas, wetlands include waters such as ponds or streams that are associated with riparian areas, and all other wet areas including springs, wet meadows, bogs, swamps, and sloughs. In the draft EIS, important waterways, wetlands, and riparian areas were shown

on Map 30 (Watersheds) and Map A (Vegetation).

The final EIS avoids the term "riparian/wetland" area. Instead, BLM has attempted to describe management options and impacts in relation to either riparian areas or wetlands, when a distinction can be made. We assume that your concern with "wetlands" may relate to your jurisdictional responsibilities under section 404 of the Clean Water Act. (The commentor is the Army Corps of Engineers.) As your letter requests, the BLM will contact the Army Corps of Engineers if any work is proposed in wetlands or waters classified as waters of the United States, when a section 404 permit might be required.

But despite the jurisdictional differences, the environmental impacts of the Preferred Alternative on wetlands would often parallel those affecting riparian areas. In the draft EIS, riparian impacts were described in relation to existing and projected riparian functioning condition, in the "Riparian Riparian" section under "Rangeland Vegetation." (See pages 197 and 198 of the draft EIS.) Other riparian concerns were explained on page 151 of the draft EIS in the discussion on the Fifteenmile Watershed Proposed ACEC.

Site-specific discussions of riparian or wetland impacts would be too detailed for use in the Grass Creek RMP because of the broad nature of the plan. Detailed impact analyses will be considered and documented in the development of activity or implementation plans which cover smaller geographical areas. These plans can be developed for specific watersheds, allotments, habitats, and other areas.

- 15.2 *Comment: Many commentors disagreed with the use of "suitability" data in Tables 17 and 3-5, because the data was overly broad and, according to some, unreliable. Most of these commentors believed the tables would be used to make reductions in livestock grazing.*

Response: Suitability is a range management concept acknowledging that some vegetation can be inaccessible to livestock, at certain times of the year, if hillsides are too steep or water sources are too far away. The draft EIS used the best available data on this concept to estimate and disclose potential environmental impacts, as required by the National Environmental Policy Act (NEPA). The purpose was to make the best

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Act (NEPA). The purpose was to make the best possible projections of future livestock grazing use. However, some incorrect comparisons in the draft EIS caused confusion and misunderstanding of the reasons for Tables 17 and 3-5, both of which included broad suitability information.

To address this confusion, the final EIS contains editorial changes on suitability including the statement that, "State-of-the-art suitability criteria will be considered after consultation with permittees, as part of monitoring and the development of allotment management or other detailed activity plans."

Also, because of concerns with the reliability of the broad suitability factors, those factors are not shown in the revision of Table 17. (That table is now Revised Table 5-4 in New Appendix 5.) In addition, the suitability columns and comparisons in Table 3-5 of the draft EIS are no longer considered valid by the planning team.

In the final EIS, BLM's projections of livestock grazing use have increased because of the removal of the broad suitability factors. As a result, the anticipated economic impacts associated with livestock grazing have also been corrected. (See New Appendix 5.)

In Revised Table 5-4, the BLM has not attempted to estimate changes in active preference or other legally authorized levels. One reason is that legally authorized levels do not necessarily reflect the grazing that takes place, and livestock cause neither environmental nor economic impacts when the animals aren't being grazed.

Instead, the planning team believes that actual grazing use, or at least the amount of forage available for that use — both in 1990 and at the end of the analysis period — is much more important for study and comparison in the EIS.

It was pointed out in public comments that problems with excessive actual use by livestock should be addressed individually. BLM acknowledges this and the fact that there are many methods to address excessive use, without lowering the legally authorized grazing of permittees. Generally, problems with excessive grazing will be addressed by temporary reductions in stocking levels, or the use of grazing systems and other practical voluntary approaches, before BLM would consider reducing the authorized level of a grazing permit.

15.3 Comment: *Many commentors requested that BLM define goals to address overgrazing that can be met within 5 years.*

Response: Problems with overgrazing will be addressed as described on page 36 of the draft EIS. Consistent with BLM policy, adjustments in livestock grazing are based on monitoring, but adjustments can also be made when agreed to or requested by a grazing permittee, if an environmental analysis indicates the change is appropriate. Most often, necessary adjustments in livestock grazing are made through implementation of detailed allotment management or other activity plans developed by the BLM, permittees, and other affected or interested citizens. A schedule for developing new grazing activity plans in the Grass Creek Planning Area was shown on pages 266 and 267 (Table 3-9) of the draft EIS.

Regarding target dates, it is important to note that the development and implementation of activity plans depend on funding and staffing. The BLM cannot identify, with precision, when specific management actions will be implemented. At the RMP level of analysis, the best estimate is that grazing management plans will be developed according to the schedule described on pages 266 and 267 (Table 3-9) of the draft EIS. More specific implementation priorities and target dates will be set by the area manager and his staff, after completion of the RMP. The schedule for RMP implementation will include input from affected or interested citizens.

15.4 Comment: *One commentor said that according to Table 17 it appeared that 8,910 AUMs will be added to grazing allotments as a result of good management. They asked for explanation of the criteria to be used to award these additional AUMs.*

Response: The 8,910 AUMs would not be awarded to permittees, as such. These 8,910 AUMs reflect anticipated gains in forage available for livestock grazing, within the entire planning area, from grazing management practices that improve the range. The management practices would be used primarily on "I" category allotments that have existing activity plans, such as allotment management or coordinated resource management plans. They would include grazing systems and range projects to improve the distribution and timing of livestock grazing, and the use of prescribed fire. For example, pre-

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scribed fire can be used to reduce woody vegetation like sagebrush and juniper, allowing more grass to grow in the treated area.

The 8,910 AUMs of available forage is an estimate of the amount of livestock forage improvement that would be expected from 1991 through 2005. It was not intended to be a specific quantity of vegetation that BLM would award to permittees.

- 15.5 **Comment:** *One commentor said that areas of concern, including areas of erosion or excessive use, will require protection by fencing to exclude the livestock, however, the costs to build and maintain these structures was not addressed in the draft EIS and the commentor assumed that the costs would be the responsibility of the permittee.*

Response: The construction of fencing for livestock grazing management was not addressed in detail in the draft EIS, because these decisions are made on a site-specific basis. When needed for grazing management systems, fencing is discussed in activity plans like allotment management or coordinated resource management plans. The costs for building and maintaining fences are often the responsibility of both the permittee and the BLM. But, more often than not, the BLM provides some type of assistance in the form of materials and/or labor. Donations from private organizations, like the Rocky Mountain Elk Foundation, also fund range projects and treatments that benefit both livestock and wildlife.

- 15.6 **Comment:** *Many commentors objected to the use of current levels of grazing to determine future levels. Some apparently thought data from 1990 would be used as a benchmark for future management decisions. Others said the draft EIS ignored consistency with the Strategic Plan for Wyoming's Agricultural Industry 1990-2000, because the EIS did not attempt to enhance livestock production.*

Response: This concern appears to be related to our use of the words "current" and "currently" in the first two paragraphs on page 36 of the draft EIS.

Our purpose in referring to the "current amounts, kinds, and seasons of livestock grazing use" was not to freeze these uses at the 1990 levels, as many people assumed. (The previous paragraph had stated that active preference was currently 101,451 AUMs, per year.) Instead, maintaining the "current" levels of grazing use

was meant to protect the interests of permittees by reiterating BLM's policy. According to that policy, changes in grazing use are not made unless monitoring indicates that an adjustment is necessary, or a permittee-requested change is shown to be appropriate through environmental analysis.

For clarification, the statement that the level of actual livestock grazing "would not exceed active preference" has been deleted.

Instead, the Proposed RMP now refers to "carrying capacity" as a level not to be exceeded.

This statement complies with law and does not represent a cap on grazing use, based on 1990 levels, that we never intended. On a case-by-case basis, the statement would allow for increases in grazing levels, when additional forage is available to meet livestock grazing and other multiple-use needs.

Carrying capacity would be determined through detailed, site-specific monitoring, in consultation with grazing permittees.

- 15.7 **Comment:** *Some commentors said 1990 was a poor year for making comparisons, because of drought and the large numbers of AUMs that livestock operators were voluntarily not using.*

Response: By way of explanation, the 1990 base year for analysis of economic impacts was established because it was a census year and the last full year of data collection before we started to develop the draft EIS.

Information about 1990 actual grazing use came from BLM's grazing automated billing system (GABS). This system has been used since 1987 to summarize grazing information in BLM's national "Public Land Statistics." In 1990, actual grazing use on BLM-administered public lands in the Grass Creek Planning Area was recorded as 72,138 AUMs. These represented an estimated 59 percent of the total actual grazing use on all public, state, and private lands managed-in-common within BLM-administered grazing allotments. (This managed-in-common total is shown as 122,268 AUMs in Revised Table 5-4.) By comparison, recorded actual grazing use on public lands was 43,769 AUMs in 1987; 51,443 AUMs in 1988; 52,484 AUMs in 1989; 54,064 AUMs in 1991; 54,397 AUMs in 1992; 60,470 AUMs in 1993; and 62,163 AUMs in 1994. Rather than being low, recorded 1990 actual use was 28 percent higher than average during the eight-year period, 1987-1994.

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The accuracy of these records needs to be qualified by the fact that, as part of the billing system, they represent "paid for" grazing use. Sometimes permittees pay the full amount for grazing at the start of a grazing season and, at the end of the season, do not request a refund for livestock that were not put in the allotment. Because records of observed actual use are not available for the entire planning area, BLM assumed for the sake of analysis that "paid for" use was a reasonable index of actual use.

It should also be noted that 1990 was not a baseline for making reductions in future grazing use, as some commentors have stated. For environmental and economic analyses, the draft EIS is required to describe existing production levels and their associated economic benefits, and to project these estimates into the future under the various alternatives. The purpose is to disclose the anticipated effects of the alternatives. This disclosure is necessary to comply with NEPA. As we stated earlier, adjustments in grazing use would be based on site-specific monitoring in consultation with grazing permittees. The 1990 actual use level would not be used for making adjustments.

- 15.8 *Comment: Some commentors assumed that all "I" category allotments were overgrazed. One commentor said Grass Creek's allotment categorization criteria was more subjective than in the adjacent Washakie Planning Area. Another commentor asked why wasn't there input from the permittees before their allotments were categorized.*

Response: The purpose for categorizing allotments in BLM resource management plans is "to establish priorities for distributing available funds and personnel during plan implementation to achieve cost-effective improvement of rangeland resources." (BLM Manual 1622) It should be noted that the criteria for "I" category allotments, cited on page 235 of the Grass Creek draft EIS, includes situations where intensive management for other resources is necessary, "even though allotment condition associated with livestock grazing is satisfactory." Considered from this perspective, an "I" category designation does not necessarily mean that livestock grazing is a problem.

The Grass Creek and Washakie Resource areas were recently merged to form the Bighorn Basin Resource Area. We agree that allotment categorization criteria should be consistent within

this resource area, and within the Worland BLM District as a whole, which also includes the Cody Resource Area. The Worland District will review the Cody and Washakie resource management plans to find opportunities for greater consistency, and to make the allotment categorization criteria more objective where possible.

The review of an allotment's category is also part of the evaluation process which takes place at the start of activity or implementation planning for an allotment. As appropriate, adjustments can be made then.

During the development of the draft EIS, permittees were contacted and invited to meet with BLM representatives, if a change in their allotment categorization was being proposed.

- 15.9 *Comment: There were a number of interpretations of the utilization objectives. Some commentors said that BLM should apply utilization objectives to adjust or curtail grazing on a yearly basis, and that rather than considering a range of utilization levels, BLM should adopt the lower levels as the objectives. Other commentors perceived, in a similar fashion, that the objectives would be used as "standards," but that this application was inappropriate. Several commentors questioned who would determine where "key areas" are identified for measuring utilization. Others wanted to know when utilization would be measured.*

Response: The utilization objectives are intended to reflect a summary of state-of-the-art range management concepts regarding the appropriate levels of grazing use. Utilization data would be collected with other types of monitoring information, in site-specific areas, and considered over a period of time, before management adjustments are made.

At the same time, utilization objectives can provide a starting point for estimating reasonable stocking levels when proposals are used for developing allotment management plans.

For further clarification of utilization objectives, and how they would be applied, we quote from page 255 of the draft EIS, Appendix 3:

Utilization is the percentage of forage that has been consumed or destroyed during a specific period. By comparing measured utilization with appropriate use levels for key forage plants, and by comparing utilization with actual use, climate, and trend data, short- and long-

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term stocking level adjustments can be made...[The Preferred Alternative] utilization levels are generally considered to be appropriate for the precipitation levels, vegetative communities, and grazing seasons described in Table 3-6. These levels will be considered in the development of allotment management plans. Table 3-6 applies specifically to key forage plants in upland areas (not riparian areas). Some exceptions will occur. Data from several studies indicates that underuse in wet years will compensate for overuse in dry years. Although utilization levels may vary widely from year to year, utilization levels which consistently exceed those shown in Table 3-6 would not be expected to meet watershed and vegetation management objectives.

As described in the draft and final EIS documents, "combined utilization" includes "all types of consumption or destruction of vegetation by livestock, wildlife, wild horses, insects, hail, etc." Forage utilization by livestock and wildlife, including AUM needs, will be considered from a multiple-use standpoint during the development and implementation of detailed, site-specific activity plans such as allotment management or coordinated resource management plans.

As stated on page 256 of the draft EIS, "Key areas will be selected when activity plans are developed by consulting with permittees and other affected parties." The final EIS contains an expanded definition of "key area" compared to that of the draft EIS (see Glossary). The expanded definition comes from BLM Manual Section H-4401-1.

Modified language in Revised Appendix 3 states that "Utilization will be measured on the standing vegetation in a pasture or allotment. When practical, the times for measuring utilization will be agreed upon by the BLM and livestock grazing permittees, or otherwise will be consistent with federal regulations and BLM policy."

- 15.10 **Comment:** *Some commentors indicated that forage utilization objectives unfairly targeted livestock for the purpose of raising wildlife numbers, possibly above WGFD "objective" levels.*

Response: In being described within the "Livestock Grazing" section of the draft EIS, these limits on combined utilization were thought by some

people to apply to livestock grazing alone. However, "combined utilization" as defined on page 39 includes "all types of consumption or destruction of vegetation by livestock, wildlife, wild horses, insects, hail, etc."

The BLM's intention is to maintain or improve the health of the most important wildlife habitats, but this would not necessarily be done to increase wildlife numbers, especially big game animals whose populations are managed by the Wyoming Game and Fish Department. It has been stated previously that utilization and other on-the-ground management concerns would be addressed individually, through monitoring and in consultation with livestock permittees and other affected interests. If monitoring shows that areas of crucial wildlife habitats are being consistently overused, BLM would consult with the permittees and other affected interests to determine the cause of the excessive use. If big game numbers (whether above or below WGFD "objectives") are to blame, BLM would recommend to WGFD that wildlife herds be reduced.

- 15.11 **Comment:** *One commentor asked why the Preferred Alternative was based on a subjective "visual resource management approach." Apparently referring to the same statement on page 37 of the draft EIS, other commentors asked for a definition of "poor vegetation condition."*

Response: We assume that the visual resource management approach refers to a management option on page 37 of the draft EIS that has been criticized as being too subjective. That proposal stated that "Authorized livestock grazing preference may be reduced in areas with excessive soil erosion, poor vegetative condition, or as necessary to provide forage for wildlife and wild horses, or to improve the visual quality of lands with high recreational value." This statement has been revised in the Proposed RMP to read, "If identified by monitoring, authorized livestock grazing preference may be reduced in areas with excessive soil erosion or poor vegetative condition, or as necessary to provide for other multiple uses." Any decision that vegetative condition is "poor" would be based on scientific monitoring data, collected in consultation with grazing permittees.

- 15.12 **Comment:** *Some commentors asked why the planning criteria said that livestock grazing must be compatible with other resource management objectives. Contrasting this with the crite-*

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ria that BLM would look for opportunities to enhance recreation, many people said the draft EIS was biased against grazing.

Response: On page 7 of the draft EIS, the section on "General Criteria" stated that one or more alternatives would consider "livestock grazing practices that are compatible with other resource management objectives." Likewise, one or more alternatives would consider "enhancing opportunities for recreation."

We believe that the Proposed RMP does indeed provide many opportunities for enhancing livestock grazing. As cited in comment response 15.6, language that was perceived as placing a cap on grazing use has been removed. In addition, livestock grazing-related employment is anticipated to increase during the period 1991 through 2005.

Other opportunities for enhancing livestock grazing have been carried over from the Preferred Alternative of the draft EIS, to the Proposed RMP. These include the anticipated use of more prescribed fire (compared to existing management) and desired plant community objectives to improve vegetation, especially the "standard" objective on pages 55-57 of the draft EIS that would favor livestock grazing and watershed protection, in all but the most important wildlife habitat areas.

15.13 Comment: *Some commentators, referring to page 40, questioned why water developments for livestock would be restricted in elk crucial winter ranges, since the water could benefit both livestock and wildlife.*

Response: Any development of water sources in elk crucial winter ranges would require careful consideration and site-specific environmental analyses, but water developments would not be prohibited as a rule-of-thumb.

The basis for the management option is that livestock water is often developed on uplands to keep cattle away from streamside riparian areas. If these uplands happen to be crucial elk winter range, then other factors like forage competition and habitat protection must be considered. Among other things, BLM wants to maintain sufficient forage, going into the winter, to support elk on their crucial winter habitat areas.

15.14 Comment: *Some commentators opposed fencing off any water from livestock, or said that if fencing is done, then adequate access to water*

must be maintained for livestock. Others asked why livestock would be fenced off the Bighorn River.

Response: The management option on fencing riparian areas was described on page 38 of the draft EIS. It said: "Important...riparian habitat areas would be fenced to control the duration and timing of livestock use, if the condition of these areas is declining and other types of grazing management do not produce a favorable response."

We point out that controlling "the duration and timing of livestock use" is not the same as excluding livestock. However, for clarity, the following statement has been added to the Proposed RMP: "Access to water for use by livestock and wildlife would be provided." This might include access to a portion of the riparian area being protected, or to another source away from the riparian area.

Through implementation of the existing management framework plan and the Bighorn River Habitat Management and Recreation Area Management Plan, livestock grazing was excluded from all public land river tracts along the Bighorn River, with the exception of one tract comprising about 125 acres. This management has been in effect since 1990. The total acreage of public lands affected is less than 1,000.

15.15 Comment: *One commentator said that BLM was proposing to apply range management concepts in ways that are not considered acceptable by acknowledged rangeland experts.*

Response: The application of range management concepts such as utilization, desired plant community objectives, and suitability is addressed elsewhere in this chapter.

To address terminology related to these concepts, we have reviewed and modified the Glossary for the final EIS. On February 22, 1995, BLM finalized new grazing regulations which define a number of rangeland management terms that are used in the final EIS. In each case, the Glossary now contains the regulation definition, and a reference citing the regulation.

But some definitions have also been expanded. This was accomplished by adding language after the official definitions, without violating the intent of the new regulations. The reasons were to (1) provide greater clarification, (2) describe a broader context for the term as used in the final EIS, or (3) respond to particular public com-

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ments. For example, the term "Affected Interest" has broad use in the Grass Creek final EIS and Proposed RMP, whereas the new grazing regulations only apply "Affected Interest" to public participation in livestock grazing issues.

For technical rangeland management terms, we consulted publications of the Society of Range Management, including the Society's 1989 Glossary and a 1995 report by the Task Group on Unity in Concepts and Terminology. In some cases, the planning team added to BLM's official definitions as a result.

In addition, some rangeland management terms have been dropped from BLM's Glossary because they are not used in the final EIS.

- 15.16 *Comment: One commentor said there was no supporting rationale for the statement on page 38 of the draft EIS that, "When prescribed fire or mechanical treatments can be used effectively as techniques for managing vegetation, they would be preferred over chemical spraying."*

Response: The support comes from a 1991 Record of Decision for vegetation treatment on BLM-administered lands in Wyoming. The decision was derived from BLM's nationwide final EIS titled, *Vegetation Treatment on BLM Lands in 13 Western States* (USDI, BLM 1991).

On page 2 of the Record of Decision, vegetation management priorities are described as follows:

Priority 1: Take actions to prevent or minimize the need for vegetation control when and where feasible considering the management objectives for the site.

Priority 2: Use effective nonchemical methods of vegetation control when and where feasible.

Priority 3: Use herbicides after considering the effectiveness of all potential methods or in combination with other methods of control. Chemicals could be used where the benefits would meet or exceed those of other control methods.

16. MINERALS MANAGEMENT— OIL AND GAS

- 16.1 *Comment: Many commentors requested that various areas be placed off-limits to oil and gas exploration and development, and to other forms*

of development, or land uses like motorized vehicle travel. The areas included all proposed ACECs, all proposed special recreation management areas, crucial big game winter ranges and birthing areas, areas having opportunities for primitive recreation, and areas identified by the National Park Service as potential national natural landmarks. Many of these commentors also opposed BLM's leasing of 100 percent of the planning area as contrary to multiple use.

Response: As much as possible, the BLM tries to facilitate the coexistence of potentially conflicting land and resource uses. Existing laws and regulations provide considerable protection for certain lands and resources for which many commentors have expressed concern. With the Proposed RMP, BLM has tried to protect or allow prudent use of important resources, without unnecessarily prohibiting or excessively constraining other land and resource uses.

In addition, the areas mentioned are covered by many existing and proposed mitigation or protective measures. The BLM applies mitigation to reduce or eliminate impacts from oil and gas and other types of development.

These measures include limitations on activities like oil and gas drilling, road construction, timber harvests, power line or pipeline construction, and motorized vehicle use. Some typical measures are: (1) seasonal limitations to protect wildlife during severe winters and periods of breeding and birthing, (2) construction requirements to protect fragile watersheds from erosion, and (3) the use of design features to hide facilities from view in highly scenic areas.

Since the draft EIS was published, the planning team has prepared an appendix on mitigation opportunities which we think more adequately describes the methods that could be used to protect these important resources and areas of concern. This information is contained in New Appendix 6.

In preparing the draft EIS, the planning team developed and evaluated mitigation and protective measures in the following manner: For areas like those mentioned, the analyses considered (1) the land and resource values present, such as scenery, vegetation, and recreation opportunities; (2) the amount of anticipated surface disturbance from things like oil and gas exploration, mining, and road construction; and (3) the availability and effectiveness of the mitigation and other protection that would reduce or avoid impacts to the public lands and resources.

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When all these things were considered, it was not necessary to prohibit oil and gas development, or otherwise generally restrict multiple use. The geographical areas mentioned in your comment letters will be adequately protected by mitigation in the Proposed RMP.

- 16.2 **Comment:** *Many commentors, speaking of all types of restrictions, said the draft EIS had not discussed the specific resources to be safeguarded or the perceived conflicts between the specific resources and oil and gas activities.*

Response: The need for specific mitigation, the resources to be protected, and the lands generally affected by mitigation are described in New Appendix 6.

- 16.3 **Comment:** *Many commentors expressed confusion regarding the "controlled surface use" limitations for protecting sage grouse complex areas.*

Response: It was frequently said that BLM had arbitrarily doubled restrictive "controlled surface use" requirements to protect sage grouse. This was based on misleading information in the draft EIS.

The sage grouse controlled surface use requirement, proposed in the Preferred Alternative, was actually less restrictive than current management which involves a timing, or seasonal requirement. This seasonal requirement was not mapped in the draft EIS, because the areas affected are pockets of sagebrush that form suitable habitat for nesting and breeding, generally within two miles of sage grouse strutting areas. These breeding and nesting habitat areas are identified during site-specific evaluations that are conducted in response to proposed surface-disturbing activities. We do not have adequate information to map them for the RMP.

But despite that fact, we mapped three habitat complex areas by showing two-mile circles around several strutting areas. This led to the confusion. These areas represented most of the additional 63,800 acres of controlled surface use compared to current management in the draft EIS. The Preferred Alternative indicated that seasonal limitations would not be applied in these complex areas unless total surface disturbance exceeded 20 percent. That was the nature of the controlled surface use requirement.

In the Proposed RMP, the confusing terminology has been removed. In New Appendix 6, land-use requirements are described in plain English, along with examples of mitigation opportunities that are used by industry and BLM to assure environmentally responsible development.

The mitigation opportunities still include the concepts of "no surface occupancy" and "seasonal limitations" on surface disturbance. The phrase "standard lease terms and conditions" is also used in this document to refer to minimum legal mitigation requirements. We have, however, removed most references to the specific oil and gas lease stipulations known as "controlled surface use" because, unlike the other types of mitigation, the terminology is not sufficiently descriptive.

At the same time, the general mitigation opportunities for sage grouse in the Proposed RMP will remain the same, not only for oil and gas exploration and development, but for all surface-disturbing activities as originally intended.

It is hoped that New Appendix 6, and the terminology change in the Proposed RMP, will allow for a better understanding of the sage grouse mitigation opportunities and the fact that they would apply, as necessary, to all surface-disturbing activities. "Surface-disturbing activities" are defined in the Glossary.

- 16.4 **Comment:** *Many commentors expressed confusion regarding the "controlled surface use" limitations to mitigate important and overlapping big game habitat areas in the Absaroka Mountain foothills.*

Response: In the big game habitat areas of the Absaroka Mountain foothills, the Preferred Alternative described limitations on surface disturbance as "controlled surface use on production." This misled many people. The purpose of this requirement was to insure that appropriate mitigation was considered and would be applied, before BLM authorized any type of surface-disturbing activity, including those related to exploration and development of oil and gas. Mitigation needs would be considered not only at the exploration stage, but also in the design and operation of production facilities. This is BLM policy and consistent with NEPA.

Some examples of mitigation opportunities for surface-disturbing activities, to be applied in big game habitat of the Absaroka Mountain foot-

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hills, are contained in New Appendix 6. None of these would mandate the shut down of oil and gas production, as originally implied in the draft EIS.

Terminology changes related to the idea of controlled surface use are described in comment response 16.3.

- 16.5 **Comment:** *Some commentors criticized BLM for removing "no surface occupancy" requirements from oil and gas leases in the past, based on industry drilling requests; therefore, some lands shouldn't be leased for development. They said these actions lacked proper review, analysis of environmental consequences, and public comment. Some commentors expressed concern that BLM could not deny development, even if a site-specific analysis showed that unacceptable impacts would occur.*

Response: As described in New Appendix 6, the BLM carefully considers the need for mitigation in response to all proposed surface-disturbing and disruptive activities. Mitigation is applied following site-specific environmental analyses. When very important resources are involved, as might be the case in a "no surface occupancy" area, the review could require an RMP amendment before an exception, waiver, or modification were made to an oil and gas lease stipulation. The plan amendment process involves the same basic NEPA analysis and public review and comment requirements as that of a resource management plan, although more abbreviated. This would include the preparation of an environmental assessment or environmental impact statement, as appropriate, and BLM state director approval.

In the absence of a "no surface occupancy" stipulation covering an entire lease, BLM cannot deny development on the entire surface of a lease, but "reasonable measures" can be applied.

The provisions for applying "reasonable measures" not addressed in the lease stipulations, are described in federal regulations, 43 CFR 3101.1-2 (surface use rights). These say that

...reasonable measures...may be required by the authorized officer to minimize adverse impacts to other resource values, land uses, or users... To the extent consistent with lease rights granted, such reasonable measures may include, but are not limited to,

modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. At a minimum, measures shall be deemed consistent with lease rights provided that they do not: require relocation of proposed operations by more than 200 meters; require that operations be sited off the leasehold; or prohibit new surface disturbing operations for a period in excess of 60 days in any lease year.

Based on the above, we agree that once a lease is issued, BLM cannot deny development. However, with the use of mitigation contained in the Proposed RMP, including "no surface occupancy," potential adverse impacts will be adequately mitigated. The BLM planning team could not identify any significant impacts that would warrant higher levels of restriction, such as "no lease."

- 16.6 **Comment:** *Some commentors said the description of environmental consequences on page 191 addressed the impacts of restrictions on the cost of minerals development, rather than the impacts of development on wildlife.*

Response: Page 191 of the draft EIS is in the section on oil and gas in Chapter 4 ("Environmental Consequences"). The description of impacts to wildlife habitat started on page 198. The economic impacts of the alternatives, including mitigation costs, are appropriate for description in Chapter 4 of the EIS. We understand the confusion, however, about what was being addressed and have rearranged this chapter in the final EIS. We hope it will add clarity.

- 16.7 **Comment:** *Many commentors said the draft EIS overlooked the benefits to wildlife and irrigation of produced water which is pumped out of the ground with oil and gas.*

Response: The section on surface water has been expanded in Chapter 3 of the final EIS to reflect some of these benefits. However, we note that page 131 of the draft EIS credited the oil and gas industry with creating 13 miles of riparian habitat. That habitat was created in streams that would not otherwise have contained surface water. An additional 200 miles or so of streams have higher flows, periodically, because of produced water. The positive and negative impacts of produced water were not described in greater detail because none of the alternatives varied in the management of this water.

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In the final EIS, language has been placed in all alternatives stating that BLM would allow the surface discharge of produced water, if it meets state of Wyoming water quality standards. This is a statement of current policy which will continue under the Proposed RMP.

- 16.8 **Comment:** *One commentor said that extremely large areas would be set aside as "no surface occupancy" and "controlled surface use." Because these designations would prohibit oil and gas development, they should be changed to allow reasonable development of at least one well per 40 acres. Another commentor said one well should be allowed on at least every square mile of public land.*

Response: Under current management (Alternative A), only 0.9 percent of BLM-administered mineral estate in the planning area is unavailable for surface occupancy for oil and gas exploration, although it would be feasible to explore and develop some of these lands through directional drilling. Under the Preferred Alternative in the draft EIS, "no surface occupancy" was increased by about 10,000 acres to 1.7 percent of the BLM-administered lands. We do not agree that this represents an extremely large area. "Controlled surface use" requirements were discussed in comment responses 16.3 and 16.4. Under the Proposed RMP, about 63,800 acres would represent a decrease in restrictions in sage grouse complex areas, compared to current management.

We believe that instead of needing one well for every 40 or 640 acres, very sensitive areas could produce oil and gas through "cluster development" and other technically advanced and environmentally responsible methods. In cluster development, entire fields or portions of fields can be developed and produced from a single location. Comment response 16.9 describes possible cluster development in the Upper Owl Creek Proposed ACEC.

Typical well-spacings in nonsensitive areas would be 40 acres for oil, and 160 acres for gas, in accordance with rules set by the Wyoming Oil and Gas Conservation Commission.

- 16.9 **Comment:** *Many commentors said that "controlled surface use" and "no surface occupancy" requirements should be dropped in favor of "standard lease terms and conditions" as printed in section 6 of the oil and gas lease form, because these terms and conditions adequately mitigate impacts.*

Response: In Chapter 2 of this document, a management option was considered that would apply a minimum level of mitigation, defined in section 6 of the standard oil and gas lease form, throughout the planning area. (By comparison, about half the planning area was subject only to these standard lease terms and conditions under the Preferred Alternative.)

The analysis of this option demonstrated that unacceptable impacts could occur to sensitive or important lands and resources. An example would include big game animals being forced off crucial winter ranges during periods of severe winter conditions and high stress. During severe winters, elk and other big game animals rely on crucial winter habitat for their survival. Sometimes the areas are needed for up to six months at a time. If the animals are disrupted or forced to leave during a severe winter because of increased human activity, all those animals could be sacrificed.

Under standard lease terms and conditions the BLM would be able to delay lease development for 60 days. However, a longer delay would require the support of an environmental analysis and the finding that unnecessary or undue degradation would occur without the delay. (See comment response 16.14.)

New Appendix 6 describes mitigation opportunities that may be needed in addition to the standard lease terms and conditions, including seasonal delays longer than 60 days. However, New Appendix 6 also points out that crucial winter habitat areas are not important for big game survival each and every year. As described in that appendix, the BLM would allow oil and gas development if weather conditions are mild and big game animals can move to adjacent habitat areas. Therefore, a seasonal mitigation requirement would not always be applied to proposed oil and gas activities or may be applied for only a part of the crucial winter period, even if the requirement is attached to the oil and gas lease along with the standard lease terms and conditions.

It is Wyoming BLM policy to apply consistent mitigation for specific resource needs and circumstances. If the BLM were to rely solely on standard lease terms and conditions, we would not be adequately disclosing information on anticipated mitigation needs. When sensitive or important resources have been identified through public involvement in the RMP, the failure to

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disclose necessary mitigation strategies for these same resources would represent a failure to comply with NEPA.

For these reasons, the option of using only standard oil and gas lease terms and conditions for all BLM-administered lands in the planning area was eliminated from further analysis.

Disclosing anticipated mitigation concerns on a lease would also enhance planning for development. Oil and gas operators would know what types of mitigation might be necessary before they buy the lease. With this knowledge, planning for mitigation would normally take less time, reducing processing costs.

In the Proposed RMP, all oil-and-gas-related mitigation has been retained from the Preferred Alternative of the draft EIS. The "no surface occupancy" stipulations would apply to about 1.7 percent of the BLM-administered lands. The largest block would be in the upper Owl Creek area, on lands having low potential for oil and gas occurrence. (Refer to the discussion on the Upper Owl Creek Proposed ACEC in Chapter 3.) After completion of the RMP, a detailed activity plan would be prepared for the Upper Owl Creek ACEC if BLM receives a proposal for any major surface-disturbing activity. This activity plan would include assistance from the development proponent and other affected and interested citizens to determine whether some surface occupancy could be allowed in the area. Mitigation considered in the analysis would include "access corridors" and "cluster development."

- 16.10 Comment:** *One commentor said the RMP preparation team should include contracted, experienced, and recognized petroleum industry consulting engineers, landmen, geophysicists, geologists, planners, and field supervisors to work with the existing environmental specialists who were used. The commentor also said he did not receive a scoping statement for the EIS.*

Response: The RMP is not adequately funded for payment of contract fees to petroleum industry consultants. We point out, however, that in addition to environmental specialists, there were four BLM geologists on the planning team at various times. The geologist who prepared Appendix 4 in the draft EIS had more than 15 years of petroleum industry experience, including 5 years in the Bighorn Basin. The draft and final EIS documents were also reviewed by

BLM geologists, minerals economists, and petroleum engineers at the BLM Wyoming State Office. Oil and gas company representatives provided information on things like hydrocarbon resource potential and mitigation in sensitive environments which assisted BLM in developing the EIS.

Scoping letters were sent to all agencies, groups, and organizations on our mailing list who had indicated an interest in the RMP. Our first scoping letter requesting petroleum and other mineral resource information was sent to 149 addresses in February 1990, including all known oil and gas lessees in the planning area at that time, and to petroleum industry groups including PAW, RMOGA, and IPAMS.

- 16.11 Comment:** *Some commentors said the draft EIS overlooked hydrodynamic or "basin-centered" concepts and, therefore, the area considered important for natural gas development was too small. Others said the reasonably foreseeable development scenario should be updated to reflect industry's focus on gas development in recent years.*

Response: Map 26 (on page 116) of the draft EIS shows the Basin-Center Gas Play. This area is described on page 273 as having "potential for significant, deep gas accumulations..." The mapped "play" and its assessment are from the U.S. Geological Survey.

On page 288 of the draft EIS, Figure 4-5 showed the 5.78 percent per year anticipated statewide increase in natural gas production. On page 283, we had projected a 5.87 percent increase per year in the planning area. After reviewing recent, natural gas production in the planning area for the years 1991 through 1994, we saw no reason to increase the anticipated rate of development.

- 16.12 Comment:** *Some commentors said an appendix should be added that would describe the various lease stipulations, parameters of their use, and conditions under which waivers, exceptions or modifications may be granted. The appendix should describe mitigation used by industry.*

Response: Please see New Appendix 6.

- 16.13 Comment:** *Some commentors said the draft EIS did not demonstrate the need for increased restrictions or that less restrictive measures were considered but found insufficient.*

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Response: Please see Revised Table 16 and New Appendix 6 in the final EIS. Also see comment response 16.9.

16.14 Comment: *Some commentators said existing lease rights must be recognized. Old leases with standard terms will not be subject to seasonal restrictions exceeding 60 days unless BLM proves oil and gas development will cause "undue degradation" to the environment.*

Response: The concept of existing lease rights was very important in determining the economic effects of management options summarized in the draft EIS. Although it was not stated explicitly, Maps 11 through 14 and Map 25 of the draft EIS showed that existing oil and gas fields generally would be subject to standard lease terms and conditions because of their existing lease rights.

In an overall sense, existing lease rights assure that the RMP will have a limited effect on planning area economics because RMP decisions cannot be used to modify existing lease terms. This is especially important in existing fields where leases do not expire while they continue to produce oil or gas.

Approximately 93 percent of the economic benefits from BLM-administered lands come from the oil and gas industry, with 94 percent of that from existing fields.

(In contrasting BLM's potential effect on activities like wildcat drilling outside existing fields, it is important to note that 100 percent of the planning area would be leased for oil and gas development and more than 98 percent would be available for surface occupancy, under the Proposed RMP. In total, standard lease terms and conditions would apply to about half the lands that are available for surface occupancy.)

New Appendix 6 contains information on the "reasonable measures" that are consistent with lease rights. This confirms the statement of the commentators regarding the 60-day limitation on seasonal restrictions.

16.15 Comment: *Some commentators said BLM should document the cost of administering the minerals program along with industry's financial contribution to local, state and federal treasuries. Net risks to the environment from oil and gas activity should be assessed after considering avoidance and mitigation. The cost of increased restrictions on oil and gas operators should be weighed against benefits derived.*

Response: *The BLM's costs for administering the minerals program, for oil and gas, vary by state. Recent news reports have stated that oil and gas development in Wyoming and Alaska support BLM operations in those states and contribute additional money to the federal treasury. This is not true of the other western states; and many recent reports have debated the costs to the federal treasury of the 1872 Mining Law, another part of the minerals program.*

The industry's financial contributions to the local economy were documented in Table 16 of the draft EIS. As modified, to include other financial benefits, these economic impacts are now shown in Revised Table 16 and New Appendix 5 of the final EIS.

The BLM viewed the Preferred Alternative of the draft EIS as about as restrictive as current management (Alternative A). For example, compared to Alternative A, the Preferred Alternative increased the level of restriction on about 10,000 acres of low oil and gas resource potential in the upper Owl Creek area, but decreased the level of restriction on about 63,800 acres having high oil and gas resource potential in sage grouse complex areas.

Since 1983 current management has not caused oil and gas development to drop precipitously; therefore, it is not anticipated that management actions in the Proposed RMP would cause such a drop either.

In each alternative, risks to the environment were assessed in the context of avoidance and mitigation. None of the alternatives analyzed in detail assumed that uncontrolled or unmitigated surface disturbance would take place.

16.16 Comment: *Some commentators opposed BLM's proposal to conduct historic evaluations in existing fields because of concerns that these would lead to additional restrictions.*

Response: The BLM is required by the National Historic Preservation Act to identify and mitigate potential adverse effects on significant historic properties on public land. The Federal Land Policy and Management Act also requires BLM to inventory the public lands, "to identify new and emerging resource and other values," although, "the preparation and maintenance of such inventory...shall not, of itself, change or prevent change of the management or use of public lands."

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Often, historic evaluations are conducted for small areas, in response to proposals for surface-disturbing activities, but some entire fields have been evaluated also, including Hamilton Dome. In this field, the more complete evaluation has allowed new proposals to be processed faster.

Field evaluations will be conducted in consultation with oil and gas operators, but BLM cannot provide assurances in advance that no new restrictions will result from these evaluations.

- 16.17 *Comment: Some commentors believed that the effects of increased land-use restrictions would gradually reduce the level of industry interest in an area for exploration. These commentors felt that the proposed mitigation, especially in Alternatives B and C, was sufficiently different to show some variation in the effects of these alternatives.*

Response: In general, we agree that land-use restrictions can have a negative effect on exploration as indicated in the comment. Accordingly, the planning team reviewed the estimates of new field discoveries associated with wildcat drilling. Determining the relative importance of wildcat drilling, compared to activities in existing fields, was necessary because of one critical assumption:

Because of existing oil and gas lease rights, legally-binding stipulations (that identify mitigation) can only be applied as new leases are issued. Since actively producing oil and gas leases do not expire, it is assumed that oil and gas production and other ongoing and existing operations in oil and gas fields would remain unchanged by any requirements of the Grass Creek Resource Management Plan.

This assumption means that the Grass Creek RMP could only affect wildcat drilling and the discovery of new fields by that drilling.

To determine the relative importance of wildcat drilling, it was assumed under Alternative B of the final EIS that there would be 50 percent more wildcat drilling and production of oil and gas from newly discovered fields, compared to the Proposed RMP and Alternative A. It was then assumed under Alternative C that wildcat drilling and new field production would decrease by 50 percent, compared to the Proposed RMP and Alternative A.

The anticipated level of development was kept the same in the Proposed RMP and Alternative A because of their similar restrictions. (The main differences in the two alternatives are that compared to Alternative A, the Proposed RMP would increase restrictions on about 10,000 acres with low oil and gas resource potential and would decrease restrictions on about 63,800 acres having high potential. See comment responses 16.3 and 16.15.)

Using historical information from the Wyoming Oil and Gas Conservation Commission, for the years 1965 to 1990, it was estimated that during the 15-year analysis period about 522,000 barrels of oil and 9.6 billion cubic feet of gas would be produced from approximately seven fields under the Proposed RMP and Alternative A. (See New Table 5-10, Appendix 5.)

On BLM-administered lands, this production would total about 376,000 barrels of oil and 8 billion cubic feet of gas from six new fields under the Proposed RMP and Alternative A.

When compared to total anticipated oil production on BLM-administered lands (of 67 million barrels during the analysis period) the increased new field production under Alternative B (of 188,000 barrels) would improve upon Alternative A's total production by less than three-tenths of a percentage point. Gas production from new fields would increase by 4 billion cubic feet on BLM-administered lands. That would improve Alternative A's total anticipated gas production (of 156 billion cubic feet) by about 2.6 percent.

As expected, Alternative C would show corresponding decreases in production of about 0.3 percent for oil and 2.6 percent for gas.

These small variations in the effects of mitigation on oil and gas production are the result of (1) legally protected lease rights and (2) reasonably foreseeable production levels based on historical data supplied by the Wyoming Oil and Gas Conservation Commission.

A detailed description of the economic effects of these alternative projections is contained in New Appendix 5.

- 16.18 *Comment: Some commentors said BLM should explain the policy related to visual resource management and other restrictions on split-estate lands.*

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Response: BLM's authority and responsibility to reasonably protect surface resources (such as visual or scenic quality) and surface uses, when managing oil and gas leases on split-estate lands, is well established by policy. For the Grass Creek Planning Area, the management of the federal mineral estate on lands with nonfederal surface ownership will be determined in the RMP. For the purposes of adequate analysis of environmental impacts and identifying reasonable stipulations to be placed on oil and gas leases, the RMP will consider the land and resource uses and values on nonfederally-owned surface (split-estate lands where BLM administers only the federal mineral estate).

Washington Office Instruction Memorandum No. 89-201 (January 4, 1989), provides policy for oil and gas leasing, operational approval, and oversight on split-estate lands. This memo summarizes the Director's resolution of two RMP protests (and the two Solicitor's Opinions that provided the basis for the protest resolutions), in explaining BLM's oil and gas responsibilities under FLPMA, NEPA, the National Historic Preservation Act (NHPA), and the Endangered Species Act (ESA).

It is clear that the privately-owned surface on split-estate lands is not subject to the planning and management requirements of FLPMA and that BLM "need only consider the planning and management of the federal minerals...However, the impacts to surface resources and surface uses from BLM-authorized mineral development must be considered under NEPA, NHPA, and ESA." In summarizing the required NEPA consideration of mineral exploration and development, IM 89-201 uses clear language to describe BLM's need to consider mitigation on split-estate lands.

BLM's NEPA responsibilities on split-estate lands are basically the same as for federal surface. The fact that impacts will occur on private surface does not diminish our responsibility to consider alternatives or our authority to [apply] mitigation measures since the impacts will be caused as a direct consequence of activity approved by BLM and conducted pursuant to a federal oil and gas lease.

In the Grass Creek RMP, the policy elaborated in IM 89-201 is being followed. Alternatives

have been developed to identify reasonable and appropriate mitigation for application to mineral exploration and development on split-estate, as well as on public lands.

Once NEPA consideration is given in the EIS and lease stipulations are applied, some flexibility remains: IM 89-201 states that the BLM "should carefully consider the views of the surface owner and the effect on the owner's use of the surface from implementation of possible mitigation measures..."

In implementing the Grass Creek RMP, the consideration of surface owner use will be addressed at the Application for Permit to Drill (drilling) stage and every attempt will be made to satisfy the owner's surface management desires.

16.19 Comment: *One commentor said there is no law that BLM must lease the entire planning area. The BLM claims on page 14 that such a mandate exists.*

Response: The option being considered on page 14 was to close the entire planning area to oil and gas leasing. Closing the entire planning area would indeed be contrary to BLM's multiple-use mandate because less restrictive measures were determined adequate to protect lands and resources in the planning area.

16.20 Comment: *One commentor recommended that the areal limits for standard lease terms and conditions around existing fields be extended to two miles past the boundaries of the fields because Marathon Oil Company has discovered where three structural or stratigraphic traps extend past the field boundaries.*

Response: The Preferred Alternative did not attach standard oil and gas lease terms and conditions to lands in existing oil and gas fields as a proposed land-use decision. Instead, Maps 11 through 14 of the draft EIS showed existing fields as subject to standard lease terms and conditions because the great majority of the leases within these fields are old. As old leases they do not have much in the way of environmental requirements, such as stipulations, attached to them. Those existing lease terms and conditions would remain in effect until the leases expire and new ones are issued. Since leases do not expire while in production, it was assumed that lands in the existing oil and gas fields would be unaffected by lease stipulations developed from the RMP.

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On BLM-administered lands adjacent to the referenced field(s), potential trade-offs between the economic benefits of mineral development and the requirements of resource protection will be considered case-by-case. (The commentor did not provide information on the specific location or extent of the potential oil and gas traps.)

- 16.21 *Comment: One commentor objected to the planning criteria stating that the potential for occurrence of mineral resources should be known before restrictions are applied, because this suggests that protection measures were more likely applied to areas without the potential for development. Instead, protective measures should be applied to areas that require protection.*

Response: The planning criteria reflects agency policy as stated in BLM Manual 1624. Please also see New Appendix 6 for evidence that protective measures will be applied to areas that require protection.

17. MINERALS MANAGEMENT— LOCATABLE/SALABLE MINERALS

- 17.1 *Comment: One commentor said that all mineral resources occurring in the planning area should be identified in the "Minerals" section of Chapter 3, and that any impacts to production facilities (like the bentonite mills at Lucerne and Worland) should be identified along with mitigation. Another commentor asked how coal and phosphate classifications would be removed legally and how this would affect local government.*

Response: We have placed new text in the final EIS to address the mineral resources not previously mentioned in the draft EIS. The most important potential impact of the Proposed RMP on locatable minerals would be to increase the possibility of bentonite and gypsum production, because outdated mineral classifications that prohibit the staking of mining claims for those minerals would be removed on about 180,700 acres. These lands comprise about 136,900 acres of public land and 43,800 acres of split-estate lands where BLM administers the minerals. (Please refer to Map 9 and pages 44, 178, 229, and 230 of the draft EIS.)

These mineral classifications are under the jurisdiction of BLM and can be removed by a decision in the Grass Creek RMP. Before the passage of the 1920 Mineral Leasing Act, lands

thought to have potential for coal and phosphate development were classified to prevent haphazard development of these (and other "nonmetalliferous") minerals on individual mining claims. The Mineral Leasing Act of 1920 provided for orderly development of coal and phosphate and made those classifications unnecessary. Since 1920, the old classifications have served mainly to prohibit other legitimate mining. Their removal would potentially benefit local governments through increased taxes paid to the state of Wyoming from bentonite and gypsum development.

The planning team also reviewed the potential effects of removing the classifications based on the planning criteria for withdrawals and classifications in Chapter 1 of this document. It was concluded that no significant adverse effects to cultural resources, recreation opportunities, watersheds, or wildlife habitat would follow the removal of these classifications, and the opening of the lands to mining claim development of "nonmetalliferous" minerals.

- 17.2 *Comment: One commentor objected to the passive mention of titanium and zircon deposits located near the town of Grass Creek and said the deposit is presently known to be economically viable and will be produced in the near future.*

Response: Thank you for the additional information. When the planning team considered reasonably foreseeable development in the planning area, it did not appear that titanium-bearing sandstones near the town of Grass Creek would be mined between now and 2005. We understand, however, that there are mining claims in this area which include the right to develop minerals under the 1872 Mining Law. The Proposed RMP does not recommend withdrawal of this area from mineral location. But even if it did, management decisions in the Grass Creek RMP could not interfere with valid existing rights established by the mining claims.

- 17.3 *Comment: Some commentors asked BLM to expand locatable mineral with draws and cited the "antiquated 1872 Mining Law" as a reason. One commentor asked for a geological analysis as the basis for withdrawal decisions.*

Response: The planning team developed proposals for locatable mineral with draws with the same process that was used to identify mitigation for surface-disturbing activities, explained in comment response 16.1. In addition, the review

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process will include the preparation of an in-depth mineral report for each specific withdrawal proposal, following completion of the Grass Creek RMP. The purpose of these reports will be to identify any mineral values affected by the proposed withdrawal. Any effects on mineral values and development will be considered as part of additional detailed environmental analyses.

Under the Proposed RMP, BLM would pursue locatable mineral withdrawals in the Upper Owl Creek Proposed ACEC, including the upper South Fork of Owl Creek; at the Legend Rock Petroglyph Site; on public lands along the Big-horn River; and in the vicinity of important rock art in the Meeteetse Draw area north of Thermopolis.

18. OFF-ROAD VEHICLE MANAGEMENT

- 18.1 *Comment: Many commentors opposed "blanket restrictions" on off-road vehicle use or had other concerns about the effects on public access.*

Response: Executive Orders and subsequent federal regulations require the BLM to designate all public lands as either open, limited, or closed to off-road vehicle use through the resource management planning process. Some new terms have been added to the Glossary explaining what is meant by off-road vehicle use being "limited to existing roads and trails" or "limited to designated roads and trails." On public lands where ORV use is limited to designated roads and trails, vehicles would be allowed on some roads and trails but not on others. The RMP will identify these general areas but won't prescribe specific roads and trails to be opened or closed. This will be accomplished after completion of the plan, through analysis of detailed information and with public participation.

With the exception of roads and trails that are closed to ORV use under current management, vehicles would be allowed on all existing roads and trails until the more detailed analysis, with public participation, takes place.

More detailed analysis would include the consideration of public access needs, identification of areas where duplicate and/or washed-out roads are contributing to erosion, and effective resolution of concerns among private landowners, the state of Wyoming, and the general

public, especially where high recreational values exist in areas of intermingled landownership.

The Absaroka Mountain foothills are an example. In areas like the upper Grass Creek and South Fork of Owl Creek watersheds, intensive management and a spirit of cooperation will be necessary to achieve public access needs and insure that private property rights are respected.

Achieving those goals in the Absaroka Mountain foothills is the main rationale for ORV use being limited to designated roads and trails in that area.

Based on public comments and internal review, it was determined that these conditions do not exist in the Badlands Area, except in wilderness study areas. Therefore, the Proposed RMP now shows the Badlands Area as limited to existing roads and trails, rather than designated roads and trails. (As indicated above, presently closed areas including the wilderness study areas will remain closed to ORV use until more detailed analysis, with public participation, takes place. This analysis will not be conducted for wilderness study areas before Congress acts on BLM's wilderness recommendations.)

- 18.2 *Comment: Many commentors expressed a desire for strong enforcement of off-road vehicle limitations and wanted to know if BLM would receive additional funding for this purpose.*

Response: The most important part of the enforcement program will be to gain public understanding and support for off-road vehicle limitations. As stated in the previous response, more public participation will be needed before decisions are made on the use of specific roads. We are optimistic that with public participation, reason and common sense will provide the rationale for these specific decisions. Developing management ideas that are reasonable and generated by public concerns will be the key to gaining compliance with off-road vehicle limitations.

For law enforcement, the Worland District has only one ranger and a limited budget for signs and brochures. The BLM cannot predict whether funding will be obtained for more law enforcement, or for other management tools. However, RMP implementation priorities, including those related to enforcement, will be set by the area manager and his staff after completion of the

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RMP. The setting of implementation priorities will include assistance from affected or interested citizens.

- 18.3 **Comment:** *One commentor said it is implied incorrectly on page 47 of the draft EIS that access is secured for the Red Canyon Creek area. The commentor also said that his private lands are included in BLM's off-road vehicle management decisions.*

Response: The management option on page 47 states that ORV use would be limited to designated roads and trails on about 9,000 acres of public land in the Red Canyon Creek Special Recreation Management Area.

According to federal regulations, all public lands must be designated as either open, limited, or closed to motorized vehicles through a resource management planning process that involves public participation (43 CFR 8342.1.). This was the reason for including these management options in the draft EIS.

If the public gains access into the Red Canyon Creek area, through easements or other forms of landowner permission, we believe it would be appropriate to limit motorized vehicle use to designated roads and trails on the BLM-administered public lands. This decision is supported by public comments describing important and sensitive resources in the Red Canyon Creek area. (See comment response 9.2.) The planning proposal on page 47 specially refers to "public lands" and would not apply to private lands.

At the same time, we acknowledge concerns about encouraging public access into the area. For this reason, the idea of managing these public lands as a Special Recreation Management Area (SRMA) has been dropped. The Proposed RMP would not designate a Red Canyon Creek SRMA.

19. RECREATION MANAGEMENT

- 19.1 **Comment:** *One commentor indicated he was strongly against any day use facilities or camping sites being established at either Wardel or Harrington Reservoirs. The commentor said Wardel is so overrun with speed boats that it's almost impossible to fish.*

Response: The primary reasons BLM develops recreation sites are to protect public health and safety, enhance resource conditions, and pro-

vide accessibility for the disabled. We are aware that there are some conflicts between pleasure boaters and anglers at Wardel Reservoir. We recently proposed a horsepower restriction for boats on that reservoir. Subsequent public comment at Wyoming Game and Fish public meetings convinced us to withdraw our proposal. These comments were: (1) Wardel was historically used for pleasure boating before a sport fishery was developed in the reservoir. It is convenient, and the closest such water body to the Greybull-Basin area. (2) The reservoir is periodically drained by the irrigation users, as they have the right to all of the water. In fact, the stored water is over allocated, and during extended droughts or as necessary for dam maintenance, the reservoir is totally drained. This of course destroys the fishery for several years. The reservoir will undoubtedly be periodically drained in the future. (3) Without pleasure boating, there would be little recreational use of the reservoir during the period when the fishery is rebuilding.

It is doubtful that the construction of day-use sites would greatly increase the recreational use of the area. The reservoir is considered to be small and not scenic, with muddy water and no shade trees. Its use at all is more indicative of a lack of other nearby waters, than testimony to its attractiveness. A day-use site and boat ramp would include an educational sign urging pleasure boaters to avoid angler's boats. By not developing a day-use site where it might be justified, BLM would be favoring one class of recreationist over another. While we would like to avoid conflicts such as you describe, recreational boaters have as much right to use the lake as recreational anglers.

Under the Proposed RMP, Harrington would be managed for fish and waterfowl. A minimum pool would be maintained. To minimize waterfowl disturbance, a horsepower restriction and seasonal boating restriction were proposed to the WGFD. After public hearings, the proposals were adopted and will be included in the 1996 fishing regulations. The reservoir was stocked with game fish in the summer of 1995.

- 19.2 **Comment:** *One commentor noted that recreational use estimated for the Red Canyon area was too high.*

Response: We agree that the estimated use was too high. The figure has been revised downward in the final EIS.

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19.3 *Comment: Many commentors assumed that the Preferred Alternative represented an attempt by BLM to expand recreational use at the expense of other resources and uses, or said BLM's estimates were inflated and unreasonable. Some of these commentors wanted detailed cost information on BLM's proposals for "extensive development of recreational sites."*

Response: In developing the draft EIS, BLM attempted to accurately estimate the existing and future demand for recreation on public lands. The four alternatives looked at various ways to accommodate the anticipated demand and to enhance certain types of recreation and to promote tourism. There was no intention to do this at the expense of other land uses.

The following is a description of how the estimates of recreational demand were derived.

Starting with the 1990 base year for analysis, BLM prepared estimates of recreational use for consumptive recreation (hunting, fishing, and trapping) and nonconsumptive recreation (such as driving, sightseeing, and camping). These estimates were further differentiated by where the recreational use took place. For example, estimates were presented for recreational use on all lands within the planning area, and for recreational use on public lands alone. Finally, these estimates were separated into "resident" and "nonresident" use so that the importance of nonresident money, coming into the local economy, could be evaluated.

The basic data for consumptive recreation was the Wyoming Game and Fish Department (WGFD) annual harvest report, while the data used for nonconsumptive recreation came from Wyoming's 1985 and 1990 *State Comprehensive Outdoor Recreation Plan (SCORP)*.

Most of this data was collected by WGFD hunt area or by county, so BLM specialists had to use inference and professional judgement in estimating what took place in the planning area. For each type of recreational activity, BLM determined (1) how much use occurred within the planning area boundary, (2) how much of that use was on BLM-administered lands, and (3) how much was resident or nonresident recreational use.

Finally, in the section on Environmental Consequences of the draft EIS, we estimated the existing and projected public land recreational use in seven geographical areas, such as the

Absaroka Foothills, Badlands, and the Red Canyon Creek area, and on all the remaining public lands in the planning area.

Based on public comments, the estimates of 1990 recreational use have been adjusted for the final EIS. These changes include (1) a lower estimate of visitor use in the Red Canyon Creek area, (2) lower visitor estimates for fishing, and (3) higher estimates for sightseeing, four-wheel driving, and nonresident small game and waterfowl hunting.

As we have indicated, many factors were involved in these estimates of 1990 recreational use and, in all cases, inference and professional judgement were needed to fit data from various sources and collection areas to the Grass Creek Planning Area. We would suggest that our estimates for 1990 recreational use, as modified and presented in the final EIS, are basically sound but remain somewhat speculative. We further suggest that the estimated 1990 recreational use primarily serves as a starting point: one that can be used for projecting future recreational use within the planning area.

In projecting future trends in recreation for the years 1991 through 2005, BLM used information from the President's Commission on Americans Outdoor (1986) and Wyoming's SCORP which indicate that outdoor recreation is steadily increasing. The amount of increase estimated in the draft EIS was between 3 and 4 percent annually.

Since the draft EIS was published, other sources of information have been consulted. These include the latest annual report of the state Tourism Division indicating that visitors to Wyoming spent almost 4.7 percent more in 1994 than in 1993. Other observers suggest a low level of increase, and that recreational demand might follow local population changes. Population growth in Big Horn, Hot Springs, Park, and Washakie counties is expected to increase by less than 1 percent annually through the year 2005.

After further review and discussion of anticipated recreational demand, BLM estimates that the planning area will see an annual growth of less than one percent, consistent with changes in local population. We believe this would be the same in all four alternatives, although the types and locations of recreational use could vary slightly, based on BLM management emphasis.

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The final EIS includes revised economic projections related to recreation in New Appendix 5. Detailed cost/benefit studies and environmental analyses will be prepared before individual recreational sites are developed. These studies and analyses will be major factors in determining the scale of the individual recreation projects, and whether some projects will be done at all.

- 19.4 **Comment:** *Many commentors perceived that BLM had a bias in favor of surface-disturbing activities to benefit recreation development, but that BLM opposed similar disturbances associated with minerals development and grazing. Some commentors asked for a definition of surface disturbance and wanted to know if it covered agricultural practices like fence and reservoir construction and grazing.*

Response: Please see New Appendix 6 for information on how BLM develops, applies, and evaluates mitigation for all types of surface-disturbing and disruptive activities. Where appropriate, the recreational activities of the general public and the construction of recreational facilities would require the same mitigation that are applied to oil and gas and other commodity development.

Surface disturbance was defined on page 297 of the draft EIS. The construction of range projects like fences and reservoirs would require mitigation as appropriate, consistent with New Appendix 6. Grazing by livestock and wildlife are not included in the definition of surface disturbance because the land surface is not removed as a direct result of the activity.

- 19.5 **Comment:** *Some commentors stated that BLM's enhancement of primitive recreation opportunities was inappropriate because page 35 of the 1990 State Comprehensive Outdoor Recreation Plan (SCORP) said that participation in primitive recreation had decreased.*

Response: Pages 35 and 36 of the 1990 SCORP were reviewed to respond to these comments. In comparing 1990 survey results with those of the 1985 SCORP, the full statement reads:

Noticeable decreases in camping, sightseeing, and picnicking are noted. These decreases may be the result of shifts in participation tastes and preferences, *but more likely, they are the result of changes in survey methodology.* In 1985, survey administrators counted the participation of all household members when calculating the per-

centage of the survey respondents who participated in a particular activity...In 1990, if the head of the household reported picnicking, it was counted only once. Hence, the unit of analysis for 1985 was the household member, while the unit of analysis for 1990 was the household. [Emphasis added.]

On reconsideration, the planning team did view this as a sufficiently clear source for saying that primitive recreation had decreased.

20. VEGETATION MANAGEMENT

- 20.1 **Comment:** *Some commentors objected to BLM's proposed "strategy" for transplanting protected plants, and to references about working with The Nature Conservancy (on page 53 of the draft EIS). One commentor said that transplants of protected plants would be difficult and costly. Instead, a policy of assessing potential land management conflicts on a species-by-species basis, and work with permittees and other interested parties in resolving conflicts, should be pursued.*

Response: The BLM never intended to establish a strategy for transplanting protected plants. The management option simply said that BLM "would participate...in the evaluation of areas for the potential transplant of protected plant species..." As administrator of the public lands, BLM would be required to evaluate any transplant requests of the U.S. Fish and Wildlife Service or the Wyoming Game and Fish Department that involve public lands. This is standard operating procedure.

At the same time, we appreciate the view that such transplants would be difficult, costly, and often unnecessary. We will keep this in mind; and in order to discourage unnecessary transplants, the subject proposal on page 53 of the draft EIS, including reference to The Nature Conservancy, is not repeated in the Proposed RMP.

We agree with resolving concerns, species-by-species and case-by-case, as recommended.

- 20.2 **Comment:** *One commentor recommended showing the scientific names of plant species with the common names listed in Table 11.*

Response: Revised Table 11 now includes the scientific names.

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20.3 Comment: *One commentor asked BLM to delineate by range site, what constitutes good condition. They considered the clarification important so that misunderstandings regarding "suitability" might be avoided.*

Response: Descriptions of good range condition, by range site, are contained in the U.S. Department of Agriculture National Resources Conservation Service's (formerly Soil Conservation Service) *National Range Handbook*. The handbook explains the range site inventory method used by the BLM since 1982.

It would not be practical to repeat the information on late seral stage plant communities (representing "good" range condition), but the handbook can be reviewed at the BLM office in Worland, or at any National Resources Conservation Service office.

20.4 Comment: *Some commentors wondered whether BLM could achieve the increase in proper functioning riparian condition prescribed in the Preferred Alternative. One commentor said the information on riparian functioning condition should be removed because there is no support for the "checklist" approach and very few permittees participated in the evaluation.*

Response: A management objective in the Preferred Alternative said that BLM would attempt to increase proper functioning riparian areas from 50 percent of the total public land stream miles, to 75 percent or more, by the end of calendar year 2005. This objective was based on BLM's national objective to reach 75 percent in proper functioning condition by the end of calendar year 1997.

Since the draft EIS was published, we have reviewed our information on riparian condition. Information on riparian condition has been compiled and reported, at the request of Congress, every year since 1993. Recently, BLM has been allowed to report riparian condition by stream mileage, instead of by acres as shown on Table 21 of the draft EIS. The different reporting methods have the ability to affect the survey results because of differing, subjective views that can be held on the width of any given riparian zone. The Bighorn Basin Resource Area continues to keep information on the number of acres of riparian areas. However, we feel that measuring riparian health by stream miles provides a more objective, less variable baseline. It also takes into account the direct relationship between stream channel morphology and the

stability of riparian vegetation adjacent to the channel.

Following a review of our data on riparian functioning condition in the planning area, it is apparent that proper functioning riparian areas are not as common as was reported in the draft EIS. But at the same time, it would be misleading to imply a scientific basis for a decline in riparian condition since 1990. Present data shows that proper functioning condition exists on only 12 percent of the public land stream miles in the planning area. This is anticipated to increase to about 32 percent by the year 2005.

Under the Proposed RMP, BLM will continue to gradually improve the condition of riparian areas. As stated in BLM Technical Reference TR 1737-11 successful management strategies to achieve proper functioning condition must address the entire watershed, because upland and riparian areas are interrelated. Examples of successful management techniques are contained in BLM technical references such as TR 1737-4 and TR 1737-6. Specific grazing management techniques to improve riparian area condition will be identified in the development of activity plans like allotment management and coordinated resource management plans.

The "checklist" refers to information that is collected to determine riparian functioning condition. It is also the information on riparian condition that Congress requires BLM to submit in annual reports. The approach is standard throughout the agency. The Proposed RMP adds the statement that permittees will be consulted and participate in collecting this information, to the extent possible.

20.5 Comment: *One commentor objected to the use of "poor, fair, good, and excellent" to describe range condition because these words imply a value judgement about the health of the land, when they primarily reflect how long ago the land was burned. Another commentor said ecological condition classes should be omitted because of current scientific evidence from the University of Wyoming which negates the Clementsian theory. Some commentors wanted the information on ecological condition updated or deleted because of its age.*

Response: In the final EIS, the words "poor, fair, good, and excellent" are not used for describing ecological condition. Instead, the terms "early seral, mid-seral, late seral, and potential natural community" are applied.

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We suggest that there are many things besides fire that can prevent a plant community from reaching the potential natural community. These include excessive grazing, hail, drought, and other types of disturbance.

Since the last major vegetation inventory, about 35,000 acres were intensively monitored within "key" areas. Because key areas often represent larger areas within an allotment, this monitoring is representative of about 244,700 total acres. Of the total, about 120,200 acres improved from the last inventory, about 23,100 acres declined, and about 101,400 acres remained the same.

It should be noted that the ecological site inventory is not, by itself, used to make management decisions. It is gathered coincident with other inventories. The ecological site inventory is used so that grazing permittees and other range managers can identify the reasons for various range "conditions" and determine whether these meet mutually beneficial goals for managing the land.

- 20.6** *Comment: There were many ideas expressed about desired plant community objectives. One commentor said the desired plant community objectives need documentation that they are technically achievable and permittees should first be consulted. Another commentor said the objectives are better addressed at the allotment level, while another said BLM's approach toward desired plant community objectives seems valid, measurable, and should help prioritize monitoring, habitat treatments, and use of personnel.*

Response: As a management concept, desired plant community objectives represent a movement away from reliance on ecological condition to evaluate the health and usefulness of rangelands. The concept relies, instead, on coordination and cooperation between BLM and public land users to determine how plant communities can meet mutually beneficial goals.

In practice, the broad desired plant community objectives listed in the Proposed RMP will be accomplished at the allotment or project level. This will include consultation with public land users, site-specific evaluation of the areas being managed, and the use of technically achievable objectives.

- 20.7** *Comment: Some commentors wanted a more complete description of noxious weed management. One commentor wanted the final EIS to*

mention that using different classes of livestock can be a viable option for controlling noxious weeds.

Response: Additional material has been placed in the final EIS to address the control of noxious weeds, including information on the use of livestock for this purpose.

- 20.8** *Comment: One commentor said BLM should identify biologically diverse areas and conserve their richness of native plant and animal species.*

Response: The final EIS has been reworded as requested.

- 20.9** *Comment: One commentor said BLM used an incorrect definition of trend in the draft EIS.*

Response: We know of three definitions: As defined in the Wyoming BLM Rangeland Monitoring Handbook (H-4423-1) trend refers to the direction of change in the health and productivity of the rangeland as observed over time. It indicates whether the rangeland is moving toward or away from its potential or toward or away from specific management objectives.

As defined in BLM Technical Reference 4400-4 (1985) trend is the direction of change in ecological status observed over time. Trend in ecological status is described as "toward" or "away from" the potential natural community, or as "not apparent."

As defined in the 4100 Regulations and Final Rule dated February 22, 1995, trend is the direction of change over time, either toward or away from desired management objectives.

This last definition is the one printed in the Glossary of the final EIS.

21. VISUAL RESOURCE MANAGEMENT

- 21.1** *Comment: Some commentors said that because of the historic significance of the oil and gas industry in Wyoming, operations should be enhanced for viewing, rather than screened.*

Response: A statement on page 62 of the draft EIS said that facilities or structures such as power lines, oil wells, and storage tanks would be screened, painted, and otherwise designed to blend with the surrounding landscape. In the final EIS, New Appendix 6 alludes to opportunities for highlighting land-use activities, instead of hiding them, to benefit public education and

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provide a better understanding of multiple use. In most cases, however, the requirement to screen, paint, or blend facilities and structures will continue to be applied when adverse effects to visual resources can be mitigated.

- 21.2 **Comment:** *One commentor asked for definitions of the visual resource classes identified on Map 19 of the draft EIS.*

Response: These definitions are now contained in the Glossary.

22. WATERSHED MANAGEMENT

- 22.1 **Comment:** *One commentor pointed out that sediment control structures built in the Fivemile, Tenmile, and Fifteenmile watersheds 40 years ago are in need of repair. Because reservoirs and check dams are full of sediment, they obviously did their jobs and now should be rebuilt. Livestock and wildlife could also use the water. Another commentor asked how BLM would address sedimentation in the absence of control structures.*

Response: Reservoirs, detention dams, and water spreaders were constructed in the 1950s and 1960s as part of a plan to reduce the amount of sediment delivered to the Bighorn River. As noted, the structures were very effective at trapping sediment; however, these kinds of structures have a finite life, and money to maintain them was not identified in the original proposals. If these structures are not reclaimed or rehabilitated, there is a danger that some will wash out and the benefit they previously afforded will be lost.

The BLM will attempt to stabilize the structures that pose the greatest risk, but maintaining these structures to catch additional sediment would be costly and is no longer a priority. Instead, we think that a better approach would be to address the problem of erosion at its source, by improving vegetation where necessary. For example, reasonable livestock and wildlife utilization levels will increase plant cover, while maintaining or encouraging plant communities that protect against erosion.

Regarding the lack of water for livestock and wildlife use, silted reservoirs are cleaned out by grazing permittees working in cooperation with the BLM, or by the BLM occasionally. These practices are expected to continue.

- 22.2 **Comment:** *One commentor said that on page 8 of the draft EIS, watersheds should be considered in ecosystem management plans to factor in water quality and riparian area management.*

Response: Thank you for the suggestion. We believe that watersheds are often good building blocks for ecosystem management because they are logical areas in which to study and understand how resources, processes, geography, and land uses are interrelated.

- 22.3 **Comment:** *Some commentors questioned the basis for estimates of soil erosion in Table 8.*

Response: The basis for Table 8 in the draft EIS was the Revised Soil Loss Equation, personal experience, and professional judgement. The purpose for Table 8 in Chapter 3 was to disclose, in a very broad sense, the amount of erosion that might result from various land-uses in the planning area. The information could also be used to project cumulative impacts of development scenarios and was applied in this manner in Chapter 4 of the draft EIS. However, the information was not used as the sole basis for establishing any management actions in the Proposed RMP.

When future site-specific studies are conducted for land-use proposals, the kind of information used in Table 8 will be evaluated, updated, and modified, to consider and document potential erosion-related impacts.

23. WILD HORSE MANAGEMENT

- 23.1 **Comment:** *Many commentors wanted wild horses confined to their original herd area or eliminated altogether. The reasons included (1) the cost of maintaining fences, (2) the horses are difficult for the public to view, (3) concerns that wild horses are hard on the land, and (4) the perception that the horses are less wild than those of the Pryor Mountains and other herd areas.*

Response: Management options have been modified from the Preferred Alternative, so that the wild horses would be confined to their original herd area under the Proposed RMP.

The management option for total removal of the wild horses was considered in Alternative B. One of the reasons this option was not selected was because the wild horses continue to benefit the economy of the Bighorn Basin and have the

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potential to contribute more in the future. As pointed out by one commentor, the horses could be put on the Internet as an advertisement for Wyoming. This would attract tourists who are looking for travel experiences with an authentic Old West flavor. Adequate roads exist in or near the herd area for touring by four-wheel drive vehicles and pickup trucks. The economic benefit would result from more travelers spending more money in local communities, because of the additional time spent touring public lands.

Other economic benefits come from the wild horse adoptions that are held in places like Worland. The general public has expressed strong support for these adoptions. One reason is that people are able to select wild horses from local herd areas, including the Fifteenmile area. Some of the horse adopters come from outside the Bighorn Basin. The money these people spend during a weekend or two each year, helps build the local economy.

In spite of concerns that the horses are more feral than those in the Pryor Mountains, all such horses are regarded as "wild" under the Wild Horse and Burro Act of 1971. There was no reason to remove all the horses for genetic reasons.

- 23.2** *Comment: Many commentors wanted elimination of all wild horse management areas and for BLM to "return all wild animal management to the State Game and Fish, and return all managed animal production to the Private sector."*

Response: Wild horse herd management areas existing when the Wild Horse and Burro Act was passed in 1971 are required by that law to remain as designated areas, even if all the horses are removed.

Regarding other livestock and wildlife management decisions, the Grass Creek RMP must comply with existing laws and regulations; the land-use plan is not intended to be used for trading management jurisdiction among federal, state, and private interests.

- 23.3** *Comment: One commentor said that a provision should be included on page 139 that if drought conditions continue, horses would be managed at the lower end of the 70 to 160 adult horse objective.*

Response: We agree that drought conditions should be considered in the timing and planning of

roundups. The recommended provision has been added to the Proposed RMP.

24. WILDLIFE MANAGEMENT

- 24.1** *Comment: One commentor expressed the view that excessive predation to wildlife can usually be traced to lack of quality habitat. By keeping the habitat intact through proper land management practices the wildlife populations will respond favorably.*

Response: We agree with you on the importance of maintaining and improving quality habitat as a means of limiting predation on wildlife. Revised Table 16 of the final EIS includes this idea.

- 24.2** *Comment: Two commentors requested new information, clarifications, and corrections in the final EIS pertaining to wildlife. One asked that the complete biological assessment be published as an appendix to the final EIS.*

Response: The Biological Assessment has been revised and resubmitted to the U.S. Fish and Wildlife Service for additional review. We have also made corrections and incorporated new information in the final EIS from this revision. Because of concerns for publication costs, we have not printed the biological assessment as part of the final EIS. However, the revised biological assessment is available to the public upon request.

- 24.3** *Comment: One commentor provided information on big game and raptor sightings in the Red Canyon allotment and asked why maps in the draft EIS did not show these habitat areas. The commentor said that big game habitat had been previously identified at the time the Red Canyon Allotment Management Plan was being developed. Other commentors have pointed out where big game animals are not observed, in apparent contradiction to some of the mapped habitat areas.*

Response: Since the Red Canyon AMP was written, the Wyoming Game and Fish Department (WGFD) has changed these designated ranges. Our current maps, and those printed in the draft EIS, reflect that information as reported by the WGFD. We do, however, appreciate the report of big game locations and will pass that information along to the WGFD. It might be enough to redesignate those areas as crucial winter range. We also appreciate the information on raptor sightings, and will include it with the rest of our wildlife inventory.

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The reported lack of wildlife in other habitat areas, according to some commentors, will also be forwarded to the WGFD.

On maps in the draft EIS, we showed the most accurate and recent information on the location of wildlife habitat areas, when that document was being prepared. However, wildlife habitat information is continually maintained and updated on maps in the Bighorn Basin Resource Area Office. The base maps showing big game, raptor, and sage grouse habitat are much larger than the page-sized maps in the draft and final EIS documents and are available for public inspection.

Although the wildlife habitat maps in the draft EIS broadly describe potentially affected resources in the planning area, they are not intended to be the sole source of information for applying mitigation and other types of management. In practice, mitigation requirements are evaluated and applied, as necessary, in response to on-the-ground studies of proposed land-use activities. In fact, these evaluations allow BLM to collect much of our information on wildlife habitat. Industry, the WGFD, and other affected or interested citizens participate in these evaluations.

The BLM intends to mitigate impacts on important wildlife habitat, as described in Revised Table 2 and New Appendix 6, where these habitats exist. Mitigation will be applied when the wildlife are dependent on those areas for their winter survival and/or breeding and birthing success. Mitigation will not be applied at other times when the animals are not at risk from proposed land-use activities. However, the fact that the precise locations of important habitat areas may vary with time, from the areas shown in the Grass Creek RMP, will not change BLM's intention to protect these resources when and where the protection is warranted.

- 24.4 *Comment: Some commentors said BLM's proposals to support WGFD wildlife populations to the "extent possible," or "where appropriate," were hollow and without any resolve to do what is right. One commentor said BLM should manage beyond WGFD herd objectives and look at ways to provide the necessary forage for the expansion of wildlife habitat. Other commentors accused BLM of taking orders from Game and Fish. One commentor recommended revised language on WGFD population objectives: "BLM will provide suitable habitat and*

forage to meet WGFD strategic plan population objectives which are developed through public input and consultation with federal land management agencies, and are based upon habitat capability and availability."

- Response:** Taken in context, we believe that the qualified support for Wyoming Game and Fish Department population objectives adequately reflects BLM's intention to protect wildlife and wildlife habitat. (The complete statements are on pages 69 and 70 of the draft EIS.)

In some cases, site-specific evaluations, consultation, and coordination may be necessary to understand "habitat capability and availability." The BLM desires the flexibility to evaluate WGFD wildlife population objectives, site-specifically, based on changing circumstances that could affect any (or all) multiple uses in an allotment or big game herd area.

The recommended wording in the comment implies, in effect, that BLM will meet state of Wyoming objectives because it is already assumed that habitat capability and availability are known from broad studies and/or public meetings. The recommended language has not been used in the Proposed RMP because it does not allow for future consultation and site-specific adjustments, required by new information and/or changing circumstances.

Please also see comment response 15.10 on "combined utilization" and WGFD population objectives for an example of how multiple-use decisions could affect population objectives because of on-the-ground circumstances. Also see comment response 2.2.

- 24.5 *Comment: Some commentors said BLM should do more to emphasize and improve wildlife habitat, riparian areas, and rangelands.*

- Response:** Management options for improving wildlife habitat, riparian areas, and rangelands were described on pages 53 through 60 (Vegetation Management) and pages 69 through 74 (Wildlife and Fish Habitat Management) of the draft EIS. In the final EIS, mitigation to protect vegetation and habitat are described in much greater detail than in the draft EIS. (See New Appendix 6.) Also, as stated in response to comments from a completely different perspective, the BLM has attempted to identify wildlife habitats in the planning area, estimate their conditions, and evaluate responsible management approaches to maintain or enhance the

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areas that are most important or significant. (See comment response 24.7.)

24.6 Comment: *Some commentors said the draft EIS had failed to address predator control.*

Response: On page 72 of the draft EIS, predator control measures are described in all alternatives. To further clarify the situation, language in the Proposed RMP states that predator control would be consistent with the Worland District Animal Damage Control Plan, which is reviewed yearly. Because of this existing predator control plan, and the comprehensive environmental assessment which was done for its development, the Grass Creek planning team did not reconsider or reanalyze the various predator control options.

24.7 Comment: *Many commentors said the Preferred Alternative favored wildlife over other resources and land uses; therefore it represents a change in BLM management priorities, away from traditional multiple use.*

Response: The Preferred Alternative did not represent a change in BLM priorities for managing wildlife. As in previous land-use planning efforts, the BLM has attempted to identify wildlife habitats in the planning area, estimate their conditions, and evaluate responsible management approaches to maintain or enhance the areas that are the most important or significant. (Also see comment response 24.5)

24.8 Comment: *One commentor was concerned that without a full-time aquatic wildlife biologist on the Worland District BLM staff that RMP objectives for fish habitat would not be accomplished.*

Response: With declining budgets and constraints on hiring new staff, it becomes necessary for BLM specialists to perform more than one function. We appreciate your concern that a full-time aquatic biologist is necessary. However, we do not believe that a realignment of duties for one biologist will affect our ability to meet aquatic habitat goals.

24.9 Comment: *Many commentors objected to "inferences" that BLM would protect gray wolves and/or black-footed ferrets. One area cited was page 201 of the draft EIS which stated that BLM's protection of big game seasonal habitats would benefit gray wolves that might prey on big game in the planning area. This was viewed as inappropriate because gray wolves in the Greater Yellowstone Ecosystem are considered an ex-*

perimental population that was not given specific protection by Congress.

Response: On page 70, the draft EIS referred to threatened or endangered species with the following: "BLM would participate with the FWS [U.S. Fish and Wildlife Service] in the evaluation and designation of critical habitat for threatened or endangered species on BLM-administered lands. If proposed surface-disturbing or disruptive activities could affect these species, BLM would consult with the FWS as required by the Endangered Species Act."

The Preferred Alternative made no specific references to wolves or ferrets. The statement on page 201 of the draft EIS, regarding big game habitat protection, is in the chapter on environmental consequences and does not represent a proposed decision. Rather, it is a statement of fact that any wolves visiting the planning area would benefit, indirectly, from habitat enhancements that maintain stable big game herds. (Another indirect effect might be that the wolves would be less likely to feed on livestock, if big game populations remain steady.) The description of indirect impacts, along with direct and cumulative impacts, is a NEPA requirement.

The draft EIS also made true statements about potential black-footed ferret habitat on page 150, because potential threatened or endangered species habitat is part of the affected environment of the planning area. The description of the affected environment in every EIS is another NEPA requirement.

24.10 Comment: *Some commentors said BLM needed to address grizzly bear contingency measures.*

Response: Potential bear problems will be addressed through education, informative signs, and the design of structures and other facilities, as bears expand within the planning area.

24.11 Comment: *Some commentors said the RMP should offer a more substantial goal of bighorn sheep recovery by reintroductions and habitat improvements than proposed in any of the alternatives. One commentor said the restrictions on pages 40 and 41 pertaining to domestic sheep are outlandish and unnecessary.*

Response: Bighorn sheep reintroductions and habitat improvements will be addressed in site-specific plans and projects, in cooperation with the WGFD, affected landowners, and other affected or interested citizens.

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The requirement to keep bighorn and domestic sheep separate is to prevent the spread of disease. There are currently no domestic sheep operations within existing or potential bighorn sheep habitat or the 2-mile area that would serve as a buffer for the bighorn sheep.

The management option pertaining to domestic sheep grazing on pronghorn antelope crucial winter ranges does not automatically prohibit sheep grazing in these areas. Sheep grazing could be allowed in pronghorn antelope crucial winter ranges if a site-specific environmental analysis demonstrates that potential impacts can be adequately mitigated.

- 24.12** *Comment: Some commentors said the issues of fragmentation of wildlife habitat must be addressed and quantified.*

Response: New information on habitat fragmentation has been placed in Chapter 3 of the final EIS. Also, as described in Revised Table 2 and New Appendix 6, BLM will evaluate the potential for habitat fragmentation and will avoid actions that disrupt or divide blocks of habitat.

- 24.13** *Comment: One commentor said it was not demonstrated in the draft EIS or in supporting documents that BLM had complied with Manual Section 6840.06 (C)(1).*

Response: This manual section describes BLM's policy for candidate species (category 1) and species-at-risk (formerly category 2) with the following words:

The BLM shall carry out management, consistent with the principles of multiple use, for the conservation of candidate species and their habitats and shall ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as T/E. Specifically BLM shall...determine the distribution, abundance, reasons for current status, and habitat needs for candidate species occurring on lands administered by BLM, and evaluate the significance of lands administered by BLM or actions in maintaining those species.

Mitigation requirements for protecting candidate species (category 1) and species-at-risk (formerly category 2) would be established through site-specific evaluations of surface-disturbing activities. In considering potential threats to these species, the planning team could not

identify any mitigation or protective measures that would be appropriate or necessary for application through an RMP decision, for either a particular geographic area or for the planning area as a whole.

To assist with the identification of appropriate mitigation through site-specific analyses, language has been placed in the biological assessment describing the reasons for current status and habitat needs (where known) of planning area candidate species and species-at-risk. We have also added language describing the significance of the public lands in maintaining these species. The revised biological assessment is available upon request.

25. SPECIAL MANAGEMENT AREAS—

GENERAL

- 25.1** *Comment: Many commentors believed that ACECs, and other designated areas, would be administered by BLM like wilderness, contrary to the desires of Congress, or at least with unnecessarily restrictive management. Many other commentors said that ACECs should be protected from all forms of development.*

Response: There seems to be a widely-held belief that BLM will manage public lands like wilderness if the public lands are designated as ACECs, wild horse herd management areas, special recreation management areas, or with some other kind of label. Conversely, there also seems to be a belief that these public lands should be managed like wilderness.

Federal regulations (43 CFR 1610.7-2) require the identification and consideration of areas having potential for ACEC "designation and protection management" during the resource management planning process. To be designated an ACEC, an area must possess both relevance and importance. To meet the relevance requirement there needs to be present "a significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard." To meet the importance requirement, "the above described value, resource, system, process, or hazard shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to human life or property."

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According to BLM Manual Section 1613, ACEC designation may be appropriate if qualities or circumstances are present that make a resource fragile, sensitive, rare, irreplaceable, endangered, threatened, or vulnerable to adverse change.

The public lands within ACECs do not automatically require specific protection simply because of the ACEC designation; however, the need for special management attention and some protection of an important resource, value, or process are the reasons for ACEC designation. Various levels of protection might be considered during the planning process with public involvement, and an appropriate level is established based on the important values of the area. Considered this way, the level of protection would probably be the same, whether or not an area were designated an ACEC. What could differ would be the level of management attention, which should be higher in an ACEC. Also see comment response 16.1.

- 25.2 *Comment: Some commentors said ACEC designation criteria needed to be documented.*

Response: New language has been placed in Chapter 3 of the final EIS explaining this designation criteria. Also see comment response 25.1.

26. SPECIAL MANAGEMENT AREAS— BADLANDS PROPOSED ACEC

- 26.1 *Comment: Many commentors wanted the Badlands Proposed Special Recreation Management Area designated as an area of critical environmental concern and placed off-limits to oil and gas exploration and development.*

Response: Our planning team has considered the Badlands Area for its ACEC potential. The results of that analysis are summarized in Chapter 3 of the final EIS. The area was evaluated based on its scenery, geologic features, and paleontology. The area overlaps part of the Fifteenmile Creek Watershed which was considered in the draft EIS for ACEC designation. The area also includes lands identified by the National Park Service as potential National Natural Landmarks.

Following the analysis, the Badlands Area was not proposed for ACEC designation in the Proposed RMP. The BLM acknowledges that the scenic resources, geology, and paleontology of

the area are important for public enjoyment, primitive recreation, and education; however, they are not a cause for concern, or at risk of being lost or significantly degraded by surface-disturbing activities. As described in New Appendix 6, there are many ways for BLM to protect scenic values and paleontologic resources through mitigation. This mitigation will be applied in the Badlands Area in response to proposed land-use activities. Generally, the anticipated levels of surface-disturbing activities, including oil and gas development, would continue to be relatively low in the Badlands Area. Opportunities for primitive kinds of recreation would also be protected by BLM's management objective in the Proposed RMP to maintain those opportunities at their current levels. For these reasons, the area does not require an ACEC designation for special management attention or protection. Also see comment responses 16.1 and 25.1.

27. SPECIAL MANAGEMENT AREAS— FIFTEENMILE CREEK WATERSHED PROPOSED ACEC

- 27.1 *Comment: One commentor requested intensified development of cooperative enterprises by the BLM, NRCS, private individuals, and state agencies to control erosion in the Fifteenmile Creek watershed. Methods including the development of structural projects and the use of grazing, off-road vehicle, and vegetation management should be pursued.*

Response: We look forward to these cooperative enterprises and partnerships.

- 27.2 *Comment: Some commentors said that natural geologic processes were the major cause of erosion in the Fifteenmile Creek Watershed, not livestock grazing. One commentor said that none of the alternatives referred to changes in grazing management as a way to address riparian habitat improvement and erosion. The commentor suggested giving incentives for dormant-season grazing because water is often unavailable in winter. The BLM should also consider coordinated resource management in the watershed.*

Response: The erosion in the Fifteenmile Creek Watershed is both natural (geologic) and accelerated (human-caused) and comes from many sources including geological processes, live-

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stock grazing, off-road vehicle use, and wild horse use. In the draft EIS, the planning team was careful not to describe livestock grazing, or any other human-related source of erosion, as responsible for the condition of the watershed.

Since 1986, the Worland District has conducted monitoring studies of comparative watersheds in the Fifteenmile Creek drainage basin to determine the influence of vegetation communities on runoff and erosion. Preliminary findings indicate that runoff and erosion can be reduced if the vegetation is changed from blue grama and cactus, to the bunch grass communities that historically existed in the watershed. These findings suggest the importance of vegetation management for controlling erosion.

The planning team avoided detailed watershed management options in the belief that this would encourage future on-the-ground cooperation and greater flexibility to address concerns. However, the Proposed RMP does encourage dormant-season grazing through utilization objectives. The utilization objectives described on page 255 of the draft EIS indicate that consistent with reasonable grazing practices, 60 percent of the forage can be consumed while the plants are dormant. This is higher than the percentage of vegetation that can be grazed while the plants are growing.

As recommended, the BLM has considered coordinated resource management and working with everyone involved in the Fifteenmile Creek Watershed. Page 74 of the draft EIS stated that BLM would pursue "cooperative management of watershed concerns with the state of Wyoming, local government, private landowners, grazing permittees, and other affected individuals and groups."

Under the Proposed RMP, the Fifteenmile Creek Watershed would not be designated an ACEC. The area is considered to lack relevance for ACEC designation because it is similar to other desert watersheds in the planning area. Its resources, processes, and problems differ mainly in scale. Therefore, the Fifteenmile Creek area does not represent a significant resource, natural system, or process. Another reason for not designating the area is that change is anticipated to occur slowly in a watershed this large. For that reason, the watershed is not endangered, threatened, or vulnerable to adverse change in the near future. Finally, public comments on the draft EIS have sug-

gested that the ACEC designation, in and of itself, might have the effect of interfering with cooperative management. Whatever the reason is for this, local public opinion about the ACEC could make it difficult for BLM to establish partnerships and pursue the common-sense management necessary to improve the watershed. That cooperative management, without the ACEC designation, is still an important objective of the Proposed RMP.

- 27.3** *Comment:* One commentor was worried that the construction of sediment structures in the Fifteenmile Creek watershed would adversely impact the area's naturalness.

Response: Generally, the construction of sediment structures would not be emphasized in the Fifteenmile Creek watershed as explained in comment response 22.1. However, if any structures are built, they would be subject to an environmental analysis and the application of mitigation such as those described in New Appendix 6. The BLM would attempt to maintain the naturalness of the watershed.

28. SPECIAL MANAGEMENT AREAS— MEETEETSE DRAW ROCK ART PROPOSED ACEC

- 28.1** *Comment:* Some commentors expressed concern about the development of interpretive trails in the Meeteetse Draw rock art area because, without proper staffing and supervision, major degradation and vandalism of these sites might occur. One commentor suggested the use of a locked gate like the one at Legend Rock. The same commentor said Native Americans must be full partners in deciding the fate of both Legend Rock and Meeteetse Draw.

Response: We appreciate the concern that development of interpretive trails could lead to additional public use which might be damaging to the rock art. This is one reason we are not pursuing designation of the Meeteetse Draw ACEC in the Proposed RMP, or the development of interpretive trails in the area, without additional consultation and further analyses. (For additional discussion, see Chapter 3 of the final EIS.)

To protect the rock art, the Meeteetse Draw area will be kept isolated and public access will not be acquired, without the preparation of environmental analyses and the appropriate

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involvement of Native Americans. Presently, there is no legal public access into the Meeteetse Draw area that is practical for vehicle use. The BLM will continue periodic surveillance in the area.

- 28.2 **Comment:** *One commentor requested new language in the final EIS to acknowledge bentonite mining as an inevitable use of the land within the Meeteetse Draw area, because of the*

existing mining claims there. The commentor also asked for a definition of "immediate vicinity" — the area surrounding petroglyphs that would be considered for mineral withdrawals.

- Response:** Language has been placed in Chapter 3 of the final EIS citing the valid existing mining claims in the Meeteetse Draw area. The immediate vicinity surrounding petroglyphs would generally include about 20 acres.

GLOSSARY

This Glossary contains definitions from appropriate federal regulations and BLM Manuals, when available, to explain terms used in the final EIS; however, some definitions have been expanded. This was accomplished by adding language after the official definitions, without violating the intent of the regulations or policy. The reasons were to (1) provide greater clarification, (2) describe a broader context for the term as used in the final EIS, or (3) respond to particular public comments.

Some terms printed in the draft EIS have been dropped from this Glossary because the terms are no longer used in this document or have been adequately defined elsewhere in the text.

Activity Plan (Site-Specific Plan): A plan for managing resource uses or values to achieve specific objectives. For example, an allotment management plan is an activity plan for managing livestock grazing use to improve or maintain rangeland conditions. (43 CFR 4100.0-5) Activity plans (also known as implementation plans) consider the management of specific geographical areas in more detail than resource management plans, taking into consideration all the resources and land uses that occur in the area.

Affected Interest: An individual, group, or organization that has submitted a written request to be provided an opportunity to be involved in the decisionmaking process for the management of livestock grazing on specific grazing allotments or has submitted written comments to BLM regarding the management of livestock grazing on a specific allotment. Referred to as "Interested Public" in the current grazing regulations. (43 CFR 4100.0-5)

In this document, the term is used for any individual, group, or organization wanting to be involved in BLM land-use planning and decisionmaking. Also synonymous with "affected or interested citizen" and "affected party." Affected interests may include other federal and state agencies, Native American representatives, and the elected officials of local and state government. The involvement of affected interests would be guided by BLM planning regulations 43 CFR 1610.2 and 1610.3, and the National Environmental Policy Act.

Allotment Categorization: The grouping of livestock grazing allotments into the categories "M" (maintain current condition), "I" (improve current condition), and "C" (manage custodially while protecting existing resource values). The criteria that determine the allotment categorization are described in Appendix G of the draft EIS.

Allotment: An area of land designated and managed for the grazing of livestock. An allotment may include intermingled private, state, public, and other federally-administered lands that are administered for grazing.

Animal Unit Month (AUM): The amount of forage necessary for the sustenance of one cow or its equivalent for a period of one month. (43 CFR 4100.0-5)

Anticline: A dome-like geologic structure comprised of folded rocks that may contain oil and/or) gas.

Area of Critical Environmental Concern (ACEC): An area within the public lands designated for special management attention 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. According to 43 CFR 1601.0-5a, "The identification of...[an] ACEC shall not, of itself, change or prevent change of the management or use of public lands."

Candidate Species: The US Fish and Wildlife Service considers "Candidate Species" to be animals and plants for which there is sufficient information on biological vulnerability and threats to support being listed as threatened or endangered species. (Also see "Species-at-Risk.")

Carrying Capacity: According to grazing regulations (43 CFR 4100.0-5), livestock carrying capacity is the maximum stocking rate possible without inducing damage to vegetation or related resources. It may vary from year to year on the same area due to fluctuating forage production. In this final EIS, the term carrying capacity (instead of "livestock carrying capacity") is used to reflect the **maximum level of grazing and all other concurrent uses** that public lands can sustain on a long-term basis.

Composition: The percentages of various plant species in a plant community.

Coordinated Resource Management (CRM): A management approach which has an overall goal of reaching agreement among affected land users on natural resource issues, and which improves natural resource values and promotes quality resource management through collaborative efforts. (Wyoming n.d.)

Cover: The material covering the soil and providing protection from, or resistance to, the impact of raindrops and the energy of water flowing over the surface of the land; expressed in percent of the area covered. Cover is composed of vegetation, plant litter, and rocks.

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Crucial Winter Habitat: Winter habitat that a wildlife species depends upon for survival, especially during severe winter weather conditions. Alternative habitat areas would be very limited or unavailable because of severe weather conditions or other limiting factors.

Desired Plant Community: A plant community which meets resource management plan objectives.

Disruptive (or Human-Presence Disturbance) Activities: The physical presence, sounds, and movements of people and their activities (on, below, or above the land surface) whether on foot, riding animals, or using mechanized or motorized vehicles or equipment. (Also see "Permanent Disruptive Activities.")

The bulk of the concern for mitigation of disruptive activities is associated with the effects of human presence and activity on wildlife. That is, the effect that human presence, movements and sounds (including those of the equipment used) may have on the well-being of wildlife during critical life-cycle stages (breeding, nesting, birthing), or during periods of severe weather conditions (severe winter storms, long periods of severe cold or deep snow conditions), when forage or habitat are severely limited, and when the animals are under high stress and depleted body-energy conditions.

Harassment of wildlife from human presence, movements, or sounds during these kinds of periods and conditions can cause excessive and unnecessary impacts, including mortality, fetal abortion, and abandonment of young. While these types of activities can be associated with the performance of surface-disturbing activities, they are not exclusive to that.

Disruptive activities can also be associated with effects to other resources, such as excessive or adverse influences and effects of human presence or modern society's imprint on areas of highly primitive, seclusive, scenic, or historic value.

Biological Diversity: The variety of life and its processes. Although vastly complex, it includes some measurable distinctions like genetic differences within and among species, species variations, associations of species with each other and their environments, and the patterns and linkages of these biological communities across geographical areas. (Keystone Center 1991.) According to West (1993) "biological diversity is the variety of life and its processes, including the variety of living organisms, the genetic differences among them, the communities, the ecosystems, and landscapes

in which they occur, plus the interactions of these components. Some [authorities] would add the local peoples, their culture, and their 'indigenous knowledge' to the list...."

Ecological Area: As used in conjunction with fire management, an ecological area reflects a certain plant community or communities and the potential resource needs and land uses that would be dependent on those communities. These areas would be treatable by fire to meet desired plant community objectives, increase biological diversity, protect watersheds, and provide forage for wildlife and livestock.

Edge Effect: The effect of ecological boundaries on plants and animals. These boundaries are usually transitions between vegetative communities and often separate other environmental factors like the amount of sunlight and moisture, soil and air temperature, and wind speed. These boundaries are caused by human and/or natural forces. Edge effects can be either positive or negative for different types of wildlife. For example, mule deer benefit from edge effect but animal populations that depend on forest interiors would decline if forest habitats are broken up by wildfire, road building, or clearcutting.

Ephemeral Stream: A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table. Confusion over the distinction between intermittent and ephemeral streams may be minimized by applying Meinzer's suggestion that the term "ephemeral" be arbitrarily restricted to streams that do not flow continuously for at least 30 days (BLM Technical Reference 1737-9, 1993). Ephemeral streams support riparian areas when stream-side vegetation reflects the presence of permanent subsurface water.

Exception: Case-by-base exemption to an oil and gas lease stipulation. The stipulation would continue to apply to all other areas on the lease where the restriction is necessary.

Forage: Browse and herbaceous foods that are available to grazing animals.

Forb: A flowering plant whose aboveground stem does not become woody and is not grass nor grasslike.

Full Suppression: A strategy for extinguishing fires that requires immediate and continuous aggressive attack in the safest, most cost-effective manner, with the least amount of property damage or resources lost. Full suppression may include control, containment, or confinement of a wildfire to meet land management objectives.

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- Functional-At-Risk:** Riparian...areas that are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation. (BLM Technical Reference 1737-9, 1993)
- Geosynthetic Materials:** The generic classification of all synthetic materials used in geotechnical engineering applications; it includes geotextiles, geocells, geogrids, geomembranes, and geocomposites. (Industrial Fabric Assoc. International, 1990.)
- Geotechnical Engineering:** The application of civil engineering technology for the use of soil or rock as construction material. (Industrial Fabric Assoc. International, 1990.)
- Geotextile:** Any permeable textile used with foundation, soil, rock, earth, or any other geotechnical engineering-related material as an integral part of a human-made project, structure, or system. (Industrial Fabric Assoc. International, 1990.)
- Historic Properties:** A historic property as defined by 36 CFR 800.2(e) means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register. This term includes, for the purposes of these regulations, artifacts, records, and remains that are related to and located within such properties. The term eligible for inclusion in the National Register includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria.
- Holistic Planning (Holistic Resource Management [HRM]):** According to the Meeteetse Conservation District, Holistic Resource Management is "the action of a community to develop, define, and apply community goals, objectives, and policies that reflect their community quality of life, landscape description, and forms of production, and to achieve and maintain the community goals, objectives and [policies] through the acknowledgment of the ecosystem processes, and the application of the tools, human creativity and money and labor, and to recommend the testing and management guidelines for equitable community development, and to monitor, control, and re-plan through an open and collaborative process as the community changes over time."
- Hydromulch:** A mulch applied in a water slurry. This same slurry may also contain items such as seed, fertilizer, erosion-control compounds, growth regulators, and soil amendments.
- Interdisciplinary:** Characterized by participation or cooperation among two or more disciplines or fields of study. As required by 40 CFR 1502.6, an interdisciplinary approach shall be used in the preparation, amendment, and revision of resource management plans.
- Intermittent Stream:** A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. Confusion over the distinction between intermittent and ephemeral streams may be minimized by applying Meinzer's (1923) suggestion that the term "intermittent" be arbitrarily restricted to streams that flow continuously for periods of at least 30 days. (BLM Technical Reference 1737-9, 1993)
- Key Area:** A relatively small area that reflects or has the capability to reflect the effectiveness of management on the resources of a larger area. Depending on management objectives, a key area may be a representative sample of a large stratum, pasture, allotment, or a particular management area or it may be representative of specific areas requiring unique management ([that is], threatened or endangered species habitat). Monitoring studies are located within key areas and are established at the frequency and intensity needed to determine whether resource objectives are being accomplished or to identify the presence of absence of conflicts or issues. (BLM Manual H-4401-1)
- Key Species:** Generally important components of a plant community or ecological site. Key species serve as indicators of change and may or may not be forage species. More than one key species may be selected for a stratum depending on management objectives and data needs. In some unique cases, poisonous plants or noxious weeds may be selected as key species. (BLM Manual H-4400-1)
- Limited to Designated Roads and Trails:** Public lands where ORV use would be allowed on some roads and trails but not on others. The RMP will identify these general areas but will not prescribe specific roads and trails to be opened or closed. This will be accomplished after completion of the RMP through analysis of detailed information and with public participation. (Also see "Off-Road Vehicle.")
- Limited to Existing Roads and Trails:** Public lands where ORV use would be allowed on all existing roads and trails. It is not intended for "existing roads and trails" to include any roads or trails created, after the completion of Grass Creek RMP, by the off-road use of motorized vehicles. (Also see "Off-Road Vehicle.")

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Limited Suppression: A fire strategy used when full control of a fire is extremely difficult or when resource values do not warrant the expense associated with full suppression.

Livestock Carrying Capacity: See "Carrying Capacity."

Mitigation: Methods used to prevent or reduce adverse effects to resources that might be caused by surface-disturbing or other disruptive activities.

Modification: Fundamental change to the provisions of an oil and gas lease stipulation, either temporarily or for the term of the lease. A modification may, therefore, include an exception from or alteration to a stipulated requirement. Depending on the specific modification, the stipulation may or may not apply to all other areas on the lease.

Monitoring: The periodic observation and orderly collection of data to evaluate: (1) effects of management actions, and (2) effectiveness of actions in meeting management objectives. (43 CFR 4100-05).

No Surface Occupancy (NSO): The term "no surface occupancy" (NSO) is used in two ways. It is used in one way to define a no surface occupancy area where no surface-disturbing activities, of any nature or for any purpose, would be allowed. For example, construction or the permanent or long-term placement of structures or other facilities for any purpose would be prohibited in an NSO area.

The other way the "no surface occupancy" term is used is as a stipulation or mitigation requirement for controlling or prohibiting selected land uses or activities that would conflict with other activities, uses, or values in a given area. When used in this way the NSO stipulation or mitigation requirement is applied to prohibit one or more specific types of land and resource development activities or surface uses in an area, while other—perhaps even similar—types of activities or uses (for other purposes) would be allowed. For example: Protecting important rock art relics from destruction may require closing the area to the staking of mining claims and surface mining, off-road vehicle travel, construction or long-term placement of structures or pipelines, power lines, general purpose roads, and livestock grazing. Conversely, the construction of fences to protect the rock art from vandalism or from trampling or breakage by livestock, an access road or trail, and other visitor facilities to provide interpretation and opportunity for public enjoyment of the rock art would be allowed. Further, if there were interest in development of leasable minerals in the area, leases for oil and gas, coal, and so forth, could be issued with a "no

surface occupancy" stipulation or mitigation requirement for the rock art site, which would still allow access to the leasable minerals from adjacent lands and underground.

The term "no surface occupancy" has no relationship or relevance to the presence of people in an area.

Notice: Notification, in the form of a letter, submitted by a mining claim operator to the BLM, for operations that will cause a cumulative surface disturbance of 5 acres or less during any calendar year. This notification must be made at least 15 calendar days before the operations begin. Approval of a notice by the BLM is not required.

Off-Road Vehicle: Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies. (43 CFR 8340.0-5)

Old-Growth Forest: A forest stand usually over 180 years old, characterized by (1) moderate to high canopy closure, (2) a multilayered, multispecies canopy dominated by large overstory trees, (3) a high incidence of large trees, some with broken tops and other indications of old and decaying wood, (4) numerous large snags, and sometimes (5) a heavy accumulation of wood, including large logs on the ground.

Perennial Stream: A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow. (BLM Technical Reference 1737-9)

Permanent Disruptive Activities: Long-term activities including physical presence, sounds, and movements of people and their activities (on, below, or above the land surface) whether on foot, riding animals, or using mechanized or motorized vehicles or equipment. A permanent disruptive activity might also be short term if it involves disruption during an important time period such as when wildlife are migrating, giving birth, or dependent on crucial winter habitat. The same activity would not be permanently disruptive if it occurred in other seasons, or adverse effects could be mitigated by conducting the activity only during certain hours of the day. (Also see "Disruptive (or Human-Presence Disturbance) Activities.")

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- Potential Natural Vegetative Community:** A vegetative community that would become established in a specific area if ecological succession was completed without interference by humans. According to the Society for Range Management Glossary (1989), "...natural disturbances are inherent in the development of the potential natural community. The potential natural community may include acclimatized or naturalized non-native species...."
- Prescribed Fire:** Application of fire (by planned or unplanned ignition) to wildland fuels in either their natural or modified state, under specified conditions to allow the fire to burn in a predetermined area while producing the fire behavior required to achieve certain management objectives.
- Primitive Recreation:** As used in this document, the terms "primitive kinds of recreation" and "primitive recreation" are used to describe the types of recreational activities available on about 62,270 acres classified as *semiprimitive nonmotorized recreation* in BLM's *recreation opportunity spectrum*.
- Proper Functioning Condition:** Riparian areas are functioning properly when adequate vegetation, land forms, or large weedy debris are present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bedload and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl, breeding, and other uses; and support greater biodiversity. The functioning condition of riparian areas is a result of interaction among geology, soil, water and vegetation.
- Public Lands:** Any land or interest in lands owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management, except lands located on the outer Continental Shelf and lands held for the benefit of Indians, Aleuts, and Eskimos. (43 CFR 1601.0-5)
- Range Condition:** The existing state of range vegetation in an area described in comparison to the natural potential plant community for that area. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the potential natural vegetation in that area.
- Range Improvement:** An authorized physical modification or treatment which is designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; and restore, protect, and improve the condition of rangeland ecosystems to benefit livestock, wild horses and burros, and fish and wildlife. The term includes, but is not limited to, structures, treatment projects, and use of mechanical devices or modifications achieved through mechanical means. (43 CFR 4100.0-5)
- Range improvements might also include the use of livestock grazing and other biological techniques.
- Range Site:** A kind of land with specific physical characteristics which differ from other kinds of lands in its ability to produce distinctive kinds and amounts of vegetation and in its response to management. (Society of Range Management Glossary, 1989)
- Rangeland Vegetation Inventory:** The data collected from range site condition mapping.
- Recreation Opportunity Spectrum:** A way to characterize recreation opportunities in terms of setting, activity, and experience opportunities. Four of six total classes are represented on BLM-administered public lands in the planning area. These are *semiprimitive nonmotorized*, *semiprimitive motorized*, *roaded natural*, and *rural*. Also see "Primitive Recreation."
- Rest-Rotation:** A prescribed pattern of grazing use that provides sequential rest for various parts of the range unit for at least one year.
- Right-of-Way Concentration Area:** Public lands where rights-of-way are concentrated and where the placement of future rights-of-way would be favored over lands that are currently unaffected by these disturbances.
- Right-of-Way Corridor:** Public lands where rights-of-way are concentrated and where the placement of future rights-of-way would be favored over lands that are currently unaffected by these disturbances. The designation of right-of-way corridors would be used to facilitate the regional development of major rights-of-way, by linking right-of-way concentration areas between planning areas.
- Riparian:** 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 influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typical riparian areas. (See BLM Manual 1737.)

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Included are ephemeral streams that have vegetation dependent upon free water in the soil. All other ephemeral streams are excluded.

Roaded Natural: One of the six classes of the *recreation opportunity spectrum*. Roaded natural areas offer about equal recreational opportunities for affiliation with other user groups or isolation from sights and sounds of human activities. Such areas provide the opportunity for visitors to have a high degree of interaction with the natural environment. Challenge and risk opportunities are not very important except in specific challenging activities. The practice of outdoor skills may be important. Opportunities for both motorized and nonmotorized recreation are present.

Rural: One of the six classes of the *recreation opportunity spectrum*. In rural areas, opportunities to experience recreation in affiliation with individuals and groups are prevalent, as is the convenience of recreation sites. These factors generally are more important than the natural setting. Opportunities for wildland challenges, risk taking, and testing of outdoor skills are unimportant except in activities involving challenge and risk.

Season of Use: The part of the year in which livestock are authorized to graze in a given year.

Seasonal Requirement: A type of mitigation prohibiting surface use during a specific time period to protect identified resource values.

Semiprimitive Motorized: One of the six classes of the *recreation opportunity spectrum*. Semiprimitive motorized areas offer some opportunities for isolation from the sights and sounds of human activities, but not as much as with opportunities for semiprimitive nonmotorized recreation. Use of these areas involves the opportunity for visitors to have a high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills. Such an area provides an explicit opportunity to use motorized equipment while in the area.

Semiprimitive Nonmotorized: One of the six classes of the *recreation opportunity spectrum*. Semiprimitive nonmotorized areas offer opportunities for isolation from the sights and sounds of human activities. Use of these areas involves the opportunity for visitors to have a high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills.

Seral Stage: The present state of vegetation of a range site in relation to the potential natural community

for the site. Vegetation status is the expression of the relative degree to which the kinds, proportions, and amounts of plants in a community resemble those of the potential natural community. The classes are potential natural community, late seral, mid-seral, and early seral.

Species-at-Risk: The US Fish and Wildlife Service considers species-at-risk to be animals and plants for which there is sufficient information that listing as threatened or endangered may be appropriate but persuasive data on biological vulnerability and threats are not currently available. (Also see "Candidate Species.")

Surface-Disturbing Activities (or Surface Disturbance): The physical disturbance and movement or removal of the land surface and vegetation. It ranges from the very minimal to the maximum types of surface disturbance associated with such things as off-road vehicle travel or use of mechanized, rubber-tired, or tracked equipment and vehicles; some timber cutting and forest silvicultural practices; excavation and development activities associated with use of heavy equipment for road, pipeline, power line and other types of construction; blasting; strip, pit and underground mining and related activities, including ancillary facility construction; oil and gas well drilling and field construction or development and related activities; range improvement project construction; and recreation site construction.

Mitigation of surface-disturbing activities centers around surface reclamation and the control and prohibition of surface uses. Mitigation is associated with concerns for such things as movement of disturbed or denuded soil (by water, air, or gravity); erosion; water quality (sedimentation, salinity, pollution); wildlife habitat (vegetative and spacial, aquatic or terrestrial); vegetative composition, cover or productive capacity (quality, quantity) for consumptive and nonconsumptive uses (grazing, scenic values, watershed stability); surface and subsurface cultural and paleontological values; and other subsurface values (cave or karst systems, aquifers).

Tackifiers: Organic and inorganic chemical products applied in water solutions to lightweight mulches to hold them in place.

Trend: The direction of change over time, either toward or away from desired management objectives. (43 CFR 4100.0-5)

Utilization: The portion of forage that has been consumed [or destroyed] by livestock, wild horses and

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burros, wildlife, and insects during a specified period. The term is also used to refer to the pattern of such use. (43 CFR 4100.0-5)

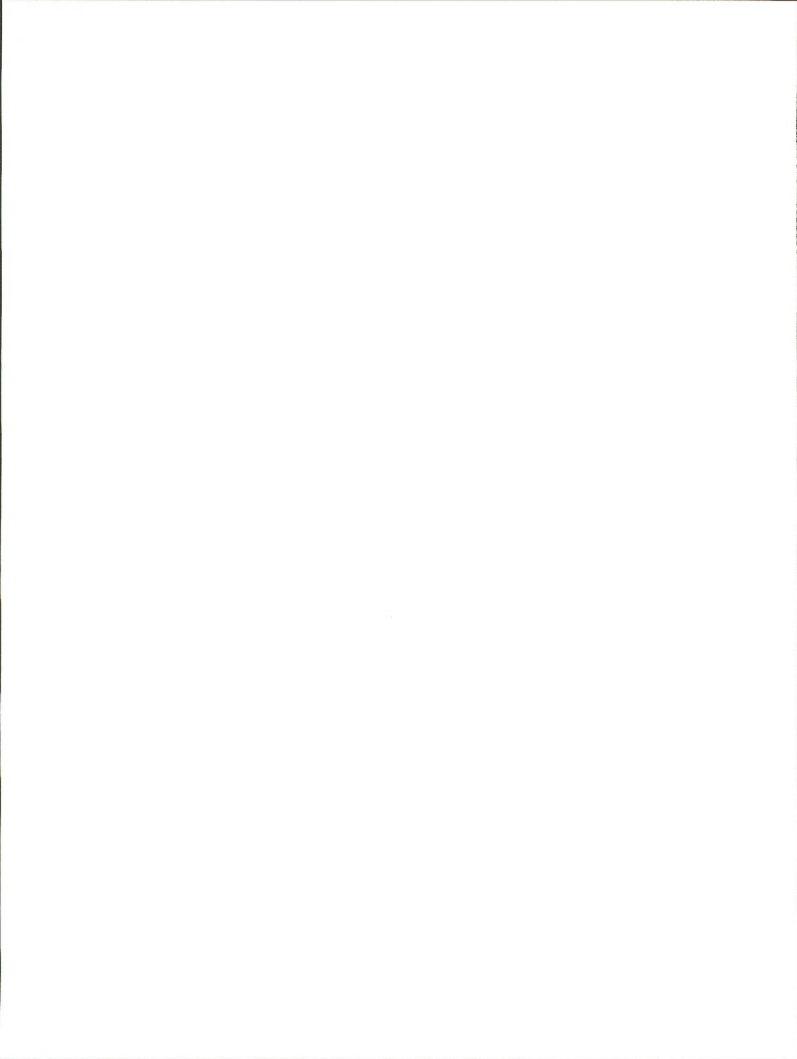
As used in this document, the term "combined utilization" highlights the cumulative effect on vegetation from all land uses and environmental factors.

Visual Resource Management (VRM): The planning and implementation of management objectives for maintaining visual quality and scenic values on public lands. Visual resource management classes determine the amount of change that would be allowed to basic elements of the landscape. Three (of the five) VRM classes are identified in the Grass Creek Planning Area: In Class II areas, changes in basic elements of the landscape can be evident but must not attract attention. In Class III areas, changes in the basic elements of the landscape can be evident but must remain subordinate to the

existing landscape. In Class IV areas, changes in the basic elements of the landscape can attract attention and may be dominant features of the landscape in terms of scale, but the changes should repeat the form, line, color, and texture of the characteristic landscape.

Waiver: Permanent exemption from an oil and gas lease stipulation.

Wetland: An area inundated or saturated by surface or ground water 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) As used in the final EIS, "wetland" is an ecological term. No specific legal or jurisdictional connotations are implied.



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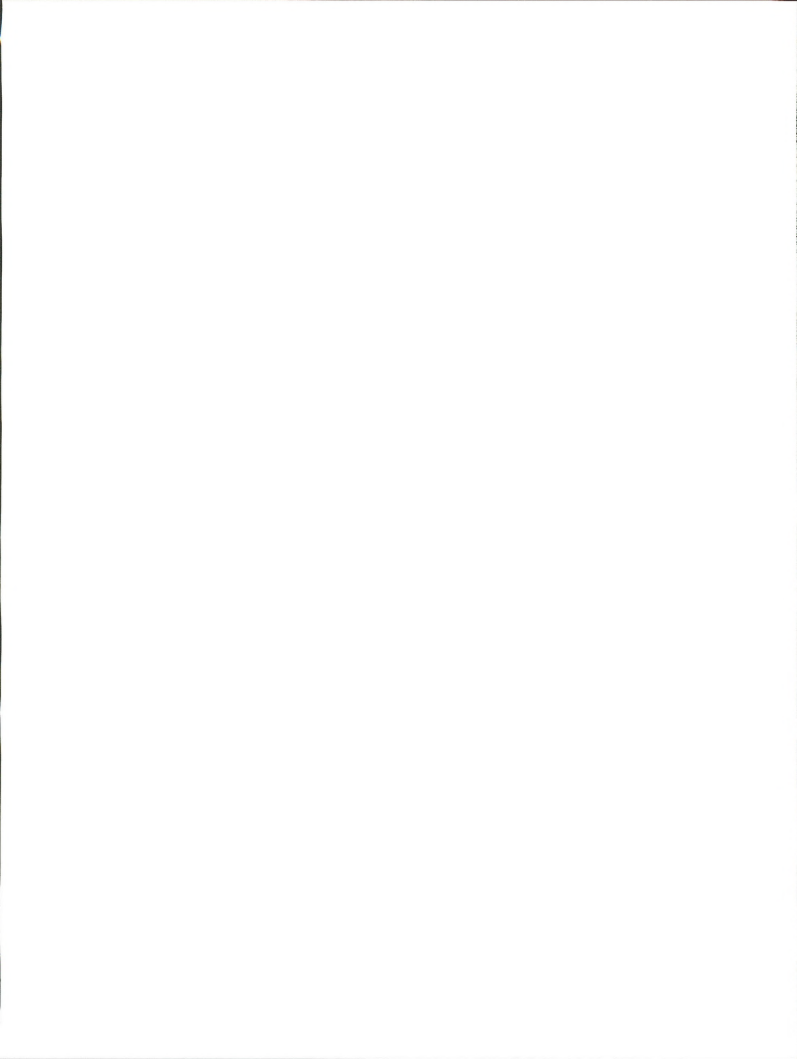
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REVISED APPENDIX 3

LIVESTOCK GRAZING MANAGEMENT

INTRODUCTION

This appendix has been revised from Appendix 3 which was published in the Grass Creek draft RMP EIS. None of the tables from that previous appendix have been reprinted, however, most of the information that was contained in Appendix 3, including the tables, continues to serve as a basis for the environmental analysis conducted in this final EIS. One exception is the broad suitability information, and the comparisons based on that information, in columns D, E, and F of Table 3-5. As explained in one of BLM's responses to public comments, the planning team no longer considers this broad suitability information to be a valid part of the environmental analysis for the RMP. While the other grazing management information contained in the draft and final EIS documents is an important part of the environmental analysis for the RMP, it is not sufficient by itself, or intended to represent the sole basis, for making on-the-ground management decisions in BLM-administered grazing allotments.

The authority for managing livestock grazing on public lands is provided by the Taylor Grazing Act of 1934, the Federal Land Policy and Management Act of 1976, and the Public Rangelands Improvement Act of 1978.

COMPONENTS OF THE LIVESTOCK GRAZING MANAGEMENT PROGRAM

1. Administration - Processing and transferring grazing permits, compiling and issuing grazing bills, record keeping, data reporting, and responding to public inquiries are the key elements of program administration.
2. Grazing Management - Through consultation with livestock permittees and other affected interests, range management objectives and strategies are established and range projects are developed to maintain or improve rangeland resources.
3. Monitoring - Rangeland trend, use of forage, duration and season of grazing, and precipitation data are recorded. This data is used to evaluate the effects of grazing on rangeland ecosystems and to determine the carrying capacity of grazing allotments.
4. Supervision - Public lands are periodically inspected to assure compliance with authorized grazing permits.

ALLOTMENT CATEGORIZATION

A selective management process was developed to assign priorities for range management in the planning area. Each grazing allotment was placed in one of three categories: "C" Custodial, "I" Improve, or "M" Maintain. Resource conditions and conflicts, the potential for resources to improve, the economic return, and the current management approach are considered. The following criteria are used to assign allotments to the management categories. Allotment categories can change based on new resource information.

CATEGORY "C" (CUSTODIAL MANAGEMENT)

The objective is to manage lands in a custodial manner that will prevent deterioration of current resource conditions.

The criteria are:

- The current range condition and potential varies, but the trend is static or upward.
- Opportunities for positive economic return on public investments are minor.
- Conflicts between livestock grazing and other resources on public land are minor.
- Intensive monitoring is not warranted because of the lack of issues.

CATEGORY "I" (IMPROVE)

The objective is to improve resource conditions and productivity to enhance overall multiple-use opportunities.

The criteria are:

- Intensive management for other resources such as wildlife and watershed is necessary even though allotment condition associated with livestock grazing is satisfactory.
- Current grazing management practices need modification to meet resource objectives.
- The allotment is not producing at or near its potential.
- Resource values on public land may be adversely affected by the current livestock use.

- Intensive monitoring is required to address resource issues, conflicts, or declining trend; or to verify that an improved trend is continuing based on new management actions.
- Opportunities for positive economic return from public or private investment may exist.
- Current range condition may be unsatisfactory and trend is static or downward.

CATEGORY "M" (MAINTAIN)

The objective is to maintain or improve the existing resource conditions and productivity.

The criteria are:

- The present range conditions are satisfactory and existing management is expected to maintain or improve conditions.
- The allotment is producing at or near its potential.
- Conflicts with livestock grazing are minor.
- Intensive monitoring is not warranted or management has been changed and intensive monitoring is needed to verify that satisfactory conditions will be maintained.
- Opportunities for positive economic return from public or private investment may exist.

VEGETATION INVENTORY

An ecological site inventory of the Grass Creek Planning Area was conducted from June 1977 to October 1979. Since 1983, approximately 35,000 acres have been evaluated and updated through range monitoring. Ecological condition classes are determined by comparing the present plant community with that of the potential natural community as indicated by the Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service) range condition guide for the site. Four classes are used to express the degree that a present plant community reflects its potential natural community. For example, if the seral stage or ecological status represents 76 percent to 100 percent of the potential natural community, the plant community is described as "potential natural community"; 51 percent to 75 percent of the potential natural community is "late seral"; 26 percent to 50 percent is "mid seral"; and 0 percent to 25 percent is "early seral." Woodlands, forests, barren, and alpine areas are not classified in this system.

PLANNING AREA MONITORING PLAN

INTRODUCTION

Monitoring is used to determine whether management actions are meeting goals and objectives established for allotments.

The *Wyoming Rangeland Monitoring Handbook (H-4423-1)* establishes when, where, and how studies will be conducted, as well as the types of data to be collected, how the data will be evaluated, and who will participate in the process. The method, amount, and intensity of monitoring for each allotment will depend on allotment category and objectives, resource values, staff availability, and funding. Monitoring data will be stored in the Bighorn Basin Resource Area allotment files.

High-intensity monitoring will be implemented in the "I" category allotments on a priority basis. Low-intensity monitoring studies will be carried out on "M" and "C" category allotments. This data will determine the effects of management actions on rangeland resources and provide quantifiable data needed to enable the authorized officer to enter into agreements or issue decisions to assure that allotment objectives are achieved. High-intensity monitoring includes actual use, utilization, climate, and trend. Low-intensity studies are those that detect undesirable changes in existing range condition, that could warrant reevaluation of the priority or category for that allotment. At a minimum, such studies include an allotment inspection at least every five years.

ACTUAL USE

Dates, numbers, and kinds of livestock grazed in an allotment comprise actual use. The information may be reported by permittees and verified by BLM livestock counts. Actual use by wildlife can be obtained from aerial or ground observations.

UTILIZATION

Utilization is the percentage of forage that has been consumed or destroyed during a specific period. By comparing measured utilization with appropriate use levels for key forage plants, and by comparing utilization with actual use, climate, and trend data, short- and long-term stocking level adjustments can be made.

Utilization monitoring provides an index to the amount of the current year's standing crop that remains on the range following grazing. This standing crop helps maintain soil productivity, livestock diet quality, wildlife habi-

tat, and forage plant vigor. Utilization data will be collected on key forage plants in key areas along permanent transects. Additional utilization data, such as maps showing patterns of use, may be collected to provide an estimate of forage utilization on a pasture or allotment.

Utilization will be measured on the standing vegetation in a pasture or allotment. When practical, the times for measuring utilization will be agreed upon by the BLM and livestock grazing permittees, or otherwise will be consistent with federal regulations and BLM policy.

The utilization levels described in Table 3-6 of the draft EIS and Revised Table 2 of the final EIS are generally considered to be appropriate for the precipitation levels, vegetative communities, and grazing seasons encountered in the Grass Creek Planning Area. These utilization levels will be considered during the development of allotment management plans, and will be linked to precipitation and vegetative community information which is also collected and considered site-specifically. The utilization levels apply to key forage plants in upland areas (not riparian areas). Some exceptions will occur. Data from several studies indicates that light use in wet years will compensate for some overuse in dry years (Holechek, et al., 1989). Although utilization levels may vary from year to year, utilization levels which consistently exceed those shown in Table 3-6 and Revised Table 2 would not be expected to meet watershed and vegetation management objectives. Specialized grazing management, such as short duration-high intensity grazing, may require utilization levels different than those cited.

There are few guidelines on appropriate use levels in riparian areas that would maintain ecosystem integrity (USDA, Forest Service 1989). Because these communities are so variable in the planning area, recommendations on utilization levels for riparian areas will be developed in site-specific activity plans.

CLIMATE AND TREND

Climate and actual use information help with the interpretation of utilization data. One way to determine trend is to establish permanent vegetation studies and photo records that can be used periodically to show changes over time as a result of grazing management.

Trend studies, climatic data, actual use, utilization and information from other studies will be used to evaluate the effectiveness of present grazing management over time, and to make necessary adjustments in grazing use. Other monitoring studies include plant phenology, and studies of range readiness and forage production.

KEY AREA AND KEY SPECIES SELECTION

A key area may represent an entire pasture or some other specific area depending on the management ob-

jectives. Riparian areas, important wildlife habitat, or a preferred grazing area with heavy use are examples of specific areas. Key areas will be selected by consulting with permittees and other affected parties when activity plans are developed. A key species is relatively or potentially abundant and serves as an indicator of changes occurring in the vegetative community. Several key species could be selected and may be important for watershed, wildlife, or livestock.

ACTIVITY PLAN IMPLEMENTATION

In cooperation with the permittees and other affected interests, BLM would develop and update activity or implementation plans, including allotment management plans, with priority for "I" category allotments.

Each activity plan would: (1) identify general goals based on the RMP; (2) determine existing conditions and resource issues; (3) specify measurable resource objectives; (4) specify management actions designed to achieve resource objectives; (5) identify how progress towards achieving goals and objectives would be monitored; and (6) specify how and when evaluations would be conducted. Interdisciplinary coordination and involvement by affected and interested parties would ensure multiple-use management.

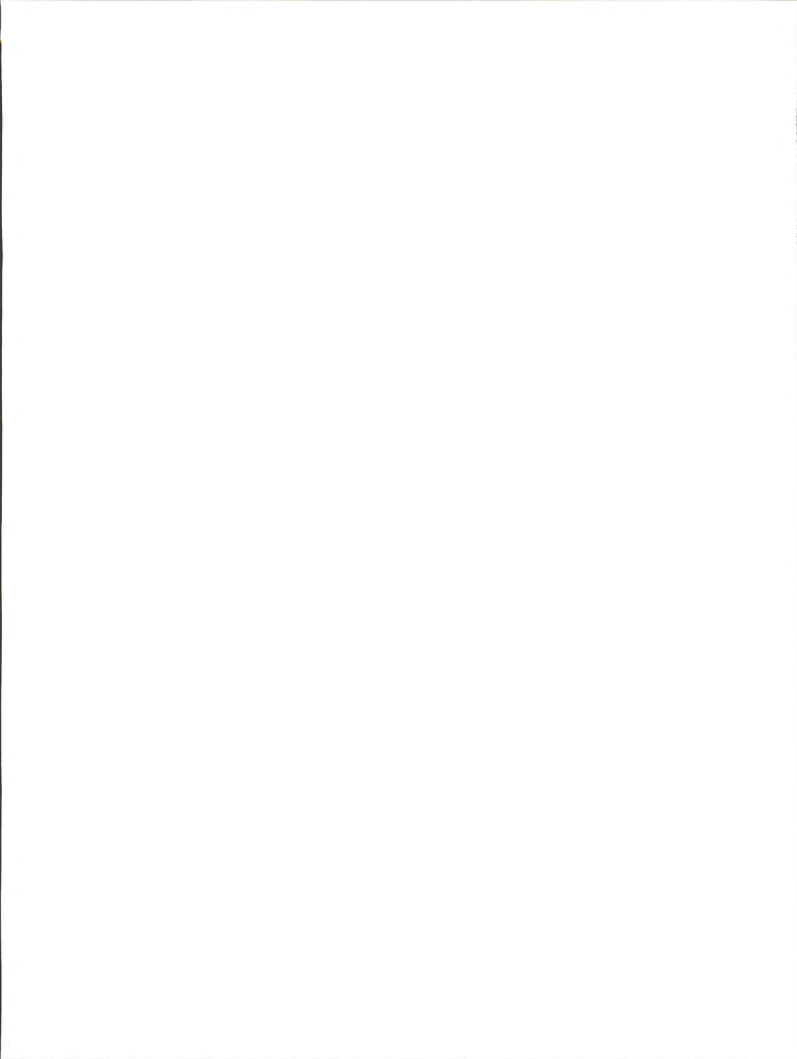
GRAZING STRATEGIES

Grazing strategies are based on livestock management needs and the phenology and physiological requirements of key forage plants. The BLM, the permittees, and other affected interests would design grazing strategies based on: (1) livestock handling requirements and economic considerations of the permittee; (2) the development of range projects that enhance the grazing strategy; (3) the current and the desired future condition of the allotment; and (4) establishing the sequence and timing of grazing and resting periods needed to achieve management objectives.

PROCEDURES FOR RANGE DEVELOPMENT PROJECTS

Range projects would be developed with grazing management strategies to achieve resource management objectives. Normally these objectives would be developed in activity plans. Typical projects would be fences, wells, springs, reservoirs, pipelines, catchments, troughs, tanks, and cattle guards and plant treatments such as herbicide application, and prescribed burning.

A number of range projects have been constructed for the enhancement and protection of watershed and wildlife values and for the management of livestock grazing. Many of these projects are vegetative manipulations, water developments, and fencing projects.



NEW APPENDIX 5

ECONOMICS

INTRODUCTION

This appendix describes the economic contributions of resource management and development in the planning area. The following resources and land uses are highlighted: forestlands; livestock grazing; coal, oil and gas;

and recreation. For this appendix, the BLM provided estimates of commodity development and other land uses for the 1990 base year and the 1991 through 2005 planning analysis period. From these estimates the University of Wyoming, College of Agricultural Economics, calculated the dollar impacts of these activities.

FORESTLAND RESOURCES

The final EIS uses the same assumptions about forestland management as the draft EIS. The overall objective is to maintain forestland health. Generally, the health of forestlands in the planning area has stayed the same or improved slightly with an historic harvest level of about 400 thousand board feet annually. As indicated on page 155 of the draft EIS, that was the volume of forest products harvested in 1990. Under the Proposed RMP and Alternative A, about 6 million board feet could be harvested during the 15-year analysis period on public land. This amount could be about 10 million board feet under Alternative B and 4 million board feet under Alternative C.

These are assumptions for analysis only. They do not reflect "allowable cut" decisions. Actual harvest levels could vary from year-to-year under the Grass Creek RMP. The identification of specific harvest areas, levels, techniques, and mitigation measures will be identified through site-specific evaluations and consultation with the timber industry and other affected or interested citizens.

As described in Revised Table 15, it is assumed that the annual harvest levels of sawlogs on lands not administered by BLM remained constant during 1991 through 1993 and would also remain constant during 1999 through 2005 at a level of about 500 thousand board feet annually. During 1994 through 1998, harvest levels on these lands could increase sharply to about 4 to 5 million board feet of sawlogs annually. The annual harvest levels for posts, poles, and firewood would remain constant throughout the analysis period at the 1990 level.

The production of one thousand board feet of timber (including sawlogs, posts, and poles) would result in a

total contribution to the local economy of \$768.59 (including both direct and indirect impacts). Total personal income would be \$164.38 supporting 0.009995 jobs.

New Tables 5-1 through 5-3 show the economic impacts of timber harvests by alternative for sawlogs and posts and poles. No economic impact is described for firewood. Firewood collected for individual use could have some impact on the local economy because it would reduce the demand for commercially-produced firewood.

The impact, however, is considered to be minimal.

During the analysis period, timber harvesting under the Proposed RMP and Alternative A on all lands in the planning area would generate about \$26.5 million in total economic activity, including about \$5.7 million in personal income, and support approximately 345 jobs (representing an average of 23 jobs per year). These totals would include about \$4.0 million in total economic activity, \$900,000 in personal income (rounded to the nearest 100,000), and 52 jobs on public lands (representing an average of 4 jobs per year).

During the analysis period, timber harvesting under Alternative B on all lands in the planning area would generate about \$29.6 million in total economic activity, including about \$6.3 million in personal income, and support approximately 385 jobs (representing an average of 26 jobs per year). These totals would include about \$7.1 million in total economic activity, \$1.5 million in personal income, and 92 jobs on public lands (representing an average of 6 jobs per year).

During the analysis period, timber harvesting under Alternative C on all lands in the planning area would generate about \$25.0 million in total economic activity, including about \$5.3 million in personal income, and support approximately 325 jobs (representing an average of 22 jobs per year). These totals would include about \$2.5 million in total economic activity, \$500,000 in personal income, and 33 jobs on public lands (representing an average of 2 jobs per year).

LIVESTOCK GRAZING MANAGEMENT

NEW ANALYSIS IN THE FINAL EIS

The draft EIS used broad "suitability" criteria to estimate future grazing levels. However, many people misunderstood these projections because of some incorrect comparisons made in Table 17 of the draft EIS.

To address these concerns, the final EIS contains several editorial changes on suitability, and the concept is not used for estimating future grazing levels. New Table 5-4 shows projected livestock grazing actual use as revised from Table 17. New Tables 5-5 through 5-8 show the resulting economic impacts of livestock grazing by alternative.

ECONOMIC IMPACTS

Each AUM of livestock grazing would result in a direct expenditure of \$32.43 and an associated total contribution to the local economy of \$77.11 (including both direct and indirect impacts). Total personal income would be \$16.99 supporting 0.001343 jobs.

Livestock grazing on public lands accounts for about 59 percent of the total grazing within BLM-administered grazing allotments.

During the analysis period, livestock grazing under the Proposed RMP on all lands within BLM-administered grazing allotments would generate about \$149 million in total economic activity, including about \$32.9 million in personal income, and support approximately 2,602 jobs (representing an average of 174 jobs per year). These totals would include about \$88.2 million in total economic activity, \$19.4 million in personal income, and 1,535 jobs on public lands (representing an average of 102 jobs per year).

During the analysis period, livestock grazing under Alternative A on all lands within BLM-administered grazing allotments would generate about \$155 million in total economic activity, including about \$34.2 million in personal income, and support approximately 2,700 jobs (representing an average of 180 jobs per year). These totals would include about \$91.5 million in total economic activity, \$20.2 million in personal income, and 1,593 jobs on public lands (representing an average of 106 jobs per year).

During the analysis period, livestock grazing under Alternative B on all lands within BLM-administered grazing allotments would generate about \$156 million in total economic activity, including about \$34.4 million in personal income, and support approximately 2,722 jobs (representing an average of 182 jobs per year). These totals would include about \$92.2 million in total economic activity, \$20.3 million in personal income, and 1,606 jobs on public lands (representing an average of 107 jobs per year).

During the analysis period, livestock grazing under Alternative C on all lands within BLM-administered grazing allotments would generate about \$138 million in total economic activity, including about \$30.4 million in personal income, and support approximately 2,407 jobs (representing an average of 160 jobs per year). These

totals would include about \$81.5 million in total economic activity, \$18.0 million in personal income, and 1,420 jobs on public lands (representing an average of 95 jobs per year).

MINERAL RESOURCES

COAL

The production of one ton of coal would result in a direct expenditure of \$11.04 and an associated total contribution to the local economy of \$17.42 (including both direct and indirect impacts). Total personal income would be \$2.89 supporting 0.000111 jobs.

In the final EIS, some assumptions regarding coal production were corrected from the draft EIS. There was no coal production on BLM-administered lands during the 1990 base year for analysis. All coal production that year came from privately-owned lands in the planning area, amounting to 101,961 tons of coal (Wyoming, Office of the State Inspector of Mines 1991). This production generated about \$1,776,000 in total economic activity including \$295,000 in personal income and about six jobs.

It is anticipated that during the 1991 through 2005 analysis period, planning area coal production would continue to be about 100,000 tons annually. This production would all come from privately-owned lands during 1991 through 1997 but would be split between privately-owned and BLM-administered lands starting in 1998.

During the analysis period, coal production on all lands in the planning area would generate about \$26.1 million in total economic activity, including about \$4.3 million in personal income, and support approximately 167 jobs (representing an average of 11 jobs per year). These totals would include about \$7 million in total economic activity, \$1.2 million in personal income, and 44 jobs on BLM-administered lands (representing an average of 3 jobs per year). These impacts are projected to be the same under all alternatives.

GAS AND OIL

NEW ANALYSIS IN THE FINAL EIS

In developing the final EIS, the BLM planning team wanted to determine the relative importance of wildcat drilling and new field discoveries in the planning area. A critical assumption made this important:

Because of existing oil and gas lease rights, legally-binding stipulations that identify mitigation can only be applied as old leases expire and new ones are issued. Since oil

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and gas leases do not expire while the leases are producing, it is assumed that oil and gas production and other ongoing and existing operations in oil and gas fields would remain unchanged by the provisions of the Grass Creek Resource Management Plan.

This assumption means that the EIS alternatives would have no effect on oil and gas production in existing fields during the analysis period. The BLM could only potentially affect exploratory drilling ("wildcat" drilling outside existing fields) and new field discoveries.

To determine the relative importance of wildcat drilling and new field discoveries, it was assumed under Alternative B of the final EIS that there would be 50 percent more wildcat drilling and production of oil and gas from newly discovered fields, compared to the Proposed RMP and Alternative A. It was then assumed under Alternative C that wildcat drilling and new field production would decrease by 50 percent, compared to the Proposed RMP and Alternative A.

Those alternative levels of development were varied in the analysis for the final EIS because of public comments stating that land-use restrictions gradually reduce the level of industry interest in an area for exploration. Those commentors felt that the proposed mitigation measures in Alternatives B and C were sufficiently different to show some variation in their effects. The 50 percent variation in new field discoveries was selected, arbitrarily, for making comparisons. (The BLM planning team continues to believe that the market price of oil is the most important factor influencing exploration, as long as the overall requirements for environmental protection are reasonable.)

The anticipated level of development was kept the same in the Proposed RMP and Alternative A, however, because of their similar restrictions. (The main differences are that compared to Alternative A, the Proposed RMP would increase restrictions on about 10,000 acres with the use of "no surface occupancy" affecting lands with low potential for oil and gas occurrence, and decrease restrictions on 63,800 acres in sage grouse complex areas having high potential for the occurrence of oil and gas.)

When compared to total oil production on BLM-administered lands, the increased new field production under Alternative B (of 188,000 barrels during the analysis period) would improve upon Alternative A's and the Proposed RMP's total production (of 67 million barrels)

by less than three-tenths of a percentage point. Gas production from new fields would increase by 4 billion cubic feet on BLM-administered lands. That would improve Alternative A's and the Proposed RMP's total anticipated gas production (of 156 billion cubic feet) by about 2.6 percent.

As expected, Alternative C would show corresponding decreases in production of about 0.3 percent for oil and 2.6 percent for gas.

These small variations in the effects of the alternatives for oil and gas production are the result of (1) legally protected lease rights and (2) reasonably foreseeable production levels based on historical data supplied by the Wyoming Oil and Gas Conservation Commission.

Historic Information and Trends

Revised Table 5-9 (modified from Table 4-3 of the draft EIS) shows the Grass Creek Planning Area oil and gas production for the years 1971 through 1990, based on Wyoming Oil and Gas Conservation Commission Yearbooks. The table also estimates production for the analysis period 1991 through 2005. Yearbook information suggests that a 2.74 percent annual decline in oil production and a 5.87 percent increase in gas production will take place in the planning area. These rates compare closely to statewide production trends reported by the Wyoming Oil and Gas Conservation Commission for the years 1969 through 1991 for oil, and for 1918 through 1991 for gas.

During the analysis period of 1991 through 2005, projections of historical data show that an anticipated 92 million barrels of oil and 185 billion cubic feet of gas would be produced in the planning area from federal, state, and private lands. About 67 million barrels of oil and 156 billion cubic feet of gas would come from public lands and other BLM-administered mineral estate (described hereinafter as BLM-administered lands).

Wildcat Drilling and Production From New Discoveries

During the period 1971 through 1990¹, eleven oil and gas fields were discovered in the Grass Creek Planning Area. (See Revised Table 5-10, modified from Table 4-1 of the draft EIS.) Six of those fields were discovered subject to BLM's existing management (described as Alternative A) which was first implemented with the 1979 Grass Creek Oil and Gas Environmental Assessment.

¹ Two periods — 1971 through 1990, and 1965 through 1990 — were used for understanding historic trends. For an overall analysis of wells drilled, fields discovered, and cumulative production, a period of approximately 25 years (starting in 1965) was arbitrarily chosen when BLM began development of the draft EIS. BLM Individual Well Record Files at the Worland District Office are also relatively complete and mutually consistent for this period. The shorter period (1971 through 1990) was used for plotting historic oil and gas production rates (both in the planning area and statewide) because these were the only years covered by Wyoming Oil and Gas Conservation Commission Yearbooks that were available for use by the BLM planning team.

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Therefore, the 2.74 percent annual decline in oil production and 5.87 percent increase in gas production is assumed to be consistent with the continuation of existing management under Alternative A. The historic data also makes it clear that periodic discoveries of new oil and gas reserves have contributed to the overall rates of production.

From Revised Table 5-10, the total oil and gas production from all fields discovered during 1965 through 1989 was added. When adjusted for a 15-year (analysis) period, this amounted to about 522,000 barrels of oil and 9.6 billion cubic feet of gas from approximately seven fields.

The BLM-administered portion would be about 376,000 barrels of oil and 8 billion cubic feet of gas from six new fields.

Economic Impacts by Activity

Economic Impact of 2D Seismic Exploration

One mile of 2D seismic exploration would result in a direct expenditure of \$8,000 and an associated total contribution to the local economy of \$10,383 (including both direct and indirect impacts). Total personal income would be \$1,939, supporting 0.064427 jobs.

In all alternatives, it is estimated that 2D geophysical exploration would involve about 150 miles of seismic lines during the analysis period. About 60 percent of the total activity (90 miles) would be on public land.

During the analysis period, 2D seismic exploration on all lands in the planning area would generate about \$1.6 million in total economic activity, including about \$291,000 in personal income, and support approximately ten jobs (representing an average of 0.7 jobs per year). These totals would include about \$934,000 in total economic activity, \$175,000 in personal income, and six jobs on public lands (representing an average of 0.4 jobs per year).

Economic Impact of 3D Seismic Exploration

One mile of 3D seismic exploration would result in a direct expenditure of \$30,000 and an associated total contribution to the local economy of \$38,937 (including both direct and indirect impacts). Total personal income would be \$7,272, supporting 0.241601 jobs.

In all alternatives, it is estimated that 3D geophysical exploration would involve about 380 miles of seismic lines during the analysis period. This would involve

about 15 separate projects, each requiring two months of work. About 60 percent of the total activity would be on public land.

During the analysis period, 3D seismic exploration on all lands in the planning area would generate about \$14.8 million in total economic activity, including about \$2.8 million in personal income, and support approximately 92 jobs (representing an average of 6 jobs per year). These totals would include about \$8.9 million in total economic activity, \$1.7 million in personal income, and 55 jobs on public lands (representing an average of 4 jobs per year).

Economic Impact of Wildcat Drilling

One wildcat well would result in a direct expenditure of \$400,000 and an associated total contribution to the local economy of \$561,551 (including both direct and indirect impacts). Total personal income would be \$88,772, supporting 3.647639 jobs.

Under the Proposed RMP and Alternative A, it is estimated that 1.87 wildcat wells would be drilled annually on all lands in the planning area. This total would include one well on BLM-administered lands.

Under Alternative B, it is estimated that 2.8 wildcat wells would be drilled annually on all lands in the planning area. This total would include 1.47 wells on BLM-administered lands.

Under Alternative C, it is estimated that 0.93 wildcat well would be drilled annually on all lands in the planning area. This total would include 0.53 well on BLM-administered lands.

During the analysis period, wildcat drilling under the Proposed RMP and Alternative A on all lands in the planning area would generate about \$15.8 million in total economic activity, including about \$2.5 million in personal income, and support approximately 102 jobs (representing an average of 9 jobs per year). These totals would include about \$8.4 million in total economic activity, \$1.3 million in personal income, and 55 jobs on BLM-administered lands (representing an average of 4 jobs per year).

During the analysis period, wildcat drilling under Alternative B on all lands in the planning area would generate about \$23.6 million in total economic activity, including about \$3.7 million in personal income, and support approximately 153 jobs (representing an average of 10 jobs per year). These totals would include about \$12.4 million in total economic activity, \$2.0 million in personal income, and 80 jobs on BLM-administered lands (representing an average of 5 jobs per year).

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During the analysis period, wildcat drilling under Alternative C on all lands in the planning area would generate about \$7.8 million in total economic activity, including about \$1.2 million in personal income, and support approximately 51 jobs (representing an average of 3 jobs per year). These totals would include about \$4.5 million in total economic activity, \$706,000 in personal income, and 29 jobs on BLM-administered lands (representing an average of 2 jobs per year).

Economic Impact of Completed Oil Wells

One completed oil (or gas) well would result in a direct expenditure of \$500,000 and an associated total contribution to the local economy of \$573,372 (including both direct and indirect impacts). Total personal income would be \$44,953, supporting 1.662922 jobs.

The total number of oil wells completed, by alternative, for the 15-year analysis period is described in Revised Table 15.

Under the Proposed RMP and Alternative A, it is estimated that 8.27 new oil wells would be completed annually on all lands in the planning area (or about 124 during the 15-year analysis period). This total would include 6.33 new oil wells on BLM-administered lands (or about 95 during the 15-year analysis period).

Under Alternative B, it is estimated that 8.53 new oil wells would be completed annually on all lands in the planning area (or about 128 during the 15-year analysis period). This total would include 6.53 new oil wells on BLM-administered lands (or about 98 during the 15-year analysis period).

Under Alternative C, it is estimated that 8.00 new oil wells would be completed annually on all lands in the planning area (or about 120 during the 15-year analysis period). This total would include 6.07 new oil wells on BLM-administered lands (or about 91 during the 15-year analysis period).

During the analysis period, new oil well completions under the Proposed RMP and Alternative A on all lands in the planning area would generate about \$71.1 million in total economic activity, including about \$5.6 million in personal income, and support approximately 206 jobs (representing an average of 14 jobs per year). These totals would include about \$54.4 million in total economic activity, \$4.3 million in personal income, and 158 jobs on BLM-administered lands (representing an average of 11 jobs per year).

During the analysis period, new oil well completions under Alternative B on all lands in the planning area would generate about \$73.4 million in total economic activity, including about \$5.8 million in personal income,

and support approximately 213 jobs (representing an average of 14 jobs per year). These totals would include about \$56.2 million in total economic activity, \$4.4 million in personal income, and 163 jobs on BLM-administered lands (representing an average of 11 jobs per year).

During the analysis period, new oil well completions under Alternative C on all lands in the planning area would generate about \$68.8 million in total economic activity, including about \$5.4 million in personal income, and support approximately 200 jobs (representing an average of 13 jobs per year). These totals would include about \$52.2 million in total economic activity, \$4.1 million in personal income, and 151 jobs on BLM-administered lands (representing an average of 10 jobs per year).

Economic Impact of Oil Production

The production of one barrel of oil would result in a direct expenditure of \$20 and an associated total contribution to the local economy of \$27.98 (including both direct and indirect impacts). Total personal income would be \$2.55, supporting 0.000100 jobs.

The total oil production would vary by less than three-tenths of a percentage point by alternative (as explained previously) even when discoveries from exploratory drilling are reduced or increased by 50 percent from historic levels. Therefore, in this final EIS, total oil production is assumed to be approximately the same in all four alternatives.

As described in Revised Table 15, about 92 million barrels of oil would be produced during the 15-year analysis period on all lands in the planning area. Of this amount, about 67 million barrels would be produced from BLM-administered lands.

During the analysis period, anticipated oil production on all lands in the planning area would generate about \$2.57 billion in total economic activity, including about \$235 million in personal income, and support approximately 9,200 jobs (representing an average of 613 jobs per year). These totals would include about \$1.86 billion in total economic activity, \$171 million in personal income, and 6,700 jobs on BLM-administered lands (representing an average of 447 jobs per year).

Economic Impact of Completed Gas Wells

One completed gas well would result in a direct expenditure of \$500,000 and an associated total contribution to the local economy of \$573,372 (including both direct and indirect impacts). Total personal income would be \$44,953, supporting 1.662922 jobs.

NEW APPENDIX 5

The total number of gas wells completed, by alternative, for the 15-year analysis period is described in Revised Table 15.

Under the Proposed RMP and Alternative A, it is estimated that 0.40 new gas well would be completed annually on all lands in the planning area (or about six during the 15-year analysis period). This total would include 0.33 new gas well on BLM-administered lands (or about five during the 15-year analysis period).

Under Alternative B, it is estimated that 0.47 new gas well would be completed annually on all lands in the planning area (or about seven during the 15-year analysis period). This total would include 0.40 new gas well on BLM-administered lands (or about six during the 15-year analysis period).

Under Alternative C, it is estimated that 0.33 new gas well would be completed annually on all lands in the planning area (or about five during the 15-year analysis period). This total would include 0.27 new gas well on BLM-administered lands (or about 4 during the 15-year analysis period).

During the analysis period, new gas well completions under the Proposed RMP and Alternative A on all lands in the planning area would generate about \$3.4 million in total economic activity, including about \$270,000 in personal income, and support approximately ten jobs (representing an average of 0.7 jobs per year). These totals would include about \$2.8 million in total economic activity, \$223,000 in personal income, and eight jobs on BLM-administered lands (representing an average of 0.5 jobs per year).

During the analysis period, new gas well completions under Alternative B on all lands in the planning area would generate about \$4.0 million in total economic activity, including about \$317,000 in personal income, and support approximately 12 jobs (representing an average of 0.8 jobs per year). These totals would include about \$3.4 million in total economic activity, \$270,000 in personal income, and ten jobs on BLM-administered lands (representing an average of 0.7 jobs per year).

During the analysis period, new gas well completions under Alternative C on all lands in the planning area would generate about \$2.8 million in total economic activity, including about \$223,000 in personal income, and support approximately eight jobs (representing an average of 0.5 jobs per year). These totals would include about \$2.3 million in total economic activity, \$182,000 in personal income, and seven jobs on BLM-administered lands (representing an average of 0.5 jobs per year).

Economic Impact of Gas Production

The production of one thousand cubic feet of natural gas would result in a direct expenditure of \$1.80 and an associated total contribution to the local economy of \$2.52 (including both direct and indirect impacts). Total personal income would be \$0.23, supporting 0.000009 jobs.

The total gas production would vary by about 2.6 percent by alternative (as explained previously) when discoveries from exploratory drilling are reduced or increased by 50 percent from historic levels. Overall, gas production would range from 180 billion to 190 billion cubic feet on all lands in the planning area, depending on the alternative, and from 152 billion to 160 billion cubic feet on BLM-administered lands. (Anticipated gas production under the Proposed RMP and Alternative A would be 185 billion cubic feet on all lands in the planning area, including 156 billion cubic feet on BLM-administered lands. Under Alternative B, the totals would be 190 and 160 billion cubic feet, while under Alternative C total production would be 180 and 152 billion cubic feet.)

During the analysis period, gas production under the Proposed RMP and Alternative A on all lands in the planning area would generate about \$467 million in total economic activity, including about \$43 million in personal income, and support approximately 1,665 jobs (representing an average of 111 jobs per year). These totals would include about \$393 million in total economic activity, \$36 million in personal income, and 1,404 jobs on BLM-administered lands (representing an average of 94 jobs per year).

During the analysis period, gas production under Alternative B on all lands in the planning area would generate about \$479 million in total economic activity, including about \$44 million in personal income, and support approximately 1,710 jobs (representing an average of 114 jobs per year). These totals would include about \$403 million in total economic activity, \$37 million in personal income, and 1,440 jobs on BLM-administered lands (representing an average of 96 jobs per year).

During the analysis period, gas production under Alternative C on all lands in the planning area would generate about \$454 million in total economic activity, including about \$41 million in personal income, and support approximately 1,620 jobs (representing an average of 108 jobs per year). These totals would include about \$383 million in total economic activity, \$35 million in personal income, and 1,368 jobs on BLM-administered lands (representing an average of 91 jobs per year).

Total Economic Impacts of Gas and Oil Activities

On all lands in the planning area, the total economic contributions from oil and gas activities would be about \$3.144 billion under the Proposed RMP and Alternative A. By comparison, the total economic contributions would be about \$3.167 billion under Alternative B, and \$3.121 billion under Alternative C.

On BLM-administered lands in the planning area, the total economic contributions from oil and gas activities would be about \$2.328 billion under the Proposed RMP and Alternative A. By comparison, the total economic contributions would be about \$2.344 billion under Alternative B, and \$2.311 billion under Alternative C.

FISCAL IMPACTS OF GAS AND OIL PRODUCTION

As described above, important economic benefits come from the expenditure of money by oil companies to explore for and develop oil and gas in the planning area. Fiscal contributions, representing royalty and tax revenue primarily from oil and gas production, are also very important to state and local economies.

Federal royalties are collected on production generated from BLM-administered lands. These royalty rates are currently 12.5 percent of the market value of the oil and gas produced. One half of these payments (minus administrative costs) are returned to the state of Wyoming which distributes the money to various state funds. Ultimately, much of this money is redistributed to meet county and other local needs.

Severance taxes are paid only to the state of Wyoming to meet various state, county, and local needs. The severance tax is based on a percentage of the fair market value of the oil and gas, after the production process is completed. For oil and gas, the taxation rate is currently 6 percent. For stripper oil, it is 4 percent.

Sales and use taxes are also paid on oil and gas production. These taxes include a state rate of 4 percent and an optional county rate up to 2 percent. These tax revenues are shared by the originating county and the state of Wyoming.

Ad valorem taxes are paid on oil and gas production to counties where the production takes place, with the exception of 12 mills paid to the state school system. An average rate is 5.9325 percent, but this varies by county, depending on the volume of production and any special projects planned within the county.

New Tables 5-11 through 5-14 show the anticipated fiscal impacts from oil and gas production under the Proposed RMP and Alternative A from all royalty and tax sources.

Under the Proposed RMP and Alternative A, total fiscal impacts from oil production on all lands in the planning area would be about \$383 million during the analysis period. On BLM-administered lands, the fiscal impacts would be about \$317 million. Because total oil production would vary by only about three-tenths of a percentage point, total production and related impacts were considered to be the same in all alternatives, for the analysis of fiscal impacts in the EIS.

Under the Proposed RMP and Alternative A, total fiscal impacts from gas production on all lands in the planning area would be about \$70 million during the analysis period. On BLM-administered lands, the fiscal impacts would be about \$63 million.

Under Alternative B, total fiscal impacts from gas production on all lands in the planning area would be about \$72 million during the analysis period. On BLM-administered lands, the fiscal impacts would be about \$65 million.

Under Alternative C, total fiscal impacts from gas production on all lands in the planning area would be about \$68 million during the analysis period. On BLM-administered lands, the fiscal impacts would be about \$61 million.

RECREATION

NEW ANALYSIS IN THE FINAL EIS

Revised Table 5-15 shows estimated recreational use for calendar year 1990, and the years 1991 through 2005 in the planning area. As shown in New Table 5-16, projections about the growing public demand for recreation have been revised downward from estimates contained in the draft EIS. For analysis in the final EIS, anticipated recreational growth in the planning area would be less than 1 percent annually, consistent with changes in local population levels. The BLM also anticipates that this rate of growth would be the same among the four alternatives, although the types and levels of recreational use would vary somewhat by location, based on BLM management emphasis.

Several smaller changes in estimated recreational use were also made in the final EIS. These included (1) a lower estimate of visitor use in the Red Canyon Creek area, (2) lower visitor estimates for fishing, and (3) higher estimates for sightseeing, four-wheel driving, and nonresident small game and waterfowl hunting.

NEW APPENDIX 5

In the draft EIS, BLM had projected future trends in recreation using information from the President's Commission on Americans Outdoor (1986) and Wyoming's 1985 and 1990 State Comprehensive Outdoor Recreation Plans. All these reports indicated that outdoor recreation was steadily increasing. The amount of increase estimated in the draft EIS was between 3 and 4 percent annually.

After the draft EIS was published, other sources of information were consulted. These included the latest annual report of the state Tourism Division indicating that visitors to Wyoming spent almost 4.7 percent more in 1994 than in 1993—an increase that might be correlated to increased tourism². Other observers suggested a low level of increase for tourism and recreation. The University of Wyoming's Department of Agricultural Economics first recommended to the Grass Creek RMP planning team that recreational demand might follow local population changes (Dr. Bob Fletcher, University of Wyoming, personal communication, April 25, 1995). This was the same projection applied to federal lands east of BLM's Worland District, in the Bighorn National Forest's Land and Resource Management Plan and by BLM's Buffalo Resource Area, now starting to develop an RMP east of the Bighorn Mountains.

ECONOMIC IMPACTS

New Table 5-17 shows the economic impacts of nonresident recreation for the 1990 base year for analysis. New Table 5-18 shows how economic impacts

would change during 1991 through 2005. Economic contributions to the local economy do not include expenditures by resident recreationists because that money is already part of the local economy. Instead, the local economy is increased by nonresident recreational dollars, originating outside the four-county area.

During the analysis period, nonresident recreation on all lands in the planning area would generate about \$37 million in total economic activity, including about \$6.4 million in personal income, and support approximately 524 jobs (representing an average of 35 jobs per year). These totals would include about \$21 million in total economic activity, \$3.6 million in personal income, and 292 jobs on public lands (representing an average of 19 jobs per year). These impacts are projected to be the same under all alternatives.

TOTAL ECONOMIC IMPACTS

New Table 5-19 shows the combined economic activity associated with forestland management, livestock grazing, minerals management, and recreation in the Grass Creek planning area. Under all alternatives, minerals management accounts for about 94 percent of the total economic activity, livestock grazing accounts for about 4 percent, while forestland management and recreation each account for about 1 percent.

The variation among the alternatives is about 2 percent, between the most economically favorable, and the least economically favorable alternatives.

² The Wyoming Economic Forecast Report of the Wyoming Department of Administration and Information alludes to the difficulty in correlating tourism and economic impacts. In the preface to the 1995 report, the department states:

Historically, three industries have been the primary drivers behind Wyoming's economy. Despite attempts to diversify, the Wyoming economy relies heavily on the mining, tourism, and agriculture industries. Mining and agriculture are classified as major industrial sectors, and can be analyzed in a detailed manner due to the availability of historical and current data. Analysis of the tourism industry presents special problems, because tourism activity occurs in many different economic sectors. Much of the activity associated with tourism takes place within the retail trade and service sectors. To date, the detailed information needed to isolate and analyze the tourism industry within the framework of the WEF [Wyoming Economic Forecast] project does not exist.

Source: University of Wyoming, Department of Agricultural Economics, Laramie, WY

**New Table 5-1
Economic Impact of Timber Harvest in the Grass Creek Planning Area for 1990
and 1991-2005 (Excluding Firewood)
Preferred Alternative and Alternative A**

On All Lands in the Planning Area					On Public Lands in the Planning Area			
Year	Thousand Board Feet (MBF)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Thousand Board Feet (MBF)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)
1990	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
1991	1,000	768,590	164,380	40.00	350	269,007	57,533	3.50
1992	1,000	768,590	164,380	40.00	350	269,007	57,533	3.50
1993	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
1994	1,000	3,766,091	805,462	48.98	350	269,007	57,533	3.50
1995	1,000	3,766,091	805,462	48.98	350	269,007	57,533	3.50
1996	1,000	3,766,091	805,462	48.98	350	269,007	57,533	3.50
1997	1,000	3,766,091	805,462	48.98	350	269,007	57,533	3.50
1998	1,000	3,766,091	805,462	48.98	350	269,007	57,533	3.50
1999	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
2000	1,000	768,590	164,380	40.00	350	269,007	57,533	3.50
2001	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
2002	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
2003	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
2004	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
2005	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
1991-2005								
Totals	34,500	26,516,355	5,671,110	344.83	5,250	4,035,098	862,995	52.47
Averages	2,300	1,767,757	378,074	22.99	350	269,007	57,333	3.50

**New Table 5-2
Economic Impact of Timber Harvest in the Grass Creek Planning Area for 1990
and 1991-2005 (Excluding Firewood)
Alternative B**

On All Lands in the Planning Area					On Public Lands in the Planning Area			
Year	Thousand Board Feet (MBF)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Thousand Board Feet (MBF)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)
1990	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
1994	1,000	768,590	164,380	40.90	350	269,007	57,533	3.50
1992	1,000	768,590	164,380	13.99	350	269,007	57,533	3.50
1999	1,000	768,590	164,380	13.99	350	269,007	57,533	3.50
1994	4,900	3,766,091	805,462	48.98	350	269,007	57,533	3.50
1995	4,900	3,766,091	805,462	48.98	350	269,007	57,533	3.50
1995	5,300	4,073,527	871,214	53.97	750	576,443	123,285	7.50
1994	5,300	4,073,527	871,214	52.97	750	576,443	123,285	7.50
1998	5,300	4,073,527	871,214	52.97	750	576,443	123,285	7.50
1999	1,400	1,076,026	230,132	13.99	750	576,443	123,285	7.50
2000	1,400	1,076,026	230,132	13.99	750	576,443	123,285	7.50
2000	1,400	1,076,026	230,132	13.99	750	576,443	123,285	7.50
2000	1,400	1,076,026	230,132	13.99	750	576,443	123,285	7.50
2003	1,400	1,076,026	230,132	13.99	750	576,443	123,285	7.50
2004	1,400	1,076,026	230,132	13.99	750	576,443	123,285	7.50
2005	1,400	1,076,026	230,132	13.99	750	576,443	123,285	7.50
1991-2005								
Totals	38,500	29,590,715	6,328,630	384.81	9,250	7,109,458	1,520,515	92.45
Averages	2,567	1,972,714	421,909	25.65	617	473,964	101,368	6.16

**New Table 5-3
Economic Impact of Timber Harvest in the Grass Creek Planning Area for 1990
and 1991-2005 (Excluding Firewood)
Alternative C**

On All Lands in the Planning Area					On Public Lands in the Planning Area			
Year	Thousand Board Feet (MBF)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Thousand Board Feet (MBF)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)
1990	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
1994	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
1992	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
1995	1,000	768,590	164,380	10.00	350	269,007	57,533	3.50
1994	1,000	3,766,091	805,462	46.98	350	269,007	57,533	3.50
1996	1,000	3,766,091	805,462	48.98	350	269,007	57,533	3.50
1996	4,700	3,612,373	772,586	46.98	150	115,289	24,657	1.50
1998	4,700	3,612,373	772,586	46.98	150	115,289	24,657	1.50
1998	4,700	3,612,373	772,586	46.98	150	115,289	24,657	1.50
1999	800	614,872	131,504	8.00	150	115,289	24,657	1.50
2000	800	614,872	131,504	8.00	150	115,289	24,657	1.50
2001	800	614,872	131,504	8.00	150	115,289	24,657	1.50
2002	800	614,872	131,504	8.00	150	115,289	24,657	1.50
2003	800	614,872	131,504	8.00	150	115,289	24,657	1.50
2004	800	614,872	131,504	8.00	150	115,289	24,657	1.50
2005	800	614,872	131,504	8.00	150	115,289	24,657	1.50
1991-2005								
Totals	32,500	24,979,175	5,342,350	324.84	3,250	2,497,918	534,235	32.48
Averages	2,167	1,665,278	356,157	21.66	217	166,528	35,616	2.17

**New Table 5-4 (Revised from Table 17 in the draft EIS)
Estimated Long-Term AUMs Available for Livestock Use¹**

Forage Available or Used	Existing Situation	Proposed RMP	Alternative A	Alternative B	Alternative C
Estimated total vegetation available (1990) based on inventory and authorized levels ²	146,381	---	---	---	---
Actual use (1990)	122,268	---	---	---	---
Adjustments from estimated 1990 vegetation available (146,381 AUMs):					
From grazing management ^{3,4}		+ 8,910	+ 8,880	+ 8,910	+ 8,580
From requirements protecting elk, moose, and bighorn sheep habitat ³		- 8,870	- 8,640	0	- 16,540
From forage allocations to wild horses ⁵		- 2,300	- 2,300	0	- 2,300
From forage utilization objectives ³		- 8,880 ⁶	0	- 8,880 ⁶	- 19,100
Estimated long-term AUMs available for livestock use by the end of calendar year 2005		135,241	144,321	146,411	117,021

¹ AUMs are shown for lands "managed-in-common" within grazing allotments.

² Based on vegetation inventory, 130,989 AUMs were available for livestock grazing in 1990 on 136 allotments. Another 22 allotments in the planning area were not inventoried. Those had 15,392 AUMs of maximum authorized grazing. The estimated AUMs available for livestock use in 1990 is the total of these AUM levels, or 146,381 AUMs. This level does not reflect the suitability of lands for grazing based on slope and availability of water. State-of-the-art suitability criteria will be considered after consultation with permittees, as part of monitoring and the development of allotment management or other detailed activity plans.

³ These adjustments are projected. Monitoring would be needed before AUMs are adjusted.

⁴ Gains in forage available for livestock would be associated with management actions like the use of prescribed fire and the use of grazing systems and range projects to improve the distribution and timing of livestock grazing.

⁵ These adjustments are based on existing monitoring data.

⁶ Adjustments would not be necessary in some allotments where season of use could be changed to winter. Overall, grazing would probably be reduced by less than 8,880 AUMs based on forage utilization objectives.

**New Table 5-5
Economic Impact of Livestock Grazing in the Grass Creek Planning Area for 1990 and 1991-2005
Preferred Alternative**

On Lands Managed-In-Common					On Public Lands			
Year	Actual Use (AUMs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Actual Use (AUMs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)
1990	122,268	9,428,085	2,077,333	164.21	72,138	5,562,570	1,225,627	96.88
1991	123,133	9,494,775	2,092,027	165.37	72,648	5,601,917	1,234,296	97.57
1992	123,998	9,561,465	2,106,721	166.53	73,159	5,641,264	1,242,966	98.25
1993	124,863	9,628,155	2,121,416	167.69	73,669	5,680,612	1,251,635	98.94
1994	125,727	9,694,915	2,136,110	167.69	74,179	5,719,959	1,260,305	99.62
1995	126,592	9,761,535	2,150,804	170.01	74,689	5,759,306	1,268,974	100.31
1995	127,457	9,828,225	2,165,498	171.18	75,200	5,798,653	1,277,644	100.65
1997	128,322	9,894,915	2,180,192	172.34	75,710	5,838,000	1,286,313	101.68
1998	129,187	9,961,604	2,194,886	173.50	76,220	5,877,347	1,294,983	102.36
1999	130,052	10,028,294	2,210,960	174.66	76,731	5,916,694	1,303,652	103.05
2000	130,917	10,094,984	2,224,274	175.82	77,241	5,956,041	1,312,322	103.73
2001	131,782	10,161,674	2,238,968	176.98	77,751	5,995,388	1,320,991	104.42
2002	132,646	10,228,364	2,253,662	178.14	78,261	6,034,735	1,329,661	105.11
2003	133,511	10,295,054	2,268,356	179.01	78,772	6,074,082	1,338,330	105.79
2004	134,376	10,361,744	2,283,051	180.47	79,282	6,113,429	1,347,000	106.48
2005	135,241	10,428,434	2,297,745	181.63	79,792	6,152,776	1,355,669	107.16
1991-2005								
Totals	1,937,804	149,424,067	32,923,290	2,602.48	1,143,304	88,160,203	19,424,741	1,535.46
Average	129,187	9,961,604	2,194,886	173.50	76,220	5,877,347	1,294,983	102.36

New Table 5-6
Economic Impact of Livestock Grazing in the Grass Creek Planning Area for 1990 and 1991-2005
Alternative A

On Lands Managed-In-Common					On Public Lands			
Year	Actual Use (AUMs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Actual Use (AUMs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)
1990	122,268	9,428,085	2,077,333	164.21	72,138	5,562,570	1,225,627	96.88
1994	123,738	9,541,453	2,102,312	166.18	73,006	5,629,457	1,240,364	98.05
1992	125,208	9,654,820	2,127,291	168.15	73,873	5,696,344	1,255,102	99.21
1993	126,679	9,768,187	2,152,269	170.13	74,740	5,763,230	1,269,839	100.38
1994	128,149	9,881,554	2,177,248	170.13	75,608	5,830,117	1,284,576	101.54
1995	129,619	9,994,921	2,202,227	180.08	76,475	5,897,003	1,299,314	102.71
1995	131,089	10,108,289	2,227,206	176.05	77,343	5,963,890	1,314,051	103.87
1994	132,559	10,221,655	2,252,184	178.03	78,210	6,030,777	1,328,789	105.04
1993	134,030	10,335,022	2,277,163	180.00	79,077	6,097,663	1,343,526	106.20
1994	135,500	10,448,390	2,302,142	180.00	79,945	6,164,550	1,358,264	107.37
2000	136,970	10,561,757	2,327,120	183.95	80,812	6,231,436	1,373,001	108.53
2001	138,440	10,675,124	2,352,099	185.93	81,680	6,298,323	1,387,738	109.70
2002	139,910	10,788,491	2,377,078	187.90	82,547	6,365,210	1,402,476	110.86
2003	141,381	10,901,858	2,402,056	189.87	83,415	6,432,096	1,417,213	112.03
2004	142,851	11,015,225	2,427,035	191.85	84,282	6,498,983	1,431,951	113.19
2005	144,321	11,128,592	2,452,014	193.82	85,149	6,565,869	1,446,688	114.36
1991-2005								
Totals	2,010,444	155,025,337	34,157,444	2,700.02	1,186,162	91,464,948	20,152,892	1,593.04
Average	134,030	10,335,022	2,277,163	180.00	79,077	6,097,663	1,343,526	106.20

**New Table 5-7
Economic Impact of Livestock Grazing in the Grass Creek Planning Area for 1990 and 1991-2005
Alternative B**

On Lands Managed-In-Common					On Public Lands			
Year	Actual Use (AUMs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Actual Use (AUMs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)
1990	122,268	9,428,085	2,077,333	164.21	72,138	5,562,570	1,225,627	96.88
1991	123,878	9,552,197	2,104,679	166.37	73,088	5,635,796	1,241,761	98.16
1992	125,487	9,676,308	2,132,025	168.53	74,037	5,709,022	1,257,895	99.43
1993	127,097	9,800,419	2,159,371	170.69	74,987	5,782,247	1,274,029	100.71
1994	128,706	9,924,530	2,186,717	172.85	75,937	5,855,473	1,290,163	101.98
1995	130,316	10,048,641	2,214,063	175.01	76,886	5,928,698	1,306,297	103.26
1996	131,925	10,172,752	2,241,409	177.18	77,836	6,001,924	1,322,431	104.53
1994	133,535	10,296,863	2,268,755	179.34	79,735	6,075,149	1,338,566	105.81
1994	135,144	10,420,974	2,296,101	181.50	79,735	6,148,375	1,354,700	107.08
1999	136,754	10,545,086	2,323,447	183.66	80,685	6,221,600	1,370,834	108.36
2000	138,363	10,669,197	2,350,793	185.82	81,634	6,294,826	1,386,968	109.63
2001	139,973	10,793,308	2,378,139	187.98	82,584	6,368,052	1,403,102	110.91
2002	141,582	10,917,419	2,405,485	190.15	83,534	6,441,277	1,419,236	112.19
2003	143,192	11,041,530	2,432,831	192.31	84,483	6,514,503	1,435,370	113.46
2004	144,801	11,165,641	2,460,177	194.47	85,433	6,587,728	1,451,504	114.74
2005	146,411	11,289,752	2,487,523	196.63	86,382	6,660,954	1,467,639	116.01
1991-2005								
Totals	2,027,164	156,314,617	34,441,515	2,722.49	1,196,026	92,225,624	20,320,495	1,606.26
Averages	135,144	10,420,974	2,296,101	181.50	79,735	6,148,375	1,354,700	107.08

New Table 5-8
Economic Impact of Livestock Grazing in the Grass Creek Planning Area for 1990 and 1991-2005
Alternative C

On Lands Managed-In-Common					On Public Lands			
Year	Actual Use (AUMs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Actual Use (AUMs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)
1990	122,268	9,428,085	2,077,333	164.21	72,138	5,562,570	1,225,627	96.88
1994	121,918	9,401,112	2,071,390	163.74	71,932	5,546,656	1,222,120	96.60
1992	121,568	9,374,139	2,065,447	163.27	71,725	5,530,742	1,218,614	96.33
1993	121,219	9,347,166	2,059,504	162.80	71,519	5,514,828	1,215,107	96.05
1994	120,869	9,320,193	2,053,561	162.33	71,313	5,498,914	1,211,601	95.77
1995	120,519	9,293,220	2,047,618	161.86	71,106	5,483,000	1,208,095	95.50
1995	120,869	9,266,247	2,041,675	161.86	70,900	5,467,086	1,204,588	95.22
1994	119,819	9,239,274	2,035,732	159.98	70,693	5,451,172	1,201,082	94.94
1999	119,470	9,212,301	2,029,789	160.45	70,487	5,435,258	1,197,575	94.66
1999	119,120	9,185,328	2,023,845	159.98	70,281	5,419,343	1,194,069	94.39
2000	118,770	9,158,355	2,017,902	159.84	70,074	5,403,429	1,190,562	94.11
2001	118,420	9,131,382	2,011,959	159.04	69,868	5,387,515	1,187,056	93.83
2002	118,070	9,104,409	2,006,016	158.57	69,662	5,371,601	1,183,549	93.80
2003	117,721	9,077,435	2,000,073	158.10	69,455	5,355,687	1,180,043	93.28
2004	117,371	9,050,462	1,994,130	157.63	69,249	5,339,773	1,176,537	93.00
2005	117,021	9,023,489	1,988,187	157.16	69,042	5,323,859	1,173,030	92.72
1991-2005								
Totals	1,792,044	138,184,512	30,446,828	2,406.75	1,057,306	81,528,863	17,963,628	1,419.96
Averages	119,470	9,212,301	59,120	160.45	70,487	5,435,258	1,197,575	94.66

**New Table 5-9: (Revised from Table 4-3 in the draft EIS)
Grass Creek Planning Area Historical Oil and Gas Production and Future Production Estimates**

PART I: Historical Production—1971 through 1990 ¹					PART II: Projected Production—1991 through 2005 ²				
Year	Oil		Gas		Year	Oil		Gas	
	All lands in planning area (BBLs)	BLM-administered lands (BBLs)	All lands in planning area (MCF)	BLM-administered lands (MCF)		All lands in planning area (BBLs)	BLM-administered lands (BBLs)	All lands in planning area (MCF)	BLM-administered lands (BBLs)
1971	13,097,056	9,478,132	9,595,354	8,060,297	1991	7,391,760	5,349,300	8,046,120	6,775,680
1972	12,254,234	8,868,196	10,484,561	8,829,103	1992	7,189,226	5,202,729	8,518,427	7,173,412
1973	11,723,749	8,484,292	9,039,838	7,612,495	1993	6,992,241	5,060,174	9,018,459	7,594,492
1974	11,681,850	8,003,576	5,275,002	4,442,107	1994	6,800,654	4,921,526	9,547,842	8,040,288
1975	14,575,256	10,547,882	4,225,699	3,558,483	1995	6,614,316	4,786,676	10,108,301	8,512,253
1976	17,255,230	12,487,337	3,323,641	2,798,855	1996	6,433,083	4,655,521	10,701,658	9,011,923
1977	15,227,506	11,019,905	2,722,151	2,292,338	1997	6,256,817	4,527,960	11,329,845	9,540,922
1978	15,818,042	11,447,267	3,352,779	2,823,393	1998	6,085,380	4,403,894	11,994,907	10,100,975
1979	---	---	---	---	1999	5,918,641	4,283,227	12,699,008	10,693,902
1980	13,551,151	9,806,754	5,474,783	4,610,343	2000	5,756,470	4,165,866	13,444,440	11,321,634
1981	13,232,253	9,575,972	5,547,557	4,671,627	2001	5,598,743	4,051,722	14,233,629	11,986,804
1982	12,164,942	8,803,576	4,522,032	3,808,027	2002	5,445,337	3,940,705	15,069,143	12,689,904
1983	11,783,827	8,527,769	3,738,900	3,148,547	2003	5,296,135	3,832,729	15,953,702	13,434,969
1984	11,170,718	8,084,072	6,423,900	5,409,600	2004	5,151,021	3,727,712	16,890,184	14,223,313
1985	10,884,878	7,877,214	8,926,428	7,516,991	2005	5,009,883	3,625,573	17,881,638	15,058,221
1986	10,284,012	7,442,377	5,597,878	4,714,002					
1987	9,536,860	6,901,675	6,487,027	5,462,759					
1988	9,249,884	6,693,995	5,753,201	4,844,800					
1989	---	---	---	---					
1990 ³	7,600,000	5,500,000	7,600,000	6,400,000					

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- 1 The historical portion of this table was taken from Table 4-3 of the draft EIS. During the period of 1971 through 1990, roughly 72 percent of the total oil production and 84 percent of the total gas production came from BLM-administered lands.
- 2 The relative percentage oil and gas production would remain about the same: About 72 percent of the oil production and 84 percent of the gas production would come from BLM-administered lands.
- 3 Rounded to the nearest 100,000 for this production year.

New Table 5-10
(Revised from Table 4-1 in the draft EIS)
Oil and Gas Field Status and Production in the Grass Creek Planning Area for Calendar Year 1990¹

Field Name	County(ies)	Year Discovered	Location (Township & Range)	Number of Producing Wells	Cumulative Oil Production to 1991 (BBLs)	Cumulative Gas Production to 1991 (MCF)	Remarks
Fields Discovered 1965 To 1990							
Hand Creek	Hot Springs	1981	46 N., 100 W.	2	85,247	0	-----
Pulliam	Washakie	1982	45 N., 98 W.	0	1,605	0	Abandoned
Fritz	Big Horn	1981	50 N., 95 W.	2	39,265	152,163	-----
Boulder Gulch	Hot Springs	1981	45 N., 98 W.	0	57,320	134,899	-----
Adam	Hot Springs	1980	48 N., 98 W.	1	73,435	0	-----
Grass Creek South	Hot Springs	1981	45 N., 98 W.	0	6,823	0	Abandoned
Seller Draw	Park	1978	48 N., 98 W.	1	0	3,135,359	-----
Buffalo Rim	Hot Springs	1978	48 N., 98 W.	0	3,373	0	Abandoned
Dobie Creek	Big Horn	1980	48 N., 98 W.	4	249,822	11,997,024	-----
Fairview	Big Horn	1977	52 N., 94 W.	2	20,286	601,434	-----
Aspen Creek	Hot Springs	1977	45 N., 101 W.	0	332,334	0	Shut-in
Totals for Fields Discovered 1965 to 1990				15	869,510	16,020,879	
Totals Adjusted For a 15-Year Period				9	521,706	9,612,527	
(Continued on next page)							

¹ Source: 1990 Wyoming Oil and Gas Fields from WY O&GCC 1991 Statistics Book

² Data for this field was adjusted to reflect estimated activity within the Grass Creek Planning Area. Part of this field is outside the planning area boundary.

New Table 5-10
(Revised from Table 4-1 in the draft EIS)
Oil and Gas Field Status and Production in the Grass Creek Planning Area for Calendar Year 1990¹

Field Name	County(ies)	Year Discovered	Location (Township & Range)	Number of Producing Wells	Cumulative Oil Production to 1991 (BBLs)	Cumulative Gas Production to 1991 (MCF)	Remarks
Fields Discovered 1907 to 1965							
King Dome	Hot Springs	1954	44 N., 96 W.	1	289,101	170	-----
Baird Peak	Hot Springs	1954	45 N. 100 W.	1	1,581,741	0	-----
Prospect Creek	Hot Springs	1963	45 N., 101 W.	0	272,927	338	Shut-in
Skelton Dome	Hot Springs	1954	45 N., 99 W.	6	0	55,881	Abandoned
Meeteetse	Park	1954	49 N., 99 W.	14	374,928	23,241,581	-----
Dickie	Hot Springs	1953	45 N., 101 W.	0	100,945	0	Shut-in
Greybull West	Big Horn	1952	52 N., 94 W.	0	33,605	1,694,525	Abandoned
Five Mile	Big Horn	1952	49 N., 93 W.	13	784,375	17,104,961	-----
Fourteenmile	Washakie	1952	46 N., 94 W.	0	131,095	696,923	Abandoned
Little Sand Draw	Hot Springs	1949	44 N., 96 W.	23	10,855,795	202,222	-----
Worland ²	Washakie	1946	44 N., 98 W.	6	5,324,792	115,411,960	-----
Wagonhound	Hot Springs	1944	44 N., 98 W.	6	633,546	9,612	-----
Gebo	Hot Springs	1949	44 N., 95 W.	41	29,442,163	926,177	-----
(Continued on next page)							

¹ Source: 1990 Wyoming Oil and Gas Fields from WY O&GCC 1991 Statistics Book

² Data for this field was adjusted to reflect estimated activity within the Grass Creek Planning Area. Part of this field is outside the planning area boundary.

New Table 5-10
(Revised from Table 4-1 in the draft EIS)
Oil and Gas Field Status and Production in the Grass Creek Planning Area for Calendar Year 1990¹

Field Name	County(ies)	Year Discovered	Location (Township & Range)	Number of Producing Wells	Cumulative Oil Production to 1991 (BBLs)	Cumulative Gas Production to 1991 (MCF)	Remarks
Fields Discovered 1907 to 1965 (Continued)							
Gooseberry	Park	1937	46 & 47 N., 100 W.	14	7,439,269	66,720	-----
Waugh	Hot Springs	1930	44 N., 96 & 97 W.	0	912,685	168,779	-----
Walker Dome	Hot Springs	1930	46 N., 99 W.	0	3,306,671	840,337	-----
Sunshine North ²	Park	1928	47 N., 101 W.	14	2,067,572	0	-----
Sunshine South	Park	1926	46 N., 100 W.	0	380,428	0	Abandoned
Enos Creek	Hot Springs	1928	46 N., 100 W.	3	846,964	433,828	-----
Golden Eagle	Hot Springs	1921	45 N., 97 W.	10	13,691,314	2,810,138	-----
Hamilton Dome	Hot Springs	1930	44 N., 97 & 98 W.	243	235,033,638	168,779	-----
Little Grass Creek	Hot Springs	1917	46 N., 99 W.	3	1,385	9,492,596	-----
Little Buffalo Basin	Park & Hot Springs	1914	47 N., 99 W.; 48 N., 100 W.	169	122,808,258	120,039,447	-----
Grass Creek	Hot Springs	1914	46 N., 98 W.	257	189,341,119	7,567,146	-----
Greybull ²	Big Horn	1907	52 N., 93 W.	0	110,530	20	Shut-in 1990
Totals for Fields Discovered from 1907 to 1965				824	625,764,846	300,871,842	x x x x x x
Totals for All Fields in the Grass Creek Planning Area				839	626,634,356	316,892,361	x x x x x x

¹ Source: 1990 Wyoming Oil and Gas Fields from WY O&GCC 1991 Statistics Book

² Data for this field was adjusted to reflect estimated activity within the Grass Creek Planning Area. Part of this field is outside the planning area boundary.

New Table 5-11
Oil Production Impacts -2.74%/Year Decline
ALL LANDS in the Grass Creek Planning Area

Year	Production (BBLs)	Direct Impact (\$)	Indirect/ Induced Impact (\$)	Total Economic Activity Impact (\$)	Total Personal Income Impact (\$)	Total Employ. Impact (Jobs)	Federal Royalty Payments (\$)	Severance Payment (\$)	Ad Val. Prod. Payment (\$)	Sales & Use Payment (\$)
The average price per barrel is assumed to be \$20. All economic impacts are reported in thousands of dollars. For example, 152,000 = \$152,000,000										
1990	7,600,000	152,000	60,648	212,648	19,380	760.00	12,100	8,830	10,101	590
1991	7,391,760	147,835	58,986	206,821	18,849	739.18	11,768	8,588	9,825	574
1992	7,189,226	143,785	57,370	201,155	18,333	718.92	11,446	8,353	9,550	551
1993	6,992,241	139,845	55,798	195,643	17,830	699.22	11,132	8,124	9,294	543
1994	6,800,654	136,013	54,269	190,282	17,342	680.07	10,827	7,902	9,082	528
1995	6,614,316	132,286	52,782	185,069	16,867	661.43	10,531	7,685	8,791	513
1996	6,433,083	128,662	51,336	179,998	16,407	643.31	10,242	7,474	8,550	498
1997	6,256,817	125,136	49,929	175,065	15,955	625.68	9,962	7,270	8,316	486
1998	6,085,380	121,708	48,561	170,269	15,518	608.54	9,670	7,070	8,088	472
1999	5,918,641	118,373	47,231	165,604	15,093	591.86	9,423	6,877	7,867	459
2000	5,756,470	115,129	45,937	161,066	14,849	575.65	9,165	6,688	7,667	447
2001	5,598,743	111,975	44,678	156,653	14,277	559.87	8,914	6,508	7,441	436
2002	5,445,337	108,907	43,454	152,361	13,806	544.53	8,670	6,327	7,238	423
2003	5,296,135	105,923	42,263	148,186	13,505	529.61	8,432	6,153	7,038	411
2004	5,151,021	103,020	41,105	144,126	13,135	515.10	8,201	5,985	6,845	400
2005	5,009,883	100,198	39,979	140,177	12,775	500.99	7,976	5,820	6,650	389
1991 through 2005										
Total	91,939,707	1,838,795	733,678	2,572,476	234,448	9,193.96	146,378	106,821	122,199	7,130
Averages	6,129,314	122,586	48,912	171,498	15,630	612.93	9,759	7,121	8,147	475

New Table 5-12
Oil Production Impacts -2.74%/Yr. Decline
BLM-ADMINISTERED LANDS in the Grass Creek Planning Area

Year	Production (BBLs)	Direct Impact (\$)	Indirect/ Induced Impact (\$)	Total Economic Activity Impact	Total Personal Income Impact (\$)	Total Employ. Impact (Jobs)	Federal Royalty Payments (\$)	Severance Payment (\$)	Ad Val. Prod. Payment (\$)	Sales & Use Payment (\$)
The average price per barrel is assumed to be \$20. All economic impacts are reported in thousands of dollars. For example, 152,000 = \$152,000,000										
1990	5,500,000	110,000	43,890	153,890	14,025	550.00	12,100	6,390	7,310	427
1991	5,349,300	106,986	42,687	149,673	13,641	534.93	11,768	6,215	7,110	415
1997	5,202,729	104,055	41,518	145,572	13,267	520.27	11,446	6,045	6,918	404
1993	5,060,174	101,203	40,380	141,584	12,903	506.02	11,132	5,879	6,726	393
1994	4,921,526	98,431	39,274	137,704	12,550	492.15	10,827	5,117	6,541	382
1995	4,786,676	95,734	38,198	133,931	12,206	478.67	10,531	5,562	6,362	372
1996	4,655,521	93,110	37,151	130,261	11,872	465.55	10,242	5,409	6,188	361
1997	4,527,960	90,559	36,133	126,692	11,546	452.80	9,962	5,261	6,018	351
1998	4,403,894	88,078	35,143	123,221	11,230	440.39	9,689	5,117	5,853	342
1999	4,283,227	85,665	34,180	119,845	10,922	428.32	9,423	4,977	5,653	332
2000	4,165,866	83,317	33,244	116,561	10,623	416.59	9,165	4,840	5,537	323
2001	4,051,722	81,034	32,333	113,367	10,332	405.17	8,914	4,708	5,385	314
2002	3,940,705	78,814	31,447	110,261	10,049	394.07	8,670	4,579	5,238	306
2003	3,832,729	76,655	30,585	107,240	9,773	383.27	8,432	4,453	5,094	297
2004	3,727,712	74,554	29,747	104,301	9,506	372.77	8,201	4,331	4,955	289
2005	3,625,573	72,511	28,932	101,444	9,245	362.56	7,976	4,212	4,819	281
1991 through 2005										
Totals	66,535,314	1,330,706	530,952	1,861,657	169,665	6,653.53	146,378	77,306	88,434	5,162
Average	4,435,688	88,714	35,397	124,110	11,311	444.57	9,759	5,154	5,896	344

**New Table 5-13
Natural Gas Production Impacts +5.87%/Yr. Decline
ALL LANDS in the Grass Creek Planning Area**

Year	Production (MCF)	Direct Impact (\$)	Indirect/ Induced Impact (\$)	Total Economic Activity Impact (\$)	Total Personal Income Impact (\$)	Total Employ. Impact (Jobs)	Federal Royalty Payments (\$)	Severance Payment (\$)	Ad Val. Prod. Payment (\$)	Sales & Use Payment (\$)
The average price per thousand cubic feet (MCF) is assumed to be \$1.80.										
1990	7,600,000	13,680,000	5,472,000	19,152,000	1,748,000	68.40	1,059,840	820,800	951,430	53,092
1994	8,046,120	14,483,016	6,493,206	20,276,222	1,850,608	72.42	1,122,053	868,981	1,007,279	56,209
1992	8,518,427	15,333,169	6,133,268	21,466,437	1,959,238	75.57	1,187,917	919,990	1,066,407	59,508
1993	9,018,459	16,233,226	6,493,290	22,726,516	2,074,246	81.17	1,257,648	973,994	1,129,005	63,001
1994	9,547,842	17,186,166	6,874,447	24,060,563	2,196,004	85.93	1,331,472	1,031,167	1,195,277	66,699
1996	10,108,301	18,194,941	7,277,977	25,472,918	2,324,909	90.97	1,409,629	1,091,696	1,265,440	70,615
1996	10,701,658	19,262,985	7,705,194	26,968,178	2,461,381	96.31	1,492,374	1,155,779	1,339,721	74,760
1997	11,329,845	20,393,722	8,157,489	28,551,210	2,605,864	101.97	1,579,977	1,223,623	1,418,363	79,148
1996	11,994,907	21,590,833	8,636,333	30,227,116	2,758,829	107.95	1,672,721	1,295,450	1,501,621	83,794
1996	12,699,008	22,858,215	9,143,286	32,001,501	2,920,772	114.29	1,770,910	1,371,493	1,589,766	88,713
2000	13,444,440	24,199,992	9,679,997	33,879,989	3,092,221	121.00	1,874,863	1,452,000	1,683,085	93,920
2001	14,233,629	25,620,532	10,248,213	35,868,745	3,273,735	126.10	1,984,917	1,537,232	1,781,882	99,433
2002	15,069,143	27,124,457	10,849,783	37,974,240	3,465,903	135.62	2,101,432	1,627,467	1,886,479	105,270
2003	15,953,702	28,716,663	11,486,665	40,203,328	3,669,351	143.58	2,224,786	1,723,000	1,997,215	111,449
2001	16,890,184	30,402,331	12,160,932	42,563,263	3,884,742	152.01	2,355,381	1,824,140	2,114,452	117,991
2003	17,881,638	32,186,948	12,874,779	45,061,727	4,112,777	160.93	2,493,641	1,931,217	2,238,570	124,918
1991 through 2005										
Totals	185,437,303	333,787,146	133,514,859	467,302,003	42,650,580	1,668.92	25,859,721	20,027,229	23,214,562	1,295,428
Average	12,362,487	22,252,476	8,900,991	31,153,467	2,843,372	111.26	1,723,981	1,335,149	1,547,637	86,362

New Table 5-14
Natural Gas Production Impacts + 5.87%/Yr. Decline
BLM-ADMINISTERED LANDS in the Grass Creek Planning Area

Year	Production (MCF)	Direct Impact (\$)	Indirect/ Induced Impact (\$)	Total Economic Activity Impact	Total Personal Income Impact (\$)	Total Employ. Impact (Jobs)	Federal Royalty Payments (\$)	Severance Payment (\$)	Ad Val. Prod. Payment (\$)	Sales & Use Payment (\$)
The average price per thousand cubic feet (MCF) is assumed to be \$1.80.										
1990	6,400,000	11,520,000	4,608,000	16,128,000	1,472,000	57.60	1,059,840	691,200	801,204	44,709
1991	6,775,680	12,196,224	4,878,490	17,074,714	1,558,406	60.98	1,122,053	731,773	848,235	47,334
1992	7,173,412	12,912,142	5,164,857	18,076,999	1,649,885	66.95	1,187,917	774,729	898,027	50,112
1993	7,594,492	13,670,085	5,468,034	19,138,119	1,746,733	69.91	1,257,648	820,205	950,741	53,054
1994	8,040,298	14,472,519	5,789,008	20,261,527	1,849,266	72.36	1,331,472	866,351	1,006,549	56,168
1995	8,512,253	15,322,058	6,128,822	21,450,878	1,957,818	76.61	1,409,629	919,323	1,065,634	59,465
1996	9,011,923	16,221,461	6,488,584	22,710,045	2,072,742	81.11	1,492,374	973,288	1,128,186	62,955
1997	9,540,922	17,173,660	6,869,464	24,043,125	2,194,412	85.87	1,579,977	1,030,420	1,194,411	66,651
1998	10,100,975	18,181,754	7,272,702	25,454,456	2,323,224	90.91	1,672,721	1,090,905	1,264,523	70,563
1999	10,693,902	19,249,023	7,699,609	26,948,633	2,459,597	96.25	1,770,910	1,154,941	1,338,750	74,705
2000	11,321,634	20,378,941	8,151,576	28,530,517	2,603,976	101.89	1,874,893	1,222,736	1,417,335	79,091
2001	11,986,214	21,575,185	8,630,074	30,205,259	2,756,829	107.88	1,984,917	1,294,511	1,500,533	83,733
2002	12,689,804	22,841,648	9,136,659	31,978,307	2,918,655	114.21	2,101,432	1,370,499	1,588,614	88,648
2003	13,434,696	24,182,453	9,672,981	33,855,434	3,089,980	120.91	2,224,786	1,450,947	1,681,865	93,852
2004	14,223,313	25,601,993	10,240,785	35,842,748	3,271,362	128.01	2,355,381	1,536,118	1,780,591	99,361
2005	15,058,221	27,104,798	10,841,919	37,946,717	3,463,391	135.52	2,493,641	1,628,288	1,885,112	105,194
1991 through 2005										
Totals	156,157,729	281,083,912	112,433,564	393,517,478	35,916,276	1,405.42	25,859,721	16,865,034	19,549,106	1,090,886
Average	10,410,515	18,738,927	7,495,571	26,234,499	2,394,418	93.69	1,723,981	1,124,336	1,303,274	72,726

**New Table 5-15 (Revised Tables 6 and 7 from draft EIS)
Estimated Recreational Use in the Planning Area**

	Calendar Year 1990 (Base Year)						Calendar Year 2005 (Projections)					
	Visitor Use Days On All Lands ¹			Visitor Use Days On Public Lands			Visitor Use Days On All Lands			Visitor Use Days On Public Lands		
	Resident	Nonresident	Total	Resident	Nonresident	Total	Resident	Nonresident	Total	Resident	Nonresident	Total
Nonconsumptive Recreation												
Boating/Canoeing	675	425	1,100	250	25	275	750	475	1,225	275	25	300
Camping	2,250	1,500	3,750	2,025	1,350	3,375	2,550	1,675	4,175	2,250	1,500	3,750
Hiking	3,575	625	4,200	3,200	575	3,775	3,950	700	4,650	3,550	625	4,175
Picnicking	2,300	1,900	4,100	1,725	1,350	3,075	2,550	2,050	4,550	1,900	1,500	3,400
Sightseeing	1,475	2,050	3,525	1,325	1,350	3,175	1,625	2,275	3,900	1,450	2,050	3,500
4-Wheel Driving	3,800	25	4,025	3,225	200	3,425	4,200	250	4,450	3,575	25	3,900
Snowmobiling	400	25	475	200	25	225	450	25	475	225	25	250
Other ²	3,000	3,500	12,500	4,600	1,300	6,400	3,950	3,875	13,825	5,100	2,000	7,100
Totals: Nonconsumptive Recreation	23,475	10,150	33,625	16,550	7,175	23,725	25,975	11,275	37,250	18,325	7,950	26,275
	Calendar Year 1990 (Base Year)						Calendar Year 2005 (Projections)					
	Visitor Use Days On All Lands			Visitor Use Days On Public Lands			Visitor Use Days On All Lands			Visitor Use Days On Public Lands		
	Resident	Nonresident	Total	Resident	Nonresident	Total	Resident	Nonresident	Total	Resident	Nonresident	Total
Consumptive Recreation												
Hunting Totals	67,300	7,600	74,900	44,600	5,000	49,600	74,490	8,435	82,925	49,375	5,525	54,900
Hunting Totals include:												
Elk	7,100	300	7,400	2,600	100	2,700	7,850	325	8,175	2,875	110	2,985
Pronghorn Antelope	550	150	700	475	125	600	600	175	775	525	135	660
Deer	24,000	3,000	27,000	13,439	1,650	15,089	26,575	3,325	29,900	14,875	1,825	16,700
Moose	40	0	40	11	0	11	40	10	50	20	6	25
Sage Grouse	13,360	1,400	14,760	8,900	1,000	9,900	14,800	1,550	16,350	9,850	1,100	10,950
Small Game/Waterfowl	22,250	2,750	25,000	19,175	2,125	21,300	24,825	3,050	27,675	21,230	2,350	23,580
Fishing Totals	49,075	8,325	57,400	4,875	875	5,750	54,325	9,225	63,550	5,400	975	6,375
Trapping Totals	1,450	150	1,600	1,225	75	1,300	1,600	175	1,775	1,350	100	1,450
Totals: Consumptive Recreation	117,825	16,075	133,900	50,700	5,950	56,650	130,415	17,835	148,250	56,125	6,600	62,725
Totals: All Recreational Use	141,300	26,225	167,525	67,250	13,125	80,375	156,390	29,110	185,500	74,450	14,550	89,000

¹ Recreational use is shown in visitor days spent on all lands within the Grass Creek RMP Planning Area. *Nonconsumptive* recreational visitor use is estimated from Big Horn, Hot Springs, Park, and Washakie county data in the 1990 State Comprehensive Outdoor Recreation Plan (University of Wyoming, 1990). *Consumptive* use is based directly on Wyoming Game and Fish Department visitor days estimated for these same four counties, also in calendar year 1990. Extrapolations of the amount of nonconsumptive and consumptive use in the planning area are based on the professional judgment of BLM recreation specialists.

² Other activities include bicycling, archery, shooting, slodging, skating, horse riding, crosscountry skiing, outdoor swimming, and water skiing.

**New Table 5-16
Estimated Population and Recreational Visitor Use¹**

Year	Population In the Four-County Area	Recreational Visitor Days
1990 (Base year)	46,800	80,375
1991	46,900	80,547
1992	48,300	82,951
1993	48,100	82,608
1994	48,600	83,467
1995	48,800	83,810
1996	49,200	84,497
1997	49,400	84,840
1998	49,800	85,527
1999	50,000	85,870
2000	50,300	86,385
2001	50,600	86,900
2002	50,900	87,415
2003	51,200	87,930
2004	51,500	88,445
2005	51,800	89,000 ²

¹ Sources: The "Regional Economic Information System", U.S. Department of Commerce, Economics and Statistic Administration, Bureau of Economic Analysis, Regional Economic Measurement Division and the "Official Population Revisions of the 1990 Census, June 22, 1992," by the Wyoming Department of Administration and Information, Division of Economic Analysis.

² Rounded to nearest 100.

**New Table 5-17
Economic Impact of Nonresident Recreation, 1990**

Nonconsumptive Recreation	Per Day			On All Lands			On BLM-Administered Lands		
	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)
All Nonconsumptive Use (such as boating, camping, hiking)	63.07	12.95	0.001041	640,161	131,443	10.57	452,527	92,916	7.47
Consumptive Recreation	Per Day			On All Lands			On BLM-Administered Lands		
	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)
Hunting Totals				1,263,309	200,033	16.30	796,700	125,483	10.23
Hunting Totals include:									
Elk	314.08	55.00	0.004464	94,224	16,500	1.34	31,408	5,500	0.45
Pronghorn Antelope	296.35	48.38	0.003848	44,452	7,257	0.58	37,043	6,048	0.48
Deer	191.69	30.29	0.002457	575,070	90,870	7.37	316,288	49,979	4.05
Moose	441.95	72.03	0.005753	0	0	0.00	0	0	0.00
Sage Grouse	155.24	24.92	0.002034	217,336	34,888	2.85	155,240	24,920	2.03
Small Game/ Waterfowl	120.81	18.37	0.001513	332,227	50,518	4.16	256,721	39,036	3.22
Fishing Totals	51.85	8.30	0.000722	431,651	69,098	6.01	45,369	7,263	0.63
Trapping Totals	51.85	8.30	0.000722	7,778	1,245	0.11	3,889	623	0.05
Totals for Consumptive Recreation				1,702,738	270,376	22.42	845,958	133,369	10.91
Totals for all Nonresident Recreation				2,342,899	401,819	32.99	1,298,485	226,285	18.38

**New Table 5-18
Economic Impact of Nonresident Recreation¹
in the Grass Creek Planning Area for all Alternatives**

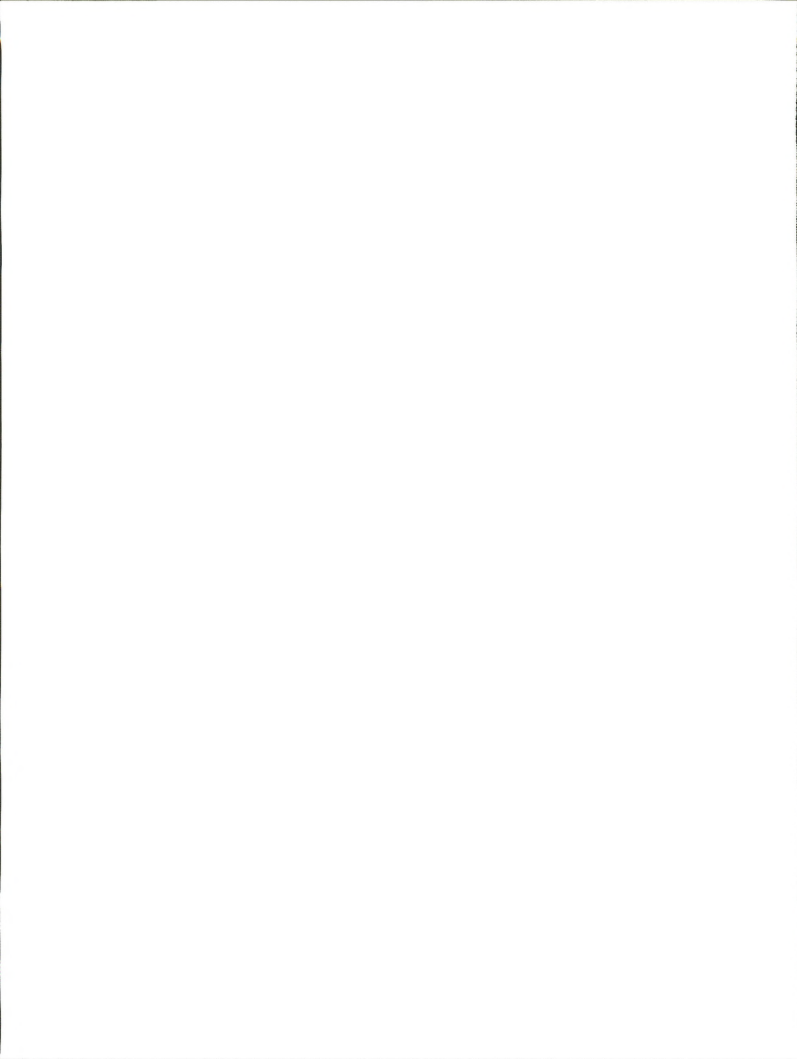
Year	On All Lands in the Planning Area			On BLM-Administered Land in the Planning Area		
	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)	Economic Activity (\$)	Personal Income (\$)	Employment (Jobs)
1991	2,360,261	404,794	33.22	1,307,667	227,886	18.52
1992	2,377,622	407,770	33.47	1,317,290	229,560	19.05
1993	2,394,984	410,746	33.71	1,326,472	231,162	18.78
1994	2,412,346	413,723	33.96	1,335,653	232,764	18.91
1995	2,429,707	416,699	34.20	1,345,276	234,439	19.05
1996	2,447,069	419,675	34.45	1,354,457	236,041	19.18
1997	2,464,430	422,652	34.69	1,363,785	237,667	19.31
1998	2,481,792	425,628	34.93	1,373,114	239,293	19.44
1999	2,499,153	428,604	35.18	1,382,442	240,920	19.58
2000	2,516,515	431,580	35.43	1,391,771	242,546	19.71
2004	2,533,876	434,557	35.67	1,401,099	244,172	19.84
2002	2,551,238	437,533	35.91	1,410,427	245,798	19.97
2003	2,568,600	440,509	36.15	1,419,756	247,425	20.10
2004	2,585,961	443,486	36.40	1,429,084	249,051	20.24
2005	2,603,323	446,462	36.64	1,438,413	250,677	20.37
Total	37,226,877	6,384,418	524.00	20,596,706	3,589,401	291.65
Average	2,481,792	425,628	34.93	1,373,114	239,293	19.44

¹ Source: University of Wyoming, Department of Agricultural Economics, Laramie, WY

New Table 5-19
Total Economic Activity in the Grass Creek Planning Area for 1991-2005 and Fiscal Impacts of Oil and Gas

Land Use	Total Economic Activity On All Lands in the Planning Area				Total Economic Activity On BLM-Administered Lands in the Planning Area			
	Proposed RMP (Millions \$)	Alternative A (Millions \$)	Alternative B (Millions \$)	Alternative C (Millions \$)	Proposed RMP (Millions \$)	Alternative A (Millions \$)	Alternative B (Millions \$)	Alternative C (Millions \$)
Forestland Management	27	27	30	25	4	4	7	3
Livestock Grazing	149	155	156	138	88	92	92	82
Minerals Management								
Coal Production	26	26	26	26	7	7	7	7
Oil & Gas	3,144	3,144	3,167	3,121	2,328	2,328	2,344	2,311
Oil & Gas Totals include:								
2D Seismic	2	2	2	2	1	1	1	1
3D Seismic	15	15	15	15	9	9	9	9
Wildcat Drilling	16	16	24	8	8	8	12	4
Completed Oil Wells	71	71	73	69	54	54	56	52
Oil Production	2,570	2,570	2,570	2,570	1,860	1,860	1,860	1,860
Completed Gas Wells	3	3	4	3	3	3	3	2
Gas Production	467	467	479	454	393	393	403	383
Recreation	37	37	37	37	21	21	21	21
Total Economic Activity	3,383	3,389	3,416	3,347	2,448	2,452	2,471	2,424
	Fiscal Impacts ¹ On All Lands in the Planning Area				Fiscal Impacts On BLM-Administered Lands in the Planning Area			
Oil & Gas	453	453	455	451	380	380	382	378

¹ Production Royalties and Taxes Contributed to Federal, State, and Local Government



NEW APPENDIX 6

MITIGATION MEASURES AND CRITERIA FOR THEIR APPLICATION TO SURFACE-DISTURBING AND DISRUPTIVE ACTIVITIES

INTRODUCTION

This appendix is in four parts: Part 1 describes opportunities for mitigating impacts to public lands and resources in the Grass Creek Planning Area; Part 2 describes watershed conservation practices for surface-disturbing activities; Part 3 summarizes literature on the seasonal use of habitat by wildlife; and Part 4 describes oil and gas standard lease terms and conditions and reasonable measures to reduce the environmental effects of oil and gas operations.

PART 1

MITIGATION FOR POTENTIALLY AFFECTED LANDS AND RESOURCES

In preparing resource management plans, the BLM is required to include appropriate mitigation measures to address environmental impacts. According to 40 CFR 1508.20, mitigation includes:

- (a) avoiding the impact altogether by not taking a certain action or parts of an action;
- (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
- (e) compensating for the impact by replacing or providing substitute resources or environments.

Early in the planning process for the Grass Creek RMP, the BLM evaluated existing inventory information, requested other scientific and technical information from public and private sources, and identified planning concerns and issues with public input.

Some of these concerns and issues addressed the potential for adverse impacts to public land resources or uses, from surface-disturbing and other disruptive activities (see Glossary).

Although it would be impossible to list all these activities, some examples include leasable and salable

minerals exploration and development; geophysical exploration; motorized vehicle use and recreation; heavy equipment use and construction (related to such things as timber sales, range or wildlife habitat improvements, and fire suppression); and the development of roads and other types of rights-of-way.

Because the RMP must deal with a large area and many different kinds of impacts, mitigation for surface-disturbing and disruptive activities is often expressed as generalized requirements or limitations on public land uses. However, when it becomes necessary to implement these requirements (for example, when a wildcat well is proposed for drilling) specific mitigation measures are applied on a case-by-case basis, using detailed, site-specific evaluations.

Table 6-1, at the back of this appendix, lists (1) the lands and resources that sometimes require protection and the general location of those lands and resources, (2) a discussion of the potential risks to those lands and resources, and (3) examples of mitigation that may be used to reduce impacts to those lands and resources in a way that does not unnecessarily constrain land uses.

Table 6-1 also satisfies a requirement of BLM manual section 1624 by indicating the type of oil and gas lease stipulation that would normally cover the mitigation described in the table. In spite of this apparent distinction for oil and gas development, the mitigation requirements in Table 6-1 will be applied in a consistent manner to all kinds of surface-disturbing activities.

PART 2

WATERSHED CONSERVATION PRACTICES FOR SURFACE-DISTURBING ACTIVITIES

FOREST MANAGEMENT ACTIVITIES

The following conservation practices would be implemented.

- Operators would locate landing or yarding areas to facilitate skid trail placement on, or as close as possible to, the contour of the slope.

NEW APPENDIX 6

- Skidder-type yarding on all slopes greater than 45 percent would be prohibited.
- Timber harvesting activities would be restricted to periods when soils are dry or frozen.
- Slash would be treated in place to minimize surface disturbance. Methods would include crushing with equipment to reduce height, and burning in place. Windrowing or piling slash using heavy equipment would be discouraged. Slash could also be spread over disturbed areas such as skid trails or decking areas to protect exposed soil from erosion.
- When logging is completed, disturbed areas would be recontoured to facilitate drainage and seeded (preferably with native species) to provide effective watershed cover within one year. If erosion problems occur, additional stabilization would be required such as construction of cross drains or water bars on skid trails or access roads, or the application of mulch or erosion blankets on slopes.
- Through occasional grazing, or through the exclusion of grazing for up to three years, livestock would be managed to facilitate regrowth of vegetation.
- Trees would be felled away from riparian areas and water courses.
- Skidder-type yarding across any ephemeral, intermittent, or perennial stream would be prohibited unless mitigation is applied to avoid channel or bank damage and associated stream sedimentation. Activities would be confined to periods when soils are frozen, or when drainage channels can be armored with natural or synthetic products.

GAS AND OIL ACTIVITIES

The following watershed conservation practices would be implemented as necessary to reduce the possibility of pollutants entering surface waters through discharges or spills. Emphasis would be on protecting areas where important or sensitive resource values or uses are dependant on the surface waters or adjacent riparian areas.

- Unlined pits to contain fluids used during drilling, development, maintenance, and production would be discouraged. Near important riparian habitat areas and adjacent to class I streams (as identified by DEQ or WGFD) fluids should be contained in tanks or closed circulation systems. At the completion of the operation, fluids would be removed from the site and disposed of at an authorized facility.
 - The disposal of produced water by surface discharge would be discouraged in areas with important or sensitive resource values or uses are dependant on the surface waters or adjacent riparian areas. In these areas, reinjection of fluids is preferred. In other areas operators might be encouraged to dispose of water on the surface if (1) the water meets state of Wyoming water quality standards; (2) new riparian habitat could be developed; and (3) other management goals and objectives could be met.
 - As necessary, the operator would construct a berm around the perimeter of the well pad before drilling begins. The berm must be sufficient to retain all fluids used on the site and prevent runoff from entering the well pad.
 - All fluids used in equipment operation and maintenance, such as waste oil, would be collected for disposal at an authorized facility. Fluids would not be disposed of on the ground.
- The following conservation practices would be implemented to maintain or enhance vegetative cover, to increase watershed stability and site productivity, and to minimize erosion and stream sedimentation.
- Surface-disturbing activities would be prohibited on slopes greater than 25 percent, unless adverse effects on watersheds are mitigated.
 - Surface-disturbing activities would be prohibited during periods when soils are saturated and the effects cannot be mitigated, or when watershed damage is likely to occur. "Mud rolling" to obtain access during wet conditions generally would be prohibited. (Mud rolling is the blading, or side-casting, of wet material from the surface of roads.)
 - Operators would be required to stabilize all exposed soil and spoil materials such as cut and fill slopes, excavations, embankments, borrow pits and waste piles during construction and before final reclamation. Stabilization measures would include seeding, rip-rapping, benching, mulching, and use of artificial coverings.
 - At the completion of drilling, disturbed areas would be recontoured to facilitate drainage and seeded (preferably with native species) to provide effective watershed cover within one year. If erosion problems occur, additional stabilization may be required, such as construction of cross drains or water bars on access roads, or the application of mulch or erosion blankets on slopes.
 - When road placement or other construction is necessary within 500 feet of streams and riparian areas, obstructions such as logs, brush, rocks, or depressions would be placed at the base of fill slopes and

immediately below cross drain outlets to facilitate sediment deposition. The use of gravel, fabric, or geotextiles may be required within 500 feet of riparian areas.

- Through occasional grazing, or through the exclusion of grazing for up to five years, livestock would be managed to encourage regrowth of vegetation.

ROAD CONSTRUCTION

The following conservation practices would be implemented to minimize surface disturbance and reduce erosion and stream sedimentation during the location and design phases as well as during all types of construction and maintenance.

- New road construction would be prohibited where existing roads provide reasonable access.
- Roads would be located to minimize the amount of cut and fill. Where appropriate, roads would be placed close to ridge tops to minimize cut and fill and the number of cross drains needed for drainage.
- During road construction, crowning or in-sloping and the use of turnouts or cross drains, such as water bars, relief culverts, or dips would be required to provide adequate drainage and prevent rill or gully erosion deeper than 1 inch. Another practice which could be used to provide drainage on contour roads (roads with grades less than 6 percent) is out-sloping, in which the road surface is uniformly graded from the toe of the road cut downward to the road shoulder. This practice could be unsafe for some types of activities, but is desirable for watershed protection and might be used under certain circumstances.
- Roads would be located to minimize the number of stream crossings. Crossings would be at right angles to streams to minimize bank and channel disturbance.
- When road placement is necessary within 500 feet of streams and riparian areas, obstructions such as logs, brush, rocks, or depressions would be placed at the base of fill slopes and immediately below cross drain outlets to facilitate sediment deposition. The use of gravel, fabric, or geotextiles may be required on roads within 500 feet of riparian areas.

The following conservation practices would be implemented to insure that riparian areas continue to provide desirable water quality and flow, as well as fish and wildlife habitat.

- Culverts, arches, ellipses, and fords would be built on streams to minimize alteration of natural stream

characteristics, provide fish passage, and reduce erosion and stream sedimentation. The use of natural stream crossings, such as fords, without structural armoring, generally would be prohibited. Stream crossings would be designed according to the following guidelines.

1. Instream structures would allow free passage of water and would not be plugged by road fill.
2. A 10-year design storm would be used for sizing structures on temporary stream crossings where structures would be removed. Culverts would have a minimum 12-inch diameter.
3. A 100-year design storm would be used for sizing structures on permanent stream crossings.
4. A minimum backfill depth would be provided on culverts equal to 1.5 times the structure diameter.
5. All structures would be checked after storm runoff to ensure that they are functioning properly.

PART 3

WILDLIFE SEASONAL HABITAT AND LITERATURE ON MITIGATION

An animal's preparation for flight, if it occurs frequently, can impose a severe burden on the animal's energy budget. Increases in heart rate have been shown to precede flight, and even to occur when animals are disturbed but do not run. The time spent and the associated period of heightened attention takes away from feeding. The animals often relocate to suboptimal habitat areas. If an animal is unable to compensate for these increases in its cost of living, then reproduction, growth, and survival may be adversely affected. Increased energy costs are more harmful during critical times of the year when animals are already in a state of depleting energy reserves, such as periods of severe weather and late pregnancy. Three types of disturbance stimuli are listed for big game: (1) those that are not familiar or predictable, (2) those involving sharp contrasts or sudden changes in the environment, for example, quick movements, sudden loud noises, and (3) those to which an animal responds innately with alarm, such as predators and natural environmental hazards (Bromley 1985).

Habituation by wildlife to human activities can be encouraged (1) when humans avoid or minimize fear-provoking actions like direct approaches, loud noises, and quick movements, (2) by controlling the timing, frequency, and intensity of human activities to make

these more regular and therefore more predictable, and (3) by minimizing the frequency and intensity of human encounters when the wildlife are particularly sensitive to disturbance. Habituation can be detrimental to animals that adapt along roads where they may become more susceptible to poaching, hunting, or collisions with vehicles (Bromley 1985).

Hunted populations of elk and mule deer are affected by human disturbances associated with multiple use on public, private, and state lands. Animals are more disturbed by people moving or working outside vehicles, than by traffic or equipment. Elk will return to an area after the human presence activity stops (Ward 1985). Human activity on forest roads alters distributions of elk habitat use. This impact may be mitigated by road closures (Wilmer and deCalesta 1985) or by separation of security areas from disturbed areas by either a line of sight topographic barrier, such as an undisturbed ridge, or by 800 meters to 2 miles of timber (Lyon 1975). This mitigation is especially important during rutting and birthing seasons. During drilling in an elk birthing area, fewer elk were in the area, cows moved their calves sooner, and elk were further away from an access road during the activity. During the following year, which had only minor human activity, elk used the area more often. The location of the access road and drill site were designed to lessen the impact to elk by avoiding critical habitats which may have lessened the consequences of the activity (Johnson and Lockman 1981).

There are many examples of development occurring successfully in areas of resource concerns. Literature provided to the planning team by Marathon Oil Company, as part of their comments on the draft EIS, included examples of industrial development and resource protection by the Atlantic Richfield Company at Sheep Mountain in Colorado (Hendry 1983). Other studies include: Penn (1986), Redman (1986), Zehner and Mullins (1987), Moore (1989), Ledec (1990), Chappelle et al. (1991), Brocklehurst (1991), Grant (1992), and Middleton (1992).

PART 4

OIL AND GAS STANDARD LEASE TERMS AND CONDITIONS

The oil and gas "standard lease terms and conditions" are defined in section 6 of the lease. The following excerpt is the "conduct of operations."

Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other

resources, and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses shall be conditioned so as to prevent unnecessary or unreasonable interference with rights of lessee.

Prior to disturbing the surface of the leased lands, lessee shall contact lessor to be apprised of procedures to be followed and modifications or reclamation measures that may be necessary. Areas to be disturbed may require inventories or special studies to determine the extent of impacts to other resources. Lessee may be required to complete minor inventories or short term special studies under guidelines provided by lessor. If in the conduct of operations, threatened or endangered species, objects of historic or scientific interest, or substantial unanticipated environmental effects are observed, lessee shall immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects.

REASONABLE MEASURES CONSISTENT WITH LEASE RIGHTS GRANTED

Federal regulations (43 CFR 3101.1-2, surface use rights) have defined the words "reasonable measures...consistent with lease rights granted" which occur in section 6 of the lease form. These reasonable measures may be required by the authorized officer to minimize adverse impacts to other resource values, land uses, or users. Reasonable measures are described as:

To the extent consistent with lease rights granted, such reasonable measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. At a minimum, measures shall be deemed consistent with lease rights provided that they do not: require relocation of proposed operations by more than 200 meters; require that operations be situated off the leasehold; or prohibit new surface-disturbing operations for a period in excess of 60 days in any lease year.

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Native American Traditional Cultural Values, Historic Properties, and Paleontological Resources

Location: Some locations are the Legend Rock Petroglyph Site, the Meeteetse Draw Rock Art Area, the Gebo-Crosby Historical Area, the Bridger Trail, the Mexican Pass Freight Road, and the Fort Washakie to Meeteetse Stage Road. (See Map 2.)

Discussion: The preferred strategy for treating potential adverse effects to Native American traditional cultural values, historical properties, and paleontological resources is avoidance. When avoidance is not feasible, appropriate mitigation is determined case-by-case. Development of mitigation will consider the level of site significance, the estimated costs of mitigation, and the urgency for beginning or completing the proposed surface-disturbing activity.

Factors: The following should be considered. What is the potential for avoiding disturbance to Native American traditional cultural values or historic properties within view or 0.25 mile of the resource or value, whatever distance is closer? (The Legend Rock Petroglyph Site would be protected for a distance of 0.5 mile.) If values, properties, or resources cannot be avoided, what is the potential for applying mitigation, such as excavation (for data recovery), stabilization, monitoring, or use of protective barriers and signs?

Opportunities for Mitigation: Avoidance would not be applied to surface-disturbing activities needed for emergency stabilization, protection, or interpretive development of the site. These surface-disturbing activities must be addressed in a site development plan jointly approved by the BLM, the Wyoming State Historic Preservation Office, and the Advisory Council on Historic Preservation. Native American groups would be consulted, as appropriate. Any changes in the oil and gas "no surface occupancy" stipulation at the Legend Rock Petroglyph Site would require environmental analysis, public participation, and an RMP amendment if necessary. Other important cultural and paleontological resources would be addressed through standard lease terms and conditions when oil and gas leases are issued.

Public Health and Safety and Prior Existing Rights

Location: Areas authorized for specific land uses such as beet dumps, existing and closed landfills, communication sites, and the Worland Rifle Range.

Discussion: These areas have existing rights that are not compatible with other surface uses. However, underground mineral resources may still be available for exploration and development.

Factors: The following should be considered. Can temporary use of the surface take place without affecting the existing uses authorized by the lease or other surface use permit? Can the surface be restored to avoid affecting the previously authorized uses?

Opportunities for Mitigation: No other use of these areas will be allowed unless the proposed activities are directly or incidentally related to development of the preexisting lease or permit, or the BLM and the lease or permit holders agree to the activity. In oil and gas leasing this would require a "no surface occupancy" stipulation.

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Visual Resource Management (VRM) Class II Scenic Areas

Location: Scenic areas in the Badlands, the Red Canyon Creek area, and the Absaroka Mountain foothills. (See Map 10.)

Discussion: In VRM Class II areas, the level of change in the appearance of the 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 major natural features of the landscape.

Factors: The following should be considered. What is the potential for successful reclamation, including stabilization of soils and revegetation? What is the potential for selective placement of the proposed activity to minimize its influence on the landscape? Can facilities be painted to blend with surroundings, or hidden behind tree buffers? Will the effects of the proposed action, combined with similar actions, cause a decline in the scenic quality of the area? Would the activity occur near, and be readily observable by the naked eye from congressionally designated wilderness areas (managed as VRM class I areas) or wilderness study areas?

Opportunities for Mitigation: Mitigation would be applied to avoid lasting impairment of visual resources. The intensity of mitigation would vary based on the importance of the visual resources. In oil and gas leasing, mitigation would be addressed through a lease notice, standard lease terms and conditions, or a controlled surface use stipulation.

Occasionally, there could be opportunities for land use activities to be highlighted to benefit public education and provide a better understanding of multiple use.

Big Game Crucial Winter Habitat and Birthing Areas

Location: Crucial winter habitat and birthing areas have been identified throughout the area which provide vital forage as well as thermal and security cover for wildlife. (See Maps 13 through 16.)

Discussion: Seasonal requirements have been designed to protect big game habitat during crucial time periods. In some years big game animals need crucial winter habitat from about November 15 through April 30, and birthing habitat, yearly, from May 1 through June 30. Depending on weather conditions and other factors identified at the time a development activity is proposed, a decision would be made to allow or not allow the activity. This is particularly important for any new or permanent surface disturbance or disruptive activity planned in the crucial habitats.

Factors: The following should be considered. What is the current big game use of the area? What are the seasonal weather patterns for the area? What are the current snow conditions (depth, crusting, longevity)? What are the current and historic precipitation records, temperature conditions, and wind chill factors? What is the current weather forecast and what is the anticipated duration of the proposed activity? Are there any topographic or geographic habitat limitations present? Are habitats fragmented? Are there current or potential stress-related problems in animal populations resulting from human disturbance and displacement (overcrowding and adverse behavioral modifications resulting from human activities)?

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Big Game Crucial Winter Habitat and Birthing Areas (Continued)

Factors (Continued): What is the current estimate of animal health in the area? What is the potential for animals to become accustomed to human activity? Will becoming accustomed to human activity allow the animals to reoccupy habitat areas after a reasonable period of time, or will it increase their susceptibility to hunting and other mortality because of stress?

Opportunities for Mitigation: A seasonal requirement would be necessary during times when animals are present and dependant on crucial winter ranges or birthing areas. Short-term exceptions to the requirement may be granted early or late in these seasons depending on weather conditions and animal occupancy. Surface-disturbing and disruptive activities may be allowed on crucial winter ranges during mild weather, if winter ranges are unoccupied and anticipated to remain unoccupied for the duration of the proposed activity, or if animals can easily defer to neighboring suitable habitats.

Birthing areas are used every year and security for the animals is necessary for successful reproduction. If big game animals have not used the habitat for several years, consultation with the WGFD could change range maps to reflect habitat use. Permanent disruptive activities and habitat fragmentation will continue to be avoided on crucial winter ranges and birthing areas.

In oil and gas leasing, mitigation would be addressed through a timing limit stipulation.

Overlapping and Important Big Game Habitat

Location: Narrow ridges (used for migration) and adjacent habitat in the Absaroka Mountain foothills. (Areas of overlapping habitat can be seen on Maps 14 and 15.)

Discussion: Along the Absaroka Mountain foothills there are narrow ridges that are the focus of migration by several species of big game animals. These are associated with other important and overlapping crucial winter ranges and birthing areas that are seasonally occupied by several types of big game animals. Permanent activities, during any year, would prohibit animal migrations on narrow migration corridors. Some years, because of weather conditions and other factors, seasonal use by big game animals is imperative on migration corridors and on overlapping crucial winter ranges and birthing areas. Without the use of these areas, significant winter mortality could take place during severe weather, or populations could gradually decline because of reduced birthing success.

Factors: The following should be considered. Are there any topographic or geographic habitat limitations present? Are habitats fragmented? Will a greater number of animals compete for limited habitat? Will forage competition increase? What is the likelihood of accidents, such as wildlife collisions with vehicles, or poaching, resulting from increased human activity? Are there current or potential stress-related problems or displacement of animal populations resulting from human disturbance. What is the current estimate of big game health in the area? What is the potential for animals to become accustomed to human activity? Will becoming accustomed to human activity allow the animals to reoccupy habitat areas after a reasonable period of time, or will it increase their susceptibility to hunting and other mortality because of stress? What is the timing of the disturbance or activity? What are the seasonal weather patterns for the area? What are the current snow conditions (depth, crusting, longevity)?

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Overlapping and Important Big Game Habitat (Continued)

Factors (Continued): What are the current and historic precipitation records, temperature conditions, and wind chill factors? What is the current weather forecast and what is the anticipated duration of the activity?

Opportunities for Mitigation: Exceptions to the seasonal requirement would not be granted during severe winters while animals are dependent on crucial winter ranges. Generally, exceptions would not be granted on migration corridors and birthing areas while animals are migrating or giving birth. No exceptions would be granted for permanent disruptive activities (see Glossary) or high profile structures on ridges where these activities would block or disrupt animal migrations. Surface-disturbing activities generally would be allowed on crucial winter ranges during mild weather, if winter ranges are unoccupied or if animals can easily defer to neighboring suitable habitats. This might be determined by aerial flights before the proposed activity. However, permanent disruptive activities and habitat fragmentation will continue to be avoided on overlapping crucial winter ranges and birthing areas.

Full field development could involve the siting of more than one well per location, or technology such as "cluster development" to decrease the amount of surface disturbance and the amount of human activity. Directional drilling and off-site production facilities would be encouraged as well as limiting access to permitted activities in these areas through locked gates. The use of downhole, submersible pumps and remote well monitoring, using radio or other electronic methods, should be considered. Noise thresholds or limits on "popping" (backfiring of propane motors) could be established for working production equipment. The noise limit for a propane motor would be 65 decibels [65dB(A)] at 100 feet.

In oil and gas leasing, mitigation would be addressed through a controlled surface use stipulation.

Active Nesting Sites for Raptors

Location: Active raptor nesting sites.

Discussion: Raptors are very sensitive to disturbance during the nesting period. Raptors nest in the planning area during February 15 through July 31, with dates varying by species. Raptors are likely to abandon their nesting attempts if they are disturbed during nest building or when eggs are being laid. Raptors will tolerate some intrusion when young are in the nest. Some raptor pairs nest in the same vicinity yearly. However, some raptors become habituated to existing disturbances or even move in after the disturbance has taken place.

Factors: The following should be considered. Has the nest had documented use within the past three years? What is the potential for the birds to become accustomed to human activity? What types of raptors are present (kestrels, burrowing owls, golden eagles)? Do the raptors represent special status species or are they sensitive species of importance to the state of Wyoming? What is the nesting chronology of the individual species? Does the nest location provide security to the raptor?

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Active Nesting Sites for Raptors (Continued)

Opportunities for Mitigation: Generally, the seasonal requirement would not be applied if the nests are unoccupied or expected to be unoccupied by special status raptor species. If nests are occupied, some short-term minor disturbances which are not anticipated to affect nesting success may be allowed.

There may be potential for relocating raptors from areas of disturbance with the placement of artificial nesting structures.

In oil and gas leasing, mitigation would be addressed through a timing-limit stipulation.

Sage Grouse Strutting and Breeding Habitat

Location: Active sage grouse strutting grounds and their immediate vicinity. (See Map 17.)

Discussion: Often sage grouse strutting grounds (leks) are used every year by grouse. (Leks are usually openings in the sagebrush.) The males are susceptible to predation at this time and tend to abandon these leks if structures are built that allow raptors to perch for hunting, or there are increased disruptive activities. Activity on leks is usually during early morning and evening.

Factors: The following are some factors to be considered. Has the lek had documented use by sage grouse during the past three years? Is the proposed surface-disturbing or disruptive activity permanent or temporary? During what season and time of day would the proposed activity take place?

Opportunities for Mitigation: Generally, surface-disturbing or disruptive activities would not be allowed while birds are breeding or preparing to breed. Permanent or high-profile structures, such as buildings, storage tanks, and overhead power lines would be prohibited or discouraged because these could increase predation. An exception could be granted if these structures are constructed with raptor antiperch features. Exceptions for human activity could be granted between 9:00 A.M. and 6:00 P.M. during the breeding season. The active breeding season is typically from March 15 through May 15.

In oil and gas leasing, mitigation would be addressed through a controlled surface use stipulation.

Sage Grouse Breeding and Nesting Habitat

Location: Suitable breeding and nesting habitat areas within 2 miles of the center of sage grouse leks. (See Map 17.)

Discussion: Most sage grouse hens nest between March 15 and July 31, within a 2-mile radius of a lek. However, within these 2 miles, only suitable habitat (comprising high density sagebrush areas) would be used. This opens up some of the area within the 2-mile radius for development from March 15 through July 31.

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Sage Grouse Breeding and Nesting Habitat (Continued)

Factors: The following should be considered. Has the lek had documented use by grouse within the past three years? What areas within the 2-mile radius are suitable for nesting? What areas contain nests? Is the proposed action within these areas of suitable or active nesting? What is the potential for the birds to become accustomed to human activity? Is the proposed surface-disturbing or disruptive activity permanent or temporary? Is there potential for creation of additional sage grouse habitat from the discharge of produced water or through reclamation that meets desired plant community objectives for sage grouse?

Opportunities for Mitigation: Generally, the seasonal requirement would be applied on lands that contain active nests or suitable nesting habitat, as determined by field surveys. Exceptions could be granted elsewhere within the 2-mile radius.

In oil and gas leasing, mitigation would be addressed through a timing limit stipulation.

Complexes of Sage Grouse Habitat

Location: In areas that involve more than two active sage grouse leks and the overlapping, surrounding suitable habitat for strutting, breeding, and nesting. (See Map 17.)

Discussion: The three complex areas (Upper Fifteenmile, Spring Gulch, and Blue Mesa) have many suitable leks and overlapping nesting habitat which may, or may not, be used by the breeding birds during any year. In these areas, it may not be necessary to protect the location of individual leks because of the adjacent habitat to which the birds can defer. However, the amount of disturbance within the complex could become a factor if that disturbance exceeds 20 percent of the total habitat. This 20 percent would include habitat affected by direct surface disturbance and indirect human activities. For example, an eighth-of-a-mile on each side of a road or a quarter-of-a-mile around an oil or gas well would be considered indirectly disturbed.

Factors: The following should be considered. What is the extent of the surface-disturbing and disruptive activities? What other projects in the area have contributed to a decrease in suitable nesting habitat in the complex area? Can some disturbance be moved outside suitable nesting areas? Is there potential for creation of additional sage grouse habitat from the discharge of produced water or through reclamation that meets desired plant community objectives for sage grouse?

Opportunities for Mitigation: Cumulative disturbance would need to be evaluated for each project within each complex area. Should it be determined that surface disturbance and disruption would be less than 20 percent of suitable habitat areas, then the activities could be allowed to proceed. The only requirement would be a time-of-day limitation whereby activity could take place from dawn to dusk (approximately 9:00 A.M. and 6:00 P.M.) during March 15 through May 15. For oil and gas proposals, this would commonly apply to predrilling activities such as geophysical exploration and new construction related to access and well locations. Exceptions to allow around-the-clock activity could be allowed if the operator can demonstrate that surface disturbance would remain less than 20 percent and none of the leks are active within 0.25 mile of the proposed activity.

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Complexes of Sage Grouse Habitat (Continued)

Opportunities for Mitigation (Continued): If the 20 percent threshold cannot be met, the sage grouse mitigation for individual leks and habitat areas would apply in these sage grouse complex areas.

In oil and gas leasing, mitigation would be addressed through a controlled surface use stipulation.

Recreation and Riparian Habitat

Location: Public lands within 0.25 mile of the high-water mark around Wardel and Harrington reservoirs.

Discussion: These reservoirs provide recreational uses and are important riparian habitat for several wildlife species. This setback from the high-water mark provides for these uses while making the underground resources available for development.

Factors: The following should be considered. Is the great blue heron rookery currently active? What is the proximity of the proposed action to surface water, riparian areas, and other wildlife habitat areas? Are there plans for development of recreational facilities or wildlife projects, or for cooperative management of the lands with the WGFD? Will fish and wildlife habitat be affected by any change in water quality? Will the proposed activity create any water hazards? What is the potential for wildlife to become accustomed to human activity?

Opportunities for Mitigation: Any development within 0.25 mile of the high-water mark of these reservoirs will need to take into consideration the impact to wildlife, fisheries, and recreation.

In oil and gas leasing, mitigation would be addressed through a controlled surface use stipulation. For any lease or portion of lease within a reservoir a "no surface occupancy" stipulation would be applied.

Soil, Water, and Riparian Habitat

Location: Areawide, particularly perennial streams.

Discussion: The specific reasons for no surface disturbance within 500 feet of water are based on the best information available. The main emphasis is to protect the riparian habitat and prevent surface water degradation. Included would be contamination from drilling fluids and increased sedimentation from disturbance. Geographical areas to be protected and time periods of concern must be delineated at the field level because surface water and riparian areas may, at times, involve ephemeral and intermittent as well as perennial waters.

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Soil, Water, and Riparian Habitat (Continued)

Factors: The following should be considered. What is the estimated duration or frequency of the surface-disturbing activity? What aquatic and terrestrial habitat values are present? What is the habitat condition? Will fish and wildlife habitat be affected by any change in water quality? Will the proposed activity create any water hazards? What are the proposed locations and design of stream crossings? Will floodplains be affected? What is the current water quality and the identified Wyoming DEQ and WGFD uses and classifications of the affected streams? What is the potential for increased sedimentation to reach class I streams? Will slope steepness be a factor in causing stream sedimentation?

Opportunities for Mitigation: Surface-disturbing activities might be allowed where riparian areas are ephemeral or intermittent (see Glossary). The placement of water control structures such as dikes, gabions, erosion fabrics, and silt fences would be typical mitigation. Water crossings could be protected by geotechnical products such as geocells, used as a driving surface. Generally, activities would not be allowed on lands within a 100-year floodplain or on seasonally or permanently saturated soils; adjacent to class I streams (as identified by DEQ or WGFD), or if the activity could cause lasting disruption to surface or groundwater hydrology. Additional mitigation may not be required for oil and gas drilling when a closed, drilling mud circulation system is used. In oil and gas leasing, mitigation would be addressed through standard lease terms and conditions.

Soil, Water, and Vegetation

Location: Areawide, on steep slopes (greater than 25 percent), particularly in areas of unstable soils identified by the Geological Survey of Wyoming, and highly erodible soils identified by the Natural Resource Conservation Service (NRCS) (formally the U.S. Soil Conservation Service [SCS]).

Discussion: When necessary, watershed conservation practices (see the Watershed Conservation Practices section of this appendix) will be required for surface-disturbing activities taking place on slopes of 25 percent or less. On steeper slopes, these practices may not adequately protect soil and water from accelerated erosion.

Factors: The following should be considered. What is the estimated duration or frequency of the surface-disturbing activity and how much will take place on steep slopes? Will the proposed activity take place on fragile soils or on soils that are susceptible to erosion? What is the potential for wind- or water-caused erosion? What are the minimum and maximum slopes (measured in percent) to be occupied? Is the area prone to landslides? What is the soil depth? What is the soil moisture? Can soils be adequately stabilized during and after the activity? Will the proposed activity take place in a highly scenic area?

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Soil, Water, and Vegetation (Continued)

Opportunities for Mitigation: The requirement would not be necessary on slopes greater than 25 percent if a mitigation plan demonstrates that the site can be recontoured, stabilized, and revegetated. The mitigation plan would need to include measures to stabilize the soils while surface-disturbing activities are taking place. Examples include using mats for travel over wet or easily eroded areas, the placement of hay bales downslope from fill material and adjacent to streams, and the use of rip-rap for erosion control in steep drainage ditches. Using hydromulch to reseed slopes, and spraying tackifiers on hillsides to prevent erosion, are other mitigation techniques.

The level of necessary mitigation would increase as slopes increase above 25 percent, if fragile or erodible soils are involved, and in areas that are subject to landslides. The development of terraces (location tiering) to be occupied by facilities might also be an acceptable mitigation technique on slopes greater than 25 percent.

Some forest management practices could be allowed on slopes greater than 25 percent. An example is skidder-type yarding that would generally be allowed on slopes up to 45 percent. For other logging operations on slopes steeper than 45 percent, activities would be limited to technically, environmentally, and economically acceptable methods like cable yarding.

Generally, proposed activities of any kind would not be allowed if lasting impairment of visual resources or water quality would take place. In oil and gas leasing, this mitigation would be addressed through standard lease terms and conditions.

Soil, Water, and Vegetation During Wet or Freezing Weather

Location: Areawide

Discussion: Frozen or saturated soils make poor construction and reclamation materials because they do not compact well and may erode rapidly when disturbed. A saturated soil is one in which all or most of the available pore space is occupied by water, and free water is present in the form of puddles and surface runoff. Saturated soils are not sufficiently stable to support structures and make poor seed beds when used for reclamation.

Factors: The following should be considered. When people drive unnecessarily during wet weather, BLM-administered roads and trails are damaged by ruts, creating accelerated erosion and possible safety hazards. This increases road maintenance costs for industry, other permitted users of the public lands, and the federal government.

For construction-related activities, factors to consider would be the soil texture, frost depth, the projected end use of the frozen or saturated soil, the time of year, and the duration of the activity. Sandy soils would be less likely to be influenced by moisture, because water would move more rapidly through the soil profile.

In situations involving motor vehicles, it would be reasonable to ask whether the land use can be delayed until the area dries out.

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Soil, Water, and Vegetation During Wet or Freezing Weather (Continued)

Opportunities for Mitigation: Construction and other surface-disturbing activities would be allowed if the soils are not prone to compaction when saturated. In some cases, the frost zone could be shallow enough to be removed and stockpiled. The proposed activity would then be able to proceed if the frozen material is not used for fill or other construction materials.

Unnecessary driving in wet weather causes undue damage to the public lands and poses safety and road maintenance problems. With appropriate notification roads can be officially closed to the public during wet weather.

In oil and gas leasing, mitigation would be addressed through standard lease terms and conditions.

Soil, Water, Vegetation, Recreation, and Wildlife Habitat

Location: BLM-administered lands within 0.5 mile of the Bighorn River, including about 1,200 acres of public land surface and 2,400 acres of BLM-administered mineral estate. (See Map 9.)

Discussion: This area contains some of the most diverse habitat for wildlife, is visually pleasing, and has high recreational importance. Some of the wildlife associated with the river include the bald eagle, waterfowl, beaver, muskrat, white-tailed deer, mule deer, bats, osprey, great blue heron, sandhill crane, warblers and other song birds, reptiles, amphibians, fish, and occasionally moose, bear, or elk. Although the BLM administers only a small portion of the river corridor, the public lands provide an important link for the wildlife. In addition, as the human population increases, the number of people who are interested in getting access to the river increases, and public land river tracts grow more important for recreation.

Factors: The following should be considered. What is the proximity of the proposed action to surface water, riparian areas, and other wildlife habitat areas? Does the tract have legal public road access for recreation? Could the proposed activity result in acquisition of physical and legal public access for recreation? Are there plans for development of recreational facilities or wildlife projects, or for cooperative management of the tract with the WGFD? Will fish and wildlife habitat be affected by any change in water quality? Will the proposed activity create any water hazards? What are the proposed locations and design of stream crossings?

Opportunities for Mitigation: Generally, surface-disturbing activities would be prohibited on tracts that are developed and cooperatively managed by the BLM and the WGFD for fishing and other recreational access, such as the Duck Swamp and the Railroad Tract. Exceptions may be granted for recreational facilities if these facilities do not degrade the habitat for fish and wildlife, particularly special status species such as the bald eagle. In oil and gas leasing, mitigation would be addressed through a "no surface occupancy" stipulation.

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Soil, Water, Vegetation, Recreation, and Wildlife Habitat
The Upper Owl Creek Proposed ACEC

Location: The Upper Owl Creek Proposed ACEC. (See Map 12.)

Discussion: The Upper Owl Creek Proposed ACEC is about 45 miles west-northwest of Thermopolis, covering about 16,300 acres of public lands in the Absaroka Mountain foothills. The Washakie Wilderness area of the Shoshone National Forest is immediately to the west and the Wind River Reservation borders part of the area on the south. Ecologically, the Upper Owl Creek area is related to these adjacent lands and to Yellowstone National Park. The proposed ACEC has a variety of complex resource concerns. Among them are shallow soils and tundra-like vegetation on slopes that are prone to landslides. These slopes contribute to the highly scenic and primitive aspects of the area. There are several endemic plant species-at-risk in the area. Water flows into the ground on public lands in the canyon of the upper South Fork of Owl Creek to recharge important aquifers within the Bighorn Dolomite and Madison Limestone formations. This water is pumped out of the ground at Hamilton Dome as a byproduct of oil and gas production. The combination of inaccessibility, topography, and vegetation has made the area home to many species of animals including moose, elk, and mule deer. Other animals like bighorn sheep and grizzly bears are known to visit the area's high altitude ridges and outcrops.

This area has experienced some interest in oil and gas exploration and at one time was encumbered by mining claims for gold and other minerals. The combination of sensitive resources and demand for commodity production means that mitigation will need to be very carefully considered in the proposed ACEC.

Factors: The following should be considered. What combination of values are present in the area of the proposed activity? Will the proposed activity require construction of an access road? Will the proposed activity result in acquisition of physical and legal public access? Is the area prone to landslides or other types of mass failure? Can soils be adequately stabilized while the activity is occurring and after completion of the activity? Would soil erosion and sedimentation in the upper South Fork of Owl Creek affect aquifers and reduce the quality or quantity of their water, including water that is produced from oil and gas development? Would the activity be audible or visible with the naked eye from the nearby Owl Creek wilderness study area (WSA)?

Opportunities for Mitigation: Generally, activities would not be allowed that could result in lasting impairment of visual resources or cause permanent adverse effects to any of the other significant resources in the area. The area would be identified as "no surface occupancy" for oil and gas leasing. This stipulation would also be applied on split-estate lands (where BLM administers the mineral estate) adjacent to the proposed ACEC. After completion of the RMP, a detailed activity plan would be prepared for the Upper Owl Creek ACEC if BLM receives a proposal for any major surface-disturbing activity. This activity plan would include assistance from the development proponent and other affected and interested citizens to determine whether some surface occupancy could be allowed in the area. Mitigation considered in the analysis would include "access corridors" and "cluster development."

Table 6-1
Mitigation for Potentially Affected Lands and Resources

Soil, Water, Vegetation, Recreation, and Wildlife Habitat
The Upper Owl Creek Proposed ACEC (Continued)

Opportunities for Mitigation: (Continued) Forest management in the proposed ACEC would emphasize maintaining forest health and important wildlife habitat. Management practices would be designed to minimize impacts to soil, water, and scenery. The construction of new forest roads would be prohibited. Recreation facilities and trailheads would be blended into their surroundings.



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