



U.S. Department of the Interior  
Bureau of Land Management

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# Rock Springs Field Office

## Draft Resource Management Plan Revision and Draft Environmental Impact Statement

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**Volume 1: Abstract, Executive Summary, Chapters 1 - 5,  
Acronyms and Glossary, Literature Cited, and Maps**

A photograph of a rural landscape. In the foreground, there is a wooden fence made of weathered posts and rails. In the middle ground, there is a two-story stone building with a chimney and a smaller structure attached to it. The background shows rolling hills under a cloudy sky.

**Estimated Lead Agency Total  
Costs to Date  
\$8.9 Million**

**May 2023**

### BLM MISSION

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

DOI-BLM-WY-D040-2011-0001-RMP-EIS

# **Rock Springs Field Office**

**Draft Resource Management Plan Revision**

**and**

**Draft Environmental Impact Statement**

**April 2023**

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# United States Department of the Interior



BUREAU OF LAND MANAGEMENT  
High Desert District - Rock Springs Field Office  
280 Highway 191 North  
Rock Springs, WY 82901-3447  
[www.blm.gov/wy](http://www.blm.gov/wy)

In Reply Refer To:

*DOI-BLM-WY-D040-2011-RMP-EIS*

Dear Reader:

The Draft Resource Management Plan/Draft Environmental Impact Statement (Draft RMP/DEIS) for the Bureau of Land Management (BLM) Rock Springs Field Office (RSFO) is available for your review and comment. The BLM prepared this document in consultation with cooperating agencies, and in accordance with the National Environmental Policy Act of 1969, as amended, the Federal Land Policy and Management Act of 1976, as amended, implementing regulations, the BLM's Land Use Planning Handbook (H-1601-1), and other applicable law and policy.

The Draft RMP/DEIS considers management for all BLM administered lands and minerals in the Rock Springs Planning Area. The planning area includes 3.6 million acres of BLM-administered surface land and 3.7 million acres of BLM-administered mineral estate in portions of Lincoln, Sweetwater, Uinta, Sublette, and Fremont counties in southwestern Wyoming. When approved, this RMP will replace the 1997 Green River RMP and will guide the management of public lands administered by the RSFO into the future. The Rock Springs Draft RMP/DEIS and supporting information is available on the project website at:

<https://eplanning.blm.gov/eplanning-ui/project/13853/510>

The BLM encourages the public to provide information and comments regarding the analysis presented in the Draft RMP/DEIS. Your timely comments on the Rock Springs Draft RMP/DEIS will help formulate the Proposed RMP/Final EIS. We are particularly interested in comments concerning the adequacy and accuracy of the proposed alternatives, the analysis of their respective management decisions, and any new information that would help the BLM as it continues to develop the RMP.

In developing the Proposed RMP/Final EIS, which is the next phase of the planning process, the BLM decision maker may select management decisions from any of the alternatives analyzed in the Draft RMP/DEIS for the purpose of creating a management strategy that best meets the needs of the resources and values in this area under the BLM multiple-use and sustained-yield mandate.

If you wish to submit comments on the Draft RMP/DEIS, please make your comments as specific as possible. Comments will be more helpful if they reference a section or page number and if they include suggested changes, methodologies, sources of information, or focus on

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**INTERIOR REGION 7 • UPPER COLORADO BASIN**

COLORADO, NEW MEXICO, UTAH, WYOMING

components of the alternatives. Comments will be accepted for ninety (90) calendar days following the Environmental Protection Agency's publication of its Notice of Availability in the Federal Register. The BLM can best utilize your comments and resource information submissions if received within the review period.

Comments may be submitted through the ePlanning site at:  
<https://eplanning.blm.gov/eplanning-ui/project/13853/510>

Comments may also be submitted by mail to:

Project Manager, RSFO RMP  
BLM Rock Springs Field Office  
280 Highway 191 North  
Rock Springs, WY 82901

Before including your address, phone number, email address, or other personal identifying information in your comment, be advised that your entire comment- including your personal identifying information- may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Public meetings to provide an overview of the document, respond to questions, and take written public comments will be announced by local media, the project website, and/or public mailings at least 15 days in advance.

Electronic copies of the Draft RMP/DEIS have been sent to affected federal, tribal, state, and local government agencies. A hard copy of the document is also available for public inspection at the BLM Rock Springs Field Office at the address shown above.

Thank you for your continued interest in the Rock Springs RMP. We appreciate the information and suggestions you contribute to the planning process. For additional information or clarification regarding this document or the planning process, please contact the RMP Project Manager at the address shown above.

Sincerely,

Andrew Archuleta  
Director BLM Wyoming

# ROCK SPRINGS FIELD OFFICE DRAFT RESOURCE MANAGEMENT PLAN AND DRAFT ENVIRONMENTAL IMPACT STATEMENT

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**Lead Agency:** U.S. Department of the Interior, Bureau of Land Management

**Type of Action:** Administrative

**Jurisdiction:** Portions of Fremont, Lincoln, Sublette, Sweetwater, and Uinta counties

**Abstract:** The Draft Resource Management Plan and Draft Environmental Impact Statement documents the comprehensive analysis of alternatives for the planning and management of public lands and resources administered by the Rock Springs Field Office. The planning area includes 3.6 million acres of BLM-administered surface land and 3.7 million acres of Bureau of Land Management-administered mineral estate in portions of Lincoln, Sweetwater, Uinta, Sublette, and Fremont counties in southwestern Wyoming. The plan alternatives are Alternative A (the 'No Action' alternative or continuation of the 1997 Green River Resource Management Plan); Alternative B (emphasizes resource conservation and is the Agency Preferred Alternative); Alternative C (emphasizes resource use); and Alternative D (emphasizes less resource conservation than Alternative B, and less use than Alternative C). Planning issues addressed include mineral exploration and development, renewable energy, wildlife habitat, outdoor recreation, wild horses, livestock grazing, historic trails, and special designations. The draft EIS provides analysis of potential management direction for important resource values and resource uses within the planning area and allocates the use of public lands for multiple uses.

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# EXECUTIVE SUMMARY

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## INTRODUCTION

The Bureau of Land Management (BLM) Rock Springs Field Office (RSFO) has prepared this draft resource management plan and environmental impact statement (draft RMP/EIS) to provide analysis of potential management direction for important resource values and resource uses within the planning area and allocates the use of public lands for multiple uses. This draft EIS documents the comprehensive analysis of alternatives for the planning and management of public lands and resources administered by the RSFO.

The planning area includes about 3.6 million acres of BLM-administered surface land and 3.7 million acres of BLM-administered mineral estate in portions of Lincoln, Sweetwater, Uinta, Sublette, and Fremont counties in southwestern Wyoming. The RSFO administers various programs, including mineral exploration and development, renewable energy, wildlife habitat, outdoor recreation, wild horses, livestock grazing, and historic trails.

BLM land within this planning effort will support guidance outlined in Executive Order 13990 on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis. E.O. 13990 establishes an Administration policy to listen to science, improve public health and protect our environment, ensure access to clean air and water, reduce greenhouse gas emissions, identify steps to accelerate responsible development of renewable energy on public lands, strengthen the government-to-government relationship with sovereign Tribal Nations, make investments to support the Administration's goal of creating millions of family-supporting and union jobs, bolster resilience to the impacts of climate change, and center equity and environmental justice.

The draft RMP/EIS was prepared using the BLM's planning regulations and guidance issued under the authority of the Federal Land Policy and Management Act (FLPMA) of 1976. An EIS is incorporated into this document to meet the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations (CFR) 1500–1508), and requirements of the BLM's NEPA Handbook 1790-1 (BLM 2008). The CEQ issued updated NEPA regulations on July 16, 2020 (85 FR 43304-43376). In accordance with those rules (at 40 CFR 1506.13), since this EIS was begun prior to September 14, 2020, the CEQ's 1978 NEPA regulations govern the preparation of this EIS. Any references to the CEQ's NEPA regulations at 40 CFR 1500-1508 refer to the 1978 regulations in effect prior to the 2020 update.

The summary of the Analysis of the Management Situation (AMS) was prepared in accordance with 43 CFR 1610 and was completed in August 2013. The AMS is accurate with the analyses of the inventory, and for the basis of formulating reasonable alternatives as described in 43 CFR 1610.4-4. Although some data has been updated in response to changing conditions (ex. air quality emissions and reasonably foreseeable development), most of the baseline data gathered from 2013 has been kept static for comparative analysis purposes. Even if minor conditions have changed for an individual resource in the intervening years since the AMS, the baseline data is adequate to compare conditions and differentiate resource impacts among the alternatives. The inventoried data in the Rock Springs Field Office remains consistent with current conditions in the scope of the resource area and portrays the existing management situation.

## PURPOSE AND NEED

### Purpose

FLPMA Section 102 sets forth the policy for periodically projecting the present and future use of public lands and their resources through the use of the land use planning process. FLPMA Sections 201 and 202 are the statutory authorities for the land use plans prepared by the BLM. The purpose or goal of the land use plan is to ensure BLM-administered lands and resources are managed in accordance with FLPMA and the principles of multiple use and sustained yield.

The purpose of the Rock Springs RMP revision is to provide an updated, comprehensive, and environmentally adequate framework for managing and allocating uses of public lands and resources administered by the BLM in the RSFO. The Rock Springs RMP will address changing needs of the planning area by updating information and revising management goals, objectives, and decisions while ensuring that public lands are managed according to the principles of multiple use identified in FLPMA while maintaining the valid existing rights and other obligations already established.

### Need

The need for revising the Green River RMP (1997) is the result of considerable changes within the planning area since completion of the existing Green River RMP. Current amendments and routine maintenance actions are no longer adequate to address these changes. Since the Record of Decision (ROD) for the Green River RMP was signed in 1997, new data has become available, new policies established, and old policies revised. Additionally, completion of multiple maintenance actions for the Green River RMP, along with multiple RMP amendments, and RODs for programmatic EIS documents are needed to be incorporated into the updated RMP (Table 1-2).

### Planning Issues

Chapter 1 provides a description of the planning issues and sub-issues identified during the draft RMP/EIS process and development. The primary issues are as follows:

- Renewable energy development and associated transmission infrastructure
- Energy and minerals development
- Lands and realty actions
- Special designations and lands with wilderness characteristics
- Visual resource management
- Cultural and historic resources
- Native American concerns
- Urban interface issues
- Recreation management
- Healthy landscapes initiative
- Wild horse management\* Livestock grazing/rangeland management
- Wildlife habitat management, including protection of sensitive species habitat\*\*,
- Fire and fuels management
- Air quality.

\*Wild horse management for the four herd management areas that contain portions of the mixed private/public checkerboard land pattern and are subject to the 2013 Consent Decree and Joint Stipulation for Dismissal in *Rock Springs Grazing Association v. Salazar*, No. 11-cv-002630F are being addressed under a separate ongoing RMP Amendment and Environmental Impact Statement.

\*\*Greater Sage-grouse management, including all actions related to management of Priority Habitat Management Areas and General Habitat Management Areas, are being addressed under separate ongoing Amendment(s) and are not included as planning issues for this document. All management actions, including restrictions for mineral development, that are currently being implemented through prior Amendment (Ex. 2015) are outside the scope of this planning effort and are not analyzed.

## **ALTERNATIVES**

### **Alternative A (No Action Alternative)**

Resources on lands administered by the BLM within the planning area are currently managed under the Green River RMP (1997) and Jack Morrow Hills Coordinated Activity Plan (CAP) (2004), as amended. Management under Alternative A represents a continuation of these management plans, which balances protection of resource values with the use and development of resources.

### **Alternative B (Agency Preferred Alternative)**

Alternative B emphasizes conservation of resource values with constraints on resource uses. Relative to all alternatives, Alternative B conserves the most land area for physical, biological, and cultural resources.

Alternative B emphasizes the improvement and protection of habitat for wildlife and sensitive plant and animal species, improvement of riparian areas, and implementation of management actions that improve water quality and enhance protection of cultural resources.

### **Alternative C**

Alternative C emphasizes resource uses (e.g., energy and mineral development and other commodity uses). Relative to all alternatives, Alternative C proposes the least restrictive management actions for energy and commodity development and the least protective management actions for physical, biological, and cultural resources while maintaining protections required by laws and regulations. Under this alternative, development and use of resources within the planning area would occur with intensive management of surface disturbing and disruptive activities.

### **Alternative D**

Alternative D explores a management approach that is less restrictive for resource uses than Alternative B, while also having a greater conservation focus than Alternative C. This approach allows for opportunities to use and develop resources within the planning area while promoting environmental conservation.

## Comparison of Alternatives

Table 1 displays a comparison of resource acres derived from the management alternatives in Chapter 2. Further analysis and acres for management alternatives can be found in Chapters 2 and 4.

**\*\*Table 1. Comparison of Land Use Restrictions and Allocations**

	Alternative A	Alternative B	Alternative C	Alternative D
<b>Livestock Grazing Allocations (Bureau of Land Management Surface Lands)</b>				
Available	3,591,404	3,583,798	3,592,374	3,589,859
Unavailable	970	8,576	0	2,515
<b>Visual Resource Management Classifications</b>				
Class I	225,717	225,785	226,629	225,703
Class II	582,672	2,148,902	607,899	1,178,718
Class III	615,492	666,522	395,683	738,311
Class IV	2,180,423	563,754	2,374,706	1,455,234
<b>Special Designations and Management Areas</b>				
Areas of Critical Environmental Concern	286,470	1,605,660	0	246,634
Wilderness Study Areas	227,960	227,960	227,960	227,960
Management Areas and Other Features	580,010	183,938	0	312,980
<b>Lands with Wilderness Characteristics (9 inventory units, 63,918 acres)</b>				
Managed to protect wilderness characteristics	0	63,918	0	0
<b>Mineral Resource Restrictions and Closures<sup>1</sup></b>				
<b>Fluid Minerals</b>				
Open	3,067,324	1,418,592	3,381,562	2,838,093
Closed	540,021	2,186,218	225,782	768,989
No Surface Occupancy	158,611	813,354	15,542	2,172
Controlled Surface Use	721,132	99,674	215,890	1,238,899
Timing Limitation Stipulations	1,840,967	713,837	1,355,485	1,911,167

<b>Solid Leasable Minerals</b>				
Coal—Open	3,472,691	223,109	3,732,436	3,348,313
Coal—Closed	485,964	3,535,546	226,219	610,342
Oil Shale—Open	3,230,850	1,836,373	3,732,690	2,401,135
Oil Shale—Closed	727,805	2,122,282	225,965	1,557,520
Trona—Open	3,535,022	1,838,898	3,732,690	3,569,103
Trona—Closed	423,633	2,119,920	225,965	389,552
<b>Locatable Minerals</b>				
Open	3,308,586	1,871,236	3,630,183	3,382,872
Proposed for Withdrawal	556,558	1,993,908	234,961	482,272
Currently Withdrawn	45,835	45,835	45,835	45,835
<b>Salable Minerals</b>				
Open	2,773,626	1,025,603	3,381,260	3,247,956
Closed	833,719	2,581,741	226,421	362,009
<b>Renewable Energy Allocations</b>				
Geothermal—Open	3,067,324	1,418,592	3,381,562	2,838,093
Geothermal—Closed	540,021	2,186,218	225,782	768,989
Wind—Open	2,458,413	987,848	3,350,674	1,940,049
Wind—Exclusion	426,709	2,480,876	225,784	286,289
Wind—Avoidance	736,138	133,903	31,018	1,388,618
Solar—Open	2,458,413	987,848	3,350,674	1,940,049
Solar—Exclusion	426,709	2,480,876	225,784	286,289
Solar—Avoidance	736,138	133,903	31,018	1,388,618
	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Land Tenure</b>				
Disposal	27,276	27,276	27,276	27,276
Retention	3,576,899	3,576,899	3,576,899	3,576,899
<b>Rights-of-Way Limitations</b>				
Open	2,458,413	987,848	3,350,674	1,940,049
Exclusion Areas	426,709	2,480,876	225,784	286,289

Avoidance Areas	736,138	133,903	31,018	1,388,618
<b>Off-Highway Vehicle Area Designations</b>				
Open	12,831	12,831	13,332	12,831
Closed	225,537	225,537	225,537	225,537
Limited to Designated Roads and Trails	968,959	3,367,576	3,365,374	3,367,576
Limited to Existing Roads and Trails	2,398,839	0	0	0
<b>Recreation Management Areas</b>				
Special Recreation Management Areas	298,110	0	592,800	135,549

<sup>1</sup>Totals for solid leasable, locatable, and salable minerals may be larger than the area of federal mineral estate considered in this planning effort. This is due to overlapping geographic information system data used for calculating acreages.

\*\*Acres do not include Greater Sage Grouse management.

## AFFECTED ENVIRONMENT

The affected environment provides a description of the existing physical, biological, and cultural resources as well as resource uses that could be affected by implementing the mineral leasing decisions in the alternatives. The information presented in the affected environment is utilized in analyzing the potential environmental consequences of the management actions in the alternatives.

## ENVIRONMENTAL CONSEQUENCES

The purpose of the analysis of environmental consequences is to determine the potential for significant impact of the “federal action” on the “human environment.” The CEQ regulations for implementing NEPA states that the “human environment” shall be interpreted comprehensively to include the natural and physical environment, and the relationship of people with that environment (40 CFR §1508.14). The “federal action” is the BLM’s selection of an RMP on which the future management of public lands within the RSFO will be based.

The environmental analysis identifies impacts that may enhance or improve a resource as a result of management actions, as well as those impacts that have the potential to impair a resource. The analysis of the alternatives is focused on identifying the types of impacts anticipated to occur and estimating their potential intensity. The analysis is organized by resource program and discloses the potential impacts on each resource program from implementing each of the proposed alternatives. The analysis also includes an assessment of cumulative effects, which are defined as the impacts that result from the incremental impact of an action when added to other past, present, or reasonably foreseeable future actions.

The primary impact to the landscape and associated resources and resource uses analyzed in the RMP would be from future proposed mineral development including oil and gas development and mining. Therefore, the biggest differences in impacts from the range of alternatives can be derived from looking at the proposed allocations for minerals cited above in Table ES-1. Based on this high-level view, Table 2 provides a brief description of the biggest difference in impacts among the alternatives.

**Table 2. Summary of Impacts by Alternative**

<b>Alternative A (No Action)</b>	Alternative A, the No Action Alternative, comprises the existing Green River RMP and Jack Morrow Hills CAP, along with maintenance actions and other revisions over the years. Together, this management is what is currently being applied to the public lands within the RSFO. This alternative is the baseline to which the other alternatives are compared. Alternative A does not result in the largest impacts from mineral extraction; Alternative C results in the most impacts from mineral development. Alternative A similarly protects the second fewest lands within Areas of Critical Environmental Concern (ACEC). Socioeconomic impacts would be lower, supporting earnings from mineral development, which are only slightly less than Alternative C.
<b>Alternative B</b>	Alternative B protects the greatest amount of lands through mineral leasing restrictions, management of ACECs, and lands with wilderness characteristics. Habitat for wildlife, vegetation, natural resources, and cultural resources would receive the greatest protection. Socioeconomic impacts would be the largest due to reduced mineral development.
<b>Alternative C</b>	Alternative C applies fewer restrictions for mineral exploration, leasing, sales, and development. This alternative removes all ACECs, applies fewer protections to natural resources, and designates more lands available to vehicle travel, off-highway vehicle (OHV) use, and recreation. Socioeconomics impacts would be lowest, with the largest earnings predicted from mineral development, renewable energy, and livestock grazing.
<b>Alternative D</b>	Alternative D provides protections for physical and natural resources; more than Alternatives A and C, but fewer than Alternative B. Restrictions to mineral exploration and development also fall just below Alternative A, but allowed to a much greater degree than Alternative B. Socioeconomic impacts similarly are slightly greater than Alternatives A and C, but impact the economy far less than Alternative B.

## CONSULTATION AND COORDINATION

Chapter 5 describes the consultation and coordination efforts by the RSFO throughout the planning process. Public involvement has been an integral part of the BLM's RMP effort. The scoping period for the RMP began on February 1, 2011 and ended on April 4, 2011. Comments obtained from the public during the scoping period were used to define the relevant issues that would be resolved by presenting a broad range of alternative management actions. Four public scoping meetings were held in Rock Springs on February 28, 2011 and in Lander, Farson, and Lyman, Wyoming on March 1, 2, and 3, respectively. Social and Economic workshops, a public outreach period for the management contained in the consent decree from the litigation of BLM by the Rock Springs Grazing Association resolved through settlement discussions in the spring of 2013 (Consent Decree and Joint Stipulation for Dismissal [Consent Decree] in Rock Springs Grazing Association v. Salazar, No. 11- CV-00263-NDF), and other opportunities for public input have been held throughout the planning process, and are listed in detail in Chapter 5.

The draft RMP/EIS was prepared in consultation and coordination with various federal, tribal governments, state, and local agencies, organizations, and individuals. Agency consultation and public participation have been accomplished through a variety of formal and informal methods, including public meetings, workshops, correspondence (both traditional and electronic), and meetings with various public agencies and interest groups. At publication, 30 agencies and groups have participated as cooperators. The full list is included in Chapter 5.3, and Native American Interest can be found in Chapter 5.1.3.

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## LIST OF ACRONYMS

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ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
AIM	Assessment, Inventory and Monitoring
AIRFA	American Indian Religious Freedom Act
AML	Appropriate Management Level
AMP	Allotment Management Plan
AMR	Appropriate Management Response
AMS	Analysis of the Management Situation
ANC	Acid Neutralizing Capacity
ANSI	American National Standard Institute
APE	Area of Potential Effects
AO	Authorized Officer
APD	Application for Permit to Drill
APHIS-WS	Animal and Plant Health Inspection Service—Wildlife Services
APLIC	Avian Powerline Interaction Committee
AQRV	Air Quality Related Values
ARMPA	Approved Resource Management Plan Amendment
ARPA	Archeological Resource Protection Act
ASRC	Areas of Significant Resource Concern
ATV	All-Terrain Vehicle
AUM	Animal Unit Months
BA	Biological Assessment
BAER	Burn Area Emergency Rehabilitation
BAR	Burned Area Rehabilitation
BBS	Breeding Bird Survey
Bcf	Billion Cubic Feet
BLM	Bureau of Land Management
BMP	Best Management Practices
BO	Biological Opinion
BOR	Bureau of Reclamation
BpS	Biophysical Setting
CAA	Clean Air Act
CAP	Coordinated Activity Plan

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CASTNet	Clean Air Status and Trends Network
CBNG	Coalbed Natural Gas
CCAA	Candidate Conservation Agreement with Assurances
CCF	Hundred Cubic Feet
CDNST	Continental Divide National Scenic Trail
CDP	Census-Designated Place
CDPA	Coal Development Potential Area
CEQ	Council on Environmental Quality
CF	Cubic Feet
CFR	Code of Federal Regulation
CFS	Cubic Feet per Second
CIAA	Cumulative Impact Analysis Area
CO	Carbon Monoxide
COA	Condition of Approval
COT	Conservation Objectives Team
CRMP	Coordinated Resource Management Plan
CRUWIN	Crucial Winter Range
CSU	Controlled Surface Use
dBA	A-weighted Decibel
DDCT	Density and Disturbance Calculation Tool
DFC	Desired Future Condition
DOA	Department of Agriculture
DOE	Department of Energy
DOI	Department of the Interior
DPC	Desired Plant Community
Dv	Deciview
EA	Environmental Assessment
EEA	Environmental Education Area
EIS	Environmental Impact Statement
EJ	Environmental Justice
ESD	Ecological Site Descriptions
EO	Executive Order
EPA	Environmental Protection Agency

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ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
ES&R	Emergency Stabilization and Rehabilitation
EVT	Existing Vegetation Type
FAA	Federal Aviation Administration
FCC	Federal Communication Commission
FLAG	Federal Land Managers' Air Quality Related Values Workgroup
FLTFA	Federal Land Transaction Facilitation Act
FLPMA	Federal Land Policy and Management Act of 1976
FMA	Forest Management Areas
FRCC	Fire Regime Condition Class
FUP	Free Use Permits
FYPC	Fossil Yield Potential Classification
GA	Geographic Area
GAP	Geographical Analysis Program
GHG	Greenhouse Gas
GHMA	General Habitat Management Area
GIS	Geographic Information System
HAF	Habitat Assessment Framework
HAP	Hazardous Air Pollutants
HBP	Held by Production
HMA	Herd Management Area
HMAP	Herd Management Area Plans
HMP	Habitat Management Plan
HUC	Hydrologic Unit Code
IDT	Interdisciplinary Team
IM	Instruction Memorandum
IMP	Interim Management Policy
IMPROVE	Interagency Monitoring of Protected Visual Environments
INRMP	Integrated Natural Resource Management Plan
IRAC	Interagency Radio Advisory Committee
ISR	In Situ Recovery

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JMH	Jack Morrow Hills
KSLA	Known Sodium Leasing Area
LAU	Lynx Analysis Unit
LBA	Lease by Application
LEX	Land Exchange
LOC	Level of Concern
LUP	Land Use Plan
MA	Management Area
MBTA	Migratory Bird Treaty Act
Mcf	Thousand Cubic Feet
MET	Meteorological Towers
MIS	Management Indicator Species
MLA	Mineral Leasing Act of 1920
MMS	Minerals Management Service
MMTA	Mechanically Mineable Trona Area
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MS	Mitigation Strategy
MSL	Mean Sea Level
MUTCD	Manual on Uniform Traffic Control Devices
MVUM	Motor Vehicle Use Map
MW	Megawatt
NAAQS	National Ambient Air Quality Standard
NADP	National Atmospheric Deposition Program
NAGPRA	Native American Graves Protection and Repatriation Act
NASA	National Aeronautic Space Administration
NDD	National Diversity Database
NEC	National Electrical Code
NEPA	National Environmental Policy Act of 1969
NFMA	National Forest Management Act of 1976
NFS	National Forest System
NFSR	National Forest System Road
NHN	Natural Heritage Network

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NHPA	National Historic Preservation Act of 1966
NHT	National Historic Trail
NMFS	National Marine Fisheries Service
NNL	National Natural Landmark
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSO	No Surface Occupancy
NST	National Scenic Trail
NTIA	National Telecommunication and Information Administration
NTN	National Trend Network
NTT	National Technical Team
NVUM	National Visitor Use Monitoring
NWI	National Wetlands Inventory
OHV	Off-Highway Vehicle
ORV	Off-Road Vehicle
PA	Programmatic Agreement
PAC	Priority Areas for Conservation
PFC	Proper Functioning Condition
PFYC	Potential Fossil Yield Classification
PHMA	Priority Habitat Management Area
PILT	Payment in Lieu of Taxes
PNC	Potential Natural Community
PRPA	Paleontological Resource Preservation Act
PSD	Prevention of Significant Deterioration
PZP	Porcine Zona Pellucida
RAAT	Reduced Agent-Area Treatments
RD&D	Research Development and Demonstration
RDF	Required Design Features
RFD	Reasonable Foreseeable Development
RFR	Radio Frequency Radiation



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RMA	Recreation Management Area
RMIS	Recreation Management Information System
RMP	Resource Management Plan
RMZ	Recreation Management Zone
RNA	Research Natural Area
ROS	Recreation Opportunity Spectrum
RPA	Renewable Resource Planning Act
R&PP	Recreation and Public Purposes
ROD	Record of Decision
ROW	Right-of-Way
RS	Revised Statute
RSFO	Rock Springs Field Office
RSUA	Recreation Special Use Authorization
SAD	Sudden Aspen Decline
SCC	Social Cost of Carbon
scf	Standard Cubic Feet
SD/MA	Special Designations/Management Areas
SDR	State Director Review
SDW	Stock Driveways
SDWA	Safe Drinking Water Act
SFA	Sagebrush Focal Area
S&G	Standards and Guidelines
SGIT	Sage-Grouse Implementation Team
SIA	Special Interest Area
SHPO	State Historic Preservation Office or Officer
SIO	Scenic Integrity Objective
SRMA	Special Recreation Management Area
SRP	Special Recreational Permit
SSC	Species of Special Concern
SUP	Special Use Permit
SUPO	Surface Use Plan of Operations
SUV	Sport Utility Vehicle
SVR	Standard Visual Range
T&C	Terms and Conditions
T&E	Threatened and Endangered

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TCP	Traditional Cultural Property
TES	Threatened and Endangered Species
THPO	Tribal Historic Preservation Office or Officer
TLD	Transportation Linear Disturbance
TLS	Timing Limitation Stipulation
UGRBWGA	Upper Green River Basin Working Group Area
USC	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	Volatile Organic Compounds
VQO	Visual Quality Objective
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WA	Wilderness Act
WAAQS	Wyoming Ambient Air Quality Standards
WAFWA	Western Association of Fish and Wildlife Agencies
WAPA	Western Area Power Administration
WARMS	Wyoming Air Resources Monitoring System
WDEQ	Wyoming Department of Environmental Quality
WDEQ-AQD	Wyoming Department of Environmental Quality-Air Quality Division
WGFD	Wyoming Game and Fish Department
WGO	Wyoming Governor's Office
WPCI	Wyoming Pipeline Corridor Initiative Project
WHBA	Wild Free-Roaming Horses and Burros Act of 1971
WHMA	Wildlife Habitat Management Area
WHT	Wild Horse Territories
WHTP	Wild Horse Territory Plans
WIZ	Water Influence Zone
WLCI	Wyoming Landscape Conservation Initiative
WOGCC	Wyoming Oil and Gas Conservation Commission

WSA	Wilderness Study Area
WSO-RMG	Wyoming BLM State Office-Reservoir Management Group
WSR	Wild and Scenic River
WUG	Western Utility Group
WUI	Wildland Urban Interface
WVEC	West-Wide Energy Corridor
WYDOT	Wyoming Department of Transportation
WYESFO	Wyoming Ecological Services Field Office
WYL	Winter Yearlong
WYNDD	Wyoming Natural Diversity Database
YRL	Yearlong

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## GLOSSARY

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**2008 WAFWA Sage-grouse MOU:** A memorandum of understanding (MOU) among Western Association of Fish and Wildlife Agencies, U.S. Department of Agriculture, Forest Service, U.S. Department of the Interior, Bureau of Land Management, U.S. Department of the Interior, Fish and Wildlife Service, U.S. Department of the Interior, Geological Survey, U.S. Department of Agriculture, Natural Resources Conservation Service, and the U.S. Department of Agriculture, Farm Service Agency. The purpose of the MOU is to provide for cooperation among the participating state and federal land, wildlife management and science agencies in the conservation and management of sage-grouse (*Centrocercus urophasianus*) sagebrush (*Artemisia* spp.) habitats and other sagebrush-dependent wildlife throughout the western United States and Canada and a commitment of all agencies to implement the 2006 WAFWA Conservation Strategy.

**Acquired Lands:** Federal lands obtained by purchase, condemnation, exchange, or gift under laws other than public land laws. Legally defined as: "... *land obtained by the United States through purchase or transfer from a State or private individual and normally dedicated to a specific use.*" McKenna v. Wallis, 200 F. Supp. 468 (1961). See also Bobby Lee Moore, et al, 72 I.D. 505 (1965).

**Actively Managed:** Management of the forestlands or woodlands by prescription to accomplish specific resource objectives. In addition, the forestlands are managed with an allowable sustainable periodic sale quantity (Schiche 2003).

**Activity Area:** An area of land impacted by a management activity or activities. It can range from a few acres to an entire watershed. It is commonly a timber sale cutting unit, a burn unit, or a pasture in an allotment.

**Activity Planning:** Site-specific planning that precedes development. This is the most detailed level of Bureau of Land Management (BLM) planning. An activity plan details management of one or more resources on a specific site. Examples are allotment management plans and recreation area management plans. Activity plans implement decisions made in the Resource Management Plan (RMP).

**Actual Use:** Where, how many, what kind or class of livestock, and how long livestock graze on an allotment or on a portion or pasture of an allotment.

**Adaptive Management:** A systematic process for continually improving management policies and practices by learning from the outcomes of actions over time. It employs management programs that are designed to continuously compare selected policies or practices and is an integrated method for addressing uncertainty that focuses on implementing actions, thoroughly monitoring results, and modifying actions when warranted. It recognizes that the complex interrelationships of physical, biological, and social components of the ecosystem and how they would react to land management practices are often not fully understood when land-use management plans are developed.

**Additionality:** The conservation benefits of compensatory mitigation are demonstrably new and would not have resulted without the compensatory mitigation project (BLM Manual Section 1794).

**Administrative Access:** Access for resource management and administrative purposes such as fire suppression, cadastral surveys, permit compliance, law enforcement, and military in the performance of their official duty, or other access needed to manage BLM-administered lands or uses.

**Age Class:** A distinct aggregation of trees originating from a single natural event or regeneration activity, or grouping of trees, e.g. 10-year age class, as used in inventory or management.

**Allotment:** An area of land designated and managed for livestock grazing. Allotments generally consist of BLM-administered lands but may include other federally managed, state-owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

**Allotment Management Plan (AMP):** A documented program developed as an activity plan, consistent with the definition at 43 USC 1702(k), that focuses on, and contains the necessary instructions for, management of livestock grazing on specified public lands to meet resource condition, sustained yield, multiple use, economic, and other objectives.

**Allowable Sale Quantity (ASQ):** The quantity of timber that may be sold from the area of suitable land covered by the forest plan for a time period specified by the plan. This allowable sale quantity (ASQ) is usually expressed on an annual basis as the “average annual allowable sale quantity.” (FSM 1900)

**Alluvium:** Any sediment deposited by flowing water, as in a river bed, floodplain, or delta.

**Ambient (noise level):** Sometimes called background noise level, reference sound level, or room noise level is the background sound pressure level at a given location, normally specified as a reference level to study a new intrusive sound source.

**Amendment:** The process for considering or making changes in the terms, conditions, and decisions of approved RMPs or Management Framework Plans using the prescribed provisions for resource management planning appropriate to the proposed action or circumstances. Usually only one or two issues are considered that involve only a portion of the planning area.

**Animal Damage Control (ADC):** The control of animals that are causing economic losses to agriculture, damage to property, or hazards to human health. Such control usually results in the killing of the offending animal(s). (See also Wildlife Services.)

**Animal Unit:** Considered to be one mature cow of about 1,000 pounds (450 kg), either dry or with calf up to six months of age, or their equivalent, consuming about 26 pounds of forage/day on an oven dry basis.

**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). For the purpose of calculating grazing fees, an animal unit month is defined as a month’s use and occupancy of range by one cow, bull, steer, heifer, horse, burro, mule, five sheep or five goats over the age of six months (43 CFR 4130.8-1(c)).

**Anthropogenic Disturbances:** Human-created features that include but are not limited to paved highways, graded gravel roads, transmission lines, substations, wind turbines, oil and gas wells and associated facilities, geothermal wells and associated facilities, pipelines, landfills, agricultural conversion, homes, and mines.

**Application for Permit to Drill (APD):** An application to drill a well submitted by a lessee or operator to the BLM. The APD consists of a Drilling Plan that discusses downhole specifications and procedures (reviewed by the BLM) that examines surface uses, including access roads, well site layout, cut and fill diagrams, reclamation procedures, production facility locations, etc.

**Aquatic Ecosystem:** Waters of the United States, that serve as habitat for interrelated and interacting communities and populations of plants and animals. (40 CFR 230.3) Waters of the United States, including wetlands, that serve as habitat for interrelated and interacting communities and populations of plants and animals. (FSM 2526.05)

**Area of Critical Environmental Concern (ACEC):** Areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish

and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. The identification of a potential ACEC shall not, of itself, change or prevent change of the management or use of public lands.

**Assessment:** The act of evaluating and interpreting data and information for a defined purpose.

**Authorized/Authorized Use:** This is an activity (i.e., resource use) occurring on the public lands that is either explicitly or implicitly recognized and legalized by law or regulation. This term may refer to those activities occurring on the public lands for which the BLM or other appropriate authority (e.g., Congress for RS 2477 rights-of-way, FERC for major, interstate rights-of-way), has issued a formal authorization document (e.g., livestock grazing lease/permit; right-of-way grant; coal lease; oil and gas permit to drill; etc.). Formal authorized uses can involve both commercial and noncommercial activity, facility placement, or event. These authorized uses are often spatially or temporally limited. Unless constrained or bounded by statute, regulation, or an approved land use plan decision, legal activities involving public enjoyment and use of the public lands (e.g., hiking, camping, hunting, etc.) require no formal BLM authorization.

**Authorized Officer:** Any employee of the BLM to whom authority has been delegated to perform the duties described.

**Available Lands (Oil and Gas):** Any lands subject to oil and gas leasing under the Minerals Leasing Act.

**Avoidance/Avoidance Area:** These terms usually address mitigation of some activity (i.e., resource use). Paraphrasing the CEQ Regulations (40 CFR 1508.20), avoidance means to circumvent, or bypass, an impact altogether by not taking a certain action, or parts of an action. Therefore, the term "avoidance" does not necessarily prohibit a proposed activity, but it may require the relocation of an action, or the total redesign of an action to eliminate any potential impacts resulting from it.

**Avoidance Mitigation:** Avoiding the impact altogether by not taking a certain action or parts of an action (40 CFR 1508.20(a)) (e.g., may also include avoiding the impact by moving the proposed action to a different time or location).

**Baseline:** The pre-existing condition of a defined area and/or resource that can be quantified by an appropriate metric(s). During environmental reviews, the baseline is considered the affected environment that exists at the time of the review's initiation, and is used to compare predictions of the effects of the proposed action or a reasonable range of alternatives.

**Best Management Practices (BMPs):** A suite of techniques that guide or may be applied to management actions to aide in achieving desired outcomes. BMPs are often developed in conjunction with land use plans, but they are not considered a planning decision unless the plans and authorizations specify that they are mandatory. BMPs may be updated or modified without a plan amendment (BLM Manual Handbook H-1601-1).

**Big Game:** Large species of wildlife that are hunted, such as elk, deer, bighorn sheep, moose, and pronghorn.

**Billed Use:** The amount of livestock use that grazing permit holders were actually billed for in a given year.

**Biological Assessment (BA):** The gathering and evaluation of information on proposed endangered and threatened species and critical habitat and proposed critical habitat. Required when a management action potentially conflicts with endangered or threatened species, the BA is the way federal agencies enter into formal consultation with the U.S. Fish and Wildlife Service and describe a proposed action and the consequences to the species from the action.

**Biological Diversity:** The variety of life forms and processes within an area. Included in the consideration of diversity are the complexities of genetic variation, number and distribution of species, and the ways in which the variety of biologic communities interact and function.

**Biotic:** All the natural living organisms in a planning area and their life processes.

**Board Foot:** A unit of solid wood one foot square and one inch thick.

**Bureau Sensitive Species:** species that require special management consideration to avoid potential future listing under the ESA and that have been identified in accordance with procedures set forth in BLM Manual 6840 – Special Status Species Management. **Candidate Species:** Plants and animals for which the U.S. Fish and Wildlife Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

**Canopy:** The uppermost layer consisting of the crowns of trees or shrubs in a forest or woodland.

**Casual Use:** Casual use means activities ordinarily resulting in no or negligible disturbance of the public lands, resources, or improvements for example, activities that do not involve the use of mechanized earth-moving equipment or explosives or, in areas designated as closed to OHVs, do not involve the use of motorized vehicles. This can also be activities occurring by chance or taking place at irregular intervals without ceremony or formality. Examples for rights of ways, see 43 CFR 2801.5 or 2881.5. The definition related to 3809-surface management of locatable minerals is found at 43 CFR 3809.5. Other activities which do not unduly disturb surface resources. If, however, the Authorized Officer determines that appreciable impacts to surface resources may occur, he/she may require the potential applicant to obtain a land use authorization with appropriate terms and conditions.

**Channel:** An open conduit either naturally or artificially created that periodically or continuously transports moving water (and, in natural systems, also transports sediment, nutrients, and woody material) or forms a connecting link between two bodies of water.

**Checkerboard:** This term refers to a land ownership pattern of alternating sections of federal-owned lands with private or state-owned lands for 20 miles on either side of a land grant railroad (e.g. Union Pacific, Northern Pacific, etc.). On land status maps this alternating ownership is either delineated by color coding or alphabetic code resulting in a "checkerboard" visual pattern.

**Cherry-stemmed/Cherry-stemming:** This term refers to a narrow, linear, intrusion or extrusion of a delineated block of Federal lands resulting in what appears on a map as a boundary inlet or peninsula. Although this term may be used in any resource program, the most common use is in relation to dead-end road intrusions along WSA boundaries.

**Closed:** Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs.

**Closed Area or Trail:** Designated areas and trails where the use of off-road vehicles is permanently or temporarily prohibited. The use of off-road vehicles in closed areas may be allowed only with the approval of the Authorized Officer.

**“Closed” Designation (OHV):** An area where off-highway vehicle use is prohibited. Use of off-highway vehicle in closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the Authorized Officer.

**Closed Road:** A road or segment of road that is restricted from certain types of use during certain seasons of the year. The prohibited use and the time period of closure are specified.

**Code of Federal Regulations (CFR):** The official, legal tabulation or regulations directing Federal Government activities.

**Collaboration:** Working together, sometimes with individuals or groups of opposing points a view, to reach a common agreement.

**Co-locate:** Installation of new linear improvements (e.g., equipment or facilities) on or within existing linear improvements.

**Commercial Forestland:** Forestland that is now producing or is capable of producing at least 20 cubic feet of wood fiber per acre per year from commercial coniferous tree species and that has met certain economic, environmental, or multiple use criteria for inclusion in the commercial forestland base.

**Commodity:** An economic good such as a product of agriculture or mining.

**Common Variety Minerals:** Category of minerals including varieties of sand, gravel, stone, pumicite, cinders, pumice (except that occurring in pieces over 2 inches on a side), clay, and petrified wood; authorized under the 1947 Materials Act and the 1955 Multiple Surface Use Act for sale as "salable minerals". (FSM 2800)

**Communication Site:** A site right-of-way that includes broadcast types of uses (e.g., television, AM/FM radio, cable television, broadcast translator) and non-broadcast uses (e.g., commercial or private mobile radio service, cellular telephone, microwave, local exchange network, passive reflector).

**Community:** An assemblage of plant, animal, and/or human populations in a common spatial arrangement.

**Compensatory Mitigation:** Compensating for the (residual) impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

**Compensatory Mitigation Projects:** Specific, on-the-ground actions to improve and/or protect habitats (e.g., chemical vegetation treatments, land acquisitions, conservation easements).

**Compensatory Mitigation Sites:** The durable areas where compensatory mitigation projects will occur.

**Condition of Approval:** Condition or provision (requirement) under which an application for a permit to drill or sundry notice is approved.

**Conformance:** That a proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan.

**Connectivity:** Condition in which the spatial arrangement of land cover types allows organisms and ecological processes (such as disturbance) to move across the landscape. Connectivity is the opposite of fragmentation.

**Conservation Plan:** The recorded decisions of a landowner or operator, cooperating with a conservation district, on how the landowner or operator plans, within practical limits, to use his/her land according to its capability and to treat it according to its needs for maintenance or improvement of the soil, water, animal, plant, and air resources.

**Consistency:** The proposed land use plan does not conflict with officially approved plans, programs, and policies of tribes, other federal agencies, and state, and local governments to the extent practical within Federal law, regulation, and policy.



**Contributing Segment:** A trail segment that contributes to the significance of the trail, wherein it retains integrity of place, setting, feel, or association. This may include an intact trail segment, a good two-track, an intact (unspoiled) setting, or a good historical association; thus, these trail segments retain elements that convey the nineteenth century "feel" to the visitor. If a piece of trail is destroyed, such as by a paved road, and the setting is compromised, then the trail segment is noncontributing.

**Controlled Surface Use (CSU):** A category of moderate constraint stipulations that allows some use and occupancy of public land while protecting identified resources or values and is applicable to fluid mineral leasing and all activities associated with fluid mineral leasing. The stipulation identifies the location protected, activities prohibited or restricted, and the resources protected. The extent of protection may range from a limited area for only one activity to all uses. Typically used in use authorizations. For the protected resource, some activities may be prohibited while others are allowed. Activities may be allowed but only under certain conditions. Examples include (1) seismic operations are prohibited within a certain distance of an unstable resource (i.e., historic structure) and (2) only tracked construction vehicles are allowed access to the site (see also Stipulation Category).

**Corridor:** A tract of land forming a passageway or designation for linear utilities, transportation, Right-of-Way, multiple pipelines (such as for oil and gas), electricity transmission lines and related infrastructure, recreation and trails, and wildlife migration. See definitions: Designated Corridor, Right-of-Way Corridor, Utility Corridor, and Utility Window.

**Council on Environmental Quality (CEQ):** An advisory council to the President of the United States established by the national Environmental Policy Act of 1969. It reviews federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.

**Cover:** Cover is any part of an animal's environment that provides protection and enhances the survival or reproduction of the animal. Wildlife cover has two components:

- It provides shelter from adverse weather conditions (winter or thermal cover), and
- It provides protection from predators (screening or escape cover) (Yarrow, 2009).

**Critical Habitat:** An area occupied by a threatened or endangered species "on which are found those physical and biological features (1) essential to the conservation of the species, and (2) which may require special management considerations or protection." These irreplaceable and vital areas are designated as critical by the Secretary of the Interior for the survival and recovery of listed threatened and endangered species.

**Crucial Habitat:** Any particular range or habitat component that directly limits a community, population, or subpopulation to reproduce, and maintain itself at a certain level over the long term.

**Crucial Winter Range:** The portion of the winter range to which a wildlife species is confined during periods of heaviest snow cover. Any portion of winter range that is the determining factor in a population's ability to maintain and reproduce itself at a certain level over the long term may be crucial winter range.

**Cultural Resource:** A fragile and nonrenewable remnant of human activity, occupation, or endeavor reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, or natural features.

**Cultural Resource Inventory:** A descriptive listing and documentation, including photographs and maps, of cultural resources. Processes involved are locating, identifying, and recording of sites, structures, buildings, objects, and districts through library and archival research; collecting information from persons knowledgeable about cultural resources; and conducting on-the-ground field surveys of varying levels of intensity. (See also Cultural Resource Inventory Classes.)

**Cultural Resource Inventory Classes:** A class I inventory is a professionally prepared study that includes a compilation and analysis of all reasonably available cultural resource data and literature, and a management-focused, interpretive, narrative overview, and synthesis of the data. The overview also defines regional research questions and treatment options.

A class II probabilistic field survey is a statistically based sample survey, designed to aid in characterizing the probable density, diversity, and distribution of cultural properties in an area, to develop and test predictive models, and to answer certain kinds of research questions. Within individual sample units, survey aims, methods, and intensity are the same as those applied in class III survey.

A class III intensive survey describes the distribution of properties in an area; determines the number, location and condition of properties; determines the types of properties actually present within the area; permits classification of individual properties; and records the physical extent of specific properties.

**Cultural Resource Management Plan (CRMP):** A plan designed to inventory, evaluate, protect, preserve, or make beneficial use of cultural resources and the natural resources that figured significantly in cultural systems. The objectives of such plans are the conservation, preservation, and protection of cultural values and the scientific study of those values.

**Cultural Resource Site (Cultural Property):** A definite location of human activity, occupation or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups.

**Cumulative Impact (Effect):** The impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

**Deferred/Deferred Use:** To set-aside, or postpone, a particular resource use(s) or activity(ies) on the public lands to a later time. Generally, when this term is used the period of the deferral is specified. Deferrals sometimes follow the sequence timeframe of associated serial actions (e.g., action B will be deferred until action A is completed, etc.).

**Designated Corridor:** A parcel of land with specific boundaries identified by law, a Secretarial Order, the land use planning process or other management decisions as being preferred locations for existing and future ROWs. Established and new corridor(s) may be suitable to accommodate more than one type of ROW or more ROWs that are similar, identical, or compatible. (see Corridor definition)

**Designated Roads and Trails:** Those roads and trails that are specifically identified by the BLM as the only allowable routes for motor vehicle travel in the specific area involved. Travel on designated roads and trails may be allowed seasonally or yearlong. Additional roads or trails may be constructed and authorized for travel as need dictates in conformance with the land use plan or activity plan.

**Desired Condition:** Alluvial stream channels (i.e., those not formed in bedrock) are considered to be physically functioning properly when they can adjust their form and gradient, over a period of time, to transport the water, wood, and sediment being delivered to them. They are resilient to disturbance. Channel cross-section form is generally maintained, even with lateral migration of the channel, or is moving toward a form that allows for improved channel function. Instream levels of fine sediment are within a natural range except for short periods of time after disturbance. Stream bank stability reflects stream type and potential.

**Desired Future Condition:** A future land or resource condition that achieves a set of compatible multi-

resource goals and objectives.

**Desired Plant Community:** The vegetation community that provides the vegetation attributes required for meeting or exceeding RMP vegetation objectives. The desired vegetation community must be within an ecological site's capability to produce these attributes through natural succession, management action, or both (BLM Wyoming Instruction Memorandum 91-290, May 29, 1991).

**Developed Recreation:** Recreation that requires facilities, resulting in concentrated use of an area. An example of a developed recreational site is a campground. Facilities might include roads, parking lots, picnic tables, restrooms, drinking water, and buildings.

**Development:** Active drilling and production of wells

**Development Area:** Areas primarily leased with active drilling and wells capable of production in payable quantities.

**Direct Impacts (Effects):** Direct impacts are caused by the action and occur at the same time and place.

**Directional Drilling (Oil and Gas):** Drilling boreholes with the directional course of the hole planned before drilling. Such holes are usually drilled with rotary equipment at an angle to the vertical and are useful in avoiding obstacles or in reaching side areas or the mineral estate beneath a restricted surface.

**Discharge (Water):** The rate of flow or volume of water flowing in a stream at a given place or within a given period of time.

**Discovery:** The knowledge of the presence of valuable minerals within or close enough to a location to justify a reasonable belief in their existence. Discovery is extremely important to public lands mining because the Mining Law of 1872 provides that mining claims can be located only after a discovery is made.

**Dispersal:** The movement, usually one way and on any time scale, of plants or animals from their point of origin to another location where they subsequently produce offspring.

**Dispersed Recreation:** Recreational use outside developed recreational sites. This includes activities such as scenic driving, hiking, bicycling, backpacking, hunting, fishing, snowmobiling, horseback riding, cross-country skiing, and recreation in primitive environments.

**Disposal:** Transfer of ownership of a tract of public land from the United States to another party through sale, exchange, or transfer under the Recreation and Public Purposes Act, Small Tracts Act, Bankhead-Jones Farm Tenant Act, General Exchange Act or other appropriate authorities.

**Disruptive Activities:** Land resource uses/activities that are likely to alter the behavior, displace, or cause excessive stress to existing animal or human populations occurring at a specific location and/or time. In this context, disruptive activity/activities refers to those actions that alter behavior or cause the displacement of individuals such that reproductive success is negatively affected, or an individual's physiological ability to cope with environmental stress is compromised. This term does not apply to the physical disturbance of the land surface, vegetation, or features. When administered as a land use restriction (e.g., No Disruptive Activities), this term may prohibit or limit the physical presence of sound above ambient levels, light beyond background levels, and/or the nearness of people and their activities. The term is commonly used in conjunction with protecting wildlife during crucial life stages (e.g., breeding, nesting, birthing, etc.), although it could apply to any resource value on the public lands. The use of this land use restriction is not intended to prohibit all activity or authorized uses. For actions other than those taken for human health and safety, regulatory compliance or emergency, an activity is "disruptive" if the activity would require people and/or the structure or activity to be present in these

habitats for a duration of more than one hour during any one 24-hour period during the applicable season in the site-specific area.

**Distribution Line:** An electrical utility line with a capacity of less than 100kV or a natural gas, hydrogen, or water pipeline less than 24” in diameter.

**Disturbance:** A discrete event, either natural or human induced, that causes a change in the existing condition of an ecological system.

**Diurnal:** Describes a cyclic event recurring daily; or the nature or habit of an organism to be active during daylight hours.

**Diversity:** The distribution and relative abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area.

**Drainage (Oil and Gas):** 1) Drainage occurs when oil and gas migrate in the subsurface from areas of high pressure to areas of lower pressure, such as is found near a producing well. 2) Production of migrated oil and gas without compensation to the owner and/or lessee from whose estate the hydrocarbons moved is called drainage.

**Durability (Protective and Ecological):** The administrative, legal, and financial assurances that secure and protect the conservation status of a compensatory mitigation site, and the ecological benefits of a compensatory mitigation project, for at least as long as the associated impacts persist (BLM Manual Section 1794).

**Easement:** A right held by a person or agency to make limited use of another’s real property for access or other purposes.

**Ecological Site:** A kind of land with a specific potential natural community and specific physical site characteristics, differing from other kinds of land in that the site has the ability to produce distinctive kinds and amounts of vegetation and to respond to management. Ecological sites are defined and described with information about soil, species composition, and annual production.

**Ecological Site Descriptions (ESDs):** Are reports that provide detailed information about a particular kind of land - a distinctive Ecological Site. ESDs provide land managers the information needed for evaluating the land as to suitability for various land-uses, capability to respond to different management activities or disturbance processes, and ability to sustain productivity over the long term. ESD information is presented in four major sections: 1) Site Characteristics - physiographic, climate, soil, and water features; 2) Plant Communities – plant species, vegetation states, and ecological dynamics; 3) Site Interpretations – management alternatives for the site and its related resources; 4) Supporting Information – relevant literature, information and data sources.

**Ecosystem:** A complete, interacting system of living organisms and the land and water that make up their environment; the home places of all living things, including humans.

**Emergency Use:** These are activities occurring on the public lands outside the scope of normal resource use and operations, and which require immediate attention. Emergency use activities are typically driven by imminent concerns for human health and safety, or protection of property (e.g., wildfire suppression, HAZMAT response, disease outbreaks, etc.). Emergency use is typically exempted from other land use restrictions, with the exercise of reasonable and prudent care.

**Endangered Species:** Any plant or animal species that is in danger of extinction throughout all or a significant portion of its range, as defined by the U.S. Fish and Wildlife Service under the authority of the Endangered Species Act of 1973.

**Enhance:** The improvement of habitat by increasing missing or modifying unsatisfactory components and/or attributes of the plant community to meet Greater Sage-Grouse objectives.

**Environmental Assessment (EA):** Concise, analytical documents, authorized by the National Environmental Policy Act (NEPA) of 1969, that are prepared with public participation to determine whether an Environmental Impact Statement (EIS) is needed for a particular project or action. If an EA determines an EIS is not needed, the EA becomes the document allowing agency compliance with NEPA requirements.

**Environmental Impact Statement (EIS):** A document required by the National Environmental Policy Act (NEPA) for certain actions "significantly affecting the quality of the human environment." An EIS is a tool for decision making. It describes the positive and negative environmental effects of a proposed action, and it usually also lists one or more alternative actions that may be chosen instead of the action described in the EIS.

**Ephemeral Channels/Streams:** A defined channel formed in response to ephemeral surface flow conditions. Defined channels typically can be identified by an abrupt bank along a water flow path with evidence of scouring, sorting, and/or vegetation removal during flood events. These channels generally form in concave erosional features such as gullies, ravines, swales, etc. These channels are above the water table at all times, and lose water to the groundwater system.

**Ephemeral Surface Waters:** Streams, lakes, or other surface water bodies that have open water *only* during or immediately after periods of rainfall or snowmelt. These water bodies are above the water table at all times, and lose water to the groundwater system.

**Erosion:** The wearing away of the land surface by running water, wind, ice, or other geological agents.

**Essential Nexus:** The degree of the actions demanded by the permit conditions bears the required relationship to the projected impact of the proposed development.

**Evaporation Pond:** An industrial containment area designed to allow briny water to evaporate by using solar energy and wind.

**Exception:** A one-time exemption for a particular site within the leasehold; exceptions are determined on a case-by-case basis; the stipulation continues to apply to all other sites within the leasehold. An exception is a limited type of waiver (H-1624-1 – Planning for Fluid Mineral Resources).

**Exclusion Areas:** An area on the public lands where a certain activity(ies) is prohibited to insure protection of other resource values present on the site. The term is frequently used in reference to lands/realty actions and proposals (e.g., rights-of-way, etc.), but is not unique to lands and realty program activities. This restriction is functionally analogous to the phrase "no surface occupancy" used by the oil and gas program, and is applied as an absolute condition to those affected activities. The less restrictive analogous term is avoidance area.

**Exotic Species:** Species which occur in a given place, area, or region as the result of direct or indirect, deliberate or accidental introduction of the species by humans, and for which introduction has permitted the species to cross a natural barrier to dispersal.

**Exploration:** Active drilling and geophysical operations to:

- a. Determine the presence of the mineral resource; or
- b. Determine the extent of the reservoir or mineral deposit.

**Extensive Recreation Management Area (ERMA):** BLM administrative units where recreation

management is only one of several management objectives and where limited commitment of resources is required to provide extensive and unstructured types of recreation activities.

**Feasible:** Something is capable of being accomplished.

**Federal Lands:** As used in this document, lands owned by the United States, without reference to how the lands were acquired or what federal agency administers the lands. The term includes mineral estates or coal estates underlying private surface but excludes lands held by the United States in trust for Indians, Aleuts, or Eskimos. (See also Public Land.)

**Federal Land Policy and Management Act of 1976 (FLPMA) as amended:** Public Law 94-579. October 21, 1976, often referred to as the BLM's "Organic Act," which provides the majority of the BLM's legislated authority, direction, policy, and basic management guidance.

**Federal Register (FR):** A daily publication that reports Presidential and federal agency documents.

**Fire Management:** The integration of knowledge of fire protection, prescribed fire, and fire ecology into multiple use planning, decision making, and land management activities. Fire management places fire in perspective within the context of overall land management objectives.

**Fire Management Plan (FMP):** A compilation of goals, objectives, and requirements from the land/resource management planning process necessary to implement wildland fire management decisions.

**Fire Regime Condition Class:** A measure describing the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects or disease, or other management activities. The fire regime condition classes defined as follows:

- **Condition Class 1:** Fire regimes are within a historical range, and the risk of losing key ecosystem components from fire is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range.
- **Condition Class 2:** Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components from fire is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, frequency, intensity, severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.
- **Condition Class 3:** Fire regimes have been significantly altered from their historical ranges. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, frequency, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.

**Fire Suppression:** All work and activities associated with fire-extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

**Fishery:** Habitat that supports the propagation and maintenance of fish.

**Flight Distance (Displacement Distance):** That to which a person can approach a wild animal without causing it to flee.

**Floodplain:** The relatively flat area or lowlands adjoining river channel constructed by the river in the

present climate and overflowed at times of high discharge.

**Flow Connected Surface Feature:** A surface waterbody, including, but not limited to, a river, stream, lake, or pond, whose water is hydrologically connected to surface or groundwater.

**Fluid Minerals:** Oil, gas, coalbed natural gas, and geothermal resources.

**Forage:** All browse and herbaceous foods available to animals that may be grazed or harvested for feeding.

**Forage Reserve:** A determination for an allotment, or a portion of an allotment, on which there is no current term permit obligation for some or all of the estimated livestock grazing capacity and where it has been determined to use the available forage for management flexibility when there is a loss of forage availability on other allotments because of factors such as drought, hail, or fire (either prescribed or wild).

**Forest Management:** The practical application of scientific, economic, and social principals to the administration and working of a forest for specified objectives.

**Forest Resource:** A community of one or more forest tree species in varying stages of ecological succession that constitutes the primary dominant life form by which certain understory plants and forest dwelling animals are associated, and in whole or part, dependent. (Schiche 2003)

**Formation Fracturing:** See Hydraulic Fracturing.

**Fossil:** Any remains, trace, or imprint of a plant or animal that has been preserved in the Earth's crust since some past geologic or prehistoric time (AGI Glossary of Geology).

**Frac:** See Hydraulic Fracturing.

**Fuelwood:** Wood that is round, split, or sawn and/or otherwise generally refuse material cut into short lengths or chipped for burning.

**Full Suppression:** A fire suppression strategy requiring immediate and continuous aggressive attack to attain the suppression objectives with the least damage to property or loss of resources in the most cost-effective manner possible. Such actions may include control, containment, or confinement of wildfire to attain land management objectives.

**Functional Habitat:** Habitat that is capable of serving the ecological requirements of a species, which includes providing for the seasonal and life cycle needs on a sustained basis.

**Furbearing Animal:** Badger, beaver, bobcat, marten, mink, muskrat, and weasel.

**Game Birds:** Grouse, partridge, pheasant, ptarmigan, quail, wild turkey, and migratory game birds.

**Geophysical Operation:** Prospecting for minerals or mineral fuels by measuring the various physical properties of the rocks and interpreting the results in terms of geologic features or the economic deposits sought. Physical measurements are taken at the surface, concerning the differences in the density, electrical resistance, or magnetic properties of the rocks. There are four main methods employed in geophysical prospecting: gravitational, magnetic, electrical, and seismic, with several modifications of each.

**General Habitat Management Areas:** Occupied (seasonal or year-round) habitat outside of priority habitat. These areas have been identified by the BLM in coordination with respective state wildlife agencies.

**Goal:** A broad statement of a desired outcome. Goals are usually not quantifiable and may not have established time frames for achievement.

**Grazing Preference:** Grazing preference means a superior or priority position against others for the purpose of receiving a grazing permit or lease. This priority is attached to base property owned or controlled by the permittee or lessee (43 CFR 4100.0-5).

**Grazing Relinquishment:** A grazing "relinquishment" is the voluntary and permanent surrender by an existing permittee or lessee, (with concurrence of any base property lienholder(s)), of their priority for a livestock forage allocation on public land (their preference) as well as their permission to use this forage (their grazing permit or lease), in whole or in part.

**Grazing System:** Scheduled grazing use and non-use of an allotment to reach identified goals or objectives by improving the quality and quantity of vegetation. Include, but are not limited to, developing pastures, utilization levels, grazing rotations, timing and duration of use periods, and necessary range improvements.

**Guidelines:** Actions or management practices that may be used to achieve desired outcomes, sometimes expressed as best management practices. Guidelines may be identified during the land use planning process, but they are not considered a land use plan decision unless the plan specifies that they are mandatory. Guidelines for grazing administration must conform to 43 CFR 4180.2 (H-1601-1, Land Use Planning Handbook).

**Habitat:** An environment that meets a specific set of physical, biological, temporal, or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycle. In wildlife management, the major components of habitat are food, water, cover and the adequate juxtaposition of the three.

**Habitat Management Plan (HMP):** An officially approved activity plan for a specific geographic area of public land. An HMP identifies wildlife habitat and related objectives, defines the sequence of actions to be implemented to achieve the objectives, and outlines procedures for evaluating accomplishments.

**Habitat Type:** Place where an animal or plant normally lives, often characterized by a dominant plant form or physical characteristic.

**Hazard Reduction:** Any treatment of living and dead fuels that reduces the potential spread or consequences of fire..

**Hazard Fuels:** A fuel complex defined by kind, arrangement, volume, condition, and location that presents a threat of ignition and resistance to control.

**Hazardous Materials:** 1) any substance, pollutant, or contaminant (regardless of quantity) listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 USC 9601 et seq., and the regulations issued under CERCLA; 2) any hazardous waste as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, and 3) any nuclear or nuclear byproduct as defined by the Atomic Energy Act of 1954, as amended, 42 USC 2011 et seq.

**Healthy Stream Channel Form and Function:** Stream channel function includes both physical and biological attributes, and applies to intermittent and perennial water bodies. Function includes water transport, sediment transport, and transport of wood and chemicals (including nutrients) delivered to streams. Physical attributes of streams include landscape setting, cross-section form, longitudinal gradient, particle size distribution, and response/adjustment to disturbance. Biological attributes of



streams include nutrient dynamics, biological productivity, and aquatic habitat characteristics.

**Herbaceous:** Pertaining to or characteristic of an herb (fleshy-stem plant) as distinguished from the woody tissue of shrubs and trees.

**Herd Area:** The geographic area identified as having been used by a herd of wild horses or burros as its habitat in 1971.

**Herd Management Area (HMA):** Areas established by the Authorized Officer for the maintenance of wild horse and burro herds. Herd management areas are established in consideration of the appropriate management level for the herd, the habitat requirements of the animals, the relationships with other uses of the public and adjacent private lands, and the constraints contained in 43 CFR 4710.4.

**Hibernaculum:** A shelter occupied during the winter by a dormant animal.

**High-voltage Transmission Line:** An electrical power line that is 100 kilovolts or larger.

**Historic:** Referring to the time after written records or after the Europeans first came and wrote about the people and events in America.

**Historic District:** A district possesses a significant concentration, linkage or continuity of sites, buildings, structures, united historically or aesthetically by plan or physical development.

**Historic Property:** Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on, the National Register of Historic Places, including artifacts, records, and material remains related to such a property or resource.

**Historical Raptor Nests:** Any raptor nest or site that has been destroyed but was historically recorded and documented. Temporal and spatial stipulations will not apply.

**Home Range:** The area in which an animal travels in the scope of natural activities.

**Holder:** An individual or entity that holds a valid special use authorization.

**Hydraulic Fracturing:** The breaking or parting of reservoir rock through the use of injected fluids. Hydraulic fracturing is a method of stimulating production or injection at a specific depth in a formation of low permeability by inducing fractures and fissures in the formation by applying high fluid pressure to its face. Fluids (liquids, gases, foams, and emulsions) are injected into reservoir rock at pressures that exceed the strength of the rock and overcome internal stresses of the rock. The fluid enters the formation and parts or fractures it. Sand grains, aluminum pellets, glass beads, or similar materials are carried in suspension by the fluid into the fractures. These are called propping agents or proppants. When the pressure is released at the surface, the fracturing fluid returns to the wellbore as the fractures partially close on the proppants, leaving paths with increased permeability for fluid flow.

**Identified 100-Year Flood Plains:** Those areas delineated by the Federal Emergency Management Agency as having a 1% probability of being inundated in any given year.

**Impacts (or Effects):** Consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative.

**Implementation Plan:** A site-specific plan written to implement decisions made in a land use plan. An implementation plan usually selects and applies best management practices to meet land use plan objectives. Implementation plans are synonymous with “activity” plans. Examples of implementation

plans include interdisciplinary management plans, habitat management plans, and allotment management plans.

**Important Habitats:** Areas of especially high value for a diversity of wildlife or areas that provide certain habitat elements essential to the existence of certain groups of wildlife.

**Indicators:** Factors that describe resource condition and change and can help the BLM determine trends over time.

**Indicator Species:** Species that indicate the presence of certain environmental conditions, seral stages, or previous treatment. One or more plant species selected to indicate a certain level of grazing use (See Management Indicator Species).

**Indirect Impacts (Effects):** Indirect impacts are caused by the action and occur later in time or further removed in distance.

**Infiltration Pond:** An industrial containment area designed to allow groundwater recharge and the downward entry of water into the soil or other material. Infiltration impoundments constructed in-channel may allow for overflow under given storm events.

**Initial Attack:** An aggressive action to put the fire out by the first resources to arrive, consistent with firefighter and public safety and values to be protected.

**In-kind Mitigation:** The replacement or substitution of resources or values that are of the same type and kind as those impacted.

**Integrated Ranch Planning:** A method for ranch planning that takes a holistic look at all elements of the ranching operations, including strategic and tactical planning, rather than approaching planning as several separate enterprises.

**Intensive Management:** Use of proper distance restrictions, seasonal or timing restrictions, rehabilitation standards, and the application of the Wyoming Mitigation Guidelines for Surface-disturbing and Disruptive Activities to adequately protect the resources for which the intensive management is applied. Intensive management actions would be applied with the goal of maintaining or enhancing sensitive resources (plant communities, wildlife habitats, archeological or paleontological resources, etc.).

**Interdisciplinary Team:** A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembled to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights on any stage of the problem, and disciplines may combine to provide new solutions. The number and disciplines of the members preparing the plan vary with circumstances. A member may represent one or more discipline or program interest.

**Interior Board of Land Appeals (IBLA):** The Department of the Interior, Office of Hearings and Appeals, board that acts for the Secretary of the Interior in responding to appeals of decisions on the use and disposition of public lands and resources. Because the IBLA acts for and on behalf of the Secretary of the Interior, its decisions usually represent the Department's final decision but are subject to the courts.

**Intermittent Surface Waters:** Streams, lakes, or other surface water bodies that generally flow or contain during a portion of the year when they receive water from springs or during runoff from rain or snow. In the case of streams, this term can also refer to spatially noncontinuous flow because of groundwater interaction (i.e., portions of the stream are generally dry and portions are generally wet in most years).

**Invasive Species (Invasive Plant Species, Invasives):** A non-native species whose introduction does or

is likely to cause economic or environmental harm or harm to human health. The species must cause, or be likely to cause, harm, and be exotic to the ecosystem it has infested before considered invasive.

**Irreversible and Irretrievable Commitment of Resources:** An irretrievable commitment of a resource is one in which the resource or its use is lost for a period of time. An irreversible commitment of a resource is one that cannot be reversed. NEPA §102(2)C requires a discussion of any irreversible or irretrievable commitments of resources that would be involved in a proposal should it be implemented.

**Isolated Parcel:** An individual parcel of land that may share a corner, but does not have a common border with another parcel.

**Jurisdiction:** The legal right to control or regulate use of a transportation facility. Jurisdiction requires authority but not necessarily ownership.

**Land Locked:** This term refers to the situation when any parcel of land (i.e., private, State, or Federal) has no legal access without crossing another ownership due to the existing land ownership pattern.

**Lands with Wilderness Characteristics:** Lands that have been inventoried and determined by the BLM to contain wilderness characteristics as defined in section 2(c) of the Wilderness Act.

**Landscape:** A distinct association of land types that exhibit a unique combination of local climate, landform, topography, geomorphic process, surficial geology, soil, biota, and human influences. Landscapes are generally of a size that the eye can comprehend in a single view.

**Land Tenure Adjustment:** This term refers to a change in land ownership patterns, or legal status, to improve their administrative manageability and/or their usefulness to the public.

**Land Use Plan:** A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land-use-plan-level decisions developed through the planning process, regardless of the scale at which the decisions were developed.

**Large Scale Anthropogenic Disturbances:** Features include but are not limited to paved highways, graded gravel roads, transmission lines, substations, wind turbines, oil and gas wells, geothermal wells and associated facilities, pipelines, landfills, agricultural conversion, homes, and mines.

**Late Brood Rearing Area:** Habitat includes mesic sagebrush and mixed shrub communities, wetmeadows, and riparian habitats as well as some agricultural lands (e.g. alfalfa fields, etc.).

**Leasable Minerals:** Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920, as amended. These include energy-related mineral resources such as oil, natural gas, coal, and geothermal, and some non-energy minerals, such as phosphate, sodium, potassium, and sulfur. Geothermal resources are also leasable under the Geothermal Steam Act of 1970.

**Lease:** Section 302 of the Federal Land Policy and Management Act of 1976 provides the BLM's authority to issue leases for the use, occupancy, and development of public lands. Authorizations are issued for purposes such as a commercial filming, advertising displays, commercial or noncommercial croplands, apiaries, livestock holding or feeding areas not related to grazing permits and leases, native or introduced species harvesting, temporary or permanent facilities for commercial purposes (does not include mining claims), residential occupancy, ski resorts, construction equipment storage sites, assembly yards, oil rig stacking sites, mining claim occupancy if the residential structures are not incidental to the mining operation, and water pipelines and well pumps related to irrigation and nonirrigation facilities. The regulations establishing procedures for processing these leases and permits are found in 43 CFR 2920.

**Lease Notice:** Provides more detailed information concerning limitations that already exist in law, lease terms, regulations, or operational orders.

**Lease Stipulations (Oil and Gas):** Additional specific terms and conditions that modify the lease rights or change the manner in which an operation may be conducted.

**Lentic:** Wetland or riparian areas with standing water habitat such as lakes, ponds, seeps, bogs, and meadows.

**Level of Acceptable Change:** Federally established threshold of acceptable change to maintain conditions of acid-sensitive lakes.

**Level of Concern:** Federally established atmospheric deposition threshold concentration amount related to undesirable effects on the ecosystem.

**Light Grazing:** Light grazing is related to forage utilization, and can be expressed as livestock grazing that consumes no more than about 30% of the current year's growth of forage plants. Light refers to the effect on the landscape, which is measured through utilization monitoring. You may reduce the number of animals by 30% and still not achieve "light grazing", if those animals that remain consume more than 30% of the current year's forage growth.

**Limited Designation (OHV):** An area restricted at certain times, in certain areas, or to certain vehicular use. These restrictions may be of any type but can generally be accommodated within the following categories: Number of vehicles; type of vehicles; time or season of vehicle use; permitted or licensed use only; use on existing roads and trails; use on designated roads and trails; and other restrictions.

**Limited Reclamation Potential:** Limited Reclamation Potential soils are as defined by the Wyoming Reclamation Policy. Site-specific evaluations will be conducted using current site conditions and up-to-date databases such as the NRCS Soil Web Survey and other information as needed to define soils as having Limited Reclamation Potential.

**Livestock Conversion:** A discretionary action changing permitted use from one kind or class of animal to another.

**Locatable Minerals:** Mineral disposable under the General Mining Act of 1872, as amended, that were not excepted in later legislation. They include hard rock, placer, industrial minerals, and uncommon varieties of rock found on public domain lands (see definition at 43 CFR 3830.10 and examples of minerals that are to be located by lode or placer claim at 43 CFR 3832.20).

**Lotic:** Riparian areas with running water habitat such as rivers, streams, creeks, and springs.

**Lynx Analysis Unit (LAU):** An LAU is a project analysis unit upon which direct, indirect, and cumulative effects analysis are performed. LAU boundaries should remain constant to facilitate planning and allow effective monitoring of habitat changes over time. An LAU is an area of at least the size used by an individual lynx, from about 25 to 50 square miles.

**Major Pipeline:** A pipeline that is 24 inches or more in outside-pipe diameter (Mineral Leasing Act of 1920 30 USC § 181; 36 CFR 251.54(f)(1)).

**Management Area:** An area identified by the BLM for the management of a specific resource or resources such as a geographic or watershed area; where activities are managed to ensure the combination of resource values are adequately maintained.

**Management Decision:** A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions.

**Management Indicator Species:** A plant or animal species selected because their status is believed to (1) be indicative of the status of a larger functional group of species, (2) be reflective of the status of a key habitat type, or (3) act as an early warning of an anticipated stressor to ecological integrity. The key characteristic of a MIS species is that its status and trend provide insights to the integrity of the larger ecological system to which it belongs.

**Master Development Plans:** A set of information common to multiple planned wells, including drilling plans, Surface Use Plans of Operations, and plans for future production.

**Mineral:** Any naturally formed inorganic material, solid or fluid inorganic substance that can be extracted from the earth, any of various naturally occurring homogeneous substances (as stone, coal, salt, sulfur, sand, petroleum, water, or natural gas) obtained usually from the ground. Under federal laws, considered as locatable (subject to the general mining laws), leasable (subject to the Mineral Leasing Act of 1920), and salable (subject to the Materials Act of 1947).

**Mineral Entry:** The filing of a claim on public land to obtain the right to any minerals it may contain.

**Mineral Estate:** The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

**Mineral Leasing Act of 1920, as amended (MLA) 30 USC 181, 43 CFR 3000 and 2880:** An Act to promote the mining of coal, phosphate, oil, oil shale, gas and sodium on the public domain.

**Mineral Location:** The act of marking out and establishing rights by a claimant for mining purposes in accordance with the Mining Law of 1872, as amended.

**Mineral Materials:** Materials such as common varieties of sand, stone, gravel, pumice, pumicite, and clay that are not obtainable under the mining or leasing laws but that can be acquired under the Materials Act of 1947, as amended; pursuant to the mineral material regulations at 43 CFR Part 3600 or 36 CFR 228 Subpart C.

**Minimization Mitigation:** Minimizing impacts by limiting the degree or magnitude of the action and its implementation (40 CFR 1508.20 (b)).

**Mining Claim:** A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. There are four categories of mining claims: lode, placer, millsite, and tunnel site.

**Minor Pipeline:** A pipeline less than 24 inches in outside diameter which doesn't require Congressional Notification.

**Mitigation:** Includes specific means, measures or practices that could reduce, avoid, or eliminate adverse impacts. Mitigation can include avoiding the impact altogether by not taking a certain action or parts of an action, minimizing the impact by limiting the degree of magnitude of the action and its implementation, rectifying the impact by repairing, rehabilitation, or restoring the affected environment, reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and compensating for the impact by replacing or providing substitute resources or environments.

**Modification (Oil and Gas Leasing):** A change to the provisions of a lease stipulation, either temporarily or for the term of the lease. May maintain, increase, or decrease the level of environmental protection. Depending on the specific modification, the stipulation may or may not apply to all sites within the leasehold to which the restrictive criteria are applied (H-1624-1 – Planning for Fluid Mineral Resources).

**Monitoring:** The orderly collection, analysis, and interpretation of resource data to evaluate progress

toward meeting management objectives. This process must be conducted over time in order to determine whether or not management objectives are being met. Monitoring also includes observations to evaluate baseline (i.e., pre-activity) conditions, evaluation of whether activities met desired goals and permit requirements (implementation monitoring), and evaluation of how well mitigation measures protected resource conditions (effectiveness monitoring).

**Moraine:** An accumulation of boulders, stones, and other earth debris carried and deposited by a glacier.

**Multiple Use:** Management of the public lands and their various resource values so that they are used in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output, as provided in the Multiple Use Sustained Yield Act.

**National Ambient Air Quality Standards (NAAQS):** The allowable concentrations of air pollutants in the ambient (public outdoor) air. National ambient air quality standards are based on the air quality criteria and divided into primary standards (allowing an adequate margin of safety to protect the public health) and secondary standards (allowing an adequate margin of safety to protect the public welfare). Welfare is defined as including, but not limited to, effects on soils, water, crops, vegetation, human-made materials, animals, wildlife, weather, visibility, climate, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being.

**National Environmental Policy Act of 1969 (NEPA):** The National Environmental Policy Act (NEPA) [42 USC 4321 et seq.] was signed into law on January 1, 1970. The Act establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within the federal agencies. The Act also establishes the Council on Environmental Quality (CEQ).

**National Historic Preservation Act (NHPA):** The National Historic Preservation Act (Public law 113-287; 54 USC 300101 et seq.) is legislation intended to preserve historical and archaeological sites in the United States of America. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices.

**National Historic Trail:** A congressionally designated trail that is an extended, long-distance trail, not necessarily managed as continuous, that follows as closely as possible and practicable the original trails or routes of travel of national historic significance. The purpose of a National Historic Trail is the identification and protection of the historic route and the historic remnants and artifacts for public use and enjoyment. A National Historic Trail is managed in a manner to protect the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass, including the primary use or uses of the trail.

**National Register of Historic Places (NRHP):** The official list of United States government's historic districts, sites, buildings, structures, and objects deemed worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Register of Historic Places is a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

~~**National Scenic Trail:** A congressionally designated trail that is a continuous and uninterrupted extended,~~  
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long-distance trail so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant resources, qualities, values, and associated settings and the primary use or uses of the areas through which such trails may pass. National Scenic Trails may be located so as to represent desert, marsh, grassland, mountain, canyon, river, forest, and other areas, as well as landforms that exhibit significant characteristics of the physiographic regions of the Nation.

**National Wild and Scenic Rivers (WSR):** The system of congressionally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition.

**Native Plant Species:** Species that were found here before European settlement, and consequently are in balance with these ecosystems because they have well developed parasites, predators, and pollinators.

**Necessary Tasks:** Administrative duties or work requiring the use of motor vehicles, such as retrieving big game kills, repairing range improvements, management of livestock, geophysical exploration activities and other types of leasable mineral exploration activity (other than casual use), or performing mining claim functions resulting in less than 5 acres of surface disturbance as described in 43 CFR 3809. Mining claimants may exercise their rights to cause more than 5 acres disturbance as part of exploring for or mining locatable minerals 36 CFR 3809.5.

**Net Conservation Gain:** The actual benefit or gain above baseline conditions.

**No Surface Occupancy (NSO):** Land use allocation or approval restriction used when surface disturbance cannot be mitigated and must be prohibited. The land use decision or stipulation identifies the NSO area and allowed or excepted uses in the area. NSO stipulations are used on oil and gas leases where drilling and/or operations impacts cannot be adequately mitigated but fluid mineral resources may be recovered by directional drilling. Exclusion Area designations in the Realty Program are NSO land use decisions. This stipulation can be used to prohibit other surface disturbing or disruptive activities such as commercial recreational activities, mining, and timber harvest (see also Stipulation Category) (IBWY-2007-029).

**Noncommercial Forestland:** Land that is not capable of yielding at least 20 cubic feet of wood per acre per year of commercial species; also, land that is capable of producing only noncommercial tree species.

**Non-Point Source Pollution:** A pollution source that is not specific in location. The source of the discharge is dispersed, not well defined, or constant.

**[3809] Notice-level Mining Activities:** A notice is required for exploration activity greater than casual use that will cause surface disturbance of 5 acres or less on BLM-administered lands and split-estate. Mining activity, regardless of acreage disturbed, may not be conducted under a notice filed under the current regulations. For activities under BLM jurisdiction, the content of the notice will determine whether the operation qualifies as a notice-level operation and will not cause undue and unnecessary degradation (43 CFR 3809.21).

**Noxious Weeds:** A plant species designated by federal or State law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States.

**Objective:** A description of a desired outcome for a resource. Objectives can be quantified and measured and, where possible, have established timeframes for achievement (H-1601-1, Land Use Planning Handbook).

**Off-Highway Vehicle (OHV):** Any motorized tracked or wheeled vehicle designed for cross-country travel

over any type of natural terrain. Exclusions (from 43 CFR 8340.0-5(a) (1-5)) are non-amphibious registered motorboats; any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; any vehicle whose use is expressly authorized by the authorizing officer or otherwise officially approved; vehicles in official use; and any combat support vehicle in times of national defense emergencies. The term Off-Road Vehicle (ORV) is used synonymously with OHV.

**Off-Highway Vehicle Management Designations:** An area where all types of vehicle use is permitted at all times, anywhere in the area subject to the operating regulations and vehicle standards set for within 43 CFR 8341 – 8342. The off-road vehicle (ORV) designation definitions have been developed in cooperation with representatives of the U.S. Forest Service, U.S. Park Service, and BLM State and District personnel. It is recognized that there are differences between OHVs and over-the-snow vehicles in terms of use and impact. Therefore, travel by over-the-snow vehicles is permitted off existing routes and in all open or limited areas (unless otherwise specifically limited or closed to over-the-snow vehicles) if they are operated in a responsible manner without damaging the vegetation or harming wildlife. Designations include—

**OHV Closed Route:** OHV Travel is prohibited on the route. Access by means other than OHVs, such as by motorized vehicles that fall outside of the definition of an OHV or by mechanized or non-mechanized means, is permitted. The BLM designates routes as closed to OHV if necessary to protect resources, promote visitor safety, reduce use conflicts, or meet a specific resource goal or objective.

**OHV Open Route:** OHV travel is permitted where there are no special restrictions or no compelling resource protection needs, user conflicts, or public safety issues to warrant limiting the timing or season of use, the type of OHV or the type of OHV user.

**OHV Limited Route:** OHV Travel on routes, roads, trails or other vehicle ways is subject to restrictions to meet specific resource management objectives. Examples of restrictions include numbers or types of vehicles; time or season of use; permitted or licensed use only; or other restrictions necessary to meet resource management objectives, including certain competitive or intensive uses that have special limitations.

**Offsite Mitigation:** Compensating for resource impacts by replacing or providing substitute resources or habitat at a different location than the project area.

**Oil and Gas Lease:** A legal contract granting the right to explore for, develop and produce oil and gas resources for a specific period of time under certain agreed-upon terms and conditions.

**Open Designation (OHV):** An area where all types of vehicle use is permitted at all times, anywhere in the area subject to the operating regulations and vehicle standards set for in 43 CFR 8341 – 8342.

**Out-of-kind Mitigation:** The replacement or substitution of resources or values that are not the same type and kind as those impacted, but are related or similar.

**Overstory:** The portion of vegetation in a forest that forms the uppermost foliage layer.

**Paleontological Resources:** Any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest, and that provide information about the history of life on earth. The term does not include: (1) Any materials associated with an archaeological resource (as defined in section 3(1) of the Archaeological Resources Protection Act of 1979 (16 U.S.C. 480bb(1)); or (2) Any cultural item (as defined in section two of the Native American Graves Protection and Repatriation Act [25 USC 3001]). The term does not apply to petrified wood or fossiliferous units.

**Particulate Matter (PM):** Fine liquid or solid particles suspended in the air and consisting of dust, smoke, mist, fumes, and compounds containing sulfur, nitrogen, and metals.



**Partners:** an association of individuals or groups with like interests due to the scope or location of a project on federal lands or in regard to a federal permitting process.

**Parturition Area:** Documented birthing areas commonly used by females. They include calving areas, fawning areas, and lambing grounds. These areas may be used as nurseries by some big game species.

**Passerine Birds:** Birds of the order Passeriformes, which includes perching birds and songbirds such as blackbirds, jays, finches, warblers, and sparrows. More than half of all birds belong to this order.

**Paved Road:** This road provides access between major points and includes major and minor highways.

**Perennial Surface Waters:** Streams, lakes, or other surface water bodies that flow or contain water year-round in most years. These water bodies are primarily fed by groundwater during the low-flow season. These systems would generally *only* dry up during drought conditions. In the case of streams, this term can refer to the persistence of surface waters along a channel (i.e., few reaches where the infiltration into the stream aquifer exceeds the flow).

**Permittee:** A person or company authorized to use or occupy BLM-administered land.

**Persistent Woodlands:** Long-lived pinyon-juniper woodlands that typically have sparse understories and occur on poor substrates in the assessment area.

**Personal Income:** The sum of wage and salary disbursements, other labor income, proprietors' income, rental income of persons, personal dividend income, personal interest income, and transfer payments to persons, less personal contributions for social insurance.

**pH:** A measure of acidity or hydrogen ion activity. Neutral is pH 7.0. All values below 7.0 are acidic, and all values above 7.0 are alkaline.

**Plan:** A document that contains a set of comprehensive, long-range decisions concerning the use and management of BLM-administered resources in a specific geographic area.

**Plan of Operations:** A [3809] Plan of Operations is required for all locatable mining exploration activity greater than 5 acres or surface disturbance greater than casual use on certain special category lands. Special category lands are described under 43 CFR 3809.11(c) and include such lands as designated Areas of Critical Environmental Concern, lands within the National Wilderness Preservation System, and areas closed to off-road vehicles, among others. In addition, a plan of operations is required for activity greater than casual use on lands patented under the Stock Raising Homestead Act with Federal minerals where the operator does not have the written consent of the surface owner (43 CFR 3814 & 3809.31(d)). The Plan of operations needs to be filed in the BLM field office with jurisdiction over the land involved. The Plan of Operations does not need to be on a particular form but must address the information required by 43 CFR 3809.401(b).

**Planning Area:** A geographical area for which land use and resource management plans are developed and maintained.

**Planning Criteria:** The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions.

**Planning Base:** Law, regulation, policy, land use plan decisions (e.g., RMPs, Resource Management Plan Amendments, and Management Framework Plan Amendments), NEPA documents (e.g., EISs Administrative Determinations, EAs, and Categorical Exclusion Reviews), and supporting data (e.g., automated databases, research, and evaluations).

**Point Source Pollution:** Any discernable, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container from which pollutants are or may be discharged to a receiving water body, wetland, etc.

**Policy:** This is a statement of guiding principles, or procedures, designed and intended to influence planning decisions, operating actions, or other affairs of the BLM. Policies are established interpretations of legislation, executive orders, regulations, or other presidential, secretarial, or management directives.

**Population:** A group of organisms, all the same species, which occupies a particular area. The term is used to refer to the number of individuals of a species within an ecosystem or of any group of like individuals.

**Potential Wild and Scenic River:** A body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, nills, and small lakes that possess free-flowing condition and outstandingly remarkable values and therefore may have potential for addition to the National System.

**Preference:** See Grazing Preference.

**Prehistoric:** Information about past events prior to the recording of events in writing. The period of prehistory differs around the world depending upon when written records became common in a region.

**Prescribed Fire:** A wildland fire originating from a planned ignition in accordance with applicable laws, policies, and regulations to meet specific objectives.

**Prescribed Fire Plan (Burn Plan):** A plan required for each fire application ignited by management. Plans are documents prepared by qualified personnel, approved by the agency administrator, and include criteria for the conditions under which the fire will be conducted (a prescription). Plan content varies among the agencies.

**Prescription:** In the context of wildland fire, a prescription is measurable criteria that define conditions under which a prescribed fire may be ignited. Prescriptions may also be used to guide selection of management responses to wildfire to define conditions under which management actions are most likely to achieve incident management objectives. Prescription criteria typically describe environmental conditions such as temperature, humidity and fuel moisture, but may also include safety, economic, public health, geographic, administrative, social, or legal considerations.

**Primitive Road:** A linear route managed for use by four-wheel drive or high-clearance vehicles. These routes do not customarily meet any BLM road design standards (H-8342-1, Travel and Transportation Management Handbook).

**Primitive Route:** A transportation linear feature located within a WSA or lands with wilderness characteristics designated for protection by a land use plan and not meeting the wilderness inventory road definition.

**Produced Water:** Groundwater produced in conjunction with the extraction of minerals.

**Proper Functioning Condition (PFC):** A riparian-wetland area is considered to be in proper functioning condition when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flow, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water 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 to fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation (Prichard, et al. 1998). There are two categories of wetlands—lentic areas, which are created by a stable water table such as playas, fens, around lakes, marshes etc., and lotic areas, which are in riverine

environments.

**Proposed Species:** Species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior as determined by the US Fish and Wildlife Service. A proposed rule has been published in the *Federal Register*.

**Public Domain:** The term applied to any or all of those areas of land ceded to the Federal Government by the Original States and to such other lands as were later acquired by treaty, purchase, or cession, and are disposed of only under the authority of Congress.

**Public Lands:** As used in this document, 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, without regard to how the United States acquired ownership.

**Range Improvement:** The term range improvement means any activity, structure or program on or relating to rangelands which is designed to improve production of forage, change vegetative composition, control patterns of use, provide water, stabilize soil and water conditions, and provide habitat for livestock and wildlife. The term includes, but is not limited to, structures, treatment projects, and use of mechanical means to accomplish the desired results.

**Range Trend:** The direction of change in range condition over time, either toward or away from desired management objectives.

**Rangeland:** Land on which the indigenous (climax or natural potential) vegetation is predominantly grasses, grass-like plants, forbs, or shrubs and is managed as a natural ecosystem. If plants are introduced, they are managed similarly. Rangelands include natural grasslands, savannas, shrublands, many deserts, tundras, alpine communities, marshes and meadows.

**Raptor:** Bird of prey with sharp talons and strongly curved beaks such as hawks, owls, vultures, ravens, and eagles.

**Raptor Concentration Area (RCA):** A localized area where raptors congregate that may provide thermal protection, increased forage availability, and a minimal level of stress-inducing disturbances.

**Reasonably Foreseeable Development (RFD):** A projection of likely exploration, development, and production of oil and gas within a study area based on existing and credible geologic data, technology, economics, and activity trends.

**Reclamation:** The suite of actions taken within an area affected by human disturbance, the outcome of which is intended to change the condition of the disturbed area to meet pre-determined objectives and/or make it acceptable for certain defined resources (e.g., wildlife habitat, grazing, ecosystem function, etc.).

**Reclamation Plans:** Plans that guide the suite of actions taken within an area affected by human disturbance, the outcome of which is intended to change the condition of the disturbed area to meet pre-determined objectives and/or make it acceptable for certain defined resources (e.g., wildlife habitat, grazing, ecosystem function, etc.).

**Recreation Opportunity Spectrum (ROS):** A planning process that provides a framework for defining classes of outdoor recreation environments, activities, and experience opportunities. The settings, activities, and opportunities for experiences are arranged along a continuum or spectrum of six classes: primitive, back country, middle country, front country, rural, and urban. The resulting analysis defines specific geographic areas on the ground, each of which encompasses one of the six classes.

**Reference State:** The reference state is the state where the functional capacities represented by soil/site stability, hydrologic function, and biotic integrity are performing at an optimum level under the natural

disturbance regime. This state usually includes, but is not limited to, what is often referred to as the potential natural plant community.

**Research Natural Area (RNA):** A physical or biological unit in which current natural conditions are maintained as much as possible. These conditions are ordinarily achieved by allowing natural, physical, and biological processes to prevail without human intervention. However, under unusual circumstances, deliberate manipulation may be utilized to maintain the unique feature that the RNA was established to protect.

**Reserve Common Allotment:** An area which is designated in the land use plan as available for livestock grazing but reserved as an area available for use as an alternative to grazing in another allotment in order to facilitate rangeland restoration treatments and recovery from natural disturbances such as drought or wildfire. The reserve common allotment would provide needed flexibility that would help the agency apply temporary rest from grazing where vegetation treatments and/or management would be most effective.

**Residual Impacts:** Impacts from an authorized land use or implementation-level decision that remain after applying avoidance and minimization mitigation; also referred to as unavoidable impacts.

**Restoration:** Implementation of a set of actions that promotes plant community diversity and structure that allows plant communities to be more resilient to disturbance and invasive species over the long term. The long-term goal is to create functional, high quality habitat that is occupied by Greater Sage-Grouse. Short-term goal may be to restore the landform, soils and hydrology and increase the percentage of preferred vegetation, seeding of desired species, or treatment of undesired species.

**Resource Damage:** Damage to any natural or cultural resources that results in impacts such as erosion, water pollution, degradation of vegetation, loss of archeological resources, or the spread of weeds.

**Resource Management Plan (RMP):** A land use plan as described by the Federal Land Policy and Management Act. The resource management plan generally establishes in a written document: (1) Land areas for limited, restricted or exclusive use; designation, including ACEC designation; and transfer from Bureau of Land Management Administration; (2) Allowable resource uses (either singly or in combination) and related levels of production or use to be maintained; (3) Resource condition goals and objectives to be attained; (4) Program constraints and general management practices needed to achieve the above items; (5) Need for an area to be covered by more detailed and specific plans; (6) Support action, including such measures as resource protection, access development, realty action, cadastral survey, etc., as necessary to achieve the above; (7) General implementation sequences, where carrying out a planned action is dependent upon prior accomplishment of another planned action; and (8) Intervals and standards for monitoring and evaluating the plan to determine the effectiveness of the plan and the need for amendment or revision. It is not a final implementation decision on actions which require further specific plans, process steps, or decisions under specific provisions of law and regulations

**Restriction/Restricted Use:** A limitation or constraint on public land uses and operations. Restrictions can be of any kind, but most commonly apply to certain types of vehicle use, temporal and/or spatial constraints, or certain authorizations.

**Right-of-Way Corridor:** A parcel of land (often linear in character) that has been identified through the land use planning process as being a preferred location for existing and future utility rights-of-way and that is suitable to accommodate one or more rights-of-way that are similar, identical, or compatible. Corridors may accommodate **multiple pipelines** (such as for oil and gas), **electricity transmission lines**, and **related infrastructure**, such as access and maintenance roads, compressors, pumping stations, and other structures. (see Corridor definition)

**Right-of-Way Grant:** Authorizes public lands to be used or occupied for the construction, operation, maintenance, and termination of a project or facility passing over, upon, under, or through such land. A ROW grant is an authorization of use for either site or linear projects (e.g. communication sites, power lines, pipelines and roads) on public lands. A grant authorizes rights and privileges for a specific use of the land for a specific period of time (43 CFR 2800, 2880).

**Riparian:** Referring to or relating to areas adjacent to water or influenced by free water associated with streams or rivers on geologic surfaces occupying the lowest position in the watershed. (See definition for Lentic and Lotic). (See also Wetland/Riparian.)

**Riparian Area:** 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). Included are ephemeral streams that have vegetation dependent upon free water in the soil. All other ephemeral streams are excluded.

**Riparian Communities:** Communities of vegetation associated with either open water or wetlands. Examples are cottonwood and willow communities, meadows, aspens near water sources, and other trees, grasses, forbs, and shrubs associated with water.

**River Eligibility:** A river or river segment found to meet criteria found in Sections 1(b) and 2(b) of the Wild and Scenic Rivers Act of being free flowing and possessing one or more outstandingly remarkable value.

**Road:** A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use (H-8342-1, Travel and Transportation Management Handbook).

**Road Category Level:** Defines the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria. There are five maintenance levels:

- **Level 1:** Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period is one year or longer. Basic custodial maintenance is performed.
- **Level 2:** Assigned to roads open for use by high-clearance vehicles. Passenger car traffic is not a consideration.
- **Level 3:** Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.
- **Level 4:** Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds.
- **Level 5:** Assigned to roads that provide a high degree of user comfort and convenience. Normally, roads are double-lane and paved or aggregate-surfaced with dust abatement.

**Rough Proportionality:** The required dedication is related both in nature and extent to the proposed development's impact.

**Runoff:** The total stream discharge of water, including both surface and subsurface flow, usually expressed in acre-feet of water yield.

**Salable Minerals:** Minerals that may be disposed of through sales and free use permits under the Materials Act of 1947, as amended. Included are common varieties of sand, stone, gravel, and clay (See also Mineral Materials).

**Sawtimber:** Trees containing at least one eight-foot sawlog and meeting regional specifications for freedom from defect. Softwood trees must be at least eight inches in diameter at breast height (4.5 feet above the ground). (Forest Standards).

**Scenery Management System (SMS):** A planning and management tool used to delineate, define, and integrate scenery resources in land and resource management planning. An SMS inventory is required for every Forest Plan revision.”

**Scenic Integrity:** An indicator of an areas visual appearance, either stated as an objective or current condition, related to the characteristic landscape.”

**Scenic Integrity (Existing or Objective):** State of naturalness or, conversely, the state of disturbance created by human activities or alteration. Integrity is stated in degrees of deviation from the existing landscape character in a national grassland or forest. The scenic integrity levels are:

- **Very High (Unaltered): Preservation.** This level refers to landscapes where the valued landscape character is intact with only minute, if any, deviations. The existing landscape character and sense of place is expressed at the highest possible level.
- **High (Appears Unaltered): Retention:** This level refers to landscapes where the valued landscape character appears intact. Deviations may be present but must repeat the form, line, color, texture and pattern common to the landscape character so completely and at such scale that they are not evident.
- **Moderate (Slightly Altered): Partial retention:** This level refers to landscapes where the valued landscape character appears slightly altered. Noticeable deviation must remain visually subordinate to the landscape character being viewed.
- **Low (Moderately Altered): Modification:** This level refers to landscapes where the valued landscape character appears moderately altered. Deviations begin to dominate the valued landscape character being viewed, but they borrow valued attributes such as size, shape, vegetative type changes or architectural styles outside the landscape being viewed. They should not only appear as valued character outside the landscape being viewed but compatible or complimentary to the character within.
- **Very Low (Heavily Altered): Maximum Modification:** This level refers to landscapes where the valued landscape character appears heavily altered. Deviations may strongly dominate the valued landscape character. They may no borrow from valued attributes such as size, shape, vegetative type changes or architectural styles within or outside of the landscape being viewed. However, deviations must be shaped and blended with the natural terrain (landforms) so that elements such as roads and structures do not dominate the composition.
- **Unacceptably Low:** This level refers to landscapes where the valued landscape character being viewed appears extremely altered. Deviations are extremely altered. Deviations are extremely dominate and borrow little if any form, line, color, texture, pattern, or scale from the landscape character. Landscapes at this level of integrity need rehabilitation.

**Scenic Resource:** Attributes, characteristics, and features of landscapes that provide varying responses from, and varying degrees of benefits to, humans.

**Scenic Quality:** The relative worth of a landscape from a visual perception point of view. Scenic quality is rated as Class A (high), Class B (medium), or Class C (low).

**Scoping:** The process of identifying the range of issues, management concerns, preliminary alternatives, and other components of an environmental impact statement or land-use planning document. It involves both internal and public viewpoints.

**Season of Use:** A livestock grazing permit term and condition identifying the time during which livestock graze a given area to achieve management and resource condition objectives.

**Secondary Paved Road:** This is a paved road, not a highway, with other roads of lesser quality branching from it. It is not usually striped and connects primary roads and major points.

**Secondary Unpaved Road:** This one-lane road is regularly maintained with other roads of lesser quality branching from it. It usually connects primary roads and major points.

**Sensitive Soils:** Land areas that have a moderate to very high hazard for soil compaction, erosion, or displacement. These soils include, but are limited to, red soils, saline soils, sandy soils, highly calcareous, and shallow.

**Sensitive Species:** Those species designated by a State Director, usually in cooperation with the State agency responsible for managing the species and state natural heritage programs. They are those species that: (1) could easily become endangered or extinct in a state; (2) are under status review by the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that federal listing, proposal, or candidate status may become necessary; (5) typically have small and widely dispersed populations, or (6) inhabit ecological refugia or other specialized or unique habitats. (see Bureau Sensitive Species)

**Seral Stage:** The relatively transitory communities that develop under plant succession generally described as early, mid, and late seral stages. The mix of seral or successional stages on the landscape can be the result of disturbances, topography and soil, climate, uses of the land, management prescriptions, vegetation classification categories, and evaluation procedures.

**Setting:** Setting is one of the seven aspects of integrity examined when evaluating a cultural resource for NRHP eligibility. "Setting is the physical environment of a historic property. Whereas location refers to the specific place where a property was built or an event occurred, setting refers to the character of the place in which the property played its historical role. It involves how, not just where, the property is situated and its relationship to surrounding features and open space.

Setting often reflects the basic physical conditions under which a property was built and the functions it was intended to serve. In addition, the way in which a property is positioned in its environment can reflect the designer's concept of nature and aesthetic preferences.

**Shrub:** A plant that has persistent woody stems and a relatively low growth habit, and that generally produces several basal shoots instead of a single bole.

**Significant Paleontological Resource:** Any paleontological resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered to be scientifically important because it is a rare or previously unknown species, it is of high quality and well preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has identified educational or recreational value. Paleontological resources that may be considered to not have paleontological significance include those that lack provenience or context, lack physical integrity because of decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities.

**Site-Specific:** Created, designed, or selected for a specific site.

**Size Class:** Tree size recognized by distinct ranges, usually of diameter or height.

**Smoke Management:** The policies and practices implemented by air and natural resource managers directed at minimizing the amount of smoke entering populated areas or impacting sensitive sites, avoiding significant deterioration of air quality and violations of National Ambient Air Quality Standards, and mitigating human-caused visibility impacts in Class I areas.

**Social Cost of Carbon:** The social cost of carbon (SCC) is an estimate of the monetized damages associated with incremental increases in CO<sub>2</sub> emissions (typically one metric ton) in a particular year. Federal agencies use the SCC to incorporate the social benefits of reducing CO<sub>2</sub> emissions into the analyses of certain regulatory actions.

**Spatial Management:** As used in this document, intensive control of the location and level of surface disturbance that is allowed in a particular area.

**Special Area Designation:** A title conferred on a specified area through the land use planning process, which identifies the area as being in need of special management attention. Examples of special area designations include Special Recreation Management Areas, Areas of Critical Environmental Concern, Special interest area, and Wildlife Habitat Management Areas.

**Special Recreation Management Area (SRMA):** An administrative unit where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance, or distinctiveness, especially compared to other areas used for recreation.

**Special Status Species:** Proposed species, listed species, and candidate species under the Endangered Species Act; state-listed species; and BLM State Director-designated sensitive species (see BLM Manual 6840—Special Status Species Policy).

**Split Estate:** This is the circumstance where the surface of a particular parcel of land is owned by a different party than the minerals underlying the surface. Split estates may have any combination of surface/subsurface owners: Federal/State; Federal/private; State/private; or percentage ownerships. When referring to the split estate ownership on a particular parcel of land, it is generally necessary to describe the surface/subsurface ownership pattern of the parcel.

**Standard:** Standards of land health are expressions of levels of physical and biological condition or degree of function required for healthy lands and sustainable uses and define minimum resource conditions that must be achieved and maintained.

**Standard Lease Term:** The terms incorporated into every oil and gas lease. Standard lease terms require compliance with all laws and regulations to ensure protection of other energy, mineral, and surface resources, such as soil, water, vegetation, cultural, and threatened and endangered species. It is important to recognize that the Authorized Officer has the authority to modify the siting and design of facilities, control the rate of development and timing of activities as well as require other mitigation under Sections 2 and 6 of the standard lease terms (BLM Form 3100-11 and 43 CFR 3101.1-2).

**Stakeholders:** Individuals or groups who are involved in or affected by a course of action that is being proposed in a project plan affecting federal lands or a federal permitting process.

**State:** A state is comprised of an integrated soil and vegetation unit having one or more biological communities that occur on a particular ecological site and that are functionally similar with respect to the three attributes (soil/site stability, hydrologic function, and biotic integrity) under natural disturbance regimes.



**State Listed Species:** Species proposed for listing or listed by a state in a category implying but not limited to potential endangerment or extinction. Listing is either by legislation or regulation.

**Stipulation (General):** A term or condition in an agreement, contract, or written authorization.

**Stipulation (Oil and Gas):** A restriction placed on an oil and gas lease or other use authorization to protect other resources (e.g., a seasonal restriction to protect big game in their winter range or in their calving areas) or land uses and is attached to and made a part of the lease. The restriction precludes or restricts activities.

**Stipulation Category:** Land use decisions or authorization requirements intended to mitigate impacts of surface disturbing or disruptive activities. These include RMP decisions, oil and gas lease stipulations, conditions of approval, and terms and conditions. These stipulations may prohibit surface use, allow surface use under certain conditions, or allow surface use during certain times (see also No Surface Occupancy, Controlled Surface Use, and Timing Limitation).

**Stochastic:** Randomly determined event, chance event, a condition determined by predictable processes and a random element.

**Substrate:** The mineral or organic material that forms the bed of a stream; the base upon which an organism lives; the surface on which a plant or animal grows or is attached.

**Succession:** The progressive replacement of plant communities on a site which leads to a potential natural plan community, attaining stability.

**Surface Discharge:** The release of produced water onto the unconfined land surface or into an existing drainage system.

**Surface Disturbance:** Any disturbance that causes the destruction or alteration of vegetation and the disturbance of the soil surface, and that will cause a lasting impact to the affected area.

1. Long-term removal occurs when vegetation is physically removed through activities that replace the vegetation community, such as a road, power line, well pad or active mine. Long-term removal may also result from any activities that cause soil mixing, soil removal, and exposure of the soil to erosive processes.
2. Short-term removal occurs when vegetation is removed in small areas, but is restored to desirable vegetation communities within a few years (<5) of disturbance, such as a successfully reclaimed pipeline, or successfully reclaimed drill hole or pit.
3. Habitat rendered unusable due to numerous anthropogenic disturbances
4. Anthropogenic surface disturbances are surface disturbances meeting the above definitions which result from human activities .

**Surface Disturbing Activities:** An action that alters the vegetation, surface/near surface soil resources, and/or surface geologic features, beyond natural site conditions and on a scale that affects other Public Land values. Examples of surface disturbing activities may include: operation of heavy equipment to construct well pads, roads, pits and reservoirs; installation of pipelines and power lines; and conducting several types of vegetation treatments (e.g., prescribed fire, etc.). Surface disturbing activities may be either authorized or prohibited (WY IB-2007-029).

**Surface Management:** Operations conducted on BLM administered lands pursuant to the 43 CFR Subpart 3809 regulations. The three levels of operations under these regulations are defined in this glossary include Casual Use, Notice and Plan of Operations. Use and Occupancy of mining claims pursuant to 43

CFR Subpart 3715 that is reasonably incident to Notices and Plans of Operations may also take place pursuant to review and approval by the BLM Authorized Official (AO).

**Surface Occupancy:** Placement or construction on the land surface of semi-permanent or permanent facilities requiring continual service or maintenance. Casual use is not included.

**Surface Use:** These are all the various activities that may be present on the surface or near-surface (e.g., pipelines), of the public lands. It does not refer to those subterranean activities (e.g., underground mining, etc.) occurring on the public lands or federal mineral estate. When administered as a use restriction (e.g., *No Surface Use [NSU]*), this phrase prohibits all but specified resource uses and activities in a certain area to protect particular sensitive resource values and property. This designation typically applies to small acreage sensitive resource sites (e.g., plant community study enclosure, etc.), and/or administrative sites (e.g., government ware-yard, etc.) where only authorized, agency personnel are admitted.

**Take:** As defined by the Endangered Species Act, “to harass, harm, pursue, hunt, shoot, wound, kill, capture, or collect, or attempt to engage in any such conduct.”

**Tall Structures:** A wide array of infrastructures (e.g., poles that support lights, telephone and electrical distribution, communication towers, meteorological towers, high-tension transmission towers, and wind turbines) that have the potential to disrupt nesting birds by creating new perching/nesting opportunities and/or decreasing the use of an area. A determination as to whether something is considered a tall structure would be based on local conditions such as vegetation or topography.

**Technically/Economically Feasible:** Actions that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant. It is the BLM’s sole responsibility to determine which actions are technically and economically feasible. The BLM will consider whether implementation of the proposed action is likely given past and current practice and technology; this consideration does not necessarily require a cost-benefit analysis or speculation about an applicant’s costs and profit. (Modified from the CEQ’s 40 Most Asked Questions and BLM NEPA Handbook, Section 6.6.3.)

**Temporal Management:** As used in this document, intensive control of the period during which BLM will allow activities that are physiologically disturbing or disruptive to normal wildlife activities such as elk migration.

**Temporary Special Use Permit:** A type of permit that terminates within one year or less after the approval date. All other provisions applicable to permits apply fully to temporary permits. Temporary special use permits are issued for seasonal or short-duration uses involving minimal improvement and investment.

**Temporary/Temporary Use:** A relative term that must be considered in the context of the resource values affected and the nature of the resource use/uses/activity/activities taking place. Generally, a temporary activity is considered to be one that is not fixed in place and is of short duration.

**Thermal Cover:** Cover used by animals to ameliorate the effects of weather. Optimally, thermal cover is provided by a stand of coniferous trees, 30 to 60 acres in size, at least 40 feet tall, with a canopy cover of at least 70%.

**Threatened Species:** Any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range; listings are published in the *Federal Register* as determined by the US Fish and Wildlife Service and the Secretary of Interior.

**Thrust Fault:** A reverse fault that is characterized by a low angle of inclination with reference to a horizontal plane.

**Timeliness:** The conservation benefits from compensatory mitigation accruing as early as possible or before impacts have begun (BLM Manual Section 1794).

**Timing Limitation:** A stipulation that prohibits surface disturbing or disruptive activities during specified times to protect identified resource values during sensitive periods (see also Stipulation Category). The stipulation does not apply to the operation or maintenance of production facilities unless the finding analysis demonstrates the continued need for such mitigation and the insufficiency of less stringent, project-specific mitigation measures.”

**Traditional Cultural Property (TCP):** A Traditional Cultural Property is defined as a property that is eligible for inclusion in the National Register of Historic Places based on its association with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community. TCPs are rooted in a traditional community's history and are important in maintaining the continuing cultural identity of the community.

**Trail:** Linear routes managed for human-powered, stock, or off-road vehicle forms of transportation, or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles (H-8342-1, Travel and Transportation Management Handbook).

**Transition:** A shift between two states. Transitions are not reversible by simply altering the intensity or direction of factors that produced the change. Instead, they require new inputs such as revegetation or shrub removal. Practices, such as these, that accelerate succession are often expensive to apply.

**Transmission Line:** An electrical utility line with a capacity greater than or equal to 100kV or a natural gas, hydrogen, or water pipeline greater than or equal to 24” in diameter.

**Trophy Game Animal:** Black bear, gray wolf, or mountain lion.

**Turbidity:** interference to the passage of light through water due to insoluble particles of soil, organics, microorganisms and other materials.

**Unavailable for Leasing:** No new oil and gas leases would be sold in areas with this designation. This term may be used interchangeably with “closed to leasing” for fluid minerals.

**Unitization:** Operation of multiple leases as a single lease under a single operator.

**Unpaved Road:** This road is regularly maintained, wide enough for at least two vehicles, provides access between major points, and serves a large area branching from it.

**Unsuitability Criteria:** Criteria of the federal coal management program by which lands may be assessed as unsuitable for all or certain stipulated methods of coal mining.

**Uplands:** Lands at higher elevations than alluvial plains or low stream terraces; all lands outside the riparian-wetland and aquatic zones.

**Utility Window:** Short segments of right-of-way corridor utilized when designating a full-length right-of-way corridor is not feasible. (see Corridor definition)

**Utility-Scale and/or Commercial Energy Development:** A project that is capable of producing 20 or more megawatts of electricity for distribution to customers through the electricity-transmission-grid system.

**Utilization:** The proportion of the current year’s forage production that is consumed or destroyed by animals. Utilization is usually expressed as a percentage.

**Valid Existing Rights:** Documented, legal rights, or interests in the land, which allow a person or entity to use said land for a specific purpose and that are still in effect. Such rights include but are not limited to fee title ownership, mineral rights, and easements. Such rights may have been reserved, acquired, granted or otherwise authorized under various statutes of law.

**Vegetative Cover:** The proportion of land or ground surface of an area covered by vegetation.

**Vegetation Treatments:** Management practices that change the vegetation structure to a different stage of development. Vegetation treatment methods include wildfire for resource benefit, prescribed fire, chemical, mechanical, and seeding.

**Viability:** For purposes of NFMA and its enabling regulations, viability is the availability of habitat that allows a species to persist on landscapes for long-periods (multi-generational) of time. It assumes that populations are abundant (sufficient numbers) and well-distributed (sufficient redundancy of populations) to provide for long-term population persistence on a landscape.

**Viewshed:** The landscape that can be directly seen under favorable atmospheric conditions from a viewpoint or along a transportation corridor.

**Visual Contrast Degree (BLM Handbook H-8431-1 – Visual Resource Contrast Rating):**

- **None:** The element contrast is not visible or perceived.
- **Weak:** The element contrast can be seen but does not attract attention.
- **Moderate:** The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- **Strong:** The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

**Visual Quality Objectives (VQOs):** A desired level of excellence based on physical and sociological characteristics of an area. Refers to degree of acceptable alteration of the characteristic landscape. Visual Quality Objectives include:

- **Maximum Modification:** Activity may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background.
- **Modification:** Activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in foreground or middleground.
- **Partial Retention:** Activities may be evident but must remain subordinate to the characteristic landscape.
- **Preservation:** Provides for ecological change only.
- **Retention:** Activities are not evident to the casual forest visitor.

**Visual Resource:** Visible feature of the landscape, such as land, water, vegetation, animals, and other features that make up the scenery of an area.

**Visual Resource Management (VRM):** The system by which BLM classifies and manages scenic values and visual quality of public lands. The system is based on research that has produced ways of assessing aesthetic qualities of the landscape in objective terms. After inventory and evaluation, lands are given

relative visual ratings (management classes), which determine the amount of modification allowed for the basic elements of the landscape.

**Visual Resource Management (VRM) Classes:** Visual resource management classes define the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. The four classes are described below:

- **Class I** provides for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers, and other similar areas where landscape modification activities should be restricted.
- **Class II** areas are those areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.
- **Class III** includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- **Class IV** applies to areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

**Waiver (Oil and Gas):** Permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold (H-1624-1 – Planning for Fluid Mineral Resources).

**Water Disposal Pit:** A pit designed under the authority of Onshore Oil and Gas Order #7 for containment of produced water (water produced in conjunction with oil and gas production) as defined in said order. Water disposal pits can be temporary or permanent.

**Water Evaporation Pit:** A water disposal pit that disposes of produced water via the process of evaporation.

**Water Influence Zone:** The water influence zone (WIZ) includes the geomorphic floodplain, riparian ecosystem, and inner gorge. Its minimum horizontal width (from top of each bank) is the greater of 100 feet or the mean height of mature dominant late-seral vegetation. It includes adjacent unstable and highly-erodible soils. The WIZ protects interacting aquatic, riparian, and upland functions by maintaining natural processes and resilience of soil, water, and vegetation systems (Reid and Ziemer, 1994).

**Water Table:** The plane surface between the zone of saturation and the zone of aeration. Measured as the elevation where the groundwater surface is at equilibrium with atmospheric pressure. The water table is typically measured with a shallow groundwater well and is equal to the elevation of the water surface in the well. This term is typically not used in reference to confined aquifers or aquifers under pressure. Also known as the groundwater table, groundwater surface, water level, and saturated surface, among others.

**Watershed:** The area of land, bounded by a divide, that drains water, sediment, and dissolved materials to a common outlet at some point along a stream channel (Dunne and Leopold, 1978), or to a lake, reservoir, or other body of water. Also called drainage basin or catchment.

**West Nile Virus:** A virus that is found in temperate and tropical regions of the world and most commonly transmitted by mosquitoes. West Nile virus can cause flu-like symptoms in humans and can be lethal to birds.

**Wetlands:** Those areas that are inundated by surface water or groundwater with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows,

river overflows, mudflats, and natural ponds.

**Wild, Scenic, or Recreational River Areas:** The three classes of what is traditionally referred to as a “wild and scenic river.” Designated river segments are classified as wild, scenic, and/or recreational, but the segments cannot overlap.

- **Wild River Areas:** Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- **Scenic River Areas:** Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- **Recreational River Areas:** Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

**Wildcat Well:** A well drilled in an area where oil and gas have not been previously discovered.

**Wilderness:** A congressionally designated area defined by the Wilderness Act of 1964, 16 USC §1131(a), as undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

**Wilderness Characteristics:** These attributes include the area’s size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. They may also include supplemental values. Lands with wilderness characteristics are those lands that have been inventoried and determined by the BLM to contain wilderness characteristics as defined in section 2(c) of the Wilderness Act.

**Wilderness Study Area (WSA):** A roadless area that has been inventoried and found to be wilderness in character, has few human developments, and provides outstanding opportunities for solitude and primitive recreation, as described in Section 603 of the Federal Land Policy and Management Act of 1976 and in Section 2(c) of the Wilderness Act of 1964. “A Wilderness is (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.” When these characteristics were found within a defined boundary, the presence of the wilderness resource was documented and the area was classified as a WSA (BLM Manual 6330).

**Wildfire:** An unplanned, unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out (National Wildfire Coordinating Group October 2014, <http://www.nwcg.gov/pms/pubs/glossary/w.htm>).

**Wildfire Suppression:** A response to wildfire, escaped wildland fire use, or prescribed fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire.

**Wildland Fire:** A general term describing any non-structure fire that occurs in the wildland. Wildland fire is categorized into two distinct types: wildfire (unplanned) and prescribed fire (planned) (2009 Guidance Rock Springs RMP Revision

for Implementation of Federal Wildland Fire Management Policy).

**Wildland Urban Interface (WUI):** Wildland Urban Interface (WUI): The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetation fuels.

**Wildlife Services (WS):** A division of the USDA Animal and Plant Health Inspection Service (APHIS) that is responsible for the control of animals that are causing economic losses to agriculture, damage to property, or hazards to human health. (See also Animal Damage Control.)

**Withdrawal:** Withholding an area of Federal land from settlement, sale, location, or entry under some or all of the general land laws for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area of federal land, other than *property* governed by the Federal Property and Administrative Services Act (40 U.S.C. 472), from one department, bureau, or agency to another department, bureau, or agency.

**Wyoming Connectivity Areas:** Condition in which the spatial arrangement of land cover types allows organisms and ecological processes (such as disturbance) to move across the landscape preventing population isolation. These connectivity areas could provide linkage within a state's sub-populations or between interstate sub populations.

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# CHAPTER 1—INTRODUCTION

## 1.1 INTRODUCTION

This draft environmental impact statement (EIS) documents the comprehensive analysis of alternatives for the planning and management of public lands and resources administered by the Bureau of Land Management (BLM) Rock Springs Field Office (RSFO) (Map 1-1). The planning area includes approximately 3.6 million acres of BLM-administered surface land and 3.7 million acres of BLM-administered mineral estate in portions of Lincoln, Sweetwater, Uinta, Sublette, and Fremont counties in southwestern Wyoming (Maps 1-2 and 1-3). The RSFO administers various programs, including mineral exploration and development, renewable energy, wildlife habitat, outdoor recreation, wild horses, livestock grazing, and historic trails. Table 1-1 provides a summary of land and mineral ownership and administrative jurisdictions within the planning area.

This draft EIS provides analysis of potential management direction for important resource values and resource uses within the planning area and allocates the use of public lands for multiple uses. The draft EIS also provides management direction for the protection of certain resources while allowing for leasing and development of mineral resources, livestock grazing, and other activities at appropriate levels.

**Table 1-1. Land and Mineral Ownership and Administrative Jurisdictions Within the Rock Springs Planning Area**

<b>Jurisdiction</b>	<b>Acres<sup>1</sup></b>
Total land surface area in the planning area (all ownership)	5,700,195
<b>Areas the Rock Springs Resource Management Plan (RMP) decisions will cover:</b>	
A. Federal land/federal minerals <sup>2</sup>	3,465,034
B. Federal land/nonfederal minerals <sup>3</sup>	143,219
C. Nonfederal land/federal minerals <sup>4</sup>	98,602
<b>Total BLM-administered federal land surface to be covered by RMP decisions</b>	<b>3,687,429</b>
<b>Total BLM-administered federal mineral estate to be covered by RMP decisions</b>	<b>3,718,451</b>
<b>Areas the Rock Springs RMP decisions will <i>not</i> cover:</b>	
D. Bureau of Reclamation (BOR) land/federal minerals <sup>5</sup>	167,580
<b>Total federal land surface that will <i>not</i> be covered by RMP decisions</b>	<b>167,580</b>
E. Private or state land/private or state minerals <sup>6</sup>	1,354,709

<sup>1</sup> Because of land surface and mineral ownership overlaps and administrative responsibility overlaps, acreage figures for different jurisdictions do not add up to the total acreage. Acreage figures are rounded to the nearest ten unless otherwise stated.

<sup>2</sup> Where the federal land surface and federal mineral estate are both administered by BLM, RMP decisions would apply to both the land surface and the mineral estate.

<sup>3</sup> Where the federal land surface is administered by the BLM and the minerals are privately or state owned, RMP decisions would apply only to BLM-administered federal land surface and only to the extent allowed by law. Although surface management decisions may affect the timing and location of development, surface management decisions cannot preclude development of the nonfederally owned minerals. The RMP decisions for mineral management would not apply to the nonfederal mineral estate. Anticipated surface and mineral management actions and their direct, indirect, and cumulative impacts (cumulative impacts to the extent that they affect resource management decisions) are included/disclosed in the analyses.

<sup>4</sup> Where the land surface is privately owned or owned by the State of Wyoming and the minerals are federally owned (i.e., split estate), the RMP decisions would apply to BLM-administered federal mineral estate and, to varying degrees, the surface estate. RMP decisions would only pertain to the state owned and privately owned land surface to the extent allowed by law and to the

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extent that the impacts were the result of the federal action. BLM would work with the private/state surface owners to honor their wishes to the extent allowed by law. Anticipated surface and mineral management actions and their direct, indirect, and cumulative impacts (cumulative impacts to the extent that they affect resource management decisions) are included/disclosed in the analyses.

<sup>5</sup> Where the federal land surface is administered by the BOR and the federal mineral estate is administered by BLM, BOR surface planning and management decisions are incorporated where possible. BLM administrative responsibilities are limited to those actions concerning the federal mineral estate, and surface management issues are handled on a case-by-case basis through consultation with BOR in conformance with its management plan(s). The RMP includes management decisions for the federal minerals on these lands. Anticipated surface and mineral management actions and their direct, indirect, and cumulative impacts (cumulative impacts to the extent that they affect resource management decisions) are included/disclosed in the analyses.

Note: Although BLM responsibilities include surface management of the lands withdrawn for BOR purposes, they are carried out in accordance with an interagency agreement between the two agencies. Administrative jurisdiction (including land use planning) for these lands lies with BOR.

<sup>6</sup> The RMP will not include any management decisions that are applicable to areas where the land surface and minerals are privately owned or owned by the State of Wyoming. However, anticipated impacts that might affect RMP decisions on these lands are included in the cumulative impact analysis.

## **1.2 PURPOSE AND NEED FOR THE RESOURCE MANAGEMENT PLAN AMENDMENTS**

### **1.2.1 Purpose**

The purpose of the Rock Springs RMP revision is to provide an updated, comprehensive and environmentally adequate framework for managing and allocating uses of public lands and resources administered by the BLM in the RSFO. The Rock Springs RMP will address changing needs of the planning area by updating information and revising management goals, objectives, and decisions while ensuring that public lands are managed according to the principles of multiple use and sustained yield as identified in the Federal Land Policy and Management Act (FLPMA) of 1976 while maintaining the valid existing rights and other obligations already established.

### **1.2.2 Need**

The need for revising the Green River RMP (1997) is the result of considerable changes within the planning area since completion of the existing Green River RMP. Current amendments and routine maintenance actions are no longer adequate to address these changes. Since the Record of Decision (ROD) for the Green River RMP was signed in 1997, new data has become available, new policies established, and old policies revised. Additionally, completion of multiple maintenance actions for the Green River RMP, along with multiple RMP amendments, and RODs for programmatic EIS documents are needed to be incorporated into the updated RMP.

The following elements have also contributed to the need to revise the existing RMP:

- An amendment to the Green River RMP to address the Jack Morrow Hills planning area completed in July 2006
- Completion of multiple Green River RMP maintenance actions
- Numerous RODs for Programmatic EISs have been completed or are ongoing

The RMP revision is needed so that management decisions, objectives, and goals can be adjusted to address new information and changed circumstances. The analysis contained in this EIS will aid the decisionmaker in selecting an alternative to become the final RMP. Based on the analyses prepared for this EIS, the new RMP will ensure the sustainability of important resources in the area (e.g., crucial big game and other wildlife habitats, air and water quality, scenic views, healthy vegetative cover, and soil stability) while providing for resource uses (such as motorized and nonmotorized recreational activities, livestock grazing and range improvement activities, renewable energy development, mineral exploration and development, and economic development opportunities) in accordance with laws and regulations and valid, existing rights. Portions of the existing Green River RMP may remain unchanged through the plan revision process, as the analysis in this draft EIS may show that those decisions are still sufficient/adequate to protect/use/manage the resource.

## 1.3 PLANNING ISSUES

Planning issues are disputes or controversies about existing and potential land and resource allocations, levels of resource use, production, and related management practices. Issues include resource use, development, and protection opportunities for consideration in the preparation of the RMP. Management concerns are topics or points of dispute that involve a resource management activity or land use. While some concerns overlap issues, a management concern is generally more important to an individual or group, as opposed to a planning issue which has more widespread point of conflict. These issues are usually expressed in terms of the potential adverse consequences or effects that a particular land or resource use may have on other land or resources used or valued by another or for another purpose.

Greater Sage-grouse management, including all actions related to management of Priority Habitat Management Areas and General Habitat Management Areas, are being addressed under separate ongoing Amendment(s) and are not included as planning issues for this document. All management actions, including restrictions for mineral development, that are currently being implemented through prior Amendment (Ex. 2015) are outside the scope of this planning effort and are not analyzed

Wild horse management for the four herd management areas that contain portions of the mixed private/public checkerboard land pattern and are subject to the 2013 Consent Decree and Joint Stipulation for Dismissal in *Rock Springs Grazing Association v. Salazar*, No. 11-cv-002630F are being addressed under a separate ongoing RMP Amendment and Environmental Impact Statement.

### 1.3.1 Issues Addressed

The RSFO initially identified the following issues to address in the RMP planning process:

- Renewable energy development and associated transmission infrastructure
- Energy and minerals development
- Lands and realty actions
- Special designations and lands with wilderness characteristics
- Visual resource management
- Cultural and historic resources and Native American concerns
- Urban interface issues
- Recreation management
- Healthy landscapes initiative
- Wild horse management
- Livestock grazing/rangeland management
- Wildlife habitat management, including protection of sensitive species habitat, excluding BLM Sage-Grouse Land Use Plans
- Fire and fuels management
- Air quality.

Additional RMP planning issues were identified during the public scoping period and from information gathered in analyzing the existing management situation in the planning area. Based on the input of the public, other government agencies, and BLM and its cooperators, issues were identified for multiple resource areas. Refer to the *Final Scoping Report for the Rock Springs Resource Management Plan Revision* (2012) for a description of the issues raised during the scoping period.

## 1.4 PLANNING CRITERIA

Planning criteria are constraints or ground rules developed to guide and direct the planning effort. Planning criteria are based on laws and regulations; guidance that the BLM Wyoming State Director provides; results of consultation and coordination with the public, other agencies, governmental entities, and Native American tribes, and analysis of information pertinent to the planning area, public input, and professional judgment. The planning criteria focus on the development of management options and alternatives, analysis of the related effects, and selection of the Agency Preferred Alternative and the Proposed RMP. Additional planning criteria may be identified as the planning process progresses. Preliminary planning criteria include the following:

- The proposed RMP will be in compliance with FLPMA and all other applicable laws, regulations, and policies.
- Impacts from the management alternatives considered in the revised RMP will be analyzed in an EIS developed in accordance with land use planning regulations at 43 Code of Federal Regulations (CFR) 1610 and National Environmental Policy Act (NEPA) regulations at 40CFR 1500.
- Lands covered in the RMP will consist of public land and split estate lands managed that the BLM manages. No decisions will be made relative to non-BLM administered lands.
- For program-specific guidance of land use planning level decisions, the process will follow BLM Land Use Planning Manual 1601 and BLM Handbook H-1601-1, Appendix C and Appendix D.
- Broad-based public participation will be an integral part of the planning and EIS process.
- If the other agencies, tribes, and/or governments have officially approved or adopted resource-related plans, then the land use plan (i.e., the Rock Springs RMP) must, to the maximum extent practical, be consistent with their officially approved and adopted resource-related policies and programs, so long as the land use plan is consistent with the policies, programs, and provisions of public land laws and regulations [see 43 CFR 1610.3-2 (b)].
- The RMP will recognize the State's responsibility and authority to manage wildlife. The BLM will consult with the Wyoming Game and Fish Department.
- The RMP will recognize valid and existing rights.
- The RMP/EIS will incorporate management decisions brought forward from existing planning documents.
- The planning team will work cooperatively and collaboratively with cooperating agencies and all other interested groups, agencies, and individuals.
- The BLM and cooperating agencies will jointly develop alternatives for resolution of resource management issues and management concerns.
- The planning process will incorporate as goal statements the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the BLM in the State of Wyoming.
- Wilderness Study Areas (WSA) will continue to be managed under the BLM Manual 6330:

Management of WSAs until Congress either designates all or portions of the WSA as wilderness or releases the lands from further wilderness consideration. As stated previously, the BLM will analyze lands with wilderness characteristics as part of the planning process.

- Forest management strategies will be consistent with the Healthy Forests Restoration Act.
- Geographic Information System (GIS) and metadata information will meet Federal Geographic Data Committee standards, as required by Executive Order 12906. All other applicable BLM data standards also will be followed.
- The planning process will involve Native American tribal governments and will provide strategies for the protection of recognized traditional cultural uses.
- All proposed management actions will be based on current scientific information, research and technology, and existing inventory and monitoring information. Where practicable and timely for the planning effort, additional scientific information, research, and new technologies will be considered.
- A Mineral Potential Report, Cultural Resources Overview Report, Biological Assessment, Socioeconomic Baseline Report, and Reasonable Foreseeable Development Scenario for Oil and Gas will be completed and used as part of the RMP revision process.
- The RMP will include adaptive management criteria and protocols as appropriate to deal with future issues.
- A reasonable foreseeable development scenario for fluid minerals will be developed.
- Known areas in the Rock Springs planning area with coal development potential are located in Sweetwater County, Wyoming. Coal screening determinations were made on these areas and updated during planning efforts for the existing Green River RMP. No additional coal screening determinations with associated coal planning decisions are planned, unless public submissions of coal resource information or surface resource issues indicate a need for such screening.

## 1.5 RELATIONSHIP TO OTHER PLANS

BLM land use plans and amendments must 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 Native American tribes, so long as the guidance and RMPs are also consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands. This includes federal and state pollution control laws as implemented by applicable federal and state air, water, noise, and other pollution standards or implementation plans. Table 1-2 outlines the local, state, and federal management plans that may pertain to the Rock Springs planning area. There are no applicable tribal plans that will require coordination with the Rock Springs RMP revision.

**Table 1-2. Related Local, State, and Federal Management Plans**

<b>Plan Type</b>	<b>Plan Name</b>
County Plans	Fremont County Wyoming Land Use Plan; 2004
	Lincoln County, Comprehensive Plan; 2006
	Sublette County Federal and State Land Use Policy; 2009
	Sweetwater County Comprehensive Plan; 2002
	Uinta County Comprehensive Plan; 2011
County Conservation Districts	Lincoln Conservation District: Land Use and Natural Management Long Range Plan, 2010-2015; 2010
	Popo Agie Conservation District (Fremont County) Long Range Plan, 2014-2018; 2013
	Sublette County Conservation District: Land Use and Natural Management Long Range Plan, 2010-2015; 2010
	Sweetwater County Conservation District Land and Resource Use Plan; 2005
	Uinta County Conservation District Long Range Plan; 2010
State of Wyoming Agency Plans	Wyoming Department of Agriculture Strategic Plan; 2005
	Wyoming Department of Game and Fish: Strategic Habitat Plan; 2015,
	Wyoming Water Development Office: Green River Basin Water Plan; Updated 2010
	Wyoming Statewide Comprehensive Outdoor Recreation Plan, 2009-2013; 2009
	Wyoming Statewide Trails Plan; 2004
	Wyoming's Comprehensive Statewide Historic Preservation Plan, 2016-2026; 2016
Federal Agency Plans	National Park Service, National Trails Intermountain Region: Comprehensive Management and Use Plan Final EIS, California National Historic Trail, Pony Express National Historic Trail, Final EIS; Oregon National Historic Trail; Mormon Pioneer National Historic Trail
	U.S. Forest Service, Ashley National Forest Plan
	U.S. Fish and Wildlife Service, Wyoming Plan
	U.S. Environmental Protection Agency, Air Quality Implementation Plans
	National Fire Plan

The Energy Policy Act of 2005, Section 368, directed that the BLM participate in an interagency effort to identify, evaluate, and ultimately establish right-of-way corridors to accommodate infrastructure that transports forms of energy. Energy-related infrastructure could include natural gas pipelines, high-voltage electrical transmission lines, and similar developments. This RMP is amended to incorporate guidance and decisions made for management of the energy corridors established within the planning area; as identified in the Approved Resource Management Plan Amendment/Record of Decision for Designation of Energy Corridors on Bureau of Land Management Administered lands in the 11 Western States (2009)

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## CHAPTER 2—ALTERNATIVES

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### 2.1 INTRODUCTION

This chapter describes four alternatives for management of the planning area. The alternatives were developed to establish a framework for measuring and comparing the impacts that could potentially result from management decisions. The alternatives represent reasonable approaches to managing resources and activities consistent with law, regulation, and policy.

Section 2.2 presents an overview of the alternative development process. Acreage tables that present the geographic implications associated with each alternative are provided in Appendix V. A summary comparison of impacts from management actions proposed for the four alternatives addressed in Chapter 4 is included in Appendix U.

### 2.2 DEVELOPMENT OF ALTERNATIVES

#### 2.2.1 Purpose of Alternatives Development

The basic goal of alternatives development is to produce distinct potential management scenarios that:

- Address the identified major planning issues
- Explore opportunities to enhance management of resources and resource uses
- Resolve conflicts among resources and resource uses
- Meet the purpose of and need for the resource management plan (RMP) revision.

Pursuit of this goal provides the Bureau of Land Management (BLM) and the public with an appreciation for the diverse ways in which conflicts regarding resources and resource uses might be resolved and offers the decisionmaker a reasonable range of alternatives from which to make an informed decision.

#### 2.2.2 Components of Alternatives`

Alternatives include potential RMP decisions that consist of identifying and clearly defining goals and objectives (desired outcomes) for resources and resource uses, followed by developing allowable uses and management actions necessary for achieving the goals and objectives. Goals are broad statements of desired outcomes and are not quantifiable or measurable. Objectives are specific measurable desired conditions or outcomes intended to meet goals. Objectives may vary across alternatives, resulting in different allowable uses and management actions for some resources and resource uses.

Management actions and allowable uses are designed to achieve objectives. Management actions are measures that guide day-to-day and future activities. Allowable uses delineate which uses are permitted, restricted, or prohibited, and may include stipulations or restrictions. Allowable uses also identify lands where specific uses are excluded to protect resource values, or where certain lands are open or closed in response to legislative, regulatory, or policy requirements. Implementation decisions are site-specific on-the-ground actions, and although they can be addressed in RMPs, this plan does not propose any implementation-level decisions.

### 2.2.3 Alternatives Development Process

The BLM complied with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) implementing regulations at 40 Code of Federal Regulations (CFR) 1500 in the development of alternatives for this draft environmental impact statement (EIS), including seeking public input and analyzing reasonable alternatives. Where necessary to meet the planning criteria, to address issues and comments from cooperating agencies and the public, or to provide a reasonable range of alternatives, the alternatives include management options for the planning area that would modify or amend decisions made in the Green River RMP and Jack Morrow Hills (JMH) Coordinated Activity Plan (CAP). Some decisions from these existing plans may still be considered acceptable and reasonable; in these instances, there is limited need to develop alternative management prescriptions. In some cases, management prescriptions are the same across all alternatives or may reflect only a decision to implement or not implement an action.

Many of the decisions from the existing Green River RMP and JMH CAP have been implemented. In some cases, implementation of these decisions established valid existing rights or other obligations that are important considerations in preparing the Rock Springs RMP. For example, many of the oil and gas resources in the planning area are leased. The presence of these valid existing rights influences, and sometimes limits, management choices. Specific to the oil and gas program, the alternatives in this draft EIS address the availability and allocation of lands for future oil and gas leasing, potential lease stipulations, and additional mitigation to be considered and applied during the Application for Permit to Drill (APD) process.

The development of alternatives began with compiling Alternative A. Alternatives B and C were then developed, followed by the analysis of all three alternatives. The BLM and cooperating agencies reviewed the analysis of Alternatives A, B, and C and considered the information and conclusions contained in the analysis to develop Alternative D, which was developed last. Public input received during the scoping process was considered to ensure that all issues and concerns would be addressed, as appropriate, in developing the alternatives. The scoping process and its results, as well as opportunities for future public and agency involvement, are summarized in Chapter 5.

### 2.2.4 Alternatives Considered but Eliminated from Detailed Analysis

Several alternatives and management options were considered as possible methods of resolving resource management issues and conflicts. Some of the alternatives and options considered were received during public scoping. These alternatives were eliminated from detailed analysis because they were ineffective (would not respond to the purpose and need), technically or economically infeasible, inconsistent with the basic policy objectives for the management of the area (such as, inconsistent with a law applicable to the BLM-administered lands within the planning area), implementation is remote or speculative, is substantially similar in design to an alternative that is analyzed, or would have substantially similar effects to an alternative that is analyzed.

#### Closure to Livestock Grazing

The removal of livestock grazing from all public lands in the planning area was considered as a method for resolving some of the planning issues related to vegetation resources. This option was eliminated from detailed analysis as it is inconsistent with policy objectives and multiple use mandate (FLPMA).

Resource conditions on BLM-administered public lands in the planning area do not warrant prohibition of livestock grazing throughout the planning area; 42 allotments meet all of the Wyoming Land Health Standards. However, the reduction or unavailability of livestock grazing could become necessary in specific situations where livestock grazing causes or contributes to conflicts with the protection and/or management of other resource values or uses. Such determinations would be made during site-specific activity planning



and associated environmental analysis. These determinations would be based on several factors, including monitoring studies, review of current range management science, input from livestock operators and interested parties, and the ability to meet the Wyoming Land Health Standards. As such, grazing permits would not be issued in an area closed to livestock grazing.

### **Closure to Fluid Mineral Leasing**

Closing the planning area to new leasing of federal minerals, specifically fluid minerals, was considered as a method for resolving conflicts with other resource values and uses. The federal mineral estate in much of the planning area has already been leased (1,772,313 acres), and large portions of this area are developed. This proposal was eliminated from further analysis. Closing the entire planning area to new fluid mineral leasing would eliminate development and production activities in areas where conflicts can be mitigated, or where conflicts do not exist. This action is not reasonable in light of the BLM's multiple use mandate outlined in the Federal Land Policy and Management Act of 1976 (FLPMA) or the Mineral Leasing Act of 1920, and is inconsistent with policy objectives. This option was eliminated from detailed analysis.

Public scoping comments indicate a growing level of concern with the rate and scale of oil and gas leasing and development in the planning area. Making portions of the planning area unavailable for oil and gas leasing in response to other identified resource needs is addressed in the alternatives analyzed in detail.

### **Closure to Coal Leasing**

Closing the planning area to new federal coal leasing was considered as a method for resolving conflicts with other resource values and uses. Approximately 442,000 acres of the federal mineral estate in the planning area, specifically the 29,161 acres of the Coal Occurrence and Development Potential Area, has already been leased and is being developed for coal mining activity.

This proposal was eliminated from further analysis. Closing the entire planning area to new coal leasing would eliminate development and production activities in areas where conflicts can be mitigated, or where conflicts do not exist. This action is not reasonable in light of the BLM's multiple use mandate outlined in FLPMA or the Mineral Leasing Act of 1920, and is inconsistent with policy objectives. Making portions of the planning area unavailable for coal leasing in response to other identified resource needs is addressed in the alternatives analyzed in detail (Table 2-1, Management Action 2401).

## **2.2.5 Overview of the Alternatives**

Resources on lands administered by the BLM within the planning area are currently managed under the Green River RMP (1997) and JMH CAP (2004), as amended. Management under Alternative A represents a continuation of these management plans, which balances protection of resource values with the use and development of resources.

Alternative B emphasizes conservation of resource values with constraints on resource uses. Relative to all alternatives, Alternative B conserves the most land area for physical, biological, and cultural resources. Alternative B emphasizes the improvement and protection of habitat for wildlife and sensitive plant and animal species, improvement of riparian areas, and implementation of management actions that improve water quality and enhance protection of cultural resources.

Alternative C emphasizes resource uses (e.g., energy and mineral development and other commodity uses). Relative to all alternatives, Alternative C proposes the least restrictive management actions for energy and commodity development and the least protective management actions for physical, biological, and cultural resources while maintaining protections required by laws and regulations. Under this alternative, development and use of resources within the planning area would occur with intensive management of surface disturbing and disruptive activities.

Alternative D explores a management approach that is less restrictive for resource uses than Alternative B, while also having a greater conservation focus than Alternative C. This approach allows for opportunities to use and develop resources within the planning area while promoting environmental conservation.

A complete description of the goals, objectives, and management actions for the four alternatives is presented in Table 2-1. The table begins with actions common to all RMP alternatives, followed by management actions organized by resource area. Unless specifically referenced for an identified management area (e.g., JMH, Map 3-20) within the planning area, the management actions presented in the table apply to the entire RMP planning area.

The current management actions, as presented in the Rock Springs Draft RMP/EIS do not include BLM Greater Sage Grouse land use plans. Depending on the ongoing planning amendment process and the court's resolution of the ongoing litigation, the BLM will implement the appropriate management for Greater Sage-Grouse. The BLM Rock Springs Draft RMP/EIS is not proposing any management for Greater Sage-Grouse.

Similarly, a Wild Horse Management RMP Amendment and Final EIS was issued by BLM in 2022. The ROD for that planning effort is anticipated in 2023. Management from that plan will be incorporated into this RMP revision as Alternative A when the final plan amendment is completed.

## **2.2.6 Detailed Alternative Descriptions by Resource**

Table 2-1. Resource Management Plan Alternatives

<b>Management Actions Common to All Resource Programs (0001-0014)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
0001		Apply the Wyoming Land Health Standards (DOI 1997a) to all resources and resource uses on BLM-administered lands. These standards are the minimal acceptable conditions that address the health, productivity, and sustainability of the rangeland.			
0002		Manage public lands for compliance with all applicable tribal, federal, and state laws, standards, and implementation plans; and with BLM policies and regulations. Manage public lands to support valid and existing rights.			
0003		Manage public land resources and resource uses in consideration of all other resource values of the applicable lands.			
0004		Apply best management practices (BMP) to authorized BLM activities on a case-by-case basis (Appendix A).			
0005		Reclaim surface disturbing activities in accordance with the current BLM Wyoming and High Desert District reclamation policies and employ the BMPs listed in Appendix A.			
0006		Consult, coordinate, and collaborate with all appropriate tribes and federal, state, and local governments and agencies regarding land management decisions and actions.			
0007		Consult with all potentially affected private landowners when BLM-authorized development is proposed.			
0008		Establish an implementation, monitoring, and evaluation process, including an interdisciplinary monitoring plan, which would evaluate the overall effectiveness of implementing the management decisions for the planning area and would be used as a basis for making management adjustments (43 CFR 1610).			
0009		Participate in all Memorandum of Understandings (MOU) for the control of pests, air quality monitoring, habitat monitoring, etc.			
0010		Consider, on a case-by-case basis, buyout or exchange of existing mineral leases from willing sellers. Congressional legislation would be required to authorize and fund lease buyouts.			
0011		Allow, on a case-by-case-basis, activities (e.g., fencing, interpretive and informational signs, barriers, etc.) for the purpose of protecting or facilitating management of resource programs or public health and safety.			
0012		Human health and safety needs supersede all actions in this plan.			
0013		In accordance with CEQ regulations (CFR 1508.20) the hierarchy for mitigation of impacts will be: (1) Avoiding the impact altogether by not taking a certain action or parts of an action; (2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation; (3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; (5) Compensating for the impact by replacing or providing substitute resources or environments.			
0014		All actions approved on a case-by-case basis will be based on site-specific NEPA analysis.			

<b>Physical Resources (PR) - Air Quality (1000-1017)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals:</b>					
PR-01: Minimize the impact of management actions in the planning area on air quality by complying with all applicable air quality laws, rules, and regulations.					
PR-02: Improve air quality in the planning area as practicable.					
<b>Objectives:</b>					
PR-1.1: Maintain concentrations of criteria pollutants in compliance with applicable state and federal Ambient Air Quality Standards within the scope of BLM's authority.					
PR-1.2: Maintain concentrations of prevention of significant deterioration pollutants associated with management actions in compliance with the applicable increment.					

<b>Physical Resources (PR) - Air Quality (1000-1017)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
PR-2.1: Reduce visibility-impairing pollutants in accordance with the reasonable progress goals and time-frames established within the State of Wyoming's Regional Haze State Implementation Plan.					
PR-2.2: Reduce atmospheric deposition pollutants to levels below generally accepted levels of concern and levels of acceptable change.					
1000	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Minimize the impact of BLM management within the planning area on air quality by complying with all applicable air quality laws, rules, and regulations.			
1001	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Manage emissions of gases and particulates from BLM management in compliance with state and federal regulations, executive and secretarial orders, and BLM policy.			
1002	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Manage atmospheric deposition pollutants from BLM management when levels of concern are identified by state and federal regulatory and land management agencies.			
1003	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Manage air resources in accordance with the Air Quality Adaptive Management Strategy in Appendix Q.			
1004	PR-01, PR-02, PR-03	Support air resource monitoring to determine existing conditions, long term trends, and the effectiveness of air resource management strategies.			
1005	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Work cooperatively with the Wyoming Department of Environmental Quality (WDEQ) and local governments to address non-attainment area requirements applicable to BLM actions, and with WDEQ to address Best Available Control Technology (BACT) requirements applicable to BLM actions.			
1006	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Continue to receive data from existing air monitoring stations and work with local, state, and tribal agencies to assess the need for establishing air quality monitoring sites within the planning area.			

<b>Physical Resources (PR) - Air Quality (1000-1017)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
1007	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Work cooperatively with state, local, federal, and tribal air quality agencies on regional air quality analyses that include the planning area.			
1008	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Work cooperatively with WDEQ and other regulatory and land management agencies through its Air Quality Interagency Review Team.			
1009	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Work collaboratively with state, local, and tribal agencies, industry, and stakeholders to gather, share, and analyze air quality monitoring data to achieve air quality goals and objectives.			
1010	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Surface disturbing activities will be managed to prevent violation of air quality regulations.	Implement mitigation measures within the BLM's authority to reduce air quality impacts from BLM actions and work cooperatively with industry and other permittees to adopt additional measures to minimize air quality impacts from BLM management actions.	Same as Alternative A	Same as Alternative B
1011	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Special requirements (e.g., use authorization stipulations, mitigation measures, conditions of approval, etc.) to alleviate air quality impacts will be identified on a case-by-case basis and included in use authorizations (including mineral leases).	See management action 1010	See management action 1010	See management action 1010
1012	PR-01, PR-02,	No similar action	Conduct conformity analyses and determinations for BLM actions in	Same as Alternative B	Same as Alternative B

<b>Physical Resources (PR) - Air Quality (1000-1017)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
	PR-1.1, PR-1.2, PR-2.1, PR-2.2		accordance with the Clean Air Act for all proposed projects located within designated non-attainment areas.		
1013	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	BMPs will be used whenever practical to reduce general air quality impacts and visibility impacts. Application of special requirements (including BMPs) is identified on a case-by-case basis. The rationale for BMPs is identified and documented in site-specific NEPA or other analyses. BMPs are applied as stipulations, conditions of approval, and terms and conditions in the authorizing document. When practicable, projects will be designed to reduce effects to sensitive airsheds. Design considerations include use of BACT, timing, sequencing, and placement of facilities.	Determine, on a case-by-case basis and in accordance with the Rock Springs Air Resources Management Plan, the level of air analysis, including air quality modeling, necessary to determine potential air quality impacts from proposed actions and subsequent potential mitigation strategies for all project level EISs and Environmental Assessments.	Same as Alternative B	Same as Alternative B
1014	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	No similar action	Determine, on a case-by-case basis, the need for quantitative air quality analyses (including modeling) to assess the potential air quality impacts and/or the effectiveness of mitigation strategies of proposed actions. Make determination in consultation with state, local, federal, and tribal agencies.	Same as Alternative A	Determine, on a case-by-case basis, the need for quantitative air quality analyses (including modeling) to assess the potential air quality impacts and/or the effectiveness of mitigation strategies of proposed actions.
1015	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	No similar action	Support a quantitative air quality analysis to ensure the protection of air quality when impacts from the sum of BLM-authorized projects in the planning area approach a level of concern as determined in consultation with state, local, federal, and tribal agencies.	Same as Alternative B	Support a quantitative air quality analysis to ensure the protection of air quality when impacts from the sum of BLM-authorized projects in the planning area approach levels of concern.
1016	PR-01, PR-02, PR-1.1, PR-1.2,	The BLM will continue to participate with other agencies in	No similar action	No similar action	No similar action, see management action 1009

<b>Physical Resources (PR) - Air Quality (1000-1017)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
	PR-2.1, PR-2.2	the collection of air quality data and air quality pollution analysis.			
1017	PR-01, PR-02, PR-1.1, PR-1.2, PR-2.1, PR-2.2	Coordination with local and state agencies to control dust on unimproved dirt roads will occur where necessary.	Require dust abatement measures for all BLM authorized activities and coordinate with local and state agencies to control dust on roads using BMPs (Appendix A).	Same as Alternative A	Apply, on case-by-case basis, dust abatement measures for BLM authorized activities and coordinate with local and state agencies to control dust on roads using BMPs (Appendix A).

<b>Physical Resources (PR) - Soil and Geologic Resources (1100-1116)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals:</b>					
PR-04: Maintain or improve soil health.					
PR-05: Minimize surface disturbance where soil features would be difficult or impossible to reclaim or replace.					
1100	PR-04, PR-05	Maintain or improve soil health (e.g. chemical, physical, and biotic properties) by focusing on making significant progress toward meeting the Wyoming Land Health Standards.			
1101	PR-04, PR-05	Apply guidelines and appropriate measures to all management actions (including reclamation) affecting soil health to decrease erosion and sedimentation, to achieve and maintain stability, and to support the hydrologic cycle by providing for water capture, storage, and release.			
1102	PR-04, PR-05	Minimize or control elevated concentration of salts and sediment loading from federal lands to the Colorado River system.			
1103	PR-04, PR-05	Assess erosion and soil stability using rangeland health evaluations.	Inventory public lands to determine the rate of erosion and degree of soil stability.	Assess erosion and soil stability using land health evaluations and the Natural Resources Conservation Service (NRCS) soil database.	Same as Alternative C
1104	PR-04, PR-05	Manage soil by using BMPs that would minimize flood damage and salt and sediment loading to water resources from human and natural causes consistent with state and federal regulations.	Manage soil resources using BMPs to minimize flood damage, retain water on the landscape, and minimize salt and sediment loading to water resources from human and natural causes consistent with local, state, and federal regulations.	Same as Alternative A	Manage soil resources using appropriate BMPs to minimize flood damage and/or soil erosion, promote healthy watershed function, and minimize salt and sediment loading to water resources from human and natural causes consistent with local, state, and federal regulations.
1105	PR-04, PR-05	Use BMPs to reduce runoff, soil erosion, and sediment yield, and to retain water on the landscape.	See management action 1104	See management action 1104	See management action 1104
1106	PR-05	No similar action	Coordinate with NRCS prior to approval of surface disturbance to	Continue to coordinate with NRCS to analyze surface-	Analyze surface-disturbing activities by use of the NRCS soil database,

Physical Resources (PR) - Soil and Geologic Resources (1100-1116)					
MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
			analyze surface-disturbing activities by mapping soils to a series level (Order 2), collecting soil samples for physical and chemical analysis, evaluating current erosion conditions, and classifying ecological site descriptions.	disturbing activities by mapping soils to a series level (Order 3), collecting soil samples for physical and chemical analysis, evaluating current erosion conditions, and classifying ecological site descriptions.	site-specific analysis such as collecting soil samples for physical and chemical analysis and identifying plants, evaluating current erosion conditions, and using current ecological site descriptions.
1107	PR-05	Areas where the soils are highly erodible or difficult to reclaim would receive increased attention and are avoidance areas for surface disturbing activities. Surface disturbing activities could be allowed in these areas if site-specific analysis determines that soil degradation would not occur, and that water quality would not be adversely affected. When applicable, an erosion control plan would be prepared as part of the site-specific analysis process for activity and implementation planning. Rehabilitation plans would be developed and implemented for disturbed areas, as needed.	Prohibit surface disturbing activities in areas where the soils have any of the following: <ul style="list-style-type: none"> <li>• A wind erodibility index greater than 100</li> <li>• Saline</li> <li>• Sodic</li> <li>• Saline-sodic</li> <li>• 2:1 clays</li> <li>• Sand dunes</li> <li>• Slopes greater than 25%</li> <li>• Slumps and creeps and/or rutting</li> <li>• Areas that are difficult to reclaim.</li> </ul> Manage as: 1) no surface occupancy (NSO) for fluid minerals; 2) closed to mineral material sales/disposals; 3) closed to all solid mineral leasing.	No similar action	Avoid surface disturbing activities in areas with limited reclamation potential, subject to adequate mitigation of impacts following BLM mitigation policies. The operator must submit an approved mitigation plan before proposed project will be approved. <ul style="list-style-type: none"> <li>• Controlled Surface Use (CSU) for fluid minerals.</li> </ul>
1108	PR-05	In the JMH planning area, areas with highly erodible soils would be avoidance areas for all surface disturbing activities. Activities could be allowed if a site-specific analysis determines that no adverse impacts would occur to areas with highly erodible soils and a plan to mitigate those impacts is approved. When applicable, erosion control plans would be	See management action 1107	See management action 1107	See management action 1107



<b>Physical Resources (PR) - Soil and Geologic Resources (1100-1116)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		required as part of surface disturbing project proposals. <sup>1</sup>			
1109	PR-04	No similar action	Require photo point monitoring for all channel crossings and all surface disturbances greater than ½ acre.	No similar action	Apply, on a case-by-case basis, photo-point monitoring of channel crossings, culverts, borrow ditch outlets, and surface disturbance.
1110	PR-04	Maintain existing watershed improvement projects.	Inventory, evaluate, maintain or improve existing landscape-level or site-specific watershed improvement projects where necessary.	Same as Alternative A	Inventory and evaluate existing landscape-level or site-specific watershed improvement projects. Maintain, improve, or decommission such projects based on the evaluation.
1111	PR-04, PR-05	Protect soils by constructing water flow, sediment control, and watershed stabilization projects in partnership with local, state, and federal programs.	Use all methods to protect (as much as practical and possible) soils in partnership with private, local, state, tribal, and federal programs.	Use only natural processes to protect (as much as practical and possible) soils in partnership with private, local, state, tribal, and federal programs.	Construct projects, on a case-by-case basis, to protect soils in partnership with private, local, state, tribal, and federal programs.
1112	PR-04, PR-05	Site-specific activity and implementation plans (to reduce erosion and sediment yield, promote ground cover, enhance water quality) would be prepared for areas where needed. These areas include but are not limited to Cedar Mountain and Sage Creek/Currant Creek. The Red Creek watershed plan would continue to be implemented, as appropriate.	Require site-specific activity and implementation plans to reduce erosion and sediment yield, promote ground cover, and enhance water quality for all areas.	Site-specific activity and implementation plans may be prepared, but would not be required, to reduce erosion and sediment yield, promote ground cover, and enhance water quality.	Require, on a case-by-case basis, proponent to prepare site-specific implementation plans for surface disturbing activities to reduce erosion and sediment yield, promote native ground cover, promote water retention, and enhance water quality.
1113	PR-04, PR-05	Reestablish vegetation cover over disturbed soils within five years of initial seeding.  Require reclamation in compliance with BLM policy, including IM No. WY-2009-022 (NOTE: this Instruction Memorandum (IM) has been superseded by IM No. WY-2012-032).	Reclaim disturbed areas in compliance with BLM Wyoming Reclamation Policy, (IM No. WY-2012-032), Rock Springs RMP Reclamation and Monitoring Plan, and other current guidance.	Same as Alternative B	Reclaim disturbed areas in compliance with BLM Wyoming and High Desert District Reclamation Plan (Appendix I), and other current guidance.  Require that surface-disturbing activities minimize the surface disturbance footprint to the maximum extent possible to limit

<sup>1</sup> Actions shaded in gray are from the Jack Morrow Hills Coordinated Activity Plan, July 2006.

<b>Physical Resources (PR) - Soil and Geologic Resources (1100-1116)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
					the areas requiring reclamation. Limit disturbance of desirable vegetative communities established during interim reclamation when implementing final reclamation.
1114	PR-04, PR-05	Practices, determined on a case-by-case basis, would be implemented as needed to protect groundwater and prevent soil contamination. Such practices could include lining of reserve, production, and other types of pits and would include alternate locations for plants, mill sites, ponds, and sewage lagoons where soils are highly permeable (Appendix A).	Implement practices, determined on a case-by-case basis, as needed to protect groundwater and prevent soil contamination. Prohibit pits that store liquids. Use closed-loop drilling systems for oil and gas operations where groundwater is within 50 feet of the surface. Dispose of hazardous materials (see Glossary) at Department of Environmental Quality (DEQ) or U.S. Environmental Protection Agency (EPA) approved disposal facilities.	Implement practices, determined on a case-by-case basis, as needed to protect groundwater and prevent soil contamination. Such practices would include lining of reserve, production, and other types of pits and have a leak detection system, and would include alternate locations for plants, mill sites, ponds, and sewage lagoons where soils are highly permeable (Appendix A). Dispose of hazardous materials (See glossary) at DEQ or EPA approved disposal facility.	Implement practices, on a case-by-case basis, as needed to protect groundwater, vulnerable aquifers, and prevent soil contamination (Appendix A).
1115	PR-04, PR-05	No similar action	No similar action	No similar action	Require the development of reclamation plans for all federal actions authorized, conducted, or funded by the BLM that disturb vegetation and/or the mineral/soil resources.  Require site-specific interim and final reclamation practices be developed and implemented that will meet the reclamation standards as identified in Appendix I. The type and detail of the reclamation plan will be commensurate with the extent and duration of soil disturbance.  Require, for extensive disturbance such as a full-field oil and gas development, a detailed, multi-phase plan such as the reclamation plan (attached as an example in Appendix I).

Physical Resources (PR) - Soil and Geologic Resources (1100-1116)					
MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
<b>Geology</b>					
1116		The natural values of Boars Tusk, Pilot Butte, and Emmons Cone would be protected. Surface occupancy and surface disturbing activities are prohibited in these areas unless such activity would enhance management of these geologic features. Interpretive facilities would be allowed.	Same as Alternative A	The natural values of Boars Tusk, Pilot Butte, and Emmons Cone would be protected. Surface occupancy and surface disturbing activities are prohibited in these areas unless such activity would enhance management of these geologic features. <ul style="list-style-type: none"><li>• NSO for fluid minerals.</li><li>• Pilot Butte and Emmons Cone are closed to mineral material sales/disposals.</li><li>• Interpretive facilities would be allowed.</li></ul>	Protect the scientific and scenic values of Pilot Butte and Emmons Cone. Prohibit surface occupancy and surface disturbing activities in these areas unless such activity would enhance management of these geologic features (NSO for fluid minerals). <ul style="list-style-type: none"><li>• Interpretive facilities would be allowed.</li><li>• Closed to mineral material sales/disposals.</li><li>• Petition to segregate and pursue a withdrawal from locatable mineral entry.</li></ul>

Physical Resources (PR) - Water Resources (1300-1325)					
MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
<b>Goals:</b>					
PR-06: Improve water quality and quantity where practical.					
PR-07: Protect and improve surface and groundwater quality and quantity through appropriate measures (e.g., predictive modeling, monitoring, and protection of surface waters and known water recharge areas) during BLM activities and permitted actions over the life of the plan.					
PR-08: Take appropriate actions within State of Wyoming established timeframes to control all causes of impairment and prevent additional listings of impaired waterbodies resulting from BLM actions and permitted activities on watersheds.					
PR-09: Prevent accelerated channel erosion and adjustments in channel geometry (e.g., width-depth ratio, sinuosity, bank stability, gradient, location of headcuts, and rate of headcut migration) of stream channels as a result of BLM-permitted activities.					
PR-10: Improve important geomorphic parameters (e.g., width to depth ratio, percent eroding bank) where these parameters are impacted by federal actions or are in areas important for water quality.					
PR-11: Maintain, improve, or reestablish proper watershed function to support natural or desired surface water and groundwater flow regimes.					
PR-12: Rehabilitate, maintain, acquire, develop, or reclaim water supply sources to meet other resource goals and objectives.					
1300	PR-06, PR-09, PR-11, BR-22.1, BR-24, BR-31.1	Coordinate with appropriate entities to propose, assess, maintain, rehabilitate, and/or reclaim water control structures as needed. Authorize new activities resulting in the surface discharge of produced water only where compatible with other resource objectives and in consultation with stakeholders.			

<b>Physical Resources (PR) - Water Resources (1300-1325)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
1301	PR-12	Areas may be considered for acquisition under a willing seller/willing buyer situation to enhance BLM management of watershed resources. The BLM would not use powers of condemnation to acquire lands (Appendix K).			
1302	PR-06, PR-09, PR-11, BR-22.1, BR-24, BR-31.1	Land uses and surface disturbing activities would be designed to reduce erosion and to maintain or improve water quality. Management in damaged wetland and riparian areas would be directed toward restoration to pre-disturbance conditions.	Design land uses and surface disturbing activities to reduce erosion and to maintain or improve water quality. Allow activities in wetland and riparian areas only if the area could be restored to pre-disturbance conditions that could proceed on to potential natural community.	Design land uses and surface disturbing activities to reduce erosion and to maintain or improve water quality. Direct management in wetland and riparian areas toward meeting Proper Functioning Condition (PFC) as a minimum. PFC is approximated by achieving Standards #2 of the Wyoming Land Health Standards.	Design land uses and surface disturbing activities to reduce erosion and to maintain or improve water quality. Direct management in wetland and riparian areas toward meeting or making progress toward Wyoming Land Health Standards as a minimum.
1303	PR-10, PR-09, PR-11, BR-22.1, BR-24, BR-31.1	<p>Management in the planning area would emphasize:</p> <ul style="list-style-type: none"> <li>• Reduction of sediment, phosphate, and salinity load in drainages where possible. Measures listed in Appendix A would be applied, as necessary. Guidelines described in the Wyoming Water Quality Rules and Regulations would also be applied, as necessary (Wyoming 1989).</li> <li>• Maintaining and improving drainage channel stability.</li> <li>• Restoring damaged wetland areas.</li> <li>• Exclosures would be designed to allow ample water for livestock and allow minimum impediments to big game migration.</li> </ul>	<p>Management in the planning area would:</p> <ul style="list-style-type: none"> <li>• Reduce sediment, phosphate, and salinity loads where possible. Measures listed in Appendix A would be applied.</li> <li>• Improve drainage channel resiliency and stability (improvement could include offsite mitigation).</li> <li>• Restore damaged riparian/wetland areas.</li> <li>• Design riparian exclosures to improve water quality conditions in riparian areas.</li> </ul>	<p>Management in the planning area would consider:</p> <ul style="list-style-type: none"> <li>• Reducing sediment, phosphate, and salinity loads in drainages where possible. Measures listed in Appendix A would be applied, as necessary.</li> <li>• Maintaining or improving drainage channel stability.</li> <li>• Restoring damaged riparian/wetland areas.</li> <li>• Designing exclosures to reduce impediments to wildlife movement and take into account livestock grazing and other uses.</li> </ul>	<p>Emphasize management in the planning area that would:</p> <ul style="list-style-type: none"> <li>• Reduce sediment, phosphate, and salinity loads in drainages. Appropriate measures listed in Appendix A would be applied.</li> <li>• Maintain or improve drainage channel and watershed stability and resiliency.</li> <li>• Identify and restore damaged riparian/wetland areas.</li> <li>• Design structures, such as fencing and instream structures, with consideration of other potentially affected resources and uses.</li> </ul>
1304	PR-10, PR-09, PR-11, BR-22.1, BR-24, BR-31.1	Activity and implementation plans would be designed with measures to reduce phosphate loading to Fontenelle and Flaming Gorge Reservoirs and the Green River.	Same as Alternative A	Same as Alternative A	Same as Alternative A
1305	PR-10, PR-09, PR-11,	In the JMH planning area, the BLM would continue to participate with federal, state, and local	Participate with federal, state, and local government agencies to develop and implement salinity	Same as Alternative A	Participate with federal, state, and local government agencies, affected landowners and the Colorado River

<b>Physical Resources (PR) - Water Resources (1300-1325)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
	BR-22.1, BR-24, BR-31.1	government agencies to develop and implement salinity control plans for the Colorado River Basin and maintain existing and future applicable water quality plans.	control measures, water quality improvement plans, and total maximum daily loads (TMDL). Participate with federal, state, and local government agencies and the Colorado River Salinity Control Forum to develop and implement salinity control plans.		Salinity Control Forum when developing and implementing salinity control measures, water quality improvement plans, salinity control plans, and TMDLs.
1306	PR-06, PR-10, PR-11, BR-22.1, BR-24, BR-31.1	The BLM would participate with federal and local government agencies to develop and implement phosphate reduction plans in tributaries to Fontenelle Reservoir and Flaming Gorge Reservoir.	See management action 1305	See management action 1305	See management action 1305
1307	PR-06, PR-09, PR-11, BR-22.1, BR-24, BR-31.1	The BLM would participate with federal and local government agencies and the Colorado River Salinity Control Forum to develop and implement salinity control plans.	See management action 1305	See management action 1305	See management action 1305
1308	PR-07	No similar action	Require best available modeling to quantify the amount of sediment, salinity, and associated nutrients that would be transported to water bodies from all surface disturbing activities.	May use modeling to quantify the amount of sediment, salinity, and associated nutrients that would be transported to water bodies.	No similar action
1309	PR-07, PR-09, PR-11, BR-22.1, BR-24, BR-31.1	Site-specific activity and implementation plans (to reduce erosion and sediment yield, promote ground cover, enhance water quality) would be prepared for areas where needed. These areas include but are not limited to Cedar Mountain and Sage Creek/Currant Creek. The Red Creek watershed plan would continue to be implemented, as appropriate.	Require site-specific activity and implementation plans to reduce erosion and sediment yield, promote ground cover, and enhance water quality for all areas. Activity and implementation plans would include site-specific watershed management stipulations and BMPs and incorporate sediment reduction and water quality improvement objectives.	Site-specific activity and implementation plans may be prepared, but would not be required, to reduce erosion and sediment yield, promote ground cover, and enhance water quality. Activity and implementation plans would include only general watershed management stipulations, BMPs, and incorporate sediment reduction and water quality improvement objectives if applicable land health standards are not met.	Prepare, on a case-by-case basis, site-specific activity and implementation plans to reduce erosion and sediment yield, promote ground cover, and enhance water quality. Activity and implementation plans could include general or specific watershed management terms and BMPs and incorporate sediment reduction, water retention, and water quality improvement objectives. Consider all existing locally developed watershed plans as new

<b>Physical Resources (PR) - Water Resources (1300-1325)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
					activity and implementation plans are developed.
1310	PR-05	Activity and implementation plans for other land and resource uses and areas would include general watershed management directives and would incorporate sediment reduction and water quality improvement objectives. Priority areas (particularly for development of allotment management plans [AMP]) include Upper Bitter Creek, Four J Basin, Vermillion Creek, and Upper Salt Wells watersheds.	See management action 1309	See management action 1309	See management action 1309
1311	PR-11, PR-06, PR-08, BR-22.1, BR-24, BR-31.1	Wetlands and floodplains within the planning area would be managed in accordance with Executive Orders (EO) 11988 and 11990.	Manage wetlands and floodplains in accordance with EOs 11988, 11990, and Section 404 of the Clean Water Act. Require projects to improve the ecological integrity of the dunal ponds in any associated activity planning.	Manage wetlands and floodplains in accordance with EOs 11988, 11990, and Section 404 of the Clean Water Act. Consider projects to improve the ecological integrity of the dunal ponds.	Maintain or improve the ecological integrity of the dunal ponds.
1312	PR-11, PR-06, PR-08, BR-22.1, BR-24, BR-31.1	In the JMH planning area, wetlands and floodplains would be managed in accordance with EOs 11988 and 11990 and Section 404 of the Clean Water Act. In addition, projects to improve the ecological integrity of the dunal ponds would be considered.	See management action 1311	See management action 1311	See management action 1311
1313	PR-05, PR-11, PR-09	The 100-year floodplains, wetlands, and riparian areas are closed to any new permanent facilities (e.g., storage tanks, structure pits, etc.). Proposals for linear crossings in these areas would be considered on a case-by-case basis.	Prohibit surface disturbing activities and new permanent facilities (e.g., storage tanks, structure pits, etc.) within 1,320 feet (¼ mile) of 100-year floodplains, wetlands, riparian areas, perennial streams, and 500 feet of the edge of the inner gorge of large ephemeral drainages. Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing.	Consider, on a case-by-case basis, surface disturbing activities and new permanent facilities (e.g., storage tanks, structure pits, etc.) proposed for placement within riparian areas or wetlands and 100-year floodplains or adjacent to the inner gorge of large ephemeral drainages. Consider, on a case-by-case basis, linear crossings in these areas.	Avoid placement of permanent facilities within 100-year floodplains, and within 1,320 feet (¼ mile) of wetlands, riparian areas, and perennial streams. Avoid surface disturbing and construction activities within 500 feet of the outer edge of wetland/riparian areas or perennial streams. Avoid surface disturbing and construction activities within 100 feet of the edge of the inner gorge of intermittent channels or ephemeral drainages.

Physical Resources (PR) - Water Resources (1300-1325)					
MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
			Avoid linear crossings in these areas.		<p>Designate these areas as a right-of-way (ROW) avoidance area.</p> <p>Allow linear crossings if a site-specific analysis by a BLM Authorized Officer (AO) determines that no adverse impacts would be likely to occur and a plan to mitigate potential impacts to water quality is approved.</p> <p>Allow structures that would enhance the protection and management of streams, wetlands, and riparian areas.</p> <p>Approval will be on a case-by-case basis and subject to adequate mitigation of impacts following BLM mitigation policies and Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities.</p> <ul style="list-style-type: none"> <li>• Controlled Surface Use (CSU) for fluid minerals.</li> </ul>
1314	PR-05, PR-11, PR-09	In the JMH planning area, permanent facilities such as storage tanks and structure pits are not allowed in 100-year floodplains, wetlands, or riparian areas. However, structures that would enhance the protection and management of 100-year floodplains, wetlands, and riparian areas could be considered. Proposals for linear crossings in these areas would be considered on a case-by-case basis.	See management action 1313	See management action 1313	See management action 1313

1315	PR-05, PR-11, PR-09	Surface disturbing and construction activities (e.g., mineral exploration and development activities, pipelines, power lines, roads, recreation sites, fences, wells, etc.) that could adversely affect water quality and wetland and riparian habitat, would avoid the area within 500 feet of or on 100-year floodplains, wetland/riparian areas,	See management action 1313	See management action 1313	See management action 1313
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**Physical Resources (PR) - Water Resources (1300-1325)**

MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		or perennial streams, and within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages. Proposals for linear crossings in these areas would be considered on a case-by-case basis. Activities could be allowed if a site-specific analysis determines that no adverse impacts would occur to floodplains, wetland/riparian areas, perennial streams, or water quality, and a plan to mitigate impacts to water quality is approved.			
1316	PR-05, PR-11, PR-09	In the JMH planning area, all surface disturbing activities would be required to adopt design strategies that serve to reduce erosion and maintain or improve water quality. The area within 500 feet of wetlands, riparian areas, and 100-year floodplains and the area within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages are avoidance areas for surface disturbing activities. Activities could be allowed if a site-specific analysis determines that no adverse impacts would occur to floodplains, wetlands, perennial streams, or water quality, and a plan to mitigate impacts to water quality is approved.	See management action 1313	See management action 1313	See management action 1313



1317	PR-07, PR-05, PR-11	Aquifer recharge areas would be managed to protect groundwater quality and to ensure continued ability for recharging aquifers. Protection would be provided by limiting road density and surface occupancy to maintain a healthy recharge area. Vegetative cover and geologic soil condition that are	Manage aquifer recharge areas to protect groundwater quality and quantity to ensure continued ability for recharging aquifers.  Manage aquifer recharge areas to maintain or enhance recharge volume and groundwater quality by limiting road density, chemical use and storage, and surface occupancy (managed as CSU for	Aquifer recharge areas would be managed to protect groundwater quality and to ensure continued ability for recharging aquifers.	Manage activities in aquifer recharge areas to protect groundwater quality and quantity to ensure continued function.  Manage activities in aquifer recharge areas to maintain, at a minimum, recharge volume and groundwater quality by limiting road density, chemical use and storage, and
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**Physical Resources (PR) - Water Resources (1300-1325)**

MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		conducive to groundwater recharge would be maintained.	fluid minerals) to maintain a healthy recharge area.  Conduct studies in relation to specific projects to better define aquifer recharge area boundaries.		surface occupancy to maintain a healthy recharge area.  • CSU for fluid minerals. Apply the above actions to identified and mapped recharge areas.
1318	PR-07, PR-05, PR-11	In the JMH planning area, aquifer recharge areas would be managed to maintain or enhance recharge volume and groundwater quality by limiting road density and surface occupancy to maintain a healthy recharge area. Studies would be conducted in relation to specific projects to better define aquifer recharge area boundaries.	See management action 1317	See management action 1317	See management action 1317
1319	PR-07, PR-05, PR-11	Activities within the water recharge area for the Town of Superior water supply would be designed to protect groundwater quality and would be allowed only if groundwater quality would be protected.  Identified as CSU for fluid minerals in Table 2-4 (Appendix V) and closed to coal exploration and sodium prospecting.	Design activities within the water recharge area for the Town of Superior water supply to protect groundwater quality.  • Manage as NSO for fluid minerals.	Same as Alternative A	Avoid surface disturbing activities and subsurface mineral activity in the identified or designated water recharge area for the towns of Superior and McKinnon.  • Unavailable to fluid minerals leasing. • Designate as a ROW avoidance area.

1320	PR-07, PR-05, PR-11	No similar action	No similar action	No similar action	Avoid or mitigate, on a case-by-case basis, BLM-authorized activities and infrastructure such as unlined impoundment ponds/pits, reserve pits, and evaporation ponds that could result in the contamination of sensitive water resources, including Source Water Protection Areas identified in Wellhead or Source Water Protection Plans approved local governing bodies and "High" and "Moderately High" sensitivity aquifer systems identified through the use of the Wyoming Groundwater Vulnerability Assessment Handbook or similar document as updated over time.
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### Physical Resources (PR) - Water Resources (1300-1325)

MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
1321	PR-06, PR-08	The BLM would cooperate with the State of Wyoming on the Wyoming State 208 water quality plan and would coordinate the development of water quality plans consistent with BLM programs and Green River RMP recommendations and decisions.	Cooperate, consistent with BLM programs and this RMP, with the State of Wyoming on the Wyoming State 208 water quality plan and in the development of water quality plans.	Same as Alternative A	No similar action (current policy)
1322	PR-12	Legal protection of those water uses, both consumptive and nonconsumptive (including instream uses), that are necessary for the accomplishment of BLM programs would be obtained, so that the beneficial uses may be continued or made possible in the future.	Same as Alternative A	Same as Alternative A	Acquire water rights for BLM programs subject to state water law. Where applicable and to the extent that BLM relies on federal reserved water rights, that water may not be used outside of the specific purpose(s) for which the federal lands reservation was created.

1323	PR-07	<p>In the JMH planning area, hydrogeologic investigations would be required where there is a reasonable expectation that surface water features are connected with geologic formations being dewatered. Such investigations would serve to determine the extent of the potential impact and provide information that could assist in mitigation of undesirable effects related to development. Attributes that could trigger a hydrogeologic investigation include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Preexisting designation of an area as a recharge zone.</li> <li>• Similar water chemistry between surface waters and proximity of a proposed project to groundwater, shallow water tables, and springs and/or seeps.</li> <li>• Wetlands, streams, or water courses.</li> </ul>	<p>Require hydrogeologic investigations where there is a reasonable expectation that surface water features are connected with geologic formations being dewatered. Such investigations would serve to determine the extent of the potential impact and provide information that could assist in mitigation of undesirable effects related to development.</p> <p>Attributes that could trigger a hydrogeologic investigation include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Preexisting designation of an area as a recharge zone.</li> <li>• Similar water chemistry between surface waters and proximity of a proposed project to groundwater, shallow water tables, and springs and/or seeps.</li> <li>• Wetlands, streams, or water courses.</li> <li>• Underlying lithology that suggests surface/groundwater</li> </ul>	No similar action	<p>Require hydrogeologic investigations where there is a reasonable expectation that surface water features are connected with aquifers and geologic formations that are potentially impacted by BLM authorized activities. Such investigations would serve to determine the extent of the potential impact and provide information that could assist in mitigation of undesirable effects related to development.</p> <p>Attributes that could trigger a hydrogeologic investigation include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Preexisting designation of an area as a recharge zone.</li> <li>• Indicators that the proposed disturbance may be in an unmapped seep, spring or recharge zone.</li> <li>• Similar water chemistry between surface waters and waters encountered in area analysis.</li> </ul>
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<b>Physical Resources (PR) - Water Resources (1300-1325)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		<ul style="list-style-type: none"> <li>Underlying lithology that suggests surface/groundwater communication, such as dipping geologic beds, fractures in the underlying rocks, and shallow producing zones. Mitigation requirements would also be implemented as needed to protect surface waters.</li> <li>Appropriate measures would be applied to protect groundwater quality and prevent commingling of aquifers.</li> </ul>	communication, such as dipping geologic beds, fractures in the underlying rocks, and shallow producing zones. Mitigation requirements would also be implemented as needed to protect surface waters. <ul style="list-style-type: none"> <li>Apply appropriate measures to protect groundwater quality and prevent commingling of aquifers.</li> </ul>		<ul style="list-style-type: none"> <li>Proximity of a proposed project related disturbance to groundwater, shallow water tables, and springs and/or seeps.</li> <li>Presence of wetlands, streams, or water courses.</li> <li>Underlying lithology that suggests surface/groundwater communication, such as dipping geologic beds, fractures in the underlying rocks, and shallow producing zones.</li> <li>Mitigation requirements would also be implemented to protect surface waters.</li> <li>Apply appropriate measures to protect groundwater quality and prevent comingling of aquifers (see Appendix A).</li> </ul>
1324	PR-07, PR-05, PR-11	Herbicide loading sites would be prohibited within 500 feet of water sources, floodplains, riparian areas, and Special Status plant locations and would be used in accordance with the guidelines in Appendix A.	Prohibit herbicide and pesticide loading, maintenance, and refueling areas within ¼ mile of water sources, floodplains, riparian areas, and Special Status plant locations. Use would be in accordance with the guidelines in Appendix A.	No similar action	Avoid herbicide and pesticide loading, maintenance, and refueling areas within ¼ mile of open water (streams, lakes, wetlands, etc.), floodplains, riparian areas, shallow unconfined aquifers, and Special Status plant locations. Use would be in accordance with the guidelines in Appendix A.
1325	PR-07, PR-05, PR-11	No similar action	Prohibit surface occupancy and surface disturbing activities in areas of shallow unconfined aquifers.  Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing.	Consider closed loop drilling systems in areas of shallow unconfined aquifers.	No similar action (see management action 1320)

<b>Physical Resources (PR) - Lands with Wilderness Characteristics (1500-1517)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
Goal:					

<b>Physical Resources (PR) - Lands with Wilderness Characteristics (1500-1517)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
PR-13: Manage lands with wilderness characteristics as appropriate, considering manageability and the context of competing resource demands.					
1500	PR-13	Maintain an inventory of lands with wilderness characteristics (Map 3-21)			
1501	PR-13	No similar action	Allow motorized travel only for access to state/private parcels.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	No similar action
1502	PR-13	No similar action	Manage as: 1) closed for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing; 4) an exclusion area for all new ROW; 5) pursue withdrawal from mineral location.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	No similar action
<b>WY040-2011-014</b>					
1503	PR-13	No similar action	Manage all lands identified as having wilderness characteristics specifically to preserve those characteristics.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	Manage the area in accordance with the Little Mountain Area of Critical Environmental Concern (ACEC).
1504	PR-13	No similar action	Pursue acquisition of the state parcel.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	No similar action
<b>WY040-2011-021</b>					
1505	PR-13	No similar action	Manage all lands identified as having wilderness characteristics specifically to preserve those characteristics.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	Manage the area in accordance with the Little Mountain ACEC.
1506	PR-13	No similar action	Pursue acquisition of the state parcel.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	No similar action
<b>WY040-2011-027</b>					
1507	PR-13	No similar action	Manage all lands identified as having wilderness characteristics specifically to preserve those characteristics.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	Manage for multiple use.
1508	PR-13	No similar action	Pursue acquisition of inholdings on a willing seller basis.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	No similar action

<b>Physical Resources (PR) - Lands with Wilderness Characteristics (1500-1517)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>WY040-2011-029</b>					
1509	PR-13	No similar action	Manage all lands identified as having wilderness characteristics specifically to preserve those characteristics.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	Manage for multiple use.
<b>WY040-2011-062</b>					
1510	PR-13	No similar action	Manage all lands identified as having wilderness characteristics specifically to preserve those characteristics.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	Manage the area in accordance with the West Sand Dunes management area and the JMH area (Area 1) with consideration of identified wilderness characteristics.
<b>WY040-2011-059</b>					
1511	PR-13	No similar action	Manage all lands identified as having wilderness characteristics specifically to preserve those characteristics.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	Manage for multiple use.
<b>WY040-2011-069</b>					
1512	PR-13	No similar action	Manage all lands identified as having wilderness characteristics specifically to preserve those characteristics.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	Manage the area in accordance with the JMH area (Areas 2 and 3) with consideration of identified wilderness characteristics.
1513	PR-13	No similar action	Designate the area as Visual Resource Management (VRM) Class II.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	Same as Alternative B
1514	PR-13	No similar action	Pursue acquisition of inholdings on a willing seller basis.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	No similar action
<b>WY040-2011-074</b>					
1515	PR-13	No similar action	Manage all lands identified as having wilderness characteristics specifically to preserve those characteristics.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	Manage the area in accordance with the JMH area (Areas 2 and 3).
<b>WY040-2011-088</b>					
1516	PR-13	No similar action	Manage all lands identified as having wilderness characteristics specifically to preserve those characteristics.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	Manage the area in accordance with the JMH area (Area 2).

<b>Physical Resources (PR) - Lands with Wilderness Characteristics (1500-1517)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
1517	PR-13	No similar action	Pursue acquisition of the state parcels.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	No similar action

<b>Mineral Resources (MR) - Locatable Minerals (2000-2001)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
Goal:					
<b>MR-01:</b> Provide opportunities to explore, locate, and develop locatable minerals while protecting other resource values.					
2000	MR-01	With the exception of lands withdrawn from mineral location, the planning area is open to filing of mining claims and exploration for and development of locatable minerals (Map 2-1).	Except for lands withdrawn from mineral location, open the planning area to filing of mining claims and exploration for and development of locatable minerals (Map 2-2, 1,871,236 total acres). Pursue proposed withdrawals (for mineral location) in the locations identified in Table 2-3 (1,993,908 acres) (Appendix V).	Except for lands withdrawn from mineral location, open the planning area to filing of mining claims and exploration for and development of locatable minerals (Map 2-3, 3,630,183 total acres). Pursue proposed withdrawals (for mineral location) in the locations identified in Table 2-3 (234,961 acres) (Appendix V).	Except for lands withdrawn from mineral location, the planning area is open to filing of mining claims and exploration for and development of locatable minerals (Map 2-4, 3,382,872 total acres). Pursue proposed withdrawals (for mineral location) in the locations identified in Table 2-3 (482,272 acres) (Appendix V).
2001	MR-01	The mineral classification withdrawals in the RMP planning area (phosphate, coal, oil shale) will be revoked. In some areas, these classification withdrawals will remain in effect (Map 3-17, Map 3-18) until replaced with an appropriate withdrawal for other appropriate purposes (see Special Management Area section).	Same as Alternative A	Same as Alternative A	The mineral classification withdrawals for phosphate 23,003 acres, coal 46,944, oil shale 2,536,440 are recommended to be revoked (Map 3-17, Map 3-18).

<b>Mineral Resources (MR) – Leasable Minerals – Geothermal (2100-2102)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
2100	MR-02, MR-03	Geothermal resources are open to leasing consideration in areas that are open to oil and gas leasing consideration. Areas closed to oil and gas leasing are also closed to	Unless otherwise noted, BLM-administered lands in the planning area open to oil and gas leasing would be open to geothermal leasing (Table 2-4) (Appendix V).	Unless otherwise noted, BLM-administered lands in the planning area are open to geothermal leasing (Table 2-4) (Appendix V). Unless otherwise	BLM-administered lands in the planning area would be open to geothermal leasing, subject to moderate and major constraints; or closed to geothermal leasing

<b>Mineral Resources (MR) – Leasable Minerals – Geothermal (2100-2102)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		geothermal leasing (540,021 acres).	Unless otherwise noted, those lands identified as closed to oil and gas leasing (2,189,218 acres) would be closed to geothermal leasing.	noted, those lands identified as closed to oil and gas leasing (225,782 acres) would be closed to geothermal leasing.	(768,989 acres, Table 2-4) (Appendix V).
2101	BR-24	Exploration and development of geothermal resources are subject to application of mitigation requirements for surface disturbing activities and other activities in the same manner as they are applied to oil and gas exploration and development activities.	See management action 2100	See management action 2100	See management action 2100
2102	MR-02, MR-03	No similar action	Consider, on a case-by-case basis, community direct-use geothermal leases subject to appropriate site-specific NEPA. Community direct-use geothermal leases would have appropriate resource protection mitigation measures applied in conformance with the resource management actions specified in this RMP.	Same as Alternative B	Allow, on a case-by-case basis, community direct-use geothermal leases subject to appropriate site-specific NEPA. Community direct-use geothermal leases would have appropriate resource protection mitigation measures applied in conformance with the resource management actions specified in this RMP.

<b>Mineral Resources (MR) - Leasable Minerals – Oil and Gas (2200-2222)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
Goals:					
MR-02: Maintain or enhance opportunities for mineral exploration and development while protecting other resource values.					
MR-03: Provide for leasing, exploration, and development of oil, gas, and geothermal resources while protecting other resource values.					



2200	MR-02, MR-03	Well spacing requirements for oil and gas resource protection would defer to the Wyoming Oil and Gas Conservation Commission guidance, with consideration for surface resource values. The Wyoming Oil and Gas Commission is responsible for establishing down-hole spacing for the State of Wyoming, which does not include an assessment of surface resources. The BLM is responsible	Same as Alternative A	Same as Alternative A	Same as Alternative A
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**Mineral Resources (MR) - Leasable Minerals – Oil and Gas (2200-2222)**

MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		for managing all aspects of the public lands under its jurisdiction, including the appropriate surface use or “spacing,” giving consideration to the design, location, and placement of well sites and facilities and potential impacts on surface resources. Surface spacing for wells would be evaluated based on appropriate NEPA or other analysis that considers impacts to all resources. The resultant surface spacing may not be the same as the down-hole spacing established by the Wyoming Oil and Gas Commission.			

201	MR-02, MR-03	Conditions of Approval (COA) attached to an APD would be based on site-specific NEPA or other analysis and would establish specific, necessary mitigation measures not covered by stipulations for resource and environmental protection. APD processing would involve completion of step-down site-specific NEPA analysis prior to any potential APD approval. Onsite meetings at proposed well pad and access road locations would be conducted to identify resource concerns and appropriateness of proposed locations. Surveys for cultural, wildlife, and paleontological resources would be required as appropriate.	No similar action	No similar action	Same as Alternative A
2202	MR-02, MR-03	No similar action	Continue to suspend existing oil and gas leases from development within the Mechanically Mineable Trona Area (MMTA). Close the MMTA (MMTA federal 141,409 acres) for new fluid mineral leasing until the oil and gas	The MMTA would be managed as a CSU. Recovery of the oil and gas resource must be accomplished without compromising the safety of underground miners.	Existing oil and gas leases are suspended in the MMTA (141,409 surface acres). The MMTA is administratively unavailable for new fluid mineral leasing until the oil and gas resource can be recovered

### Mineral Resources (MR) - Leasable Minerals – Oil and Gas (2200-2222)

MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
			resource can be recovered without compromising the safety of the underground miners.		without compromising the safety of underground miners.
2203	MR-02, MR-03	No similar action	The Sweetwater County Growth Management Area (45,204 acres) would be unavailable to fluid mineral leasing.	No similar action	The Sweetwater County Growth Management Area (45,204 acres) would be unavailable to fluid mineral leasing.
2204	BR-24	Where controlled use or restrictions on specific activities are needed but do not necessarily exclude activities, CSU or surface disturbance restrictions would be designed to protect those resources. These restrictions would be placed on areas where resources could be avoided, or adverse effects could be mitigated.	No similar action	No similar action	See management action 2207

2205	MR-02, MR-03	<p>In the JMH area, lease stipulations are identified in Appendix B. The lease stipulations would notify the leaseholder that development activities may be limited, prohibited, or implemented with mitigation measures to protect specific resources. The stipulations would allow the leaseholder's development activities while providing the BLM with the authority for substantial delay or site changes or the denial of operations with the terms of the lease contract. The types of lease stipulations include CSU through limitation on the amount and type of surface disturbance, CSU through avoidance of other resources, timing limitations (TL) on development activity, and NSO. Standard lease terms and conditions may also apply. Appendix B contains additional information about lease stipulations and the standard lease form (Form 3100-11).</p>	See management action 2204	See management action 2204	See management action 2207
<b>Mineral Resources (MR) - Leasable Minerals – Oil and Gas (2200-2222)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
2206	BR-24	<p>Where maximum protection of resources is necessary, an NSO requirement would be imposed. Areas identified as needing maximum protection are shown on Table 2-4 (Appendix V) and Map 2-5. Additional areas may be identified through site-specific environmental analysis and activity planning.</p>	See management action 2204	See management action 2204	See management action 2207

2207	MR-02, MR-03	BLM-administered public lands not specifically closed are open to consideration of oil and gas leasing. Public lands closed to leasing include lands within the Red Creek ACEC and portions of the Wind River Front (Map 2-5).	<p>Protect important resources by applying appropriate restrictions and prohibiting surface-disturbing activities to the extent this restriction does not violate the leaseholder/operator lease.</p> <p>The planning area is:</p> <ul style="list-style-type: none"> <li>• Open to leasing, subject to existing laws with terms and conditions of the standard lease form (Map 2-6; Table 2-4, Appendix V).</li> <li>• Open to leasing subject to moderate constraints such as timing limitation stipulations (TLS) (713,837 acres) and CSU (99,674 acres) (Map 2-6; Table 2-4, Appendix V).</li> <li>• Open to leasing subject to major constraints such as NSO (813,354 acres) (Map 2-6; Table 2-4, Appendix V).</li> <li>• Closed to leasing (2,186,218 acres) (Map 2-6; Table 2-4, Appendix V).</li> <li>• Exceptions would not be granted.</li> </ul>	<p>Protect important resources by applying appropriate restrictions and prohibiting surface-disturbing activities to the extent this restriction does not violate the leaseholder/operator lease rights.</p> <p>The planning area is:</p> <ul style="list-style-type: none"> <li>• Open to leasing, subject to existing laws with terms and conditions of the standard lease form (Map 2-7; Table 2-4, Appendix V).</li> <li>• Open to leasing subject to moderate constraints such as TLS (1,355,485 acres) and CSU (215,890 acres) (Map 2-7; Table 2-4, Appendix V).</li> <li>• Open to leasing subject to major constraints such as NSO (15,542 acres) (Map 2-7; Table 2-4, Appendix V).</li> <li>• Closed to leasing (225,782 acres) (Map 2-7; Table 2-4, Appendix V).</li> <li>• Grant exceptions if the specific criteria apply (see exception/waiver/modification criteria, Appendix B).</li> </ul>	<p>The planning area, subject to valid existing rights, is:</p> <ul style="list-style-type: none"> <li>• Open to leasing, subject to existing laws with terms and conditions of the standard lease form (Map 2-8; Table 2-4, Appendix V).</li> <li>• Open to leasing subject to moderate constraints such as overlapping TLS (1,911,167 acres) and CSU (1,238,899 acres) (Map 2-8; Table 2-4, Appendix V).</li> <li>• Open to leasing subject to major constraints such as NSO (2,172 acres) (Map 2-8; Table 2-4, Appendix V).</li> <li>• Close to leasing (768,989 acres) (Map 2-8; Table 2-4, Appendix V).</li> <li>• Grant exceptions if the specific criteria apply (see exception/waiver/modification criteria, Appendix B).</li> </ul>
2208	MR-02, MR-03	The remainder of the public lands in the planning area are open to consideration for oil and gas	See management action 2207	See management action 2207	See management action 2207

<b>Mineral Resources (MR) - Leasable Minerals – Oil and Gas (2200-2222)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		leasing with appropriate mitigation measures. Appendix B provides information on which restrictions apply to particular actions and land uses to protect resource values in certain areas. This Appendix provides guidelines for all surface disturbing activities, not just those related to oil and gas exploration and development activities.			
2209	BR-24	In the JMH area, areas that cannot be offered for lease include wilderness study areas (WSA) (about 119,000 acres) and other areas where fluid mineral leasing and development would not be in compliance with other laws or with land use planning decisions that prohibit fluid mineral leasing and development in certain areas (Map 2-5 and Table 2-4, Appendix V).	See management action 2207	See management action 2207	See management action 2207
2210	MR-02, MR-03	In the JMH area, fluid mineral leasing, exploration, and development would be allowed in portions of the planning area with necessary mitigation.	See management action 2207	See management action 2207	See management action 2207
2211	MR-02, MR-03	Timing limitations (seasonal restrictions) would be applied when activities occur during crucial periods or would adversely affect crucial or sensitive resources. Such resources include, but are not limited to, soils during wet muddy periods, crucial wildlife seasonal use areas, and raptor nesting areas. Exceptions to seasonal restriction may be granted if the criteria in Appendix B apply (Map 2-5).	See management action 2207	See management action 2207	See management action 2207
2212	MR-02, MR-03	No similar action	Consistent with the management of other resources and resources uses under this alternative, the JMH planning area is open to	Consistent with the management of other resources and resources uses under this alternative, the JMH planning area is open to	Consistent with the management of other resources and resources uses under this alternative, the JMH planning area is open to mineral

<b>Mineral Resources (MR) - Leasable Minerals – Oil and Gas (2200-2222)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			mineral leasing (Map 2-6; Table 2-4, Appendix V).	mineral leasing (Map 2-7; Table 2-4, Appendix V).	leasing (Map 2-8; Table 2-4, Appendix V).
2213	MR-02, MR-03	The JMH CAP area is divided into three implementation management areas. Area 1 is open to fluid mineral leasing with appropriate stipulations applied to protect sensitive resources in Area 1 (Table 2-4, Appendix V).	Area 1 of the JMH planning area would be open to fluid mineral leasing with appropriate stipulations applied to protect sensitive resources. As leases expire within Area 1, they would not be considered for subsequent lease offerings.	Area 1 of the JMH planning area would be open to fluid mineral leasing with appropriate stipulations applied to protect sensitive resources. As leases expire within Area 1, they would be considered for subsequent lease offerings. Areas available for subsequent lease offerings will be managed for CSU and TLS as listed in Table 2-4 (Appendix V) or those identified through monitoring.	Same as Alternative A
2214	MR-02, MR-03	As leases expire within Area 1, they would be considered for subsequent lease offerings. Stipulations for subsequent lease offerings identified in Appendix B, those identified through monitoring as described in Appendix I, and the lease stipulations (Appendix B) would be applied if deemed necessary.	See management action 2213	See management action 2213	See management action 2213
2215	MR-02, MR-03	Area 2 is open to leasing considering such factors as operational need, resource recovery, geology, and ability to mitigate impacts and with stipulations applied to protect sensitive resources in Area 2 (Table 2-4, Appendix V). The BLM may request potential lessees to share data (such as reservoir data or geologic data) or plans related to the development of the potential oil and gas resource prior to leasing; sharing of these data is voluntary.	Area 2 of the JMH planning area would be open to fluid mineral leasing considering such factors as operational need, resource recovery, geology, mineral potential, and ability to mitigate impacts with appropriate stipulations (Table 2-4, Appendix V).	Area 2 of the JMH planning area would be open to fluid mineral leasing.	JMH Area 2 is open to leasing considering such factors as operational need, resource recovery, geology, and ability to mitigate impacts and with stipulations applied to protect sensitive resources in Area 2 (Table 2-4, Appendix V). • CSU for fluid minerals. The BLM may request potential lessees to share data (such as reservoir data or geologic data) or plans related to the development of the potential oil and gas resource prior to leasing; sharing of these data is voluntary.
2216	MR-02, MR-03	As leases expire within Area 2, they would be considered for	See management action 2215	See management action 2215	See management action 2215

<b>Mineral Resources (MR) - Leasable Minerals – Oil and Gas (2200-2222)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		subsequent lease offerings. Stipulations identified in Table 2-4 in Appendix V and Appendix B would be applied to new leases if deemed necessary.			
2217	MR-02, MR-03, BR-24	Approximately 35,500 acres along the perimeter of Area 3 are available for leasing with an NSO stipulation. This acreage represents a distance of ½ mile within portions of the boundary of Area 3. Although current technologies suggest that the ½-mile distance is adequate at this time, these NSO areas may be expanded to include additional adjacent acreage provided the planning area resource objectives can be met.	Close approximately 35,500 acres along the perimeter of JMH Area 3 to fluid mineral leasing. This acreage represents a distance of ½ mile within portions of the boundary of Area 3.	No similar action	Same as Alternative B
2218	MR-03	The remainder of JMH Area 3 is closed to oil and gas leasing (about 92,000 acres). This closure is established to meet the resource goals and objectives for the planning area. These objectives include providing adequate habitat as well as opportunity for the use of crucial winter range, calving/fawning areas, migration corridors, etc. and protection of sensitive resources and public health and safety (Table 2-4, Appendix V). Area 3 includes portions of the Steamboat Mountain ACEC, Greater Sand Dunes ACEC, White Mountain Petroglyphs ACEC, Oregon Buttes ACEC, South Pass Historic Landscape ACEC, the White Mountain and Split Rock areas, and the core and connectivity areas.	Close JMH Area 3 to fluid mineral leasing (about 92,000 acres). As existing leases expire in Area 3, they would not be reoffered for lease (Table 2-4, Appendix V), including the perimeter of Area 3 identified above.	No similar action	Same as Alternative B Appendix V
2219	MR-03	As existing leases expire in Area 3, they would not be reoffered for	See management action 2218	See management action 2218	See management action 2218

<b>Mineral Resources (MR) - Leasable Minerals – Oil and Gas (2200-2222)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		lease (approximately 88,200 acres) (Table 2-4, Appendix V) unless they are within the 35,500 acres along the perimeter of Area 3 identified above.			
2220	MR-02, MR-03	Buyout or exchange of existing leases from willing sellers may be considered on a case-by-case basis. Congressional legislation would be required to authorize and fund lease buyouts.	Same as Alternative A	Same as Alternative A	Same as Alternative A
2221	MR-02, MR-03, BR-24	An interdisciplinary BLM team, in coordination with the working group, stakeholders, and other members of the public, would evaluate monitoring data and determine changes in management. The lease stipulations in Table 2-4 in Appendix V and Appendix B may be adjusted or clarified based on these data. Twelve basic sensitive resources and uses would be used to evaluate these lands and ensure that the appropriate mitigation is provided. These sensitive resources and uses may change or be added to in the future based on monitoring (Appendix I). If an evaluation concludes that planning area management objectives are not being met, the analysis of actions would include application of strategies that ensure continuity between activities and the land use plan. Any changes to the lease stipulations identified in Table 2-4 in Appendix V and Appendix B would be applied to new leases only.	Form a RSFO working group under the direction of the Rock Springs Field Manager.  An interdisciplinary BLM team, in coordination with the RSFO working group, stakeholders, and other members of the public, would evaluate monitoring data and determine recommendations for changes in management for the RSFO.	No similar action	No similar action
2222	MR-02, MR-03, BR-24	Monitoring of sensitive resource indicators would determine the effectiveness of lease stipulations and COAs and provide guidance	See management action 2221	See management action 2221	See management action 2221



Mineral Resources (MR) - Leasable Minerals – Oil and Gas (2200-2222)					
MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		<p>for adopting new or modified stipulations, exception criteria, or COAs needed to meet resource objectives. Indicators could include, but are not limited to, wildlife population trends, reproduction rates, observed ranges, and habitat integrity (Appendix B). Development levels may be adjusted, or new stipulations may be applied to new leases when offered. COAs may be applied to proposed activities as appropriate and necessary to protect resource values. Adjustments could be made to ensure that further activity would not cause fragmentation and abandonment of habitat and would still meet stated management objectives, safeguard sensitive resources, and not result in significant or irreversible adverse effects. Proposed changes would be analyzed in subsequent NEPA or other documents (such as site-specific NEPA analysis for well sites) in accordance with law and policy. Changes would be based on several factors including the following:</p> <p>Data trends for indicators on the viability of potentially impacted wildlife and other sensitive resources, including impacts from other causes such as disease, drought, hunting pressure, introduction of non-native species, and recreation activities.</p> <p>Fragmentation of habitat and migration pathways due to development activities.</p> <p>Net amount of surface disturbance, including approved development activities that would be</p>			

<b>Mineral Resources (MR) - Leasable Minerals – Oil and Gas (2200-2222)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		implemented in nearby areas and planned reclamation of existing surface disturbances. Amount and location of actual land use activity.			

<b>Mineral Resources (MR) - Geophysical Exploration (2300)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
2300	MR-02, MR-03	Most of the planning area is open to consideration of geophysical activities except where off-road vehicle use or explosive charges would cause unacceptable impacts.	Assess geophysical exploration activities (including those unrelated to oil and gas) in appropriate site-specific NEPA analysis, including a categorical exclusion where appropriate. Apply resource protection mitigation measures in conformance with the resource management actions specified in this RMP and appropriate to the site-specific setting and operations proposed.	Assess geophysical exploration activities (including those unrelated to oil and gas) in appropriate site-specific NEPA analysis, including a categorical exclusion where appropriate. Apply resource protection mitigation measures in conformance with the resource management actions specified in this RMP and appropriate to the site-specific setting and operations proposed.	Assess geophysical exploration activities (including those unrelated to oil and gas) in appropriate site-specific NEPA analysis, and all required resource clearances. Apply resource protection mitigation measures in conformance with the resource management actions specified in this RMP and appropriate to the site-specific setting and operations proposed.

<b>Mineral Resources (MR) - Other Leasable Minerals (2400-2419)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
Goal: MR-04: Provide for both short and long-range exploration and development of solid leasable minerals.					
2400	MR-02, MR-04	Leasing of other leasable minerals would be considered on a case-by-case basis and is subject to appropriate mitigation.	Same as Alternative A	Same as Alternative A	Same as Alternative A
<b>Solid Leasable Minerals (coal)</b>					
2401	MR-02, MR-04	With appropriate limitations and mitigation requirements for the protection of other resource values, all BLM-administered public lands and federal coal lands in the Green River planning area, except for	With appropriate limitations and mitigation requirements for the protection of other resource values, all BLM-administered public lands and federal coal lands in the Rock Springs planning area, except for	With appropriate limitations and mitigation requirements for the protection of other resource values, all BLM-administered public lands and federal coal lands in the Rock Springs	Same as Alternative A

<b>Mineral Resources (MR) - Other Leasable Minerals (2400-2419)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		those lands identified as closed, are open to coal resource inventory and exploration to help identify coal resources and their development potential Table 2-7 in Appendix V, Map 2-9).	those lands identified as closed, would be open to coal resource inventory and exploration to help identify coal resources and their development potential (Table 2-7 in Appendix V, Map 2-10).	planning area, except for those lands identified as closed, would be open to coal resource inventory and exploration to help identify coal resources and their development potential (Table 2-7 in Appendix V, Map 2-11).	Appendix V
2402	MR-02, MR-04	In the JMH planning area, most of the planning area would be open to coal exploration activities, with avoidance and mitigation requirements needed to protect the resources (Map 2-9, and Table 2-7, Appendix V). Areas currently closed to coal exploration activities (e.g., WSAs and Steamboat Mountain ACEC outside the area of coal occurrence and development potential) would remain closed. In addition, Steamboat Mountain Management Area (outside the area of coal occurrence and development potential) would also be closed. Areas closed to exploration include: WSAs, Oregon Buttes ACEC, Steamboat mountain ACEC, Steamboat Mountain Management Area, South Pass Historic Landscape ACEC, White Mountain Petroglyphs vista, Boars Tusk, Crookston Ranch, Tri-Territory Marker, wetlands, riparian areas, 100-year floodplains +500 foot buffer, Special Status plants, raptor nest sites, and Greater Sage-Grouse leks +-mile buffer.	See management action 2401	See management action 2401	See management action 2401
2403	BR-22.1, BR-24	The North Fork Vermillion Creek Drainage and the City of Rock Springs Expansion Area are closed to further consideration for federal coal leasing and development (Map 2-9).	Retain the closure of North Fork Vermillion Creek Drainage and Sweetwater County Growth Management Area to coal leasing and development (Map 2-10).	The North Fork Vermillion Creek Drainage is closed to further consideration for federal coal leasing and development.	Same as Alternative A
2404	MR-02, MR-04	The Coal Occurrence and Development Potential area is	Subject the Coal Occurrence and Development Potential area to	The Coal Occurrence and Development Potential area	Same as Alternative A

<b>Mineral Resources (MR) - Other Leasable Minerals (2400-2419)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		<p>subject to continued field investigations, studies, and evaluations to determine if certain methods of coal mining can occur without having a significant long-term impact on wildlife, cultural, and watershed resources in general and on threatened and endangered plant and animal species and their essential habitats. Such investigations, studies, and evaluations may be conducted on an as-needed or case-by-case basis in reviewing individual coal leasing or development proposals (e.g., mine plans) or, if opportunities or needs arise, area-wide studies may be conducted. These studies include keeping resource databases current (e.g., where existing raptor nests become abandoned or where new raptor nests become established, etc.), analysis of effects to wildlife and threatened and endangered species habitats and populations, and the cumulative effects of mining operations and other activities in the area. Consultation with other agencies (e.g., U.S. Fish and Wildlife Service (USFWS), Wyoming Game and Fish Department (WGFD), etc.), interested parties, and with industry would occur as needed or required.</p>	<p>continued field investigations, studies, and evaluations on an as-needed basis to determine if certain methods of coal mining can occur without having a significant long-term impact on resource values.</p>	<p>(Map 3-10, 878,501 surface acres) is subject to continued field investigations, studies, and evaluations on an as-needed basis to determine if certain methods of coal mining can occur without having a significant long-term impact on resource values.</p>	
2405	MR-02, MR-04	<p>In the JMH planning area, lands within the Coal Occurrence and Development Potential Area (Map 2-9) have been identified as having a known or assumed potential for coal development. These lands were reviewed against 20 criteria to determine whether they were</p>	See management action 2404	See management action 2404	See management action 2404

<b>Mineral Resources (MR) - Other Leasable Minerals (2400-2419)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		suitable for development (43 CFR 3461). These criteria considered existing resource values, such as cultural resources, scenic values, wildlife, threatened and endangered species, natural landmarks, and watersheds. The coal planning decisions made in the Green River RMP apply.			
2406	MR-02, MR-04	In the JMH planning area, areas outside the coal occurrence and development potential area but within the planning area may also be considered for leasing for coal development, but would have to be reviewed through the site-specific application of the coal screening process and would have to meet the suitability criteria for coal leasing. Restrictions on mining activity, such as no surface facilities or subsurface mining with controls on surface facilities, would be required on coal leases where needed for resource protection. See the Green River RMP for more information relating to coal management.	Close areas outside the coal occurrence and development potential area, but within the planning area, to exploration and leasing for coal development.	Consider areas outside the coal occurrence and development potential area but within the planning area for leasing for coal development, after review through the site-specific application of the coal screening process and meeting the suitability criteria for coal leasing. Require restrictions on mining activity, such as no surface facilities or subsurface mining with controls on surface facilities, on coal leases where needed for resource protection.	See management action 2404
<b>Public Land Surface Overlying State-Owned Coal</b>					
2407	MR-02, MR-04	BLM-administered public land surface overlaying state-owned coal are open to further consideration for coal development with appropriate and necessary conditions and requirements for protection of the public land surface and surface resource values and uses, including big game crucial winter range, cultural values, geologic features, and rights-of-way (about 28,000 acres). These lands are subject to continued field investigations,	Open BLM-administered public land surface overlaying state-owned coal to further consideration for coal development with appropriate and necessary conditions and requirements for protection of the public land surface and surface resource values.	Same as Alternative A	BLM-administered public land surface overlaying state-owned coal are available for ROWs to develop coal, unless identified as avoidance or exclusion areas in Table 2-10 (Appendix V).

<b>Mineral Resources (MR) - Other Leasable Minerals (2400-2419)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		<p>studies, and evaluations to determine if certain methods of coal mining can occur without having a significant long-term impact on wildlife, in general, and on threatened and endangered plant and animal species and their essential habitats. Such investigations, studies, and evaluations may be conducted on an as-needed or case-by-case basis in reviewing individual coal leasing and development proposals by the state or, if opportunities or needs arise, area-wide studies may be conducted. These studies include keeping resource databases current (e.g., where raptor nests become abandoned or where new raptor nests become established), analysis of effects to wildlife and threatened and endangered species habitats and populations, and the cumulative effects of mining operations and other activities in the area. Consultation with other agencies (e.g., USFWS, WGFD, etc.), special interest groups, and with industry would occur as needed or required.</p> <p>About 3,000 of these acres are closed to surface mining activities to protect cultural and geologic values. These would be no surface occupancy and very limited surface occupancy areas.</p>			
<b>Trona (Sodium)</b>					
2408	MR-02, MR-04	The Known Sodium Leasing Area (KSLA) is open to exploration and consideration for leasing and development but is closed to prospecting permits.	The KSLA is open to sodium (trona) exploration and consideration for leasing and development.	Same as Alternative B	Same as Alternative B

<b>Mineral Resources (MR) - Other Leasable Minerals (2400-2419)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
2409	MR-02, MR-04	Sodium (trona) leasing would be considered on a case-by-case basis and is subject to the same conditional requirement as oil and gas and coal, and the general management direction applied in this RMP.	See management action 2408	See management action 2408	See management action 2408
2410	MR-02, MR-04	The remainder of the planning area is open to sodium prospecting except for areas that are closed to mineral leasing, surface mining, or mechanical prospecting type activities (areas closed to drilling, off-road vehicle use, and explosive charges).	Open the area outside of the KSLA (within the planning area) to sodium prospecting except for areas that are closed to mineral leasing, surface mining, or mechanical prospecting type activities.	Open the area outside of the KSLA (within the planning area) to sodium prospecting except for areas that are closed to mineral leasing, surface mining, or mechanical prospecting type activities.	Same as Alternative A
2411	BR-35, BR-39, BR-32	The known sodium leasing area is open to exploration and consideration for leasing and developments but is closed to prospecting permits.  The remainder of the planning area is open to sodium prospecting except for areas that are closed to mineral leasing, surface mining, or mechanical prospecting type activities (areas closed to drilling, off road vehicle use, and explosive charges).  Sodium (trona) leasing will be considered on a case-by-case basis, and is subject to the same conditional requirements as oil and gas and coal, and the general management direction applied in this RMP.	Same as Alternative A	Same as Alternative A	Same as Alternative A
<b>Oil Shale</b>					
2412	MR-02, MR-04	Designate 210,000 acres of land within the most geologically prospective oil shale area as available for application for leasing for commercial oil shale development in accordance with	Same as Alternative A	Same as Alternative A	Same as Alternative A

Mineral Resources (MR) - Other Leasable Minerals (2400-2419)					
MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		applicable federal and state regulations and BLM policies.			
2413	MR-02, MR-04	Specify that while the preliminary EIS refers to “application for leasing for commercial oil shale development,” the BLM could publish in the <i>Federal Register</i> one or more additional requests for expressions of interest in Research Development and Demonstration (RD&D) leasing within one or more of the states of Colorado, Utah, and Wyoming. Any new RD&D lease would have to be consistent with the applicable BLM land use plans.	The BLM could publish in the <i>Federal Register</i> one or more additional requests for expressions of interest in RD&D leasing within one or more of the states of Colorado, Utah, and Wyoming. Any new RD&D lease would have to be consistent with the applicable BLM land use plans.	Same as Alternative A	Same as Alternative A
2414	MR-02, MR-04	Specify that lands would be available only for RD&D leases first. The BLM would issue a commercial lease only when a lessee satisfies the conditions of its RD&D lease and the regulations at 43 CFR Part 3926 for conversion to a commercial lease. The preference right acreage, if any, which would be included in the converted lease, would be specified in the RD&D lease.	Same as Alternative A	Same as Alternative A	Same as Alternative A
2415	MR-02, MR-04	Specify that commercial leasing would occur utilizing a lease by application process. The process would require that additional NEPA analysis be conducted prior to lease issuance. Information collected as part of the lease application process would be incorporated into the NEPA analysis.	Use a lease-by-application process for commercial leasing. Require additional NEPA analysis be conducted prior to lease issuance.	Same as Alternative A	Same as Alternative A
2416	MR-02, MR-04	Specify that approval of the project-specific operating plan would require NEPA review to consider site-specific and project-specific factors. The NEPA review for the operating plan may be	Require NEPA review to consider site-specific and project-specific factors before approval of the project-specific operating plan. The NEPA review for the operating plan could be incorporated into NEPA	Same as Alternative A	Same as Alternative A



<b>Mineral Resources (MR) - Other Leasable Minerals (2400-2419)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		incorporated into NEPA for the lease application if adequate operational data are provided by the applicant(s).	for the lease application if adequate operational data are provided by the applicant(s).		
2417	MR-02, MR-04	Specify that the BLM would consider and give priority to the use of land exchanges, where appropriate and feasible, to consolidate land ownership and mineral interests within the oil shale basins.	Consider and give priority to the use of land exchanges, where appropriate and feasible, to consolidate land ownership and mineral interests within the oil shale basins.	Same as Alternative A	Same as Alternative A
2418	MR-02, MR-04	Specify that applications for commercial leases using surface mining technologies would only be accepted within an area of 380,220 acres within the most geologically prospective oil shale area where the overburden is zero to 500-feet thick. Applications for commercial leasing using surface mining technologies would not be accepted in any other areas.	Applications for commercial leases using surface mining technologies would only be accepted within an area of 210,000 acres within the most geologically prospective oil shale area where the overburden is zero to 500-feet thick. Applications for commercial leasing using surface mining technologies would not be accepted in any other areas.	Applications for commercial leases using surface mining technologies would only be accepted within an area of 765,000 acres within the most geologically prospective oil shale area where the overburden is zero to 500-feet thick. Applications for commercial leasing using surface mining technologies would not be accepted in any other areas.	Same as Alternative A
2419	SD-01, SD-02	Additional areas would be closed and would not be available for future opportunity to lease for commercial development of oil shale resources under both programmatic alternatives. These additional areas include, but are not limited to: – The MMTA. This area, which is located in the Green River Basin in Wyoming, falls within a portion of the KSLA that encompasses the world's largest known trona deposits. Trona leases were issued within this area, and production occurs from a number of underground mines. The MMTA would be excluded from oil shale leasing until technology or other factors exist to allow development of the oil shale resource without	Same as Alternative A	No similar action	Close areas for future opportunity to lease for commercial development of oil shale resources (Map 2-12, 1,557,520 acres). These additional areas include, but are not limited to: – MMTA to oil shale leasing until technology or other factors exist to allow development of the oil shale resource without jeopardizing the safe operation of underground trona mines. This area, which is located in the Green River Basin in Wyoming, falls within a portion of the KSLA that encompasses the world's largest known trona deposits. Trona leases were issued within this area, and production occurs from a number of underground mines. – The Sweetwater County Growth Management Area.

Mineral Resources (MR) - Other Leasable Minerals (2400-2419)					
MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		<p>jeopardizing the safe operation of underground trona mines.</p> <ul style="list-style-type: none"> <li>- Segments of rivers that the BLM has determined to be potentially eligible for wild and scenic river (WSR) status by virtue of a WSR inventory. These river segments and a corridor extending at least ¼ mile from the high-water mark on either side of these segments would be excluded from commercial leasing.</li> <li>- Historic trails. Historic trails identified by the BLM Wyoming State Office and a corridor extending at least ¼ mile on either side of the trail would be excluded from commercial leasing.</li> <li>- Monument Valley Management Area. Oil shale development within this management area, which is located in the RSFO area, is prohibited in the Green River RMP (BLM 1997a). Specifically, the RMP directs that these lands remain withdrawn from oil shale development until a comprehensive study of the area has been conducted, including an assessment of the potential designation of this area as an ACEC on the basis of the need to protect cultural and paleontological resources.</li> <li>- Management Area 3, JMH planning area. In accordance with the JMH Coordinated Activity Plan (BLM 2006a), extensive restrictions on surface disturbing activities have been established for Area 3 within the JMH planning area because of the presence of sensitive natural and cultural resources. The portion of Area 3</li> </ul>			<ul style="list-style-type: none"> <li>- Steamboat ACEC</li> <li>- South Pass Historic Landscape ACEC</li> <li>- Red Desert MA</li> <li>- Killpecker Sand Dunes SRMA</li> <li>- ¼ mile on either side of a NHT</li> </ul>

<b>Mineral Resources (MR) - Other Leasable Minerals (2400-2419)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		<p>that overlaps with the most geologically prospective oil shale resources in the Green River Basin is restricted to NSO and has been excluded from future leasing on the basis of input from the field office.</p> <ul style="list-style-type: none"> <li>– Expansion Areas around Rock Springs and Green River, Wyoming. The BLM would not issue leases within the “expansion areas” agreed upon with the cities of Rock Springs and Green River, Wyoming.</li> <li>– Incorporated town and city limits. The BLM has determined that it will not issue leases within incorporated town and city limits.</li> </ul>			

<b>Mineral Resources (MR) – Saleable Minerals (2500-2507)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goal:</b>					
MR-05: Provide access to mineral material resources (saleable minerals) to meet demand and necessity.					
2500	MR-05	Most of the planning area is open to consideration of mineral material sales and activity except for areas where such activity would cause unacceptable impacts.	Open the planning area to mineral material disposals, except where closed (2,581,741 acres) to protect sensitive resources. Areas closed to mineral material disposals are included in Table 2-8 (Appendix V) and Map 2-14.	Open the planning area to mineral material disposals, except where closed (226,421 acres) to protect sensitive resources. Areas closed to mineral material disposals are included in Table 2-8 (Appendix V) and Map 2-15.	Open the planning area to mineral material disposals, except where closed (362,009 acres) to protect sensitive resources. Areas closed to mineral material disposals are included in Table 2-8 (Appendix V) and Map 2-16.
2501	MR-05	The JMH planning area would be open to mineral material disposals where required to meet planning objectives, such as construction and maintenance of roads in the approved transportation plan, construction of recreational facilities, or other construction related to approved development activities (Map 2-13 and Table 2-8,	See management action 2500	See management action 2500	See management action 2500

<b>Mineral Resources (MR) – Saleable Minerals (2500-2507)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		Appendix V). Mining and reclamation plans would be prepared for each use of saleable mineral materials to provide protection for sensitive resources and to restore disturbed areas.			
2502	MR-05	In the JMH planning area, existing sales contracts and free use permits for mineral materials, such as sand and gravel, would be recognized. Mining of mineral materials would comply with applicable regulatory requirements (43 CFR 3600) and air and water quality protection regulations. A site-specific analysis would be performed before any exploration or extraction activity to identify and locate resource elements that would require protection or mitigation measures. Mineral material disposals that pose impacts to identified cultural and historic resources and other sensitive resources that cannot be adequately mitigated would not be allowed. Development would be allowed as long as sensitive resources are protected from unacceptable impacts.	See management action 2500	See management action 2500	See management action 2500
2503	MR-05	As sale areas, community pits, and localized common use areas become established to provide for sales of mineral materials, such as moss rock and sand, their use and management would be in conformance with other resource objectives. Adequate mine and reclamation plans for use areas would be developed. Requests from users for mineral material would be evaluated on a case-by-case basis.	Establish no new community pits and localized common use areas.	Establish new community pits and localized common use areas.	Authorize new community pits and localized common use areas on a case-by-case basis.

<b>Mineral Resources (MR) – Saleable Minerals (2500-2507)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
2504	MR-05	Establishment of mineral material sites would be evaluated on a case-by-case basis.	Establish no new mineral material sites.	Establish new mineral material sites.	Same as Alternative A
2505	MR-05	No topsoil sale areas will be established.	Establish no additional topsoil sale areas. Close existing topsoil sale areas.	Establish topsoil sale areas.	Prohibit establishing additional topsoil sale areas. Close the existing topsoil sale area after it is depleted.
2506	BR-35, BR-42, BR-32	Saleable mineral pits no longer in use will continue to be available for use for other resource uses.	Restore saleable mineral pits no longer in use.	Same as Alternative A	Reclaim saleable mineral pits no longer in use, as per BLM Wyoming and High Desert District Reclamation Plans, unless the AO determines the pits could be used for other resource uses or values.
2507	MR-05	No similar action	Allow collection of petrified wood with written authorization only to academic, scientific, governmental, or other qualified institution or individual.	Allow collection of petrified wood for hobby purposes and commercial use on public lands.	Allow collection of petrified wood for hobby purposes and commercial use on public lands with the following restrictions: <ul style="list-style-type: none"> <li>• Collection for commercial purposes would require a permit.</li> <li>• Quantities would be limited to those described in 43 CFR 3622.</li> <li>• Collection methods would be limited to hand tools only.</li> <li>• Excavations would be filled to match surrounding topography.</li> <li>• Additional reclamation efforts may be required for commercial permits.</li> <li>• No unnecessary, undue degradation would be caused.</li> </ul>

<b>Fire and Fuels Management (FM) – Wildland Fire Ecology and Management (3000-3013)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals:</b>					
FM-01: Restore natural fire regimes and frequencies to the landscape and utilize wildland fire and vegetation treatments (such as mechanical, chemical, biological, and prescribed fire) to meet multiple-use resource objectives, including returning fire to its natural role in the ecosystem.					
FM-02: Protect life, property, and resource values by responding to wildfires based on ecological, social, and legal consequences of the fire and the circumstances under which it occurs.					
FM-03: Use fire management strategies and tactics that are appropriate for the values at risk while also minimizing impacts on resource values.					

<b>Fire and Fuels Management (FM) – Wildland Fire Ecology and Management (3000-3013)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
3000	FM-02, FM-01, FM-03	Partner with the public, counties, interagency cooperators, and stakeholders to strengthen coordination of all fire management activities and encourage the creation of fire safe communities.			
3001	FM-01, FM-02	Manage fire and fuels consistent with approved local fire plans in coordination with counties, cooperators, and stakeholders.			
3002	FM-03, FM-01	Conduct appropriate emergency stabilization and rehabilitation (ES&R) after wildfire to address current and anticipated needs to resource values at risk.			
3003	FM-01	Consult and cooperate with private landowners, affected partners, and local, state, tribal, and other federal agencies on individual treatments (such as prescribed fire and biological, mechanical, and chemical treatments) designed to reduce or modify hazardous fuels accumulations.			
3004	FM-01	Manage fuels in Wildland Urban Interface areas, including industrial interface to reduce potential of losses due to fire consistent with the National Cohesive Wildland Fire Management Strategy.			
3005	FM-01	Immediate control actions will be used only in cases of arson, direct threat to public safety, or a strong potential threaten structural property.			
3006	FM-01, FM-02, FM-03	Fire suppression actions would be based on achieving the most efficient control and allowing historical acres burned to increase. Activity plans would be developed for designated fire management areas defining specific parameters for all fire occurrence.	Base fire suppression actions on achieving the most efficient control, while allowing wildfire to function as a natural ecological role. Develop site-specific activity plans for designated fire management areas. No geographic areas are identified as suitable for the use of wildland fire from unplanned ignitions to meet resource objectives.	Base fire suppression actions on limiting the total number of acres burned in unplanned ignitions.	Same as Alternative B
3007	FM-02, FM-03	Heavy equipment or actions that would cause surface disturbance would be used only after a site-specific analysis has been performed and approved. Activities that cause surface disturbance would be considered on a case-by-case basis.	Use heavy equipment or actions that would cause surface disturbance only after an evaluation has been approved by the AO and determines that such use is necessary to protect life or property.	Prohibit use of heavy equipment within 100 feet of special management areas, except to protect life or property.	Allow the use of heavy equipment or actions that would cause surface disturbance only after the AO has determined that such use is necessary to protect life or property.
3008	FM-02, FM-03	Use of chemical fire suppression agents is prohibited in rock art sites. Generally, use of chemical fire suppression agents is prohibited in special management areas, unless or until a wildland fire situation analysis is completed or activity plan for the special management areas identified chemical suppression agents as an allowable use.	Prohibit use of chemical fire suppression agents within ¼ mile of Special Designations and rock art sites and where it may adversely affect identified resources (e.g., cultural, water, soil, wildlife). Prohibit use of fire suppression chemicals, including foaming agents and surfactants, within 1,320 feet (¼ mile) of Special	Prohibit use of chemical fire suppression agents within 300 feet of Special Designations and rock art sites and where it may adversely affect identified resources (e.g., cultural, water, soil, wildlife). Prohibit use of fire suppression chemicals, including foaming agents and surfactants, within 100 feet of Special Status plant	Prohibit, except to protect life and property, use of aerial fire suppression agents within ¼ mile of Special Status plant species populations, surface water, riparian areas, and rock art sites. Prohibit, except to protect life and property, ground use of fire suppression chemicals, including foaming agents and surfactants, within 300 feet of Special Status plant

<b>Fire and Fuels Management (FM) – Wildland Fire Ecology and Management (3000-3013)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			Status plant species populations or surface water.	species populations or surface water.	species populations, surface water, riparian areas, and rock art sites.
3009	FM-03	Wildfires occurring in forested areas would be appropriately suppressed in accord with resource values threatened, as determined on a case-by-case basis.	No similar action	No similar action	No similar action (see management actions 3005 and 3006)
3010	FM-02, FM-03	Wildfires occurring in or directly threatening a developed or active timber sale would receive priority suppression control action.	Same as Alternative A	Same as Alternative A	Same as Alternative A
3011	FM-03	Prescribed fire would be restricted in areas with surface coal or other fossil fuel outcrops.	Same as Alternative A	Same as Alternative A	Prohibit prescribed fire in areas with surface coal or other fossil fuel outcrops.
3012	BR-35, BR-39, BR-32	<p>Appropriate management response to protect the basin big sagebrush/lemon scurpea plant communities will be applied.</p> <p>Wildland and prescribed fires will be managed in all vegetation types to maintain or improve biological diversity and the overall health of the public lands. In particular, plant species and age class diversity will be a priority; thus, appropriate management response for all wildland fires will be identified and implemented depending on the resources and management objectives for the area.</p> <p>Suppression techniques and hazardous fuels reduction activities will be identified to reduce wildland fire severity and occurrence on portions of the landscape where fire could cause undesirable changes in plant community composition and structure. A site-specific analysis will be prepared for sensitive resource areas, such as Special Status plant species sites, heritage sites, historic trails,</p>	Same as Alternative A	Same as Alternative A	<p>Take suppression action to protect the basin big sagebrush/lemon scurpea plant communities.</p> <p>Manage wildfires and prescribed fires in all vegetation types to maintain or improve biological diversity and the overall health of the public lands. Plant species and age class diversity will be a priority; thus, response for all wildfires will be identified and implemented depending on the resources and management objectives for the area.</p> <p>Identify suppression techniques and hazardous fuels reduction activities to reduce wildfire severity and occurrence on portions of the landscape where fire could cause undesirable changes in plant community composition and structure.</p> <p>Prepare a site-specific analysis for sensitive resource areas, such as Special Status plant species sites, cultural resources, historic trails, and ACECs, to determine the type of fire</p>

<b>Fire and Fuels Management (FM) – Wildland Fire Ecology and Management (3000-3013)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		and ACECs, to determine the type of fire suppression activity that will be acceptable. Fire equipment and fire suppression techniques, such as vegetation clearing, will be limited to existing roads and trails in Special Status plant species habitat. As appropriate, the Fire Management Plan will be updated to reflect the appropriate suppression activity in sensitive resource areas. (MD FIRE 5 <sup>2</sup> )			suppression activity that will be acceptable.  Limit fire equipment and fire suppression techniques, such as vegetation clearing, to designated roads and trails in Special Status plant species habitat. Update the Fire Management Plan, as appropriate, to reflect the appropriate suppression activity in sensitive resource areas.
3013	FM-02, FM-03	Non-commercial timber stands may be included in prescribed fire activities. Standard management practices such as pile and broadcast burning may be permitted in all forested areas.	Same as Alternative A	Same as Alternative A	Non-commercial timber stands may be included for fuel treatment activities. Standard management practices such as pile and broadcast burning may be permitted in forested areas.

<b>Biological Resources (BR) - Forest and Woodlands (4000-4024)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals:</b>					
BR-01: Manage forest and woodland communities for health, composition, structure, and diversity through forest management practices to provide a range of seral classes across the landscape that would provide for multiple use, including the harvesting of forest and woodland products.					
BR-02: Manage forest and woodland health to protect and/or improve watershed values.					
BR-03: Maintain, restore, and enhance forest stands to supply forest products to the public consistent with forest health, landscape restoration, and reduction of forest fuels objectives.					
BR-04: Promote aspen regeneration using a variety of vegetation treatments and natural processes within the planning area.					
BR-48: Maintain and protect unique populations of trees for their ecological, scientific, and cultural values.					
4000	BR-01	Vegetation management and timber sale activities will be conducted in accordance with the Wyoming Forestry BMPs - Water Quality Protection Guidelines handbook.			
4001	BR-01	Cooperate with adjoining private, state, and other federal forest and woodland managers to promote healthy forest and woodlands.			
4002	BR-01, BR-03	Use inventory and monitoring data to identify areas of fuel overloading within forest and woodland communities.			



<b>Biological Resources (BR) - Forest and Woodlands (4000-4024)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
4003	BR-02, BR-43, LR-11	Noncommercial forest lands (woodlands) would be managed to optimize cover and enhance habitat for wildlife, protect soil and watershed values, and complement recreation uses.	Manage forests and woodlands to improve vegetative health and for the benefit of other resources. Use natural processes to the greatest extent possible.	Manage forest and woodland health across the landscape to provide forest and woodland products to the public. Use all available treatment methods.	Manage forest and woodland health across the landscape to improve vegetative health while providing forest and woodland products to the public. Use all available treatment methods and natural processes.
4004	BR-01, BR-03	The planning area is divided into four timber compartments for timber management: Wind River Front, Pine Mountain, Little Mountain, and Hickey Mountain-Table Mountain.	See management action 4003	See management action 4003	See management action 4003
4005	BR-01, BR-09, BR-16	Hickey Mountain-Table Mountain would be managed as described in the woodland prescriptions.	See management action 4003	See management action 4003	See management action 4003
4006	BR-03, BR-02, BR-16	The Wind River Front is a restricted forest management area where forest resources would be managed for commercial forest values, to improve the health, vigor, and diversity of forest stands, and still give full consideration to other resource values such as watershed, wildlife, minerals, recreation, and scenic values.	See management action 4003	See management action 4003	See management action 4003
4007	BR-16, BR-04, BR-09	Pine and Little Mountain areas would be managed to enhance other resources, and activities would be designed to benefit these other resource uses. Priority for timber harvesting would be given to mature, decadent, and diseased trees.	See management action 4003	See management action 4003	See management action 4003
4008	BR-16, BR-01, BR-09	The major consideration for timber harvesting in the Wind River Front is to improve the condition of the forest stand with emphasis on meeting wildlife habitat needs. The major consideration for harvesting in other areas is to provide watershed stability and habitat for wildlife needs. Soil, watershed, and	See management action 4003	See management action 4003	See management action 4003

<b>Biological Resources (BR) - Forest and Woodlands (4000-4024)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		wildlife cover are important considerations. Timber stand conditions and management considerations would dictate harvest methods and size and shape of units.			
4009	BR-01, BR-16, BR-19	Habitat fragmentation would be prevented if it has negative ecological effect.	See management action 4003	See management action 4003	See management action 4003
4010	BR-01, BR-03	Where possible, and within RMP objectives, timber compartments (commercial and woodland forest lands) would be managed to meet the local demand for minor forest products (e.g., fuelwood, posts and poles, wildlings, and Christmas trees).	Allow the sale of small vegetative permits to meet public demand for posts and poles, firewood, sawlogs, Christmas trees, burlwood, and other vegetative products and to meet forest health objectives and wildlife habitat requirements.	Allow the sale of small vegetative permits to meet public demand for posts and poles, firewood, sawlogs, Christmas trees, burlwood and other vegetative products.	Permit, on a case-by-case basis, the collection/harvest of other forest products (e.g., posts and poles, firewood, sawlogs, Christmas trees, burlwood, etc.) to meet public demand, forest health objectives, and wildlife habitat requirements.
4011	BR-01, BR-03	Cutting methods include, but are not limited to, clear cutting, individual tree marking, shelter wood, thinning, and group selection. Individual clear-cut units would not exceed 25 acres in size unless a site-specific analysis indicates RMP resource objectives would be met with a larger clear-cut unit size. All clear-cut design and planning would consider other resource value such as escape cover for wildlife. Clear-cut unit size and shape would be designed to maximize natural regeneration and edge effect for wildlife.	Prohibit clear-cuts and harvest methods that create clear-cuts.	Authorize clear-cuts within the following parameters: <ul style="list-style-type: none"> <li>• Could be of any size.</li> <li>• Limit ground based logging systems to a maximum of 45% slope; any slope greater than 45% could be logged with cable systems or by helicopter.</li> </ul>	Same as Alternative A
4012	BR-01, BR-36, PR-09	Clearcutting is not allowed within 100 feet of drainages or standing and flowing waters. Other logging activity, such as thinning or cable logging, could occur within the 100-foot zone if other resource values would not be adversely affected.	Same as Alternative A	Allow clearcutting and other logging activity within 100 feet of riparian areas and standing or flowing waters.	Same as Alternative A
4013	BR-01, BR-37, BR-24	Timber harvesting activities would be restricted seasonally, as appropriate, to protect big game	Same as Alternative A	Same as Alternative A	Restrict timber harvesting activities seasonally as directed in actions 4421 and 4428 for big game

<b>Biological Resources (BR) - Forest and Woodlands (4000-4024)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		wintering and parturition activity, grouse (sage, sharptail, etc.) strutting and nesting, and raptor nesting activity. Approximately 1,436 acres of commercial timber within big game winter ranges are closed to logging activity, usually from November 15 to April 30. If the logging unit encompasses big game parturition habitats, the area is closed to timber harvest activities usually from May 1 through June 30. There would be no logging activity within grouse nesting sites and raptor nesting sites usually from February 1 to July 31 (See Minerals management). Exceptions may be approved if conditions described in Appendix B apply.			. Exceptionsto these seasonal restrictions may be approved after application of Exception/Waiver/Modification criteria contained in Appendix B.
4014	PR-05, BR-01, PR-07	Logging operations on slopes steeper than 45% would be limited to technologically, environmentally, and economically acceptable methods such as cable yarding and/or horse skidding.	Limit logging operations on slopes steeper than 25% to technologically, environmentally, and economically acceptable methods.	Limit logging operations on slopes steeper than 45% to technologically, environmentally, and economically acceptable methods.	Same as Alternative B
4015	BR-01, FM-01, BR-16	Slash disposal would be tailored to the individual harvest unit to promote reforestation, minimize erosion, and allow big game movement. Methods could include broadcast burning, piling and burning, lopping and scattering, chipping, and roller chopping.	Make slash resulting from timber harvesting available for biomass, piled or lopped and scattered, roller chopped, or burned to provide watershed protection, promote reforestation and reclamation, provide nutrient recycling, and improve wildlife habitat.	Same as Alternative A	Same as Alternative A
4016	BR-01, BR-03, BR-04	Stand replacement of harvested areas or areas denuded by natural causes would be revegetated with tree seedlings within 5 to 15 years (fully stocked).	Leave harvested areas and areas denuded by natural causes to revegetate naturally.	Implement, on a case-by-case basis, forest and woodland replanting as soon as possible after sale, vegetative treatment, or fire to more effectively sustain commodity production.	Complete revegetation surveys following harvest, vegetative treatment, or fire. In areas where natural regeneration fails to self-establish within five years, replant forests and woodlands to more effectively sustain commodity production and to support ecological health and function.

<b>Biological Resources (BR) - Forest and Woodlands (4000-4024)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
4017	BR-01, BR-04, FM-01	Commercial conifer stands would be managed under the guidelines for suppression of wildfires.	Use natural processes to revitalize decadent stands, improve stand density, and increase canopy cover.	Use logging or timbering before wildfire and other natural processes to revitalize decadent stands, improve stand density, and increase canopy cover.	Use best available methods to revitalize decadent stands; managing stand density, and canopy cover according to silvicultural best practices and individual stand objectives.
4018	BR-01, BR-08	Special management areas (old growth, scientific research areas) would be identified and appropriate management incorporated into activity plans.	Same as Alternative A	No similar action	Identify special management areas and incorporate appropriate management into activity plans. Examples of such special tree populations include: The Douglas fir on Pine Butte, the northern most extent of Colorado Pinon Pine located in Wild Horse Basin, old growth Juniper stands, and the isolated alpine woodland community on top of Black Mountain at Pine Springs.
4019	BR-01	No similar action	Permit firewood cutting of dead standing or downed forest timber in designated cutting areas.	Prohibit firewood cutting in the planning area.	Same as Alternative B
<b>Juniper, Aspen, and Limber Pine</b>					
4020	BR-01, BR-02, BR-03	Woodland forests areas would be managed using silvicultural practices that promote stand viability. Treatments could include thinning, harvesting, chaining, and burning. The vegetative material resulting from these treatments would normally be sold through public demand sales.	Manage woodland forests to improve vegetative health and for the benefit of other resources. Use natural processes to the greatest extent possible. Prohibit pre-commercial thinning except for fuels treatment.	Manage woodland forests to maintain and improve forest health across the forested landscape and to provide forest products to the public. Use all available treatment methods. Allow pre-commercial thinning in overstocked areas and regenerated timber sale areas when trees in those areas reach the 20- to 30-year age class.	Manage woodland forests to maintain and improve forest health across the forested landscape and to provide forest products to the public. Use all available treatment methods. Encourage pre-commercial thinning in overstocked areas and regenerated timber sale areas when trees in those areas reach the 10- to 30-year age class.
4021	BR-01, BR-03, BR-04	Woodland forest acreage would be maintained. Treatments may be implemented that influence successional stages, but such treatments would not permanently convert the areas to another vegetation type. Old aspen stands may be replaced by stands of sprouting aspen by various treatment methods (e.g., burning).	See management action 4020	See management action 4020	See management action 4020

<b>Biological Resources (BR) - Forest and Woodlands (4000-4024)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		Old decadent trees may be left standing or downed to provide cover or other habitat for wildlife (e.g., Animal Inn), and juniper stands may be replaced where they are encroaching into other vegetation types.			
4022	BR-01, BR-02, BR-16	Silvicultural treatments in mature timber stands would be designed to improve wildlife habitat and watershed condition, i.e., create small openings to provide forage for wildlife and accumulate snow drifts to increase moisture.	See management action 4020	See management action 4020	See management action 4020
4023	BR-01, BR-03, BR-06	Cottonwood trees are not available for any harvesting.	Same as Alternative A	Make cottonwood trees available for harvesting on a case-by-case basis.	Allow harvesting of cottonwood trees on a case-by-case basis.
4024	BR-01, BR-03, BR-08	In the JMH planning area, management of conifer and aspen communities in the JMH planning area would be designed to promote forest and woodland health. Old, decadent trees may be left standing or downed to provide cover or other habitat for wildlife.	Design management of conifer and aspen communities to promote forest and woodland health. Old, decadent trees could be left standing or downed to provide cover or other habitat for wildlife.	No similar action	Same as Alternative B

<b>Biological Resources (BR) - Vegetation - Grassland and Shrubland Communities (4100-4112)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
Goals:					
BR-05: Manage vegetation communities to restore, maintain, or enhance native vegetation composition and diversity.					
BR-06: Provide a mix of natural successional stages for each vegetation type that incorporates community health, diverse structure, and composition.					
BR-07: Maintain, improve, enhance, or restore habitat to facilitate the conservation, recovery, and maintenance of populations of native plant species.					
BR-08: Maintain, improve, or enhance areas of ecological importance, priority plant species and habitats, and unique plant communities.					
BR-09: Maintain, improve, or enhance sustainable forage levels for all grazing/browsing animals depending upon identified desired plant communities.					
BR-10: Manage grazing/browsing use levels in consideration of plant, riparian-wetland, and soil health requirements.					
4100	BR-05	Manage vegetation using the best available science-based assessment and modeling information (e.g. Lidar) in coordination with such sources as Wyoming Landscape Conservation Initiative (WLCI) and utilizing state and local expertise.			

<b>Biological Resources (BR) - Vegetation - Grassland and Shrubland Communities (4100-4112)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
4101	BR-05, BR-06, BR-07	Establish desired plant community objectives for upland and riparian areas for the planning area through individual site-specific activity and implementation planning and as updated ecological site inventory data become available. All activity and implementation plans would incorporate desired plant community objectives.			
4102	BR-05, BR-06, BR-07	Native plant communities are the preferred species identified when establishing desired plant community objectives (see Riparian Vegetation Guidelines for additional guidance).	Use native plant species when establishing desired plant community objectives.	Accept native and approved non-native plant species when establishing desired plant community objectives.	Native plant communities are the preferred species when establishing desired plant community objectives.
4103	BR-05, BR-06, BR-07	Prescribed fire would generally be the preferred method of vegetation manipulation to convert stands of brush to grasslands and to promote regeneration of aspen stands and/or shrub species. Low intensity burns during periods of high soil moisture would be the preferred methods/times in mountain shrub communities.	Use naturally occurring wildfires, prescribed fire, and biological treatments to meet vegetation management objectives or to protect and enhance crucial and sensitive wildlife habitats.	Use naturally occurring wildfires, prescribed fire, chemical treatments, biological treatments, mechanical methods, and livestock grazing to meet vegetation management objectives.	Same as Alternative C
4104	BR-05, BR-06, BR-07	Prescribed burns generally will be conducted in areas having greater than 35% sagebrush composition, 20% desirable grass composition, and greater than 10 inches of precipitation. Other vegetation manipulation methods will be considered on a case-by-case basis depending on objectives and cost benefits.	See management action 4103	See management action 4103	See management action 4103
4105	BR-05, BR-06, BR-07	Prescribed fire is the preferred method of vegetation manipulation, and spring burns are preferred to regenerate shrubs. Chemical treatment would be used only where national guidelines can be exercised to prevent unwanted effects or harm to desirable fauna or flora and to prevent transportation of chemicals to other areas by water or air movement.	See management action 4103	See management action 4103	See management action 4103
4106	BR-01, BR-04, BR-16	Aspen and juniper stands would be open to prescribed fire activities to	See management action 4103	See management action 4103	See management action 4103

<b>Biological Resources (BR) - Vegetation - Grassland and Shrubland Communities (4100-4112)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		enhance watershed and wildlife values.			
4107	BR-05, BR-06, BR-16	Prescribed burns may be conducted in crucial big game winter ranges if habitat values would be improved for these species.	See management action 4103	See management action 4103	See management action 4103
4108	BR-05, BR-06, BR-16	Use mechanical, chemical, and biological methods, (e.g., fire, livestock grazing, etc.) to achieve desirable vegetation communities.	See management action 4103	See management action 4103	See management action 4103
4109	BR-09, BR-10, BR-16	Approximately 26,700 acres of vegetative treatment would be designed to increase forage, while about 41,000 acres would primarily be designed to improve wildlife habitat. Treatment methods available include mechanical, biological, chemical, and prescribed fire.	No similar action	No similar action	No similar action
4110	BR-05, BR-09, FM-01	Vegetation manipulation projects would be conducted to reach multiple use objectives and would involve site-specific environmental analysis and coordination. Funds for vegetation manipulation in I category allotments would be provided by the BLM, other state or federal agencies, and private sources.	Design vegetation treatments to improve ecosystem health and improve Fire Regime Condition Class across the landscape.	Design vegetation treatments to increase resource use.	No similar action
4111	BR-05, BR-07, BR-09	all treated areas would berested a minimum of two growing seasons from livestock grazing. Burn areas would be fenced from livestock and big game animals if necessary.	rest all treated areas a minimum of five growing seasonsfrom livestock grazing.	rest areas treated with prescribed fire a minimum of two growing seasons from livestock grazing. Areas with other types of treatments would not be required to be rested.	Adapt management of treated areas, using a site-specific analysis of contributing factors, if not meeting or making significant progress toward vegetation objectives.

<b>Biological Resources (BR) - Vegetation - Grassland and Shrubland Communities (4100-4112)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
4112	BR-05, BR-37, PR-11	Vegetation treatment projects would be designed to protect water quality and dissipate erosion. This generally means accomplishing vegetation treatments in a mosaic pattern and leaving sufficient untreated vegetation to buffer riparian areas and intermittent and ephemeral drainages from erosion. Specific treatment designs for erosion control would be determined on a case-by-case basis.	Design vegetation treatment projects to improve water quality and reduce erosion by dissipating erosive energies.	Design vegetation treatment projects to maintain water quality and reduce erosion by dissipating erosive energies.	Design vegetation treatment projects to maintain or improve water quality and reduce erosion by dissipating erosive energies.

<b>Biological Resources (BR) - Invasive Species and Pest Management (4200-4213)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals:</b>					
BR-11: Control the introduction and proliferation of noxious weeds and other invasive species and reduce established populations to acceptable levels determined through cooperation, consultation, and coordination with local, state, and other federal plans, policies, and agency agreements.					
BR-12: Prevent introduction and establishment of invasive or nuisance species and eliminate threats from those species (aquatic and terrestrial).					
BR-13: Eliminate threats to sensitive fish from non-native fish species.					
BR-14: Prevent the spread of fish diseases from trans-basin transfer of water or from other vectors.					
4200	BR-11, BR-12	The BLM would support and cooperate with local efforts to manage and control invasive plant species or noxious weeds, including local plans and control efforts. The BLM would collaborate with weed and pest districts in the treatment of noxious weeds or invasive species.			
4201	BR-05, BR-11, BR-12	Manage for healthy native plant communities by reducing, preventing expansion of, or eliminating the occurrence of noxious weeds and other invasive species by implementing management actions consistent with national guidance and state and local weed management plans.			
4202	BR-11, BR-12	Manage noxious weeds and invasive species (e.g., cheatgrass, halogeton, tamarisk, Russian olive) using an Integrated Pest Management approach for the detection, control, and eradication of new infestations.			
4203	BR-11, BR-12	Maintain adequate baseline information regarding the extent and control of noxious weeds and other invasive species to make informed decisions, evaluate effectiveness of management actions, and assess progress toward goals to improve invasive species management.			
4204	BR-11	Use efficient, established monitoring methodology to measure the success of habitat reclamation, enhancement, and restoration.			
4205	BR-11	Apply pesticides and herbicides in a manner compatible with fish, wildlife, and associated habitat health.			
4206	BR-11	Coordinate with other agencies who manage native and non-native species.			



### Biological Resources (BR) - Invasive Species and Pest Management (4200-4213)

MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
4207	BR-11, BR-12, BR-05	In the JMH planning area, an invasive species is one that is non-native to a particular ecosystem and its introduction is likely to cause harm to the economy, environment, or human health. Federal agencies are directed under EO 13112 to expand and coordinate efforts to prevent the introduction and spread of invasive species. Preventing the introduction and proliferation of invasive species would be accomplished through close monitoring and containment of infestations and through implementation of BMPs for all surface disturbing activities (Appendix A). Public education regarding invasive species and the means to address them would also be promoted.	Promote public education regarding invasive species and the means to address them.  Use monitoring, BMPs (Appendix A), eradication, seeding, and containment of noxious weeds and invasive plant species for all activities.  Limit control of noxious weeds and other invasive plant species to mechanical and biological methods.	Promote public education regarding invasive species and the means to address them.  Use (on a case-by-case basis) monitoring, BMPs (Appendix A), mitigation, eradication, seeding, and containment of noxious weeds and invasive plant species in areas of high potential for infestations.  Achieve control of noxious weeds and other invasive plant species through chemical, mechanical, and biological methods.	Promote public education regarding invasive species and the means to address them.  Use Integrated Pest Management Techniques and BMPs (Appendix A) for all activities to control and prevent the introduction, establishment, and spread of noxious weeds and other invasive species.
4208	BR-11, BR-12, BR-24	No similar action	Adopt and support the objectives, strategies and actions listed in the Wyoming Aquatic Invasive Species Management Plan or as updated/ revised (WGFD, 2010).	No similar action	Same as Alternative B
4209	BR-14, BR-12, BR-13	No similar action	Prohibit actions involving the transfer of water from watersheds with aquatic invasive species or fish diseases to other waters.	No similar action	Prohibit, except to protect life and property, and to prevent the spread of aquatic invasive species, the movement of water from one fourth level (eight-digit Hydrological Unit Code) watershed to another fourth level (eight-digit Hydrological Unit Code) watershed. If movement of water has occurred, WGFD will be contacted so that they can begin a monitoring program.
4210	BR-12, BR-14, BR-16	No similar action	Prohibit equipment, including that used for fire suppression, to transfer water from watersheds with aquatic invasive species or fish diseases to other waters. Inspect, clean or decontaminate	No similar action	Inspect, clean or decontaminate fire suppression equipment before coming into, or within, the RSFO from areas containing aquatic invasive species, fish diseases, and noxious weeds and other invasive species.

<b>Biological Resources (BR) - Invasive Species and Pest Management (4200-4213)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			fire suppression vehicles before coming into, or within, the RSFO from areas containing aquatic invasive species, noxious weeds, and other invasive species.		
4211	BR-12, BR-16, BR-17	The JMH CAP planning area would be designated as a "restricted control area" for animal control in coordination with Animal and Plant Health Inspection Service—Wildlife Services (APHIS-WS). Restricted control areas are public land areas where animal damage management may be planned, but control activities may be limited to certain methods or times of the year to achieve management objectives. Emphasis would be placed on non-lethal methods. Control techniques and methods would be discussed at the annual management meeting between the BLM and APHIS-WS.	Designate, in coordination with APHIS-WS, the entire planning area as a "restricted control area" for animal control. Animal damage management may be planned, but control activities may be limited to certain methods or times of the year to achieve management objectives. Emphasize non-lethal methods.  Discuss control techniques and methods at the annual management meeting between the BLM and APHIS-WS.	Designate, in coordination with APHIS-WS, the JMH Coordinated Activity planning area as a "restricted control area" for animal control.  Discuss and consider control techniques and methods for the remainder of the planning area at the annual management meeting between the BLM and APHIS-WS.	Same as Alternative C
4212	BR-11, BR-28, BR-30	No similar action	Prohibit aerial application of chemicals within 2,640 feet (½ mile) of wetlands, riparian areas, aquatic habitats, and Special Status plants.  Apply chemicals in accordance with label requirements.  Exceptions could be applied to manage riparian weed species.	Prohibit aerial application of chemicals within 100 feet of wetlands, riparian areas, aquatic habitats, and Special Status plants.  Apply chemicals in accordance with label requirements.  Exceptions could be applied to manage riparian weed species.	Prohibit aerial application of chemicals within 1,320 feet (¼ mile) of wetlands, riparian areas, aquatic habitats, and Special Status plants. Consider exceptions on a case-by-case basis to manage riparian weed species.  Apply chemicals in accordance with label requirements.
4213	BR-11, BR-28, BR-30	No similar action	Prohibit vehicle and hand application of chemicals within 1,320 feet (¼ mile) of wetlands, riparian areas, aquatic habitats, and Special Status plants.  Apply chemicals in accordance with label requirements.  Exceptions could be applied to manage riparian weed species.	Prohibit vehicle and hand application of chemicals within 25 feet (by vehicle) or 10 feet (by hand) of wetlands, riparian areas, aquatic habitats, and Special Status plants.  Apply chemicals in accordance with label requirements.  Exceptions could be applied to manage riparian weed species.	Prohibit vehicle and hand application of chemicals within 25 feet (by vehicle) or 10 feet (by hand) of wetlands, riparian areas, aquatic habitats, and Special Status plants. Consider exceptions on a case-by-case basis to manage riparian weed species.  Apply chemicals in accordance with label requirements.

<b>Biological Resources (BR) – Riparian and Wetland Resources (4300-4303)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goal:</b>					
BR-15: Achieve and/or maintain PFC as a minimum condition within riparian areas.					
4300	BR-15, BR-06, BR-10, BR-22.1, BR-24, BR-31.1	Riparian habitat in PFC is the minimum acceptable status or level within the Green River Resource Area. Under this Green River RMP, 75% of the riparian areas should, within 10 years, have activity and implementation plans in various states of implementation that would allow riparian areas to achieve or maintain PFC.	Achieve PFC and/or maintained as a minimum standard on all riparian and wetland areas. Address wetland and riparian areas that show a negative trend and/or do not achieve PFC in activity or other management plans to move these areas to PFC. Manage all riparian areas for late successional stage vegetation or potential natural community. All riparian areas should, within five years, have activity or other management plans in various states of implementation that would allow riparian areas to achieve these objectives.	Achieve PFC and/or maintained as a minimum standard on all riparian and wetland areas. Address wetland and riparian areas that show a negative trend and/or do not achieve PFC in activity or other management plans to move these areas to Proper Functioning Condition. All riparian areas should, within 10 years, have activity or other management plans in various states of implementation that would allow riparian areas to achieve these objectives.	Manage all riparian/wetland areas and streams to meet or make significant progress toward meeting the Wyoming Land Health Standards. Give priority to those areas that are functioning at risk with a downward trend or in non-functioning condition. All riparian areas not meeting or making significant progress toward meeting the Wyoming Land Health Standards should, within 10 years, have activity or other management plans in various states of implementation that would allow riparian objective to achieve, or make significant progress toward achieving, the Wyoming Land Health Standards.
4301	BR-15, BR-05, BR-10, BR-22.1, BR-24, BR-31.1	Management toward PFC or desired future condition of riparian areas would be implemented (see discussions in Livestock Grazing Management, in Vegetation Management, and Appendix G). EO 11990 for the protection of wetlands would apply.	See management action 4300	See management action 4300	See management action 4300
4302	BR-15, BR-06, BR-08, BR-22.1, BR-24, BR-31.1	Riparian habitat would be maintained, improved, or restored to provide wildlife and fish habitat, improve water quality, and enhance forage conditions.	Maintain, improve, or restore riparian habitat to provide wildlife and fish habitat, improve water quality, and enhance forage conditions.	Maintain riparian areas to provide wildlife and fish habitat, improve water quality, and enhance forage conditions.	Maintain, improve, or restore riparian habitat to provide wildlife and fish habitat, improve water quality, and enhance forage conditions.
4303	BR-11, BR-12, BR-13, BR-14	Where possible, acquisition of additional riparian area acreage would be pursued to enhance riparian area management.	Pursue, where possible, acquisition of additional riparian area acreage to enhance riparian area management.	No similar action	Pursue, where possible, acquisition of additional riparian area acreage to enhance riparian area management.

<b>Biological Resources (BR) – Riparian and Wetland Resources (4300-4303)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			Aquatic, wetland, and riparian habitat would not be suitable for disposal.		

<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals and Objectives:</b>					
BR-16: Manage for the biological integrity of terrestrial and aquatic ecosystems to maintain or enhance fish and wildlife habitat.					
BR-17: Manage for the biological integrity and habitat function of terrestrial and aquatic ecosystems to sustain, enhance, and/or optimize distribution and abundance of all native, desirable non-native, and Special Status Species consistent with habitat capability.					
BR-18: Conserve and enhance habitats at the ecosystem or landscape scale sufficient to support functioning habitat to meet WGFD terrestrial and aquatic wildlife objectives, WGFD's Strategic Habitat Plan, State Wildlife Action Plan, WGFD's Ungulate Migration Strategy Plan, and strategic population plans.					
BR-19: Maintain and restore connectivity between important seasonal ranges and life stage habitats. Maintain functioning terrestrial and aquatic habitats, migration corridors, and fish passages that allow free movement.					
BR-20: Maintain and/or improve habitat quality and quantity to ensure the continued viability of sensitive habitats. Manage areas of sensitive resources for no net loss of crucial habitats or function of these important habitats, in consideration of other RMP objectives.					
BR-21: Maintain current and historic raptor habitats within the planning area to ensure long-term species sustainability and widely distributed functioning habitats in accordance with the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act (1940).					
BR-22: Maintain, restore, and/or enhance fisheries habitats in the planning area so they achieve stable stream conditions with hydrologically stable and resilient channel shape. Riparian habitats would be managed to promote healthy vegetative structure to achieve optimum conditions for desired aquatic wildlife populations.					
BR-22.1: Provide suitable habitat to support the goals and objectives of the Conservation Agreements and Strategies (CAS) for Colorado River cutthroat trout in the states of Colorado, Utah, and Wyoming and for the "3-Species" roundtail chub, flannelmouth sucker, and bluehead sucker.					
BR-23: Provide quality habitats to support introduction, reintroduction, augmentation, etc. of desirable priority aquatic and terrestrial wildlife species on public lands in the planning area.					
BR-24: Manage environmental risks and associated impacts in a manner compatible with sustaining plant, fish, and wildlife populations and habitats.					
BR-25: Manage habitat to support long-term recreational and educational benefits and opportunities for the public.					
BR-26: Provide for consumptive and non-consumptive wildlife and fisheries resource uses and activities on public lands.					
BR-49: Manage in accordance with the recommendation of the statewide Bighorn/Domestic Sheep Interaction Report as updated as state statute.					
<b>General Wildlife</b>					
4400	BR-25, BR-26	Cooperate with the WGFD to recommend adjustments to herd objectives based upon habitat condition trends and recommend wildlife use adjustments if monitoring data indicate adjustments are necessary.			
4401	BR-18, BR-33	Maintain, restore, and/or enhance fish and wildlife habitat, and habitat functionality. Consider all mitigation options when developing mitigation for project-level activities for terrestrial and aquatic wildlife and Special Status Species habitats.			
4402	BR-16, BR-33, BR-41	Coordinate management of aquatic and terrestrial wildlife species and their habitat.	No similar action	No similar action	No similar action (see Management Actions Common to All Resource Programs section)

<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
4403	BR-38	The BLM would cooperate with the WGFD in preparation of studies for the introduction and re-introduction of native and non-native wildlife and fish species.	No similar action	No similar action	No similar action
4404	BR-16, BR-20, BR-24	High value wildlife habitats would be maintained or improved by reducing habitat loss or alteration and by applying appropriate distance and seasonal restrictions and rehabilitation standards to all appropriate activities. These habitats include crucial winter habitat, parturition areas, sensitive fisheries habitat, etc.	Prevent or reduce habitat loss or alteration by applying appropriate surface use and seasonal restrictions and rehabilitation standards to all appropriate activities (Table 2-4, Appendix V) to protect or improve wildlife habitats.	Apply seasonal restrictions to all appropriate activities (Table 2-4, Appendix V) to maintain high priority wildlife habitats.	No similar action (distance and seasonal restrictions are detailed in the following management actions: 2207, 4419 to 4427, and 4435)
4405	BR-16, BR-24	In the JMH planning area, seasonal limitations for wildlife habitat would be applied as necessary to protect sensitive wildlife areas from development and/or disruptive activities during sensitive time periods in animals' life cycles, such as nesting, birthing, and wintering. Wildlife seasonal stipulations would not close an area to development but would protect wildlife species if weather or other habitat needs dictate that it is necessary (Appendix B). The BLM Authorized Officer may decide to grant or not grant exceptions to seasonal limitations based on recommendations from the wildlife biologist, in coordination with the WGFD. Criteria for exceptions are outlined in Appendix B.	See management action 4404	See management action 4404	See management action 4404
4406	LR-01, LR-04, PR-06, BR-24	Aquatic, wetland, and riparian habitat would not be suitable for disposal unless opportunities exist for land exchanges of equal or greater value (including monetary and functional resource values).	Aquatic, wetland, and riparian habitat would not be suitable for disposal. Consider acquiring additional lands along perennial waters and wetlands (Appendix K).	Aquatic, wetland, and riparian habitat would be suitable for disposal by any method.	Restrict land exchanges of aquatic, wetland, and riparian habitat only for land of equal or better ecological/functional resource value as determined by the BLM. Acquire, on a case-by-case basis, additional land along perennial water

<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		The BLM would consider acquiring additional lands along perennial waters and wetlands (Appendix K). Water rights for BLM water developments would be pursued as appropriate.			and wetlands (Appendix K) to enhance riparian area management. Pursue water rights for BLM water developments on a case-by-case basis.
4407	BR-20, BR-19	No similar action	Maintain and improve habitat quantity and quality for migratory bird species of conservation concern to prevent, avoid, reduce, and/or mitigate adverse impacts to the extent feasible, and in a manner consistent with regional or statewide bird conservation priorities.	Maintain habitat quantity and quality for migratory bird species of conservation concern to avoid, reduce, or mitigate adverse impacts to the extent feasible, and in a manner consistent with regional or statewide bird conservation priorities.	Maintain or improve habitat quantity, functionality, and quality, on a case-by case basis, for migratory bird species of conservation concern consistent with regional or statewide bird conservation priorities.  Require, on a case-by-case basis, pre-construction surveys by a qualified biologist for any project proposed to be implemented during the migratory bird nesting season, generally February 1 through August 31. If active/occupied nests are identified, construction activities in the immediate area will be halted, until it is determined that the nest is no longer active/occupied, due to events such as fledging, nest predation, or nest abandonment.
4408	BR-16, BR-10	Livestock and wild horse water developments in crucial habitat could be allowed if they conform with wildlife objectives and do not result in adverse impacts to the crucial habitat.	Consider water developments only if wildlife habitat and resource conditions would be improved or maintained.	Allow water developments where needed.	Allow water developments in big game crucial winter range and parturition areas on a case-by-case basis subject to adequate mitigation of impacts following BLM mitigation policies.
4409	BR-16, BR-10	The cooperative management agreement with the WGFD for annual monitoring, maintenance, and the development of additional waters would continue as needed. Livestock water developments would be modified or protected where possible to enhance wildlife habitat and to maintain or enhance water quality.	See management action 4408	See management action 4408	See management action 4408
4410	BR-16, BR-10	In the JMH planning areas, wildlife water developments would be	See management action 4408	See management action 4408	See management action 4408

<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		considered on a case-by-case basis to maintain or improve wildlife habitat and resource conditions.			
4411	BR-16, BR-17, BR-20	Needed special management and riparian management exclusions would be developed and/or maintained, and exclusion plans would be implemented for enhancement of wildlife habitat. Exclusions are closed to livestock grazing use and no animal unit months (AUM) in these areas would be available for livestock use.	Develop and/or maintain special management and riparian management exclusions for enhancement of wildlife habitat and other resource objectives. Implement exclusion plans.	Special management and riparian management exclusions would not be developed. Make existing exclusions available to livestock grazing where appropriate.	Allow development and/or maintenance of special management and riparian management exclusions, subject to adequate mitigation of impacts following BLM mitigation policies.  Review existing exclusions, and if they are providing intended function, create and implement exclusion plans. If they are not providing intended function, determine if changes can be made, or if they should be removed.
4412	BR-11, BR-24, BR-35	The BLM would continue to coordinate and to annually review with APHIS-WS their annual wildlife damage management plan for animal damage control activities on public lands. Areas where proposed animal damage control activities (all or specific methods) are not compatible with BLM planning and management prescriptions or objectives for other resource activities and users, would be identified on a case-by-case basis, and APHIS-WS would be requested to amend or adjust proposed animal damage control activities accordingly.	Continue to coordinate and review with APHIS-WS their annual wildlife damage management plan for animal damage control activities on public lands. Identify, on a case-by-case basis, areas where proposed animal damage control activities (all or specific methods) are not compatible with BLM planning and management prescriptions or objectives for other resource activities and users. Request APHIS-WS amend or adjust proposed animal damage control activities accordingly. Allow animal damage control on BLM land only if it would benefit Special Status Species or is needed for valid safety concerns.	Continue to coordinate and review with APHIS-WS and county pest control, their annual wildlife damage management plan for animal damage control activities on public lands to benefit resource use and wildlife. Identify, on a case-by-case basis, areas where proposed animal damage control activities (all or specific methods) are not compatible with BLM planning and management prescriptions or objectives for other resource activities and users. Request APHIS-WS and county pest control to amend or adjust proposed animal damage control activities accordingly.	Same as Alternative A
4413	BR-16, BR-17, BR-25	Habitat management plans would be developed, where needed, particularly for highly developed and disturbed areas to mitigate wildlife habitat losses. Plans could include habitat expansion efforts, threatened and endangered	Develop habitat management plans (HMP) in high-priority wildlife habitat areas. These areas include WLCI Focus areas, WGFD Strategic Habitat Plan and State Wildlife Action Plan areas and	No similar action	Develop HMPs if a need is identified. Consider areas included in the WGFD Strategic Habitat Plan and State Wildlife Action Plan and other areas to mitigate wildlife habitat and habitat functionality losses.

<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		species reintroduction, and population goals and objectives. Such actions as preparing transportation plans and reclaiming roads, seeding, vegetation enhancement (vegetation treatments, fencing), water developments, and reclamation actions to reduce the amount of disturbance, would be considered. Areas identified for consideration of such plans include but are not limited to the Little Colorado Desert (including the Fontenelle II and Blue Forest units), Nitchie Gulch, Wamsutter Arch, Patrick Draw, and Cedar Canyon areas.	other areas to mitigate wildlife habitat losses.		
4414	BR-16, BR-17, BR-25	In the JMH planning area, HMPs would be prepared as needed to meet area management objectives. An HMP identifies management actions to be implemented to achieve specific objectives related to land use planning decisions. An HMP focuses on priority species and their habitats; therefore, the plan is generally limited to a specific geographic area. Plans include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives (in coordination with the WGFD). These plans would guide the BLM in managing and rehabilitating wildlife habitat in site-specific locations within the planning area. To the extent possible, suitable wildlife habitat and forage would be provided to support the WGFD Strategic Plan objectives (MOU WY-131). Changes in the WGFD planning objective levels would be considered based on habitat	See management action 4413	See management action 4413	See management action 4413



<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		capability, availability, and site-specific analysis.			
4415	BR-16, BR-24	In the JMH planning area, crucial winter range or sensitive habitats (such as birthing areas, the connectivity area (migration corridor), nesting sites, Greater Sage-Grouse breeding habitats and winter concentration areas, and sensitive fisheries habitats) would be managed (Maps 9 and 10) by maintaining habitat or reducing habitat loss or alteration, improving habitat where possible, and applying appropriate mitigation requirements (e.g., distance and seasonal limitations and rehabilitation) to all appropriate activities. Exceptions can be provided on a case-by-case basis should exception criteria (Appendix B) be met. See also the Surface Use Activities section of the JMH CAP for actions relating to surface disturbing and disruptive activities.	No similar action. See BR-16 thru 26, & 41. See MAs 4418, 4421, & 4425 thru 4427.	No similar action. See BR-16 thru 26, & 41. See MAs 4418, 4421, & 4425 thru 4427.	No similar action. See BR-16 thru 26, & 41. See MAs 4418, 4421, & 4425 thru 4427.
4416	BR-16, BR-24	In the JMH planning area, sensitive fisheries habitats would be managed (Maps 9 and 10) by maintaining habitat or reducing habitat loss or alteration, improving habitat where possible, and applying appropriate mitigation requirements (e.g., distance and seasonal limitations and rehabilitation) to all appropriate activities. Exceptions can be provided on a case-by-case basis should exception criteria (Appendix B) be met. See also the Surface Use Activities section of the JMH CAP for actions relating to surface disturbing and disruptive activities.	No similar action. See BR-16 thru 26, & 41. See MAs 4600 thru 4624.	No similar action. See BR-16 thru 26, & 41. See MAs 4600 thru 4624.	No similar action. See BR-16 thru 26, & 41. See MAs 4600 thru 4624.

<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
4417	BR-16, BR-24	No similar action	Apply stipulations and mitigations provided in Appendix B to oil and gas development operations.  Exclude surface occupancy and/or disturbance (to the extent this restriction does not violate the leaseholder's/operators lease rights) on existing leases within closed areas to protect important habitats.  Permit management actions/projects designed to maintain or improve wildlife habitat.	No similar action. See BR-16 thru 26, & 41. See MA 4610 and Mineral Resources.	No similar action. See BR-16 thru 26, & 41. See MA 4610 and Mineral Resources.
4418	BR-16, BR-24	No similar action	Prohibit renewable energy projects in big game crucial winter range and parturition habitat, raptor concentration (high-use/high-density raptor nesting/roosting/perching areas) areas, and currently mapped unique habitats (e.g. aspen and mountain shrub) or new areas identified as part of site-specific investigations.	Allow renewable energy projects in big game crucial winter range and parturition habitat, raptor concentration areas (high-use/high-density raptor nesting/roosting/perching areas), and unique habitats (e.g. aspen and mountain shrub).	No similar action  See Renewable Energy section 6100 - 6108.
<b>Big Game</b>					
4419	BR-41, BR-09, BR-26	To the extent possible, suitable wildlife habitat and forage would be provided to support the WGFD 1989 Strategic Plan objectives. Changes within WGFD planning objective levels would be considered based on habitat capability and availability and site-specific analysis.	Manage wildlife habitat to provide forage to support the WGFD 2009 (or subsequent approved) Strategic Habitat Plan in the attainment of big game herd unit objectives, strategic population plans, and aquatic basin management plan objectives.  Consider habitat capability and availability during coordination with WGFD for changes to plan objectives.	Manage wildlife habitat, to the extent possible, to provide forage for all resources.  Consider habitat capability and availability during coordination with WGFD for changes to plan objectives.	Manage, to the extent possible, wildlife habitat to provide forage to support the WGFD Strategic Habitat Plan in the attainment of big game herd unit objectives, strategic population plans, and aquatic basin management plan objectives.
4420	BR-24, BR-41	No similar action	Prohibit livestock grazing in big game parturition habitat during the birthing season (usually from May 1 through June 30).	Prohibit livestock grazing in big game parturition habitat during the birthing season (usually from May 1 through June 30). Allow	Evaluate and adjust grazing schedules, at the time of permit renewal, if any conflicts with parturition areas exist.

<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
				existing uses pending site-specific analysis.	
4421	BR-24, BR-41	In the JMH planning area, disruptive activities would be prohibited in big game crucial winter range between November 15 and April 30. Seasonal limitations may be excepted, provided criteria in Appendix B can be met and appropriate mitigation can be implemented (as determined by the BLM). Mitigation of adverse effects (e.g., noise and traffic) on all habitats would be determined and applied on a case-by-case basis. Steamboat Mountain ACEC is closed to motor vehicle use from May 10 to July 1 for crucial birthing habitat for deer and elk.	Prohibit surface disturbing or disruptive activities on big game crucial winter ranges, parturition areas, migration corridors and transitional habitats, as identified by WGFD. Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing. Steamboat Mountain ACEC is closed to motor vehicle use from May 1 to June 30 for crucial birthing habitat for deer and elk.	Restrict surface disturbing and/or disruptive activities in big game crucial winter range between November 15 and April 30. Restrict surface disturbing and/or disruptive activities in big game birthing areas between May 1 and June 30. Grant exceptions if impacts could be mitigated in accordance with exception criteria (see specific exception/waiver/modification criteria, Appendix B). Determine and apply mitigation of adverse effects (e.g., noise and traffic) on all habitats. Steamboat Mountain ACEC is closed to motor vehicle use from May 1 to June 30 for crucial birthing habitat for deer and elk.	Allow surface disturbing activities on big game crucial winter ranges and parturition areas subject to adequate mitigation of impacts following BLM mitigation policies. Avoid disruptive activities in big game crucial winter range between November 15 and April 30. Avoid disruptive activities in big game parturition areas between May 1 and June 30. Grant exceptions if impacts could be mitigated in accordance with exception criteria (see specific exception/waiver/modification criteria, Appendix B). Determine and apply mitigation of impacts (e.g., noise and traffic) on all habitats and habitat functionality. The Elk Parturition area within the Steamboat Mountain ACEC is closed to motor vehicle use from May 1 to June 30 for crucial birthing habitat for deer and elk.
4422	BR-24, BR-41	Big game crucial winter ranges and parturition areas would be protected to ensure continued usability by limiting activities during critical seasons of use and by limiting the amount of habitat disturbed.	See management action 4421	See management action 4421	See management action 4421

4423	BR-24, BR-41	In the JMH planning area, surface disturbing and disruptive activities are prohibited in big game birthing areas from May 1 to June 30. To meet management objectives, the amount of habitat disturbed in these areas would also be limited (see Sensitive Habitat discussion). Mitigation of adverse effects (e.g., noise and traffic) on all habitats would be determined and applied on a case-by-case basis.	See management action 4421	See management action 4421	See management action 4421
4424	BR-24, BR-41	No similar action	Identify and preserve wildlife species migration and travel	Restrict, on a case by case basis, surface disturbing	Allow fluid mineral surface occupancy and use within a WGFD designated
<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
			corridors. Prohibit surface-disturbing activities within ½ mile of big game migration corridors to avoid constriction of current or future identified big game corridors. Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing.	activities within identified wildlife migration corridors.	big game migration corridor if the fluid mineral operator and the BLM arrive at an acceptable conservation plan for avoidance, minimization, rectification and/or restoration within the migration corridor. The purpose of the conservation plan is to ensure that fluid mineral development activities are pursued in a manner that maintain habitat function and result in no significant declines in species distribution or abundance. The BLM will consult with the WGFD to evaluate the adequacy of the conservation plan prior to finalization.  • CSU for fluid minerals.
4425	BR-20, BR-17, BR-41	No similar action	Manage big game crucial winter range and parturition habitat for the plant condition and composition that would be most ecologically beneficial for the identified species while also considering the habitat of other species. Avoid, where possible, single wildlife species management.	Manage big game crucial winter range and parturition habitat for the plant condition and composition that maintains a functional habitat for the benefit of all herbivores.	Manage big game crucial winter range and parturition habitat in a manner that meets or is making significant progress toward meeting the Wyoming Land Health Standards, and the plant condition and composition that would maintain a functional habitat for the benefit of all herbivores.  Monitor and develop, on a case-by case basis, plans to address any undesirable resource conditions.

4426	BR-24, BR-18, BR-41	Big game crucial winter ranges and birthing areas are open to further consideration for federal coal leasing and development with a provision for maintaining a balance between coal leasing and development, and adequate crucial winter range and birthing area habitats to prevent significant adverse impacts to important big game species. This would be accomplished through controlled timing and sequencing of federal coal leasing and development in these areas. For example, satisfactory abandonment and	Close big game crucial winter ranges and parturition areas to further consideration for federal coal leasing and development.	Open big game crucial winter ranges and parturition areas to further consideration for federal coal leasing and development with a provision for maintaining a balance between coal leasing and development, and adequate crucial winter range and birthing area habitats. Prevent significant adverse impacts to important big game species through controlled timing and sequencing of federal coal leasing and development in these areas.	Same as Alternative A
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**Biological Resources (BR) – Fish and Wildlife (4400-4436)**

MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		adequate reclamation of mined lands in big game crucial winter ranges and birthing areas would be required before additional federal coal leasing and development is initiated in the same crucial winter ranges and birthing areas.			
4427	BR-24, BR-41	Vehicular travel in crucial and important wildlife habitats and during crucial and important periods (strutting grounds, spawning beds, big game ranges, calving/fawning periods, etc.) would be restricted seasonally, as necessary.	Seasonally close vehicular travel in crucial and important wildlife habitats and during crucial and important periods (big game crucial winter ranges 11/15-4/30, deer parturition areas 5/1-6/30, elk calving areas 5/1-6/30, moose calving areas 5/1-6/30, raptor nesting areas 2/1-7/31). See Appendix J.	Limit vehicular travel to designated roads and trails in crucial and important wildlife habitats and during crucial and important periods (big game crucial winter ranges 11/15-4/30, deer parturition areas 5/1-6/30, elk calving areas 5/1-6/30, moose calving areas 5/1-6/30, raptor nesting areas 2/1-7/31).	Seasonally close, on a case-by-case basis, vehicular travel in designated crucial winter ranges and parturition areas during key periods (big game crucial winter ranges 11/15-4/30, big game parturition areas 5/1-6/30). Exceptions will be granted for administrative use. See Appendix J.

**Raptors**

4428	BR-21, BR-24, BR-35	Active and historic raptor nesting sites would be protected and managed for continued nesting activities. An active raptor nest is one that has been occupied within the past three years; a historic nesting site is an area of high topographic relief, particularly cliff areas, known to have supported concentrations of nesting raptors, such as Cedar Canyon, Four-J Basin, Kinney Rim, etc. The appropriate level of protection would be determined on a case-by-case basis depending upon the species involved, natural topographic barriers, and line-of-sight distances, etc. Different species of raptors may require different types of protective measures (Appendix J).	Protect occupied nests and historic raptor nesting sites and associated feeding areas and manage for continued nesting activities.  Determine, on a case-by-case basis, the appropriate level of protection depending upon the species involved, natural topographic barriers, and line-of-sight distances, etc.  Different species of raptors could require different types of protective measures (Appendix J).	Protect occupied raptor nesting sites and managed for continued nesting activities.  Determine, on a case-by-case basis, the appropriate level of protection depending upon the species involved, natural topographic barriers, and line-of-sight distances, etc.  Different species of raptors could require different types of protective measures (Appendix J).	No similar action (see other actions in this section)
4429	BR-21, BR-24, BR-35	In the JMH planning area, active and historic raptor nesting sites would be protected and managed (e.g., through distance restrictions) for continued nesting activities.	See management action 4428	See management action 4428	See management action 4428

Biological Resources (BR) – Fish and Wildlife (4400-4436)					
MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		Different species of raptors may require different types of protective measures. Permanent or high-profile structures (e.g., power lines or other structures that may negatively impact raptors) would be prohibited within a specified distance of active raptor nests. Distance would be determined on a case-by-case basis and would depend on the raptor species involved, natural topographic barriers, line-of-sight distances, and other such factors.			
4430	BR-21, BR-24, BR-35	Project components, such as permanent and high-profile structures, e.g., buildings, storage tanks, power lines, roads, well pads, etc. are prohibited within an appropriate distance of active raptor nests. The appropriate distance (usually less than ½ mile) would be determined on a case-by-case basis and may vary depending upon the species involved, natural topographic barriers, and line-of-sight distances, etc. Placement of facilities, "on" (very low profile) or below ground, and temporary disruptive activities, such as occur with pipeline construction, seismic activity, etc., could be granted exceptions within ½ mile of active raptor nests, in certain circumstances (Appendix J).	Prohibit surface occupancy within one mile of occupied and historic raptor nests and associated feeding grounds. This includes project components such as permanent and/or high-profile structures (e.g., buildings, storage tanks, power lines, roads, well pads, etc.).  Manage as: 1) NSO for fluid minerals; 2) closed for coal and sodium prospecting; 3) closed to material sales; 4) avoidance area for new rights-of-way.  Buffer recommendations could be modified on a site-specific or project-specific basis based on field observations and local conditions.  Infrastructure (or facilities) that have potential to cause direct avian mortality (e.g., wind turbines, guyed towers, airports, wastewater disposal facilities, transmission lines), would follow USFWS recommendations to locate structures away from high avian-use areas such as those used for nesting, foraging, roosting or	Project components, such as permanent and high-profile structures (e.g., buildings, storage tanks, power lines, roads, well pads, etc.) are restricted within an appropriate distance of occupied raptor nests. The appropriate distance (usually less than ½ mile) would be determined on a case-by-case basis and may vary depending upon the species involved, natural topographic barriers, and line-of-sight distances, etc.  • CSU for fluid minerals.	Allow surface occupancy within the identified buffer of occupied and historic raptor nests, subject to adequate mitigation of impacts following BLM mitigation policies. This includes project components such as permanent and/or high-profile structures (e.g., buildings, storage tanks, power lines, roads, well pads, etc.).  Ferruginous hawk – ½ mile Bald eagle – one mile Golden eagle – ¼ mile Burrowing owl – ¼ mile General raptor – ¼ mile  • CSU for fluid minerals.  Modify buffer recommendations, on a site-specific or project-specific basis, based on field observations and local conditions.  Require implementation of USFWS recommendations to locate structures away from high avian-use areas such as those used for nesting, foraging, roosting or migrating, and the travel between high-use areas on infrastructure (or facilities) that have potential to cause direct avian

<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			migrating, and the travel between high-use areas.		mortality (e.g., wind turbines, guyed towers, airports, wastewater disposal facilities, transmission lines).
4431	BR-21, BR-24, BR-35	Nesting raptors would be protected by restricting disruptive activities seasonally within a ½- to one-mile radius of occupied raptor nesting sites.	Restrict surface disturbing and disruptive activities seasonally within a two-mile radius of occupied nests and historic raptor nesting sites and associated feeding grounds to protect nesting raptors.	Restrict surface disturbing or disruptive activities seasonally within a ½-mile radius of occupied raptor nesting sites to protect nesting raptors.	Avoid surface disturbing and disruptive activities seasonally within the identified buffer of occupied nests and historic raptor nest sites (see Appendix J).
4432	BR-21, BR-24, BR-35	In the JMH planning area, temporary disturbances associated with placement of facilities such as pipelines and other actions such as seismic activities can be allowed within ½ to one mile of active raptor nests.	See management action 4431	See management action 4431	See management action 4431
4433	BR-21, BR-24, BR-35	In the JMH planning area, disruptive activities would be seasonally restricted within a ½- to one-mile radius of occupied raptor nesting sites. Raptor nest surveys would be conducted within a one-mile radius or linear distance of proposed surface uses or activities during raptor nesting season. Seasonal limitations may be excepted, provided criteria in Appendix B can be met and appropriate mitigation can be implemented (as determined by the BLM). Mitigation of adverse effects (e.g., noise and traffic) on all habitats would be determined and applied on a case-by-case basis.	See management action 4431	See management action 4431	See management action 4431
4434	BR-21, BR-24, BR-35	Raptor nest surveys would be conducted within a one-mile radius, or linear distance of proposed surface uses or activities, if such activities are proposed to be conducted during raptor nesting seasons, usually between February 1 and July 31.	Conduct raptor surveys (for nesting, roosting, and foraging) within up to a four-mile radius of surface disturbing or disruptive activities based on the extent and nature of the proposed action.	Same as Alternative A	Conduct raptor nest surveys within one mile of proposed surface uses or activities, on a case-by case basis, if suitable raptor nesting habitat is identified.



<b>Biological Resources (BR) – Fish and Wildlife (4400-4436)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Fish</b>					
4435	BR-24BR-24, BR-22	Seasonal restrictions for surface disturbing activities to protect game fish and Special Status fish populations during spawning would be applied as necessary.	Apply TLS to surface disturbing activities within ¼ mile of riparian areas along fish-bearing streams to protect spawning, egg incubation, and fry areas. Apply spring TLS from March 15 to July 31 and fall TLS from September 15 to November 30. Critical dates often vary based on site location and species composition.  Manage as: 1) TLS for fluid minerals; 2) closed to all solid mineral leasing.  Evaluate, on a case-by-case basis, requests for exceptions to TLS and consider reducing or increasing these standard dates (see Appendix B for specific exception/waiver/modification criteria). Consult with the WGFD on evaluations of all such requests.	No TLS would be applied to surface disturbing activities to protect fisheries critical life stages.	Avoid surface disturbing and construction activities (e.g., mineral exploration and development activities, pipelines, power lines, roads, recreation sites, fences, wells, etc.) within the 100-year floodplains that could adversely affect fish-bearing streams.  Allow linear crossings in these areas on a case-by-case basis only if the BLM determines that no adverse impacts would likely occur and a plan to mitigate potential impacts to water quality and fish habitat is approved.  Avoid surface disturbing activities within fish-bearing streams to protect spawning habitat, egg incubation, and fry from March 15 to July 31 and fall TLS from September 15 to November 30. Critical dates often vary based on site location and species composition.  Evaluate requests for exceptions to TLS and consider reducing or increasing these standard dates (see Appendix B for specific exception/waiver/modification criteria). Consult with the WGFD on evaluations of requests.
4436	BR-19, BR-22	No similar action	Remove human-caused barriers to fish passage where appropriate and/or feasible to provide for more genetic diversity, increased habitat, and population stability.  Human-caused barriers could be placed to protect conservation populations of fish species from hybridization or competition.	No similar action	Same as Alternative B

<b>Biological Resources (BR) – Special Status Species (4600-4624)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Plants</b>					
<b>Goals:</b>					
BR-27: Manage for the biological integrity and habitat function to facilitate the conservation, recovery, and maintenance of populations of Special Status plant species and to avoid contributing to the listing of or jeopardizing the continued existence or recovery of Special Status Species and their habitats.					
BR-28: Maintain or enhance the habitats that support or could support Special Status plants and their native pollinators.					
BR-29: Maintain sufficient undisturbed or minimally disturbed habitats to protect Special Status plant species.					
BR-30: Manage specific environmental hazards, risks, and impacts in a manner compatible with Special Status plant species' health.					
4600	BR-27, BR-28, BR-30	Any management actions on potential habitat of Special Status plant species communities on federal land or on split estate lands (i.e., non-federal land surface ownership with BLM-administered federal minerals ownership) would require searches for the plant species prior to project or activity implementation to determine the locations of Special Status plant species and essential and/or important habitats. Special status plant populations are closed to activities that could adversely affect these species and their habitat. Management requirements in habitat areas may include prohibiting or limiting motorized vehicle use, surface uses, and explosive charges or any other surface disturbing or disruptive activity that may cause adverse effects to the plants.	Require Special Status plant species surveys on potential habitats on federal land surface before any project or activity is approved. If species are found, species-specific protective measures would be developed and implemented.  For Interrelated or Interdependent Actions and when necessary to comply with the Endangered Species Act (ESA), require inventories for listed or proposed species potential habitats on federally leased lands before any project or activity is approved (see BLM Manual 6840). If species are found, species-specific protective measures would be developed and implemented in consultation with the USFWS.  If Special Status plant species are found during construction, halt all disturbing activities in the inhabited area until species-specific protective measures are developed and implemented. Develop and implement protective measures for listed and proposed species in consultation with the USFWS.	Require Special Status plant species surveys on potential habitats on federal land surface before any project or activity is approved. If species are found, species-specific protective measures would be developed and implemented.  For Interrelated or Interdependent Actions and when necessary to comply with the ESA, require inventories for listed or proposed species on potential habitats on split-estate lands before any project or activity is approved (see BLM Manual 6840). If species are found, species-specific protective measures would be developed and implemented in consultation with the USFWS.  If species are found during construction, avoidance measures would be taken if possible. Develop and implement protective measures for listed species in consultation with the USFWS.	Require Special Status plant species surveys on potential habitats on federal land surface before any surface disturbing project or activity is approved. If species are found, species-specific protective measures would be developed and implemented.  For Interrelated or Interdependent Actions, require inventories for listed or proposed species potential habitats on federally leased lands before any surface disturbing project or activity is approved (see BLM Manual 6840). If species are found, species-specific protective measures would be developed and implemented in consultation with the USFWS.  If Special Status plant species are found during construction, halt all disturbing activities in the inhabited area until species-specific protective measures are developed and implemented. Develop and implement protective measures for listed and proposed species in consultation with the USFWS.
4601	BR-27, BR-28, BR-29	In the JMH planning area, surveys would be conducted of potential habitat for federally listed, proposed, or candidate threatened and endangered plant species	See management action 4600	See management action 4600	See management action 4600

### Biological Resources (BR) – Special Status Species (4600-4624)

MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		before any surface is disturbed or water sources are depleted. If such a species is located, formal consultation with USFWS would occur. Management prescriptions to provide, maintain, or improve habitat would be developed on a case-by-case basis.			
4602	BR-27, BR-28, BR-29	Known locations of Special Status plant species communities would be protected and closed to: 1) surface disturbing activities or any disruptive activity that could adversely affect the plants or their habitat; 2) the location of new mining claims (withdrawal from mineral location and entry under the land laws would be pursued); 3) mineral material sales; 4) all off-road vehicular use, including those vehicles used for geophysical exploration activities, surveying, etc.; and 5) the use of explosives and blasting. (See the discussion Lands and Realty management and Minerals management.)	Prohibit surface disturbing activities or any disruptive activity on known locations of Special Status plant species.  Manage as: 1) NSO for fluid minerals; 2) withdrawal from mineral location and entry under the land laws would be pursued; 3) closed to mineral material sales; 4) closed to all off-highway vehicle (OHV) vehicular travel, including those vehicles used for geophysical exploration activities, surveying, etc.; 5) the use of explosives and blasting; 6) avoidance area for new ROWs.	Avoid known locations of Special Status plant species for surface disturbing activities. Permit authorizations where applicants could demonstrate that proposed activities would not impact sensitive plant species.  Manage as: 1) avoidance area for new ROWs; 2) limit vehicle use to existing roads and trails.	Prohibit surface disturbing activities or any disruptive activity within 100 feet of the boundary of known locations of Special Status plant species.  <ul style="list-style-type: none"> <li>• NSO for fluid minerals.</li> <li>• Close to mineral material sales.</li> <li>• Allow subsurface mining only and prohibit surface facilities.</li> <li>• Designate as a ROW avoidance area.</li> <li>• Close to all OHV vehicular travel, including those vehicles used for geophysical exploration activities, surveying, etc.</li> <li>• Prohibit the use of explosives and blasting.</li> </ul>
4603	BR-27, BR-28, BR-29	Locations of Special Status plant species are open to consideration for mineral leasing with an NSO requirement (Table 2-4, Appendix V).	See management action 4602	See management action 4602	See management action 4602
4604	BR-27, BR-29, BR-30	On essential and important Special Status plant species habitat, all fire suppression activities are limited to existing roads and trails. A site-specific analysis would be prepared for all fire management activities (e.g., prescribed fires, fire suppression) around Special Status plant species sites to determine the appropriate fire management response.	Limit all surface disturbing fire suppression activities within Special Status plant species habitat to existing roads and trails, except for the protection of life or property.	Consult with the BLM Fire Incident Resource Advisor on all fire suppression activities within Special Status plant species habitat.	Restrict all surface disturbing fire suppression activities to designated roads and trails, except for the protection of life or property, within Special Status plant species habitat.

Biological Resources (BR) – Special Status Species (4600-4624)					
MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
4605	BR-27, BR-29, BR-30	In the JMH planning area, a site-specific analysis would be prepared for all fire management actions around Special Status plant species sites to determine the appropriate fire management response. Fire equipment and fire suppression techniques such as vegetation clearing would be limited to existing roads and trails in Special Status plant species habitat.	See management action 4604	See management action 4604	See management action 4604
4606	BR-28, BR-29	Activities such as fencing, interpretive signs, or barriers to ensure protection to the Special Status plant species and their habitat would be considered on a case-by-case basis.	Same as Alternative A	No similar action	No similar action (see Management Actions Common to All Resource Programs section)
4607	BR-27, BR-28, BR-29	The BLM would pursue acquisition of approximately 1,920 acres of additional <i>Descurainia torulosa</i> habitat on Pine Butte.	Pursue acquisition with a willing seller of approximately 1,920 acres of additional Wyoming tansymustard ( <i>Descurainia torulosa</i> ) habitat on Pine Butte.	Do not pursue acquisition of approximately 1,920 acres of additional Wyoming tansymustard ( <i>Descurainia torulosa</i> ) habitat on Pine Butte.	Same as Alternative B
4608	BR-27, BR-28, BR-29	Should new Special Status plant species be identified, they would be managed under the same prescriptions described above for the known species. This may result as new information about vegetation types and communities is acquired.	Same as Alternative A	No similar action	Same as Alternative A
4609	BR-27, BR-28, BR-29	Known locations of Special Status Species would be evaluated on a case-by-case basis to determine if they meet the relevance and importance criteria to be considered for ACEC designation. If appropriate, such locations would be proposed for ACEC designation and the Green River RMP would be amended, as necessary (see the section on Special Designation Management Areas).	Evaluate, on a case-by-case basis, known locations of Special Status Species to determine if they meet the relevance and importance criteria to be considered for ACEC designation. If appropriate, propose such locations for ACEC designation and amend this RMP as necessary (see the section on Special Designations).	No similar action	Same as Alternative B

<b>Biological Resources (BR) – Special Status Species (4600-4624)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
4610	BR-27, BR-28, BR-29	In the JMH planning area, Special Status plant species potential habitat areas would be areas of CSU for surface disturbing activities related to oil and gas activities.  Surface disturbing activities for other uses or projects may also be restricted or prohibited based on site-specific analysis.	Prohibit surface-disturbing activities in potential habitat areas of Special Status plant species.  Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing; 4) pursue withdrawal from mineral location.	Place no limitations on surface-disturbing activities in potential habitat areas of Special Status plant species.	Allow surface-disturbing activities in Special Status plant species' mapped habitat, subject to adequate mitigation of impacts following BLM mitigation policies.  <ul style="list-style-type: none"> <li>• CSU for fluid minerals.</li> <li>• Designate as a ROW avoidance area.</li> </ul>
4611	BR-27, BR-28, BR-29	Vegetation treatments will be designed to be compatible with Special Status plant species. For example, spraying, burning, mechanical disturbances, etc. will not be allowed to adversely affect these plants.	Conduct vegetation treatments in Special Status plant species habitats only when they would benefit these species and their pollinators over the longterm.	Conduct vegetation treatments in Special Status plant species habitats.	Allow vegetation treatments in Special Status plant species habitats only when they would benefit these species and their pollinators.
4612	BR-27, BR-28, BR-30	No similar action	Prohibit range improvement projects such as troughs, reservoirs, fences, and other surface-disturbing activities within 1,320 feet (¼ mile) of Special Status plant species populations, unless they are determined to be beneficial to that species.	Prohibit range improvement projects such as troughs, reservoirs, fences, and other surface-disturbing activities within 100 feet of Special Status plant species populations, unless the impacts can be mitigated.	Same as Alternative B
4613	BR-08, BR-17, BR-20	In the JMH planning area, some basin big sagebrush/lemon scurfpea areas along the base of Steamboat Mountain would be provided protection by controlling surface use or implementing other intense mitigation to preserve the character of vegetation communities. Implementation of healthy rangeland standards would ensure the viability of vegetation resources. Water developments would be considered only if the resource conditions are maintained or improved.	Protect some basin big sagebrush/lemon scurfpea areas along the base of Steamboat Mountain by controlling surface use or implementing other intense mitigation to preserve the character of vegetation communities.	No similar action	Avoid surface disturbing activities in basin big sagebrush/lemon scurfpea areas along the base of Steamboat Mountain, to preserve the character of this vegetation community.  <ul style="list-style-type: none"> <li>• CSU for fluid minerals.</li> <li>• Designate as a ROW avoidance area.</li> </ul>

<b>Biological Resources (BR) – Special Status Species (4600-4624)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
4614	BR-08, BR-17, BR-20	No similar action	The Little Firehole's Cottonwood Canyon area would be: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing; 4) pursue withdrawal from mineral location; 5) an exclusion area for new ROWs.  Pursue withdrawal from entry under land laws and mineral location.  Prohibit surface disturbing activities, except for activities intended to protect or enhance the unique vegetative assemblage values.	No similar action	Allow, on a case-by-case basis, activities intended to protect or enhance the unique vegetative assemblage values in the Little Firehole's Cottonwood Canyon area. Otherwise: <ul style="list-style-type: none"> <li>• NSO for fluid minerals</li> <li>• Close to mineral material sales/disposal</li> <li>• Close to all solid mineral leasing</li> <li>• Petition to segregate and pursue a withdrawal from locatable mineral entry</li> <li>• Designate an avoidance area for new ROWs.</li> </ul>
<b>Wildlife and Fisheries</b>					
<b>Goals and Objectives:</b>					
BR-32: Protect or enhance areas of ecological importance for Special Status Species. Manage for no net loss of habitat or population of any Special Status Species, in consideration of other RMP objectives.					
BR-33: Maintain, restore, and/or enhance Special Status Species habitat to achieve full site potential in coordination and consultation with the USFWS and other local, state, and federal agencies in an effort to prevent listing under the Endangered Species Act (1973).					
BR-34: Conserve and/or recover Special Status Species and their habitat.					
BR-35: Manage specific environmental hazards, risks, and impacts in a manner compatible with Special Status Species health.					
BR-38: Provide quality habitats to support the introduction, reintroduction, and augmentation of identified high priority and/or Special Status Species in consultation and coordination with appropriate agencies.					
BR-39: Sustain the integrity of sagebrush habitat to provide continuity and quality necessary to maintain sustainable populations of sagebrush obligate species.					
BR-41: Protect, enhance, and restore wildlife habitat in support of Wyoming Game and Fish population objectives.					
BR-43: Maintain and restore healthy aspen communities and associated understory vegetation to benefit multiple aquatic and terrestrial wildlife species.					
BR-44: Maintain and restore healthy willow, cottonwood, and other native riparian shrub communities, and associated understory vegetation to benefit multiple aquatic and terrestrial wildlife species.					
4615	BR-34, BR-31	Develop and implement HMPs, activity plans, or use other mechanisms to protect high priority and Special Status Species.			
4616	BR-32, BR-34	No similar action	Protect and improve Special Status Species habitats by preventing habitat loss or alteration, pursuing withdrawals and not reoffering mineral leases once they expire. These actions are in addition to recommendations in the 6840 Manual.	Maintain Special Status Species habitats by applying BLM Manual 6840 Special Status Species policy (management requirements are to avoid or minimize adverse impacts and maximize potential benefits to species whose viability has been	No similar action (current policy)

<b>Biological Resources (BR) – Special Status Species (4600-4624)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
				identified as a concern by reviewing programs and activities to determine their potential effect on sensitive species).	
4617	BR-31, BR-32, BR-34	No similar action	Manage Special Status Species habitat for the plant condition and composition that would be most ecologically beneficial for the identified species while also considering the habitat of other species.	Manage Special Status Species habitat for the plant condition and composition that maintains a functional habitat.	Manage Special Status Species habitat for the plant condition and composition that maintains a healthy functional habitat.
4618	BR-35, BR-33	In the JMH planning area, the BLM would consult or conference (for proposed species) with USFWS to determine whether its actions may affect any listed or proposed species and to document its determinations in a biological assessment (Appendix H) as directed by the ESA. Land use decisions would be implemented with appropriate conservation measures and/or reasonable and prudent alternatives to avoid jeopardizing any species, causing the need to list a species, or destroying or adversely modifying designated or proposed critical habitat.	Consult or conference (for proposed species) with USFWS and in accordance with programmatic statewide consultations to determine whether BLM actions could affect any listed or proposed species and to document its determinations in a biological assessment (Appendix H) as directed by the ESA. Implement land use decisions with appropriate conservation measures and/or reasonable and prudent alternatives to avoid jeopardizing any species, causing the need to list a species, or destroying or adversely modifying designated or proposed critical habitat.	Same as Alternative B	No similar action (current policy)
4619	BR-25, BR-34, BR-32	In the JMH planning area, surveys or searches would be conducted in potential habitat for federally listed, proposed, candidate, and sensitive species before any surface is disturbed. At any time a listed, proposed, or candidate species is found, all disruptive activities would be halted until protective measures developed with the USFWS are implemented. The BLM would take proactive measures to improve habitat character as needed in	Conduct surveys for Special Status Species (as identified in BLM Manual 6840) on suitable habitat before any federal project or federal activity would be approved. Surveys would be conducted by a qualified biologist and follow best available science and methods as determined by the Rock Springs BLM Biologist. If important lifecycle activities of Special Status Species are identified during a survey in an area not protected by TLS, prevent	Same as Alternative A	Conduct surveys of suitable habitat for federally listed, proposed, candidate, and BLM/State sensitive species before any surface is disturbed.  Suspend all disruptive activities and develop/implement protective measures (in consultation with the USFWS and WGFD) any time a listed, proposed, candidate, or BLM/State sensitive species is found. Take proactive measures to improve habitat character as needed in

<b>Biological Resources (BR) – Special Status Species (4600-4624)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		accordance with Section 7 of the ESA and BLM Manual 6840 policy.	surface disturbing and/or disruptive activities until protective measures are developed. These lifecycle activities might include nesting, burrowing, denning, early brood-rearing, or spawning, etc. Grant no exceptions to this policy. The BLM would take proactive measures to improve habitat as needed in accordance with Section 7 of the ESA and BLM Manual 6840 policy.		accordance with Section 7 of the ESA and BLM Manual 6840 policy.
<b>Avian Predators</b>					
4620	BR-35, BR-21	In the JMH planning area, measures would be taken, as appropriate, to reduce potential raptor perches in and around prairie dog towns and colonies, such as constructing perch deterrent on power poles.	Require raptor perch deterrent devices on any new permitted vertical structure suitable for raptor perching. Take measures (e.g., avoidance, burying power lines, installation of perch deterrence devices, and exclusion of artificial nest structures) to limit hunting perches or artificial nest sites for avian predators within 1,320 feet (¼ mile) of sensitive prey species habitat.	Take discretionary measures to reduce potential raptor perches in and around Special Status Species habitat.	Require, on a case-by case basis, measures (e.g., avoidance, burying power lines, installation of perch deterrence devices, and exclusion of artificial nest structures) to limit hunting perches or artificial nest sites for avian predators within 1,320 feet (¼ mile) of sensitive prey species habitat.
4621	BR-35, BR-32	In the JMH planning area, measures (e.g., avoidance, burying power lines, installation of anti-perch devices, and exclusion for artificial nest structures) would be taken to limit hunting perches or artificial nest sites for avian predators within ¼ mile of nesting aggregation areas.	See management action 46020	See management action 4620	See management action 4620
<b>Amphibians and Reptiles</b>					
4622	BR-24, BR-41	No similar action	Stipulate or implement, on a case-by-case basis, management guidelines as identified in Habitat Management Guidelines for Amphibians and Reptiles of Northwestern U.S. and Canada, PARC Technical Publication HMG-4 (Pilliod and Wind 2008), and	No similar action	Require, on a case-by-case basis, implementation of management guidelines as identified in Habitat Management Guidelines for Amphibians and Reptiles of Northwestern U.S. and Canada, PARC Technical Publication HMG-4 (Pilliod and Wind 2008), and similar



**Biological Resources (BR) – Special Status Species (4600-4624)**

MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
			similar future guidance for activities that have the potential to impact known or potential amphibian/reptile habitat. Base decisions on the best available science in consultation with the WGFD.		future guidance for activities that have the potential to impact known or potential amphibian/reptile habitat.

**Mountain Plover**

4623	BR-35, BR-32	In the JMH planning area, mountain plover surveys would be required prior to authorizing any surface disturbing or disruptive activities in potential plover habitat. Surveys would be conducted within suitable mountain plover habitat by a qualified biologist using protocol determined by the Rock Springs BLM biologist.  Active mountain plover nesting aggregation areas would be avoidance areas for surface disturbing and disruptive activities within ¼ mile of the area from April 10 to July 10.	Require mountain plover surveys prior to permitting surface disturbing or disruptive activities in potential plover habitat. Conduct surveys within suitable mountain plover habitat. Survey protocol would be conducted by a qualified biologist and follow best available science and methods as determined by the Rock Springs BLM Biologist.  Prohibit surface disturbing and disruptive activities within ¼ mile of active mountain plover nesting aggregation areas from April 10 to July 10.	Require mountain plover surveys prior to permitting surface disturbing or disruptive activities in potential plover habitat. Conduct surveys within suitable mountain plover habitat. Survey protocol would be conducted by a qualified biologist and follow best available science and methods as determined by the Rock Springs BLM Biologist.  Prohibit surface disturbing and disruptive activities within 100 feet of active mountain plover nesting aggregation areas from April 10 to July 10.	Require mountain plover surveys prior to permitting surface disturbing or disruptive activities in plover nesting habitat, if the activities would occur during the mountain plover nesting season (April 10 to July 10). If active nests are located, no surface disturbing or disruptive activities would be allowed within ¼ mile until the end of the nesting season. Survey protocol would be conducted by a qualified biologist and follow best available science and methods as determined by the Rock Springs BLM Biologist.
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**Fisheries**

**Goals and Objectives:**  
 BR-31: Manage for biological integrity and habitat function to facilitate the conservation, recovery and maintenance of populations of Special Status Species.  
 BR-31.1: Provide suitable habitat to support the goals and objectives of the CASs for Colorado River cutthroat trout in the states of Colorado, Utah, and Wyoming and for the “3-Species” roundtail chub, flannelmouth sucker and bluehead sucker.  
 BR-36: Maintain, restore, and/or enhance fisheries habitats in the planning area so they achieve stable stream conditions with hydrologically sound channel shape and function. Manage riparian habitats to promote healthy vegetative and instream structure for the benefit of aquatic Special Status Species.  
 BR-37: Maintain functioning terrestrial and aquatic habitats, migration corridors, and fish passages that allow free movement and use of seasonal habitats.

4624	BR-31.1, BR-22.1, BR-24BR-24	In the JMH planning area, seasonal limitations for surface disturbing activities to protect game and Special Status fish species during spawning would be applied (Appendix B).	Apply TLS to surface disturbing activities within ¼ mile of riparian areas along fish-bearing streams to protect spawning, egg incubation, and fry areas in Special Status fish-bearing streams. Apply spring TLS from March 15 to July 31 and fall TLS from September 15 to November 30. Critical dates often	Apply no TLS to surface disturbing activities to protect fisheries critical life stages.	No similar action (see general fish management in the Fish and Wildlife section)
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<b>Biological Resources (BR) – Special Status Species (4600-4624)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			vary based on site location and species composition. Manage as: 1) TLS for fluid minerals; 2) closed to all solid mineral leasing. Evaluate, on a case-by-case basis, requests for exceptions to TLS. Exceptions could include reducing or increasing these standard dates (see Appendix B for specific exception/waiver/modification criteria). Consult on all requests with the WGFD.		

<b>Biological Resources (BR) – Special Status Species - Greater Sage-Grouse (4700-4800)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals and Objectives:</b>					

<sup>3</sup> There is currently no connectivity habitat identified in the planning area by the Wyoming Game and Fish Department.

**Biological Resources (BR) – Special Status Species - Greater Sage-Grouse (4700-4800)**

MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
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Placeholder section for BLM Sage-Grouse Plans.

**General Management Direction for Action Alternatives**

Placeholder section for BLM Sage-Grouse Plans.

**Biological Resources (BR) – Wild Horses (4900)**

MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
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**Goals and Objectives:**  
 WH-01: Manage wild horses in the planning area at Appropriate Management Levels (AMLs) for the Little Colorado HMA.  
 WH-02: Provide adequate habitat for free-roaming wild horses through management consistent with the principles of multiple use for the Little Colorado HMA.  
 WH-03: Provide opportunities for the public to view wild horses for the Little Colorado HMA.

**Placeholder section for Wild Horse Management EIS, management will be added once the amendment is complete for the Adobe Town HMA, Divide Basin HMA, Salt Wells Creek HMA, and White Mountain HMA.**

4900	WH-01 WH-02 WH-03	Manage wild horses adhering to all applicable laws, agreements, court orders, and decisions for each HMA and consider private property rights.			
4901	WH-01 WH-02 WH-03	An appropriate management level (AML) of 69 to 100 horses in the Little Colorado Desert is established.	Same as Alternative A	Same as Alternative A	Same as Alternative A
4902	WH-01 WH-02 WH-03	The site specific activity plan for the HMA in the planning area will be maintained to conform with RMP objectives for vegetation management and implemented.	Same as Alternative A	Same as Alternative A	Same as Alternative A
4903	WH-01 WH-02 WH-03	Specific habitat objectives for herd management area will be developed.	Same as Alternative A	Same as Alternative A	Same as Alternative A
4904	WH-01 WH-02 WH-03	Water developments will be provided if necessary, to improve herd distribution and manage forage utilization.	Same as Alternative A	Same as Alternative A	Same as Alternative A
4905	WH-01 WH-02 WH-03	Water developments on crucial winter ranges could be allowed if they conform with wildlife objectives and do not result in adverse impacts to the crucial winter range.	Same as Alternative A	Same as Alternative A	Same as Alternative A
4906	WH-01 WH-02	Wild horse herd management will be directed to ensure that adequate	Same as Alternative A	Same as Alternative A	Same as Alternative A

	WH-03	forage will be available to support appropriate management levels in the herd unit and that the herd maintains appropriate age, sex, and color ratios.			
4907	WH-01 WH-02 WH-03	A selective gathering program will be implemented in the wild horse herd management area. Gathering plans will be prepared for removal of excess horses from inside and outside the wild horse herd management area.	Same as Alternative A	Same as Alternative A	Same as Alternative A
4908	WH-01 WH-02 WH-03	Fencing in the wild horse herd management area will be restricted to those situations where multiple-use values will be enhanced. All fences will be constructed to minimize restriction of wild horse movement.	Same as Alternative A	Same as Alternative A	Same as Alternative A
4909	WH-01 WH-02 WH-03	Opportunity for public education and enjoyment of wild horse herd will be provided by placing interpretive signs, providing interpretive sites, and providing access to the herd area.	Same as Alternative A	Same as Alternative A	Same as Alternative A
4910	WH-01 WH-02 WH-03	Other resource uses will be maintained and protected consistent with those resource management objectives while maintaining viable, healthy wild horse herds and appropriate herd management levels. Wild horse herd management areas will be managed in a natural, healthy state and for an ecological balance among wild horses and land and resource uses.	Same as Alternative A	Same as Alternative A	Same as Alternative A

<b>Heritage and Visual Resources (HR) – Cultural Resources (5000-5013)</b>					
<b>MA #</b>	<b>Goal/ Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals and Objectives:</b>					
HR-01: Compile a record of known cultural resources in the RSFO and assign those resources to appropriate uses.					
HR-02: Manage each type of cultural resource according to their proper use allocation and monitor those resources' condition and use.					

<b>Heritage and Visual Resources (HR) – Cultural Resources (5000-5013)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>HR-2.1: Develop activity plans or project/site-specific treatment plans or other protective measures for significant cultural resources at risk from deterioration or adverse effects from other uses.</p> <p>HR-03: Consult with Native American tribal governments regarding proposed land uses having the potential to affect cultural resources identified as having tribal interests or concerns. Determine the types of resources of concern to various tribes and take tribal views into consideration when making land use allocations or decisions.</p> <p>HR-04: Promote stewardship, conservation, and appreciation of cultural resources.</p> <p>HR-05: Maintain and enhance programs that provide opportunities for scientific research of cultural resources.</p> <p>HR-06: Provide opportunities for public education and interpretation of cultural resources.</p> <p>HR-6.1: Conduct presentations for schools, community organizations, and the public.</p> <p>HR-07: Provide for appropriate interpretation of sites of high public interest.</p> <p>HR-08: Pursue establishment of site stewardship programs at vulnerable cultural sites, including, but not limited to, the Tolar, White Mountain, Cedar Canyon, Sugarloaf, and La Barge petroglyph sites.</p> <p>HR-09: Preserve and stabilize significant cultural resources, especially resources that face immediate threat and/or historic structures in high public use areas.</p>					
5000	HR-01, HR-2.1	Identify, preserve, and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations (FLPMA, Section 103(c), 201(a) and (c); National Historic Preservation Act (NHPA), Section 110(a); Archeological Resources Protection Act (ARPA), Section 14(a)).			
5001	HR-15, HR-03	Identify culturally sensitive sites on BLM-administered lands within the planning area.			
5002	HR-09, HR-08, HR-2.1, HR-6.1	Protect and preserve representative samples of the full array of significant cultural resources for the benefit of present and future generations.			
5003	HR-02, HR-03	Coordinate with other BLM programs preplanning measures to prevent potential conflicts before they occur.			
5004	HR-02, HR-01	Sites eligible for or listed on the National Register of Historic Places (NRHP) would be managed for their local, regional, and national significance, under the guidelines of the NHPA (especially sections 106 and 110) and the ARPA. These sites would be managed to ensure against adverse effects through proper mitigation, if disturbance and destruction is not avoidable. Management prescriptions for sites that are not eligible for the NRHP would be determined on a case-by-case basis according to values involved.	Allow authorized activities to proceed in accordance with current Wyoming State Protocol and NHPA regulations, with an emphasis on avoiding National Register-eligible properties.	Allow authorized activities to proceed in accordance with current Wyoming State Protocol and NHPA regulations. Allow development to proceed by imposing the minimum restrictions required by law and regulation on activities that could cause adverse effects to National Register-eligible properties.	Allow authorized activities to proceed in accordance with current Wyoming State Protocol and NHPA regulations.

<b>Heritage and Visual Resources (HR) – Cultural Resources (5000-5013)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
5005	HR-02, HR-01	In the JMH planning area, heritage resources would be managed pursuant to the NHPA, ARPA, and other pertinent laws, regulations, and policies. The Wyoming State Historic Preservation Office must be consulted concerning eligibility of resources for the NRHP and concerning any potential effects that could result from BLM supported, authorized, or assisted undertakings. Sites that are not eligible for the NRHP would be managed on a case-by-case basis according to their values. Sites that are listed or eligible for listing on the NRHP would be managed for their local, regional, and national significance in accordance with the NHPA and the ARPA. Sites would be managed to ensure against adverse effects through proper mitigation if disturbance or destruction is not avoidable. Mitigation may include scientific information retrieval as well as other measures such as interpretation and improved public appreciation of the heritage resource.	See management action 5004	See management action 5004	See management action 5004
5006	HR-02, HR-01	Historic and archaeological sites within the context of early contact between Native Americans and Euro-American peoples have been identified, but they are understood only in general terms. The historical context of these sites would continue to be developed, and an interpretive program would be developed to improve public appreciation of these locations. Some or all of these sites may be nominated to the NRHP and/or	See management action 5004	See management action 5004	See management action 5004

Heritage and Visual Resources (HR) – Cultural Resources (5000-5013)					
MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		included in the Backcountry Byways program.			
5007	HR-02, HR-01	The Big Sandy Station, Big Timber Station, Freighter Springs station, Camp Carmichael, Lander's Camp, and the site of the Simpson's Gulch wagon train burning would be managed for the preservation of cultural and historical values. Site-specific resource management actions may be developed in cultural resources management plans for these sites.	See management action 5004	See management action 5004	See management action 5004
5008	HR-05	Management emphasis for the prehistoric quarry site would be for scientific data recovery. The prehistoric quarry site would be protected by closing it to mineral location and pursuing a withdrawal. The site is an exclusion area and is closed to surface disturbing activities that could adversely affect it. Only those surface disturbing activities related to data recovery would be allowed (see discussions in Lands and Realty Management and Minerals Management).	Manage the prehistoric quarry sites (48SU1263, 0.11 acres and 48SU7632, 0.66 acres) to emphasize scientific information. Protect the site by pursuing a withdrawal from mineral location. Close the site to surface disturbing activities that could adversely affect it. Allow only those surface disturbing activities related to scientific investigation. Manage as: 1) CSU for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing; 4) exclusion area for new ROWs.	Manage the prehistoric quarry sites (48SU1263, 0.11 acres and 48SU7632, 0.66 acres) to emphasize scientific information. Manage activities to mitigate potential adverse effects to the sites.	Manage the prehistoric quarry sites (48SU1263, 0.11 acres and 48SU7632, 0.66 acres) to emphasize scientific information. <ul style="list-style-type: none"> <li>• Petition to segregate and pursue a withdrawal from locatable mineral entry.</li> <li>• Allow only those activities related to scientific investigations or traditional cultural practices.</li> <li>• Manage as closed to mineral material sales/disposal.</li> </ul> Since prehistoric steatite/soapstone quarries are relatively rare and have been identified as a sensitive cultural resource during tribal consultation, projects proposed in the vicinity of steatite outcrops would require additional fieldwork and research, including tribal consultation, to determine if the outcrop is important to tribes and/or contains important scientific information.
5009	HR-09, HR-10, LR-01	Exchanges for acquisition and cooperative agreements would be pursued to enhance management of cultural resources.	Same as Alternative A	No similar action	Pursue land exchanges for acquisitions and cooperative agreements to enhance management of cultural resources.
5010	HR-02, HR-05	No similar action	Manage sites allocated for conservation, traditional use, or	Same as Alternative B	Same as Alternative B

Heritage and Visual Resources (HR) – Cultural Resources (5000-5013)					
MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
			public use to avoid adverse effects; manage sites allocated for scientific or experimental use for their research potential.		
5011	HR-08, HR-12, HR-07	In the JMH planning area, management of heritage resources would include inventories and mitigation as needed for specific projects. An appropriate level of analysis of all surface disturbing activities would be conducted to determine the potential effect of the activity on the resource and its eligibility for listing on the NRHP. Site stewardship and public education aspects of the Heritage Resource Program would continue to be implemented. Sites eligible for inclusion in the NRHP because of their scientific value would be protected. Preservation of the scientific information would be the preferred mitigation method should avoidance of such sites not be possible.	Develop and enhance the site stewardship program and public education opportunities in coordination with recreation and other programs for National Historic Trails and other sites.	Same as Alternative A	Manage the site stewardship program in cooperation with the State Historic Preservation Office (SHPO).
5012	HR-02, HR-05	In the JMH planning area, <u>sites eligible under NRHP Criteria A, B, or C</u> : All National Register-eligible historic sites would be protected through provisions of the NHPA and ARPA. Sites eligible under Criteria A, B, or C would be protected and mitigation measures would be developed on a case-specific basis depending on site values and proposed activity. Scientific data recovery may not be the appropriate mitigation strategy for these sites. Sites eligible for inclusion in the NRHP under Criterion D because of their scientific information content would be surrounded by a minimum 100-foot avoidance area, pursuant to	Avoid ground disturbing activities, including geophysical activities, on sites eligible for inclusion in the NRHP under Criterion D (because of their scientific information content) by at least 500 feet.  This avoidance distance could be appropriate for sites eligible for the NRHP under other criteria and would be determined on a case-by-case basis. Develop appropriate mitigation measures if a site cannot be avoided.	Avoid ground disturbing activities, including geophysical activities, on sites eligible for inclusion in the NRHP under Criterion D (because of their scientific information content) by at least 100 feet.  This avoidance distance could be appropriate for sites eligible for the NRHP under other criteria and would be determined on a case-by-case basis. Develop appropriate mitigation measures if a site cannot be avoided.	Avoid surface disturbing activities, including geophysical activities, on sites eligible for inclusion in the NRHP under Criterion D (because of their scientific information content) by at least 100 feet.  This avoidance distance could be appropriate for sites eligible for the NRHP under other criteria and would be determined on a case-by-case basis. Develop appropriate mitigation measures if a site cannot be avoided.



<b>Heritage and Visual Resources (HR) – Cultural Resources (5000-5013)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		the Protocol Agreement between BLM and SHPO. Eligible sites may be nominated to the NRHP. The BLM may work with partners to fund preparation of NRHP nominations on a case-by-case basis.			
5013	HR-15, HR-03, HR-2.1	In the JMH planning area, the Indian Gap Trail would be researched and a trail interpretive plan would be developed.	No similar action	No similar action	No similar action

<b>Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>HR-10: Preserve and protect the historical remains and historical setting of the South Pass Historic Landscape ACEC. See the ACEC section for management alternatives for these resources.</p> <p>HR-11: Establish appropriate management prescriptions for the South Pass Historic Landscape ACEC.</p> <p>HR-12: Coordinate with recreation and other programs to provide opportunities for public visitation, interpretation, education, and appreciation of the South Pass Historic Landscape ACEC.</p> <p>HR-13: Preserve and protect the cultural remains and natural settings of significant rock art sites, including but not limited to Tolar, White Mountain, Cedar Canyon, Sugarloaf, and La Barge petroglyph sites. See the Areas of Critical Environmental Concern section for management alternatives for these resources. If they are not designated ACECs, then management actions for them would be analyzed in this section.</p> <p>SD-23: Manage the Crookston Ranch to preserve its historic features for the interpretation of ranching history in the area.</p>					

<b>Rock Art Sites</b>					
5100	HR-13, HR-16, HR-6.1	Five significant rock art sites and their surrounding viewshed (within ½ mile) would be managed to protect their cultural and historical values. Surface disturbing activities and visual intrusions would be prohibited within these areas if they would adversely affect these values. Management of visitor use at rock art sites may include interpretive signing, fencing, barriers, and other activities.	Manage significant rock art sites (including both prehistoric and historic inscriptions) and their surrounding viewshed (the actual area that can be seen from the rock art sites, within three miles) to protect their cultural and historical values. These would include but would not be limited to: Cedar Canyon – 311 acres + 4,008 viewshed acres LaBarge Bluffs – 20 acres + 5,008 viewshed acres	Manage significant rock art sites (including both prehistoric and historic inscriptions) and their surrounding viewshed (the actual area that can be seen from the rock art sites, within ¼ mile) to protect their cultural and historical values. These would include but would not be limited to: Cedar Canyon – 311 acres + 126 viewshed acres LaBarge Bluffs – 20 acres + 103 viewshed acres Sugarloaf – 20 acres + 49 viewshed acres	Manage significant rock art sites (including both prehistoric and historic inscriptions) and their surrounding setting within ½ mile to protect Native American, cultural, and historical values. These include: Cedar Canyon – 21.7 acres LaBarge Bluffs – 20 acres Sugarloaf – 2.3 acres Tolar – 8.3 acres White Mountain – 21.6 <b>The rock art site (excluding the 1/2 mile setting):</b>

Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)					
MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
			<p>Sugarloaf – 20 acres + 371 viewshed acres</p> <p>Tolar – 20 acres + 1,512 viewshed acres</p> <p>White Mountain – 20 acres + 4,780 viewshed acres.</p> <p>Prohibit surface disturbing activities, visual intrusions, and audible intrusions, within these areas.</p> <p>Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing; 4) pursue withdrawal from mineral location; 5) an exclusion area for new ROWs.</p> <p>Management of visitor use at rock art sites could include interpretive signing, fencing, barriers, and other activities.</p> <p>Allow geophysical activities such as shothole, blasting, and vibroseis locations, provided they are at least one mile from a significant rock art site, and a site-specific analysis determines that visual intrusions and adverse effects would not occur.</p>	<p>Tolar – 20 acres + 61 viewshed acres</p> <p>White Mountain – 20 acres + 115 viewshed acres.</p> <p>Management of visitor use at rock art sites could include interpretive signing, fencing, barriers, and other activities.</p>	<ul style="list-style-type: none"> <li>• Prohibit surface occupancy</li> <li>• NSO for fluid minerals</li> <li>• Close to mineral material sales/disposal.</li> <li>• Maintain existing withdrawals (Sugarloaf petroglyphs [5 acres] and White Mountain [20 acres]) and pursue new withdrawals from mineral location.</li> <li>• Designate as a ROW exclusion area.</li> <li>• Allow subsurface mining only if a site-specific analysis determines no adverse effects will occur.</li> <li>• Designate as VRM Class II.</li> </ul> <p>Allow geophysical activities such as shothole, blasting, and vibroseis locations, provided they are at least ¼ mile from a significant rock art site, and a site-specific analysis determines that visual intrusions and adverse effects would not occur.</p> <p><b>Setting (within ½ mile of site):</b></p> <p>Allow surface disturbing activities, visual, audible and atmospheric intrusions only if they do not adversely affect Native American, cultural or historical values.</p> <ul style="list-style-type: none"> <li>• CSU for fluid minerals.</li> <li>• Designate as a ROW avoidance area.</li> <li>• Designate as VRM Class II.</li> </ul>
5101	HR-13, HR-16, HR-6.1	The vistas surrounding these five significant rock art sites (i.e., the actual area that can be seen from the rock art sites, within ½ mile) is an avoidance area for surface disturbing activities and visual intrusions. Most surface disturbing and other activities visible within the vista would be prohibited if they	See management action 5100	See management action 5100	See management action 5100

Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)					
MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		would adversely affect rock art site values. Surface disturbing and other activities would be analyzed for the effects to the actual area seen from the rock art site for a distance of ½ mile surrounding the sites (vista). Some activities within ½ mile of the rock art, but not visible from the rock art panels, may be allowed. Other kinds of activities, such as audible disturbances, may not be allowed if they would adversely affect the sacred Native American values at the rock art sites. Site-specific activity or implementation plans would be prepared for these sites.			
5102	HR-13, HR-16, HR-6.1	If other significant rock art sites are identified in the future, they would be managed in the same manner as the above five significant sites.	See management action 5100	See management action 5100	See management action 5100
5103	HR-13, HR-16, HR-6.1	All other rock art sites would be managed on a case-by-case basis according to resource values.	See management action 5100	See management action 5100	See management action 5100
5104	HR-13, HR-16	The Cedar Canyon, LaBarge Bluffs, Sugarloaf, Tolar, and White Mountain rock art sites are exclusion areas, and are closed to surface disturbing activities that could adversely affect rock art resources. These sites are closed to: 1) the location of mining claims and entry under the land laws; withdrawals would be pursued as necessary and the existing Sugarloaf and White Mountain withdrawals would be retained; 2) mineral material sales for sand, gravel, or other types of construction or building materials; 3) the use of explosives and blasting; and 4) the use of fire retardant chemicals containing dyes. Off-road vehicular use,	Designate the Cedar Canyon, LaBarge Bluffs, Sugarloaf, Tolar, and White Mountain rock art sites as exclusion areas for ROWs (Map 2-22 and Table 2-10, Appendix V), and close to surface disturbing activities that could adversely affect rock art resources.  These sites would be closed to: <ul style="list-style-type: none"> <li>• The location of mining claims and entry under the land laws; withdrawals would be pursued and the existing Sugarloaf (10 acres) and White Mountain (20 acres) withdrawals would be retained</li> <li>• Mineral material sales for sand, gravel, or other types of</li> </ul>	See management action 5100	See management action 5100

<b>Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		including vehicles used for geophysical exploration activities, are limited to designated roads and trails (see Table 2-11, Appendix V; also see the discussions in Lands and Realty Management, Minerals Management, and Off-Road Vehicle Management).	<p>construction or building materials</p> <ul style="list-style-type: none"> <li>• The use of explosives and blasting</li> <li>• The use of fire retardant chemicals within ¼ mile of the sites.</li> </ul>		
5105	HR-13, SD-22, HR-2.1	For the protection of important rock art sites, other important cultural resource values, and important geologic and ecologic features, federal coal lands with these important values are open to consideration for further leasing and development by subsurface mining methods only. Any federal coal leasing and development on these lands would include an NSO requirement for any related ancillary facilities, and surface disturbing activities would be prohibited (about 13,340 acres of federal coal lands). (Refer to the Natural Corrals, Cedar Canyon, Greater Sand Dunes, and Steamboat Mountain portions of the Special Management Area section for more details.)	Close federal coal lands within ½ mile of important rock art sites, other important cultural resource values, and important geologic and ecologic features, to leasing and development.	See management action 5100	See management action 5100
5106	HR-13, BR-24, SD-22, HR-2.1, BR-24BR-24	In the JMH planning area, important geological, ecological, and historic resources would be open to consideration for coal leasing and development by subsurface mining methods only. Areas acceptable for coal leasing and development by subsurface mining methods only with no surface operations include Boars Tusk and Crookston Ranch. Areas acceptable for coal development by subsurface mining methods only and controls on placement of surface facilities include Steamboat	See management action 5105	See management action 5100	See management action 5100

<b>Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		Mountain ACEC, the eastern part of Greater Sand Dunes ACEC, Tri-Territory Marker, and raptor nest sites with a ½- to one-mile buffer. The portions of the Steamboat Mountain Management area within the Coal Occurrence and Development Potential Area would also be acceptable for leasing and development by subsurface mining methods with appropriate mitigation to protect these resources (similar to CSU). Big game crucial winter ranges and birthing areas are open to further consideration for federal coal leasing and development with a provision for maintaining a balance between coal leasing and development and adequate crucial winter range and birthing area habitats.			
<b>Other Sites</b>					
5107	HR-09, HR-12	The Tri-Territory Marker is an exclusion area and is closed to: 1) surface disturbing activities that could adversely affect it; and 2) exploration and development of locatable minerals. A withdrawal would be pursued. The site would be open for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection of the area. A cultural resource activity plan may be prepared for the site if necessary (see discussions in Lands and Realty Management and Minerals Management).	Close the Tri-Territory Marker (10 acres) to surface disturbing activities. The Tri-Territory Marker would be open for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection of the area. Manage as: 1) closed for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing; 4) petition to segregate and pursue a withdrawal from locatable mineral entry; 5) an exclusion area for new rights-of-way; 6) closed to coal and sodium exploration.	Same as Alternative B	Same as Alternative B
5108	HR-09, HR-12	In the JMH planning area, the Tri-Territory Marker would be an exclusion area for rights-of-way and would continue to be closed to surface disturbing activities. The	See management action 5107	See management action 5107	See management action 5107

<b>Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		Tri-Territory Marker would be withdrawn from mineral location and closed to coal and sodium exploration. The Tri-Territory Marker would be open for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection of the area.			
5109	HR-09, HR-02, HR-15	Playa Lake areas with high cultural site density would be managed as historic districts. Management prescriptions for surface disturbing activities in playa lake areas would be developed on a case-by-case basis. A programmatic memorandum of agreement for data recovery with the SHPO and Advisory Council on Historic Preservation would also be pursued. Each playa may be managed as an NRHP eligible historic district (Blue Forest, Blue Point, and Adobe Town Rim).	<p>Manage areas with high cultural resource density such as Blue Point, Blue Forest, Adobe Town Rim, Cedar Canyon and the Bozovich site complex as historic districts.</p> <p>Close these areas to surface disturbing activities that could adversely affect the cultural resources but open them for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection of the area.</p> <p>Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; and 3) closed to all solid mineral leasing.</p> <p>Encourage appropriate scientific study of sites in this area.</p> <p>Develop management prescriptions for surface disturbing activities in these areas on a historic district level.</p>	No similar action	No similar action
5110	HR-09, HR-02, HR-15	North and South Table Mountains (the Bozovich Site complex) would be managed to preserve cultural values within standard Section 106 and 110 NHPA compliance. The area would be closed to surface disturbing activities that could adversely affect the cultural sites but would be open for consideration of activities such as	See management action 5109	See management action 5109	See management action 5109

Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)					
MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		fencing, interpretive signs, or barriers to ensure protection of the area. Appropriate scientific study of sites in this area would be a priority within the resource area cultural program (see discussions in Lands and Realty Management and Minerals Management).			
5111	HR-09, HR-02, HR-15	The Eden-Farson, Finley, Krmptich, and Morgan archaeological sites, and similar sites identified in the future, would be managed to protect their important scientific values. No public interpretive efforts would be initiated at these sites. Periodic law enforcement patrol and other efforts would be instituted to ensure that the ARPA is enforced and that these sites are protected.	Same as Alternative A	Same as Alternative A	Manage the Eden-Farson (48SW304), Finley (48SW5), and Krmptich (48SW9826) archeological sites, and similar sites identified in the future, to protect their important scientific values. No public interpretive efforts would be initiated at these sites.  Institute periodic law enforcement patrol and other efforts to ensure the ARPA is enforced and that these sites are protected.
5112	HR-09, HR-16	All known human burial sites would be protected regardless of their ethnic affiliation. Management of Native American burial sites would take into account recommendations from appropriate tribes. Data recovery would not be the preferred method for mitigation of adverse effects to any burial location.	Close all known human burial sites, regardless of their ethnic affiliation, to surface disturbing activities that could adversely affect the sites.  Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing; 4) an exclusion area for all new ROWs.  Management of Native American burial sites would take into account recommendations from appropriate tribes.  Excavation/data recovery would not be the preferred method for mitigation of adverse effects to any burial location.	Same as Alternative A	Close all known human burial sites, regardless of their ethnic affiliation, to surface disturbing activities that could adversely affect the sites.  Manage as: <ul style="list-style-type: none"> <li>• NSO for fluid minerals</li> <li>• Close to mineral material sales/disposal</li> <li>• Designate an exclusion area for all new ROWs.</li> </ul> Consult with appropriate tribes regarding management of Native American burial sites and surrounding areas.  Excavation/data recovery would not be the preferred method for mitigation of adverse effects to any burial location.  Any burial located in the future will be managed with the same prescriptions as known burial sites.

Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)					
MA #	Goal/Obj.	Alternative A	Alternative B	Alternative C	Alternative D
5113	HR-09, HR-16	Known burial areas would be closed to surface disturbing activities that could adversely affect them (see discussions in Lands and Realty Management and Minerals Management and Table 2-4, Appendix V).	See management action 5112	See management action 5112	See management action 5112
5114	HR-09, SD-02, HR-2.1	LaCledé Stage Station and Dug Springs Stage Station on the Overland Trail would be protected as exclusion areas and would be closed to surface disturbing activities that could adversely affect the sites. These sites would be closed to exploration and development of locatable minerals and entry under the land laws, and withdrawals would be pursued. Interpretive and visitor management efforts would be allowed as necessary (see discussions in Lands and Realty Management and Minerals Management).	Close the Boyer Ranch House (formerly LaCledé Stage Station) (10 acres) and Dug Springs Stage Station (10 acres) on the Overland Trail to surface disturbing activities that could adversely affect the sites. Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing; 4) petition to segregate and pursue withdrawal from mineral location; 5) an exclusion area for ROWs. Cultural resource management plans could be written for these sites and interpretive and visitor management efforts would be allowed as necessary.	No similar action	Allow surface disturbing activities at the Boyer Ranch House (formerly LaCledé Stage Station) (10 acres) and Dug Springs Stage Station (10 acres) on the Overland Trail or their setting only if they do not adversely affect the cultural values of the sites. <ul style="list-style-type: none"> <li>• CSU for fluid minerals.</li> <li>• Petition to segregate and pursue withdrawal from mineral location.</li> </ul>
5115	HR-09, SD-01, SD-02	The Dry Sandy Stage Station and Fort LaCledé may be considered for acquisition under a willing seller/willing buyer situation to enhance BLM management of important historic resources. The BLM would not use powers of condemnation to acquire these parcels (Appendix K).	The Dry Sandy Stage Station and LaCledé Stage Station (formerly known as Fort LaCledé) could be considered for acquisition under a willing seller/willing buyer situation to enhance BLM management of important historic resources.	No similar action	Consider acquisition on a willing seller basis of the Dry Sandy Stage Station, LaCledé Stage Station (formerly known as Fort LaCledé), Big Pond Stage Station, Sulphur Springs Register, and Point of Rocks Stage Station to enhance BLM management of important historic resources.
5116	SD-22, SD-03	No similar action	No similar action	No similar action	The Crookston Ranch site, approximately 40 acres: <ul style="list-style-type: none"> <li>• NSO for fluid minerals.</li> <li>• Petition to segregate and pursue withdrawal from mineral location.</li> <li>• Close to mineral material sales.</li> </ul>



<b>Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
					<ul style="list-style-type: none"> <li>• Close to solid mineral leasing.</li> <li>• Designate as a ROW exclusion area.</li> </ul> Prohibit geophysical activities such as shothole, blasting, and vibroseis locations within ¼ mile from the site. Allow geophysical activities outside of ¼ mile only after a site-specific analysis determines that visual intrusions and adverse effects would not occur. Allow non-mineral development surface disturbing activities at the site and within ½ mile of the site, only if they do not adversely affect the cultural values of the site.
5117	SD-22, SD-03	No similar action	No similar action	No similar action	Suppress all fires within ¼ mile of the Crookston Ranch site.
5118	SD-22, SD-03	No similar action	No similar action	No similar action	Pine Springs (90 acres) would be managed to protect the natural and cultural values in the area.
5119	SD-22, SD-03	No similar action	No similar action	No similar action	Prohibit surface disturbing activities in Pine Springs (90 acres). <ul style="list-style-type: none"> <li>• NSO for fluid minerals</li> <li>• Retain the withdrawal from mineral location</li> <li>• Close to mineral material sales</li> <li>• Designate as a ROW avoidance area.</li> </ul>
5120	SD-22, SD-03	No similar action	No similar action	No similar action	Close Pine Springs to all geophysical operations and to the use of blasting and explosives.
5121	SD-22, SD-03	No similar action	No similar action	No similar action	Designate Pine Springs as VRM Class II.
<b>West Sand Dunes Archaeological District</b>					
<b>Goal:</b>					
SD-04: Manage for protection cultural resources for scientific study, education, and interpretation.					
5122	SD-04, HR-02, HR-05	The paleosol deposition area would be designated a special management area called the West	Designate the West Sand Dunes Archaeological District as a portion of the Steamboat	The West Sand Dunes Archaeological District would not be retained.	The West Sand Dunes Archaeological District is not designated as a special

<b>Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		Sand Dunes Archaeological District (18,650 acres of BLM-administered public lands) to be managed for scientific study, education, and interpretation (Table 2-12, Appendix V and Map 2-29).	Mountain ACEC and manage for scientific study, education, and interpretation (Table 2-12, Appendix V and Map 2-30).		management area. Rename the area as the West Sand Dunes Paleosol Deposition Area.
5123	SD-04, HR-02, HR-05	Heritage resource inventories in this area would be required, including analysis of subsurface deposits to ascertain whether they include important archaeological materials.	Apply the following prescriptions to the West Sand Dunes Archaeological District: Require heritage resource inventories in this area to include analysis of subsurface deposits to ascertain whether they include important archaeological materials. Require subsurface inventory using remote sensing techniques, hand-dug test excavations, and/or mechanical testing prior to issuing any surface disturbing authorizations in the West Sand Dunes Archaeological District.	No similar action, the West Sand Dunes Archaeological District would not be retained.	Apply the following prescriptions to the West Sand Dunes Paleosol Deposition Area: Require heritage resource inventories in this area to include analysis of subsurface deposits to ascertain whether they include important archaeological materials. Require subsurface inventory using remote sensing techniques, hand-dug test excavations, and/or mechanical testing prior to issuing any surface disturbing authorizations in the West Sand Dunes Paleosol Deposition Area.
5124	SD-04, HR-02, HR-05	The paleosol deposition area, including the Finley, Krmopotich, and Eden-Farson archaeological sites and geological deposits in the area, has been identified as an important heritage resource area: The paleosol deposition area would be designated the West Sand Dunes Archaeological District Special Management Area to be managed for scientific study, education, and interpretation (Map 2-29). Site locations would be kept confidential, and surface disturbance would be limited in the vicinity. Heritage resource inventories in this area would be required to include analysis of subsurface deposits to ascertain whether they	See management action 5123	See management action 5123	See management action 5123

**Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)**

MA #	Goal/ Obj.	Alternative A	Alternative B	Alternative C	Alternative D
		<p>include important archaeological materials.</p> <p>Subsurface inventory would be required using remote sensing techniques, hand-dug test excavations, or mechanical testing prior to issuing any surface disturbing authorizations in the West Sand Dunes Archaeological District. The testing strategy should be appropriate to meet the goal of finding buried paleosols and evaluating their potential association with archaeological materials.</p> <p>Subsurface testing would require an approved testing plan and BLM–State Historic Preservation Officer (SHPO) consultation. Mitigation may include research-oriented data recovery excavation.</p> <p>The Finley site would be nominated to the NRHP under the Register’s History of American Archaeology context and the Earliest Americans context.</p> <p>The Krmpotich site would be nominated to the NRHP under the Register’s Earliest Americans context.</p>			
5125	SD-04, HR-02, HR-05	<p>Subsurface inventory would be required by remote sensing techniques, hand-dug test excavations, or mechanical testing prior to issuing any surface disturbing authorizations in the West Sand Dunes Archaeological District. The testing strategy should be appropriate to meet the goal of finding buried paleosols and evaluating their potential association with archaeological materials.</p>	See management action 5123	See management action 5123	See management action 5123

<b>Heritage and Visual Resources (HR) – Specific Cultural Resources (5100-5127)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
5126	HR-09, HR-04	The Krmpotich site would be nominated to the NRHP under the Register's Earliest Americans context.	Same as Alternative A	No similar action, the West Sand Dunes Archaeological District would not be retained.	No similar action
5127	HR-09, HR-04	The area would be managed as a right-of-way avoidance area.	Same as Alternative A	No similar action, the West Sand Dunes Archaeological District would not be retained.	No similar action

<b>Heritage and Visual Resources (HR) – Sacred, Spiritual and/or Traditional Cultural Properties (5200-5202)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals:</b>					
HR-14: Maintain existing and establish new working relationships with Native American tribes for purposes of advancing the protection of cultural resources.					
HR-15: Consult, as appropriate, with Native American tribes to identify tribally sensitive resources or places that may be present within the RSFO. Safeguard all information considered by tribes to be confidential and utilize the information to prevent conflicts with incompatible uses.					
HR-16: Preserve and protect the cultural remains and natural settings of Sacred, Spiritual, and/or Traditional Cultural Properties.					
5200	HR-14, HR-15, HR-16	No similar action	Continue existing relationships and develop new relationships with Native American tribes in order to identify sites, areas, and resources important to them. Document important sites, areas, and resources and keep confidential as appropriate. The information would be incorporated into the planning system, to identify conflicts in the earliest stages, and to avoid conflicts whenever possible. Manage identified areas of tribal importance to minimize disturbance to them and to ensure continued access.	Same as Alternative B	No similar action
5201	HR-15, HR-16	In the JMH planning area, when activity is proposed in the vicinity of Traditional Cultural Properties (TCP), sacred sites, and/or respected places, management would be developed through consultation with Tribal leaders, SHPO, and the activity proponent	Consult with Tribal leaders, SHPO, and the activity proponent when an activity is proposed within three miles of TCPs, sacred sites, and/or respected places and based on the characteristics of the site and the proposed activity.	Consult with Tribal leaders, SHPO, and the activity proponent when activity is proposed within ¼ mile of TCPs, sacred sites, and/or respected places and based on the characteristics of the site and the proposed activity.	Consult with Tribal leaders, SHPO, and the activity proponent when an activity is proposed in the vicinity of TCPs, sacred sites, or places of cultural or religious importance. Design management based on the characteristics of the site and the proposed activity.

<b>Heritage and Visual Resources (HR) – Sacred, Spiritual and/or Traditional Cultural Properties (5200-5202)</b>					
<b>MA #</b>	<b>Goal/Obj.</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		based on the characteristics of the site and the proposed activity. Mitigation may include siting activity in such a way as to protect the foreground viewshed of the area of concern, if appropriate. Areas located on Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, Joe Hay Rim, and the Indian Gap Trail have been identified as respected places, which may include Native Americans' sacred sites or TCPs.	Mitigation could include siting activity in such a way as to protect the setting of the area of concern, if appropriate.  Areas located on Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, Joe Hay Rim, Pine Spring, Aspen Mountain and the Indian Gap Trail have been identified as respected places.	Mitigation could include siting activity in such a way as to protect the setting of the area of concern, if appropriate.  Areas located on Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, Joe Hay Rim, Pine Spring, Aspen Mountain and the Indian Gap Trail have been identified as respected places.	Mitigate activities, on a case-by-case basis, to protect the site and surrounding setting.
5202	HR-15, HR-03	The Indian Gap will be managed as part of the Steamboat Mountain ACEC. A portion of Indian Gap will be closed to surface disturbing and disruptive activities. The remainder of Indian Gap will be open to consideration of surface disturbing and disruptive activities with mitigation to protect resource values (Table 2-12, Appendix V and Map 2-29).	No similar action	No similar action	No similar action

<b>Heritage and Visual Resources (HR) – Paleontological Resources (5300-5309)</b>					
<b>#</b>	<b>Goal/Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals:</b>					
HR-17: Manage, preserve, and protect paleontological resources and areas on BLM-administered land in the planning area.					
HR-18: Reduce threats to paleontological resources from natural or human-caused deterioration.					
HR-19: Promote and enhance scientific and educational knowledge of paleontological resources in the planning area.					
HR-20: Provide paleontological research opportunities for qualified scientists/academia on public lands within the planning area in conjunction with the Wyoming State Office Paleontologist, implementing the paleontology permitting program.					
HR-21: Provide opportunities for the public to enjoy limited recreational collection of common invertebrate and plant fossils in portions of the planning area.					
HR-22: Develop interpretive sites relative to paleontological resources.					
HR-23: Promote and implement stewardship, conservation, and protection of paleontological resources.					
HR-24: Ensure areas containing, or likely to contain, vertebrate or noteworthy occurrences of invertebrate or plant fossils are identified and evaluated prior to authorizing surface-disturbing activities.					

<b>Heritage and Visual Resources (HR) – Paleontological Resources (5300-5309)</b>					
<b>#</b>	<b>Goal/Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
HR-25: Resolve conflicts between paleontological resources and other resource uses.					
5300	HR-17, HR-23	Require the Potential Fossil Yield Classification as a standard part of review for all surface-disturbing activities.			
5301	HR-17, HR-23	Identify and mitigate, on a case-by-case basis, threats to paleontological resources.			
5302	HR-17, HR-23	Significant paleontological resources would be managed for their scientific and educational values and in accordance with 43 CFR 3600, 43 CFR 3622, and 43 CFR 8365.	Manage significant paleontological resources for their scientific and educational values and in accordance with 43 CFR 3600, 43 CFR 3622, and 43 CFR 8365, and other applicable laws and regulations.	Same as Alternative A	No similar action (action required under existing law, regulation and policy)
5303	HR-17, HR-23	Collecting of vertebrate fossils may be allowed with written authorization which may be issued only to an academic, scientific, governmental, or other qualified institution or individual. Collection of common invertebrate fossils and petrified wood for hobby purposes is allowed on public lands and is regulated under 43 CFR 3600, 3 CFR 3622, and 43 CFR 8365. A site protection plan may be written and implemented for the Farson fossil Fish Beds.	Allow collecting of significant paleontological resources with written authorization only to academic, scientific, governmental, or other qualified individual. Allow collection of common invertebrate or plant fossils for hobby purposes on public lands as regulated under 43 CFR 8365. A site protection plan could be written and implemented for 18-mile canyon.	Allow collecting of significant paleontological resources with written authorization only to academic, scientific, governmental, or other qualified individual. Allow collection of common invertebrate or plant fossils for hobby purposes on public lands as regulated under 43 CFR 8365.	Allow collecting of significant paleontological resources by permitted academic, scientific, governmental, or other qualified individual only.  Allow non-commercial collection of common invertebrate or plant fossils for hobby purposes on public lands as regulated under 43 CFR 8365.
5304	HR-17, HR-23	Surface disturbing activities that affect known vertebrate fossil localities would be considered in site-specific analyses and potential adverse effects would be mitigated. At the area manager's discretion, mitigating measures may be required for surface disturbing activities occurring in areas having a reasonable chance for the occurrence of scientifically significant fossils. Operators are required to report any paleontological resources discovered during the course of operations.	Consider surface disturbing activities that affect known significant paleontological resource localities after site-specific analyses and potential adverse effects are mitigated. The AO may require mitigating measures for surface disturbing activities occurring in areas having a reasonable chance for the occurrence of scientifically significant fossils. Require operators to report any paleontological resources discovered during the course of operations.	Same as Alternative A	Allow surface disturbing activities that affect known significant paleontological resource localities after site-specific analyses and potential adverse effects are mitigated. The AO may require mitigating measures for surface disturbing activities affecting known localities of scientifically significant fossils. Require operators to report any paleontological resources discovered during the course of operations.

<b>Heritage and Visual Resources (HR) – Paleontological Resources (5300-5309)</b>					
<b>#</b>	<b>Goal/Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
5305	HR-17, HR-23	No similar action	Prohibit surface disturbing activities in Adobe Town and Desolation Flat/Desolation Point areas.  Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing.	No similar action	No similar action
5306	HR-17, HR-23	Provide paleontological research opportunities for qualified scientists/academia on BLM-administered land within the planning area in conjunction with the Wyoming State Office Paleontologist, implementing the paleontology permitting program.	Provide paleontological research opportunities for qualified scientists/academia on BLM-administered land within the planning area in conjunction with the Wyoming State Office Paleontologist, and BLM's paleontology permitting program. The BLM would actively solicit paleontological research.	Same as Alternative A	Same as Alternative A
5307	HR-17, HR-23	In the JMH planning area, documented significant fossil sites would be avoided to protect scientific and educational values. Management guidelines included in BLM Handbook 8270-1 would apply. If impacts are unavoidable, a BLM-approved paleontologist would evaluate the site (a paleontological survey may also be required) and would coordinate with the BLM in developing a mitigation plan. The mitigation plan may include activity monitoring, fossil documentation, recovery, and storage in a federally approved repository.	Avoid documented significant fossil sites to protect scientific and educational values. Apply management guidelines included in BLM Handbook 8270-1.  If impacts are unavoidable, a BLM-permitted paleontologist would evaluate the site (a paleontological survey may also be required) and would coordinate with the BLM in developing a mitigation plan. The mitigation plan could include activity monitoring, fossil documentation, recovery, and storage in a federally approved repository.	Same as Alternative A	Same as Alternative B
5308	HR-17, HR-23	No similar action	No similar action	No similar action	Allow surface disturbing activities, on a case-by-case basis, in the Farson Fossil Fish Beds, subject to adequate mitigation of impacts following BLM mitigation policies.  • Designate as a ROW avoidance area.

<b>Heritage and Visual Resources (HR) – Paleontological Resources (5300-5309)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
					The BLM (or BLM paleontological staff) may write and implement a site protection plan for the Farson Fossil Fish Beds and other significant fossil localities as they are identified.
5309	HR-17, HR-23	No similar action	No similar action	No similar action	Institute periodic law enforcement patrol and other efforts to protect sites under the Paleontological Resources Protection Act.

<b>Heritage and Visual Resources (HR) – Visual Resources (5400-5413)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goal:</b>					
HR-26: Maintain or improve overall visual values and scenic quality and establish priorities for managing the visual resources in conjunction with other resource values.					
5400	HR-02, HR-11, HR-04	Visual resource classes would be retained or modified to enhance other resource objectives such as those for cultural resource and recreation management, wild horse viewing, and special management areas. The visual resource management classifications are shown in Table 2-9, Appendix V and Map 2-17.	Designate VRM classifications as shown in Table 2-9, Appendix V and Map 2-18.	Designate VRM classifications as shown in Table 2-9, Appendix V and Map 2-19.	Designate VRM classes as shown in Table 2-9, Appendix V and Map 2-20.
5401	HR-02, HR-11, HR-04	In the JMH planning area, visual resource classes would be retained or modified to enhance other resource objectives such as heritage resources, recreation uses, wild horse viewing, and special management areas. Projects would be designed to meet established visual classifications objectives and appropriate mitigation would be applied.	See management action 5400	See management action 5400	See management action 5400
5402	HR-02, HR-11, HR-04	In the JMH planning area, a low level of change would be acceptable to the characteristic landscapes of the ACECs, thus the eastern portion of the Greater	See management action 5400	See management action 5400	See management action 5400



Heritage and Visual Resources (HR) – Visual Resources (5400-5413)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		Sand Dunes ACEC, South Pass Historic Landscape ACEC, and White Mountain Petroglyphs ACEC would be managed as VRM Class II areas.			
5403	HR-02, HR-11, HR-04	In the JMH planning area, Steamboat Mountain ACEC, Steamboat Mountain Management Area (includes Split Rock), and unique geological features and landforms, including portions of White Mountain, Pinnacles Geological Feature, and the West Sand Dunes Archaeological District, would also be managed as VRM Class II areas.	See management action 5400	See management action 5400	See management action 5400
5404	HR-02, HR-11, HR-04	In the JMH planning area, all areas not managed as VRM Class I, II, or III would be managed as VRM Class IV.	See management action 5400	See management action 5400	See management action 5400
5405	HR-02, HR-11, HR-04	No similar action	Determine visual resource management of checkerboard lands by the Visual Resource Inventory.	Manage all lands within the checkerboard consistent with VRM Class IV objectives.	See management action 5400
5406	HR-02, HR-11, HR-04	No similar action	Determine visual resource management of the lands east of State Highway 430, South of the checkerboard, and west of the Rock Springs/Rawlins boundary, exclusive of Adobe Town WSA, by the Visual Resource Inventory (Map 2-18).	Manage lands east of State Highway 430, South of the checkerboard, and west of the Rock Springs/Rawlins boundary, exclusive of Adobe Town WSA, consistent with VRM Class IV objectives (Map 2-19).	See management action 5400
5407	HR-02, HR-11, HR-04	All surface disturbing actions, regardless of the visual resource management class, are required to be mitigated to reduce visual impacts. This would be achieved by designing and locating the disturbances in a manner that most closely meets the minimum degree of contrast acceptable for the visual resource management classes.	Design and locate all surface disturbing actions in a manner that most closely meets the minimum degree of contrast acceptable for the VRM classes and could require mitigation.  Design projects and facilities to meet the objectives of the established visual classifications and include appropriate mitigation.	Same as Alternative A	Design, locate, and mitigate all surface disturbing activities in a manner that meets the requirements of each VRM class.

<b>Heritage and Visual Resources (HR) – Visual Resources (5400-5413)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
5408	HR-02, HR-11, HR-04	Projects and facilities would be designed to meet the objectives of the established visual classifications and appropriate mitigation would be included. Facilities (either in place or new), including linear ROWs, etc., must be screened, painted, or designed to blend with the surrounding landscape.	See management action 5407	See management action 5407	See management action 5407
5409	HR-02, HR-11, HR-04	The public lands along all major highways in the planning area would be managed under their respective visual resource management classifications (Map 2-17, Table 2-9, Appendix V).	See management action 5407	See management action 5407	See management action 5407
5410	HR-02, HR-11, HR-04	In the JMH planning area, projects would be designed, sited, screened, or painted to reduce visual impacts regardless of the VRM classification. The VRM classes provide the design standards for all surface disturbing projects (Map 2-17).	See management action 5407	See management action 5407	See management action 5407
5411	HR-02, HR-11, HR-04	No similar action	Prohibit, on a case-by-case basis, surface-disturbing activities that create a moderate to strong contrast (via the visual contrast rating system) in areas managed consistent with VRM Class III and IV objectives that can be observed from areas managed consistent with VRM Class I and II (e.g., wind development).	Allow surface-disturbing activities in areas managed consistent with VRM Class III and IV objectives that can be observed from areas managed consistent with VRM Class I and II, regardless of the degree of visual contrast.	Prohibit, on a case-by-case basis, surface disturbing activities that create a strong contrast (via the visual contrast rating system) that can be observed in areas managed consistent with VRM Class I and II.
5412	HR-02, HR-11, HR-04	No similar action	Require all proposed actions within areas designated as VRM Class I, II, and III objectives to conduct a visual simulation prior to analysis and/or mitigation design.	A visual simulation would not be required.	Visual simulations would be required consistent with Manual 8400.
5413	HR-02, HR-11, HR-04	Allow the construction and placement of the Gateway West Transmission Line on public land	Same as Alternative A	Same as Alternative A	Same as Alternative A

Heritage and Visual Resources (HR) – Visual Resources (5400-5413)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		classified as VRM Class II in section 10, T. 20 N., R. 109 W.			

Land Resources (LR) – Lands and Realty (6000-6015)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
<b>Goals:</b>					
LR-01: Manage the acquisition, disposal, withdrawal, and use of public lands to meet the needs of internal and external customers (e.g., to respond to community needs for expansion and economic development and to preserve important resource values).					
LR-02: Improve efficiency of management in areas of scattered or intermingled land ownerships patterns.					
LR-03: Review and evaluate the need and merits of current and proposed withdrawals.					
LR-04: Identify BLM administered lands within the planning area for acquisition, disposal, or withdrawal.					
6000	LR-06, LR-07, LR-02, BR-24BR-24	Access to public lands would be provided throughout the planning area. Where necessary and consistent with off-road vehicle (ORV) designations, access would be closed, or restricted in specific areas to protect public health and safety, and to protect significant resource values. Easements would be pursued where practical, to provide access to public lands for recreational, wildlife, range, cultural/historical, mineral, special management area, and other resource management needs (about 300 acres)Appendix K.	Evaluate, on a case-by-case basis, access needs to public, state, and private land within the planning area. Restrict access where necessary to protect public health or safety and sensitive resources. Consider, when requested by the land owner, access across public land to isolated private and state land consistent with the guidelines and objectives set forth in FLPMA and existing regulatory requirements.	Same as Alternative A	Restrict or close access where necessary and consistent with OHV designations: 1) in specific areas to protect public health and safety; and 2) to protect significant resource values.  Pursue easements where practical, to provide access to public lands for recreational, wildlife, range, cultural/historical, mineral, special management area, and other resource management needs (Appendix K).
6001	PR-01, PR-02, PR-03	No similar action	Limit geologic carbon sequestration exploration and site characterization projects and commercial sequestration projects and facilities to the Rock Springs Uplift.	Facilitate geologic carbon sequestration exploration and site characterization projects and commercial sequestration projects and facilities throughout the area of review. These could range from the prospective use of deep saline aquifers, e.g., Weber Sandstone and Madison limestone formations, deep unmineable coal seams, and suitable depleted oil and gas	Allow geologic carbon sequestration exploration and site characterization projects and commercial sequestration projects and facilities (Appendix H).

<b>Land Resources (LR) – Lands and Realty (6000-6015)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
				fields after the completion of Enhanced Oil Recovery.	
6002	LR-06, MR-03	Public lands would be made available throughout the planning area for rights-of-way, permits, and leases.	The planning area is open to the consideration of granting lands/realty actions, except where identified.	Same as Alternative B	The planning area is open to the consideration of granting lands/realty actions, except where identified.
6003	LR-06, MR-03	In the JMH area, the extent of right-of-way exclusion and avoidance areas, based on the location of specific sensitive resources, is shown on Map 2-21 and Table 2-10, Appendix V.	See management action 6002	See management action 6002	See management action 6002
6004	LR-06, BR-46, BR-35	No similar action	Stipulate pipeline trenches are not allowed open longer than 10 days during the construction phase. Require pipeline gates to mitigate impacts to livestock, wildlife and public safety.	Same as Alternative B	Same as Alternative B
6005	LR-06	No similar action	No similar action	No similar action	Remove abandoned pipelines that are exposed or have come to the surface and that present a public safety hazard.
<b>Withdrawals and Classifications</b>					
6006	LR-03	Withdrawals for Public Water Reserves would be revoked where no longer needed and pursued where the need exists.			
6007	LR-03, LR-01, PR-07	The BLM Rock Springs Administrative Site withdrawal would be retained (Appendix K).			
6008	LR-01, LR-03, LR-04, BR-24, HR-2.1	Land withdrawals identified in the Green River RMP would be pursued. New withdrawals in addition to those identified in the Green River RMP include the top of Steamboat Mountain, the Pinnacles Geologic Feature, and two northern elk calving areas.	Process land withdrawals identified in Table 2-3, Appendix V.	Process land withdrawals identified in Table 2-3, Appendix V.	Process land withdrawals identified in Table 2-3, Appendix V.
6009	LR-04, BR-29, HR-13, BR-24, HR-2.1	Withdrawals and classifications would be processed to protect important resource values (Appendix K).	See management action 6008	See management action 6008	See management action 6008

<b>Land Resources (LR) – Lands and Realty (6000-6015)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
6010	LR-03, BR-20, HR-13	Withdrawals which no longer serve the purpose for which they were established would be revoked.  Prior to revocation, withdrawn lands would be reviewed to determine if any other resource values require withdrawal protection (Appendix K).	Revoke withdrawals which no longer serve the purpose for which they were established (Appendix K).  Review withdrawn lands, prior to revocation or expiration, to determine if any other resource values require withdrawal protection. Manage lands within withdrawn areas that expire or are revoked in accordance with the management of the surrounding lands	Same as Alternative A	Same as Alternative B
6011	LR-03	An additional 63 acres inundated by water under Flaming Gorge Reservoir may be withdrawn for the Bureau of Reclamation.	No similar action	No similar action	No similar action
<b>Land Tenure Adjustments</b>					
6012	PR-07, BR-05, LR-04	No BLM-administered public lands within the planning area are available for agricultural entry under Desert Land Entry (43 CFR 2520) due to one or more of the following factors: unsuitable soils, salinity contributions into the Colorado River System, lack of water supplies, rugged topography, lack of access, small parcel size, and presence of sensitive resources.	No BLM-administered public lands within the planning area are available for agricultural entry under Desert Land Entry (43 CFR 2520).	BLM-administered public lands within the planning area would be available for agricultural entry under Desert Land Entry (43 CFR 2520).	Same as Alternative A
6013	LR-01	Public lands would be retained in federal ownership with the exception of those lands which have potential for disposal. Lands currently identified as meeting the FLPMA disposal criteria are described in Appendix K. The preferred method of disposal would be by land exchanges. Other lands would be considered for disposal on a case-by-case basis. All disposals must conform to the criteria listed in Appendix K.	Retain public lands in federal ownership except for those lands which have potential for disposal. Lands currently identified as meeting the FLPMA disposal criteria are described in Appendix K. Other lands would be considered for disposal and must conform to the disposal criteria for exchange or sale as described in Appendix K. Land exchange is the preferred method of disposal.	Retain public lands in federal ownership except for those lands which have potential for disposal. Lands currently identified as meeting the FLPMA disposal criteria are described in Appendix K. Other lands would be considered for disposal and must conform to the disposal criteria for exchange or sale as described in Appendix K.	Retain public lands in federal ownership except for those lands which have potential for disposal. Lands currently identified as meeting the FLPMA disposal criteria are described in Appendix K. Other lands would be considered for disposal and must conform to the disposal criteria for exchange or sale as described in Appendix K. Land exchange is the preferred method of disposal.

<b>Land Resources (LR) – Lands and Realty (6000-6015)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
6014	LR-01, LR-04, PR-06	Acquisition of lands would be considered to facilitate various resource management objectives. The preferred method for acquisition would be through exchange. Land exchanges are considered discretionary and voluntary real estate transactions between parties involved. Lands considered would include private/State lands along upper stream reaches of the Big Sandy River; State inholdings in WSAs; other lands with important resource values. Consideration would be given to exchanges for state lands in special management areas such as ACECs. In those instances where a purchase or exchange is not feasible, attempts would be made to enter into cooperative agreements to protect cultural/historical sites; threatened and endangered species habitat; and riparian habitat. Appendix K describes proposed acquisitions (about 28,000 acres) that could be made by purchase/exchange or through cooperative agreement to support resource needs.	Consider acquisition of lands to facilitate various resource management objectives. Land exchanges would be considered discretionary and voluntary real estate transactions between parties involved. Refer to Appendix K for lands considered for acquisition.  Land exchange is the preferred method for acquisition.	Consider acquisition of lands to facilitate various resource management objectives. Land exchanges would be considered discretionary and voluntary real estate transactions between parties involved. Refer to Appendix K for lands considered for acquisition.  No private or state lands would be acquired unless the landowner seeks a land exchange.	Consider acquisition of lands to facilitate various resource management objectives. Land acquisitions would be considered discretionary and voluntary real estate transactions between parties involved. Refer to Appendix K for lands considered for acquisition. Land exchange is the preferred method for acquisition.
6015	LR-01, LR-04, PR-06	Exchanges would conform to the JMH planning objectives and actions. BLM land acquisition would be considered to facilitate various resource management objectives. The preferred method for acquisition would be through exchange. Land exchanges are considered discretionary and voluntary real estate transactions between the willing parties involved. Exchanges for state lands in WSAs and other special management areas would be considered to ensure easier and	See management action 6014	See management action 6014	See management action 6014

Land Resources (LR) – Lands and Realty (6000-6015)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		consistent management in these areas. Exchanges would be considered to acquire state or private lands that hold high cultural and historical value; that hold important resource values, such as habitat for threatened and endangered species; and that would facilitate resource management objectives, such as preventing habitat fragmentation.			

Land Resources (LR) – Renewable Energy (6100-6108)					
#	Goal/Obj	Alternative A	Alternative B	Alternative C	Alternative D
<b>Goal:</b>					
LR-05: Provide opportunities for assessment and development of renewable energy facilities on public lands.					
6100	LR-05	In cooperation with project proponents, promote and enhance scientific knowledge of renewable energy resources in the planning area.			
6101	LR-05	Coordinate with local, state, and federal agencies in the development of renewable energy resources.			
6102	LR-05	Programmatic policies and BMPs for wind-energy development are identified in the Record of Decision for <i>Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments</i> (BLM 2005c), IM 2009-043, and 43 CFR 2800-2809.			
6103	LR-05	No similar action	Renewable energy development would follow the BMPs specified in the Appendix A.  Additional measures and BMPs could be identified and required to protect resources and resource uses.	Same as Alternative B	Same as Alternative B
6104	LR-05, SR-01, PR-01, BR-24	Consider authorization of renewable energy projects consistent with the management of other resource values.	Consider the authorization of renewable energy projects consistent with the management of other resource values and uses.	Same as Alternative A	Same as Alternative B
6105	LR-05, SR-01, PR-01, BR-24	The JMH planning area would be open to alternative energy development projects, such as wind or solar farms, consistent with the resource protection requirements and the transportation plan. The ROW authorization that would allow these developments to occur	The planning area would be open to renewable energy development unless managed as renewable energy or ROW exclusion or avoidance areas to meet other resource objectives (Table 2-10, Appendix V; Map 2-22). See management action 2207	Same as Alternative B	The planning area would be open to renewable energy development projects, subject to adequate mitigation of impacts following BLM mitigation policies or except where specifically prohibited or restricted (Table 2-10, Appendix V and Map 2-24 for ROWs). See management action 2207

<b>Land Resources (LR) – Renewable Energy (6100-6108)</b>					
#	Goal/Obj	Alternative A	Alternative B	Alternative C	Alternative D
		would include mitigation requirements to protect sensitive resources and would meet the location requirements for utility lines and roads required in the transportation plan.	Geothermal resources are discussed in the fluid minerals section. See management action 2100-2102		Geothermal resources are discussed in the fluid minerals section. See management action 2100-2102
6106		No similar action	No similar action	No similar action	The Sweetwater County Growth Management Area is designated a ROW exclusion area for wind energy developments. See management action 2203, 2403, & 2419
6107	LR-05 MR-01	No similar action	Consider the authorization of renewable energy ROWs within the KSLA on a case-by-case basis consistent with the management of other resource values and uses. See management action 2408-2411	No similar action	Same as Alternative B
6108	LR-05	No similar action	Programmatic policies and BMPs for solar energy development as identified in the Approved RMP/ROD for Solar Energy Development in Six Southwestern States (BLM 2012) would be considered on a case-by-case basis.	Same as Alternative B	Same as Alternative B

<b>Land Resources (LR) – Rights-of-Way and Corridors (6200-6210)</b>					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
Goal: LR-06: Manage public lands to meet transportation and ROW needs consistent with goals and objectives of other resources while supporting the national energy plans and policies.					
6200	LR-06, LR-07	Maintain a transportation management system in cooperation with appropriate state and local agencies and governments to meet public and resource management needs.			



6201	LR-06, MR-03	The planning area, with the exception of defined exclusion and avoidance areas, would be open to the consideration of granting rights-of-way (see Special Management Area section and Table 2-10, Appendix V).	The planning area is open to consideration of granting rights-of-way with the exception of defined exclusion and avoidance areas (see Map 2-22).	The planning area is open to consideration of granting rights-of-way with the exception of defined exclusion and avoidance areas (see Map 2-23).	The planning area is open to consideration of granting rights-of-way with the exception of defined exclusion and avoidance areas (see Map 2-24).
6202	LR-06, MR-03	Areas are designated for avoidance or exclusion to rights-of-	See management action 6201	See management action 6201	See management action 6201

### Land Resources (LR) – Rights-of-Way and Corridors (6200-6210)

#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		way where these uses are incompatible with management of sensitive resources and/or would have unacceptable impacts. Rights-of-way and avoidance areas are described in Table 2-10, Appendix V and shown on Map 2-21.			
6203	LR-06	The Aspen Mountain Communications Site Plan would govern development of sites at this location.	Same as Alternative A	Same as Alternative A	Same as Alternative A (Appendix M)
6204	LR-06, SR-01	Sites at other locations would be approved on a case-by-case basis. Sharing of sites would be advocated, where possible.	Encourage new communication facilities be co-located with existing sites where possible.	Same as Alternative A	Communication sites at other locations would be approved on a case-by-case basis. Sharing of sites would be advocated, where possible
6205	LR-06, PR-04	An avoidance area for major utility lines would be located along I-80 between Point of Rocks and Green River. Due to topography, congestion in the concentration area, and surface mining, this area would be restricted to local distribution service lines. All other utilities would be located, if possible, in the northern or southern east-west windows.	Designate an avoidance area for major utility lines along I-80 between Point of Rocks and Green River (Table 2-10, Appendix V; Map 2-22).	No similar action	Same as Alternative B

6206	LR-06, SR-01, HR-02	Right-of-way corridors would not be designated due to the predominate checkerboard private land pattern in the planning area. The preferred energy transport corridors identified in the WWEC ARMPA/ROD 2009 have been adopted (Map2-21).	Retain the preferred corridors identified in the WWEC ARMPA/ROD 2009 (Map 2-22). Eliminate the existing corridor identified in the WWEC ARMPA/ROD (2009) east of Flaming Gorge in the planning area (126-218). Corridor widths would be 3,500 feet wide. Designate no new corridors.	Retain the preferred corridors identified in the WWEC ARMPA/ROD 2009 (Map 2-23). Corridor widths would be 3,500 feet wide. Designate new corridors consistent with RMPs for other field offices.	Retain the preferred corridors identified in the WWEC ARMPA/ROD 2009 (Map 2-24). Restrict corridor widths to 3,500 feet wide, or consistent with RMPs for other field offices.
6207	LR-06, HR-11	Areas designated as utility windows, rights-of-way concentration areas, and existing communication sites would be	Areas designated as rights-of-way concentration areas and corridors, and existing communication sites would be preferred locations for	There would be no preferred location of right-of-way within right-of-way concentration areas and corridors.	Close the utility window located in the Little Mountain ACEC.

**Land Resources (LR) – Rights-of-Way and Corridors (6200-6210)**

#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		preferred locations for future grants.	future grants, with the exception of exclusion and avoidance areas.		
6208	LR-06, LR-07, BR-07	In the JMH area, to the extent possible, utility and transportation rights-of-way would be located to coincide with existing roads, trails, and other right-of-way or easement concentration areas where they would not create safety hazards or conflict with other resource objectives. Linear rights-of-way would be considered as part of transportation planning.	See management action 6207	See management action 6207	See management action 6207

6209	LR-06, SD-37, BR-24	In the JMH area, the transportation plan also applies to the transport of gas, condensate, or water via pipelines and electric power transmission (buried power lines) within the planning area. Pipelines and buried power lines generally would be located adjacent to roads to reduce new surface disturbance.	Locate pipelines, power lines and other utilities adjacent to or co-located within existing ROWs to reduce new surface disturbance.	Locate pipelines, power lines and other utilities adjacent to or co-located within existing ROWs to reduce new surface disturbance, where feasible.	Same as Alternative C
6210	LR-06, MR-03	Designate new ROW corridor (Wyoming Pipeline Corridor Initiative Project) as shown on Map 2-21.  The preferred pipeline corridors identified in the WPCI ROD 2021 have been adopted.	Designate new ROW corridor (WPCI) as shown on Map 2-22.	Designate new ROW corridor (WPCI) as shown on Map 2-23.	Designate new ROW corridor (WPCI) as shown on Map 2-24.

**Land Resources (LR) – Backcountry Byways(6300-6306)**

#	Goal/Obj	Alternative A	Alternative B	Alternative C	Alternative D
Goal: LR-08: Promote the increased awareness of the historical and cultural values and facilitate a sense of stewardship within the backcountry byways.					
6300	LR-08, LR-15, LR-02	Manage National Backcountry Byways and All-American Roads to enhance opportunities for the public to experience and enjoy public lands (Map 3-19).			
6301	LR-15, LR-02	Identify scenic or backcountry byways and develop management prescriptions to maintain resource values.			
6302	LR-08, LR-15, LR-02	Through cooperative relationships with volunteer groups, landowners, other agencies, and other interested stakeholders, showcase landscapes, their scenic qualities, multiple uses, and unique character through interpretation.			
6303	LR-08, LR-15, LR-02	The Wild Horse Loop Tour on White Mountain would be managed as the Wild Horse Scenic Loop Byway (see	Retain the Wild Horse Scenic Loop Byway.	The Wild Horse Scenic Loop Byway would not be retained.	Retain as the Pilot Butte Loop Backcountry Byway.
		Environmental Assessment, WY-040-03-054).			

6304	LR-08, LR-15, LR-02	Five backcountry byways are designated and would include consideration for mountain bike use. They are Tri-Territory Loop, the Lander Road, Red Desert, Fort LaCledde Loop, and the Firehole-Little Mountain Loop. Brochures and interpretive signs would be prepared to inform users.	Retain the Tri-Territory Loop, the Lander Road, Red Desert, Fort LaCledde Loop, and the Firehole-Little Mountain Loop Backcountry Byways. Consider additional backcountry byways.	Five backcountry byways would not be retained. Additional backcountry byways would not be considered.	Retain the Tri-Territory Loop, the Lander Road, Red Desert, Fort LaCledde Loop, and the Firehole-Little Mountain Loop Backcountry Byways.
6305	LR-15, LR-02	Within the JMH area, an interpretive prospectus and sign plan would be developed for the Backcountry Byways program (Tri-Territory Loop and Red Desert) and would include interpretive and directional signs. The location of these signs would be coordinated with state and local governments and other interested parties for the Red Desert viewpoint from the dugway of Steamboat Mountain, the Chicken Springs overlook, Steamboat Mountain, Oregon Buttes, Honeycomb Buttes, and Indian Gap.	See management action 6318	See management action 6318	See management action 6318
6306	LR-08, LR-15, LR-02	Additional travel routes that meet the criteria would be considered for designation as backcountry byways on a case-by-case basis.	Consider, on a case-by-case basis, additional travel routes that meet the criteria for designation as backcountry byways. Designate the Cherokee Trail and Tri-territory Short Loop as backcountry byways and consider for mountain bike use.	Do not consider additional travel routes that meet the criteria for designation as backcountry byways.	Designate, on a case-by-case basis, additional travel routes that meet the criteria for designation as backcountry byways.

Land Resources (LR) – Livestock Grazing Management (6400-6417)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
<b>Goal:</b>					
LR-09: Maintain, restore, or enhance livestock grazing opportunities while meeting or making significant progress towards meeting the Wyoming Land Health Standards, and achieve allotment objectives.					
6400	LR-09, BR-05, BR-09	Provide, maintain, and improve opportunities for livestock grazing while meeting or making significant progress towards meeting the Wyoming Land Health Standards.			

6401	LR-09, BR-05, BR-09	Use livestock grazing systems and management techniques, where appropriate, to maintain vegetation communities and ecosystem functions, in consultation and coordination with the grazing permittees and the interested public.			Use livestock grazing systems and management techniques to maintain or enhance land health; improve forage for livestock, wild horses and wildlife; and meet other multiple-use objectives. Use the Wyoming Guidelines for Livestock Grazing Management and other appropriate BMPs in designing and implementing livestock grazing systems and management.
6402	LR-09, BR-10, BR-09	Use data collected from inventory and monitoring to support decisions that authorize livestock grazing levels and management.			Adjust livestock grazing use when land health assessments, evaluations, monitoring data, or other acceptable scientific analysis demonstrates that changes in grazing management are needed and appropriate. Adjustments in livestock grazing may include changes in the number of livestock, the kind of livestock, the season-of-use (timing and duration), or the grazing system utilized (such as rotation system).
6403	LR-09, BR-05, BR-09	Identify and implement range and vegetation improvement projects to maintain, restore, and enhance livestock grazing and/or fulfill or make significant progress towards meeting the Wyoming Land Health Standards in cooperation, consultation, and coordination with the grazing permittees and the interested public.			
6404	LR-09, BR-09, BR-05	Authorized grazing use would not exceed the recognized permitted active AUMs (318,647 AUMs). Public lands would be made available for livestock grazing while considering the needs of other resources.	The total authorized livestock use for a grazing season within the RSFO would be the active use AUMs sustained on an allotment-by-allotment basis for livestock grazing, providing the Wyoming Land Health Standards are met. If a land health evaluation shows that land health standards are not met and current livestock grazing management is determined to be among the causal factors, implement a 20% reduction annually from the 10-year average	Reduce total authorized livestock use to the highest level of billed use over the last 10 years (2009 – 2018). A total of 160,387 active AUMs will be allocated for livestock use.  Adjust active use AUMs when site-specific monitoring/assessment data, the results of a land health evaluation, or a site-specific NEPA analysis demonstrates that an adjustment is appropriate to facilitate proper	Authorize livestock grazing at current active use AUM levels within all existing grazing allotments. Total active use AUMs currently administered by the RSFO are 304,261 (for an explanation of the difference between active use AUMs in Alternative A and Alternative D see Section 3.16). There are also two allotments that are partially within the RSFO that have grazing use administered by another BLM office. These include the Crooked Wash (2,292 active use AUMs

Land Resources (LR) – Livestock Grazing Management (6400-6417)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
			of actual billed AUMs for each permit/lease up to three consecutive years (60%) in active AUMs until land health standards are met. Adjust reductions if it has been determined that significant progress has been made toward achieving land health standards.	grazing management to provide for meeting or making significant progress towards meeting the Wyoming Land Health Standards and to meet the goals and objectives of the RMP.	currently available within the RSFO) and Horseshoe Wash (607 active use AUMs currently available within the RSFO) allotments. Adjust active use AUMs (increase or decrease) when site-specific monitoring/assessment data, the results of a land health evaluation, or a site-specific NEPA analysis demonstrates that an adjustment is appropriate to facilitate proper grazing management to provide for meeting or making significant progress towards meeting the Wyoming Land Health Standards and to meet the goals and objectives of the RMP.
6405	BR-24, BR-10, BR-09	No similar action	Establish allotment stocking rates which result in forage utilization levels in areas preferred by livestock (generally a light 21% to 40% utilization level) that provide for wildlife cover and utilization.	No similar action (see action 6404)	No similar action (see action 6404)
6406	BR-24, BR-10, BR-09	No similar action	Adjust livestock and wild horse forage allocations as needed to meet the site potential which supports wildlife habitat requirements.	No similar action	No similar action (see action 6401)
6407	LR-09	The Palmer Draw area (970 acres) and special management enclosures are closed to livestock grazing. AUMs currently authorized in these areas would be suspended.	Close all enclosures within the planning area to livestock grazing. Suspend AUMs currently authorized in these enclosures.	All enclosures within the planning area could be removed and the area would be available for livestock grazing.	Close the Pine Creek Special Status Plant Enclosure (Small Rockcress, <i>Arabis pusilla</i> ) (587 acres) to livestock grazing. Close the McKinnon Special Status Plant Enclosure (Precocious Milkvetch, <i>Astragalus proimanthus</i> ) (120 acres) to livestock grazing. Close the Palmer Draw Enclosure (1,808 acres) to livestock grazing. Close all other livestock enclosures within the planning area to livestock grazing, unless a site-specific analysis indicates grazing could be

Land Resources (LR) – Livestock Grazing Management (6400-6417)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
					<p>used to achieve enclosure goals and objectives.</p> <p>Establish new enclosures only when site-specific analysis demonstrates that doing so would help meet resource objectives. If the enclosure is of a sufficient size, consider adjusting livestock AUMs in accordance with management action 6404.</p> <p>Remove enclosures when site-specific analysis determines they no longer serve their purpose. Once removed, the area would be available for livestock grazing.</p>
6408	LR-09	In the JMH planning area, riparian enclosures can be maintained and/or modified based on site-specific analysis. Where site-specific analysis determines they no longer serve their purpose, they can also be removed. New enclosures can be developed if they would benefit in meeting the management objectives outlined in Section 2.7.1. Enclosures would remain closed to livestock grazing, and AUMs in these enclosures are not available for livestock use.	No similar action	No similar action	No similar action
6409	LR-13, LR-11, LR-09	All developed and some semi-developed recreation areas are closed to livestock grazing and would be fenced to reduce conflicts between uses.	Same as Alternative A	Open all developed and some semi-developed recreation areas to livestock grazing but areas could be fenced to reduce conflicts between uses.	Same as Alternative A
6410	LR-09, BR-05, BR-09	Management would be implemented in "I" category allotments to maintain or improve wild horse, wildlife, watershed, vegetation, and soil resource conditions. Management in "M" category allotments would be directed toward maintenance of resource conditions. Management	Same as Alternative A	No similar action	No similar action

Land Resources (LR) – Livestock Grazing Management (6400-6417)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		in "C" category allotments would be directed towards monitoring resource conditions.			
6411	LR-09, BR-10, BR-15	<p>the following RMP decisions remain ineffect with the modification described in action 4745:</p> <p>Salt or mineral supplements for livestock are prohibited within 500 feet of water, wetlands, or riparian areas unless analysis shows that watershed, riparian, and wildlife objectives and values would not be adversely affected. Salt or mineral supplements are prohibited on areas inhabited by Special Status plant species or other sensitive areas.</p>	<p>prohibit placement of salt and mineral supplements (such as low moisture block supplements) as follows:</p> <ul style="list-style-type: none"> <li>• Within ½ mile of natural perennial or ephemeral water sources, BLM water improvements, riparian-wetland areas, regional historic trails and early highways, or as needed to protect setting on areas being reclaimed</li> <li>• Within three miles on each side of the National Historic Trails (NHT) unless the project and its associated impacts are not visible from the NHTs</li> <li>• Within 2,640 feet (½ mile) of surface water sources (excluding stock tanks), riparian areas, and wetlands</li> <li>• Supplements within 1,320 feet (¼ mile) of Special Status plant species populations.</li> </ul>	<p>prohibit salt or mineral supplements for livestock within 100 feet of:</p> <ul style="list-style-type: none"> <li>• Surface water, wetlands, or riparian areas</li> <li>• Special Status plant species, or other sensitive areas</li> <li>• National Historic and Scenic Trails unless analysis shows that these resources would not be adversely affected.</li> </ul>	<p>Prohibit placement of salt and mineral supplements (such as low moisture block supplements) within ¼ mile of the following resource values:</p> <ul style="list-style-type: none"> <li>• Perennial or intermittent water sources</li> <li>• BLM water improvements</li> <li>• Riparian or wetland areas</li> <li>• On each side of the NHTs or other historic roads and trails, unless the project and its associated impacts are not visible from the NHTs</li> <li>• Special Status plant species populations</li> <li>• Avoid placement of salt and mineral blocks within 500 feet of areas that are actively being reclaimed.</li> </ul>
6412	LR-09	No similar action	No similar action	Authorize livestock trailing, on a case-by-case basis, based on appropriate, site-specific NEPA compliance	Same as Alternative C
6413	LR-09	No similar action	Reduce areas open to grazing and available AUMs where industrial activity conflicts with grazing operations and rangeland management objectives. Conflicts could include loss of forage, unsuccessful rehabilitation of disturbed areas, invasive species, safety hazards, improper livestock distribution, or other circumstances.	Same as Alternative B	Incorporate adaptive management and collaboration with interested parties, including livestock operators, to examine the effects of intense industrial operations on access to and availability of the forage base. Reasonable and prudent mitigation will be implemented to maintain the availability of public lands for authorized livestock grazing use.



Land Resources (LR) – Livestock Grazing Management (6400-6417)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
					Reductions in grazing use in industrialized areas could become necessary if mitigation is insufficient to maintain the current level of livestock grazing. Reductions could be temporary in nature, with AUMs restored to affected permittees.
6414	BR-15, LR-09, BR-05	No similar action	Prohibit livestock grazing in riparian areas that are not meeting PFC.	Allow livestock grazing in riparian areas that are making significant progress toward meeting Standard #2 of the Wyoming Land Health Standards.	No similar action
6415	LR-09	No similar action	No similar action	No similar action	Authorize livestock conversions only after completing a site-specific NEPA analysis that considers rangeland suitability for the desired kind and class of livestock (e.g. forage value, terrain, water source limitations, adequate infrastructure, etc.).
6416	LR-09	the following RMP decisions remain ineffect with the modification described in action 4747: Range improvements will be directed at resolving or reducing resource concerns, improvement of wetland/riparian areas, and overall improvement of vegetation/ground cover. New range improvements may be implemented in "I" and "M" category allotments. Maintenance of range improvements will be required in accordance with the BLM Rangeland Improvement Policy.	Range improvements will be directed at resolving or reducing resource concerns, improvement of wetland/riparian areas, and overall improvement of vegetation/ground cover. New range improvements may be implemented on grazing allotments. Maintenance of range improvements will be required in accordance with the BLM Rangeland Improvement Policy.	Same as Alternative B	Same as Alternative B
6417	LR-09	The following RMP decisions remain in	Same as Alternative A	Same as Alternative A	Same as Alternative A

**Land Resources (LR) – Livestock Grazing Management (6400-6417)**

#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		<p>effect with the modification described in action 4747:</p> <p>Implementation of grazing management systems will assist in improving or maintaining the desired range condition. Approved AMPs, or other activity plans intended to serve as the functional equivalent to an allotment management plan, for each of the designated grazing allotments will provide the necessary guidance for achieving grazing management objectives.</p> <p>Appropriate actions for improving degraded rangeland and riparian habitat (i.e., meeting Wyoming Standards for Healthy Rangelands (BLM 1997a)) include, but will not be limited to, reduction of permitted AUM, modified turnout dates, livestock water developments, range improvements, modified grazing periods, growing season rest, riparian pastures, exclosures, implementation of forage utilization levels, and livestock conversions. These improvements will be considered individually using the method outlined in Appendix 2 of the JMH CAP ROD to ensure conformance with management objectives for the planning area and other resource values.</p>			

**Land Resources (LR) – Recreation (6500-6557)**

#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
<b>Goals:</b>					
LR-10: Ensure the continued availability of outdoor recreational opportunities sought by the public while protecting other resources.					
LR-11: Maintain or enhance the health and viability of recreation opportunities dependent on natural resources and settings within the planning area.					

Land Resources (LR) – Recreation (6500-6557)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
LR-12: Provide an array of resource-dependent dispersed recreation opportunities such as hunting, fishing, camping, motorized use, and open space.					
LR-13: Minimize conflicts between recreation and other types of resource uses.					
6500	LR-12, LR-11, LR-10	Allow commercial competitive events and organized group activities, on a case-by-case basis, where compatible with natural resource management objectives.			
6501	LR-12, LR-11, LR-10	Manage SRMAs to provide for current and future recreation opportunities.			
6502	LR-12, LR-11, LR-10	Meet requirements for the health and safety of visitors.			
6503	LR-12, LR-11, LR-10	Most public lands in the planning area are open to consideration of all individual, commercial, and competitive outdoor recreation uses.	Consider special recreation permits on a case-by-case basis.	Same as Alternative B	Special recreation permits may be issued as a discretionary action, consistent with current BLM policy for activities that 1) support recreation and visitor services objectives/direction; 2) satisfy a public demand that is not being met; and 3) would not cause public health and safety issues.
6504	LR-12, LR-11, LR-10	Undeveloped recreation sites and other recreation use areas would be managed with priority consideration for air quality, cultural resources, watershed protection, wildlife values, and public health and safety.	Manage undeveloped recreation with priority consideration for other resource values.	Manage undeveloped recreation with priority consideration for recreation use.	No similar action
6505	LR-12, LR-11, LR-10	Dispersed camping is prohibited near water sources in designated areas where it is necessary to protect water quality and wildlife and livestock watering areas. Camping in other riparian areas is allowed within 200 feet of water. Areas would be closed to camping if resource damage occurs.	Allow overnight camping throughout the planning area, including WSAs, in accordance with BLM guidelines. Prohibit dispersed camping in riparian areas or within 200 feet of water. Close areas to camping if resource damage occurs.	Allow overnight camping throughout the planning area, including WSAs, in accordance with BLM guidelines. Allow dispersed camping in riparian areas. Close areas to camping if resource damage occurs.	Allow overnight camping throughout the planning area, including WSAs, in accordance with BLM guidelines. Prohibit camping within 50 feet of riparian areas or surface water. Close areas to camping if resource damage occurs. Camping will be allowed once the resource damage has been corrected.
6506	LR-12, LR-11, LR-10	In the JMH planning area, overnight camping would be allowed throughout the planning area, including WSAs, in accordance with BLM guidelines. Dispersed camping would be	See management action 6505	See management action 6505	See management action 6505

<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		allowed within 200 feet of a water source except where necessary to protect water quality and wildlife and livestock watering areas. Areas would be closed to camping if resource damage occurs. Camping designations are a discretionary action approved by a BLM Authorized Officer.			
6507	LR-12, LR-11, LR-10	The Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Red Creek, Pine Mountain, Little Mountain, and Cedar Canyon areas would be managed to assure their continuing value for recreational opportunities. Recreation area management plans would be prepared for these areas if necessary.	Manage the Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Red Creek, Pine Mountain, Little Mountain, and Cedar Canyon areas in consideration of the impacts to other resource values and resource uses.	Manage the Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Pine Mountain, and Cedar Canyon areas to provide for their continuing value for recreational opportunities.	See Special Recreation Management Areas section
6508	LR-12, LR-11, LR-10	Recreation project plans and an interpretive prospectus would be developed for the 14-Mile recreation site, Sweetwater Campgrounds, Boars Tusk, Leucite Hills, and the Continental Divide Snowmobile Trail.	Do not develop recreation project plans and an interpretive prospectus for the Sweetwater Campgrounds, Boars Tusk, Leucite Hills, and the Continental Divide Snowmobile Trail.	Develop recreation project plans and an interpretive prospectus for the Sweetwater Campgrounds, Boars Tusk, Leucite Hills, and the Continental Divide Snowmobile Trail.	No similar action
6509	LR-12, LR-11, LR-10	The 14-Mile Recreation Area is closed to surface disturbing and development activities, except for those specifically associated with construction and development of recreation facilities for the site. The public water reserve and the recreational withdrawal which closes the area to mineral location and disposal would be retained.	No similar action	No similar action	No similar action
6510	LR-12, LR-11, LR-10	The Green River, Sweetwater River, Big Sandy River, and the Bitter Creek segment between the towns of Rock Springs and Green River would be managed for recreation values. Recreation area	Manage the Green River, Sweetwater River, Big Sandy River, and the Little Sandy River with priority given to other resource values.	Manage the Green River, Sweetwater River, Big Sandy River, and the Little Sandy River with priority given to recreation values.	See Special Recreation Management Areas below

<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		management plans would be developed, where necessary. Recreation area management plans would be developed, where necessary.			
6511	LR-12, LR-11, LR-10	Cutting of trees and firewood for camping purposes in developed recreation sites is limited to designated areas.	Cutting of downed, dead trees for firewood for camping purposes in developed recreation sites would be limited to designated areas.	Cutting of downed, dead trees for firewood for camping purposes in developed recreation sites would not be limited to designated areas.	Limit cutting of firewood for camping purposes to downed, dead trees in designated areas within developed recreation sites.
6512	BR-01, BR-03, LR-10	Firewood cutting for camping purposes would be limited to designated areas (this mainly applies to the area around developed recreation sites).	Limit cutting of downed or dead trees for firewood for camping purposes (outside of developed recreation sites) to designated areas.	Allow (outside of developed recreation sites) cutting of downed or dead trees for firewood for camping purposes.	Limit cutting of firewood for camping purposes outside of developed recreation sites to downed, dead trees.
6513	LR-12, LR-11, LR-10	Recreation site development projects and access routes along intensively used streams and reservoirs would be managed to maintain or improve wetland habitat conditions.	Manage recreation site development projects and access routes along streams and reservoirs to maintain or improve wetland habitat conditions.	Manage recreation site development projects and access routes along streams and reservoirs for recreation use.	Same as Alternative B
6514	LR-12, LR-11, LR-10	Development of permanent recreation sites and facilities in undeveloped recreation use areas would be considered, provided proper mitigation and exceptions to Executive Order 11988 apply. The area within 500 feet of riparian areas and floodplains is an avoidance area for recreation site facilities. Exceptions may be considered following a site-specific analysis. Adverse impacts to riparian areas and water quality is prohibited. Water sources at undeveloped recreation sites would be monitored. If the water is not potable, signs would be posted.	Consider development of permanent recreation sites and facilities in undeveloped recreation use areas, provided proper mitigation and exceptions to Executive Order 11988 apply. Prohibit recreation site facilities within 500 feet of riparian areas. Prohibit adverse impacts to water quality. Monitor water sources at undeveloped recreation sites. Post signs if the water is not potable. Maintain or improve buffer strips of native vegetation sufficient to protect surface water between developed recreational facilities and surface water.	Consider development of permanent recreation sites and facilities in undeveloped recreation use areas and comply with Executive Order 11988. Do not require vegetation buffer strips between developed recreational facilities and surface water.	No similar action

Land Resources (LR) – Recreation (6500-6557)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
6515	LR-12, LR-11, LR-10	Vegetation buffer strips would be maintained between developed recreational facilities and surface water.	See management action 6514	See management action 6514	See management action 6514
6516	LR-12, LR-11, LR-10	Surface disturbing activities are prohibited within ¼ mile of recreation sites unless such activities are determined to be compatible with or are done for meeting recreation objectives for the area. Generally, such activities (e.g., those associated with mineral development, roads, pipelines, power lines, etc.) would be designed to avoid these areas. These areas would be open to development of recreation site facilities. An approved plan would be required prior to the site disturbance.	Prohibit surface disturbing activities within three miles or the visual horizon, whichever is closer, of developed recreation sites unless such activities are determined to be compatible with or are done for meeting recreation objectives for the area.  Manage as: 1) NSO for fluid minerals; 2) closed to mineral material sales/disposal; 3) closed to all solid mineral leasing.  These areas would be open to development of recreation site facilities. Require an approved plan prior to the site disturbance.	No similar action	Allow surface disturbing activities within ¼ mile of developed recreation sites, on a case-by-case basis, only if they do not adversely impact recreational uses and objectives for the area.  • Manage as an NSO for fluid minerals.
6517	LR-12, LR-11, LR-10	Posting information and directional signs would be necessary in some areas. This RMP establishes various types of resource designations, and sign posting would be provided to promote visitor use of the various areas consistent with management objectives.	No similar action	No similar action	No similar action
6518	LR-12, LR-11, LR-10	Geophysical travel through developed and semi-developed recreation sites is restricted to existing roads and trails.	Close developed and semi-developed recreation sites to geophysical travel.	Same as Alternative A	Restrict geophysical activity in developed and semi-developed recreation sites.
6519	LR-12, LR-11, LR-10	Suitable wild horse herd viewing area(s) may be developed to enhance public viewing of horses. Viewing areas plus a ½-mile distance surrounding them are closed to long-term or permanent intrusions and surface disturbing activities that could interfere with opportunities to view horses (e.g., structures, mineral activities,	Same as Alternative A	No similar action	Develop, on a case-by-case basis, wild horse viewing areas to enhance public viewing of horses.

<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		power lines, roads, etc.). Short-term intrusions within the ½-mile distance and actions that will blend with the landscape or will benefit the intent of the wild horse herd viewing areas will be considered on a case-by-case basis.			
6520	LR-12, LR-11, LR-10	In the JMH planning area, recreational activities involving gold panning or casual use relating to prospecting and other similar activity would be allowed in those parts of the planning area that are not withdrawn from mineral location or where such withdrawals would not be pursued. Withdrawn areas include the White Mountain Petroglyphs ACEC. Withdrawals would be pursued for the Steamboat Mountain diamond potential area, the western portion of the Greater Sand Dunes ACEC, South Pass Summit, Tri-Territory Marker, Crookston Ranch, Pinnacles Geologic Feature, Public Water Reserves, Special Status plant species locations, and the northern elk birthing areas.	Allow recreational activities involving gold panning or casual use relating to prospecting and other similar activity (with the exception of sluice boxes) in those parts of the planning area that are not withdrawn from mineral location or where such withdrawals would not be pursued.	Same as Alternative B	Same as Alternative B
<b>Special Recreation Management Areas<sup>4</sup></b>					
6521	LR-12, LR-11, LR-10	See the following actions for specific SRMA designations. Manage lands within the planning area not designated as a special recreation management area as an extensive recreation management area (ERMA).	See the following actions for specific SRMA designations.	See the following actions for specific SRMA designations.	See the following actions for specific SRMA designations.

<sup>4</sup> Under BLM Land Use Planning Handbook (H-1601-1) Appendix B Special Recreation Management Areas are defined as a resource use. Under this definition the designation of an SRMA was placed in Alternative C, the resource use alternative, because it encouraged recreation use of the resources and not designating an SRMA was placed in Alternative B, the resource conservation alternative, because it did not encourage recreation use of the resources.

<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Continental Divide Snowmobile Trail Special Recreation Management Area</b>					
6522	LR-12, LR-11, LR-10	The Continental Divide Snowmobile Trail is designated a special recreation management area to place management emphasis on enhancing recreation opportunities and to focus management on areas with high recreation values or areas where there are conflicts between recreation and other uses (60 acres, Table 2-12, Appendix V and Map 2-29). A management plan for the Continental Divide Snowmobile Trail would be developed.	Do not retain the Continental Divide Snowmobile Trail Special Recreation Management Area.	Retain the Continental Divide Snowmobile Trail Special Recreation Management Area (Table 2-12, Appendix V and Map 2-31). Manage the trail for hiking, equestrian, and mountain bike uses. Motor vehicle use would not be precluded on the sections that are concordant with two-track roads.	No similar action, see Wind River Front SRMA (management action 6543)
6523	LR-12, LR-11, LR-10	The integrity of the Continental Divide Snowmobile Trail and the South Pass Cross Country Ski Trail would be maintained by limiting (and in some cases precluding) surface disturbing activities or facilities on or within ¼ mile of the trails. The only exceptions would be the establishment of facilities to provide services to the users of the trails and to provide for public health and safety.	No similar action. The Continental Divide Snowmobile Trail and the South Pass Cross Country Ski Trail SRMA would not be retained.	Manage the Continental Divide Snowmobile Trail. <ul style="list-style-type: none"> <li>• Limit or prohibit surface disturbing activities or facilities on or within ¼ mile on the Continental Divide Snowmobile Trail.</li> <li>• Manage as a CSU for fluid minerals.</li> </ul> The Continental Divide Snowmobile trail system could be expanded by adding loop trails. Do not retain the South Pass Cross Country Ski Trail.	Do not retain the South Pass Cross Country Ski Trail. See Wind River Front SRMA.
6524	LR-12, LR-11, LR-10	The integrity of the Continental Divide Snowmobile Trail would be maintained to allow for continued snow machine use. The trail system may be expanded by adding loop trails. Maintaining trail integrity would be accomplished by limiting surface disturbing activities, structures, or facilities that block or hinder trail use on or within ¼ mile of the trail. The only exceptions would be facilities that support trail visitor use and experiences along the trail or to	See management action 6523	See management action 6523	See management action 6523



<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		protect the health and safety of trail users.			
<b>Continental Divide National Scenic Trail Special Recreation Management Area</b>					
6525	LR-12, LR-11, LR-10	The integrity of the Continental Divide National Scenic Trail would be maintained by limiting (and in some cases precluding) surface disturbing activities or facilities on or within ¼ mile of the trails. The only exceptions would be the establishment of facilities to provide services to the users of the trails and to provide for public health and safety.	No similar action. The Continental Divide National Scenic Trail SRMA would not be retained.	Manage the Continental Divide National Scenic Trail and Connecting Side Trail consistent with the National Direction for the Continental Divide National Scenic Trail and guidance in the National Scenic and Historic Trails Manuals.  Limit or prohibit surface disturbing activities or facilities on or within ¼ mile on the Continental Divide Snowmobile Trail.  Manage as a CSU for fluid minerals  The Continental Divide Snowmobile trail system could be expanded by adding loop trails.	Retain the Continental Divide National Scenic Trail SRMA (Appendix S)
6526	LR-12, LR-11, LR-10	In the JMH planning area, the Continental Peak/South Pass Connecting Side Trail would be managed as a side trail to the existing Continental Divide National Scenic Trail. Management would be as described for the Continental Divide National Scenic Trail (BLM 1999). Existing primitive two-track roads, BLM roads that provide legal public access through certain private lands, segments of cross-country travel on BLM-administered public land, and an existing trail would be used as Continental Divide National Scenic Trail components. The existing primitive two-track roads and BLM road segments would continue to be open to motorized use. Cross-country travel routes would not be open to motorized use.	See management action 6525	See management action 6525	No similar action, see the Congressionally Designated Trails Section (7000-7022)

<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
6527		No similar action	No similar action. The Continental Divide National Scenic Trail SRMA would not be retained.	Designate ¼ mile either side of Continental Divide National Scenic Trail as VRM Class II.	No similar action, see the Congressionally Designated Trails Section (7000-7022).
6528	HR-02, HR-11, HR-04	No similar action	Designate VRM Class within 15 miles on each side of the Continental Divide National Scenic Trail as follows: VRM Class I: 1% (11,370 acres) VRM Class II: 88% (715,468 acres) VRM Class III: 6% (45,502 acres) VRM Class IV: 5% (42,185 acres). To maintain the scenic character of the Continental Divide National Scenic Trail, the sensitive nature of the landscape as directed by the Continental Divide National Scenic Trail comprehensive plan would recognize and provide for SRMAs.	See management action 6527	No similar action, see the Congressionally Designated Trails Section (7000-7022)
<b>Green River Special Recreation Management Area</b>					
6529	LR-12, LR-11, LR-10	The Green River is designated a special recreation management area to place management emphasis on enhancing recreation opportunities and to focus management on areas with high recreation values or areas where there are conflicts between recreation and other uses (700 acres, Table 2-12, Appendix V, and Map 2-29). A management plan for the Green River would be developed.	Do not retain the Green River Special Recreation Management Area.	Retain the Green River Special Recreation Management Area designation (700 acres, Table 2-12, Appendix V, and Map 2-31). Manage for motorized and non-motorized recreation opportunities such as fishing, floating, photography, hunting, hiking, and nature viewing in these rural, front, and middle country settings. Develop day use areas and construct boat put in/take out sites on a case-by-case basis using site-specific analysis.	Same as Alternative B
6530	LR-12, LR-11, LR-10	No similar action	No similar action. The Green River Special Recreation Management Area would not be retained. Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-18.	Designate as VRM Class II and III within three miles of the river.	No similar action. The Green River Special Recreation Management Area would not be retained. Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-20.

<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Killpecker Sand Dunes Special Recreation Management Area</b>					
6531	LR-12, LR-11, LR-10	The former SRMA designation for the Killpecker Sand Dunes is retained (39,290 acres, Table 2-12, Appendix V and Map 2-29).	Do not retain the Killpecker Sand Dunes Special Recreation Management Area.	Retain the Killpecker Sand Dunes Special Recreation Management Area designation (39,290 acres, Table 2-12, Appendix V and Map 2-31). Manage for motorized recreationists to engage in OHV, motorbike, and other motorized hill climbing activities in these front country settings.	Reduce the size of the Killpecker Sand Dunes Special Recreation Management Area to only include the OHV Open Play Area (12,832 acres, Table 2-12, Appendix V and Map 2-32).  Manage for motorized recreationists to engage in OHV, motorbike, and other motorized hill climbing activities in these front country settings.
6532	LR-12, LR-11, LR-10	No similar action	No similar action. The Killpecker Sand Dunes Special Recreation Management Area would not be retained.	Reduce the boundary as shown on Map 2-31.	Same as Alternative C
6533	LR-12, LR-11, LR-10	No similar action	No similar action. The Killpecker Sand Dunes Special Recreation Management Area would not be retained.	Allow overhead ROW. Designate as a ROW avoidance for subsurface or surface projects.	Designate as a ROW avoidance area.
6534	LR-12, LR-11, LR-10	No similar action	No similar action. The Killpecker Sand Dunes Special Recreation Management Area would not be retained.	Allow surface disturbing activities only if the purpose of the activity is to benefit the resource objectives. <ul style="list-style-type: none"> <li>• NSO for fluid minerals.</li> <li>• Petition to segregate and pursue withdrawal from mineral location.</li> <li>• Prohibit geophysical activities such as shothole, blasting, and vibroseis locations.</li> </ul>	Allow surface disturbing activities only if the purpose of the activity is to benefit the resource objectives. <ul style="list-style-type: none"> <li>• Petition to segregate and pursue withdrawal from mineral location.</li> <li>• Close to mineral material sales.</li> <li>• Prohibit geophysical activities such as shothole, blasting, and vibroseis locations.</li> <li>• Closed to fluid minerals.</li> <li>• Closed to Oil Shale</li> </ul>
6535	LR-12, LR-11, LR-10	No similar action	No similar action. The Killpecker Sand Dunes Special Recreation Management Area would not be retained.	Designate as VRM Class III and IV.	Designate as VRM Class III.
6536	LR-12, LR-11, LR-10	No similar action	No similar action. The Killpecker Sand Dunes Special Recreation Management Area would not be retained.	9,250 acres are designated open to off-road vehicle travel on the active sand dunes. Off-road vehicle travel on 3,581 acres of vegetated dune areas is limited to existing roads and trails.	9,250 acres are designated open to off-road vehicle travel on the active sand dunes. Off-road vehicle travel on 3,581 acres of vegetated dune areas is limited to existing roads and trails.

<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Oregon and Mormon Pioneer National Historic Trails Special Recreation Management Area</b>					
6537	LR-12, LR-11, LR-10	The former SRMA designation for the Oregon and Mormon Pioneer National Historic Trails is retained (290 acres, Table 2-12, Appendix V, and Map 2-29). The management plan for the Oregon and Mormon Pioneer Trails would be implemented.	Do not retain the Oregon and Mormon Pioneer National Historic Trails Special Recreation Management Area.	Retain the Oregon and Mormon Pioneer National Historic Trails Special Recreation Management Area designation. Manage for historic tourism markets (290 acres, Table 2-12, Appendix V, and Map 2-31). Motor vehicle use would not be precluded on the sections that are concordant with two-track roads. Prohibit any use that would degrade integrity of contributing sections.	Same as Alternative B
6538	LR-12, LR-11, LR-10	No similar action	No similar action. The Oregon and Mormon Pioneer National Historic Trails Special Recreation Management Area would not be retained.	Allow surface disturbing activities only if the purpose of the activity is to benefit the resource objectives. <ul style="list-style-type: none"> <li>• NSO for fluid minerals.</li> <li>• Close to mineral material sales.</li> <li>• Designate as a ROW avoidance area.</li> <li>• Prohibit geophysical activities such as shothole, blasting, and vibroseis locations.</li> </ul>	Same as Alternative B
6539	LR-12, LR-11, LR-10	No similar action	No similar action. The Oregon and Mormon Pioneer National Historic Trails Special Recreation Management Area would not be retained.	Designate the area within three miles as VRM Class II and III.	Same as Alternative B
<b>Little Mountain Area Special Recreation Management Area</b>					
6540	LR-12, LR-11, LR-10	No similar action	No similar action	Designate the Little Mountain Area as a Special Recreation Management Area (40,550 acres, Table 2-12, Appendix V and Map 2-31). Manage as a SRMA for motorized and non-motorized recreationists to engage in hiking, hunting, wildlife viewing, and nature viewing in these back country and middle country settings.	Designate the Little Mountain Area as a Special Recreation Management Area (40,550 acres, Table 2-12, Appendix V and Map 2-32). Manage as a SRMA for motorized and non-motorized recreationists to engage in hiking, hunting, wildlife viewing, and nature viewing in the back country and middle country settings (Appendix S).

<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
6541		No similar action	No similar action	Designate as VRM Class II and III.	Designate as VRM Class II.
<b>Red Creek Badlands Special Recreation Management Area</b>					
6542	LR-12, LR-11, LR-10	No similar action	No similar action	Designate Red Creek Badlands as a Special Recreation Management Area (261,140 acres, Table 2-12, Appendix V and Map 2-31). Manage exclusively for non-motorized recreationists to engage in hiking, hunting, wildlife viewing, and nature viewing so that affected community residents report realizing a “moderate” level of recreation experience and benefit outcomes in these back country settings.	No similar action
<b>Wind River Front Special Recreation Management Area</b>					
6543	LR-12, LR-11, LR-10	The Wind River Front is designated a special recreation management area to place management emphasis on enhancing recreation opportunities and to focus management on areas with high recreation values or areas where there are conflicts between recreation and other uses (257,680 acres, Table 2-12, Appendix V, and Map 2-29). A management plan for the Wind River Front would be developed.	Do not retain the Wind River Front Special Recreation Management Area.	Retain the designation of the Wind River Front SRMA (257,680 acres, Table 2-12, Appendix V, and Map 2-31). Manage the Wind River Front SRMA for motorized and non-motorized recreationists to engage in hunting, hiking, horseback riding, wildlife viewing, sightseeing, fishing, and driving for pleasure in these back, middle, and front country settings.	Reduce the size of the Wind River Front SRMA to only include the eastern unit (82,107 acres, Table 2-12, Appendix V, and Map 2-32). Manage the Wind River Front SRMA for motorized and non-motorized recreationists to engage in hunting, hiking, horseback riding, wildlife viewing, sightseeing, fishing, and driving for pleasure in the back, middle, and front country settings. Manage the Continental Divide Snowmobile Trail for over-the-snow vehicle use (Appendix S).
6544	LR-12, LR-11, LR-10	To facilitate management, the area is divided into two units. The boundary between the two units is the Continental Divide, and the eastern unit includes the Prospect Mountains.	No similar action. The Wind River Front Special Recreation Management Area would not be retained.	No similar action	No similar action
6545		No similar action	No similar action. The Wind River Front Special Recreation Management Area would not be retained.	No similar action	No similar action

<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Eastern Unit</b>					
6546	LR-12, LR-11, LR-10	Major facilities (including linear facilities) are generally prohibited in this unit (82,107 acres). Some facilities could be allowed if analysis indicates that the management objectives for the unit could be met. For example, small and short-distance feeder lines (e.g., power, telephone, water) may be considered.	Do not retain the Wind River Front Special Recreation Management Area.	Some facilities could be allowed if analysis indicates that the management objectives for the unit could be met.	Allow facilities, on a case-by-case basis, if analysis indicates the management objectives for the unit could be met.
6547	LR-12, LR-11, LR-10	This unit of the SRMA is closed to mineral leasing.	Do not retain the Wind River Front Special Recreation Management Area.	No similar action	Closed to fluid minerals Closed to coal leasing
6548	LR-12, LR-11, LR-10	The Sweetwater Bridge and Guard Station campgrounds are closed to mineral location and withdrawal from the public land laws, including the mining laws, would be pursued.	Do not retain the Wind River Front Special Recreation Management Area.	Petition to segregate and pursue withdrawal from mineral location for the Sweetwater Bridge and Guard Station campgrounds.	Same as Alternative C
6549	LR-12, LR-11, LR-10	Additional withdrawals may be pursued in the unit to meet unit management objectives, if necessary.	Do not retain the Wind River Front Special Recreation Management Area.	Do not pursue additional withdrawals in the unit.	Same as Alternative A Pursue proposed withdrawal for mineral location
6550	LR-12, LR-11, LR-10	The Sweetwater Bridge and Guard Station Campgrounds would be upgraded to better provide for public health and safety, reduce natural resource degradation, and to meet Bureau accessibility standards.	Do not retain the Wind River Front Special Recreation Management Area.	Same as Alternative A	Same as Alternative A
6551	LR-12, LR-11, LR-10	All activities in the unit would conform with the requirements of the Class II VRM classification and all management actions would be designed and located to blend into the natural landscape and to not be visually apparent to the casual viewer.	Do not retain the Wind River Front Special Recreation Management Area.	Designate this area as VRM Class II and III objectives.	Designate this area as VRM Class II objectives.
6552	LR-12, LR-11, LR-10	Location of long, linear facilities would be avoided the unit. If avoidance is not possible, such facilities would be required to meet	Do not retain the Wind River Front Special Recreation Management Area.	Allow the location of linear facilities within the unit consistent with other resources and resource uses, on a case-by-case basis.	Manage as ROW avoidance area.

<b>Land Resources (LR) – Recreation (6500-6557)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		the Class II VRM classification standards. A transportation plan would be completed prior to allowing developments in the unit. ROW Exclusion area.			
6553	LR-12, LR-11, LR-10	The public lands along about 1½ miles of the Big Sandy River, adjacent to the Bridger-Teton Forest boundary, would be managed to retain their inherent pristine character. Actions that would alter these characteristics in this area are prohibited. Along this segment of the Big Sandy River, and within ½ mile of either bank of the river, the public lands are closed to surface disturbing activities. An NSO requirement would be imposed on the area including the river and within ½ mile of either bank of the river.	Do not retain the Wind River Front Special Recreation Management Area.	Prohibit, on a case-by-case basis, surface disturbing activities (NSO) consistent with other resources and resource uses along about 1½ miles of the Big Sandy River, adjacent to the Bridger-Teton Forest boundary and within ½ mile of either bank of the river.	No similar action
<b>Western Unit</b>					
6554	LR-12, LR-11, LR-10	This unit of the SRMA (170,678 acres) is open to mineral leasing. Daily vehicle use and access may not be feasible for this entire area. Access, particularly proposed roads, may be limited and a road density analysis may be required. To prevent conflicts with recreation users, alternative access may be needed.	Do not retain the Wind River Front Special Recreation Management Area.	This unit of the SRMA (170,678 acres) is open to mineral leasing.	No similar action See Appendix S
6555	LR-12, LR-11, LR-10	Surface disturbing activities in this unit would be limited through CSU requirements or closing areas where maximum resource protection is necessary.	Do not retain the Wind River Front Special Recreation Management Area.	No similar action	No similar action
6556	LR-12, LR-11, LR-10	Facility placement would be designed for minimum surface disturbance, unless a site-specific analysis determines that additional activity can occur and unit management objectives can be met. An exception may be granted	Do not retain the Wind River Front Special Recreation Management Area.	Allow, on a case-by-case basis, any facility placement consistent with other resources and resource uses.	Design any facility placement for minimum surface disturbance, unless a site-specific analysis determines that additional activity can occur and unit management objectives can be met.

Land Resources (LR) – Recreation (6500-6557)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		if the operator/individual and surface management agency could arrive at an acceptable mitigation plan for anticipated impacts. Options in the mitigation plans may include consideration of development in one portion of the area coupled with no development in other areas. Other considerations may include placement of multiple facilities in a specific area (e.g., multiple wells and production facilities on one drill pad) and using remote control operations (e.g., remote well head and production facility control) to limit trips into locations or other areas.			
6557	LR-12, LR-11, LR-10	All activities in the unit would conform with the requirements of Class III and Class IV VRM classifications and all management actions would be designed and located to remain subordinate to the characteristic landscape or to repeat the basic elements (form, line, color, and texture) inherent in the characteristic landscape. New roads would be designed so they conform with the landform and do not create the "tunnel effect".	Do not retain the Wind River Front Special Recreation Management Area.	Designate this area as VRM Class II, III and IV objectives (Map 2-19).	Designate this area as VRM Class II, III and IV objectives (Map 2-20).

Land Resources (LR) – Off-Highway Vehicles (6600-6620)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
<b>Goals:</b>					
LR-14: Protect public lands and resources while providing opportunities for the safe use and enjoyment of OHVs.					
LR-15: Assess current and future OHV use (e.g., oil, gas, mining and agriculture) and demand, and plan for and balance the demand for OHV use when developing the planning area transportation plan.					
LR-16: Integrate concepts of habitat connectivity into OHV planning to minimize habitat fragmentation.					
LR-17: Use high-use areas and special events to maximize the dissemination of responsible-use education materials and concepts to the public.					



<b>Land Resources (LR) – Off-Highway Vehicles (6600-6620)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
6600	LR-14, LR-15, LR-06	Manage the use of OHVs in partnership with other land-managing agencies, local governments, communities, permittees, private landowners, and interest groups through a balanced approach.			
6601	LR-14, LR-15, LR-06	Engineer, locate, or relocate roads and trails to accommodate OHV activities while minimizing resource impacts.			
6602	LR-14, LR-15, LR-06	Manage OHV use by type, season, intensity, distribution, and (or) duration to minimize the impact on plant and wildlife habitats. If seasonal closures become appropriate to minimize adverse OHV impact(s) on public lands resources, strive to preserve public access by designating alternative routes.			
6603	LR-14, LR-15, LR-06	Clearly identify route and area designations as open, closed, or limited to OHV use.			
6604	LR-14, LR-15, LR-06	Maintain an inventory of existing road and trail systems.			
6605	LR-14, LR-15, LR-06	Cooperatively develop and improve public outreach programs to promote trail etiquette, environmental ethics, and a responsible-use stewardship ethic (e.g., tread lightly, leave no trace, etc.).			
6606	LR-14, LR-15, LR-06	No similar action	Where off-road vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence.	Same as Alternative B	Close, temporarily on a case-by-case basis, areas where OHV use has caused adverse effects on resources to the type(s) of vehicle causing the effects until the effects are eliminated and measures implemented to prevent recurrence.
6607	LR-14, LR-15, LR-06	Off-road vehicle use would be managed according to the OHV designations listed on Table 2-11, Appendix V and shown on Map 2-25—Open: 12,831 acres; Closed: 225,537 acres; Limited to Designated Roads and Trails: 968,959 acres; Limited to Existing	Manage OHV area designations as shown on Map 2-26 (12,831 acres Open; 225,537 acres Closed; 3,367,576 acres Limited to Designated Roads and Trails).	Manage OHV area designations as shown on Map 2-27 (13,332 acres Open; 225,537 acres Closed; 3,365,374 acres Limited to Designated Roads and Trails).	Manage OHV area designations as shown on Map 2-28 (12,831 acres Open; 225,537 acres Closed; 3,367,576 acres Limited to Designated Roads and Trails)

<b>Land Resources (LR) – Off-Highway Vehicles (6600-6620)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		Roads and Trails: 2,398,839 acres.			
6608	LR-14, LR-15, LR-06	Areas for ORV rallies, cross-country races, and outings may be provided on a permit basis.	Do not provide areas for OHV rallies, cross-country races, and other organized events.	Provide areas for OHV rallies, cross-country races, and other organized events on a permit basis.	Permit, on a case-by-case basis, organized OHV events.
6609	LR-14, LR-15, LR-06	Approximately 170,000 acres are closed to off-road vehicle use to protect naturalness and outstanding opportunities for solitude, or primitive and unconfined recreation.	No similar action	No similar action	No similar action
6610	LR-14, LR-15, LR-06	In areas designated as either "limited" to designated roads and trails or "limited" to existing roads and trails for off-road vehicle use, motorized vehicles must stay on designated or existing roads and trails, unless allowed an exception by the Authorized Officer. This limitation applies to all activities involving motorized vehicles. Except for areas that are closed to off-road vehicle travel, some types of off-road motor vehicle use may be allowed by the Authorized Officer provided resource damage does not occur.	No similar action	No similar action	No similar action
6611	LR-14, LR-15, LR-06	In the JMH planning area, specific roads and trails may be closed or seasonally closed to OHV use as needed for public health and safety reasons, restoration or remediation actions, habitat protection, or other valid reasons as determined by BLM (Map 2-25).	No similar action	No similar action	No similar action
6612	LR-14, LR-15, LR-06	Vehicular travel is restricted to designated roads in sensitive watersheds and in cultural site management areas.	No similar action	No similar action	No similar action
6613	LR-14, LR-15, LR-06	Generally, over-the-snow vehicle use is subject to the prescriptions described in this section unless a	No similar action	No similar action	Allow over-the-snow vehicles if snow depth is adequate to cover vegetation. Restrict over-the-snow

Land Resources (LR) – Off-Highway Vehicles (6600-6620)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		site-specific analysis determines that exceptions can be allowed.			vehicles in areas of snow depth that is not adequate to cover vegetation. Temporarily close areas to over-the-snow vehicles, if winter conditions warrant, in order to reduce stress to wildlife and other sensitive resources. BLM over-the-snow restrictions do not apply to county roads, permitted uses, and administrative uses.
6614	LR-14, LR-15, LR-06	The existing open area in the Killpecker Sand Dunes would remain open.	No similar action (see OHV designations above)	No similar action (see OHV designations above)	No similar action (see OHV designations above)
6615	LR-14, LR-15, LR-06	No new OHV open areas would be established.	No similar action (see OHV designations above)	No similar action (see OHV designations above)	No similar action (see OHV designations above)
6616	LR-14, LR-15, LR-06	OHV implementation plans would be prepared as necessary and would reflect the OHV designations made in the Green River RMP. OHV implementation planning would also be a part of comprehensive activity planning efforts.	No similar action	No similar action	No similar action
6617	LR-14, LR-15, LR-06	In the JMH planning area, the Pinnacles Geologic Feature would be closed to OHV use, and OHV use would be limited to designated roads and trails in the South Pass Historic Landscape ACEC (portion not visible), cushion plant community, and Steamboat Mountain Management Area. The remaining public lands in the JMH CAP planning area would remain open, limited, or closed to OHV use (see Glossary for definitions) as previously described in the Green River RMP. The OHV management prescriptions identified in the Green River RMP would be implemented.	No similar action	No similar action	No similar action

<b>Land Resources (LR) – Off-Highway Vehicles (6600-6620)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
6618	LR-14, LR-15, LR-06	In the JMH planning area, specific roads and trails may be closed or seasonally closed to OHV use as needed for public health and safety reasons, restoration or remediation actions, habitat protection, or other valid reasons as determined by BLM.	No similar action	No similar action	No similar action
6619	LR-14, LR-15, LR-06	In the JMH planning area, the Authorized Officer may grant exceptions to closed or limited OHV designations in consideration of such factors as scientific purposes and emergency access needs.	No similar action	No similar action	No similar action
6620	LR-14, LR-15, LR-06	No similar action	No similar action	No similar action	Any land acquired by the BLM over the life of the resource management plan will be managed similarly to the existing OHV area designations of adjoining BLM lands or as stated, or implied, in the transfer. Where clarification is absent, the BLM will manage acquired lands under the OHV limited area designation. The type of limitation will be set by implementation-level decisions; until these decisions are made, use may continue in the same manner and degree consistent with the purposes for which the acquisition was made.

<b>Special Designations (SD) – Congressionally Designated Trails (7000-7022)</b>					
<b>#</b>	<b>Goal /Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Goals:</b>					
SD-01: Preserve and protect the historical remains and historical settings of congressionally designated National Historic Trails (e.g., Oregon, California, Mormon-Pioneer and Pony Express) and NHT-related resources (e.g., camps, graves, inscription sites, stations, natural landmarks).					
SD-02: Preserve and protect the historical remains and historical settings, if appropriate, of other trails and roads that are eligible for the NRHP but are not congressionally designated. These roads and trails include, but are not limited to, the Overland Trail, the Cherokee Trail, the Point of Rocks to South Pass Road, and Expansion Era Roads.					
7000		Establish appropriate management prescriptions for the NHTs.			

Special Designations (SD) – Congressionally Designated Trails (7000-7022)					
#	Goal /Obj	Alternative A	Alternative B	Alternative C	Alternative D
7001		Coordinate with recreation and other programs to provide opportunities for public visitation, interpretation, education, and appreciation of NHTs.			
National Historic and Scenic Trails					
7002	SD-01, HR-11	The area within ¼ mile or the visual horizon (whichever is less) of any contributing trail segment would be an avoidance area for surface disturbing activities. Developments such as roads, pipelines, and power lines may be allowed to cross trails in areas where previous disturbance has occurred and the trail segment has lost the characteristics that contribute to its National Register significance. Crossings may include additional disturbance of trail ruts in the areas where previous disturbances have occurred but the ruts themselves have not been disturbed. Development actions would be analyzed on a case-by-case basis through site-specific analysis to identify mitigation needs and meet management objectives.	Designate lands within five miles on each side of the National Historic Trails as the trail management corridor.  Subject all actions within five miles on each side of the NHTs, except for highly visible projects and/or projects out of scale with the surrounding environment (e.g. wind farms, gas plants, large transmission lines, and power plants), to the following restrictions: 1) closed to mineral leasing; 2) closed to mineral material sales; 3) a withdrawal would be pursued; 4) exclusion area for ROWs.	Avoid surface disturbing activities within ¼ mile of any contributing NHT segment if it would be visible from the trail.  Subject the area beyond ¼ mile from the NHTs to standard NHPA and BLM/SHPO Protocol measures to avoid, minimize, or mitigate effects to NHTs.  Allow NHT crossings by ROWs in areas where trail ruts have been modified by modern uses, where previous crossings exist, or where new corridor crossings would not damage trail remains.	Designate lands within five miles on each side of the National Historic Trails and the Continental Divide National Scenic Trail and Connecting Side Trail as the National Trail Management Corridor.  The BLM and SHPO have agreed that the setting of the NHT in parts of the Western portion of the RSFO has been compromised by existing development. In this area, the National Trail Management Corridor will be reduced to ¼ mile on either side of NHT ruts and swales.  The area within ¼ mile on either side of a NHT will be closed to Oil Shale.
7003	SD-01, HR-11	No similar action	Subject all actions within five to 15 miles on each side of the NHTs, except for highly visible projects and/or projects out of scale with the surrounding environment (e.g. wind farms, gas plants, large transmission lines, and power plants), to the following restrictions: 1) open to mineral leasing with CSU restrictions, 2) open to mineral material sales with CSU restrictions, 3) open to locatable minerals; 4) is a ROW avoidance area with CSU restrictions.	No similar action	Apply the following actions within the National Trail Management Corridor: <ul style="list-style-type: none"> <li>• National Trail Management Corridor is a CSU for fluid minerals.</li> <li>• The area within ¼ mile on either side of a NHT will be closed to Oil Shale.</li> <li>• Surface disturbing activities will be prohibited if the project causes more than a weak contrast (VRM) to the setting of the National Historic and Scenic Trails.</li> <li>• Designate as a ROW avoidance area.</li> <li>• Allow new ROWs if it is determined by the AO that impacts associated with the action will not cause an adverse effect to the National Historic and Scenic Trails.</li> </ul>

					<ul style="list-style-type: none"> <li>Allow mineral material disposals if it is determined by the AO that</li> </ul>
Special Designations (SD) – Congressionally Designated Trails (7000-7022)					
#	Goal /Obj	Alternative A	Alternative B	Alternative C	Alternative D
					<p>impacts associated with the action will not cause an adverse effect to the National Historic and Scenic Trails.</p> <ul style="list-style-type: none"> <li>Allow new surface disturbing activities only if they will not cause an adverse effect to the National Historic and Scenic Trails.</li> </ul>
7004	SD-01, HR-11, HR-10	No similar action	<p>Designate the NHT and associated landscapes as:</p> <ul style="list-style-type: none"> <li>VRM Class II objectives within 15 miles in all directions.</li> <li>VRM Class II objectives for all designated NHT crossings.</li> </ul>	Designate ¼ mile on either side of NHT trail segments as VRM Class II objectives.	<p>Designate the National Trail Management Corridor as VRM Class II.</p> <p>Manage existing utility crossings within the National Trail Management Corridor as VRM Class III.</p> <p>On contributing segments of NHT or other historic trails within the checkerboard land pattern area, manage the setting to preserve the existing character of the landscape to the extent possible within federally-managed lands.</p>

7005	SD-01, SD-02	No similar action	On contributing segments of NHT or other historic trails within the checkerboard land pattern area, manage the setting to preserve the existing character of the landscape to the extent possible within federally-managed lands and on non-federal land when activity is part of a federal undertaking (connected action).	Same as Alternative B	See management action 7004
7006	SD-01, HR-11, HR-10	No similar action	Highly visible projects and/or projects out of scale with the surrounding environment (e.g. wind farms, gas plants, large transmission lines, and power plants) could be authorized within 20 miles of the NHTs only if the project causes no more than a weak contrast (VRM) to the setting of the NHTs.	Authorize highly visible projects and/or projects out of scale with the surrounding environment (e.g. wind farms, gas plants, large transmission lines, and power plants) on a case-by-case basis avoiding adverse impacts to the NHTs.	Allow highly visible projects and/or projects out of scale with the surrounding environment (e.g. wind energy development projects, gas plants, power plants, high voltage transmission lines) that are <b>outside</b> of the National Trail Management Corridor only. if the project causes no more than a weak contrast (VRM), as viewed from important corridor related National Historic and Scenic

**Special Designations (SD) – Congressionally Designated Trails (7000-7022)**

#	Goal /Obj	Alternative A	Alternative B	Alternative C	Alternative D
					Trails features, contributing trail segments, high potential sites and segments, and other key observation points that contribute to the nature and purpose of the National Trails.
7007	SD-01, LR-06, HR-11	No similar action	Allow NHT crossings by new major utility systems only in designated ROW corridors.	Allow NHT crossings in areas where trail ruts have been modified by modern uses, where crossings currently exist, or where new corridor crossings would not damage trail remains and where the project would have no more than a weak contrast (VRM) to the setting of the NHT.	Allow National Historic and Scenic Trails crossings by new major utility systems only in designated ROW corridors identified in the Rights-of-Way and Corridors section.

7008	SD-01, HR-11	Motorized vehicles, such as those used for geophysical exploration, or large heavy vehicles such as buses used in recreational tours, or similar activities, could cross and drive down the trails, provided a site-specific analysis determines that no adverse effects would occur.	Prohibit large, heavy vehicles (e.g., geophysical, tour buses or similar size vehicles) from driving on contributing segments of the NHTs.	Same as Alternative A	Same as Alternative B
7009	SD-01, HR-11	Geophysical activities such as shotholes, blasting, and vibroseis locations could, generally, be allowed, provided they are at least 300 feet from the trail, do not occur directly on the trail, and a site-specific analysis determines that visual intrusions and adverse effects would not occur.	Geophysical activities such as shotholes, blasting, and vibroseis locations could, generally, be allowed, provided they are at least one mile from a contributing NHT segment, do not occur directly on the NHT, and a site-specific analysis determines that visual intrusions and adverse effects would not occur.	Geophysical activities such as shotholes, blasting, and vibroseis locations could, generally, be allowed, provided they are at least 100 feet from a contributing NHT segment, do not occur directly on the NHT, and a site-specific analysis determines that visual intrusions and adverse effects would not occur.	Allow geophysical activities such as shotholes, blasting, and vibroseis in the National Trail Management Corridor only if the impacts will not be visible from National Scenic Trails and contributing portions of the National Historic Trails and will not cause an adverse effect to the trails.
7010	SD-01, HR-11	No blading would be allowed on any historic trail unless necessary to protect life or property.	Prohibit blading on any contributing segment of NHTs, unless necessary to protect life or property.	Same as Alternative B	Prohibit blading on any National Historic or Scenic Trail, unless necessary to protect life or property.



<b>Special Designations (SD) – Congressionally Designated Trails (7000-7022)</b>					
<b>#</b>	<b>Goal /Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7011	SD-01, HR-11	Historic trails are not available for use as industrial access roads (e.g., oil and gas drilling access roads, or as haul roads for heavy truck traffic).	Contributing segments of NHTs would not be available for use as industrial access roads (e.g., oil and gas drilling access roads, or as haul roads for heavy truck traffic).  Prohibit large, heavy vehicles (e.g., geophysical, tour buses, or similar size vehicles) from driving on contributing segments of the NHTs.	Same as Alternative B	National Scenic Trails and contributing segments of NHTs would not be available for use as industrial access roads (e.g., oil and gas drilling access roads), or as haul roads for heavy truck traffic.  Vehicles could cross the trails, provided a site-specific analysis determines that no adverse effects would occur.
7012	SD-01, HR-11	Motorized vehicles, such as those used for geophysical exploration, or large heavy vehicles such as buses used in recreational tours, or similar activities, could cross and drive down the trails, provided a site-specific analysis determines that no adverse effects would occur.	See management action 7011	See management action 7011	See management action 7011
7013	SD-01, HR-11, HR-12	The Parting-of-the-Ways historical site would be protected by closing it to exploration and development of locatable and saleable minerals and pursuing a withdrawal from mineral location. An existing 40-acre mineral location withdrawal in the area would be retained (Table 2-3, Appendix V). The site would be managed under the prescriptions for management in the Oregon/Mormon Pioneer National Historic Trails Management Plan.	Prohibit surface disturbing activities in the Parting-of-the-Ways historical site that would adversely affect it.  Retain the existing 40-acre withdrawal.	Same as Alternative B except the 40-acre withdrawal would not be retained once it expires.	Prohibit surface disturbing activities in the Parting-of-the-Ways historical site that would adversely affect it.  <ul style="list-style-type: none"> <li>• Retain the existing 40-acre withdrawal.</li> <li>• NSO for fluid minerals.</li> </ul>
7014	SD-01, HR-11	No similar action	New audible and atmospheric effects would not exceed current levels existing along NHT corridors.	Subject projects creating new audible and atmospheric effects to NHTs to measures in the	Allow actions that introduce new audible and atmospheric levels that exceed current levels in the National Trails Management Corridor only if

<b>Special Designations (SD) – Congressionally Designated Trails (7000-7022)</b>					
<b>#</b>	<b>Goal /Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
				NHPA to avoid, minimize or mitigate those effects.	they do not cause adverse impacts to the congressionally designated trails.
7015	SD-01, HR-11	The integrity of the Dry Sandy Swales trail segment (about one mile) will be protected. The site will be an exclusion area and will be closed to surface disturbing activities that could adversely affect it (see discussions in Lands and Realty Management and Minerals Management).	Same as Alternative A	Same as Alternative A	No similar action (see other actions within this section)
7016	SD-01, HR-11	The area within ¼ mile of either side of the Dry Sandy Swales trail segment will be managed in accordance with the Oregon/Mormon Pioneer National Historic Trails Management Plan.	Same as Alternative A	Same as Alternative A	No similar action (see other management in this section)
<b>Eligible But Not Designated</b>					
7017	SD-02, HR-09	Management of historic roads and trails that are eligible for the NRHP but are not congressionally designated would generally be the same as for designated trails including a ¼-mile protective setback on either side of the trails. These trails may be recommended for listing to the NRHP. These trails include the Overland Trail, the Cherokee Trail, and the Point of Rocks to South Pass Road.	Manage historic roads and trails that are eligible for the NRHP but are not congressionally designated (these include, but are not limited to, the Overland Trail, the Cherokee Trail, the Point of Rocks to South Pass Road and other Expansion Era roads and trails), as follows: Within ½ mile on either side of an intact trail or road segment, unless the proposed project and its associated impacts are not visible from the road or trail, would be: 1) open to mineral leasing with NSO restrictions; 2) closed to mineral material sales; 3) an exclusion area for new right-of-way; 4) pursue withdrawal from mineral location. ½ to two miles on each side of the intact road or trail segment, unless the proposed project and its associated impacts are not visible	Manage, on a case-by-case basis based on their resource values, historic roads and trails that are eligible for the NRHP but are not congressionally designated (these include, but are not limited to, the Overland Trail, the Cherokee Trail, the Point of Rocks to South Pass Road and other Expansion Era roads and trails). Provided such actions do not occur directly on the historic road, actions along the intact road or trail segments would be: • Open to mineral leasing with standard lease stipulations • Open to mineral material sales • Open to new right-of-way • Open to locatable minerals. Manage highly visible projects and/or projects out of scale with the surrounding environment (e.g. wind farms, gas plants, and	Historic roads and trails that are eligible for the NRHP but are not congressionally designated (these include, but are not limited to the Point of Rocks to South Pass Road and other Expansion Era roads and trails) will be managed according to their historical context and as follows: • Actions within 500 feet of a contributing segment of road or trail: - NSO for fluid minerals - Designate as a ROW avoidance area. For most projects, the setting will be analyzed out to one mile on either side of contributing segments of the historic roads and trails. For highly visible projects, impacts to setting will be analyzed on a case-by-case basis. Should any roads or trails be congressionally designated as part of

**Special Designations (SD) – Congressionally Designated Trails (7000-7022)**

#	Goal /Obj	Alternative A	Alternative B	Alternative C	Alternative D
			<p>from the road or trail, would be:                      1) open to mineral leasing with NSO restrictions; 2) closed to mineral material sales; 3) an exclusion area for new right-of-way; 4) open to locatable minerals.</p> <p>Two to five miles on each side of the intact road or trail segment, unless the proposed project and its associated impacts are not visible from the road or trail, would be:                      1) open to mineral leasing with CSU restrictions; 2) open to mineral material sales with CSU restrictions, 3) open to new right-of-way with CSU restrictions; 4) open to locatable minerals.</p> <p>Deny highly visible projects and/or projects out of scale with the surrounding environment (e.g. wind farms, gas plants, and power plants) within zero to five miles on each side of intact segments of the road or trail unless the project and its associated impacts are not visible from the road or trail.</p> <p>Should any roads or trails be congressionally designated as part of the NHT system, they would be managed according to the prescriptions set forth in the National Historic Trails section.</p> <p>Various Expansion Era (i.e., 1870 to 1940) roads would be managed according to their historical context. Era Roads are those routes developed after establishment of the Transcontinental Railroad in Wyoming in 1869. Management prescriptions similar to those in the Oregon/Mormon Pioneer National Historic Trails Management Plan would be applies, although the ¼-</p>	<p>power plants) with the following restrictions from zero to five miles on each side of intact segments of the road or trail unless the project and its associated impacts are not visible from the road or trail.</p> <p>Should any roads or trails be congressionally designated as part of the NHT system, they would be managed according to the prescriptions set forth in the National Historic Trails section.</p> <p>Various Expansion Era (i.e., 1870-1940) roads would be managed according to their historical context. Era Roads are those routes developed after establishment of the Transcontinental Railroad in Wyoming in 1869. Management prescriptions similar to those in the Oregon/Mormon Pioneer National Historic Trails Management Plan would be applied, although the ¼-mile protective setback might not always be applied. Management actions would include development of activity plans with the objective of preserving the historical integrity of significant NRHP contributing segments. Activity plans may include NRHP nomination of those Expansion Era trails that qualify.</p>	<p>the NHT system, they would be managed according to the prescriptions set forth in the National Historic Trails section.</p>

<b>Special Designations (SD) – Congressionally Designated Trails (7000-7022)</b>					
<b>#</b>	<b>Goal /Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			mile protective setback might not always be applied. Management actions would include development of activity plans with the objective of preserving the historical integrity of significant NRHP contributing segments. Activity plans may include NRHP nomination of those Expansion Era trails that qualify.		
7018	SD-02, HR-09	In the JMH planning area, Expansion Era roads would be managed in a manner similar to that of the historic trails covered in the Oregon/Mormon Pioneer National Historic Trails Management Plan (BLM 1986), with prescriptions from that plan applied, although the ¼-mile protective setback might not always be applicable. Management actions would include development of activity plans with the objective of preserving the historical integrity of significant NRHP contributing segments of the historic roads. Activity plans may include NRHP nomination of those Expansion Era roads that qualify.	See management action 7017	See management action 7017	See management action 7017
7019	SD-02, HR-09	Various Expansion Era (i.e., 1870 to 1940) roads would be managed according to their historical context. Era Roads are those routes developed after establishment of the Transcontinental Railroad in Wyoming in 1869. Management prescriptions similar to those in the Oregon/Mormon Pioneer National Historic Trails Management Plan would be applied, although the ¼-mile protective setback might not always be applied. Management actions would include development	See management action 7017	See management action 7017	See management action 7017

**Special Designations (SD) – Congressionally Designated Trails (7000-7022)**

#	Goal /Obj	Alternative A	Alternative B	Alternative C	Alternative D
		of activity plans with the objective of preserving the historical integrity of significant NRHP contributing segments. Activity plans may include NRHP nomination of those Expansion Era trails that qualify.			
7020	SD-02, HR-09	No similar action	Allow geophysical activities such as shotholes, blasting, and vibroseis locations provided they are at least ¼ mile from an NRHP eligible historic road, do not occur directly on the historic road, and a site-specific analysis determines that visual intrusions and adverse effects would not occur.	Allow geophysical activities such as shotholes, blasting, and vibroseis locations provided they are at least 100 feet from an NRHP eligible historic road, do not occur directly on the historic road, and a site-specific analysis determines that visual intrusions and adverse effects would not occur.	Allow geophysical activities such as shotholes, blasting, and vibroseis locations provided they are: <ul style="list-style-type: none"> <li>• At least 300 feet from a NRHP eligible historic road or trail</li> <li>• Do not occur directly on the historic road</li> <li>• A site-specific analysis determines that visual intrusions and adverse effects would not occur.</li> </ul>
7021	SD-02 HR-09	No similar action	No similar action	No similar action	Manage the Overland and Cherokee Trails to preserve the trail values, characteristics, and settings for which the trail was identified for study. Actions within ¼ mile of contributing trail segments: <ul style="list-style-type: none"> <li>• CSU for fluid minerals</li> <li>• Closed to Oil Shale</li> <li>• Designate as a ROW avoidance area</li> <li>• Petition to segregate and withdraw from locatable mineral entry</li> <li>• Open to solid leasable minerals by subsurface methods only.</li> </ul> For most projects, the setting will be considered out to three miles to either side of contributing portions of trail. Allow, on a case-by-case basis, highly visible projects and/or projects out of scale with the surrounding environment (e.g. wind farms, gas plants, large transmission lines, and power plants) within five miles of the trail only if the project causes no more than a weak contrast (VRM) to the

<b>Special Designations (SD) – Congressionally Designated Trails (7000-7022)</b>					
#	Goal /Obj	Alternative A	Alternative B	Alternative C	Alternative D
					setting of the Overland or Cherokee Trails. Apply the National Historic Trail prescriptions (see National Historic Trails subsection) should any historic road or trail be designated as part of the National Historic Trail System.
7022	SD-01, LR-06, HR-11	No similar action	No similar action	No similar action	Allow crossings of eligible but not designated trail segments by new major utility systems only in designated ROW corridors.

<b>Special Designations (SD) – Wilderness Study Areas (7100-7103)</b>					
#	Goal/Obj	Alternative A	Alternative B	Alternative C	Alternative D
7100		Retain the wilderness quality and manage the WSAs in the planning area in accordance with general BLM Management authorities found in FLPMA, 43 USC 1701 and associated regulations and policies, including applicable land use plans.			
7101		Should Congress not designate areas (partially or wholly) as wilderness, the management of the nondesignated areas would be in accordance with the approved Green River RMP or as otherwise directed by Congress.	Should Congress not designate the WSAs in the planning area (partially or wholly) as wilderness, the management of the identified areas would be for wilderness values.	Should Congress not designate areas (partially or wholly) as wilderness, the management of the identified areas would be for multiple use.	WSAs that are released by Congress from wilderness study will no longer be subject to management as Wilderness Study Areas. These lands will be managed under general BLM Management authorities found in FLPMA, 43 USC 1701 and associated regulations and policies, including applicable land use plans.
7102		In the JMH planning area, the WSAs are managed as VRM Class I areas to preserve the natural setting and existing character of the landscape. As a result, the Oregon Buttes ACEC and the western portion of the Greater Sand Dunes ACEC are managed as VRM Class I areas.	Designate WSAs as VRM Class I areas (227,960 acres) to preserve the natural setting and existing character of the landscape.	Same as Alternative A	Same as Alternative B
7103		In the JMH planning area, a visual transition area of one mile adjacent to each Class I area (WSA) would be managed as Class II to retain the existing character of the Class I areas	Manage a visual transition area consistent with VRM Class II within three miles or the visual horizon (whichever is closer) of a WSA boundary.	No similar action	No similar action

**Special Designations (SD) – Wilderness Study Areas (7100-7103)**

#	Goal/Obj	Alternative A	Alternative B	Alternative C	Alternative D
		(WSA) and surrounding landscapes.			

**Special Designations (SD) – Wild and Scenic Rivers (7200-7234)**

#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
7200	SR-01	Manage the free-flowing condition, water quality, tentative classification, and ORVs of eligible and suitable WSR to assure a decision on suitability can be made for eligible rivers; or in the case of suitable rivers, until Congress designates the river or releases it for other uses.			
7201	SR-01	Protect outstanding remarkable values of eligible and suitable WSR segments.			
7202	SR-01	Seven BLM-administered public land parcels along the Sweetwater River (involving about 9.7 miles of the river) were found to meet the wild and scenic rivers suitability factors to be given further consideration for inclusion in the Wild and Scenic Rivers System. Of the 9.7 miles of river involved, the BLM lands along 5.8 miles are classified as wild, the BLM lands along 0.5 miles are classified as scenic, and the BLM lands along 3.4 miles are classified as recreational (Map 2-29) (see Appendix L).	Seven BLM-administered public land parcels along the Sweetwater River (involving about 9.7 miles of the river) were found to meet the wild and scenic rivers suitability factors to be given further consideration for inclusion in the Wild and Scenic Rivers System. Of the 9.7 miles of river involved, classify the BLM lands along 5.8 miles as wild, 0.5 miles as scenic, and 3.4 miles as recreational (Map 2-30) (see Appendix L).	No similar action, the Sweetwater River would be determined non-suitable for WSR.	Seven BLM-administered public land parcels along the Sweetwater River (involving about 9.7 miles of the river) were found to meet the wild and scenic rivers suitability factors to be given further consideration for inclusion in the Wild and Scenic Rivers System. Of the 9.7 miles of river involved, classify the BLM lands along 5.8 miles as wild, 0.5 miles as scenic, and 3.4 miles as recreational (Map 2-32) (see Appendix L).
7203	SD-11, SR-01	<b>Wild Classification</b> The public lands are closed to mineral leasing and related exploration and development activities. Existing mineral leases on these lands would be allowed to expire.	Designate ½ mile of either side of the river bank an exclusion area for ROWs and surface disturbing activities (except for the purpose of maintaining or enhancing the wild and scenic rivers). Close ½ mile of either side of the river bank to mineral leasing and related exploration and development activities, petition to segregate and pursue a withdrawal from locatable mineral entry, and close to mineral material sales. Retain the existing withdrawal.	No similar action, the Sweetwater River designation would not be retained.  Revoke the existing withdrawal for the wild portion of the Sweetwater River.	<b>All Classifications/Tentative Classifications</b> Within ½ mile of either side of the river bank: <ul style="list-style-type: none"> <li>• Designate as a ROW exclusion area</li> <li>• Manage surface disturbing activities to maintain the wild and scenic rivers</li> <li>• CSU for fluid minerals</li> <li>• Close to mineral material sales</li> <li>• Retain the existing withdrawal from mineral location.</li> </ul>
7204	SD-11, SR-01	<b>Wild Classification</b> The public lands are closed to mineral location (e.g., filing of	See management action 7203	See management action 7203	See management action 7203

Special Designations (SD) – Wild and Scenic Rivers (7200-7234)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		mining claims and related exploration and development). A withdrawal from land disposal, mineral location, and entry under the land laws would be pursued. Valid existing rights (existing mining claims) would be recognized.			
7205	SD-11, SR-01	<b>Wild Classification</b> The public lands are closed to surface disturbing activities such as construction of recreational developments (e.g., campgrounds, put-in or take-out areas, or other such facilities), wildlife habitat improvements, range improvements, rights-of-way, mineral development, etc. Hiking trails may be built, "by hand labor," if there is a demand for them and they conform with the management objective for these lands.	See management action 7203	See management action 7203	See management action 7203
7206	SD-11, SR-01	<b>Wild Classification</b> The public lands are closed to recreational dredging for minerals, such as gold, and to mineral material sales.	See management action 7203	See management action 7203	See management action 7203
7207	SD-11, SR-01	<b>Wild Classification</b> The public lands are an exclusion area for rights-of-way (Table 2-10, Appendix V).	See management action 7203	See management action 7203	See management action 7203
7208	SD-11, SR-01	<b>Scenic Classification</b> The public lands are closed to mineral leasing and related exploration and development activities. Existing mineral leases on these lands would be allowed to expire.	See management action 7203	See management action 7203	See management action 7203
7209	SD-11, SR-01	<b>Scenic Classification</b> The public lands are closed to mineral location (e.g., filing of	See management action 7203	See management action 7203	See management action 7203



Special Designations (SD) – Wild and Scenic Rivers (7200-7234)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		mining claims and related exploration and development). A withdrawal from mineral location and entry under the land laws would be pursued. Valid existing rights (existing mining claims) would be recognized.			
7210	SD-11, SR-01	<b>Scenic Classification</b> The public lands are closed to most surface disturbing activities such as construction of rights-of-way, mineral development, most types of recreation site development, and wildlife habitat and range improvements. Some recreation developments (such as put in or take out areas), and wildlife and range improvements may be allowed on the public lands so long as there is no substantial adverse effect to the natural-like appearance of the lands within the river corridor and their immediate environment.	See management action 7203	See management action 7203	See management action 7203
7211	SD-11, SR-01	<b>Scenic Classification</b> The public lands are closed to recreational dredging for minerals such as gold and to mineral material sales.	See management action 7203	See management action 7203	See management action 7203
7212	SD-11, SR-01	<b>Scenic Classification</b> The public lands are an exclusion area for rights-of-way (Table 2-10, Appendix V).	See management action 7203	See management action 7203	See management action 7203
7213	SD-11, SR-01	<b>Recreational Classification</b> The public lands are closed to mineral leasing and related exploration and development activities. Existing mineral leases on these lands would be allowed to expire.	See management action 7203	See management action 7203	See management action 7203
7214	SD-11, SR-01	<b>Recreational Classification</b>	See management action 7203	See management action 7203	See management action 7203

Special Designations (SD) – Wild and Scenic Rivers (7200-7234)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		The public lands are closed to mineral location (e.g., filing of mining claims and related exploration and development). A withdrawal from mineral location and entry under the land laws would be pursued. Valid existing rights (existing mining claims) would be recognized.			
7215	SD-11, SR-01	<b>Recreational Classification</b> The public lands are closed to most surface disturbing activities such as construction of rights-of-way and mineral development. Some surface disturbing activities may be allowed. Activities such as recreational developments (development and improvement of campgrounds, put in or take out areas, etc.), range improvements, and wildlife improvements may be considered, provided such activity is done in a manner that minimizes surface disturbance, sedimentation, pollution, and visual impairment, and if a site-specific analysis determines that no adverse effects would occur.	See management action 7203	See management action 7203	See management action 7203
7216	SD-11, SR-01	<b>Recreational Classification</b> The public lands are closed to recreational dredging for minerals, such as gold, and to mineral material sales.	See management action 7203	See management action 7203	See management action 7203
7217	SD-11, SR-01	<b>Recreational Classification</b> The public lands are an exclusion area for rights-of-way (Table 2-10, Appendix V).	See management action 7203	See management action 7203	See management action 7203
7218	SD-11, SR-01	<b>Wild Classification</b> The public lands are closed to land disposal actions. Exchanges of public lands "outside the corridor" could be considered for acquiring	The public lands are closed to land disposal actions.	No similar action, the Sweetwater River designation would not be retained.	All Classifications: • Prohibit land disposal actions.

<b>Special Designations (SD) – Wild and Scenic Rivers (7200-7234)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		private or state lands within the corridor or between the public land parcels along the river; however, public lands within the corridor would not be exchanged (Appendix K).			
7219	SD-11, SR-01	<b>Scenic Classification</b> The public lands are closed to land disposal actions. Exchanges of public lands "outside the corridor" could be considered for acquiring private or state lands within the corridor or between the public land parcels along the river; however, public lands within the corridor would not be exchanged.	See management action 7218	See management action 7218	See management action 7218
7220	SD-11, SR-01	<b>Recreational Classification</b> The public lands are closed to land disposal actions. Exchanges of public lands "outside the corridor" could be considered for acquiring private or state lands within the corridor or between the public land parcels along the river; however, public lands within the corridor would not be exchanged (Appendix K).	See management action 7218	See management action 7218	See management action 7218
7221	SD-11, SR-01	<b>Wild Classification</b> The public lands would be managed under a Class II VRM classification.	Designate this area as VRM Class II objectives.	The Sweetwater River designation would not be retained.	All Classifications: Same as Alternative B
7222	SD-11, SR-01	<b>Scenic Classification</b> The public lands would be managed under a Class II VRM classification.	See management action 7221	See management action 7221	See management action 7221
7223	SD-11, SR-01	<b>Recreational Classification</b> The public lands would be managed under a Class II VRM classification.	See management action 7221	See management action 7221	See management action 7221

<b>Special Designations (SD) – Wild and Scenic Rivers (7200-7234)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>Wild Classification</b>					
7224	SD-11, SR-01	Geophysical exploration is limited to foot access and use of surface cables on the public lands (use of motorized or non-motorized vehicles is prohibited). Surface charges may be allowed if site-specific analyses determine no permanent adverse impacts would occur.	Limit geophysical exploration to foot access and use of surface cables on the public lands. Prohibit use of motorized or non-motorized vehicles.	No similar action, the Sweetwater River designation would not be retained.	Same as Alternative B
7225	SD-11, SR-01	The public lands are closed to motorized and non-motorized vehicles. Hikers would be required to "pack it out"; there would be no garbage facilities. Campfires are permitted in keeping with current fire management regulations.	Limit motorized and non-motorized vehicles, including those used for fire suppression, to designated roads.	No similar action, the Sweetwater River designation would not be retained.	Same as Alternative B
7226	SD-11, SR-01	The public lands are closed to commercial timber sales and harvesting. Cutting of trees would only be allowed with written permission or in association with safety and environmental protection requirements (such as clearing trails, visitor safety, and fire control).	Prohibit commercial timber sales and harvesting.	No similar action, the Sweetwater River designation would not be retained.	Same as Alternative B
<b>Scenic Classification</b>					
7227	SD-11, SR-01	Interim Management on BLM-administered Public Land Parcels Identified as Potentially Meeting the Scenic Classification (involving 0.5 miles of river) would focus on maintaining or enhancing the outstandingly remarkable historic, scenic, and recreational values and the relatively unmodified character of the area in a near-natural setting. Any activities that conflict with this objective are prohibited. Some intrusions on the public lands involved may be allowed if they are not readily evident or are short lived, and do	Focus interim management on BLM-administered public land parcels Identified as Potentially Meeting the Scenic Classification (involving 0.5 miles of river) on maintaining or enhancing the outstandingly remarkable historic, scenic, and recreational values and the relatively unmodified character of the area in a near-natural setting.	No similar action, the Sweetwater River designation would not be retained.	Same as Alternative B

<b>Special Designations (SD) – Wild and Scenic Rivers (7200-7234)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		not adversely affect maintaining the scenic classification.			
7228	SD-11, SR-01	Geophysical exploration is allowed if a site-specific analysis determines no adverse effects would occur. Vehicles would be restricted to designated roads and trails only. Foot access is required off of existing roads. Surface charges may be allowed if site-specific analyses determine no permanent adverse impacts would occur.	Limit geophysical exploration to foot access and use of surface cables on the public lands. Prohibit use of motorized or non-motorized vehicles.	No similar action, the Sweetwater River designation would not be retained.	Same as Alternative B
7229	SD-11, SR-01	Motorized and non-motorized vehicles are restricted to using designated roads and trails. Hiking trails may be built if there is a demand for them and they conform with the objective for the scenic classification. Mountain biking is allowed to the extent that no adverse effects occur. Hikers would be required to "pack it out"; there would be no garbage facilities. Campfires are permitted in keeping with current fire management regulations.	Limit motorized and non-motorized vehicles, including those used for fire suppression, to designated roads. Prohibit the use of mountain bikes on trails. No new hiking trails would be constructed.	No similar action, the Sweetwater River designation would not be retained.	Limit motorized and non-motorized vehicles, including those used for fire suppression, to designated roads .
7230	SD-11, SR-01	The public lands are closed to commercial timber sales and harvesting. Cutting of trees would only be allowed with written permission or in association with safety and environmental protection requirements (such as clearing trails, visitor safety, and fire control).	Prohibit commercial timber sales and harvesting.	No similar action, the Sweetwater River designation would not be retained.	Same as Alternative B
<b>Recreational Classification</b>					
7231	SD-11, SR-01	Interim Management on BLM-administered Public Land Parcels Identified as Potentially Meeting the Recreational Classification (involving 3.4 miles of river) would focus on maintaining or enhancing	Focus interim management on BLM-administered public land parcels identified as Potentially Meeting the Recreational Classification (involving 3.4 miles of river) on maintaining or	No similar action, the Sweetwater River designation would not be retained.	Same as Alternative B

<b>Special Designations (SD) – Wild and Scenic Rivers (7200-7234)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		the outstandingly remarkable historic, scenic, and recreational values in a modestly modified setting and retain the character of the area. Any activities that would conflict with this objective are prohibited. Some intrusions may be allowed if they would not adversely affect the characteristics of the area and the maintenance of the recreational classification.	enhancing the outstandingly remarkable historic, scenic, and recreational values in a modestly modified setting and retain the character of the area. Prohibit any activities that would conflict with this objective.		
7232	SD-11, SR-01	Geophysical exploration is allowed if a site-specific analysis determines no adverse effects would occur. Vehicles would be restricted to designated roads and trails only. Foot access is required off of existing roads. Surface charges may be allowed if site-specific analyses determine no permanent adverse impacts would occur.	Limit geophysical exploration to foot access and use of surface cables on the public lands. Prohibit use of motorized or non-motorized vehicles.	No similar action, the Sweetwater River designation would not be retained.	Same as Alternative B
7233	SD-11, SR-01	Motorized and non-motorized vehicles are restricted to using designated roads and trails. Hiking trails may be built if there is a demand for them and they conform with the objective for the recreational classification. Mountain biking is allowed to the extent that no adverse effects would occur. Public use and access may be regulated and distributed where necessary to protect and enhance outstandingly remarkable values.	Limit motorized and non-motorized vehicles Prohibit the use of mountain bikes on trails. No new hiking trails would be constructed.	No similar action, the Sweetwater River designation would not be retained.	Limit motorized and non-motorized vehicles, including those used for fire suppression, to designated roads .
7234	SD-11, SR-01	The public lands are closed to commercial timber sales and harvesting. Firewood collection for camp fires and some post and pole cutting would be allowed provided no substantial adverse effects occur to the public lands.	Prohibit commercial timber sales and harvesting.	No similar action, the Sweetwater River designation would not be retained.	Same as Alternative B

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7300	PR-06, PR-09, PR-11	Maintain or enhance the resource values and characteristics for which these areas were designated as special management areas.			
7301	PR-06, PR-09, PR-11	Ensure developments and activities conform with the concepts of open space.			
7302	PR-06, PR-09, PR-11	Allow, on a case-by-case basis, activities that conform to objectives for the management areas.			
7303	PR-06, PR-09, PR-11	Analyze any increase in vegetative production, and if feasible, prioritize it for watershed stabilization and improvement, and wildlife forage, before considering it for livestock.			
7304	PR-06, PR-09, PR-11	Restrict travel and transportation of heavy firefighting equipment to designated roads and trails. Allow heavy firefighting equipment off of designated road and trails for protection of life, property, and resource values.			
<b>Red Desert Watershed Management Area</b>					
<b>Goal:</b>					
SD-03: Emphasize protection of visual resources, watershed values, wildlife resources, and to provide large areas of unobstructed views for enjoyment of scenic qualities in the area.					
7305	PR-06, PR-09, PR-11	The Red Desert Watershed area was not found to contain values that meet the relevance and importance criteria; therefore, it is not recommended for ACEC designation.	Reduce the Red Desert Watershed Management Area to only include the eastern portion of the area (Table 2-12, Appendix V and Map 2-30). Appendix V	The Red Desert Watershed Management Area would not be retained.	Rename Red Desert Watershed Management Area to the Red Desert Management Area. Reduce the size of the Red Desert Management Area to 162,980 acres by moving the eastern boundary to the west (Table 2-12, Appendix V and Map 2-32).
7306	PR-06, PR-09, PR-11	The Red Desert Watershed Area would be managed to ensure developments and activities conform with the concepts of open space. The area would be managed consistent with the Class II and Class III VRM classifications. Site-specific visual resource reviews (inventories) would be conducted prior to	Designate the area as VRM Class II objectives.	Designate VRM classifications as shown on Table 2-12, Appendix V and Map 2-19.	Designate the area as VRM Class II.

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		allowing activities that may affect these values.			
7307	PR-06, PR-09, PR-11	Surface disturbing activities, mineral exploration and development, and seismic activities would continue where acceptable subject to the management guidelines provided in the Minerals section. Approximately 2,500 acres are closed to surface disturbing activities to protect Special Status plant species and to protect relevant and important resource values in the Oregon Buttes ACEC.	Surface disturbing activities, mineral exploration and development, and seismic activities could be authorized if impacts could be mitigated.	No similar action, the Red Desert Watershed Management Area would not be retained.	Allow surface disturbing activities subject to mitigation to minimize impacts. <ul style="list-style-type: none"> <li>• CSU for fluid minerals.</li> <li>• Closed to Oil Shale</li> </ul> Open approximately 2,860 acres of federal coal lands with development potential in the area to consideration of sub-surface coal leasing and development only.
7308	PR-06, PR-09, PR-11	Approximately 2,860 acres of federal coal lands with development potential in the area are open to consideration of coal leasing and development (see Coal Decisions). Most of the area is open to consideration of saleable minerals activities and mineral location.	See management action 7307	See management action 7307	See management action 7307
7309	PR-06, PR-09, PR-11	In the JMH area, portions of the Red Desert Watershed Management Area (about 7,280 acres in Area 1) are open to fluid minerals leasing consideration with stipulations to protect sensitive resources.	See management action 7307	See management action 7307	See management action 7307
7310	PR-06, PR-09, PR-11	Restrictions for protection of raptors, big game crucial winter range, and big game calving/fawning areas would apply (see Wildlife section and Appendix J). Exceptions to these restrictions may be approved if conditions and criteria described in Appendix B apply.	Manage important wildlife habitats for no-net-loss of habitat and to retain habitat function by applying surface use restrictions. Grant exceptions only if the action benefits wildlife values (see Appendix B for specific exception/waiver/modification criteria).	No similar action, the Red Desert Watershed Management Area would not be retained.	Same as Alternative B



<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7311	PR-06, PR-09, PR-11	The preferred route for rights-of-way in the management area is the east-west window described in the Lands and Realty Management section. Other areas would be considered if in conformance with wildlife, watershed, cultural, and scenic resource management objectives. Overhead power lines are prohibited in the area. Approximately 95,580 acres are closed to off-road vehicle travel, and the remainder of the area is limited to designated roads and trails. Access for motorized vehicle travel would be managed to provide access opportunities in conformance with other resource objectives.	Eliminate right-of-way windows. Prohibit overhead power lines.	No similar action, the Red Desert Watershed Management Area would not be retained.	Designate as a ROW avoidance area. Manage the areas within the boundaries of existing WSAs as ROW exclusion areas. See the OHV section for OHV designations.
<b>Pine Mountain Management Area</b>					
7312	SR-01	The area is not designated as an ACEC, but would be maintained as a geographic management unit (see Glossary). The Pine Mountain Management Area is not recommended as part of the Greater Red Creek ACEC because Pine Mountain does not contain the same sensitivity of resources found in Greater Red Creek, even though the watershed resources in this area are interconnected with those of Greater Red Creek. The area does not contain populations of the Colorado River cutthroat trout that the Greater Red Creek area has and thus would not need to receive the same management emphasis.	Expand the Pine Mountain Management Area to include the Salt Wells area and rename as the Salt Wells Area.  Designate the new Salt Wells Area as the Salt Wells portion of the Greater Red Creek ACEC (249,326 acres, Table 2-12, Appendix V and Map 2-30).	The area would not be managed as the Pine Mountain Management Area and would not be combined with the Salt Wells area, and the Salt Wells area would not be designated as part of the Greater Red Creek ACEC.	Same as Alternative A
7313	SR-01	The Pine Mountain area would be managed as an avoidance area for rights-of-way and surface disturbing activities.	Manage the Salt Wells portion (249,326 acres; Map 2-30) as an exclusion area for rights-of-way and surface disturbing activities,	Open the Pine Mountain area to rights-of-way and surface disturbing activities.	Avoid surface disturbing activities.  • Designate as a ROW avoidance area.

Special Designations (SD) – Management Areas (7300-7348)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
			<p>unless the purpose of the activity is to benefit the resource objectives for the management area.</p> <p>Complete a transportation plan prior to authorization of any new roads or development. Apply a “no net gain in roads” in crucial habitats and consider seasonal road closures.</p>		<ul style="list-style-type: none"> <li>• CSU for fluid mineral leasing.</li> </ul>
7314	SR-01	The area is open to mineral leasing and related exploration and development activities with appropriate mitigation requirements (CSU) applied to protect all other resource values.	Close the area for mineral leasing and geophysical activities.	The area would not be managed as the Pine Mountain Management Area and would not be combined with the Salt Wells area, and the Salt Wells area would not be designated as part of the Greater Red Creek ACEC.	No similar action (see management action 0013 for application of mitigation measures)
7315	SR-01	Livestock grazing objectives and management practices would be re-evaluated and, as needed, modified to be consistent with the watershed, water quality, fisheries, recreation, and riparian management objectives. Grazing systems would be designed to achieve desired plant communities and PFC of watersheds (upland and riparian) (Appendix G).	No similar action	No similar action, the area would not be managed as the Pine Mountain Management Area and would not be combined with the Salt Wells area, and the Salt Wells area would not be designated as part of the Greater Red Creek ACEC.	<p>Modify livestock and grazing objectives and management practices, on a case-by-case basis, to be consistent with the watershed, water quality, fisheries, recreation, and riparian management objectives.</p> <p>Design grazing systems to achieve desired plant communities and PFC of watersheds.</p>
7316	SR-01	Activities that preclude the achievement or maintenance of PFC of uplands and riparian areas, and achievement of other management objectives are prohibited.	Prohibit activities that preclude the achievement or maintenance of the Wyoming Land Health Standards.	No similar action, the area would not be managed as the Pine Mountain Management Area and would not be combined with the Salt Wells area, and the Salt Wells area would not be designated as part of the Greater Red Creek ACEC.	No similar action (see Livestock Grazing Management, Water Resources, and Riparian and Wetland Resources sections)
7317	SR-01	Any increase in vegetative production would be reserved for watershed stabilization and improvement purposes.	Reserve any increase in vegetative production for watershed stabilization and improvement and wildlife forage.	No similar action, the area would not be managed as the Pine Mountain Management Area and would not be combined with the Salt Wells area, and the Salt Wells area would not be	No similar action (see actions common to all management areas 7300-7304)

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
				designated as part of the Greater Red Creek ACEC.	
7318	SR-01	Management of habitat for Special Status Species, if identified, would be developed on a case-by-case basis.	Develop and implement an HMP focused on mule deer crucial winter range, pronghorn crucial winter range, elk crucial winter range and parturition, and raptor concentration areas, nesting, and feeding grounds.	No similar action, the area would not be managed as the Pine Mountain Management Area and would not be combined with the Salt Wells area, and the Salt Wells area would not be designated as part of the Greater Red Creek ACEC.	No similar action (see Special Status Species section)
7319	SR-01	Restrictions for protection of raptors, big game crucial winter range, and big game calving/fawning areas would apply (see Wildlife section and Appendix J). Exceptions to these restrictions may be approved if conditions and criteria described in Appendix B apply.	Manage sensitive wildlife habitats (e.g. crucial winter range, parturition areas, migration corridor, and Special Status Species nesting and brood rearing habitat) for no-net-loss of habitat and to retain habitat function by applying surface use restrictions. Exceptions would not be granted, unless they benefit resource values.	Apply surface use restrictions and seasonal limitations in sensitive wildlife habitats (e.g. crucial winter range, parturition areas, migration corridor, and Special Status Species nesting and brood rearing habitat) to reduce impacts to habitat. Exceptions could be granted (see specific exception/waiver/modification criteria, Appendix B).	No similar action (see Special Status Species section)
7320	SR-01	Travel and transportation of firefighting equipment is limited to designated roads and trails. Use of heavy firefighting equipment is prohibited in areas closed to surface disturbing activities. Fire management, suppression needs, and prescribed burning in timber stands would be determined on a case-by-case basis to ensure timber stands are maintained in healthy condition and the "snow fence effect" is preserved. Fire management in other areas would be determined on a case-by-case basis to ensure that area objectives are met.	Limit travel and transportation of firefighting equipment to designated roads and trails. Prohibit the use of heavy firefighting equipment. Determine, on a case-by-case basis, fire management, suppression needs, and prescribed burning in timber stands to ensure timber stands are maintained in healthy condition and the "snow fence effect" is preserved. Determine, on a case-by-case basis, fire management in other areas to ensure that area objectives are met.	Same as Alternative A	No similar action (see actions common to all management areas and Wildfire Ecology and Management section)
7321	SR-01	The entire area would be managed consistent with the Class III VRM classification.	Designate the entire area as VRM Class II objectives.	Determine VRM classes by the Visual Resource Inventory and management direction for the individual locations as appropriate.	Same as Alternative A

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7322	SR-01	Recreation developments would be kept to a minimum and designed primarily for the protection of resource values the prevention of resource damage, and for public health and safety.	Provide onsite controls and facilities for recreation development only for the protection of resource values and the safety of the users.	No similar action, the area would not be managed as the Pine Mountain Management Area. The area would be managed consistent with other resources and resource uses.	Same as Alternative A
7323	SR-01	Off-road vehicle travel is limited to designated roads and trails. A transportation plan would be completed. Some existing roads and trails in the area may be closed and reclaimed as a result of transportation planning. Transportation planning would include consideration of proper road location, construction, reconstruction, design, and reclamation. New road construction would be reviewed on a case-by-case basis for conformance with area and transportation plan objectives. In some cases, consideration of a "no net gain in roads" factor may be an effective way to help meet objectives in the area.	Prohibit motor vehicle use on public lands within the area, except for the protection of life and property. Apply a "no net gain in roads" in crucial habitats and consider seasonal road closures.	No similar action, the area would not be managed as the Pine Mountain Management Area. Vehicle travel in the area would be determined by the travel management portion.	No similar action.
7324	SR-01	The area is open to consideration of activities that conform with objectives for the area. Such activities may include fencing, interpretive signs, transportation or other use barriers, and sediment or erosion control structures to meet resource management objectives. Any actions to be conducted in the Pine Mountain Area would be considered and analyzed on a case-by-case basis. Controls may be placed on the amount, sequence, timing, or level of activity or development that may occur to assure that the actions would be consistent with or help to meet the management objectives	Protect or improve wildlife habitats by preventing or reducing habitat loss or alteration and by applying appropriate surface use and seasonal restrictions and rehabilitation standards to all appropriate activities. Manage sensitive wildlife habitats (e.g. crucial winter range, parturition areas, migration corridor, and Special Status Species nesting and brood rearing habitat) for no-net-loss of habitat and to retain habitat function by applying surface use restrictions. Do not grant exceptions unless they benefit resource values.	Apply surface use restrictions and seasonal limitations in sensitive wildlife habitats (e.g. crucial winter range, parturition areas, migration corridor, and Special Status Species nesting and brood rearing habitat) to reduce impacts to habitat. Grant exceptions if impacts could be mitigated and would not result in a "take" of a Special Status Species. (see specific exception/waiver/modification criteria, Appendix B).	Same as Alternative B

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		for the area. This may result in such things as limiting the number of roads and other construction or other surface disturbing activities (such as well pads) or deferring activities or development in some areas until other areas have been reclaimed and restored to previous uses (Appendix I).			
<b>Four J Basin Portion of the Pine Mountain Management Area</b>					
7325	SR-01	To meet management objectives, surface occupancy and surface disturbance on BLM-administered public lands would be severely limited or prohibited. NSO is allowed on the escarpment or toe slopes. Due to the highly erosive nature of these soils, all surface disturbing activities should be designed for zero runoff into the established drainages.	Manage the Four J Basin portion as an exclusion area for rights-of-way and surface disturbing activities, unless the purpose of the activity is to benefit the resource objectives for the management area.  Complete a transportation plan prior to authorization of any new roads or development. Apply “no net gain in roads” in crucial habitats. Transportation planning would include consideration of seasonal road closures.	No similar action, the area would not be managed as the Pine Mountain Management Area.	No similar action
7326	SR-01	Mineral leasing is allowed provided management objectives could be met and unacceptable impacts would not occur.	Prescriptions to maintain relevant and important values would need to address mineral exploration and development under the 1872 mining law, oil and gas leasing/development, wind leasing/development, management of rights-of-way, management of OHV, and actions that impact forage quality and quantity including vegetative manipulation activities.	Allow mineral leasing consistent with other resources and resource uses.	No similar action
7327	SR-01	Any determinations to close parts of the area to mineral location and pursue withdrawals would be deferred to completion of a comprehensive activity or implementation plan for the area. In the interim, those parts of the area not covered by existing	Pursue a withdrawal of the area from mineral location and close to mineral leasing.	See management action 7326	See management action 7326

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		withdrawals would remain open to mineral location.			
7328	SR-01	Livestock grazing would be managed to allow for optimum vegetation recovery in the long term and for uplands and riparian areas to reach PFC as a minimum. If necessary, forage would be reserved for watershed purposes. Full consideration would be given to maintaining and protecting important wildlife habitat.	Develop and implement an HMP focused on, mule deer crucial winter range, pronghorn crucial winter range, elk crucial winter range and parturition, and raptor concentration areas, nesting, and feed grounds that addresses meeting PFC and managing plant communities through proper grazing management, OHV use, and strategically placed energy developments.	Manage livestock grazing consistent with other resources and resource uses.	No similar action
<b>Sugarloaf Basin Management Area</b>					
7329	SR-01	The Sugarloaf Basin area is not designated an ACEC, but would be maintained as a geographic management unit. The area is not recommended as part of the Greater Red Creek ACEC because Sugarloaf Basin does not contain the same sensitivity of resources found in Greater Red Creek, even though the watershed resources in the area are interconnected with those of Greater Red Creek. The area does not contain populations of the Colorado River cutthroat trout that the Greater Red Creek area has and thus does not need to receive the same management emphasis. The watershed, scenic, and wildlife resources are determined to be neither more than locally significant nor fragile, sensitive, or rare, when compared to those values found in Currant, Sage, and Red Creeks.	Designate the Sugarloaf Basin area as the Sugarloaf Basin portion of the Greater Red Creek ACEC (Table 2-12, Appendix V and Map 2-30).	The area would not be designated as an ACEC.	Retain the area as a management area (Table 2-12, Appendix V and Map 2-32).

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7330	SR-01	The Sugarloaf Basin area would be managed as an avoidance area for rights-of-way and surface disturbing activities. However, a north-south right-of-way window, parallel to the east side of the Flaming Gorge National Recreation Area, would be established.	Manage the Sugarloaf Basin portion (87,240 acres; Map 2-30) as an exclusion area for rights-of-way and surface disturbing activities, unless the purpose of the activity is to benefit the resource objectives for the management area.	Open the Sugarloaf Basin area to rights-of-way and surface disturbing activities.	Designate as a ROW avoidance area outside of any designated ROW corridors (see Rights-of-Ways and Corridors section).
7331	SR-01	The area is open to mineral leasing and related exploration and development activities with appropriate mitigation requirements applied to protect all other resource values.	Close the Sugarloaf Basin portion for mineral leasing and geophysical activities.	No similar action, the area would not be designated as an ACEC.	Allow surface disturbing activities if the operator and the BLM arrive at an acceptable plan for avoidance, minimization, rectification, and/or restoration within the Sugarloaf Basin area. The purpose of the plan is to ensure that fluid mineral development activities are pursued in a manner that maintain habitat function and result in no significant declines in species distribution or abundance. The BLM will consult with the WGFD to evaluate the adequacy of the conservation plan prior to finalization.
7332	SR-01	Any increase in vegetative production would be reserved for watershed stabilization and improvement purposes.	Reserve any increase in vegetative production for watershed stabilization and improvement purposes and wildlife forage.	No similar action, the area would not be designated as an ACEC.	No similar action (see Common to All Resources section)
7333	SR-01	Management of habitat or Special Status Species, if identified, would be developed on a case-by-case basis. Restrictions for protection of raptors, big game crucial winter range, and big game calving/fawning areas would apply (see Wildlife section and Appendix J). Exceptions to this restriction may be approved if conditions and criteria described in Appendix B.	Manage sensitive wildlife habitats for no-net-loss of habitat and to retain habitat function by applying surface use restrictions. Do not grant exceptions unless they benefit resource values.	No similar action, the area would not be designated as an ACEC.	Manage sensitive wildlife habitats for no-net-loss of habitat and to retain sensitive wildlife habitat function. Allow surface disturbing and disruptive activities subject to adequate mitigation of impacts following BLM mitigation policies or to benefit wildlife resource values.

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7334	SR-01	The area would be managed consistent with the Class II and Class III VRM classifications.	Designate the entire area as VRM Class II objectives.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	Designate the area as VRM Class III objectives.
7335	SR-01	Recreation developments would be kept to a minimum and designed primarily for the protection of resource values, the prevention of resource damage, and for public health and safety.	Provide onsite controls and facilities for recreation development only for the protection of resource values and the safety of the users.	No similar action, the area would not be designated as an ACEC.	Same as Alternative A
<b>Pinnacles Geographic Area</b>					
<b>Goals:</b>					
SD-05: Manage to preserve the scenic, paleontological, and wildlife values of the area.					
SD-06: Manage to preserve the value of this unique geologic feature.					
7336	SD-05, SR-01	The Pinnacles Geographic Area (1,340 acres) would continue to be managed as part of the Red Desert Watershed Management Area (Table 2-12, Appendix V and Map 2-29).	Designate the Pinnacles Geographic Area as the Pinnacles ACEC (Table 2-12, Appendix V and Map 2-30).	Do not designate the Pinnacles Geographic Area as an ACEC.	The Pinnacles Geographic Area (1,340 acres) would continue to be managed as part of the Red Desert Management Area (Table 2-12, Appendix V and Map 2-32).
7337	SD-05, SR-01	Leasable Fluid Minerals: The Pinnacles Geographic Area is entirely within Area 3 which is closed to fluid minerals leasing consideration. A portion along the perimeter of the Pinnacles Geographic Area would be considered for leasing with an NSO stipulation (approximately 1,200 acres).	Manage as: 1) closed to mineral material sales/disposal; 2) exclusion area for ROWs; 3) pursue withdrawal from mineral location.  Limit surface disturbing activities to actions that would preserve or enhance the values of the area.	No similar action, the Pinnacles Geographic Area would not be designated as an ACEC.	No similar action
<b>Pinnacles Geologic Feature</b>					
<b>Goal:</b>					
SD-07: Manage to preserve the value of this unique geologic feature.					
7338	SD-05, SD-06, SR-01	The Pinnacles Geologic Feature (approximately 1,345 acres of BLM-administered public land) would continue to be managed as part of the Red Desert Watershed Management Area. The Pinnacles Geologic Feature is entirely within the Pinnacles Geographic Area and contains the actual Pinnacle	Manage the Pinnacles Geologic Feature as a portion of the Pinnacles ACEC (Table 2-12, Appendix V and Map 2-30).	Open the Pinnacles Geologic Feature to rights-of-way and surface disturbing activities.	The Pinnacles Geologic Feature would not be designated as an ACEC. Management for the Pinnacles Geologic Feature would be as follows: <ul style="list-style-type: none"> <li>• Prohibit surface disturbance</li> <li>• NSO for fluid minerals</li> <li>• Petition to segregate and pursue a withdrawal from mineral location</li> </ul>



<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		<p>monoliths, identified as the Pinnacles Proper (about 600 acres) (Table 2-12, Appendix V and Map 2-29).</p> <p>The Pinnacles Geologic Feature (about 1,345 acres) will be an exclusion area for rights-of-way. Surface use will also be controlled. The use of explosives on and within ½ mile of the Pinnacles Geologic Feature will be prohibited. The VRM classification for the Pinnacles Geologic Feature will be Class II. Vehicular travel within ½ mile of the Pinnacles Geologic Feature, and including the features, will be limited to designated roads and trails. The Pinnacles proper will be closed to surface disturbance.</p>			<ul style="list-style-type: none"> <li>• Close to mineral material sales</li> <li>• Designate as a ROW exclusion area</li> <li>• Prohibit the use of explosives on and within ½ mile of the feature</li> <li>• Designate as VRM Class II.</li> </ul>
7339	SD-05, SD-06, SR-01	Locatable Minerals: A withdrawal from mineral location would be pursued.	Pursue a withdrawal for the Pinnacles ACEC.	No similar action.	No similar action
<b>Monument Valley Management Area</b>					
<b>Goal:</b>					
SD-08: Provide protection of wildlife, geologic, cultural, watershed, scenic, and scientific values (paleontological and cultural).					
7340	SD-08, SR-01	Designation of the area as an ACEC would be deferred until a determination can be made that specific resources meet the ACEC relevance and importance criteria. Although the Monument Valley area has unique scenic features and has the apparent high potential for significant cultural and paleontological resources, there has been little systematic inventory of these features and resources. This lack of information precludes identification of specific resources that meet the ACEC relevance and importance criteria for designation of ACECs. Rather than	Designate the Monument Valley Management Area as the Monument Valley ACEC (Table 2-12, Appendix V and Map 2-30).	Monument Valley Management Area would not be designated as an ACEC.  The designation of the Monument Valley Management Area would not be a retained.	Same as Alternative C

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		considering ACEC designation without a more complete appreciation of the values in the area and appropriate management prescriptions, the area would be targeted for additional cultural and paleontological inventory. If specific resources are identified that meet the relevance and importance criteria, the area would then be considered for designation as an ACEC. Further public input would be solicited at that time.			
7341	SD-08, SR-01	The area is open to: 1) consideration for mineral leasing, exploration, and development provided mitigation can be applied to retain the resource values; 2) consideration for mineral material sales with the appropriate constraints applied to all surface disturbing activities; and 3) development and public use with necessary consideration for wildlife, raptors, cultural, watershed, and scientific values.	Close federal sections of the area to mineral leasing, exploration and development, and mineral material sales. The federal sections would not be available to development.	No similar action, the Monument Valley Management Area would not be retained.	Same as Alternative C
7342	SD-08, SR-01	Surface disturbing activities, including rights-of-way, would be managed to avoid slopes greater than 25% and highly erosive areas unless a plan can be developed to mitigate adverse effects to the resource values.	Manage surface disturbing activities, including rights-of-way, to avoid slopes greater than 20% and highly erosive areas.	No similar action, the Monument Valley Management Area would not be retained.	Same as Alternative C
7343	SD-08, SR-01	No similar action	Manage sensitive wildlife habitats (e.g. crucial winter range, parturition areas, and Special Status Species nesting and brood rearing habitat) for no-net-loss of habitat and to retain habitat function by applying surface use restrictions. Allow exceptions only if they benefit wildlife values (see Appendix B for specific	No similar action, the Monument Valley Management Area would not be retained.	Same as Alternative C

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			exception/waiver/modification criteria).		
7344	SD-08, SR-01	The oil shale withdrawal would remain in effect until a comprehensive study is completed for the area. If necessary, needed withdrawals for any of these lands would be identified and would be pursued for protection of their scientific or other resource values before the oil shale withdrawal is terminated.	Retain the oil shale withdrawal.	No similar action, the Monument Valley Management Area would not be retained.	Same as Alternative C
7345	SD-08, SR-01	Off-road vehicle travel is limited to designated roads and trails. A transportation/road plan would be prepared to manage public use of the area and to keep the miles of roads and trails to a minimum.	Limit vehicle use to designated roads and trails.	No similar action, the Monument Valley Management Area would not be retained.	Same as Alternative C
7346	SD-08, SR-01	The entire area would be managed consistent with the Class II VRM classification. All management actions would be designed and located to blend into the natural landscape and to not be visually apparent to the casual viewer.	Designate the ACEC as VRM Class II objectives.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-20.
7347	SD-08, SR-01	No new recreation sites would be developed in the area and limited interpretive signing would be accomplished (mostly for roads and access routes).	Do not develop new recreation sites in the area and use limited interpretive signing (mostly for roads and access routes).	No similar action, the Monument Valley Management Area would not be retained.	Same as Alternative C
7348	SD-08, SR-01	Wild horse herd management would be consistent with the wild horse herd management plan for the area. Construction of wild horse traps and range improvements would be allowed provided the management objectives of the area can be met. Areas with highly erosive soils or slopes are not suitable for wild horse traps and range improvements. Improvements would be considered with	Allow construction of temporary wild horse traps provided the management objectives of the area can be met.	No similar action, the Monument Valley Management Area would not be retained.	Same as Alternative C

<b>Special Designations (SD) – Management Areas (7300-7348)</b>					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		protection provided for slopes, raptors, cultural, scientific, scenic, and watershed resources.			

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
<b>Goal:</b>					
SD-11: Provide for appropriate interpretation of sites of high public interest.					
7400	SD-11	Protect and enhance the relevant and important values associated with ACECs.			
7401	SD-11	Allow, on a case-by-case basis, activities that conform to objectives for the ACECs.			
7402	SD-11	Analyze any increase in vegetative production, and if feasible, prioritize it for watershed stabilization and improvement, and wildlife forage, before considering it for livestock.			
7403	PR-06, PR-09, PR-11	Restrict travel and transportation of heavy firefighting equipment to designated roads and trails. Allow heavy firefighting equipment off of designated road and trails for protection of life, property, and resource values.			
<b>Cedar Canyon ACEC</b>					
<b>Goal:</b>					
SD-12: Provide protection and enhancement of relevant and important cultural values, scenic values, and wildlife habitat in the area.					
7404	SD-12, HR-13, HR-16	The ACEC designation for the BLM-administered public lands in the area is retained (Table 2-12, Appendix V and Map 2-29).	Retain the Cedar Canyon ACEC designation (Table 2-12, Appendix V and Map 2-30).	The ACEC designation would not be retained.	Same as Alternative C
7405	SD-12	The BLM-administered public lands in the ACEC are open to consideration for mineral leasing with restrictions to protect cultural and wildlife values, particularly raptors and raptor habitat, big game winter range, and watershed values.	Close the BLM-administered public lands in the ACEC to mineral leasing to protect cultural and wildlife values, particularly raptors and raptor habitat, big game winter range, and watershed values.	No Similar action, the ACEC would not be retained.	No similar action (see Cultural, Wildlife and Fisheries sections),
7406	BR-17, BR-18	Vegetation would be managed to provide habitat for wildlife.	Manage vegetation to enhance habitat for wildlife.	No similar action, the ACEC would not be retained.	No similar action (see Cultural, Wildlife and Fisheries sections),
7407	BR-21	Habitat for raptors would be maintained or enhanced. Cliffs, tree hollows, and pinnacles would	Protect and manage occupied nest and historic raptor nesting sites and associated feeding areas for continued nesting activities.	No similar action, the ACEC would not be retained.	No similar action (see Cultural, Wildlife and Fisheries sections),

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		be managed to provide nesting habitat.	Determine, on a case-by-case basis, the appropriate level of protection depending upon the species involved, natural topographic barriers, and line-of-sight distances, etc. Different species of raptors could require different types of protective measures (Appendix J).		
7408	SD-12	The ACEC is closed to wood cutting and the removal of other vegetative product materials.	Prohibit wood cutting and the removal of other special forest products in the ACEC.	No similar action, the ACEC would not be retained.	No similar action (see Cultural, Wildlife and Fisheries sections)
7409	SD-12	Motorized vehicle travel in the ACEC (including over-the-snow vehicles) is limited to designated roads and trails.  All off-road vehicle travel in the area is restricted during the winter and spring to protect wildlife during high stress periods of severely cold temperatures, heavy snow cover, and short food supply.	Prohibit motorized and non-motorized vehicle travel in the ACEC (including over-the-snow vehicles).	No similar action, the ACEC would not be retained.	No similar action (see Cultural, Wildlife and Fisheries sections)
7410	SD-12, HR-06, HR-12	BLM would attempt to acquire needed access to this ACEC. Signing and closing of all nonessential roads and trails would be accomplished along with providing legal and physical access.	Work with adjacent landowners and local governments to provide continued access to the Cedar Canyon ACEC.	No similar action, the ACEC would not be retained.	No similar action (see Cultural, Wildlife and Fisheries sections)
7411	SD-12, HR-13, HR-16	The ACEC would be managed consistent with the Class II, Class III, and Class IV VRM classifications to protect, maintain, and enhance the visual resource values. All future facilities would be designed to blend with the landscape, including painting where necessary, and disturbed areas would be revegetated to keep visual resource impacts to a minimum.	Designate the ACEC as VRM Class II objectives.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-20.

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7412	SD-12, HR-13, HR-16	The vista area would be managed consistent with a Class II VRM classification.	See management action 7411	See management action 7411	See management action 7411
7413	BR-05	A reclamation plan for disturbed areas would be prepared to restore lost habitat. Reclamation of some areas may be required prior to disturbing additional areas.	Prepare a reclamation plan for existing disturbed areas. Require reclamation of some of the existing disturbed areas (as determined by the AO) prior to disturbing additional areas.  Reclaim all areas not specifically tied to an authorized activity, as per the BLM Wyoming Reclamation Guidelines.	No similar action, the ACEC would not be retained.	No similar action (see Cultural, Wildlife and Fisheries sections)
7414	BR-17	Wildlife waters would be developed and maintained as necessary.	Consider livestock water developments only if wildlife habitat and resource conditions would be improved or maintained.	No similar action, the ACEC would not be retained.	No similar action (see Cultural, Wildlife and Fisheries sections)
7415	SD-12, HR-13, HR-16	Any activities or ancillary facilities related to either surface or subsurface mining are prohibited on or within a ½-mile radius of rock art site(s). In areas that are more than ½ mile from rock art site(s), seasonal uses and types of placement of surface facilities, activities, etc., related to subsurface mining, would be allowed on a very limited basis.	Manage the Cedar Canyon Petroglyph rock art site and the surrounding setting (within three miles) to protect the cultural and historical values.  Prohibit any activities or ancillary facilities related to either surface or subsurface mining, surface disturbing activities, visual intrusions, and audible intrusions, within these areas.	No similar action, the ACEC would not be retained.	No similar action (see Cultural, Wildlife and Fisheries sections)
7416	SD-12, HR-13, HR-16	Proposed surface disturbing activities on BLM-administered public lands, within ½ mile from the Cedar Canyon Petroglyph rock art site (about 360 acres), would be analyzed for the visual effects to the actual area that can be seen from the rock art site within the ½-mile area surrounding the site (vista area). Most surface disturbing activities visible within this vista are prohibited. Some disturbance activities, such as interpretive facilities, within the vista area would be allowed, if they	See management action 7415	See management action 7415	See management action 7415

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		do not affect the integrity of the rock art site. Other kinds of activities, such as audible disturbances, may not be allowed if they would adversely affect the sacred Native American values.			
7417	SD-12, HR-13, HR-16	The vista area is also closed to: 1) the location of mining claims and entry under the land laws (withdrawal from land entry and mineral location would be pursued); 2) mineral material sales; 3) the use of explosives and blasting, and vibroseis operations; and 4) the use of fire retardant chemicals containing dyes.	Manage the surrounding setting (within three miles) to protect the cultural and historical values. Manage as closed to: 1) mineral material sales for sand, gravel, or other types of construction or building materials; 2) the use of explosives, blasting and vibroseis operations; 3) the use of fire retardant chemicals within ¼ mile of the sites.  Pursue withdrawal from mineral location and entry under the land laws.	No similar action, the ACEC would not be retained.	No similar action (see Cultural, Wildlife and Fisheries sections)
<b>Greater Red Creek ACEC</b>					
<b>Goals:</b>					
SD-13: Restore healthy watershed condition and sustain sound watershed and riparian values, including, but not limited to, improving channel stability, vegetation diversity and abundance, and water quality, including reducing sediment loads and improving water quality of all tributaries entering Flaming Gorge Reservoir and the Green River.					
SD-14: Repair, improve, or maintain Colorado River cutthroat trout habitat in Red, Currant, Trout, and Sage Creeks and their tributaries.					
SD-15: Provide opportunities for dispersed recreation uses in the area that are consistent with the primary watershed, riparian, and fisheries management objectives.					
SD-16: Allow the recreation user the opportunity to have a high degree of interaction with the natural environment, to have moderate challenge, and to use outdoor skills.					
SD-17: Maintain and protect important wildlife habitat.					
SD-18: Protect the scenic qualities of the area.					
SD-19: Reduce the amount of sediment being delivered to the Green River through Red Creek by reducing accelerated sheet, rill, gully, and channel erosion.					
SD-20: Protect and enhance Special Status plants and their habitats and other important plant communities.					
SD-21: Protect sensitive cultural and paleontological resources.					
7418	BR-17, BR-20, BR-18	The 131,600 acres of BLM-administered public lands in the Greater Red Creek area are designated the Greater Red Creek ACEC (Table 2-12, Appendix V and Map 2-29).	Expand the Greater Red Creek ACEC to include Sugarloaf Management Area and Salt Wells Management Area (468,170 acres, Table 2-12, Appendix V and Map 2-30).	The ACEC would not be retained.	Adjust the northern boundary to exclude the checkerboard land from the ACEC (108,010 acres, Table 2-12, Appendix V, and Map 2-32). The ACEC would be renamed the Little Mountain ACEC.

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7419	BR-22.1, BR31.1, BR-32	All resource and land uses in the area would be managed in support of watershed stability and Colorado River cutthroat trout habitat management objectives.	Manage the Sage Creek, Currant Creek, and Red Creek watersheds in support of watershed stability and Colorado River cutthroat trout habitat management objectives.	No similar action, the ACEC would not be retained.	Manage the Sage Creek, Currant Creek, and Red Creek watersheds in support of watershed stability and Colorado River cutthroat trout habitat management objectives. See management action 7418
7420	BR-16, BR-17, BR-19	Management would include emphasis on maintaining or improving important wildlife habitat.	HMP revision should be ecosystem based for multiple aquatic and terrestrial wildlife species assemblages.  Develop and implement an HMP focused on multiple aquatic and terrestrial wildlife species assemblages and their habitats. This includes , mule deer crucial winter range, pronghorn crucial winter range, elk crucial winter range and parturition, raptor concentration areas, nesting and feed grounds, Colorado River cutthroat trout, juniper obligate birds and small mammal species, midget faded rattlesnake, northern leopard frog, and lizard species assemblages.	No Similar action, the ACEC would not be retained.	Same as Alternative A
7421	BR-17, BR-20, BR-24	The Greater Red Creek ACEC would, in general, be managed as an avoidance area for rights-of-way and surface disturbing activities. Exceptions (in some specific areas) are described in the individual watershed sections.	Manage as: 1) an exclusion area for new rights-of-way; 2) closed to mineral material sales; 3) closed to solid minerals leasing; 4) closed to fluid mineral leasing.  Pursue a withdrawal from entry under land laws and mineral location.  Existing fluid mineral leases would not be offered for lease once they expire.  Prohibit surface disturbing activities, except for activities intended to protect or enhance ACEC values.	No similar action, the ACEC would not be retained.	Allow surface disturbing activities only if they protect or enhance ACEC values.  <ul style="list-style-type: none"> <li>• Close to fluid mineral leasing.</li> <li>• Petition to segregate and pursue a withdrawal from mineral location.</li> <li>• Close to oil shale leasing.</li> <li>• Designate as a ROW avoidance area.</li> <li>• Designate as VRM Class II.</li> <li>• Closed to Coal Leasing</li> </ul> See also management action 7418
7422	BR-17, BR-20, BR-24	Most of the area is open to mineral leasing and related exploration and development activities with appropriate mitigation	See management action 7421	See management action 7421	See management action 7421



<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		requirements applied to protect the other important resource values.			
7423	BR-16, BR-20, BR-22	Livestock grazing objectives and management practices would be evaluated and, as needed, modified to be consistent with the watershed, water quality, fisheries, recreation, and riparian management objectives. Grazing systems would be designed to achieve desired plant communities and PFC of watersheds (upland and riparian) (Appendix G).	Modify livestock grazing objectives and systems to manage for plant condition and composition most ecologically beneficial to identified wildlife species, while also considering the habitat of other species, in areas identified as habitat for Special Status Species, crucial winter range, or parturition habitat for big game.	No similar action, the ACEC would not be retained.	Evaluate livestock grazing objectives and management practices, and modify to be consistent with the watershed, water quality, fisheries, recreation, and riparian management objectives. Design grazing systems to achieve desired plant communities and PFC of watersheds (upland and riparian) (Appendix-H). See also management action 7418
7424	BR-16, BR-15	Any activity that could preclude the achievement of PFC of uplands and riparian areas and achievement of other management objectives is prohibited.	Prohibit activities that preclude the achievement or maintenance of the Wyoming Land Health Standards as a minimum.	No similar action, the ACEC would not be retained.	No similar action (see Common to All actions)
7425	BR-02	Forested areas would be managed primarily toward meeting the watershed, riparian, fisheries, and recreation objectives for the ACEC. Timber harvest levels and logging practices would be designed to help meet those objectives.	Manage forested areas primarily toward meeting the riparian, watershed, and other objectives of the ACEC.	No similar action, the ACEC would not be retained.	Manage forested areas primarily toward meeting the riparian, watershed, and other objectives of the ACEC. See management action 7418
7426	BR-17, BR-24	Travel and transportation of firefighting equipment is limited to designated roads and trails. Use of heavy firefighting equipment is prohibited in areas closed to surface disturbing activities.	Limit travel and transportation of firefighting equipment to designated roads and trails. Prohibit the use of heavy firefighting equipment.	No similar action, the ACEC would not be retained.	No similar action (see actions Common to All ACECs and Wildfire Ecology and Management section)
7427	BR-02, BR-06, BR-24	Fire management, suppression needs, and prescribed burning in timber stands would be evaluated on a case-by-case basis to ensure timber stands are maintained in healthy condition and the "snow fence effect" is preserved. Fire management in other areas would be evaluated on a case-by-case basis to ensure that area objectives are met.	Same as Alternative A	No similar action, the ACEC would not be retained.	Evaluate, on a case-by-case basis, fire management, suppression needs, and prescribed burning in timber stands to ensure timber stands are maintained in healthy condition and the "snow fence effect" is preserved. See also management action 7418

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7428	BR-24	Recreation development would be kept to a minimum. Onsite controls and facilities would be provided for the protection of resource values and the safety of the users only.	Provide onsite controls and facilities for recreation development only for the protection of resource values and safety of the users.	No similar action, the ACEC would not be retained.	Allow onsite recreation controls and facilities only for the protection of resource values and safety of the users. See also management action 7418
7429	BR-24	Off-road vehicle travel on BLM-administered public lands within the area is limited to designated roads and trails. A transportation plan would be developed for the area. Some existing roads and trails in the area may be closed and reclaimed as a result of transportation planning. Transportation planning would include consideration of proper road location, construction, reconstruction, design, and reclamation. New road construction would be reviewed on a case-by-case basis for conformance with area and transportation plan objectives. In some cases, consideration of a "no net gain in roads" factor may be an effective way to help meet objectives in the area.	Limit motorized vehicle use to designated roads and trails (Map 2-26). Prohibit off-road motor vehicle use on BLM-administered public lands within the area, except for the protection of life and property. Apply "no net gain in roads."	No similar action, the ACEC would not be retained.	No similar action
7430	BR-22.1, BR31.1, BR-32	No similar action.	Pursue opportunities with willing sellers to acquire lands to improve management opportunities for Colorado River cutthroat trout and its habitat (Appendix K).	No similar action, the ACEC would not be retained.	No similar action (see Lands and Realty section)
<b>Sage Creek portion of Greater Red Creek ACEC</b>					
7431	BR-17, BR-20, BR-24	About 9,600 acres of federal coal in the Sage Creek watershed are acceptable for further consideration for development by surface and subsurface coal mining methods, with certain stipulations. Coal leases and development in the area would include a requirement for plans of development, mining plans, etc., to include adequate mitigation	See management action 7421	No similar action, the ACEC would not be retained.	No similar action (see management action 7421)

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		measures to assure protection of the fisheries and watershed values, prior to allowing any mining activity.			
7432	BR-24	The watershed (about 52,270 acres) would be managed consistent with the Class III VRM classification.	Designate the area as VRM Class II.	No similar action, the ACEC would not be retained.	Designate as VRM Class II (see VRM section, Map 2-20).  See also management action 7418
7433	BR-16, BR-17, BR-32	No similar action	Prohibit livestock grazing in the portion of the Mellor Mountain grazing allotment that intersects the Sage Creek portion (Map 2-30).	No similar action, the ACEC would not be retained.	No similar action (see Livestock Grazing section)
<b>Currant Creek Portion of the Greater Red Creek ACEC</b>					
7434	BR-17, BR-20, BR-32	All BLM-administered public lands within this watershed (about 23,740 acres) are closed to: 1) surface disturbing activities; 2) mineral material sales; and 3) mineral location.  A withdrawal from entry under land laws and mineral location would be pursued. This area is also an exclusion area for rights-of-way.  Exceptions to these requirements are:  A north-south right-of-way window, parallel to the east side of the Flaming Gorge National Recreation Area would be established at County Road 4-33 or to the west of this road.  Aboveground power lines that span the drainage (from rim to rim) could be considered east of County Road 4-33 in the northern portion of the Currant Creek watershed, if environmental analysis demonstrates that scenic, watershed, and fisheries objectives could be met.	See management action 7421	No similar action, the ACEC would not be retained.	No similar action (see management action 7421)

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		The rim areas within the Currant Creek watershed (tops of the watershed ridges) with slopes of less than 25% could be considered for surface disturbing activities if environmental analysis demonstrates that watershed, fisheries, wildlife, and scenic objectives could be met. Within the Currant Creek watershed, slopes greater than 25% and areas in or within 500 feet of riparian areas and floodplains are closed to surface disturbance unless the action is designed specifically for the enhancement of watershed values and Colorado River cutthroat trout habitat.			
7435	BR-17, BR-20, BR-32	The BLM-administered public lands in the watershed are closed to coal and sodium exploration, prospecting, leasing, and development activities.	See management action 7421	No similar action, the ACEC would not be retained.	See management action 7421
7436	BR-17, BR-20, BR-32	The area would be managed consistent with the Class II VRM classification. Management actions on the BLM-administered public lands classified as Class II VRM lands would be designed to retain the existing character of the landscape.	Designate the area as VRM Class II objectives.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	No similar action (see VRM section, Map 2-20)
7437	BR-17, BR-20, BR-32	Fire suppression activities in this watershed would be limited to containment at ridgetops.	Limit fire suppression activities in this watershed to containment at ridgetops using designated roads.	No similar action, the ACEC would not be retained.	No similar action (see Wildfire Ecology section)
7438	BR-17, BR-31.1, BR-32	No similar action	Prohibit livestock grazing in the Jane's Meadow and Upper Currant Creek Pastures within the Sugarloaf Grazing Allotment.	No similar action, the ACEC would not be retained.	No similar action (see Livestock Grazing section)
<b>Red Creek Portion of the Greater Red Creek ACEC</b>					
7439	BR-17, BR-20, BR-24	The BLM-administered public lands within this watershed (about 55,880 acres) are closed to: 1) surface disturbing activities; 2)	See management action 7421	No similar action, the ACEC would not be retained.	No similar action (see management action 7421)

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		mineral leasing; 3) mineral material sales; and 4) mineral location. A withdrawal from entry under the land laws and mineral location would be pursued for the area.			
7440	BR-16, BR-17, BR-18	The one pipeline right-of-way concentration area in the watershed is an avoidance area for any additional rights-of-way. However, that part of the right-of-way concentration area, from the Red Creek escarpment south to Richards Gap, is closed to any new rights-of-way development for at least 10 years to allow soils to stabilize from previous disturbance. At the end of the 10-year period, new rights-of-way in the area could be reconsidered if satisfactory stabilization has occurred. The remainder of the BLM-administered public lands that lie east of the right-of-way concentration area would also be managed as an exclusion area for rights-of-way. An evaluation may occur sooner than 10 years if there is evidence of vegetation recovery on the majority of the concentration area, and disturbed soils appear to have stabilized.	See management action 7421	No similar action, the ACEC would not be retained.	No similar action (see ROW section)
7441	BR-17, BR-20, BR-32	The area would be managed consistent with the Class II VRM classification. Management actions on the BLM-administered public lands classified as Class II VRM lands would be designed to retain the existing character of the landscape.	Designate the area as VRM Class II objectives (see the WSA section for VRM objectives for WSAs within the ACEC).	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	No similar action (see VRM section, Map 2-20)
7442	BR-17, PR-09, PR-11	The Red Creek watershed would be managed to minimize accelerated erosion and increased sedimentation into the Green	Same as Alternative A	No similar action, the ACEC would not be retained.	Allow activities such as the installation of structures designed to reduce sediment, siltation, or erosion, and the rerouting or

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		River/Colorado River system. Activities such as the installation of structures designed to reduce sediment, siltation, or erosion; and the rerouting or maintenance of roads (including the installation of culverts and similar structures), could be accomplished to meet the area objectives and provide needed or improved access.			maintenance of roads (including the installation of culverts and similar structures), to meet the area objectives and provide needed or improved access.  See also management action 7418
7443	BR-17, BR-31, BR-15	No similar action	Prohibit livestock grazing in the Red Creek allotment.	No similar action, the ACEC would not be retained.	Require the completion of a grazing management plan prior to any annual authorization for livestock use in the allotment. See also management action 7418
7444	SD-13, SD-16	No similar action	Allow motorized travel only for access to state/private parcels.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	No similar action
7445	SD-13, SD-16	No similar action	Pursue acquisition of the state parcel.	All lands identified as having wilderness characteristics would not be managed to protect those characteristics.	No similar action (see Lands and Realty section)
<b>Greater Sand Dunes ACEC</b>					
<b>Goal:</b>					
SD-22: Protect the unusual geologic features associated with the sand dunes, Crookston Ranch, and the Boars Tusk; the biological interrelationships supported by the dunes, the dunal ponds, and a variety of recreation uses.					
7446	SD-22, SD-03	The ACEC designation for the BLM-administered public lands in the Greater Sand Dunes ACEC area is retained (39,290 acres, Table 2-12, Appendix V, and Map2-29).	Retain the Greater Sand Dunes ACEC designation.	The ACEC would not be retained.	Retain the Western Portion of the Greater Sand Dunes ACEC (26,364 acres) and rename to the Greater Sand Dunes ACEC
7447	SD-22, SD-03	The BLM-administered public lands in the ACEC would be managed consistent with the Class II VRM classification. Management actions on the BLM-administered public lands classified as Class II VRM lands would be designed to retain the existing character of the landscape.	Designate the ACEC as VRM Class II objectives (see the WSA section for VRM objectives for WSAs contained within the ACEC).	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-20.

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7448	SD-22, SD-03	The BLM-administered public lands in the Greater Sand Dunes area and those within one mile or the visual horizon (whichever is closer) of the area are avoidance areas for new rights-of-way (approximately 70,850 acres).	Designate the Greater Sand Dunes area and public land within one mile or the visual horizon (whichever is closer) of the area as avoidance areas for new ROWs.	No similar action, the ACEC would not be retained.	The BLM-administered public lands in the Greater Sand Dunes area and those within one mile or the visual horizon (whichever is closer) of the area are avoidance areas for new rights-of-way (approximately 57,924 acres).
7449	SD-22, SD-03	The BLM-administered public lands in the area are closed to mineral material sales.	Close BLM-administered public lands in the area to mineral material sales.	No similar action, the ACEC would not be retained.	Same as Alternative A
7450	SD-22, SD-03	In the JMH planning area, areas closed to coal leasing (unsuitable) include the western portion of Greater Sand Dunes ACEC, which includes the Sand Dunes WSA.	Same as Alternative A	No similar action, the ACEC would not be retained.	No similar action; see MA 7451
7451	SD-22, SD-03	Approximately 9,840 acres of federal coal lands in the area are closed to coal leasing and development by surface mining methods and related surface facilities and activities. This area is open to consideration for coal leasing by subsurface mining methods with placement of surface facilities extremely limited.	Same as Alternative A	No similar action, the ACEC would not be retained.	Same as Alternative A Closed to Oil Shale
7452	SD-22, SD-03	Projects to improve the dunal ponds for bird, amphibian, and mammal habitat would be considered and evaluated for development on the BLM-administered public lands.	Manage to protect and improve the dunal ponds for bird, amphibian, and mammal habitat.	No similar action, the ACEC would not be retained.	Same as Alternative B
7453	SD-22, SD-03	A diversity of non-motorized recreation uses, including hiking, bird-watching, photography, sightseeing, and hunting, would be encouraged. Appropriate recreation facilities would be developed and maintained on BLM-administered public lands to provide for a diversity of motorized and non-motorized recreation uses.	Manage to protect and improve the dunal ponds for bird, amphibian, and mammal habitat.	No similar action, the ACEC would not be retained.	Same as Alternative B

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7454	SD-22, SD-03	Two roads that pass through or adjacent to the area would be designated as part of the Tri-Territory backcountry byway (see Map 2-29).	Retain the Tri-territory backcountry byway designation.	No similar action, the ACEC would not be retained.	No similar action (see Backcountry Byways section)
<b>Boars Tusk Portion of the Greater Sand Dunes ACEC</b>					
<b>Goals:</b>					
SD-24: Preserve the scenic, cultural, Native American, and wildlife values of the area.					
SD-25: Preserve the value of this unique geologic feature.					
7455	SD-22, SD-03	The Boars Tusk would be managed to preserve its value as a geologic feature (Table 2-12, Appendix V and Map 2-29).  Note: Boars Tusk is within the boundary of the Greater Sand Dunes ACEC (but is not managed as part of the ACEC).	Retain Boars Tusk as part of the Greater Sand Dunes ACEC (Table 2-12, Appendix V and Map 2-30).	Boars Tusk would not be retained as an ACEC.	No similar action
7456	SD-22, SD-03	The Boars Tusk and approximately 1,400 acres of BLM-administered public lands in the surrounding area would be closed to any surface mining activity, but open to consideration of subsurface mining methods. Activities or ancillary facilities related to subsurface mining would be prohibited (Map 2-29 in the Green River RMP, U.S. Department of the Interior [DOI] 1997).	Designate the Boars Tusk ACEC an exclusion area for ROWs. Close the area to mineral location, mineral material sales and leasable minerals. Pursue a withdrawal from entry under land laws and mineral location.  Limit surface disturbing activities to actions that would preserve or enhance the values of the area.	No similar action, the Boars Tusk would not be retained as an ACEC.	Prohibit surface disturbing activities within the Boars Tusk Feature (90 acres). <ul style="list-style-type: none"> <li>• NSO for fluid minerals.</li> <li>• Designate as a ROW exclusion area.</li> <li>• Prohibit geophysical activities such as shothole, blasting, and vibroseis locations within ½ mile from the site.</li> <li>• Allow geophysical activities outside ½ mile only after a site-specific analysis determines that visual intrusions and adverse effects would not occur.</li> <li>• Allow surface disturbing activities outside of the 90-acre site if the project does not adversely affect the cultural and scenic values of the area.</li> </ul>
7457	SD-22, SD-03	The Boars Tusk area (about 90 acres) is closed to: 1) surface disturbing activities; 2) mineral	See management action 7456	See management action 7456	See management action 7456



Special Designations (SD) – ACECs (7400-7570)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		material sales; and 3) use of explosives and blasting.			
7458	SD-22, SD-03	The area within a ½-mile radius of Boars Tusk (including Boars Tusk) is closed to blasting and explosive charges (about 500 acres).	See management action 7456	See management action 7456	See management action 7456
7459	SD-22, SD-03	The Boars Tusk and about 1,400 acres of BLM-administered public lands in the surrounding area would be managed to retain natural and geologic values. The area is closed to any surface mining activity such as coal mining and any related surface facilities. The area is open to consideration of coal leasing by subsurface mining methods only. Any activities or ancillary facilities related to subsurface mining are prohibited.	See management action 7456	See management action 7456	See management action 7456
7460	SD-24, 25	The Boars Tusk area is open to consideration of activities such as fencing, interpretive signs, or transportation barriers to ensure protection of the site. Facilities are prohibited from being developed on the actual geologic feature.	For public safety, the Boars Tusk geologic feature and surrounding talus slopes (90 acres) could be fenced to discourage OHV use. Interpretation and visitor controls would be installed. Allow no facilities within the feature or on the talus slopes. The Boars Tusk would remain closed to climbing activities.	No similar action, the Boars Tusk would not be retained as an ACEC.	Close the Boars Tusk to climbing activities.
7461	SD-22, SD-03	Off-road vehicle use is limited to designated roads and trails in this area. The road around the Boars Tusk is closed.	Close and reclaim the road around the Boars Tusk geologic feature.	No similar action, the Boars Tusk would not be retained as an ACEC.	No similar action
7462	SD-22, SD-03	Activities in the area would be required to conform with VRM classifications and prescriptions.	Designate the area as VRM Class II objectives.	No similar action, the ACEC would not be retained.	No similar action (see VRM section, Map 2-20)
7463	SD-22, SD-03	Geophysical activity, including off-road vehicle travel, is allowed, provided resource damage is minimized and the activities conform with ORV designations	Prohibit geophysical activity. OHV activity would be consistent with the transportation plan.	No similar action, the ACEC would not be retained.	Same as Alternative A

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		and transportation plans for the area.			
7464	SD-22, SD-03	The relatively pristine portion of the eastern area that has no developments (approximately 8,800 acres), including the base of Steamboat Rim, would be managed to protect big game habitat, vegetation communities, and visual and recreation resources.	Same as Alternative A	No similar action, the ACEC would not be retained.	No similar action (see Killpecker Sand Dunes SRMA and Steamboat ACEC)
7465	SD-22, SD-03	Activities would not be permitted to disrupt access to or use of developed and semi-developed recreation sites. Activities that are incompatible with recreation sites would be managed to avoid these sites.	Same as Alternative A	No similar action, the ACEC would not be retained.	Same as Alternative A
7466	SD-22, SD-03	Surface disturbing activities, geophysical activities, and oil and gas exploration and development activities are restricted seasonally on crucial big game winter ranges and big game birthing areas. Exceptions to this restriction may be approved for activities such as oil and gas development, rights-of-way, construction, and range improvement development, if conditions described in Appendix B apply. Once an operation starts (such as oil and gas drilling/completion), it would be allowed to be completed into or through the winter. Decision points for shutdown due to unacceptable winter conditions occur between exploration or development stages, such as pad construction and drilling startup, and between drilling/completion and production facility installation.	Restrict surface disturbing activities, geophysical activities, and oil and gas exploration and development activities seasonally on crucial big game winter ranges, big game birthing areas, and sage-grouse nesting habitat and winter concentration areas. Grant no exceptions.	No similar action, the ACEC would not be retained.	No similar action (see Fish and Wildlife section)

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7467	SD-22, SD-03	Surface water, soils, and shallow aquifers would be protected from contamination by practices such as closed drilling systems or installation of pit liners. Pit liners would be removed prior to reserve pit reclamation.	Require closed loop drilling systems in the eastern portion of the ACEC, and prohibit reserve pits.	No similar action, the ACEC would not be retained.	No similar action (see Soil and Geologic Resources section)
7468	SD-22, SD-03	Dune ponds would not be used as water sources for development activities.	Same as Alternative A	No similar action, the ACEC would not be retained.	Same as Alternative A (see Water Resources section)
7469	SD-22, SD-03	This portion of the ACEC is an avoidance area for rights-of-way. Some facilities could be allowed if analysis indicates that the management objectives for the area could be met. New linear facilities such as pipelines and power lines in areas of ongoing development may be laid on the surface, or buried adjacent to access roads or within existing concentration areas containing such lines. Pipelines in the stabilized dune areas would be installed as surface lines to avoid unnecessary disturbance of vegetation. Surface gas pipelines would be monitored by the operators to identify potential hazards to ORV users. Identified hazards would be marked to improve visibility. A recreation user map would be developed in cooperation with oil and gas operators to show the location of aboveground facilities (e.g., pipelines, well production facilities, snow fences, etc.).	Designate the east portion of the ACEC a ROW exclusion area.	No similar action, the ACEC would not be retained.	No similar action (see Special Recreation Management Areas subsection)
7470	SD-22, SD-03	About 10,500 acres are designated open to off-road vehicle travel on the active sand dunes. Off-road vehicle travel on about 5,810 acres of stabilized	Same as Alternative A	No similar action, the ACEC would not be retained.	No similar action (see management action 6536)

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		dune areas is limited to existing roads and trails.			
<b>Crookston Ranch Portion of the Greater Sand Dunes ACEC</b>					
<b>Goal:</b>					
SD-23: Preserve its historic features and for the interpretation of ranching history in the area.					
7471	SD-22, SD-03	The Crookston Ranch site would be managed to preserve its historic features and for the interpretation of ranching history in the area. About 500 acres of BLM-administered public lands surrounding the site (the area within a ½-mile radius) would be managed to preserve the setting of the historic ranch.  Note: Crookston Ranch is within the boundary of the Greater Sand Dunes ACEC (but is not managed as part of the ACEC).	Retain Crookston Ranch as part of the Greater Sand Dunes ACEC.	Crookston Ranch would not be retained as an ACEC.	No similar action (see Cultural Resources section & management action 5116)
7472	SD-22, SD-03	The Crookston Ranch and surrounding 500-acre area are closed to surface mining activities such as coal mining, and to the placement of related surface facilities.	Designate the Crookston Ranch an exclusion area for ROWs. Close the area to mineral location, mineral material sales, and leasable minerals. Pursue a withdrawal from entry under land laws and mineral location.  Limit surface disturbing activities to actions that would preserve or enhance the values of the area.	No similar action, the Crookston Ranch would not be retained as an ACEC.	No similar action (see Cultural Resources section)
7473	SD-22, SD-03	The Crookston Ranch site (about 40 acres) is closed to: <ul style="list-style-type: none"> <li>• Surface disturbing activities</li> <li>• Mineral material sales</li> <li>• Use of explosives and blasting.</li> </ul>	See management action 7472	See management action 7472	See management action 7472
7474	SD-22, SD-03	The Crookston Ranch area is open to consideration of activities such as fencing, interpretive signs, or transportation barriers to ensure protection of the sites. Facilities are prohibited from being developed onsite. Either a	See management action 7472	See management action 7472	See management action 7472

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		protective right-of-way or withdrawal for the Crookston Ranch would be pursued to accomplish this.			
7475	SD-22, SD-03	Fires in the Crookston Ranch area would be immediately suppressed if there is any potential of the structures being burned.	Suppress fires in the Crookston Ranch area if there is any potential of the structures being burned.	No similar action, the Crookston Ranch would not be retained as an ACEC.	No similar action (see Cultural Resources section)
7476	SD-22, SD-03	Off-road vehicle use is limited to designated roads and trails in this area.	Prohibit off-highway vehicle use in the area.	No similar action, the Crookston Ranch would not be retained as an ACEC.	No similar action
<b>Natural Corrals ACEC</b>					
<b>Goal:</b>					
SD-26: Protect and enhance the cultural, historical, recreational, wildlife, scenic, and geological values in the area.					
7477	SD-26	The ACEC designation for the 1,110 acres of BLM-administered public lands in the area is retained (Table 2-12, Appendix V and Map 2-29).	Retain the ACEC designation (1,110 acres, Table 2-12, Appendix V, and Map 2-30).	No similar action, the ACEC would not be retained.	The ACEC would not be retained. The Natural Corrals (354 acres) would be managed to protect the cultural and historic values.
7478	SD-26	The entire ACEC is open to consideration of oil and gas leasing with an NSO stipulation.	The ACEC would be closed to consideration of fluid mineral exploration and development.	No similar action, the ACEC would not be retained.	NSO for fluid mineral exploration and development.
7479	SD-26	Any surface disturbing activities that could adversely affect the relevant and important resources in the ACEC are prohibited.	Prohibit any surface disturbing activities that could adversely affect the relevant and important resources in the ACEC. Designate the ACEC an exclusion area for ROWs.	No similar action, the ACEC would not be retained.	<ul style="list-style-type: none"> <li>• Prohibit surface disturbing activities.</li> <li>• Close to mineral material sales.</li> <li>• Allow solid leasable mineral mining by subsurface methods only.</li> <li>• Designate as a ROW exclusion area.</li> </ul>
7480	SD-26	The ACEC is closed to surface coal mining activity and related facilities and to mineral material sales. The ACEC is open to consideration of further leasing and development by subsurface mining methods only. Any related ancillary facilities and surface disturbing activities are prohibited.	Designate the ACEC an exclusion area for surface solid leasable mineral activity and related facilities and to mineral material sales. The ACEC would be open to consideration of further leasing and development by subsurface mining methods only. Prohibit any related ancillary facilities and surface disturbing activities.	No similar action, the ACEC would not be retained.	See management action 7479
7481	SD-26	The 357-acre of mineral location withdrawal in the area would be	Retain and petition to extend the withdrawal when it expires.	No similar action, the ACEC would not be retained.	Retain the withdrawal from mineral location.

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		retained. The public water reserve withdrawal in section 12 would be revoked, since these lands are now privately owned. A filing for a BLM water right on these lands would be pursued if necessary.			
7482	SD-26	The ACEC is open to consideration of such activities as fencing, interpretive signs, or construction of transportation barriers or barriers to other types of uses, to meet resource management objectives. Management activities would be designed to increase public awareness of the significance of the area.	Same as Alternative A	No similar action, the ACEC would not be retained.	No similar action (see Common to All Resources section)
7483	SD-26	The ACEC would be managed consistent with the Class III VRM classification.	Designate the ACEC as VRM Class II objectives.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	Designate as VRM Class III.
7484	SD-26	The road/trail from the spring located in the SE¼NW¼NE¼ SW¼ of Section 18 and the NRHP site are closed to off-road vehicle use. This 20-acre NRHP site is also closed to vehicle use for geophysical activities and by over-the-snow vehicles, and to the use of explosives and to blasting. The remainder of the ACEC is open to over-the-snow vehicles; all other off-road vehicle travel is limited to designated roads and trails.	Close the NRHP listed prehistoric site (48SW336) (20 acres) to: 1) OHV use; 2) vehicles used for geophysical activities; 3) over the snow vehicles; 4) the use of explosives and blasting. The remainder of the ACEC would be open to over-the-snow vehicles. Limit all other OHV travel to designated roads and trails.	No similar action, the ACEC would not be retained.	No similar action (see management actions 5004, 5012 and 7479)
7485	SD-26	The wild horse herd use would continue and would be monitored to ensure resources are protected. No wild horse traps would be constructed in the ACEC.	Allow construction of temporary wild horse traps provided the management objectives of the area can be met.	No similar action, the ACEC would not be retained.	Allow placement of temporary wild horse traps provided the management objectives of the area can be met.
<b>Oregon Buttes ACEC</b>					
<b>Goals:</b>					
SD-27: Protect and enhance the scenic integrity as an historic landmark.					
SD-28: Protect the significant wildlife and geologic values that are found in the area.					

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7486	SD-27, SD-28	The ACEC designation for 3,440 acres of BLM-administered public lands in the area is retained (Table 2-12, Appendix V and Map 2-29).	Retain the ACEC designation (3,440 acres, Table 2-12, Appendix V, and Map 2-30).	The ACEC would not be retained.	Retain the Oregon Buttes ACEC (3,440 acres, Table 2-12, Appendix V, and Map 2-32)
7487	SD-27, SD-28	The ACEC is closed to: 1) surface disturbing activities that could adversely affect the resource values in the area; 2) mineral material sales for sand, gravel, or other types of construction or building materials; 3) motorized vehicle travel, including those utilized for seismograph operations.	Designate the ACEC an exclusion area for ROWs. Close the area to mineral material sales, mineral exploration and development activities. Prohibit OHV use for any purpose.	No similar action, the ACEC would not be retained.	Same as Alternative B
7488	SD-27, SD-28	The ACEC is open to consideration of such activities as fencing, interpretive signs, or construction of barriers to ensure protection to the area. Restrictions for raptors and big game parturition areas apply (see Wildlife section and Appendix J).	The ACEC would be open to consideration of such activities as fencing, interpretive signs, or construction of barriers to ensure protection to the area.	No similar action, the ACEC would not be retained.	Same as Alternative B
7489	SD-27, SD-28	The Oregon Buttes ACEC would be managed consistent with the Class II VRM classification. Management actions would be designed to blend into the natural landscape and retain the existing character of the landscape.	Designate the Oregon Buttes ACEC as VRM Class II objectives (see the WSA section for VRM designations relating to WSAs within the ACEC).	No similar action, the ACEC would not be retained.	Same as Alternative B
<b>Pine Springs ACEC</b>					
<b>Goal:</b>					
SD-29: Protect cultural, historic, prehistoric, geologic, and scenic values.					
7490	SD-29	The 6,030 acres of BLM-administered public lands in the Pine Springs area are designated the Pine Springs ACEC (Table 2-12, Appendix V and Map 2-29).	The ACEC designation would be retained (Table 2-12, Appendix V and Map 2-30).	The ACEC would not be retained.	Same as Alternative B  Retain the Pine Springs Expanded ACEC and rename to the Pine Springs ACEC.
7491	SD-29, HR-09, HR-16	The Pine Springs ACEC is expanded from 90 acres to 6,030 acres.	Expand the Pine Springs ACEC from 6,030 to 6,480 acres.	No similar action, the ACEC would not be retained.	Same as Alternative B

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7492	SD-29, HR-07, HR-2.1	The Pine Springs ACEC (6,030 acres) is closed to surface disturbing activities. About 2,000 acres in the area would be closed to exploration and development of locatable minerals and entry under the land laws. Withdrawal from these activities would be pursued. The existing 90-acre withdrawal would be retained. Cultural resource management plans may be written for the site, and interpretive and visitor management efforts may be allowed as necessary (see also Pine Springs ACEC, lands and Realty management and Minerals management discussions). (Surface disturbing activities may include activities associated with mineral exploration and development; construction of roads, pipelines, power lines; mineral material sales; etc.).	Designate the ACEC an exclusion area for: 1) surface disturbing activities that could adversely affect resource values or preclude meeting ACEC management objectives; 2) ROWs. Pursue a withdrawal from mineral location and entry under the U.S. mining laws.  Close the area to: 1) mineral material sales for sand, gravel, or other types of construction or building materials; 2) mineral leasing.  Retain and petition to extend the withdrawal when it expires.  Write cultural resource management plans for the site. Allow interpretive and visitor management efforts as necessary.	Revoke the existing withdrawal, the ACEC would not be retained.	Same as Alternative B
7493	SD-29, HR-07, HR-2.1	The ACEC is closed to: 1) surface disturbing activities that could adversely affect resource values or preclude meeting ACEC management objectives; 2) mineral location and entry under the land laws (an additional withdrawal of about 2,000 acres would be pursued; 3) mineral material sales for sand, gravel, or other types of construction or building materials; and 4) off-road vehicle travel, with the exception of about 820 acres.	See management action 7492	See management action 7492	See management action 7492
7494	SD-29, HR-09	Motorized vehicle travel and some non-motorized vehicle travel along the east edge of the ACEC (about 730 acres) and the Pine Springs 90-acre site is limited to existing roads and trails.	Prohibit OHV use.	No similar action, the ACEC would not be retained.	No similar action



<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7495	SD-29, HR-09, HR-16	The Pine Springs site (90 acres) is closed to all geophysical operations and to the use of explosives and blasting.	Close the Pine Springs ACEC to all geophysical operations and to the use of blasting and explosives.	No similar action, the ACEC would not be retained.	Same as Alternative B
7496	SD-29, HR-07	The ACEC is open to consideration of such actions as fencing, interpretive signs, or construction of barriers to ensure protection to the area; to maintenance of the spring development; and to additional spring developments if these actions would not impact cultural values.	The ACEC would be open to consideration of such actions as fencing, interpretive signs, or construction of barriers to ensure protection to the area and to maintenance of the existing spring development. Close the ACEC to additional spring developments.	No similar action, the ACEC would not be retained.	No similar action (see Management Actions Common to All Resources section)
7497	SD-29, HR-16	The ACEC would be managed consistent with the Class II VRM classification. Management actions on the BLM-administered public lands classified as Class II VRM lands would be designed to retain the existing character of the landscape.	Designate the ACEC as VRM Class II (see the WSA section for VRM objectives for WSAs within the ACEC).	No similar action, the ACEC would not be retained.	Same as Alternative B
<b>South Pass Historic Landscape ACEC</b>					
<b>Goals:</b>					
SD-30: Protect the visual and historical integrity of the National Historic Trails and surrounding setting.					
SD-31: Protect the scenic and wildlife values of the area.					
7498	SD-30, SD-31	The 53,940 acres of BLM-administered public lands in the South Pass Historic Landscape area are designated the South Pass Historic Landscape ACEC (Table 2-12, Appendix V and Map 2-29). The ACEC would be evaluated to determine if it meets the criteria for nomination to the NRHP.	Retain and expand the ACEC designation to 171,300 acres (Table 2-12, Appendix V and Map 2-30).	No similar action, the ACEC would not be retained.	Retain the ACEC designation (53,940 acres) (Table 2-12, Appendix V and Map 2-32).
7499	SD-31	The scenic values along Highway 28 within Fremont County would be protected. All proposed lands actions and other activities within view of the highway would be evaluated for impacts and would	Protect the scenic values along Highway 28 within Fremont County. Evaluate all proposed lands actions and other activities within view of the highway for impacts and require mitigation to	No similar action, the ACEC would not be retained.	Designate as VRM Class II.

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		require mitigation to protect the scenic and historic values of this area. Class II VRM classifications on public lands would be retained.	protect the scenic and historic values. Designate all areas in Fremont county visible from Highway 28 as VRM Class II objectives.		
7500	SD-30, SD-31	All activities for the ACEC would be managed consistent with the Class II VRM classification. All management actions would be designed and located to blend into the natural landscape and to not be visually apparent to the casual viewer. The scenic values of the Highway 28 visual corridor (3 linear miles) would be protected.	Designate the ACEC as VRM Class I and II objectives.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	See management action 7499
7501	SD-30, SD-31	The South Pass Historic Landscape encompasses the viewshed along the Oregon, Mormon Pioneer, California, and Pony Express trails and the Lander Cutoff (about 16.42 miles of trail with a six-mile wide corridor along the Oregon, Mormon Pioneer, and California trails, and a 2-mile wide corridor along the Lander Cutoff) (Map 2-29).	The South Pass Historic Landscape would encompass the setting along the Oregon, Mormon Pioneer, California, and Pony Express trails and the Lander Cutoff (about 16.42 miles of trail with a 10-mile wide (5 miles each side) corridor (Map 2-30). Allow activities such as fencing, interpretive signs, or construction of barriers to ensure protection of the landscape.	No similar action, the ACEC would not be retained.	No similar action (see Common to All Resources section)
7502	SD-30, SD-31	The landscape is open to consideration of mineral leasing and mineral material sales, provided that effects to the visual and cultural resource values could be mitigated. Closed to Trona.	Designate the ACEC an exclusion area for rights-of-way and surface disturbing activities (Table 2-12, Appendix V; Map 2-30). Pursue a withdrawal from entry under land laws and mineral location. Close the area to leasable minerals and mineral material sales. Existing fluid mineral leases would not be offered for lease once they expire.	No similar action, the ACEC would not be retained.	The portion of the ACEC that is visible from the NHT and NST: <ul style="list-style-type: none"> <li>• Allow surface occupancy and disturbance only if the project causes no more than a weak contrast(VRM) to the setting of the trails and does not cause an adverse effect to the trails, National HistoricLandmarks (NHL), or ACEC values.</li> <li>• CSU for fluid minerals.</li> <li>• Closed to Oil Shale</li> <li>• Row Exclusion</li> <li>• Pursue proposed withdrawal for mineral location</li> </ul>

7503	SD-30, SD-31	About 33,700 acres surrounding the trails and visible from the trails are closed to surface disturbing activities that could adversely	See management action 7502	See management action 7502	See management action 7502
<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		affect the viewshed. This is an exclusion area for all rights-of-way.			
7504	SD-30, SD-31	About 20,080 acres that are shielded by topography and not visible from the trail are open to development activities if they are subordinate to the landform and not visible from the historic trails, and provided that environmental analysis indicates that the visual integrity of the area can be maintained. Rights-of-way will be managed to avoid this area, and this area will not be considered as a preferred route for linear facilities.	Same as Alternative A	Same as Alternative A	No similar action (see VRM section)
7505	SD-30, SD-31	Off-road vehicle travel is limited to designated roads and trails in the areas that are visible from the historic trails.	Limit vehicle use to designated roads and trails.	No similar action, the ACEC would not be retained.	No similar action
7506	SD-30, SD-31	Wild horse management in the area would be consistent with the Great Divide Basin Wild Horse Herd Management Plan and the management objectives for the area. No wild horse traps would be constructed within areas that are visible from the trails.	Allow construction of temporary wild horse traps provided the management objectives of the area can be met.	No similar action, the ACEC would not be retained.	Allow placement of temporary wild horse traps provided the management objectives of the area can be met.
7507	SD-30, SD-31	Most of the ACEC is also open to exploration and development of locatable minerals. A plan of operations is required to address measures to mitigate affects to the viewshed before any mining claim activity is allowed. A withdrawal of about 5,260 acres from mineral location and entry under public land laws will be pursued, if necessary.	Same as Alternative A	Same as Alternative A	No similar action
<b>Special Status Plant Species ACEC</b>					

<b>Goals:</b>					
SD-32: Prevent destruction or loss of Special Status plant communities and important habitat.					
<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
SD-33: Provide opportunities for enhancing or expanding habitat.					
SD-34: Provide sufficient protection to prevent listing as threatened and endangered species.					
7508	SD-34, BR-27, BR-32	The 1,200 acres of BLM-administered public lands in Special Status Plant Species areas are designated an ACEC (Table 2-12, Appendix V and Map 2-29).	Retain the Special Status Plant Species ACEC (Table 2-12, Appendix V and Map 2-30).	The ACEC would not be retained.	Same as Alternative B
7509	SD-34, BR-27, BR-32	The BLM-administered public land areas occupied by four Special Status (candidate) plant species are included in the ACEC designation (making up about 66 sites involving about 1,200 acres of BLM-administered public lands). Additional acres may be added to the ACEC, if more of these Special Status (candidate) plant species or their essential habitat areas are found on BLM-administered public lands. Management and protection to actual plant locations is provided for <i>Arabis pusilla</i> , <i>Astragalus proimanthus</i> , <i>Descurainia torulosa</i> , and <i>Thelesperma pubescens</i> (Map 2-29).	Expand the ACEC to include all BLM Special Status plant species on BLM-administered public land areas occupied by those species. Additional areas could be added to the ACEC, if more populations of these Special Status plant species are found on BLM-administered public lands (3,610 acres, Table 2-12, Appendix V, and Map 2-30).	No similar action, the ACEC would not be retained.	Modify the ACEC to include the Cedar Mountain Easter daisy ( <i>Townsendia microcephala</i> ) and Green River greenthread ( <i>Thelesperma caespitosa</i> ) plant species on BLM-administered public land areas occupied by those species (1,120 acres, Table 2-12, Appendix V, and Map 2-32).

7510	SD-32, SD-34, BR-29	The ACEC is closed to: 1) direct surface disturbing activities or any disrupting activities (e.g., offsite dust, air pollutants, etc.) that could adversely affect the Special Status plant species and their habitat; 2) the location of mining claims (withdrawal from mineral location and entry under the land laws would be pursued); 3) surface occupancy and surface disturbing activities (such as leasable mineral exploration and development activities or construction of long-term placement of facilities or structures); 4) mineral material	Designate the ACEC an exclusion area for direct surface disturbing activities or any disrupting activities (e.g., offsite dust, air pollutants, etc.) that could adversely affect the Special Status plant species and their habitat. Pursue a withdrawal from mineral location and entry under the land laws. Stipulate NSO and surface disturbing activities for leasable mineral exploration and development activities or construction of long-term placement of facilities or structures. Close to mineral	No similar action, the ACEC would not be retained.	Prohibit surface disturbing activities. <ul style="list-style-type: none"> <li>• NSO for fluid minerals.</li> <li>• Petition to segregate and pursue a withdrawal for all plant species from mineral location.</li> <li>• Close to mineral material sales.</li> <li>• Close to solid mineral leasing.</li> <li>• Designate as a ROW exclusion area.</li> <li>• Prohibit the use of explosives and blasting.</li> <li>• Retain existing withdrawals for the following plant species: Small rockcress (<i>Arabis pusilla</i>) (1,020 acres) and Uinta greenthread,</li> </ul>
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**Special Designations (SD) – ACECs (7400-7570)**

#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		sales; 5) the use of explosives and blasting (see Map 2-29).	material sales and use of explosives and blasting. Retain existing withdrawals for the following plant species: Small rockcress, ( <i>Arabis pusilla</i> ) (1,020 acres) and Uinta greenthread ( <i>Thelesperma pubescens</i> ) (3,646 acres).		<i>(Thelesperma pubescens)</i> (3,646 acres).
7511	SD-32, SD-34, BR-29	Known locations of Special Status (candidate) plant species communities are closed to off-road vehicle travel. Off-road vehicle travel in the remainder of the ACEC is limited to designated roads and trails.	Designate the ACEC as limited to designated to roads and trails.	No similar action, the ACEC would not be retained.	No similar action

7512	SD-33, BR-28, BR-29	Searches would be conducted to identify any additional areas where Special Status (candidate) plant species are located. Habitat needs would be determined and management prescriptions would be specified. The window for inventory would be mainly from May through August. As new populations are identified, site boundaries and any ACEC designation on BLM-administered public lands would be expanded to cover any new or expanded sites. Should a plant species be removed from the Special Status (candidate or sensitive) plant species list, the portion of any ACEC designation attributed to that plant species would be discontinued. The ACEC acreage could, thus, increase or decrease, depending upon the results of the searches or if a plant species should be de-listed. Nonessential habitat to support these plants would not be included in the ACEC designation.	Conduct inventories to identify any additional areas where Special Status plant species are located.	No similar action, the ACEC would not be retained.	Conduct inventories to identify any additional areas where Special Status plant species are located. The window for inventory would depend on each species phenology.  As new populations are identified, site boundaries and any ACEC designation on BLM-administered public lands would be expanded to cover any new or expanded sites. Should a plant species be removed from the Special Status plant species list, the portion of any ACEC designation attributed to that plant species would not be retained. Nonessential habitat to support these plants would not be included in the ACEC designation.
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**Special Designations (SD) – ACECs (7400-7570)**

#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
7513	SD-32, BR-29, BR-30	Special status (candidate) plant species population areas are closed to any surface disturbing fire suppression activities unless necessary for species survival. The use of fire suppression ground vehicles would be consistent with ORV designations in these areas. The type of suppression activity, if any, would be determined through site-specific analysis.	No similar action	No similar action, the ACEC would not be retained	No similar action (see Special Status Species section)
7514	BR-46, SD-32, BR-29	Wild horse management in the area would be consistent with wild horse herd management plans and management objectives for this area. No wild horse traps would be constructed within this area.	Same as Alternative A	No similar action, the ACEC would not be retained.	Prohibit the placement of wild horse traps within the ACEC.

7515	SD-32, SD-33, BR-28	Activities that meet or that do not conflict with the objectives for the ACEC could be allowed. For example, activities such as fencing, interpretive signs, or barriers for the purpose of ensuring protection of the plant species would be considered for both known and potential habitat areas.	Same as Alternative A	No similar action, the ACEC would not be retained.	No similar action (see Actions Common to All Resources section)
<b>Steamboat Mountain ACEC</b>					
<p><b>Goals:</b></p> <p>SD-35: Enhance and maintain the water quality, vegetation, soil, and wildlife resources to ensure biological diversity and a healthy ecosystem. Protect the unique geological and ecological features in the ACEC.</p> <p>SD-36: Maintain the unique diverse habitats (big sagebrush, aspen, limber pine, and mountain shrub communities) in the Steamboat Mountain area, especially on stabilized sand dunes along Steamboat Rim, Indian Gap, and in the Johnson, Lafonte, and Box Canyon areas.</p> <p>SD-37: Provide suitable habitat to maintain or improve the Steamboat elk herd, other big game populations.</p>					
7516	SD-35, SD-36, SD-37	The Steamboat Mountain area (about 47,280 acres of BLM-administered public lands) is designated an ACEC (Table 2-12, Appendix V and Map 2-29). The JMH Area 3 is within the Steamboat Mountain area.	Expand the Steamboat Mountain ACEC to include the Steamboat Mountain Management Area, western portion of the Red Desert Watershed Management Area, and other areas (439,330 acres, Table 2-12, Appendix V, and Map 2-30).	The ACEC would not be retained. The Steamboat Mountain Management Area would not be designated as an ACEC.	Retain the Steamboat Mountain ACEC (47,280 acres, Table 2-12, Appendix V, and Map 2-32).

Special Designations (SD) – ACECs (7400-7570)					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
7517	BR-19, PR-11, BR-20, HR-2.1	The Steamboat Mountain Management Area is not designated as an ACEC, but would be maintained as a geographic management unit. The Steamboat Mountain Management Area (88,290 acres of BLM-administered public lands) is a geographic area which includes the Steamboat Mountain ACEC including the Steamboat Mountain ACEC expansion, and additional area containing other important Native American cultural values, Indian Gap, important watershed values, unique wildlife habitat features, and crucial and overlapping big game habitat. Specific management prescriptions for the Steamboat Mountain ACEC may be found in that section of this document.	See management action 7516	See management action 7516	See management action 7516
7518	SD-35, SD-36, SD-37	All activities would be designed to place priority consideration on elk habitat over conflicting land uses to ensure continued elk use of the area. Steamboat Rim and the base of the rim would be managed to protect big game habitat, vegetation communities, and visual and recreation resources.	Design all activities to place priority consideration on relevant and important values over conflicting land uses. Manage the Steamboat Rim and the base of the rim to protect big game habitat, vegetation communities, and visual and recreation resources.	No similar action, the ACEC would not be retained.	Same as Alternative A
7519	SD-36, BR-28, BR-29	The ACEC is closed to mineral material sales.	Designate the ACEC an exclusion area for direct surface disturbing activities or any disrupting activities (e.g., offsite dust, air pollutants, etc.) that could adversely affect the Special Status plant species and their habitat. Pursue a withdrawal from mineral location and entry under the land laws. Stipulate NSO and surface disturbing activities for leasable mineral exploration and development activities or	No similar action, the ACEC would not be retained.	Allow surface disturbing activities subject to mitigation to minimize impacts. <ul style="list-style-type: none"> <li>• Closed to fluid minerals</li> <li>• Closed to Oil Shale</li> </ul>



<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			construction of long-term placement of facilities or structures. Close to mineral material sales and use of explosives and blasting.		
7520	MR-04, SD-36, SD-37	Leasing and development of federal coal in the area would be considered for subsurface mining methods only. Development or mine plans would be required to ensure adequate measures are taken to protect and maintain the elk herd and habitat. The location of surface facilities relating to subsurface mining would be considered on a case-by-case basis. Approximately 9,810 acres of federal coal lands with development potential occur within the Steamboat Mountain ACEC.	Consider leasing and development of federal coal in the area only for subsurface mining methods. Require development or mine plans to ensure adequate measures are taken to protect and maintain the elk herd and its habitat and on a case-by-case basis, the location of surface facilities relating to subsurface mining.	No similar action, the ACEC would not be retained.	Allow leasing and development of federal coal in the area only by subsurface mining methods. Allow, on a case-by-case basis, the location of surface facilities relating to subsurface mining.
7521	SD-35, SD-36, BR-18	The ACEC is open to actions that would enhance the management objectives for the area. Actions that may be considered include such things such as fencing, interpretive signs, or construction of vehicle barriers.	Open the ACEC to actions that would enhance the management objectives for the area. Actions that could be considered include things such as fencing, interpretive signs, or construction of vehicle barriers.	No similar action, the ACEC would not be retained.	No similar action (see Actions Common to All Resources section)
7522	SD-35, SD-36, SD-37	Seasonal restrictions would be applied to land and resource uses as needed, to protect elk and deer during severe winter conditions and during birthing periods.	Prevent or reduce habitat loss or alteration by applying appropriate surface use and seasonal restrictions and rehabilitation standards to all activities within elk and mule deer crucial winter and parturition habitats, raptor nesting and associated feeding areas, and habitat necessary to accomplish the management objectives for the area.	No similar action, the ACEC would not be retained.	No similar action (see Fish and Wildlife section)
7523	SD-35, SD-36, SD-37	The ACEC is an avoidance area for rights-of-way. Communication sites are prohibited in the ACEC. Linear rights-of-way and geophysical activities are allowed	Designate the ACEC an exclusion area for rights-of-way.	No similar action, the ACEC would not be retained.	Designate as a ROW avoidance area. Prohibit communication sites and overhead power lines.

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		if impacts to the elk and the unique habitats can be mitigated.			
7524	SD-35, SD-36, SD-37	Motorized vehicle travel is limited to designated roads and trails. Seasonal road and trail closures may be implemented as necessary to protect elk and deer during critical winter and birthing periods. Transportation planning would be completed to identify the designated roads and trails. The May 10-July 1 seasonal closure for vehicular travel in the area remains in effect to protect big game calving and fawning activity.	Allow vehicle travel on designated roads subject to seasonal restrictions.  Apply “no net gain in roads” in crucial habitats. Consider seasonal road closures in transportation planning.	No similar action, the ACEC would not be retained.	Retain the seasonal closure for vehicular travel in the ACEC to protect designated parturition areas.  See Management Action 4421
7525	HR-26, SD-35, SD-36	All activities in the ACEC would be managed consistent with the Class II and Class III VRM classifications. All management actions would be designed and located to blend into the natural landscape and to not be visually apparent to the casual viewer.	Designate the ACEC as VRM Class I and II objectives (see the WSA section for VRM objectives for WSAs within the ACEC).	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	Designate as VRM Class II.
7526	SD-35, PR-04	The unique geological and ecological features in the ACEC would be protected by limiting or prohibiting intrusions and facilities, and by providing public interpretation of these features.	Protect the unique geological and ecological features in the ACEC by limiting or prohibiting intrusions and facilities, and by providing public interpretation of these features.	No similar action, the ACEC would not be retained.	No similar action
7527	SD-35, SD-36, SD-37	Vegetation management would be designed to maintain, preserve, or enhance biological diversity while providing big game forage and cover requirements. Fire management activities would be designed to meet these objectives. Management of conifer communities would be limited to activities designed to control insects and disease. Dead standing trees would be managed under the "Animal Inn" program to help maintain biological diversity. Reseeding and reforestation within	Design vegetation management to maintain, preserve, or enhance biological diversity.	No similar action, the ACEC would not be retained.	No similar action (see specific resource sections)

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		the ACEC would be done with native species. Shrub species may be included in all seed mixes.			
7528	LR-01, LR-02, SD-36	Acquisitions would be pursued to improve manageability of the ACEC (see Lands and Realty Management section and Appendix K).	Pursue acquisitions to improve manageability of the ACEC on a willing seller condition.	No similar action, the ACEC would not be retained.	Pursue acquisitions to improve manageability of the ACEC on a willing party basis.
7529	SD-37, BR-09, BR-10	Any additional forage that becomes available in the ACEC would be allocated to wildlife use.	Allocate any additional forage that becomes available in the ACEC to wildlife use.	No similar action, the ACEC would not be retained.	No similar action (see Common to All for Special Designations)
<b>White Mountain Petroglyphs ACEC</b>					
<b>Goals:</b>					
SD-38: Protect cultural resource values from degradation.					
SD-39: Provide for wildlife and scenic values and Native American concerns.					
7530	SD-03, SD-11	The ACEC designation for the 20 acres of BLM-administered public lands in the White Mountain Petroglyphs area is retained (Table 2-12, Appendix V and Map 2-29).	Retain the ACEC designation (20 acres, Table 2-12, Appendix V, and Map 2-30).	The ACEC would not be retained.	Same as Alternative C (see Specific Cultural Resources section)
7531	SD-03, SD-11	The ACEC is open to consideration of such activities as fencing, interpretive signs, or construction or placement of barriers to ensure protection of the site. Public awareness and use of the area as an educational site are encouraged.	Same as Alternative A	No similar action, the ACEC would not be retained.	Same as Alternative C
7532	SD-03, SD-11	The ACEC is an exclusion area for: 1) surface disturbing activities that could adversely affect the resource values in the area; 2) the location of mining claims and entry under the land laws (the existing withdrawal would be retained); 3) mineral material sales for sand, gravel, or other types of construction or building materials; 4) the use of explosives and blasting; and 5) rights-of-way.	Designate the ACEC an exclusion area for: 1) surface disturbing activities that could adversely affect the resource values in the area; 2) the use of explosives and blasting; 3) rights-of-way. Pursue a withdrawal from mineral location and entry under the land laws, and retain the existing withdrawal. Close the area to mineral material sales for sand, gravel, or other types of construction or building materials.	Revoke the existing withdrawal, the ACEC would not be retained.	No similar action (see Cultural Resources section)

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7533	SD-03, SD-11	The ACEC would be managed consistent with the Class II VRM classification. Management actions on the lands classified as Class II lands would be designed to retain the existing character of the landscape.	Designate the ACEC as VRM Class II.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-20 (see Cultural Resources section).
7534	SD-03, SD-11	Vibroseis activities are prohibited within 300 feet of the rock art site. Other kinds of activities, such as audible disturbances, may not be allowed if the sacred Native American values at the rock art sites would be adversely affected.	Allow geophysical activities such as shothole, blasting, and vibroseis locations provided they are at least one mile from the rock art site, and a site-specific analysis determines that visual intrusions and adverse effects would not occur.  Prohibit other kinds of activities, such as audible disturbances, if the sacred Native American values at the rock art sites would be adversely affected.	No similar action, the ACEC would not be retained.	Same as Alternative C (see Cultural Resources section)
7535	SD-03, SD-11	Lands visible within a ½-mile radius of the rock art site (vista) would be an avoidance area and are open for consideration of such activities as fencing, interpretive signs, or construction and placement of trail and off-road vehicle barriers to ensure protection to the rock art. Most surface disturbing activities visible within the vista are prohibited. Some activities within ½ mile of the rock art but not visible from the panels would be allowed, if they do not affect the rock art site.	Manage the White Mountain Petroglyphs and the surrounding setting (within three miles) to protect its cultural and historical values.  Designate lands visible within a three-mile radius of the rock art site open for consideration of such activities as fencing, interpretive signs, or construction and placement of trail and off-road vehicle barriers to ensure protection to the rock art site.  Allow some activities within three miles of the rock art, but not visible from the panels, if they do not affect the visual and audible integrity of the rock art site.	No similar action, the ACEC would not be retained.	Same as Alternative C (see Cultural Resource section)
7536	SD-03, SD-11	The ACEC is closed to off-road vehicle travel including vehicles used for geophysical exploration activities and to the use of fire-	Close the ACEC (20 acres) to vehicle travel.	No similar action, the ACEC would not be retained.	Same as Alternative C

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
		retardant chemicals containing dyes.			
7537	SD-03, SD-11	Off-road vehicle travel, including vehicles used for geophysical exploration and fire suppression activities, within that part of the vista that lies outside of the ACEC is limited to designated roads and trails.	Limit vehicle use within the setting of the petroglyphs to designated roads and trails.	No similar action, the ACEC would not be retained.	Same as Alternative C (see management actions 5100 and 5107)
<b>South Wind River ACEC</b>					
<b>Goals:</b>					
SD-40: Provide protection and enhancement of the recreation opportunities, activities, and setting of the area.					
SD-41: Maintain the high visual values of the area.					
SD-42: Protect air quality in the adjacent Class I airshed.					
SD-43: Maintain or enhance biological diversity.					
SD-44: Prevent fragmentation of grasslands, shrublands, streams, wetlands, and forest habitats.					
SD-45: Protect and enhance crucial wildlife habitats and migration corridors.					
SD-46: Protect the visual and historical integrity of the National Historic Trails and surrounding viewscape.					
SD-47: Protect and enhance Special Status plants and their habitats.					
7538	SD-40, SD-41, SR-01	No similar action	Designate the South Wind River ACEC (374,710 acres, Table 2-12, Appendix V, and Map 2-30).	The South Wind River ACEC would not be designated.	Same as Alternative C (see the Fish and Wildlife, Wind River Front SRMA, Congressionally Designated Trails, Special Status Species, and Special Status Plant ACEC sections)
7539	SD-40, SD-41, SR-01	No similar action	Prohibit surface disturbing activities or facilities on or within three miles of the trail or the Visual Horizon (whichever is closer) of the Continental Divide National Scenic Trail. Prohibit surface disturbing activities or facilities on or within three miles of the trail or the Visual Horizon (whichever is closer) of the Continental Divide Snowmobile trail. Prohibit surface disturbing activities or facilities on or within three miles of the trail or the Visual Horizon (whichever is closer) of	No similar action, the South Wind River ACEC would not be designated.	Same as Alternative C

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			the South Pass Cross Country Ski Trail.		
7540	SD-40, SD-41, SR-01	No similar action	Designate the area as VRM Class II objectives.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-19.	Designate VRM classifications as shown on Table 2-9, Appendix V and Map 2-20.
7541	SD-40, SD-41, SR-01	No similar action	Design any facility placement for minimum surface disturbance, unless a site-specific analysis determines that additional activity could occur and management objectives could be met.	No similar action, the South Wind River ACEC would not be designated.	Same as Alternative C
7542	SD-40, SD-41, SR-01	No similar action	Allow construction of temporary wild horse traps provided the management objectives of the area can be met.	No similar action, the South Wind River ACEC would not be designated.	Same as Alternative C
7543	SD-40, SD-41, SR-01	No similar action	Designate the ACEC an exclusion area for rights-of-way and surface disturbing activities (unless the purpose of the activity is to benefit the resource objectives for the ACEC). Close the area to mineral material sales (Table 2-8, Appendix V; Map 2-14 and 2-30). Pursue a withdrawal from entry under land laws and mineral location. Close the area to mineral leasing. Existing mineral leases would not be offered for lease once they expire.	No similar action, the South Wind River ACEC would not be designated.	Same as Alternative C
7544	SD-40, SD-41, SR-01	No similar action	Manage vegetative resources in the area for the benefit of watershed, and wildlife, in accordance with management objectives of those values.	No similar action, the South Wind River ACEC would not be designated.	Same as Alternative C
7545	SD-40, SD-41, SR-01	No similar action	Limit vehicle use to designated roads and trails, subject to seasonal restrictions.	No similar action, the South Wind River ACEC would not be designated.	Same as Alternative C
7546	SD-40, SD-41, SR-01	No similar action	Manage necessary life stage wildlife habitats and sensitive species habitats for no-net-loss of habitat and to retain habitat function by applying surface use restrictions. Grant no exceptions,	No similar action, the South Wind River ACEC would not be designated.	Same as Alternative C

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			unless they benefit resource values.		
7547	SD-40, SD-41, SR-01	No similar action	Manage a separate offsite mitigation area for biological impacts from energy development.	No similar action, the South Wind River ACEC would not be designated.	Same as Alternative C
<b>East Sand Dunes—Red Lake ACEC</b>					
<b>Goals:</b>					
SD-40: Provide protection and enhancement of the recreation opportunities, activities, and setting of the area.					
SD-41: Maintain the high visual values of the area.					
SD-45: Protect and enhance crucial wildlife habitats and migration corridors.					
7548	SD-40, SD-41, SR-01	No similar action	Designate the East Sand Dunes—Red Lake ACEC (22,340 acres, Table 2-12, Appendix V, and Map 2-30).	No similar action, the East Sand Dunes—Red Lake ACEC would not be designated.	Same as Alternative C
7549	SD-40, SD-41, SR-01	No similar action	Designate the area as VRM II.	Designate the VRM Classification as shown on Table 2-9, Appendix V and Map 2-19.	Same as Alternative C
7550	SD-40, SD-41, SR-01	No similar action	Design any facility placement for minimum surface disturbance unless a site-specific analysis determines that additional activity could occur and management objectives could be met.	No similar action, the East Sand Dunes—Red Lake ACEC would not be designated.	Same as Alternative C
7551	SD-40, SD-41, SR-01	No similar action	Designate the ACEC as exclusion are for right-of-way and surface disturbing activities (unless the purpose of the activity is to benefit the resource objectives for the ACEC).  Close the area to mineral material sales (Table 2-8, Appendix V; Maps 2-14 and 2-30). Pursue a withdrawal from entry under land laws and mineral location.  Close the area to mineral leasing. Existing mineral leases would not be offered for lease once they expire.	No similar action, the East Sand Dunes—Red Lake ACEC would not be designated.	Same as Alternative C

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
7552	SD-40, SD-41, SR-01	No similar action	Manage vegetative resources in the area for the benefit of watershed and wildlife, in accordance with management objectives of those values.	No similar action, the East Sand Dunes—Red Lake ACEC would not be designated.	Same as Alternative C
7553	SD-40, SD-41, SR-01	No similar action	Limit vehicle use to designated roads and trails, subject to seasonal restrictions.	No similar action, the East Sand Dunes—Red Lake ACEC would not be designated.	Same as Alternative C
7554	SD-40, SD-41, SR-01	No similar action	Manage a separate offsite mitigation area for biological impacts from energy development.	No similar action, the East Sand Dunes—Red Lake ACEC would not be designated.	Same as Alternative C
<b>Big Game Migration Corridor ACEC</b>					
<b>Goals:</b>					
SD-40: Provide protection and enhancement of the recreation opportunities, activities, and setting of the area.					
SD-41: Maintain the high visual values of the area.					
SD-42: Protect air quality in the adjacent Class I airshed.					
SD-43: Maintain or enhance biological diversity.					
SD-44: Prevent fragmentation of grasslands, shrublands, streams, wetlands, and forest habitats.					
SD-45: Protect and enhance crucial wildlife habitats and migration corridors.					
SD-46: Protect the visual and historical integrity of the National Historic Trails and surrounding viewscape.					
SD-47: Protect and enhance Special Status plants and their habitats.					
7555	SD-40, SD-41, SR-01	No similar action	Designate the Big Game Migration Corridors as an ACEC (226,335 acres, Table 2-12, Appendix V, and Map 2-30).	No similar action, the Big Game Migration Corridors would not be designated as an ACEC.	Same as Alternative C
7556	SD-40, SD-41, SR-01	No similar action	Prohibit surface disturbing activities or facilities within the entire Big Game Migration Corridor ACEC.	No similar action, the Big Game Migration Corridors would not be designated as an ACEC.	Same as Alternative C
7557	SD-40, SD-41, SR-01	No similar action	Designate the area as VRM Class II objectives.	No similar action, the Big Game Migration Corridors would not be designated as an ACEC. Appendix V	Same as Alternative C Appendix V
7558	SD-40, SD-41, SR-01	No similar action	Designate the ACEC as an exclusion area for right-of-way. Close the area to mineral material sales (Table 2-8, Appendix V; Maps 2-14 and 2-30).	No similar action, the Big Game Migration Corridors would not be designated as an ACEC.	Same as Alternative C



<b>Special Designations (SD) – ACECs (7400-7570)</b>					
<b>#</b>	<b>Goal/ Obj</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
			Pursue a withdrawal from entry under land laws and mineral location. Close the area to mineral leasing. Existing mineral leases would not be offered for lease once they expire.		
7559	SD-40, SD-41, SR-01	No similar action	Manage necessary life state wildlife habitats and sensitive species habitats for no-net-loss or habitat and to retain habitat function by applying NSO restrictions within the ACEC. Grant no exceptions unless they benefit resource values.	No similar action, the Big Game Migration Corridors would not be designated as an ACEC.	Same as Alternative C
7560	SD-40, SD 41, SR-01	No similar action	Manage vegetative resources in the area for the benefit of watershed and wildlife, in accordance with management objectives of those values.	No similar action, the Big Game Migration Corridors would not be designated as an ACEC.	Same as Alternative C
7561	SD-40, SD 41, SR-01	No similar action	Limit vehicle use to designated roads and trails, subject to seasonal restrictions.	No similar action, the Big Game Migration Corridors would not be designated as an ACEC.	Same as Alternative C
7562	SD-40, SD 41, SR-01	No similar action	Manage a separate offsite mitigation area for biological impacts from energy development.	No similar action, the Big Game Migration Corridors would not be designated as an ACEC.	Same as Alternative C
<b>Big Sandy Openings</b>					
<b>Goals:</b>					
SD-09: Protect and enhance the scenic integrity.					
SD-10: Protect the significant watershed, wildlife, and geologic values that are found in the area.					
7563	SR-01	No similar action	Designate the Big Sandy Openings an ACEC (Table 2-12, Appendix V and Map 2-30).	Big Sandy Openings would not be designated as an ACEC.	Same as Alternative C
7564	SR-01	No similar action	Designate the ACEC as VRM Class II objectives.	No similar action, the Big Sandy Openings would not be designated as an ACEC.	Same as Alternative C
7565	SR-01	No similar action	Design any facility placement for minimum surface disturbance, unless a site-specific analysis determines that additional activity	No similar action, the Big Sandy Openings would not be designated as an ACEC.	Same as Alternative C

<b>Special Designations (SD) – ACECs (7400-7570)</b>					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
			could occur and management objectives could be met.		
7566	SR-01	No similar action	Designate the ACEC an exclusion area for ROWs, surface disturbing activities (unless the purpose of the activity is to benefit the resource objectives for the ACEC), mineral material sales, and mineral location (Table 2-12, Appendix V; Map 2-30). Pursue a withdrawal from mineral location. Close the area to mineral leasing. Do not offer existing mineral leases for lease once they expire.	No similar action, the Big Sandy Openings would not be designated as an ACEC.	Same as Alternative C
7567	SR-01	No similar action	Limit vehicle use to designated roads and trails, subject to seasonal restrictions.	No similar action, the Big Sandy Openings would not be designated as an ACEC.	Same as Alternative C
<b>National Historic Landmarks</b>					
7568	SD-01, HR-10, SD-30	Maintain and protect the integrity of unique resource values, preserve historic significance, and provide opportunity for other compatible uses where appropriate.			
7569	SD-11, HR-07	Provide for appropriate interpretation of sites of high public interest.			
7570	SD-30, SD-01, HR-10	No similar action.	Until a formal NHL boundary is designated, the South Pass NHL would use the same boundary as the South Pass Historic Landscape ACEC (Map 2-30, 53,940 acres).	Same as Alternative B	For NHPA section 106 purposes only, until a formal National Historic Landmark boundary is established, the boundary is the same as the South Pass Historic Landscape ACEC shown on Map 2-32 (53,940 acres), as per the SHPO Letter dated February 3, 2006).

<b>Socioeconomic Resources (SR) – Economics and Public Safety (hazardous materials; abandoned mine lands) (8000-8012)</b>					
#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
<b>Goal and Objectives:</b>					
SR-01: Consider the total effect of BLM actions on adjacent, non-BLM lands.					

**Socioeconomic Resources (SR) – Economics and Public Safety (hazardous materials; abandoned mine lands) (8000-8012)**

#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
<p>SR-02: Provide sustainable economic development opportunities for a diversity of multiple-use resources including energy, mineral extraction, grazing, agriculture, and recreation, including sightseeing, hunting, fishing, tourism, hiking and others.</p> <p>SR-02.1: Provide resources and necessary access, consistent with multiple and sustainable use, for economic, cultural, and social viability at the national, regional and local levels.</p> <p>SR-02.2: Recognize the importance of mineral and oil and gas extraction as an important component to sustaining the economy of the region.</p> <p>SR-02.3: Recognize the state and regional economic importance of the Flaming Gorge National Recreation Area (NRA). Consider resources necessary to enhance the fisheries, wildlife, and recreational opportunities connected and related to the NRA.</p> <p>SR-02.4: Recognize the importance of wildlife and its habitat and migration corridors to sustaining recreation and the economy of the state and southwest Wyoming.</p> <p>SR-03: Consider local and regional economic development and land use plans in BLM decision making. Provide opportunities for economic and social sustainability at the national, regional, and local level.</p> <p>SR: 03.1 Consider the impact of BLM management actions on community health, safety, welfare, infrastructure, services, housing, employment, custom, and culture.</p> <p>SR-04: Respect, recognize, and support public health and safety needs.</p> <p>SR-04.1: Reduce potential threats to the public health and safety on BLM-administered lands.</p> <p>SR-04.2: On a case-by-case basis, permit commercial use of BLM-administered lands prior to use of the area.</p> <p>SR-04.3: Reduce risk to humans and the environment from hazardous materials on BLM-administered lands in the planning area where possible.</p> <p>SR-05: Reduce risk to health and safety from geologic hazards on BLM-administered lands with the planning area.</p> <p>SR-05.1: Avoid geologic hazards on BLM-administered lands within the planning area, where possible.</p> <p>SR-05.2: Inventory, assess, and manage geologic hazards on BLM-administered lands within the planning area, where possible.</p> <p>SR-05.3: Address and mitigate hazards from abandoned mines.</p>					
8000	SR-01	Reduce or minimize risk to humans and the environment from hazardous materials on BLM-administered lands within the planning area.			
8001	SR-01	Avoid waste contamination due to any BLM-authorized actions.			
8002	SR-01	Integrate hazardous materials and waste management policies and controls into all BLM programs.			
8003	SR-05	Manage risks to public health, safety, and the environment posed by human-caused hazards and/or natural geologic hazards on the National System of Public Lands.			
8004	SR-05.3	Reduce or eliminate hazards, where possible, from abandoned mine lands on BLM-administered lands within the planning area.			
8005	SR-05.3	Collaborate with Wyoming DEQ through existing or new MOUs to identify and plan for remediation of Abandoned Mine Land sites, including the appropriate level of environmental review prior to on-the-ground work.			
8006	SR-01	For BLM-authorized activities that involve hazardous materials or their use, precautionary measures would be used to guard against releases or spills into the environment. If safety hazards are identified as a result of hazardous waste spills on BLM-administered	Manage risk to public safety and the environment associated with hazardous substances, wastes, and materials to ensure restoration of contaminated lands and carry out response activities.	Same as Alternative B	Comply with federal and state laws and regulations governing use of hazardous substances and the generation of hazardous wastes. Maintain the health of ecosystems through assessment, cleanup, and restoration of contaminated sites. Integrate environmental protection

## Socioeconomic Resources (SR) – Economics and Public Safety (hazardous materials; abandoned mine lands) (8000-8012)

#	Goal/ Obj	Alternative A	Alternative B	Alternative C	Alternative D
		public lands, the BLM would provide appropriate warnings.			and compliance into all BLM activities.
8007	SR-01	Certain wastes generated by the oil and gas industry are exempt from regulation as hazardous wastes. These exemptions are too complex in detail to be listed here but are on file in BLM offices. Pits containing produced water or drilling fluids at well sites or other locations may be tested for Toxicity Characteristic Leaching Procedure (TCLP) constituents if nonexempt, hazardous wastes are indicated. Costs for testing and proper disposal would be borne by the operator if analysis confirms the presence of nonexempt waste.	Test pits associated with oil and gas activities that contain produced water or drilling fluids at well sites or other locations for TCLP constituents. Operator will pay costs for testing and proper disposal.	If nonexempt, hazardous wastes are expected, test pits associated with oil and gas activities that contain produced water or drilling fluids at well sites or other locations for TCLP constituents. Operator will pay costs for testing and proper disposal.	Require testing of oil and gas pits containing produced water or drilling fluids for TCLP constituents if nonexempt, hazardous wastes are suspected. Operator will pay costs for testing and proper disposal if analysis confirms the presence of nonexempt waste.
8008	SR-05.2 SR-05.3	No similar action	Identify Abandoned Mine Lands sites with warning signage and consider adding protective fencing where appropriate.	Same as Alternative B	Same as Alternative B
8009	SR-03	No similar action	No similar action	No similar action	Consider local county and community plans regarding socioeconomic conditions during the decision making process.
8010	SR-03	No similar action	No similar action	No similar action	Consider paced development options for industrial, mineral and energy development projects in the planning area to avoid adverse impacts to the socioeconomic conditions.
8011	SR-4.1 SR-5.1	No similar action	No similar action	No similar action	Avoid construction and development on areas with potential for natural hazards such as unstable soils and landslides.
8012	SR-03	No similar action	No similar action	No similar action	Consider impacts on the adequacy and safety of water resources to ensure county and community public health and safety.

## CHAPTER 3—AFFECTED ENVIRONMENT

This chapter describes environmental characteristics, conditions, and trends that influence the resolution of planning issues or that would be affected by the management actions presented in Chapter 2. The descriptions of the affected environment included in this chapter are summarized from the detailed descriptions included in the *Summary of the Analysis of the Management Situation*; for a comprehensive description of the affected environment, please refer to this document. The *Summary of the Analysis of the Management Situation* is thereby incorporated by reference into this Resource Management Plan (RMP)/Environmental Impact Statement (EIS). The status of the current environmental conditions is, in part, a result of the current Green River RMP. Environmental components that would not be affected or that are not essential to the resolution of planning issues are not covered in detail.

The summary of the Analysis of the Management Situation (AMS) was prepared in accordance with 43 CFR 1610 and was completed in August 2013. The AMS is accurate with the analyses of the inventory, and for the basis of formulating reasonable alternatives as described in 43 CFR 1610.4-4. Although some data has been updated in response to changing conditions (ex. air quality emissions and reasonably foreseeable development), most of the baseline data gathered from 2013 has been kept static for comparative analysis purposes. Even if minor conditions have changed for an individual resource in the intervening years since the AMS, the baseline data is adequate to compare conditions and differentiate resource impacts among the alternatives. The inventoried data in the Rock Springs Field Office remains consistent with current conditions in the scope of the resource area and portrays the existing management situation.

### 3.1 AIR RESOURCES

Air quality in a region is affected primarily by the magnitude and distribution of air pollutant emissions sources, topography, and the regional climate. Regional sources of air pollution impacting the planning area include mining operations, oil and gas development, coal fired power plants, windblown dust and wildfire. Additionally, air quality in the region is also influenced by high winds that transport dust and pollutants from industrial sources and metropolitan areas outside of the planning area. Air pollutants addressed include criteria pollutants, hazardous air pollutants, greenhouse gases, and sulfur and nitrogen compounds that could impact Air Quality Related Values such as impair visibility or contribute to atmospheric deposition or acid rain. Additional information on air resources, air quality conditions and regulatory framework within the Rock Springs planning area can be found in Appendix Q, Air Quality Technical Support Document.

The planning area is buffeted by high to moderate predominant westerly winds with low precipitation and relative humidity. Climate in the planning area is designated as temperate, semi-arid with long cold winters and warm summers. Mean annual temperature recorded at the Rock Springs Airport is 43.0°F. Summer temperatures average a mean of 65.0°F, the maximum average summer temperature is 79.7°F and average minimum summer temperature is 50.3°F. Winter temperatures average a mean of 22.0°F, with a winter maximum average temperature of 31.1°F, and the average minimum temperature of 12.8°F (Western Regional Climate Center, 2012). The average annual precipitation recorded at the Rock Springs Airport is 8.6 inches. Average annual snowfall is 43.6 inches with accumulation rarely exceeding more than a few inches. (Western Regional Climate Center, 2016). The daily annual wind speed average is 11.4 miles per hour with high to moderate prevailing westerly winds (Western Regional Climate Center, 2009). Air quality in the area is influenced by high winds that can transport air pollutants and dust from industrial sources and metropolitan areas from the west. The predominant wind direction near Rock Springs is from the west-southwest.

Air quality in a geographic area is defined by its visual appearance and measured concentrations of air pollutants. These characteristics can be affected by naturally occurring phenomena such as wind, temperature, humidity, geographic features, vegetation, and wildfire.

Elements of air quality include concentrations of air pollutants, visibility, and atmospheric deposition.

Criteria air pollutants are those for which national health-based concentration standards have been established under the National Ambient Air Quality Standards program. Criteria air pollutants include carbon monoxide, nitrogen dioxide, ozone, particulate matter with a diameter less than or equal to 10 microns, fine particulate matter (diameter less than or equal to 2.5 microns), and sulfur dioxide. A portion of the planning area is located within the Upper Green River Basin ozone nonattainment area as shown on Map 3-14.

Visibility is a measure of how far and how well an observer can see a distant and varied scene. Pollutant particles in the atmosphere can impair scenic views, degrading the contrast, colors, and distance an observer is able to see. Light extinction is used as a measure of visibility and is calculated from the monitored components of fine particle mass (aerosols) and relative humidity. Wyoming has seven total Class I areas for visibility, including the Savage Run Wilderness which the state of Wyoming has designated as a prevention of significant deterioration Class I area. There are no Class I areas located within the planning area. The Rock Springs planning area intersects the 100-kilometer buffer with two Class I areas, the Bridger Wilderness and Fitzpatrick Wilderness airsheds (Map 3- 13).

Atmospheric deposition is the process by which air pollutants are removed from the atmosphere and deposited on terrestrial and aquatic ecosystems. Air pollutants can be deposited by precipitation (via rain or snow) or dry deposition (gravitational settling of particles and adherence of gaseous pollutants to soil, water, and vegetation). Much of the concern about atmospheric deposition surrounds the secondary formation of acids and other compounds from emitted nitrogen and sulfur species such as nitric oxide and sulfur dioxide which can contribute to acidification of lakes, streams, and soils and affect other ecosystem characteristics, including nutrient cycling and biological diversity. Deposition varies with precipitation, which, in turn, varies with elevation and time.

## **3.2 GEOLOGY**

### **3.2.1 Physiography**

Most of the planning area, with the exception of a small area along the Colorado border that falls into the Northern Rocky Mountain Province, resides in the Wyoming Basin (Sullivan 1980). Portions of this physiographic province lay partially or entirely within the boundary of the planning area. They include the Green River, the Great Divide, the Washakie Basins, and the Rock Springs Uplift. This province is made up of high plains and plateau areas and is bordered by mountain ranges and major uplifts of the Central Rocky Mountain Province. The southern end of the Wind River Range extends into the planning area on its northeast border. Surface features reflect erosion by wind and water in an arid, cold-temperature environment. In some instances, they have been modified by faulting or volcanic activity.

### **3.2.2 Structural Geology**

The Green River Basin is a large structural and topographic basin drained by the Green River and its tributaries. In the north, this river flows in a broad shallow valley, while to the south it becomes a canyon that reaches a depth of 1,000 feet. The floor of the basin lies between 6,000 and 8,000 feet above sea level, and is a primarily flat to gently rolling plain. Tertiary sediments underlying the basin are predominantly soft to weak, with only a few beds that are more resistant. Where the rocks are flat-lying, the resistant beds cap low, flat tablelands and buttes. The outer margin of the Green River Basin is defined by a series of escarpments formed by tilted beds of the Green River and Wasatch Formations. North of the town of Green River, the main escarpment forms a bluff known as White Mountain. The flat-lying strata of the Green River Basin exert little geologic control on the drainage, resulting in a dendritic drainage pattern. Gravel terraces have developed along most of the major streams, and their elevations range from 5 to 10 feet above the river level to as much as 500 feet.

The Great Divide Basin is a structural basin underlying a topographic and internally drained basin. The Continental Divide splits near the southeast end of the Wind River Range and converges again at the north

end of the Sierra Madre Mountains. Lake, swamp, and stream deposits of Tertiary age make up most of the bedrock and surficial deposits are predominantly soft and weak, causing the basin to be nearly flat and featureless, with occasional intermittent lakes and dry flats in the lowest areas. Low hills and ridges form the high ground that marks the two branches of the Continental Divide. Altitudes range from 6,500 to 7,500 above sea level. The largest, most conspicuous features of the Great Divide Basin are dry-lake flats. These broad shallow depressions are the sites of former lakes that are being filled in by debris washed in from the surrounding highlands. Isolated sand and gravel terraces deposits with at least eight different terrace levels have been recognized. The Wamsutter Arch is a low relief anticline. The Wamsutter Arch extends eastward from the Rock Springs Uplift and separates the Great Divide and Washakie Basins.

The Washakie Basin is a structural and topographic basin, south of Interstate 80 and east of the Rock Springs Uplift. The overall configuration of the basin is that of a very broad, roughly square bowl shape with an outward facing escarpment, developed on the Laney Shale member of the Green River Formation. On the west, the escarpment is known as Kinney Rim; on the north, it is known as Laney Rim. Altitudes above sea level range from 6,100 feet in the drainage to 8,700 feet on Pine Butte.

The Rock Springs Uplift is a broad, elliptical anticline that began to form after the Lance Formation was deposited in the late Cretaceous. Erosion has uncovered a sequence of Tertiary and Upper Cretaceous rocks. The rocks exposed on the uplift are cut by several faults and data indicate that the west flank of the uplift is bounded by a thrust fault that does not reach the surface. The crest of the Rock Springs Uplift is occupied by a large depression, called the Baxter Basin, which is carved into the soft weak rocks of the Baxter Shale.

### **3.3 SOIL RESOURCES**

Soils in the planning area are diverse and highly variable. Soil characteristics can differ over relatively short distances, reflecting differences in parent material, position on the landscape, elevation, aspect, biota such as bacteria, fungi, biological crusts, vegetation, soil, animals and humans, and climatic variables, such as precipitation and temperature. Soils are affected by a variety of surface uses that loosen topsoil and damage or remove vegetation or other ground cover, which may result in accelerated erosion.

#### **3.3.1 Soil Conditions and Characteristics**

The soils in the planning area have been impacted by fires, timber harvest, solid mineral exploration, oil and gas exploration, recreation, livestock grazing, and wildlife. Position on the landscape, slope length and gradient, chemical and physical properties, surface texture and structure, plant cover, and erosion control practices contribute to susceptibility of soils to wind and water erosion. The soils possess several limitations that reduce the potential for establishing vegetation following a disturbance. Soils with limitations include highly erodible soils, saline, sodic, and sandy soils, soils with biological crusts, soils with slopes greater than 25%, frozen soil, 2:1 shrink-swell clays, badlands, and soils with potential archaeological or paleontological concerns. Soils considered susceptible to these limiting features are discussed in the following subsections.

Highly erodible soils are characterized by the loss of valuable topsoil resulting from action by either wind or water and have limited reclamation potential. Soils in the field office are especially dependent on vegetative cover to prevent erosion, and erosion increases when the vegetative community is disturbed by surface disturbing activities such as road construction, fire, intense grazing, or any other use that reduces the amount of vegetative cover.

Saline soils have calcium, magnesium, or other non-sodium salts dominating their ionic composition, although they might also contain some sodium salts. Soil salinity can have significant effects on soil erosion and reclamation potential. Because erosion of saline soils can also have significant effects on downstream water quality, saline soils are managed to minimize impacts in these areas and to promote the revegetation of previously disturbed areas to the greatest extent possible.

The ionic composition of sodic soils is dominated by sodium salts. Soils with sodium adsorption ratios of 13 or greater are considered sodic. Infiltration of precipitation into these soils is reduced by the dispersion of soil particles caused by the higher levels of sodium, resulting in greater surface runoff rates and increased soil erosion and sediment yields. These soils may have a less sodic soil horizon(s) above the sodic horizon. When this less sodic soil horizon(s) is disturbed or removed, the resulting impact can be irreversible.

Sandy soils are highly susceptible to wind erosion, and efforts are made to avoid disturbing these areas. Sandy soil series include Crestman, Eightyfive A-B-C, Koonich variant, LaMarsh, Littsan variant, Ryan Park, and Space City (USDI, BLM 1990c).

The planning area contains numerous types of sensitive soils. The most sensitive and of highest importance are those soils which have biological crusts. Biological soil crusts are a mosaic of bacteria, algae, lichens, mosses, and microfungi that weave through the top few centimeters of soil, gluing loose particles together and forming a matrix that stabilizes and protects soil surfaces from erosive forces. These biological soil crusts, when undisturbed, tend to occupy the nutrient-poor zones between vegetation clumps (BLM 2001c). Biological soil crusts are well-adapted to severe growing conditions, but poorly adapted to compressional disturbances from vehicles, people, or animals.

Physical soil crusts are different from biological soil crusts and generally form in coarse sandy soils with low organic matter content, high salinity, and high alkalinity. Physical soil crusts may form when exposed to raindrop splash on bare soil or as a result of compaction. Soils with physical crusting typically reduce water infiltration and can prevent seedling emergence (BLM 2001c).

## **3.4 WATERSHED AND WATER QUALITY**

### **3.4.1 Surface Water**

Most the planning area is within United States Geological Survey Water Resource Region 14, with a small portion within Region 10 (Map 3-1). The portion of the planning area that is drained by the Green/Colorado River (Region 14, Basin 1404401) is subject to the Colorado River Compact. The major portion of the planning area not drained by the Colorado River is within the Great Divide Basin. The portion of the planning area near South Pass that is drained by the Sweetwater River is located within the Missouri River Basin and is subject to all applicable rules and agreements for that watershed.

There are approximately 1,700 miles of stream and 46,000 acres of lakes, ponds and reservoirs in the planning area (Map 3-1). Major reservoirs in the area include Eden Valley Reservoir, Big Sandy Reservoir, Fontenelle Reservoir, and Flaming Gorge Reservoir.

Water bodies in Wyoming are classified for water quality regulation according to beneficial uses by the Wyoming Department of Environmental Quality (WDEQ). Class 1 waters are defined as “outstanding waters” and are those surface waters in which no further water quality degradation by point source discharges, other than from dams, will be allowed. Nonpoint sources of pollution in Class 1 waters are controlled by the implementation of appropriate best management practices (BMP). Class 1, 2, and 3 waters are those with specific water quality standards that must be maintained. There are no Class 1 waters within the planning area. There are 42 miles of Class 2 water on the Big Sandy River between the confluence with the Green River and the confluence of the Little Sandy River near Farson.

On Bitter Creek and Killpecker Creek, 58.1 miles and 6.3 miles, respectively, are listed as being impaired by fecal coliform. The same 58.1 miles of Bitter Creek are also impaired by chloride concentrations. Killpecker Creek is also a source of chlorides into the system but is not listed for chlorides due to naturally



high background levels of chloride originating from the soils. Additional information on impaired waterbodies can be found in WDEQ's *Wyoming's 2020 Integrated 305(b) and 303(d) Report*.

### 3.4.2 Groundwater

Although much has been documented about groundwater occurrence in the area, the aquifer systems are not well defined because of the sporadic nature of occurrence in each geologic layer. Some geologic stratigraphic units which are known to contain groundwater are the Bishop Formation, Bridger Formation, Laney Shale, Wilkins Peak, and Tipton Shale members of the Green River Formation, the main body of the Wasatch Formation, and the Almond and Ericson Formations of the Mesaverde group. Water yields vary widely from good (greater than 20 gallons per minute) to poor (less than 5 gallons per minute) between and within these formations.

Published information suggests that the following areas can be classified as recharge areas: The Rock Springs Uplift, Wind River Front, north flank of the Uinta Mountains, and localized areas recharging the Bishop Conglomerate (Pine Mountain, Little Mountain, and Cedar Mountain). The recharge area for the town of Superior is partially located on Bureau of Land Management (BLM)-managed public lands.

## 3.5 VEGETATIVE COMMUNITIES

The vegetative resources in the planning area are divided into three main areas: Rangelands/Uplands, Riparian, and Forestry and Woodlands. Each of these main areas is made up of various vegetation communities or associations. Due to the complexity of biological resources and the vast size of the planning area, this section does not attempt to provide an encyclopedic description of all these areas that are found in the planning area. Common names for species are used throughout this section.

### 3.5.1 Rangelands/Uplands

Rangeland/Uplands within the planning area mainly consist of grassland and sagebrush communities. Grasslands cover approximately 154,940 acres (excluding 551,040 acres of Sagebrush/Grassland). Patches of grasslands are found scattered throughout low and high-density sagebrush communities. These grassland communities provide important habitat and forage for wildlife. Grass species dominate these communities, but shrubs, subshrubs, and cushion plants are also common.

Sagebrush communities are the most extensive plant cover type in the planning area as well as in the surrounding Wyoming Basin area and intermountain region. Sagebrush communities cover approximately 2,183,030 acres within the planning area (including 551,040 acres of sagebrush/grasslands). Adaptations to different habitat characteristics (e.g., soil type, climate, and elevation) have resulted in a variety of sagebrush species in the western United States (Monsen and Shaw 2000). Sagebrush communities in the planning area are dominated by two subspecies of big sagebrush (Wyoming big sagebrush and big basin sagebrush), with a well-established grass and forb component.

### 3.5.2 Riparian

Wetlands and riparian areas occur throughout the planning area and are most frequently located on the lands adjacent to surface waters but may also be located in lands with a high water table that is not expressed on the surface (Map 3-2). They are dominated by vegetation that is adapted to a consistent water supply and can withstand soil saturation, and periodic flooding. These small, but important, ecosystems serve as a biological oasis and represent a vegetation structure, soil, and hydrology unique relative to the vast expanses of sagebrush and prairie grass that dominate the landscape of the region. They comprise less than 2% of the land mass in the State of Wyoming, yet are prized for their fish and wildlife habitat, water supply, cultural,

and historic and recreational values as well as for their economic values which stem from use in livestock production, forest management, and mineral extraction.

### 3.5.3 Forestry and Woodlands

Forest and woodland communities consist of broadleaf species, including aspen stands, cottonwood, and willow, and at higher elevations, whitebark pine and limber pine association. Aspen stands occur in areas with high moisture availability such as on northern and eastern exposures where snow packs accumulate. They often occur on the edges of conifer stands as a transition between sagebrush and conifer zones (Map 3-2).

## 3.6 INVASIVE SPECIES AND PEST MANAGEMENT

Invasive species disrupt or have the potential to disrupt or alter the natural ecosystem function, composition, or diversity of the site it occupies. Noxious weeds are native or nonnative plants that are unwanted in a particular area at a particular time, as designated by the State of Wyoming Noxious Weed List or declared by County Weed Control Districts.

Invasive species are an increasing problem in the planning area and are impacting water and other resources. The primary species targeted by the field office include Russian knapweed, spotted knapweed, Canada thistle, musk thistle, bull thistle, houndstongue, hoary cress (whiteweed), perennial pepperweed (tall whiteweed), Russian olive, and tamarisk, as well as halogeton and cheatgrass. These plants are typically found in sagebrush/grassland, desert shrub, and riparian/wetland community types.

The Zebra and Quagga mussels are also of particular concern to native aquatic invertebrate communities in cold water systems, and could potentially pose a threat to local trout populations in the planning area. They have been identified in many nearby waters.

Invasive species within the planning area are controlled through cooperative agreements with the Sweetwater County Weed and Pest Control District. In addition to the County Weed and Pest District, the Rock Springs Field Office (RSFO) works in cooperation with the Wyoming Game and Fish Department (WGFD), State Lands Division, local Natural Resources Conservation Service offices, and private landowners. Approximately 1,000 acres of invasive species-infested areas within the planning area are treated annually.

Wyoming-designated pests under W.S. 11-5-102(a)(xii) include grasshoppers, Mormon crickets, prairie dogs, ground squirrels, mountain pine beetle, and beet leafhopper. Although applying pest control measures has been limited, it is reasonable to assume that issues such as the West Nile virus, bird flu, nonnative animals, and tree pathogens may need to be addressed in the foreseeable future.

The U.S. Department of Agriculture, Animal and Plant Health Inspection Service – Wildlife Service (APHIS-WS) is currently the BLM's agent for controlling animal pests. In October 2015, APHIS-WS and the BLM signed a memorandum of understanding detailing cooperative efforts between the two entities on suppression of grasshoppers and Mormon crickets on BLM-administered lands (Document #15-8100-0870-MU). The preferred method for treating grasshoppers and Mormon crickets is by Reduced Agent Area Treatments (RAAT). RAATs are a grasshopper suppression method in which the rate of insecticide is reduced from conventional levels, and treated swaths are alternated with swaths that are not directly treated. The RAATs strategy relies on the effects of an insecticide to suppress grasshoppers within treated swaths while conserving grasshopper predators and parasites in swaths not directly treated.

## 3.7 WILDLIFE AND FISHERIES HABITAT

### 3.7.1 Wildlife

Over 350 species of wildlife are found on a variety of habitats on the public lands in the planning area. BLM manages wildlife habitat on public lands, while the WGFD manages the wildlife populations. The United States Fish and Wildlife Service (USFWS) has regulatory authority over migratory birds and species that are listed as endangered, threatened, or proposed for listing. The BLM and WGFD have officially coordinated their management activities since 1976. The distribution and abundance of wildlife in the planning area are primarily functions of habitat conditions.

#### Big Game

The WGFD manages big game populations in herd units. The WGFD revises its population objectives for each big game species based on new habitat information, population trends, recreation demand, and public input.

#### Pronghorn

Suitable summer pronghorn (*Antilocapra americana*) habitat is found in most vegetative communities. Preferred pronghorn habitat is usually characterized by the presence of summer water and big sagebrush in combination with rabbitbrush and antelope bitterbrush. The planning area provides an estimated 3,880,000 acres of this habitat (Map 3-3).

#### Mule Deer

The Wyoming mule deer (*Odocoileus hemionus*) population was estimated at approximately 480,000 individuals in 2008 (WGFD 2005). Mule deer are distributed over most of the planning area and are managed in seven herd units which occur fully or partially within the planning area.

#### White-tailed Deer

White-tailed Deer (*Odocoileus virginianus*) are present in low numbers north of the City of Green River between the Green River and Blue Rim Road. The WGFD does not report on this herd.

#### Rocky Mountain Elk

Historically, Rocky Mountain elk (*Cervus elaphus nelsoni*) migrated to the planning area from Jackson, Wyoming, and Yellowstone National Park, with the last major migration occurring in 1913. Four elk herd units are designated in the planning area. The South Rock Springs and the Steamboat Herd Units are located within the planning area, while only portions of the Uinta-Cedar Mountain and South Wind River units are within the planning area.

#### Moose

In 2005, the WGFD listed the Shiras moose (*Alces alces shirasi*) as a species of greatest conservation need based on declines in habitat and population (WGFD 2005). The Sublette herd is the largest herd in the state accounting for 56% of all moose counted during 2007 trend counts (G. Fralick, personal communication; Smith and Younkin 2010b).

#### Bighorn Sheep

Bighorn sheep (*Ovis canadensis canadensis*) historically ranged across the planning area as indicated in early accounts by mountain men and settlers. Petroglyph panels at the Sugarloaf, White Mountain, and Cedar Canyon rock art sites and elsewhere depict bighorn sheep as important to prehistoric inhabitants of the region and they were probably common here at that time. Habitat requirements of bighorn sheep are

similar to other wildlife species occupying the planning area. They prefer broken terrain with few human intrusions and little human activity. Bighorns graze on a wide variety of grasses, sedges, and forbs. There currently are no bighorn sheep herd management areas in the planning area due to conflicts with domestic sheep grazing allotments (primarily disease transmission from domestic to wild sheep).

### Mountain Lion

The wide distribution of mountain lion (*Felis concolor*) observations indicates that this species is presently found throughout much of the planning area within suitable habitat and that the population is limited. Mountain lions reside in the broken juniper and rim rock areas wherever suitable habitat exists.

### Black Bear

Suitable bear habitat exists over about 189 square miles of land in the planning area. Black bear (*Ursus americanus*) occupy timbered habitats along the Wind River Mountains with some use of habitat near the Colorado and Utah border and on Little Mountain and Pine Mountain. Occasionally, black bears are found along the Sweetwater River and its tributaries and upper reaches of Little Sandy and Big Sandy rivers.

### Other Mammals

Other mammals present in the planning area include coyote (*Canis latrans*), white-tailed jackrabbit (*Lepus townsendi*), Nuttall's cottontail rabbit (*Sylvilagus nuttalli*), Desert cottontail (*Sylvilagus auduboni baileyi*) pygmy rabbit (*Brachylagus idahoensis*), porcupine (*Erethizon dorsatum*), raccoon (*Procyon lotor*), red fox (*Vulpes fulva*), swift fox (*Vulpes velox*), beaver (*Castor canadensis*), striped skunk (*Mephitis mephitis*), white-tailed prairie dog (*Cynomys leucurus*), weasel (*Mustela ermine muricus*), ermine (*Martens martes americana*), long-tailed weasel (*Mustela frenata*), mink (*Mustela vison*), badger (*Taxidea taxus*), and river otter (*Lutra canadensis*), various rodents, and several bat species.

### Birds

#### Waterfowl

The planning area lies between the Pacific and Central Flyways. The period of occupancy by waterfowl is relatively short. Most of the waterfowl found in the planning area are migratory, short-term occupants. The majority of the waterfowl nesting in the flyways occur below 8,500 feet. All waterfowl are dependent on ponds, marshes, streams, lakes, and rivers.

Common ducks include the mallard (*Anas platyrhynchos*), green-winged teal (*Anas crecca*), cinnamon teal (*Anas cyanoptera*), Northern pintail (*Anas acuta*), canvasback (*Aythya valisineria*), redhead (*Aythya americana*), and common goldeneye (*Bucephala clangula*). Some species only migrate through the area on their way to breeding or nesting grounds farther north, or to winter areas farther south. Other species such as the Barrow's goldeneye (*Bucephala islandica*), are resident for only parts of the year, wintering in western Wyoming. The Canada goose (*Branta canadensis*) is an abundant year-round resident. Trumpeter swans (*Cygnus buccinator*), and tundra swans (*Cygnus columbianus*) may be found on Seedskadee National Wildlife Refuge and nearby along the Green River.

#### Wading Birds

Wading birds are water birds that usually do not swim or dive for their prey, but wade in shallow edges of lakes, ponds, creeks, and other waters for food not available on shore. The great blue heron (*Ardea herodias*), white-faced ibis (*Plegadis chihi*), and sandhill crane (*Grus canadensis*) are wading birds common to planning area.

## Shorebirds

Shorebirds are most often found foraging for food along water margins. Shorebirds use the planning area during migration and also for nesting. Shorebirds frequent open water areas, riverine, and wetland habitats on the planning area. Common shorebird species utilizing area include killdeer (*Charadrius vociferus*), spotted sandpiper (*Actitis macularia*), greater yellowlegs (*Tringa melanoleuca*), lesser yellowlegs (*Tringa flavipes*), willet (*Catoptrophorus semipalmatus*), long-billed dowitcher (*Limnodromus scolopaceus*), Wilson's phalarope (*Phalaropus tricolor*) and common snipe (*Gallinago gallinago*).

## Divers and Swimmers

Divers and swimmers are water birds that swim or dive for their prey. The common merganser (*Mergus merganser*), pied-billed grebe (*Podilymbus podiceps*), and American coot (*Fulica americana*) use open water areas, tall emergent marshes, and nest in the planning area. The double-crested cormorant (*Phalacrocorax auritus*) and American white pelican (*Pelecanus erythrorhynchos*) subsist on a diet of fish and frequent riverine and open-water habitats. Exposed river rocks, cottonwood trees, and graveled shorelines provide roosting habitat.

## Neotropical Migrants

Neotropical migrants are birds that breed in North America, but winter in Central and South America or the West Indies. The following species are those that are more commonly found on the planning area during migration, but many nest on the planning area as well. These species include: tree swallow (*Tachycineta bicolor*), rufous hummingbird (*Selasphorus rufus*), Western kingbird (*Tyrannus verticalis*), Eastern kingbird (*Tyrannus tyrannus*), yellow warbler (*Dendroica petechia*), Lincoln sparrow (*Melospiza lincolnii*), common nighthawk (*Chordeiles minor*), and the yellow-rumped warbler (*Dendroica coronata*).

## Woodpeckers

Woodpeckers that inhabit the planning area include the Northern flicker (*Colaptes auratus*), which is the most common, the downy woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), and the red-naped sapsucker (*Sphyrapicus nuchalis*).

## Upland Birds

Upland bird species rely primarily on upland habitats, away from riparian and wetland habitat. Several of the more common upland bird species found in the planning area include horned lark (*Eremophila alpestris*), Western meadow lark (*Sturnella neglecta*), mourning dove (*Zenaidura macroura*), sage sparrow (*Amphispiza belli*), and sage thrasher (*Oreoscoptes montanus*).

## Grouse

Greater Sage-Grouse are found throughout the planning area wherever suitable habitat exists and are discussed further with Special Status Wildlife Species section of this document. Chukar partridge (*Alectoris chukar*), blue grouse (*Dendragapus obscurus*), and ruffed grouse (*Bonasa umbellus*) are also present in the planning area.

## Juniper Obligate Species

Birds such as the black-throated gray warbler (*Dendroica nigrescens*), Western scrub-jay (*Aphelocoma californica*), juniper titmouse (*Baeophus griseus*), ash-throated flycatcher (*Myiarchus cinerascens*), gray flycatcher (*Empidonax wrightii*), Bewick's wren (*Thryomanes bewickii*), blue-gray gnatcatcher (*Poliophtila caerulea*), and other animals such as the cliff chipmunk (*Tamias dorsalis*), pinyon mouse (*Peromyscus truei*), canyon mouse (*Peromyscus crinitus*), and Northern tree lizard (*Urosaurus ornatus wrightii*) occur in this habitat and are in the northernmost extent of their range.

## Raptors

There are 27 species of hawks, eagles, and owls either nesting, thought to nest, or having the potential of nesting in the planning area (Map 3-4). Other species may be found wintering or stopping over on their migration. The BLM has identified the bald eagle, peregrine falcon, ferruginous hawk, prairie falcon, osprey, and golden eagle, as raptors of high priority for conservation and habitat criteria for management.

## Amphibians

Tiger salamander (*Ambystoma tigrinum*), Great Basin spadefoot (*Spea intermontana*), boreal toad (*Bufo boreas boreas*), Northern leopard frog (*Lithobates pipiens*), Columbia spotted frog (*Rana luteiventris*), all use riparian and wetland areas.

## Reptiles

The midget-faded rattlesnake (*Crotalus oreganus concolor*), prairie rattlesnake (*Crotalus viridis viridis*), Great Basin gophersnake (*Pituophis catenifer deserticola*), Greater short-horned lizard (*Phrynosoma hernandesi*), Northern sagebrush lizard (*Sceloporus graciosus graciosus*), striped whipsnake (*Masticophis taeniatus*), plateau fence lizard (*Sceloporus tristichus*), and wandering gartersnake (*Thamnophis elegans vagrans*) are some of the reptiles found in the planning area.

### 3.7.2 Fisheries and Fish Habitat

The planning area primarily lies within the upper Green River Basin of the Colorado River freshwater ecoregion with a very small portion in the upper Sweetwater River drainage of the Middle Missouri freshwater ecoregion. There are 25 species of fish known to occur in the waters of the planning area, eight of the 25 species are native. Colorado River cutthroat trout and mountain whitefish are the only native sport fish in the area. Seven species are considered sensitive by the BLM: the Colorado River cutthroat trout, Bonneville cutthroat trout, Yellowstone cutthroat trout, Snake River cutthroat trout, the roundtail chub, the flannelmouth sucker and the bluehead sucker. For the State of Wyoming, four species have been identified as “species of special conservation need” in the 2010 State Wildlife Action Plan. These species are Colorado River cutthroat trout, flannelmouth sucker, bluehead sucker and the roundtail chub. The other six native fish in the planning area are nongame species. Introduced sport fish include five species of trout, kokanee salmon, channel catfish and smallmouth bass.

## 3.8 SPECIAL STATUS SPECIES

According to BLM Manual 6840, BLM special status species are: (1) species listed or proposed for listing under the Endangered Species Act (ESA), and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as Bureau sensitive by the State Director(s). All Federal candidate species, proposed species, and delisted species in the 5 years following delisting will be conserved as Bureau sensitive species. Bureau sensitive species require special management consideration to avoid potential future listing under the ESA and that have been identified in accordance with procedures set forth in this manual

The BLM defines sensitive species as those that could easily become endangered or extinct in a state unless protection is granted. Designated sensitive species are provided the same level of protection by the BLM as federal candidate species.

### 3.8.1 Federally Listed Wildlife (Including Fish)

Table 3. lists the federally listed wildlife species that may inhabit the planning area.

#### Black-footed Ferret

Black-footed ferret (*Mustela nigripes*) are associated with prairie dog colonies. Recently, the USFWS

block-cleared the entire planning area and considers the black-footed ferret extirpated in this area.

### Canada Lynx

Canada lynx (*Lynx canadensis*) habitat is represented by moist boreal forests that have cold, snowy winters and sufficient snowshoe hare (*Lepus americanus*) availability for prey. The predominant vegetation of boreal forest is conifer trees, primarily species of spruce (*Picea spp.*) and fir (*Abies spp.*).

### Yellow-Billed Cuckoo, Western Population

The yellow-billed cuckoo (*Coccyzus americanus*) prefers large tracts of deciduous riparian woodlands with dense, scrubby undergrowth. It frequently uses willow thickets for nesting and forages among large cottonwoods (Bennett and Keinath 2001). In Wyoming, the western subspecies of the yellow-billed cuckoo is considered uncommon and is found along waterways in the lower Green River Basin.

### Colorado River Endangered Fish Species

Some species listed as threatened or endangered do not occur within the planning area but may be affected by depletions of water from the Colorado or Platte River systems. Water depletions are defined simply as diversions less return flows. There are four species of fish in the upper Colorado River system that are federally listed as endangered. They are the bonytail chub (*Gila elegans*), the Colorado pikeminnow (*Ptychocheilus lucius*), the humpback chub (*Gila cypha*) and the razorback sucker (*Xyrauchen texanus*). Though they currently exist only downstream from the southern border of Wyoming, water from the Upper Green River Basin affects the downstream habitat for these fish.

Due to conservation efforts, the humpback chub and razorback sucker have been proposed for reclassification (downlisting) from endangered to threatened. The humpback chub was proposed for downlisting on January 22, 2020, and the razorback sucker on July 7, 2021.

### Platte River Endangered Species

A small portion of the planning area lies within the Platte River Basin. There are four listed species, whooping crane (*Grus americana*), Northern Great Plains population of the piping plover (*Charadrius melodus*), and pallid sturgeon (*Scaphirhynchus albus*), downstream of the planning area that are affected by water depletions of any kind. Section 7 consultation with USFWS is conducted any time there is a potential for water depletions in the Sweetwater river drainage.

**Table 3. Federally Listed Wildlife in the Planning Area**

Common Name	Scientific Name	Designation
Canada Lynx	<i>Lynx canadensis</i>	Threatened
Yellow-Billed Cuckoo (Western Population)	<i>Coccyzus americanus</i>	Threatened
Bonytail Chub	<i>Gila elegans</i>	Endangered
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	Endangered
Humpback Chub	<i>Gila cypha</i>	Threatened
Razorback Sucker	<i>Xyrauchen texanus</i>	Endangered
Whooping Crane	<i>Grus americana</i>	Endangered
Northern Great Plains population of the piping plover	<i>Charadrius melodus</i>	Threatened
pallid sturgeon	<i>Scaphirhynchus albus</i>	Endangered

### 3.8.2 Wyoming BLM Sensitive Wildlife Species

Bureau sensitive species are species that require special management consideration to avoid potential future listing under the ESA and that have been identified in accordance with procedures set forth in this manual. Table 3-1 lists the BLM Wyoming sensitive wildlife species that may inhabit the planning area.

**Table 3-1. Bureau of Land Management Wyoming Sensitive Wildlife Species**

Mammals		Avian	
Fringed myotis	<i>Myotis thysanodes</i>	Bald eagle	<i>Haliaeetus leucocephalus</i>
Idaho pocket gopher	<i>Thomomys idahoensis</i>	Brewer's sparrow	<i>Spizella breweri</i>
Long-eared myotis	<i>Myotis evotis</i>	Burrowing owl	<i>Athene cunicularia</i>
Pygmy rabbit	<i>Brachylagus idahoensis</i>	Ferruginous hawk	<i>Buteo regalis</i>
Spotted bat	<i>Euderma maculatum</i>	Greater Sage-Grouse	<i>Centrocercus urophasianus</i>
Swift fox	<i>Vulpes velox</i>	Loggerhead shrike	<i>Lanius ludovicianus</i>
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Long-billed curlew	<i>Numenius americanus</i>
White-tailed prairie dog	<i>Cynomys leucurus</i>	Mountain plover	<i>Charadrius montanus</i>
Wyoming pocket gopher	<i>Thomomys clusius</i>	Northern goshawk	<i>Accipiter gentilis</i>
Fish		Peregrine falcon	<i>Falco peregrinus</i>
Bluehead sucker	<i>Catostomus discobolus</i>	Sagebrush sparrow	<i>Artemisiospiza nevadensis</i>
Colorado River cutthroat trout	<i>Oncorhynchus clarkia pleuriticus</i>	Sage thrasher	<i>Oreoscoptes montanus</i>
Flannelmouth sucker	<i>Catostomus latipinnis</i>	Trumpeter swan	<i>Cygnus buccinators</i>
Roundtail chub	<i>Gila robusta</i>	White-faced ibis	<i>Plegadis chihi</i>
Amphibians		Reptiles	
Boreal toad (Northern Rocky Mountain population)	<i>Bufo boreas</i>	Midget-faded rattlesnake	<i>Crotalus viridis concolor</i>
Columbia spotted frog	<i>Rana luteiventris</i>		
Great Basin spadefoot toad	<i>Spea intermontana</i>		
Northern leopard frog	<i>Rana pipiens</i>		

### 3.8.3 Special Status Species Plants

Special status plant species are found within a variety of habitats in the planning area. The landscape in the area exhibits diverse climates, topography, and soils. Table 3-2 presents special status plants that are known to or may be found on land managed by the BLM.

Two federally listed plant species, the threatened Ute ladies' tresses (*Spiranthes diluvialis*) and the endangered blowout penstemon (*Penstemon haydenii*), may occur within the planning area. Also, 16 BLM Wyoming Sensitive Plant Species are found within the planning area. These 16 species are also Wyoming Natural Diversity Database plant species of concern.



**Table 3-2. Special Status Plant Species in the Planning Area**

Common Name	Scientific Name	Heritage Status	ESA/BLM Status
Blowout penstemon	<i>Penstemon haydenii</i>	G1/S1	ESA Endangered
Ute ladies' tresses	<i>Spiranthes diluvialis</i>	G2/S1	ESA Threatened
Beaver Rim phlox	<i>Phlox pungens</i>	G2/S2	BLM Sensitive Plant Species
Cedar Mountain Easter daisy	<i>Townsendia microcephala</i>	G1/S1	BLM Sensitive Plant Species
Cedar Rim thistle	<i>Cirsium aridum</i>	G2Q/S2	BLM Sensitive Plant Species
Dune wildrye	<i>Elymus simplex</i> var. <i>luxuriens</i>	G4?QTNR-/S1	BLM Sensitive Plant Species
Green River greenthread	<i>Thelesperma caespitosum</i>	G1/S1	BLM Sensitive Plant Species
Large-fruited bladderpod	<i>Lesquerella macrocarpa</i>	G2/S2	BLM Sensitive Plant Species
Limber pine	<i>Pinus flexilis</i>		BLM Sensitive Plant Species
Meadow pussytoes	<i>Antennaria arcuata</i>	G2/S2	BLM Sensitive Plant Species
Ownbey's thistle	<i>Cirsium ownbeyi</i>	G3/G2	BLM Sensitive Plant Species

Common Name	Scientific Name	Heritage Status	ESA/BLM Status
Precocious milkvetch	<i>Astragalus racemosus</i> var. <i>treleasei</i>	G1/S1	BLM Sensitive Plant Species
Small rock cress	<i>Arabis pusilla</i> ( <i>Boechea pusilla</i> )	G1/S1	BLM Sensitive Plant Species
Stemless beardtongue	<i>Penstemon acaulis</i> var. <i>acaulis</i>	G2T2/S1	BLM Sensitive Plant Species
Trelease's racemose milkvetch	<i>Astragalus racemosus</i> var. <i>treleasei</i>	G5T2/S2	BLM Sensitive Plant Species
Tufted twinpod	<i>Physaria condensate</i>	G2/S2	BLM Sensitive Plant Species
Uinta greenthread	<i>Thelesperma pubescens</i>	G1/S1	BLM Sensitive Plant Species
Wyoming tansymustard	<i>Descurainia tortulosa</i>	G1?/S2	BLM Sensitive Plant Species

### 3.9 WILD HORSES AND BURROS

The RSFO protects, manages, and controls wild horses under the authority of the 1971 Wild Free-Roaming Horses and Burros Act (as amended by Congress in 1976, 1978, and 2004) to ensure that healthy herds thrive on healthy rangelands. One of the BLM's key responsibilities under the law is to manage for a "thriving natural ecological balance." Wild horses depend upon adequate habitat for free-roaming nature through management consistent with principles of multiple use and environmental protection. This includes identifying the appropriate management levels (AML) in five Herd Management Areas (HMA) currently found in the planning area (Map 3-5).

The area utilized by the wild horses encompasses large unfenced acreages of private, state, Bureau of Reclamation, and BLM lands. Areas utilized by wild horses include entire areas or portions of wilderness study areas (WSA) and areas of critical environmental concern (ACEC).

The AML for the five HMAs within the RSFO were established in the 1997 Green River RMP and are provided in Table 3-3. For the Great Divide Basin, Salt Wells Creek, Adobe Town and White Mountain Rock Springs RMP Revision

HMA, the AML established in the 1997 RMP was based on a 1979 agreement between the Rock Springs Grazing Association (a major private land owner in the Checkerboard) and Wild Horses. The BLM will update this information based on the Wild Horse Management EIS, in progress. See Appendix S.

The Wild Horse Management EIS will amend the management for the Adobe Town HMA, Divide Basin HMA, Salt Wells Creek HMA, and White Mountain HMA.

**Table 3-3. Herd Management Areas in the Planning Area and Associated Appropriate Management Levels**

HMA	Acreage	AML
Great Divide Basin	778,915	415-600
White Mountain	392,649	205-300
Salt Wells Creek	1,193,283	251-365
Adobe Town	102,753	165-235
Little Colorado	519,541	69-100

### 3.10 WILDLAND FIRE ECOLOGY AND MANAGEMENT

Wildfires can occur from an act of nature, such as lightning, or can be caused by humans, either accidentally or with the intent to cause damage. Prescribed fire is used for beneficial purposes (such as reducing hazardous fuel accumulation, wildlife habitat enhancement, or forage production) in a controlled manner under a specific prescription and planned effort. Wildfires resulting from an act of nature can sometimes be managed to achieve resource objectives.

In any year, the planning area will experience approximately 34 to 50 unplanned ignitions resulting in approximately 1,800 to 2,200 burned acres. An examination of the available historical record (Planning Area) and experience indicate that the typical wildfire in the planning area is a natural caused single tree (juniper) fire of less than one acre. However, occasionally, larger unplanned events skew the average acreage per fire (Map 3-6). Only three wildfires larger than 3,000 acres have occurred in the planning area since 1984; these include the Wildhorse Basin 07/2000 (36,700 acres), Sheep Mountain 08/2000 (36,360 acres) and Pepper 07/2002 (13,200 acres).

### 3.11 CULTURAL RESOURCES

The planning area straddles a section of Wyoming with possibly the highest densities of archaeological sites and districts in the state (Map 3-7). Historic sites, prehistoric sites, and traditional cultural properties (TCPs) are widespread throughout the planning area. The area also contains more linear miles of intact National Historic Trails (NHT), NHT candidates, and historical wagon roads than any other BLM Field Office in Wyoming. Tribes have identified a host of important cultural sites and landscapes important to their cultures and life ways. One of these sites, the White Mountain Petroglyphs, has become a major tourist attraction. Other important cultural resources such as the South Pass National Historic Landmark also draw thousands of visitors each year. The planning area has more miles of some of the best preserved NHTs than anywhere else in the Nation (Map 3-7).

Cultural resources include prehistoric and historic archaeological and architectural structures, features and objects, as well as Native American traditional cultural and religious resources. Prehistoric resources include lithic scatters, temporary camp sites, occupation sites, hunting/kill/butchering sites, processing areas, rock shelters, rock art, cairns, trails, and corrals. Historic resources include historic trails, stage stations, homesteads/farmsteads, roads, irrigation ditches, reservoirs, mining sites, corrals, cairns, campsites, rock art/inscriptions, and trash scatters. Together these resources represent human use of the area by Native American and Euro-American cultures, covering a time from the Paleo-Indian period (12,000 before present) through the present.

Several Native American tribes were present in the region in the late 18th and early 19th centuries, including the Shoshone, Ute, Bannock, Crow, Blackfoot, and to a degree the Arapaho. Tribes from the Northern Plains, Great Basin, and Columbia Plateau, as well as European Americans participated in fur trade rendezvous held along the Green River. It is also likely that other groups, including Athapaskan-speaking ancestors of the modern-day Navajo and Apache people of the Southwest, passed through this region only a few hundred years before Europeans arrived in North America.

In the existing GRRMP and the JMH tribes have identified several areas as containing tribally respected places. In 2000, Native American representatives advised the BLM that all evidence left by their ancestors, or by other people who lived in the area before the present time, deserve respect, hence their use of the term ‘respected place’. According to this definition, respected places would include prehistoric sites, cairns, stone circles, petroglyphs, isolated artifacts and any other evidence of prehistoric human occupation. It should be noted that the term ‘respected places’ is not from the NRHP or other existing laws and guidance but is verbiage BLM and others use in discussions with tribal representatives in order to retrieve the broadest range of information to assist in managing the various kinds of historical and cultural manifestations on the landscape.

Although no specific sites or locations were identified as respected places in either the GRRMP or JMH, both documents say that areas on Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, Joe Hay Rim and the Indian Gap Trail have been identified as respected places. A summary of Native American consultation written after tribal consultation field visits for the JMH in 2003, indicates that respected places can consist of a variety of features that can be expected to occur throughout the Green River Basin and not just in the areas noted above. The document goes on to say it is unlikely that any of the places identified to date meet the National Register of Historic Places (NRHP) definition of Traditional Cultural Properties, in which case site specific consultation with tribes and the Wyoming State Historic Preservation Officer will occur once a project near these sites has been proposed.

The Green River RMP and the JMH both identify Indian Gap and the Indian Gap Trail as a respected place for tribes. Both plans also state that Indian Gap and the associated Indian Gap Trail will be further researched. Subsequent research, including Tribal consultation and field visits from 1998 and 2003, revealed that two tribes identified the Gap as a historic resource. Oral history indicates that an historical Indian trail passed through the saddle between Steamboat Rim and Essex Mountain (Indian Gap). One tribal elder stated that the trail was used to bring coal from Rock Springs to the Wind River reservation perhaps as early as 1880s-1920s. A Tribal elder from a different tribe stated that the trail was used by their people while travelling between Fort Duchesne, Utah and Fort Washakie, Wyoming. The Elders mother said they would travel to either Rock Springs or Farson to buy supplies before continuing their journey. There are no existing physical remnants of the trail.

### 3.12 PALEONTOLOGICAL RESOURCES

Fossils are defined as the remains, imprints, and traces of once living organisms that have been preserved in the Earth’s crust. Fossils can be remains of plants or animals (the body or imprints of remains), or their reflected actions (trace fossils). Fossils are typically preserved in sedimentary rocks, or in a few unique situations, in volcanic igneous and some meta-sedimentary rocks. They can range in microscopic in size, (radiolarians, foraminifera, bacteria and algae, vertebrates, and pollen) to macroscopic (flowers, leaves, petrified wood, shells or invertebrate animals, and the bones, teeth tracks, feeding traces, coprolites and burrows of vertebrates).

The management of paleontological resources on public lands is directed for the protection of vertebrate and scientifically significant plant and invertebrate fossils for the benefit of the public as a whole. Significant fossils are defined by BLM policy as including all vertebrate fossil remains and those plant and invertebrate fossils as determined on case-by-case basis. The abundance of these resources varies with the different geologic formation, with some containing few or no significant fossils, and other formations being

known to produce significant fossils. Geologic units in the planning area are classified according to the Potential Fossil Yield Classification (PFYC), usually at the formation or member level, according to the probability of yielding resources of concern to land managers, primarily all vertebrate fossils and significant plant and invertebrate fossils (Map 3-15). The PFYC is intended to assist in determining proper mitigation approaches for surface disturbing activities, disposal or acquisition actions, recreation possibilities or limitations, and other BLM-approved activities and will provide consistent information for input and analysis during planning process. There are five Classes of PFYC with Class 1 being Very Low Potential, and Class 5 being Very High Potential for vertebrate or scientifically significant paleontological resources.

### 3.13 LANDS WITH WILDERNESS CHARACTERISTICS

Section 201 of Federal Land Policy and Management Act of 1976 (FLPMA) requires the BLM to maintain on a continuing basis an inventory of all public lands and their resources and other values. This inventory requirement includes maintaining information regarding wilderness characteristics. Section 201 also provides that the preparation and maintenance of the inventory shall not, of itself, change or prevent change of the management or use of the lands. Additionally, Section 202 of FLPMA requires BLM to rely on resource inventories in the development and revision of land use plans, including inventory information regarding wilderness characteristics.

In 2010, the BLM conducted an evaluation of lands with wilderness characteristics and identified nine areas that met the FLPMA definition as having wilderness characteristics. Public comment recommended an additional 18 inventory units which were evaluated in accordance with BLM Manuals and Policy. The wilderness characteristics inventory for the entire planning area was updated. The areas which met the FLPMA definition for lands with wilderness characteristics, totaling 63,918 acres, are described below (Map 3-21).

**WY040-2011-014—10,131 acres:** The area is comprised of BLM-administered lands except for a 40-acre state land parcel located in the southeast portion of the area. There are no existing rights-of-way (ROW) or mineral leases located within the area. The area is characterized by a steep valley bounded on the north by the checkerboard land pattern, on the east by State Highway 191, and on the south and west by County Road 4-34 and private and state land boundaries.

**WY040-2011-021—5,709 acres:** The area is comprised of BLM-administered lands and does not include existing mineral leases. It is bounded on the north by a range fence, on the east by an unnamed primitive two-track road, on the south by a primitive two-track road used to access two wells southeast of the area, and on the west by County Road 4-62 and the Mid-America Pipeline ROW.

**WY040-2011-019—6,067 acres:** The area is comprised of BLM-administered lands and includes existing mineral leases across 30% of the area. It is bounded on the north by the Little Mountain ridge road, on the east and south by Wyoming State Highway 191, and on the west by a large power line ROW.

**WY040-2011-029—4,817 acres:** The area is comprised of BLM-administered lands and includes existing mineral leases across 35% of the area. It is bounded on the northeast by State Highway 430, on the south by County Road 4-76, and on the west by an unnamed two-track road.

**WY040-2011-062—6,419 acres:** The area is comprised of BLM-administered lands and includes existing mineral leases across 10% of the area. It is bounded on all sides by unnamed two track roads.

**WY040-2011-059—8,014 acres:** The area is comprised of BLM-administered lands and includes existing mineral leases across 15% of the area. It is bounded on the north by the Sublette Cutoff route of the Oregon Trail, on the east by BLM Road 41-06, on the south by US highway 28, and on the west by unnamed two track roads.

**WY040-2011-069—8,114 acres:** The area is comprised of BLM-administered lands and includes existing

mineral leases across 40% of the area. It is bounded on the north by Rock Cabin Creek Road, on the east by an unnamed two-track road, on the south by County Road 4-21, and on the west by an unnamed two-track road.

**WY040-2011-074—8,232 acres:** The area is comprised of BLM-administered lands and includes some existing mineral leases. It is bounded on the north by unnamed two track roads, on the east by County Road 4-74, on the south by County Road 4-21, and on the west by unnamed two-track roads.

**WY040-2011-088—6,415 acres:** The area is comprised of BLM-administered lands and includes existing mineral leases across 20% of the area. It is bounded on the north by the Honeycomb Buttes WSA boundary road, on the east by an unnamed two-track road, on the south by County Road 4-74, and on the west by a proposed Revised Statute (RS) 2477 road.

### 3.14 VISUAL RESOURCES

The landscape found in the Wyoming Basin Province is characterized primarily by highly erodible soils and multi-colored, horizontally layered sedimentary bedrock. These conditions have generated the formation of the colorful badlands landscape common throughout most of the province. Between these badland areas, the land form is primarily low rolling or flat-topped hills. Dramatic elevation changes and steeper slopes become more dominant near the Wyoming and Wind River Mountain ranges, which offers more visual contrast due to the sweeping topography.

Man-made development within the field office include oil and gas production, ranching and other rural or small community developments, wind and solar energy development interrupt the repeating patterns of the landscape, creating disruptions to the line, shape, and texture of natural landscapes. The degree to which these intrusions affect visual resources varies greatly with each individual project.

Areas with high scenic quality and visual resource values include the Greater Sand Dunes ACEC, WSAs, Special Recreation Management Areas (SRMA), Suitable Wild and Scenic Rivers (WSR), South Pass Historic Area and the scenic vistas along Highway 28, the White Mountain Petroglyphs, rivers, the Wind River Mountains, Red Creek, Currant Creek, Little Mountain, Pine Mountain, Steamboat Mountain, major reservoirs, historic trails, the Continental Divide, snowmobile trails, and hiking trails.

#### 3.14.1 Existing Visual Resource Management Classifications

Visual resource values are defined through the implementation of the BLM's visual resource management (VRM) methodology, beginning with a classification system comprising three phases: 1) inventory (as outlined in BLM Handbook 8410-1, *Visual Resource Inventory and Evaluation*); 2) establishment of management classes through land use plans; and 3) analysis of management actions to ensure compliance (as outlined in BLM Handbook 8431-1, *Visual Contrast Rating*). These classifications are based on scenic quality, visual sensitivity levels, and viewer distance zones. The visual resource inventory (VRI) is considered, along with BLM's allocated resources, in the assignment of VRM Classes I through IV, which prescribe VRM objectives. VRIs were completed in 2009 and in 2011 (BLM 2011 [Visual Resource Inventory]) (Map 3-16). Current acreages of each VRM class are identified in Table 3-4 and shown on Map 2-17.

**Table 3-4. Visual Resource Management Classes and Acreage**

VRM Management Class	Acreage
Class I	225,717
Class II	582,672
Class III	615,492
Class IV	2,180,423

## 3.15 ENERGY AND MINERALS

BLM-managed minerals within the RSFO include leasable fluid minerals, leasable solid minerals, saleable minerals, and locatable minerals. Currently critical minerals identified through EO 13817 and SO 3359 are not being developed. For many of these minerals, deposits are unknown and current development potential is considered low. The fluid minerals include oil and gas, and geothermal resources. Leasable solid minerals include coal, trona, oil shale, and phosphate. Locatable minerals include uranium, gold, diamonds, zeolites, nephrite jade, titaniferous sand, and rare earth elements. Areas withdrawn from mineral location are shown on Maps 3-17 and 3-18 and include coal (46,944 acres), phosphate (23,003 acres), and oil shale (2,536,440 acres). These mineral classification withdrawals for coal, phosphate, and oil shale are recommended to be revoked. Saleable minerals include sand and gravel and other saleable minerals.

### 3.15.1 Leasable Fluid Minerals

The planning area contains 14 lithostratigraphic units with the Almond, Lance and Frontier being the main economic formations. Wells in the planning area are drilled as conventional wells; however, infill field development is typically directional drilled from multi-well pads. Typically, these wells range in depth from 7,000 to 13,000 feet in true vertical depth. There is a high success rate, 93%, in the planning area for spud (beginning of drilling) to completed wells. The majority of the wells spudded in the last 10 years were drilled within existing oil and gas fields.

There are currently 85 operators producing oil and gas resources in the planning area. As of October 2010, federal oil and gas leases encompass 1,722,313 acres or 60% of the acres available to lease. The number of leases and total number of acres under lease in each county are shown on Map 3-8.

Approximately 764 wells were completed from January 1, 1999 to December 31, 2009. Since 1999, there has been a variable trend in oil and gas well completions on federal oil and gas leases. In 1999, 39 wells were spudded, with a peak in 2006 of 102 well spuds. In 2010 the total fell to 40 wells (Map 3-9).

### 3.15.2 Geothermal Resources

There are no outstanding applications or active federal geothermal leases within the planning area at this time. A lack of leasing activity is often indicative of a low to non-existent demand for federal geothermal resources and of a lack of economically important geothermal resources in this area. There is no current local or regional dependence on the public lands for geothermal resources within the planning area. There are no known or identified geothermal resources suitable for commercial development within the planning area.

### 3.15.3 Coal

Coal on federal lands is managed by the BLM as a leasable solid mineral under the Mineral Leasing Act of 1920. The BLM manages coal leasing as well as other administrative duties related to coal production from federal coal lands throughout the United States pursuant to Title 43 of the Code of Federal Regulations (CFR) Part 3400, Coal Management regulations. Wyoming has the largest federal coal program in the BLM. Coal mining is a significant part of the economy in Sweetwater County Wyoming. In the planning area, coal mining occurs on federal, state, and private lands. Coal deposits underlie a large portion of the planning area, but vary in depth, thickness, and quality. Most of today's economically important coal deposits occur on the flanks of the Rock Springs Uplift. Currently there are two companies mining coal in the planning area. The combined coal production from all of the mines in the Planning Area for the year 2009 totaled about 9.2 million tons with approximately 1.5 million tons federal. There are no outstanding or pending applications for federal coal leases or exploration licenses on lands within the Planning Area. The last leasing was completed in 2013 and recent coal production has been in decline.

### 3.15.4 Trona (Sodium)

Trona is a relatively rare sodium carbonate mineral with wide geographic distribution. It is found in Africa, China, Turkey, Mexico, and the U.S. (BLM 2012a). In the U.S., trona deposits are found in California, Nevada, Utah, Colorado, and Wyoming. However, Wyoming, and specifically the Rock Springs and Kemmerer Field Offices, are home to the largest known trona deposits in the world (Map 3-10). Wyoming is the U.S. and world leader in trona mining and soda ash production. Wyoming mines produced more than 95% of U.S. soda ash and 38% of the world's production of soda ash in 2006 (WSGS 2011e).

The Eocene Green River Formation, located in the Green River Basin in southwest Wyoming, contains the world's largest known deposit of trona. The trona was deposited in ancient Lake Gosiute which covered most of southwestern Wyoming at that time. During a number of dry periods, Lake Gosiute's level dropped and as the water increased in salinity, trona and other evaporite minerals such as halite were deposited (Wiig et. al. 1995). This deposit is located in the southwest quarter of the planning area principally within the checkerboard lands.

### 3.15.5 Oil Shale

The richest oil shale resources in the planning area are located along White Mountain west of Rock Springs, southwest of the town of Farson in the northern part of Sweetwater County, and in the Kinney Rim area on the western flank of the Washakie Basin (Map 3-10). The western Washakie Basin is most promising. This area contains an estimated 55 billion barrels of in-place oil and covers roughly 302,470 acres (BLM 2012a). However, the oil shale deposits in the Green River Basin of Wyoming are low grade (USGS 2011b). Higher quality resources in Colorado and Utah have been the focus of the companies involved in developing technologies to extract the oil.

### 3.15.6 Phosphate

In Idaho, Utah, and Wyoming the principle phosphate-bearing geologic layer is the Phosphoria formation, a very light-colored, cliff-forming sandstone. This Permian rock is wide-spread in Wyoming and is found in the overthrust belt of western Wyoming and the flanks of each of the major mountain ranges in the state. It does not outcrop in the planning area and instead is deeply buried under more recent sediments (Love and Christensen 1985).

Phosphate resources are not known to exist in currently economical minable quantities in the planning area. No exploration or mining for phosphates has occurred in the field office, nor is occurring as of March 2012 (Bautz 2012). The occurrence potential of phosphate is not determined due to the lack of useful data. There is no potential for developing phosphate in the planning area.

### 3.15.7 Uranium

While uranium minerals are found in the northeastern portions of the planning area, no current in-situ recovery or traditional uranium mines are operating, nor are there any known plans for uranium mines within the planning area. No new exploration or surveying has taken place in the field office (Bautz 2012).

### 3.15.8 Gold

Gold occurs in primary vein deposits, in placer deposits and in disseminated deposits. In the planning area, it occurs primarily in placer deposits. A placer deposit is a concentration of natural material that has accumulated in unconsolidated sediments of streambed, beach, or area where sediments collect. It has been moved from its original location in solid rock (the lode) by weathering and accumulates in placer deposits because of its weight and resistance to corrosion (Kirkemo 1991).

A total of 62 active placer mining claims for gold are located in Fremont County within the planning area (BLM Undated a through c). The WDEQ/Land Quality Division is aware of three active exploration operations in the Dickie Springs area on private land. The field office has approved three Plans of Operation

for placer gold exploration operations since August of 2000 on mining claims also in the Dickie Springs area. In addition, RSFO approved a Notice level exploration operation for placer gold in July of 2011 on mining claims in the Oregon Gulch area. However, no new gold exploration or mining operations are known to be proposed or planned (BLM 2012a, Bautz 2012).

### **3.15.9 Diamonds**

Within the planning area diamond occurrences are associated with kimberlite pipes and with lamproite igneous rocks. The Wyoming State Geological Survey has identified diamonds in placer deposits at the Cedar Mountain breccia pipes southwest of the town of Green River. This area is classified as having high potential for occurrence of diamonds. The Leucite Hills lamproites north and northeast of Rock Springs are potential host rocks for diamonds. Diamond stability indicator minerals have been found there although no diamonds have been discovered. The potential for the occurrence of diamonds in the Leucite Hills lamproites is classified as low.

There are no current mining claims, Notices or Plans of Operation to explore for or develop diamond resources within the field office. The potential for commercial development of diamonds is considered very low. Recreational and hobby collection are expected to continue at the levels currently being experienced.

### **3.15.10 Zeolites**

The zeolite clinoptilolite occurs near Fort LeClede in the southeastern portion of the planning area. This zeolite is an almost complete alteration of the Eocene Adobe Town Member, a volcanic tuff in the Washakie Formation. The known zeolite deposits in this area are classified as high occurrence potential. The area underlain by the Washakie Formation is classified as low potential.

A zeolite mine has operated in the Fort LaClede area but is currently inactive. There are no current mining claims, Notices or Plans of Operation to explore for or develop zeolite resources within the planning area. The potential for development of zeolite is expected to be low.

### **3.15.11 Nephrite Jade**

Nephrite jade, also referred to as Wyoming Jade, is one of two distinct and unrelated mineral species to which the term “jade” is applied, the other being the mineral jadeite. The Wyoming State Mineral and Gem Society has identified a general area of detrital jade that runs from Farson, eastward through the Red Desert in Sweetwater County to Seminole Dam, north to Alcova, westward through Lander and southwest back to Farson (WSG&MS 2009). The portion of that area located within the field office is classified as moderate potential for occurrence of nephrite jade.

The potential for development of nephrite jade at a commercial scale in the planning area is considered to be very low during the planning period. Collection by hobbyists is expected to continue at the current levels during the planning period.

### **3.15.12 Titaniferous Sands**

Titaniferous (black) sands occur in the planning area in the form of moderately to strongly indurated black sandstones of the Late Cretaceous Mesaverde Group. They are found about 40 miles south of Rock Springs, east of Richards Mountain near the Colorado border, about 25 miles south-southeast of Rock Springs, and about 15 miles east-southeast of Rock Springs (Root et. al. 1973). These identified deposits are classified as high potential for occurrence of titaniferous sands.

There are no current mining claims, Notices or Plans of Operation on file or in process to explore for or develop titaniferous sand deposits. The development potential for titaniferous sands is considered very low.



### 3.15.13 Rare Earth Elements

There are no known deposits of rare earth elements in the planning area. There has been no systematic sampling for or evaluation of rare earth elements in the planning area. Due to sparse and incomplete data, the occurrence potential is not determined. The RSFO is not aware of mining claims, notice or plan level exploration work that are active or under application rare earth elements.

### 3.15.14 Sand and Gravel

Most of the aggregates mined in the planning area are used for road construction and maintenance. Decorative and dimensional stone is generally used for commercial and residential construction in the region and beyond. Sand and gravel resources come from many geographic and geologic formations including current stream formed floodplains and gravel bars, ancient gravel deposits, or hard rock formations of fractured or massive granite, quartzite, limestone, or conglomerates. Sand and gravel resources are found along drainage channels, particularly the Green River and its tributaries. Sand and gravel are also found in outwash material originating from glaciations and erosion of the Wind River and Uinta Mountains. Buttes and plateaus capped by the Bishop Conglomerate are also sources of sand and gravel (BLM 2012a).

Within the planning area, sand and gravel has been the primary mineral material produced from federal lands. Sand and gravel is used primarily for construction and road maintenance projects. BLM's Land and Mineral Legacy Rehost 2000 System (LR 2000) records show 62 authorizations for mineral materials sites on federal lands are currently in effect covering a total of 3,909.45 acres. The majority of authorizations (48) were issued in the form of Rights of Way (ROW) to the Wyoming Department of Transportation for highway construction and maintenance. However, not all of these pits are currently active. These ROW material pits range in size from 2.75 acres to 480 acres and cover a total of 3,295.45 acres within the field office (BLM Undated d1 through d10).

### 3.15.15 Other Saleable Minerals

Decorative stone (moss rock), dimension stone (flagstone), decorative boulders, and petrified wood are also present in the planning area (BLM 2012a). Moss rock and dimension stone are typically collected from one or more sandstones found in the planning area. Dimension stone is generally derived from calcareous or tuffaceous sandstones, limestones, or massive shales and siltstones that cleave on predictable planes. Resources are diverse and widespread within the planning area (Bautz 2012).

Petrified wood is typically collected from the Eden Valley and Blue Forest areas. This saleable mineral material is recreationally collected for hobby purposes (up to 25 pounds per day/250 pounds per year) and is not commercially available (WYD000-2016-004) within the planning area. If not prohibited by WYD000-2016-004 the BLM mineral materials program (43 CFR 3600), allows for the exploration, development, and disposal of salable minerals through sales, community pit, common use or free use permits.

## 3.16 LIVESTOCK GRAZING MANAGEMENT

The planning area contains 79 livestock grazing allotments covering approximately 5.27 million acres and authorizes 304,259 animal unit months (AUM) per year (Map 3-11). However, in recent years, actual use has been less than 200,000 AUMs. Annual fluctuations in the authorized AUMs are the result of user demands, climatic conditions, and/or from the collection of monitoring information. A portion of the grazing allotments contain lands unsuitable for livestock grazing, and approximately 15,110 acres in the planning area are unallocated lands.

The Green River RMP authorized a total of 318,647 active use AUMs in 1997. Currently, there are 304,261 active use AUMs permitted within the planning area. This discrepancy between the 1997 AUMs and current AUMs is a result of livestock conversions (converting from sheep to cattle use typically results in a

reduction in active AUMs due to differences in foraging habits), AUMs in allotments that are now managed by another BLM field office and AUMs that were retired. As a result of these actions the current active use that can be authorized within the planning area boundary is 304,261 AUMs.

Starting in 1998, the BLM started assessing grazing allotments for adherence to the approved Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management as mandated in the 1995 revision to the 43 CFR 4100 grazing regulations (BLM 1997). Grazing permits/leases are offered and accepted with the understanding that resource conditions will be evaluated to determine if they conform to the Wyoming Land Health Standards approved by the Secretary of Interior on August 12, 1997 (Appendix G). These standards are used to allow sustainable livestock grazing management to continue while protecting watersheds, riparian and upland ecosystems, and wildlife habitat. A summary of the current land health conditions (as per the Wyoming Land Health Standards) for the grazing allotments located within the planning area are provided in Table G-1 in Appendix G.

Water projects are the most numerous range improvement and are intended to improve livestock distribution without fragmenting habitat with fences. Most existing water developments were constructed in the 1960s and 1970s.

The majority of the allotment boundaries within the planning area have been fenced, with pasture division fences within some allotments. The major highways in this area have also been fenced. New fences are designed to reduce impacts on big game animals and comply with BLM Handbook H-1741-1. Since the release of the previous RMP in 1997, the following new range improvement projects have been constructed within the planning area:

- 37 Fences
- 11 Reservoirs
- 19 Water Wells
- 21 Water Troughs
- 7 Stream Improvements
- 24,539 Acres of Brush Control

These projects were installed to benefit livestock that graze the forage but many also benefit wildlife and generally promote improved rangeland health within the planning area.

There are a number of methods that livestock managers use to evaluate land health which can reveal trends in the composition of the plant community or productivity of a plant community. Rangeland monitoring occurs throughout the planning area as part of the land health assessment process. Rangeland monitoring information has been analyzed for all of the allotments in the planning area. Overall rangeland trend as related to livestock grazing, is static to upward. Many allotments are managed under grazing rotations and seasons of use designed to meet soil cover and desired plant species growth requirements. Where livestock grazing has been identified as a significant causal factor for not achieving land health standards, grazing use has been changed.

### **3.17 RECREATION AND VISITOR SERVICES**

The BLM provides opportunities for outdoor recreation and nature-based tourism under the concept of multiple-use management. Recreational activities occurring on public lands are multi-faceted, generally considered as non-consumptive and typically requires minimal regulatory constraints. People value natural landscapes, the freedom to choose a particular activity, the opportunity to test skills, time spent with family and friends, and the opportunity for discovery. Recreation on public lands also contributes to local economies. There are a number of recreation service providers in the area (e.g., hotels, outfitters, equipment manufacturers and dealers, and restaurants) that depend on the public lands, in part, for their livelihood.

### 3.17.1 Recreational Use

Types of recreational use include dispersed recreation and developed recreation. Dispersed recreation consists of activities of an unstructured type that are not confined to specific locations or dependent on developed recreation sites. Dispersed recreation occurs throughout the planning area over a wide range of ecosystem types, and includes sight-seeing, touring, backpacking, horseback riding, geocaching, hiking, off-highway vehicle (OHV) use, photography, wildlife viewing, fishing, other water related activities, hunting, and camping. The RSFO manages many developed recreation sites scattered throughout the RSFO, consisting of day use/picnic areas, campgrounds, interpretive sites, and historic site tourism. Developed recreation sites provide excellent opportunities and starting points for activities such as camping, hiking, backpacking, horseback riding, wildlife viewing, sightseeing, OHV touring, fishing, and hunting.

Special recreational permits (SRP) are issued to manage visitor use, protect natural and cultural resources, and achieve the goals and objectives of the recreation. The five general categories of SRPs are commercial, competitive, vending, individual or group use in special areas, and organized group activity and event use.

The planning area administers approximately 20 SRPs per year and this number has remained relatively stable from year to year. Within the planning area SRPs are administered for activities and events such as outfitting and guiding for hunting activities, fishing, floating, horseback rides, wild horse viewing tours, interpretive tours, livestock drives, horseback fund raising events, horse endurance rides, yoga trips, and llama treks. Recreation Management Areas are the BLM's primary means of managing recreational use of the public lands. A Recreation Management Area is a land unit where recreation and visitor services are recognized as a primary resource management consideration and specific management is required to protect the recreation opportunities (BLM 2014 [BLM H-8320-1]). Recreation Management Areas are designated as either a SRMA or an extensive recreation management area (ERMA).

A SRMA is an administrative unit where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance, and/or distinctiveness, especially as compared to other areas used for recreation. The RSFO has six existing SRMAs, Killpecker Sand Dunes, Oregon and Mormon Pioneer NHTs, Continental Divide National Scenic Trail, Continental Divide Snowmobile Trail SRMA, Green River, and Wind River Front.

An ERMA is an administrative unit that requires specific management consideration in order to address recreation use, demand, or recreation and visitor services program investments. ERMAs are managed to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA.

## 3.18 Transportation

The BLM-managed transportation system is extensive and complements the public road system. The existing network of roads has been built and is maintained primarily by the oil and gas industry. Section 9113 of the BLM Manual determines the functional classification of roadways, which also determines design speeds.

There are 225 miles of federal highways in the planning area. Interstate 80 is a 4-lane federal highway and is maintained year-round by the Wyoming State Highway Department. There are 245 miles of state highway in the planning area, including Wyoming 28, 430, 530, 370, 371, 372, and 373. Approximately 950 miles of county roads are located within the planning area. These roads are mostly unpaved and were constructed under authority of Revised Statute 2477 (43 United States Code (USC) 932, repealed October 21, 1976). A Notice of Filing has been made on these roads by the counties. Approximately 450 miles of BLM roads are found within the planning area.

The Rock Springs Municipal Airport is located on a mesa eight miles east of Rock Springs. The airport consists of two lighted paved runways, a commercial airport terminal, and numerous hangars. The City of Green River owns an airstrip located approximately four miles south of the city. There are several heliports in the field office including the BLM heliport north of Rock Springs.

River access is provided by several boat ramps located along the Green River near Flaming Gorge Recreational Area and the Fontenelle Recreation Area.

The Union Pacific Railroad, which provides freight service to the area, generally parallels I-80. Spur lines serve the coal and trona mines and the SF Phosphates Ltd. fertilizer plant southeast of Rock Springs. The width of the mainline railroad is 200 feet.

### 3.18.1 Off-Highway Vehicle Use

43 CFR 8340.0-5 defines an OHV (referred to in the regulations as an off-road vehicle) as “any motorized vehicle capable of, or designated for, travel on or immediately over land, water, or other natural terrain.” Certain authorized vehicles were excluded from this definition including non-amphibious registered motor boats; any military, fire, emergency, or law enforcement vehicles while being used for emergency purposes; vehicles whose use is expressly authorized by the Authorized Officer, or otherwise officially approved; vehicles in official use; E-bikes under varying circumstances; and any combat or combat support vehicle when used in times of national defense emergencies. The national objectives for OHV management are to provide for OHV use while protecting natural resources, promoting public safety, and minimizing conflicts among the various users of public lands (BLM 2001 [National OHV Strategy]).

OHV use in the planning area has local as well as regional and national significance. Many OHV enthusiasts visiting the planning area come from surrounding areas such as Gillette and Casper, Wyoming, Colorado’s Front Range, and Utah’s Wasatch Front. Recreational OHV opportunities exist for both cross-country and designated route use and is often linked to other recreation activities such as dispersed camping, hunting, and fishing. Additionally, OHVs have become indispensable tools for resource-related industries including ranching, mineral exploration, and oil and gas production. OHV clubs and organizations are present in the communities within the planning area. These groups hold various OHV endurance, race, and challenge course events, including four annual events and an average of three one-time events each year.

## 3.19 FORESTRY AND WOODLANDS

The RSFO contains approximately 7,900 acres of commercial forestland divided between four timber compartments: Wind River Front, Pine Mountain, Little Mountain and Hickey Mountain-Table Mountain. The majority of the commercial conifer species are located along the Wind River Front. These stands are primarily found extending from timbered areas on Forest Service land. The stands in the planning area extend downslope away from the Wind River Range reaching the transition zone of sagebrush hills. Moderate-sized stands of commercial conifers are also found on the Pine Mountain compartment and Little Mountain compartment near the Colorado and Utah borders. These two compartments also contain large stands of juniper scattered throughout their lower elevations. The Hickey Mountain-Table Mountain unit is composed primarily of scattered stands of juniper with small pockets of aspen and Douglas-fir intermixed on Hickey Mountain. Pine Mountain, Little Mountain, and the Wind River Front all have firewood, post/pole, and Christmas tree sale areas that are designed to meet public demand and help achieve forest management objectives for these areas.

The conifer stands can be divided into two categories. The first category includes the north-facing, cooler slopes that are mostly occupied by the Engelmann spruce/subalpine fir complex (spruce-fir) with occasional Douglas-fir intermixed. This complex is dominated by subalpine fir. The second category includes the south, east, and west facing slopes which are occupied by lodgepole pine and the limber/white bark pine complex, as well as spruce-fir in the transition zone from north to east. Lodgepole pine is the most prevalent

species in this complex. Aspen stands are found throughout the field office on a variety of aspects. The most dominant occurrences are on east to northeast.

Based on the 1985 calculations, the planning area could annually harvest from 104,000 cubic feet to 225,000 cubic feet of timber, depending upon management constraints. A large number of subalpine fir seedlings are becoming established under lodgepole, aspen, and Douglas fir overstories and may affect the future commercial quality of many stands. Subalpine fir will become the major stand component without management activity, such as harvesting, that favors the other species. This could have an important effect on the merchantability of forest products on BLM-administered lands since Subalpine fir is a less desirable commercial species because of its lower strength, nail holding characteristics, its higher susceptibility to rotting and higher warpage percentage.

The large expanse of juniper acreage within the southern half of the planning area is currently receiving very little management activity. Only a few permits are sold annually for juniper firewood and Christmas trees. Reforestation is being accomplished by natural seeding and occasionally by planting containerized stock or direct seeding. At present, no timber stand improvements (e.g., thinning, treatments) are being conducted in the field office other than through post/pole and Christmas tree sales. At the present level of harvesting for these products, the acreage treated is insignificant. Some of the field office supports forest and woodland ecosystems which provide multiple benefits and uses (personal and commercial).

## **3.20 LANDS AND REALTY**

The lands and realty program is designed to manage the underlying land base and their boundaries that hosts and supports all resources and management programs. The primary activities of the lands and realty program include: (1) land use authorizations (e.g., ROW, leases and permits); (2) land tenure adjustments (e.g., sales, exchanges, purchases); and (3) withdrawals, classifications, and other segregations. The BLM works cooperatively to execute the lands and realty program with federal agencies, the State of Wyoming, counties and cities, and other public and private landholders.

Land use authorizations include various authorizations to use public surface for ROWs, leases, permits, and easements under Section 302(b) and 501(b) of the FLPMA; Mineral Leasing Act of 1920, as amended; Recreation and Public Purposes (R&PP) leases under the R&PP Act of June 14, 1926 (43 USC 869 et seq.). Past and current conditions associated with these components of land use authorizations are described below.

### **3.20.1 Rights-of-way, Lease, Permits and Easements**

Sections 302(b) and 501(b) of the FLPMA authorizes the BLM to issue ROWs, leases, permits, and easements for the use, occupancy, and development of public lands. Short-term permits are issued annually for commercial filming projects. Section 501(b) of the FLPMA and Section 28 of the Mineral Leasing Act of 1920, as amended, authorize BLM to grant, issue, or renew ROWs on public lands.

### **3.20.2 Recreation and Public Purposes Act Leases and Conveyances**

The R&PP Act authorizes the BLM to lease or convey public surface to state and local governments and qualified nonprofit organizations for recreation or public uses. Lands are leased or conveyed for less than fair market value or at no cost for qualified uses. Examples of typical uses under the R&PP Act include historic monument sites, campgrounds, schools, parks, public works facilities, and hospitals.

### **3.20.3 Land Ownership Adjustments**

Land ownership (or land tenure) adjustment refers to those actions that result in the retention of public land, disposal of public land, or the acquisition by the BLM of non-federal lands or interests in land. FLPMA

Sections 201 and 202 state the Secretary shall “prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values...and...develop, maintain, and, when appropriate, revise land use plans which provide by tracts or areas for the use of the public lands, respectively.” FLPMA section 102 requires that public land be retained in public ownership unless, as a result of land use planning, disposal of certain parcels is warranted. Tracts of land that are designated in BLM land use plans as potentially available for disposal are more likely to be conveyed out of federal ownership through an exchange rather than a sale. This preference toward exchange over sale is established in BLM policy. Acquisition of and interests in lands are important components of the BLM’s land tenure adjustment strategy. Acquisition of and interests in land can be accomplished through several means, including exchange, purchase, donation, and condemnation, as described below. Therefore, as mandated by FLPMA Sections 201 and 202, tract(s) of public land as listed in Appendix K have been found to meet criteria for disposal in FLPMA Section 203 and/or FLPMA Section 206 during this land use planning effort.

## Exchanges

Exchange is the process of trading lands or interests in lands. Public lands may be exchanged for lands or interests in lands owned by corporations, individuals, or government entities. Exchanges are the primary means by which land acquisition and disposal are carried out. Except for those exchanges that are congressionally mandated or judicially required, exchanges are voluntary and discretionary transactions with willing landowners and serve as a viable tool for the BLM to accomplish its goals and mission. The lands to be exchanged must be of approximately equal monetary value and located within the same state. Exchanges also must be in the public interest and conform to applicable BLM land use plans.

## Purchases

The BLM has the authority under Section 205 of the FLPMA, to purchase lands or interests in lands. Similar to other acquisitions, purchase is used to acquire key natural resources or to acquire legal ownership of lands that enhance the management of existing public lands and resources. Acquiring lands and interests in lands through purchase helps consolidate management areas to strengthen resource protection. Purchases are used primarily to enhance recreational opportunities, acquire crucial wildlife habitats and to protect cultural resources.

## Land Sales

Section 203 of the FLPMA authorizes the sale of public lands. The objective of BLM land sales is to provide a means for disposal of public lands that are found, through the land use planning process, to be suitable for disposal. Public lands must be sold at not less than fair market value and meet the sale criteria of the FLPMA. Properties identified for disposal are located in Appendix K.

### 3.20.4 Withdrawals

Withholding an area of Federal land from settlement, sale, location, or entry under some or all of the general land laws for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program. Multiple new withdrawals have been proposed (Maps 2-2 thru 2-4). There is also a need to review existing withdrawals to determine if the need to continue with the withdrawal still exists (Map 3-17 & 3-18). Withdrawals and classifications will be completed on a case-by-case basis.

If it is determined by a withdrawal review that a withdrawal should be relinquished, partially or in its entirety, recommendations will be made for an opening order that may be incorporated in a public land order that revokes a withdrawal published in the *Federal Register*. If a withdrawal expires it can no longer be extended and the land open automatically open to operation of the law(s) to which the land was closed.

### **3.20.5 Desert Land Entries**

No BLM-administered public lands within the planning area are available for agricultural entry under Desert Land Entry (43 CFR 2520) due to one or more of the following factors: unsuitable soils, salinity contributions into the Colorado River System, lack of water supplies, rugged topography, lack of access, small parcel size, and presence of sensitive resources.

### **3.20.6 Rights-of-Way**

The realty program is primarily driven by the local mineral industry, and the majority of ROWs are issued in support of oil and gas development. Approximately 58,900 acres are under ROW within the planning area. Of this total, there are 6,200 acres of oil and gas access road and 20,900 acres of pipeline. The remaining acreage is for power lines, waterlines, telephone cables, highways, and other facilities. An average of 109 realty grants are processed annually. Of these, 33% are oil and gas pipelines and 30% are access roads for approved Applications for Permit to Drill locations.

## **3.21 RENEWABLE ENERGY**

The BLM manages vast stretches of public lands that have the potential to make significant contributions to the nation's renewable energy portfolio. By working with local communities, state regulators, industry, and other federal agencies, the Department of the Interior and the BLM continue to strengthen America's energy independence by providing sites for environmentally sound development of renewable energy on public lands. This RMP will identify areas within the planning area that are open to both wind and solar renewable energy development. However, the focus of this section will be on wind energy development because unlike solar, there is high potential for commercially viable wind energy in the planning area.

### **3.21.1 Wind Energy**

The BLM completed a Programmatic EIS relating to the development of wind energy on public lands in June 2005. This EIS provides an analysis of the development of wind energy projects on public lands in the West. In conjunction with the publication of this EIS, the BLM amended 52 land use plans to allow for the use of applicable lands for wind energy development. BLM RMPs such as the Green River RMP (1997) may be able to use this EIS to analyze anticipated impacts from individual wind ROW applications.

In addition, the BLM issued a wind energy policy in December 2008 to provide guidance on BMPs. These BMPs include measures to mitigate the potential impact of wind energy development on birds, wildlife habitat, and other resource values, as well as guidance on administering wind energy authorizations.

According to wind resource potential maps (Map 3-12) provided by the U.S Department of Energy National Renewable Energy Laboratory, the wind resource level for these areas is marginal to good.

### 3.21.2 Solar Energy

On January 18, 2017, the BLM enacted the Solar and Wind Energy Rule. This rule amended Title V of FLPMA and the BLM's ROWs under FLPMA and 43 CFR, Part 2800 to update the BLM's rate and fee structure for new solar and wind development and testing. This was done to ensure that these rates and fees reflect current market conditions. The Rule also provides flexibility to operators, develops a competitive bidding process, and encourages development in designated leasing areas that are most amenable to high generation with low resource conflicts. Wyoming was not included in the decision to designate designated leasing areas because the demand for solar energy related ROWs within the planning area is low. Applications for solar energy projects will be processed and authorized as ROWs under Title V of the Federal Land Policy and Management Act (FLPMA) and 43 CFR, Part 2800. Utility-scale solar power or photovoltaic electric generating facilities must comply with the BLM's planning, environmental, and right-of-way application requirements in 43 CFR, 2800-2809. Currently there is one 80 megawatt solar development located within the planning area that has been in operation since 2019.

## 3.22 SPECIAL DESIGNATIONS

The Special Designations and Management Areas (SD/MA) discussed in this section include ACECs, WSAs, and other Management Areas (MA). Areas managed under special designations are regulatory or congressionally mandated and are designed to protect or preserve certain resource qualities or uses. Locations of SD/MAs found in the planning area are identified in Map 2-29. The environment of other MAs is considered unique in some respects (i.e., vegetation, cultural); and therefore, it is necessary to apply different management prescriptions to these areas for the protection of the resources for which the MA is identified.

### 3.22.1 Special Designation—Areas of Critical Environmental Concern and Other Management Areas

#### Areas of Critical Environmental Concern

Pursuant to the FLPMA of 1976, Section 103(a), an ACEC is defined as an area “within public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.” While an ACEC may emphasize one or more unique resources, other existing multiple-use management can continue within an ACEC, provided the uses do not impair the values for which the ACEC was established.

A total of 10 ACECs currently exist within the planning area (Map 2-29). The relevant and important values and acres associated with the ACECs are shown in Table 3-5 below.

**Table 3-5. Areas of Critical of Environmental Concern Located in the Planning Area**

ACEC	Relevant and Important Values	Acres
Cedar Canyon	Cultural, Wildlife	2,550
Greater Red Creek	Cultural, Wildlife, Special Status Plant Species	131,890
Greater Sand Dunes	Cultural, Scenic, Recreation, Wildlife, Special Status Plant Species	38,650
Natural Corrals	Cultural, Historic, Wildlife	1,142
Oregon Buttes	Cultural, Historic, Scenic, Geologic	3,450
Pine Spring	Cultural, Paleontological, Scenic	6,030



ACEC	Relevant and Important Values	Acres
South Pass Historic Landscape	Cultural, Scenic, Wildlife.	53,940
Special Status Plant	Special Status Plants	Acres will vary by the identification of new plant locations
Steamboat Mountain	Wildlife, Cultural, Scenic	43,270
White Mountain Petroglyphs	Cultural, Wildlife, Recreation	20

## Other Management Areas

As part of the RMP planning process, other management areas will be reevaluated to determine if the reasons for which they have received additional management are still present and require continued management attention and if current management is sufficient to protect these values.

### 3.22.2 Special Designations—Wilderness Study Areas

In 1964, Congress passed the Wilderness Act, establishing a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, most land considered for and designated as wilderness was managed by the United States Forest Service and National Park Service. With the passage of FLPMA in 1976, Congress directed BLM to inventory, study, and recommend which public lands under its administration should be designated wilderness.

BLM manages these potential wilderness areas as WSAs (USDI, BLM 1990b). During the time that the Congress considers an area for wilderness, which can be many years, designated WSAs require special management practices to preserve the wilderness characteristics that make the areas appropriate for designation. Section 603(c) of FLPMA provides direction to the BLM on the management of Wilderness Study Areas and states that with some exceptions, 'During the period of review of such areas and until Congress has determined otherwise, the Secretary shall continue to manage such lands according to his authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness.' This language is referred to as the "non-impairment" mandate. The BLM developed a non-impairment standard used in manual section 6330 to meet this mandate. Only Congress can designate or release Section 603 WSAs, and their status will not change as a result of this planning process.

There are no congressionally designated Wilderness areas within the planning area. However, there are 13 WSAs mandated by Congress to be protected under Manual 6330 for Lands under Wilderness Review (Map 2-29).

### 3.22.3 Special Designations—Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968 provides for the protection of certain free flowing rivers and immediate environments that possess Outstandingly Remarkable Values. As guided from BLM Manual 6400, the BLM is committed to carrying out the provisions of the Wild and Scenic Rivers Act of 1968 and shall identify and evaluate all rivers located on BLM-administered lands to determine if they are appropriate for addition to the National Wild and Scenic River System. As appropriate, the BLM shall make recommendations for legislative actions to accomplish such additions. The BLM shall take actions as necessary to ensure proper management of river corridors.

The National Wild and Scenic River System is a system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and

other similar values and are preserved in a free-flowing condition. The system includes three types of river classifications. These classifications are based on an analysis of the present level of development within the stream corridor at the time the inventory was completed. These classifications also control the level of development that may occur within a stream corridor, once a stream is determined eligible or suitable and a classification is assigned. The classifications are:

1. **Wild:** Rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.
2. **Scenic:** Rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads.
3. **Recreation:** Rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past.

In September 1992, a final report was completed evaluating BLM-administered lands along streams and waterways for potential WSR designation within the planning area. It was determined that for this RMP planning process this report was sufficient and no additional evaluation would occur. The final report resulted in nine segments being found eligible for WSR designation, with four of the nine waterways determined to be suitable for Wild and Scenic River designation (Map 2-29).

A summary of the Wild and Scenic Rivers Suitability Review of BLM-Administered Public Lands included nine waterways, as identified in Appendix L. The nine waterways include the Red Creak Unit (25.25 miles), Current Creak Unit (23.8 miles), Pacific Creek (34.05 miles), North Fork of Bear Creek (12 miles), Canyon Creek (11.15 miles), Green River (71 miles), Sweetwater River upstream & downstream (29.05 miles), and the Big Sandy River (74.6 miles); see Table L-16, Summary of Wild and Scenic River Suitability Review.

BLM determined that seven of the BLM-administered public land parcels (9.7 miles) along the upstream portion of the Sweetwater River review segment meet the wild and scenic river suitability factors and should be managed to maintain or enhance their outstandingly remarkable values for any possible future consideration for inclusion in the wild and scenic river system. The suitable determination is based on the uniqueness of the diverse BLM-administered land resources and their regional and national significance, making them worthy of any future consideration for addition to the wild and scenic river system.

### **3.22.4 Special Designations—National Historic Landmarks**

The South Pass National Historic Landmark (NHL) was congressionally designated in 1961 to preserve and protect the nationally significant character of the historic landscape that was so important to emigrants (Map 2-29). South Pass made possible the westward migration that began in the 1840s by providing a relatively gentle pass across the mountains, crossing the Continental Divide. The NHTs located within the planning area all pass through and are part of the historic landscape. Several efforts have been made to designate an official NHL boundary. However, these efforts have not been successful. Consequently, through a letter of agreement in February 2006 with the Wyoming State Historic Preservation Office, the NHL boundary has been defined as the same boundary as the South Pass ACEC. This will continue until an official boundary is designated.

### **3.22.5 Special Designations—Backcountry Byways**

The BLM began a byway program in 1989 with a primary focus of enhancing recreational opportunities. A National Scenic Byway System was created two years later, under section 1047 of the Intermodal Surface Transportation Efficiency Act of 1991. This act recognized the BLM back country and scenic byways as a component of the National Scenic Byway System.

There are five Back-Country Byways currently designated. These are the Tri-Territory Loop, the Lander Road, Red Desert, Fort Laclede Loop and the Firehole-Little Mountain Loop. There is one scenic byway currently designated, which is the Wild Horse Loop Tour. There is one All-American Road designation, which is the Flaming Gorge - Green River Basin Scenic Byway (Map 3-19).

### 3.22.6 Special Designations—National Historic Trails

NHTs are congressionally designated parts of the National Trails System, administered by the National Park Service. The planning area contains more linear miles of intact NHTs, NHT candidates, and historical wagon roads than any other field office in Wyoming. The field office contains a high number of historic properties for which setting is a very important attribute including NHT, NHT candidates and sites associated with NHTs.

There are four NHTs located within the planning area; they include the Oregon, Mormon-Pioneer, California, and the Pony Express trails (Map 3-7). The Overland and Cherokee Trails are not congressionally designated but are considered candidates for inclusion within the National Trails System. Both are eligible for nomination to the NRHP. See 3.11 Cultural Resources section for more information on Indian Gap and Indian Gap Trail.

#### National Scenic Trail (NST)

There is one NST located within the planning area (Map 2-29); the Continental Divide National Scenic Trail (CDNST). The CDNST is maintained by limiting (and in some cases precluding) surface disturbing activities or facilities on or within 1/4 mile of the trail(s). There are adjacent trails and primitive two track roads providing access. The CDNST is managed as a SRMA (see 3.17.1 Recreational Use).

## 3.23 SOCIOECONOMICS

BLM RMP decisions may have economic and social impacts on stakeholders to BLM-administered lands, and to communities and the general public in and beyond the planning area. Appendix D of the *BLM Land Use Planning Handbook (H-1601-1)*, “Social Science Considerations in Land Use Planning Decisions,” provides guidance on analysis of social and economic information in the BLM planning process. The purpose of such analysis is to contribute to informed, sustainable land use planning decisions.

Earlier in the planning process for this RMP, the BLM prepared a Socioeconomic Baseline Report (BLM 2013). The purpose of the baseline report, as described in Appendix D of the Handbook, is to “characterize existing conditions and trends in local communities and the wider region that may affect and be affected by land use planning decisions.” The baseline report provides considerable detail on social conditions and trends, economic conditions and trends, and BLM public land uses and values. The report contains considerable detail on these points and additional information not mentioned here, as well as references for the data and information summarized here.

The socioeconomic study area for this planning action has been defined to include five counties in southwestern Wyoming located within, or in proximity to, the boundary of the RSFO: Fremont, Lincoln, Sublette, Sweetwater, and Uinta. Most of Sweetwater County is within the RSFO. Although most of Fremont, Lincoln, Sublette, and Uinta counties fall outside of the RSFO, these counties were included in the socioeconomic study area because the RSFO administers some public lands and federal minerals in the counties, and because businesses and people in surrounding communities have important relationships with BLM-administered lands and resources. Additional social and economic linkages to the RSFO exist beyond the five-county socioeconomic study area; the BLM considered notable external linkages qualitatively in the impact analysis. Some basic but important characteristics of the socioeconomic study area and the planning area are as follows:

- A large majority of the land in the socioeconomic study area is federally owned (71% overall). The

BLM manages the largest amount of land (47%), followed by private ownership (25%), and other federal agencies (24%).

- Within the planning area portion of the study area, the percentage of privately owned land is similar (24%) to that of the study area, while BLM land makes up a larger proportion (67%) than in the study area and the percentage of land managed by other federal agencies is much less (5%).
- The checkerboard land ownership pattern in the middle portion of the planning area creates challenges and concerns for both the BLM and private landowners.
- The socioeconomic study area had a 2010 Census population of more than 133,400, which is 23.6% of the total Wyoming population.
- Sublette County had the smallest population of 10,247, and Sweetwater County had the largest population of 43,806 as of 2010.
- The socioeconomic study area is very sparsely populated, with a few small urban centers. As of 2010, the population density is 4.4 persons per square mile, compared with figures of 5.8 for the state and 87.4 for the nation.
- The socioeconomic study area, and particularly the planning area, is located at considerable distance from any large urban areas.

# CHAPTER 4—ENVIRONMENTAL CONSEQUENCES

## 4.1 INTRODUCTION

This chapter objectively evaluates the environmental impacts of implementing each alternative described in Chapter 2 and forms the analytic basis for the comparative summary of impacts presented in Appendix U. Chapter 3 describes the existing conditions of the resources and resource uses that would be affected by the alternatives. The organization of Chapter 4 parallels that of Chapter 3, in that the resource programs are presented in the same order. Because resources and resource uses are often interrelated, one section may refer to another.

\* The BLM Greater Sage Grouse land use plans are not included.

\* The Wild Horse Management RMP Amendment and EIS land use plan is not included.

## 4.2 ANALYSIS METHODS

The analysis of the alternatives is focused on identifying the types of impacts anticipated to occur and estimating their potential intensity. The analysis is organized by resource program and discloses the potential impacts on each resource program from implementing each of the proposed alternatives. The impact analysis for Alternative A was prepared first to serve as the baseline for alternative comparison. It is important to note that management prescriptions for each resource or resource use directly or indirectly relate to each other; therefore, impacts on one particular resource program may also apply to other programs. It is therefore recommended that the reader review all impact analyses to attain a comprehensive description of the impacts on the resource or resource use in question.

Potential impacts of certain land use activities can be compared visually and numerically among the alternatives by using geographic information system (GIS) data. The locations of resources and overlapping resource issues are shown in Maps 2-1 through 2-35. The geographic implications associated with each management alternative are presented in Tables 2-3 through 2-12 in Appendix V. These tables and maps should be reviewed in conjunction with the impact analyses.

Acreage calculations used in this analysis are approximate values for alternative comparison and analytic purposes only and do not reflect exact measurements of on-the-ground resources and actions. These acreage values were calculated using ESRI's ArcGIS Desktop 9.1 software. The projection of GIS data that were analyzed to provide the acreage calculations is Universal Transverse Mercator Zone 12N, based on the North American Datum of 1983.

### 4.2.1 Types of Impacts

On September 14, 2020, the CEQ's updated NEPA regulations (40 CFR 1500-1508) went into effect. These regulations explained that the updates apply "to any NEPA process begun after September 14, 2020" but that "[a]n agency may apply the regulations... to ongoing activities and environmental documents begun before September 14, 2020." (40 CFR 1506.13, emphasis added; see 85 FR 43372-43373, July 16, 2020). The CEQ's NEPA regulations were again subsequently revised, in part, effective May 20, 2022 (see 87 FR 23453-23470, April 20, 2022). In accordance with the CEQ's current NEPA regulations, this EIS continues to use the CEQ's previous NEPA regulations that were in place at the time the Rock Springs RMP EIS was initiated in 2011.

Throughout this chapter, the terms "impact" and "effect" are used interchangeably. Impacts can be direct, indirect, or cumulative. Impacts may be perceived as positive (beneficial) or negative (adverse). Some impacts would be positive for some individuals and negative for others; for example, road closures could benefit hikers and primitive recreation but be a detriment to off-highway vehicle (OHV) users. For this

reason, impacts are generally not labeled as beneficial or adverse in this chapter. In addition, no cost benefit analysis is used nor is required under Council on Environmental Quality (CEQ) Regulations at 40 Code of Federal Regulation (CFR) 1502.23. Table 4-1 provides an overview of the general types of impacts discussed in this chapter.

**Table 4-1. Types of Impacts**

Type	Description
Direct Impacts	Direct impacts occur at the same time and place as the action responsible for the impact. For example, removal of vegetative cover caused by facility construction would be considered a direct impact on vegetation resources.
Indirect Impacts	Indirect impacts are temporally and spatially removed from the action responsible for the impact but are related to the action through a process of cause and effect. For example, removal of vegetative cover caused by facility construction that consequently results in increased surface runoff and sedimentation of nearby streams would be considered an indirect impact on riparian resources.  Indirect impacts may reach beyond the natural and physical environment (i.e., environmental impact) to include growth-inducing effects and other effects related to induced changes to resource uses (i.e., nonenvironmental impact).
Cumulative Impacts	Cumulative impacts result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions that take place over time. Cumulative impacts are described in Appendix T.

## 4.2.2 Availability of Data and Incomplete Information

The best available information pertinent to the management decisions was used in the development of this environmental impact statement (EIS).

Certain information was unavailable for use in developing this plan, because inventories either have not been conducted or were incomplete. Some of the major types of incomplete and unavailable data include, but are not limited to—

- Incomplete soil survey information for the planning area
- Incomplete hydrogeologic information for the planning area
- Incomplete information on range site conditions and vegetation production
- Unavailable data on forest stand composition, age, and distribution

As a result of these missing data, some of the impacts that result from the proposed management of certain resources cannot be quantified. In these cases, impacts are projected in qualitative terms. Subsequent project-level analyses will provide the opportunity to collect and examine the site-specific inventory data necessary for determining the appropriate application of the resource management plan (RMP)-level guidance. In addition, ongoing inventory efforts within the planning area will serve to update and refine the information used to implement this plan.

### 4.2.3 Analysis Assumptions

Assumptions for analysis are made to assist in determining the potential environmental, social, and economic impacts of the alternatives (Chapter 2) on the affected environment (Chapter 3). They are based on expected trends (e.g., population growth or decline within the planning area), expected demands (e.g., increases in certain kinds of recreational use), and the likelihood of resource development (e.g., the reasonably foreseeable development [RFD] scenario for oil and gas).

Assumptions are for the purpose of analysis only and are presumed true for the purpose of equitably comparing the alternatives. Assumptions do not constrain or define management; they are based on observations, historical trends, and professional judgment. Assumptions are generally made for the expected life of the RMP, unless otherwise stated.

Resource-specific assumptions are described under each resource program in the sections that follow. General assumptions applicable to all resources and resource uses are as follows:

- The decisions proposed in the alternatives apply to Bureau of Land Management (BLM)-administered lands; however, cumulative impact analyses may also consider decisions made for resources managed by other entities or individuals.
- The planning criteria described in Chapter 1 (Section 1.4.2) apply to all alternatives.
- The alternatives will be implemented as described in Chapter 2.
- Implementation actions will comply with valid existing rights and all federal laws, regulations, and policies.
- Sufficient funding and personnel will be available to implement the RMP.
- Appropriate maintenance will be carried out to maintain the functional capability of all developments (e.g., roads, fences, and other projects).
- Monitoring will be completed as indicated, along with any needed adjustments or revisions.
- Mitigation measures will be applied as described in Chapter 2 and applicable appendices.

## 4.3 AIR QUALITY

Air resources were evaluated within the planning area to determine how air quality and air quality related values could be affected by future federal actions implemented under this RMP. Actions that initiate or increase emissions of air pollutants can result in negative effects on air resources, including increased concentrations of air pollutants, decreased visibility, increased atmospheric deposition on soils and vegetation, and acidification of sensitive water bodies. Actions that reduce or control emissions of air pollutants can be very effective at improving air quality and preventing degradation. This section addresses the potential effects of emissions of air pollutants from specific activities that would be authorized, allowed, or performed by the BLM under each alternative within the planning area over the life of the RMP.

### 4.3.1 Summary of Impacts

The potential for BLM actions to contribute to future significant adverse impacts on air quality was analyzed in the context of existing air quality conditions within the planning area and predicted future growth in emission generating activities. Air pollutant emissions from future potential actions were estimated for

several BLM management actions and activities likely to occur under each alternative that have the potential to generate quantifiable emissions of regulated air pollutants. The estimated emissions were compiled in an emissions inventory. Emissions calculations, assumptions, and methods are included in Appendix P, Air Quality Technical Support Document. Total estimated emissions and predicted increases in emissions were analyzed to develop air resource management goals, objectives, and actions that would be effective in minimizing future impacts on air quality. The resulting adaptive management strategy for the Rock Springs planning area is included in Appendix Q, Air Quality Adaptive Management Strategy.

Emissions were estimated for four criteria pollutants, volatile organic compounds (VOC), hazardous air pollutants (HAP), and greenhouse gases (GHG) for the Rock Springs Field Office (RSFO). Emissions were also estimated for three future years, a short-term year (year 1), a mid-term year (year 10) and a long-term year (year 20), as the basis to evaluate differences in management actions among alternatives and potential increases in emissions over the life of the plan. Potential emissions were also estimated for reasonably foreseeable future cumulative actions within the planning area and are discussed further in Appendix T. The following air pollutants were identified as being pollutants that could potentially be emitted by management actions and activities authorized, permitted, allowed or performed under this RMP. Emissions of each of these pollutants were estimated for each identified activity and addressed for each alternative in this analysis.

- Particulate matter (PM)—PM less than 10 microns in diameter (PM<sub>10</sub>) and PM less than 2.5 microns in diameter (PM<sub>2.5</sub>)
- Nitrogen oxides (NO<sub>x</sub>)
- Sulfur dioxide (SO<sub>2</sub>)
- Carbon monoxide (CO)
- VOC
- HAPs
- GHGs (carbon dioxide [CO<sub>2</sub>], methane [CH<sub>4</sub>], and nitrous oxide [N<sub>2</sub>O]).

Estimated emissions from BLM actions under each alternative and estimated changes in emissions from BLM actions over the life of the plan vary by pollutant, management action, and year. In general, the major contributor to total pollutant emissions over the life of the plan is predicted to be predominantly attributable to activities associated with oil and gas development. Activities associated with surface mining of coal and trona are predicted to be major contributors to particulate matter emissions. Activities associated with fire management, livestock grazing, and travel are predicted to contribute to some pollutant emissions as well. Table 4-2 and Table 4-3 summarize the estimated annual emissions for each alternative by pollutant.

**Table 4-2. Total Estimated Regulated Emissions Summary for Bureau of Land Management Activities in the Rock Springs Planning Area (Tons)**

Scenario	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>	CO	VOC	HAPs
Alternative A - Year 1	19,121	3,030	12,602	37	12,220	26,335	1,008
Alternative B - Year 1	16,358	2,513	11,067	18	9,365	24,266	922
Alternative C - Year 1	20,241	3,805	12,952	103	20,915	26,876	1,057
Alternative D - Year 1	19,116	3,029	12,591	37	12,215	26,318	1,007



Scenario	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>	CO	VOC	HAPs
Alternative A - Year 10	25,861	3,832	19,023	43	17,584	48,174	1,796
Alternative B - Year 10	18,166	2,722	12,438	19	10,541	28,918	1,097
Alternative C - Year 10	27,530	4,667	19,582	110	26,485	49,405	1,876
Alternative D - Year 10	26,097	3,855	18,956	43	17,562	47,975	1,794
Alternative A - Year 20	32,759	4,663	26,126	50	23,454	72,334	2,659
Alternative B - Year 20	19,633	2,898	13,931	21	11,777	33,998	1,278
Alternative C - Year 20	35,066	5,567	26,937	117	32,594	74,347	2,773
Alternative D - Year 20	33,162	4,701	26,024	50	23,415	71,912	2,652

**Table 4-3. Total Estimated Greenhouse Gas Emissions Summary for Bureau of Land Management Activities in the Rock Springs Planning Area (Tons or Metric Tonnes)<sup>1</sup>**

Scenario	CO <sub>2</sub> (tons)	CH <sub>4</sub> (tons)	N <sub>2</sub> O (tons)	CO <sub>2</sub> eq tons (100 Year)	CO <sub>2</sub> eq metric tonnes (100 Year)*	CO <sub>2</sub> eq tons (20 Year)**
Alternative A - Year 1	1,792,764	26,021	39	3,476,501	3,153,829	4,083,849
Alternative B - Year 1	1,564,352	16,782	20	2,984,314	2,707,325	3,074,262
Alternative C - Year 1	1,807,623	26,560	106	3,524,047	3,196,962	4,161,517
Alternative D - Year 1	1,790,750	26,013	39	3,474,249	3,151,786	4,081,131
Alternative A - Year 10	2,981,005	38,933	56	5,030,699	3,706,757	6,361,095
Alternative B - Year 10	1,824,372	19,671	24	3,326,211	3,017,488	3,577,975
Alternative C - Year 10	3,036,206	40,017	123	5,133,982	4,657,471	6,525,008
Alternative D - Year 10	2,971,247	38,937	56	5,020,997	4,554,973	6,351,589
Alternative A - Year 20	4,279,554	52,984	74	6,727,520	6,103,105	8,844,778
Alternative B - Year 20	2,097,511	22,633	28	3,683,300	3,341,435	4,100,930
Alternative C - Year 20	4,380,881	54,693	142	6,894,592	6,254,671	9,107,486
Alternative D - Year 20	4,260,853	52,955	74	6,707,907	6,085,313	8,823,508

<sup>1</sup>Emissions are gross for all activities and indirect and direct GHG's are not separated. Detailed descriptions of the emission calculations can be found in Appendix P, section T.6. Further information can be found in Appendix T, Cumulative Impact Analysis.

\*Global Warming Potential (GWP)-100 yr CH<sub>4</sub> = 28, N<sub>2</sub>O = 265

\*\* GWP-20 yr CH<sub>4</sub> = 84, N<sub>2</sub>O = 264

Existing air quality conditions, geographic characteristics, and estimated emissions for each alternative were evaluated to identify pollutants of concern and activities that emit significant quantities of pollutants of concern and to identify potential adverse impacts on air quality. The identification of the following pollutants, activities, and potential impacts under each alternative was used to design air quality management goals and objectives listed in Chapter 2 and the Air Quality Adaptive Management Strategy included in Appendix Q:

- The magnitude of estimated emissions of air pollutants from BLM authorized activities and management actions is predicted to be greatest under Alternative C which includes the highest level of energy development actions. Therefore, potential impacts to air quality under this alternative are expected to be greatest. Air quality impacts under Alternatives A and D are expected to be similar to current conditions at the proposed levels of development under these alternatives. Alternative B, with oil and gas development levels about half of Alternative C, would be expected to result in the least impacts to air quality.
- The magnitude of estimated emissions from BLM authorized oil and gas activities at the level of development predicted in Alternatives A, C, and D over the life of the plan have the potential to contribute to increased ambient concentrations of ozone in the Rock Springs planning area and the Upper Green River Basin ozone nonattainment area during the summer and winter ozone seasons. Estimated emissions from BLM authorized oil and gas activities under Alternative B have the potential to contribute to ozone formation in the region but significantly less than the other alternatives due to the more restrictive oil and gas production rates in this alternative. For example, Alternative B has fewer wells for gas and oil development.
- The magnitude of and increases in estimated emissions from BLM authorized oil and gas activities at the level of development predicted in Alternatives A, C, and D have the potential to cause impacts related to visibility degradation and increased atmospheric deposition at sensitive areas such as the Fitzpatrick Wilderness Area to the north and the Mount Zirkel Wilderness Area to the south. Emissions predicted under Alternative B also have the potential to impact visibility and deposition but significantly less than the other alternatives.
- The magnitude of and increases in estimated emissions from solid mineral development, including surface mining of coal and trona, at the level of development predicted for all alternatives over the life of the plan have the potential to cause impacts related to fugitive dust and increased ozone formation, visibility degradation, and atmospheric deposition.
- The estimated emissions of GHGs directly associated with solid mineral development and livestock grazing under all alternatives are not predicted to significantly change from current conditions during the life of the plan while direct emissions of GHGs associated with oil and gas development under all alternatives are predicted to increase, which is due to a larger estimated number of oil and gas wells being installed.

### 4.3.2 Methods and Assumptions

The air resource impact analysis consisted of a comparative emissions approach to evaluate emission levels and air quality conditions of estimated future emissions for each alternative. This analysis was based on RFD scenarios for management actions under each alternative as provided by the RSFO and the potential for impacts on future air quality conditions. The purpose of conducting the emissions-based analysis was to evaluate the magnitude of emissions of each pollutant from BLM authorized activities to identify the potential for those emissions to cause adverse impacts on air quality in the context of existing air quality conditions. By identifying those activities with significant estimated emissions, the BLM can focus its air resource protection and compliance efforts effectively. This information is useful for evaluating the effect of various management actions on air emissions and for evaluating the effect of emission control strategies. This information is ultimately used to inform the selection of effective resource management actions under this RMP.

The BLM estimated emissions for specific management actions in year one and two future years (year 10 and year 20) to examine potential impacts at the beginning, midpoint, and end of the 20-year plan. Potential emissions were also estimated for reasonably foreseeable future cumulative actions within the planning area and are discussed further in the cumulative impacts section. Given the uncertainties concerning the number, nature, duration, and specific location of future emission sources and activities, the emission comparison

approach provides an appropriate basis for comparing the potential impacts under each alternative.

Operational, production, and construction activity data used to estimate emissions for proposed emission sources were obtained from RSFO staff and the 2012 Solid Mineral Occurrence and Development Potential Report for the RSFO (BLM, 2012). BLM's Excel spreadsheet-based emissions calculators were used to develop the estimated emissions for all of the management actions evaluated with exception of the trona mining activities. Trona mining emissions were estimated based on a representative mine calculator, by using a Permit Application Analysis for the Ciner Wyoming, LLC Big Island Mine and Refinery facility (WDEQ, 2017). Emission factors used in the BLM calculators to estimate proposed emissions were obtained from (1) the U.S. Environmental Protection Agency (EPA) NONROAD2008a Emissions Model, (2) EPA's AP-42 Guidance, and (3) EPA MOVES 2010a for a mobile emissions factor model for non-road motor vehicles. See Appendix P, Air Quality Technical Support Document for additional information on methods for calculating the estimated emissions.

### Monetized Impacts from GHGs

The “social cost of carbon”, “social cost of nitrous oxide”, and “social cost of methane” – together, the “social cost of greenhouse gases” (SC-GHG) are estimates of the monetized damages associated with incremental increases in GHG emissions in a given year.

On January 20, 2021, President Biden issued E.O. 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*.<sup>i</sup> Section 1 of E.O. 13990 establishes an Administration policy to, among other things, listen to the science; improve public health and protect our environment; ensure access to clean air and water; reduce greenhouse gas emissions; and bolster resilience to the impacts of climate change.<sup>ii</sup> Section 2 of the E.O. calls for Federal agencies to review existing regulations and policies issued between January 20, 2017, and January 20, 2021, for consistency with the policy articulated in the E.O. and to take appropriate action.

Consistent with E.O. 13990, the Council on Environmental Quality (CEQ) rescinded its 2019 “Draft National Environmental Policy Act Guidance on Considering Greenhouse Gas Emissions” and has begun to review for update its “Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews” issued on August 5, 2016 (2016 GHG Guidance).<sup>iii</sup> While CEQ works on updated guidance, it has instructed agencies to consider and use all tools and resources available to them in assessing GHG emissions and climate change effects including the 2016 GHG Guidance.<sup>iv</sup>

Regarding the use of Social Cost of Carbon or other monetized costs and benefits of GHGs, the 2016 GHG Guidance noted that NEPA does not require monetizing costs and benefits.<sup>v</sup> It also noted that “the weighing of the merits and drawbacks of the various alternatives need not be displayed using a monetary cost-benefit analysis and should not be when there are important qualitative considerations.”<sup>vi</sup>

Section 5 of E.O. 13990 emphasized how important it is for federal agencies to “capture the full costs of greenhouse gas emissions as accurately as possible, including by taking global damages into account” and established an Interagency Working Group on the Social Cost of Greenhouse Gases (the “IWG”).<sup>vii</sup> In February of 2021, the IWG published *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide: Interim Estimates under Executive Order 13990* (IWG, 2021).<sup>viii</sup> This is an interim report that updated previous guidance from 2016. The final report is expected in January 2022.

In accordance with this direction, this subsection provides estimates of the monetary value of changes in GHG emissions that could result from selecting each alternative. Such analysis should not be construed to mean a cost determination is necessary to address potential impacts of GHGs associated with specific alternatives. These numbers were monetized; however, they do not constitute a complete cost-benefit analysis, nor do the SC-GHG numbers present a direct comparison with other impacts analyzed in this

document. SC-GHG is provided only as a useful measure of the benefits of GHG emissions reductions to inform agency decision-making.

For Federal agencies, the best currently available estimates of the SC-GHG are the interim estimates of the social cost of carbon dioxide (SC-CO<sub>2</sub>), methane (SC-CH<sub>4</sub>), and nitrous oxide (SC-N<sub>2</sub>O) developed by the Interagency Working Group (IWG) on the SC-GHG. Select estimates are published in the Technical Support Document (IWG 2021)<sup>ix</sup> and the complete set of annual estimates are available on the Office of Management and Budget's website<sup>x</sup>

The IWG's SC-GHG estimates are based on complex models describing how GHG emissions affect global temperatures, sea level rise, and other biophysical processes; how these changes affect society through, for example, agricultural, health, or other effects; and monetary estimates of the market and nonmarket values of these effects. One key parameter in the models is the discount rate, which is used to estimate the present value of the stream of future damages associated with emissions in a particular year. A higher discount rate assumes that future benefits or costs are more heavily discounted than benefits or costs occurring in the present (i.e., future benefits or costs are a less significant factor in present-day decisions). The current set of interim estimates of SC-GHG have been developed using three different annual discount rates: 2.5%, 3%, and 5% (IWG 2021).

As expected with such a complex model, there are multiple sources of uncertainty inherent in the SC-GHG estimates. Some sources of uncertainty relate to physical effects of GHG emissions, human behavior, future population growth and economic changes, and potential adaptation (IWG 2021). To better understand and communicate the quantifiable uncertainty, the IWG method generates several thousand estimates of the social cost for a specific gas, emitted in a specific year, with a specific discount rate. These estimates create a frequency distribution based on different values for key uncertain climate model parameters. The shape and characteristics of that frequency distribution demonstrate the magnitude of uncertainty relative to the average or expected outcome.

To further address uncertainty, the IWG recommends reporting four SC-GHG estimates in any analysis. Three of the SC-GHG estimates reflect the average damages from the multiple simulations at each of the three discount rates. The fourth value represents higher-than-expected economic impacts from climate change. Specifically, it represents the 95<sup>th</sup> percentile of damages estimated, applying a 3% annual discount rate for future economic effects. This is a low probability, but high damage scenario, represents an upper bound of damages within the 3% discount rate model. The estimates below follow the IWG recommendations.

Estimated SC-GHGs associated with GHG emissions from BLM activities in the Rock Springs Planning Area, as described in Section 4.3.1, are provided in Table 4.3.1. These estimates represent the present value of future market and nonmarket costs associated with CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions. Estimates are calculated based on IWG estimates of social cost per metric ton of emissions for a given emissions year<sup>xi</sup> and BLM's estimates of emissions in each year for the lifetime of the RMP. Social cost calculations use estimated GHG emissions from both federal oil and non-oil and gas-related activities, including respective direct and indirect GHGs for a given activity. Social cost estimates are presented for each greenhouse gas per Alternative and are rounded to the nearest \$1,000.

**Table 4-3.1. SC-GHG Associated with Potential BLM Activities in the Rock Springs Planning Area**

Alternative	Greenhouse Gas	Social Cost of GHG (2020\$)			
		Average Value, 5% discount rate	Average Value, 3% discount rate	Average Value, 2.5% discount rate	95 <sup>th</sup> Percentile Value, 3% discount rate
A	CO <sub>2</sub>	\$4,605,362,000	\$17,862,413,000	\$27,181,136,000	\$54,242,158,000
	CH <sub>4</sub>	\$468,232,000	\$1,193,435,000	\$1,609,812,000	\$3,178,746,000
	N <sub>2</sub> O	\$9,733,000	\$34,613,000	\$52,221,000	\$91,854,000
	<b>Total</b>	<b>\$5,083,327,000</b>	<b>\$19,090,461,000</b>	<b>\$28,843,169,000</b>	<b>\$57,512,758,000</b>
B	CO <sub>2</sub>	\$2,858,353,000	\$10,973,840,000	\$16,665,226,000	\$33,266,304,000
	CH <sub>4</sub>	\$236,163,000	\$596,505,000	\$803,177,000	\$1,587,765,000
	N <sub>2</sub> O	\$4,873,000	\$17,177,000	\$25,865,000	\$45,552,000
	<b>Total</b>	<b>\$3,099,389,000</b>	<b>\$11,587,522,000</b>	<b>\$17,494,268,000</b>	<b>\$34,899,621,000</b>
C	CO <sub>2</sub>	\$4,671,784,000	\$18,123,728,000	\$27,579,879,000	\$55,037,574,000
	CH <sub>4</sub>	\$479,058,000	\$1,221,127,000	\$1,647,192,000	\$3,252,524,000
	N <sub>2</sub> O	\$16,354,000	\$57,823,000	\$87,129,000	\$153,379,000
	<b>Total</b>	<b>\$5,167,196,000</b>	<b>\$19,402,678,000</b>	<b>\$29,314,200,000</b>	<b>\$58,443,477,000</b>
D	CO <sub>2</sub>	\$4,571,057,000	\$17,726,780,000	\$26,973,977,000	\$53,828,974,000
	CH <sub>4</sub>	\$465,485,000	\$1,186,224,000	\$1,600,030,000	\$3,159,500,000
	N <sub>2</sub> O	\$9,681,000	\$34,422,000	\$51,931,000	\$91,346,000
	<b>Total</b>	<b>\$5,046,223,000</b>	<b>\$18,947,426,000</b>	<b>\$28,625,938,000</b>	<b>\$57,079,820,000</b>

<sup>1</sup> 86 FR 7037 (Jan. 25, 2021).<sup>2</sup> Id., sec. 1.<sup>3</sup> 86 FR 10252 (February 19, 2021).<sup>4</sup> Id.<sup>5</sup> 2016 GHG Guidance, p. 32, available at: [https://ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa\\_final\\_ghg\\_guidance.pdf](https://ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa_final_ghg_guidance.pdf)<sup>6</sup> Id.<sup>7</sup> E.O. 13990, Sec. 5.<sup>8</sup> [https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument\\_SocialCostofCarbonMethaneNitrousOxide.pdf](https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf)<sup>9</sup> IWG 2021. Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide, Interim Estimates under Executive Order 13990. Interagency Working Group on Social Cost of Greenhouse Gasses, February 2021.<sup>10</sup> <https://www.whitehouse.gov/omb/information-regulatory-affairs/regulatory-matters/#scghgs><sup>11</sup> <https://www.whitehouse.gov/omb/information-regulatory-affairs/regulatory-matters/#scghgs>

### 4.3.3 Effects Common to All Alternatives

Impacts on air quality were assessed indirectly by calculating emissions by alternative for the various types of development and use activities for the criteria pollutants noted above. The BLM also estimated emissions for a short year (year 1) and two future years (year 10 and year 20) to examine potential impacts mid-way through the 20-year plan and at the end of the plan. The analysis compares operational emissions for the short-year (year 1), mid-year (year 10), and long-year (year 20) to determine the expected future change in

emission levels for each alternative. Emissions were quantified for each alternative as an indication of potential magnitude of impacts on air quality from each alternative. For this analysis, the magnitude of the change in emissions was analyzed to determine whether the impacts on air quality have the potential to be significant.

Air quality modeling can be used to determine ambient concentrations of air pollutants and to assess potential impacts on air quality; however, models are dependent on specific input data to predict impacts such as actual meteorological data, actual emissions data, emission source spatial and temporal data, and actual topographic data. At this stage of the planning process, not all of the data for these projects are known, and air quality dispersion modeling cannot be performed; therefore, the RSFO has developed an Air Quality Adaptive Management Strategy, Appendix Q, in lieu of emissions modeling. Proponents of mineral development projects would be required to provide data to BLM as part of additional National Environmental Policy Act (NEPA) analysis to analyze project impacts on ambient air quality at the time that a project is proposed. The NEPA analysis may include air quality modeling to determine whether the project has the potential to exceed or violate any ambient standards or cause significant adverse impacts on air quality. In addition, as part of the Air Quality Adaptive Management Strategy for managing air resources within the planning area, the BLM would conduct a regional air modeling study to evaluate potential impacts on air quality from future mineral development in the Rock Springs planning area. It should be noted that impacts for all alternatives have been analyzed herein using estimates of mass emission rates only, no air quality modeling has been conducted for this RMP.

For each alternative, the BLM evaluated pollutant emissions from several different emissions generating activities to determine the potential impact. For all of the alternatives, the magnitude of emissions from oil and gas development and coal and trona mining activities have the largest potential to impact air quality within the planning area. In addition, these emissions could impact two federally designated Class I areas located within 100 kilometers of the planning area, Fitzpatrick Wilderness and Bridger Wilderness, located to the north of the planning area.

#### 4.3.4 Summary of Impacts by Alternative

BLM emission sources include fluid mineral development (conventional natural gas, coalbed natural gas [CBNG], and oil), solid mineral development (coal and trona), fire management and ecology, sand and gravel mining/processing, livestock grazing, vegetation management, trails and travel management and general-purpose BLM travel. Emissions from solid mineral development (minerals development and production) and fluid mineral development (oil and gas production) is a major contributor to total estimated emissions under all alternatives. Activities for which emissions are quantified in solid minerals development include mineral extraction activities and vehicle traffic for coal mining; while trona mining includes soda ash dryers, coolers, classifier operations, crushers, and other plant activities (including vehicle traffic). Activities for which emissions are quantified in fluid minerals development include well drilling and completion, road and well pad construction, flaring and venting, compressor operations, dehydrator and separator operations, tank venting and load out, wellhead fugitives, pneumatic device operations, and vehicle traffic.

Emissions from mineral development and production (fluid and solid minerals) are from five main sources:

- 1) Combustion emissions from vehicle tailpipe and exhaust stack emissions (CO<sub>2</sub>, CO, PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>x</sub>, VOCs, and HAPs) due to the operation of mobile and stationary source construction equipment.
- 2) Fugitive dust emissions (PM<sub>10</sub> and PM<sub>2.5</sub>) due to earthmoving activities and the operation of vehicles on unpaved surfaces.
- 3) NO<sub>x</sub>, PM, CO, VOC, and HAPs emissions from oil and gas well construction activities and

- drilling rig equipment.
- 4) NO<sub>x</sub>, VOC, CO, and HAPs emissions associated with vehicular traffic and oil and gas well construction and production equipment.
  - 5) CO<sub>2</sub> and CH<sub>4</sub> emissions associated with fluid mineral operations as well as coal mining extraction and processing.

The quantities of emissions estimated from fluid mineral development and solid mineral development activities are based on reasonably foreseeable estimates of development rates, well counts, production rates, and existing technologies. The estimated emissions should not be considered definitive and may not reflect actual emissions at the time of development, due to the unknown future demand for mineral development over the life of the plan. Although the quantity of emissions calculated for this category may not represent actual emissions from eventual development, the magnitude of estimated emissions of several pollutants for this source category is considerable. Emissions of PM<sub>10</sub>, VOCs, and NO<sub>x</sub> from this category have the highest potential to impact air quality under each of the alternatives. These impacts could include increased ambient concentrations of NO<sub>x</sub> and increased ozone formation in summer and winter.

Predicted NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions from oil and gas development under all alternatives could result in degraded visibility and atmospheric deposition. Natural gas activities are predicted to be the largest contributor to greenhouse gas emissions for all alternatives followed by oil development. The largest sources of greenhouse gas emissions within the oil and gas sector include CO<sub>2</sub> emissions from natural gas compressors and drill rig engines and fugitive CH<sub>4</sub> emissions from wellhead equipment, pneumatic devices, and tanks.

For the alternatives, the largest BLM criteria pollutant and organics (i.e., HAPs and VOCs) sources would be associated with mineral development (coal and trona mining), and fluid mineral development (natural gas and CBNG). Detailed emission breakdowns by resource are included for each of the alternatives in Appendix P. For some of these resources, emissions would be similar to emissions associated with current levels of activity. For example, BLM does not expect sand and gravel mining/processing and general BLM travel to change and emissions from these activities would remain relatively constant for the alternatives. Consequently, emissions from these ongoing resource management activities would not represent increases to regional emissions; however, oil and gas activity emissions would reflect increased activity in future years and could contribute to regional emission changes.

It is important to note that the magnitude and rate of increased, decreased, or maintenance of mining operations over the life of the plan is dependent on economics and the demand for the materials as well as the construction of product transportation facilities and mineral processing facilities. The rate of mineral development predicted for the emissions inventory is based on mineral potential and may result in overestimating (resulting if demand decreases more than anticipated) or underestimating (resulting if demand increases more than anticipated) of emissions for all alternatives.

BLM has chosen the alternatives to establish a framework for measuring and comparing the impacts that could potentially result from management decisions. The alternatives represent reasonable approaches to managing resources and activities consistent with law, regulation, and policy.

### **Greenhouse Gas (GHG) Emissions**

Table 4-3.1 shows the direct federal oil and gas well development and productions GHG emissions across all alternatives for the 20-year analysis period. Alternative C has the potential to emit the most direct GHG emissions while Alternative B direct GHG emissions are the least of all alternatives. Alternative B most closely aligns with the DOI's climate change priorities among all alternatives.

**Table 4-3.1. Total Federal Direct Oil and Gas GHG Emissions (MT)**

Alternative	Direct Oil and Gas Well Development Emissions			Direct Oil and Gas Production Operation Emissions			Total Direct		
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
A	3,499,257	1,017	33	52,410,143	565,910	733	55,909,400	566,926	765
B	927,665	268	9	30,579,540	329,819	428	31,507,205	330,088	437
C	3,606,282	1,046	34	53,209,887	575,330	744	56,816,170	576,376	778
D	3,472,659	1,008	32	51,989,648	561,060	726	55,462,307	562,067	759

### 4.3.5 Alternative A

Alternative A, a continuation of current management levels, results in the second highest estimated emission levels of all four alternatives for most emissions, including GHGs. Because the RFD predicted CBNG wells are lower for Alternative A than Alternative D, Alternative A has lower emissions than Alternative D for a few pollutants, including PM<sub>10</sub> and PM<sub>2.5</sub> in mid-year and long-year (Table 4-2) and CO<sub>2</sub>eq metric tonnes (100 Year) in mid-year (Table 4-3). Tables of the estimated emissions calculations by source category and the key assumptions used in the calculations are provided in Appendix P.

#### Fluid Minerals

Estimated emissions from oil and gas development for Alternative A were calculated using an RFD rate based on historical development rates for federal wells within the planning area over the last 20 years. Estimated emissions from oil and gas activities were based on installation of 4,648 new BLM wells and associated drilling, completion, gas treatment, and compression activities over the life of the plan, with a rate of 75% of all new oil and gas wells being producing wells. Estimated emissions from 1,536 existing base year BLM wells and associated decline over a 20-year period were also included in the estimated emissions calculations at a rate of 12 oil and gas wells abandoned annually.

Estimated emissions from CBNG activities were based on installation of 125 new BLM wells and associated drilling, completion, gas treatment, and compression activities over the life of the plan, with a rate of 80% of all new oil and gas wells being producing wells. Estimated emissions from 28 existing base year BLM wells and associated decline over a 20-year period were also included in the estimated emissions calculations at a rate of one CBNG well abandoned annually. Appendix P includes additional details on the assumptions used in calculating emissions from oil and gas activities for this alternative. General assumptions used to estimate emissions for Alternative A are based on the following assumptions:

- Percentage of months with frozen or primarily muddy roads is 15%.
- Vehicle generated fugitive dust control percentage is 50%.
- Fugitive dust control for well pad or resource road construction is 50%.
- Fastest wind speed for calculating wind erosion is 53 miles per hour (mph).
- Fugitive emissions from equipment leaks and emission factors for pneumatic pumps, were obtained from EPA-453/R-95-017, Protocol for Equipment Leak Emission Estimates, November 1995.
- All natural gas-fired compressors comply with New Source Performance Standard 40 CFR part 60 subpart JJJJ.
- Compressors are equipped with a nonselective catalytic reduction catalyst.



The reasonably foreseeable potential for oil and gas development for Alternative A is greater than Alternative B and D for all activities with exception of CBNG, where Alternative D is slightly greater than Alternative A. Development for Alternative A is less than that of Alternative C for all activities. The estimated emissions for oil and gas development under this alternative reflect this substantially higher level of development compared to Alternative B and slightly higher than Alternative D. The magnitude of NO<sub>x</sub> and VOC emissions would likely contribute to increased concentrations of ozone formation and has the potential to contribute to adverse impacts associated with ozone formation.

## Solid Minerals

Estimated emissions for solid mineral development activities for Alternative A include coal mining, trona mining, and sand and gravel mining. Development and production rates for this alternative are based on the 2012 Solid Mineral Occurrence and Development Potential Report for the RSFO (BLM, 2012), historical production data for the planning area, and surface use restrictions included in this alternative. Solid mineral development and emissions estimates over the life of the plan for this alternative include the following assumptions:

- Continuation of current development practices for coal mines in the RSFO (estimated production rate of 8.8 million tons per year) for each year of the plan.
- Continuous sales of sand and gravel (approximately 5,000 tons mined per year) for each year of the plan.
- Continuation of current development practices for trona mines in the RSFO (estimated production rate of 2.6 million tons per year) for each year of the plan.
- Fugitive dust control from construction activities using frequent watering and speed control with an assumed control efficiency of 50% for coal mining and sand and gravel.
- Percentage of months with frozen or primarily muddy roads is 15%.
- Vehicle generated fugitive dust control percentage is 50%.
- Fastest wind speed for calculating wind erosion is 53 mph.

Emissions from solid mineral mining are expected to be consistent for all pollutants over the short year (year 1), mid-year (year 10) and long year (year 20) of the plan due to continuation of mining activities. This level of development is not expected to vary greatly by alternative or increase over the life of the plan. PM<sub>10</sub>, PM<sub>2.5</sub>, and NO<sub>x</sub> emissions from mining equipment associated with coal and sand and gravel mining are expected to be substantial. Because of the large amounts of NO<sub>x</sub>, solid mineral mining has the potential to contribute to increased ozone formation and impacts on visibility and atmospheric deposition.

## Land Resources – Rights-Of-Way and Renewable Energy

Emissions generating activities associated with rights-of-way (ROW) include construction activities for wind energy projects, communication sites, transmission lines, and non-oil and gas pipelines. A total of 32 projects with an average of 165 acres of disturbance per project were assumed as the level of development for this category (note wind energy projects make up the majority of the acreage). This level of development is not expected to vary by alternative or increase over the life of the plan. Estimated emissions are predicted to be very low for all alternatives and are not expected to contribute to significant air quality impacts.

## Livestock Grazing

Emissions generating activities associated with this category include primarily construction activities in support of grazing operations. Construction and maintenance of reservoirs, springs, wells, pipelines, and

fences generate fugitive dust and combustion emissions from construction equipment. Estimated emissions are based on animal unit months (AUM) from cattle grazing permits. Grazing activities are expected to stay constant over the life of the plan for this alternative. Estimated emissions from this category are predicted to be very low for all alternatives and are not expected to contribute to significant air quality impacts.

### **Trails and Travel Management**

Emissions generating activities associated with this category include fugitive dust from road and trail construction and maintenance, fugitive dust from motorized use, and combustion emissions from motorized use. Estimated emissions from these activities were calculated based on vehicle miles traveled and associated miles of roads and trails for vehicles including all-terrain vehicles, off-road motorcycles, and snowmobiles. Trails and travel management activities are expected to stay constant over the life of the plan for this alternative. Estimated emissions from this category are predicted to be very low for all alternatives and are not expected to contribute to significant air quality impacts.

### **Vegetation – Fire Management and Ecology and Mechanical Treatment**

Emissions generating activities associated with the category included smoke (particulate matter and other products of combustion) from prescribed and wild fires and combustion emissions from mechanical equipment used to manage vegetation and wildlife habitat. Estimated emissions were calculated based on historical acres burned and treated in the planning area. Continuation of current practices was assumed for Alternative A in accordance with the management goals. The magnitude of emissions from prescribed fire has the potential to result in impacts on visibility, ozone formation, and human and wildlife health.

#### **4.3.6 Alternative B**

Alternative B emission estimates result in the lowest total air pollutant emissions in future project years and conserves the most land area for physical, biological, and cultural resources. This alternative emphasizes the improvement and protection of habitat for wildlife and sensitive plant and animal species, improvement of riparian areas, and implementation of management actions that improve water quality and enhance protection of cultural resources. This alternative would likely result in the least adverse impacts on air quality (Table 4-2 and Table 4-3). Tables of the estimated emissions calculations by source category and the key assumptions used in the calculations are provided in Appendix P.

#### **Fluid Minerals**

Estimated emissions from oil and gas development for Alternative B were calculated using an RFD rate based on historical development rates for federal wells within the planning area over the last 20 years. Estimated emissions from oil and gas activities were based on installation of 1,231 new BLM wells and associated drilling, completion, gas treatment, and compression activities over the life of the plan, with a rate of 75% of all new oil and gas wells being producing wells. Estimated emissions from 1,536 existing base year BLM wells and associated decline over a 20-year period were also included in the estimated emissions calculations at a rate of 12 oil and gas wells abandoned annually.

Estimated emissions from CBNG activities were based on installation of 61 new BLM wells and associated drilling, completion, gas treatment, and compression activities over the life of the plan, with a rate of 80% of all new oil and gas wells being producing wells. Estimated emissions from 28 existing base year BLM wells and associated decline over a 20-year period were also included in the estimated emissions calculations at a rate of one CBNG well abandoned annually. Appendix P includes additional details on the assumptions used in calculating emissions from oil and gas activities for this alternative. The general assumptions used to estimate emissions for Alternative A are the same for Alternative B.

The reasonably foreseeable potential emissions for Alternative B, oil and gas development, is less than all alternatives as Alternative B is the most restrictive alternative.

## **Solid Minerals**

Estimated emissions for solid mineral development activities for Alternative B include coal mining, trona mining, and sand and gravel mining. Solid mineral development and emissions estimates over the life of the plan for this alternative are the same as Alternative A except the assumption of a decrease in sales of sand and gravel (4,000 tons mined per year) for each year of the plan.

## **Land Resources – Rights-Of-Way and Renewable Energy**

Emissions generating activities associated with ROWs include construction activities for wind energy projects, communication sites, transmission lines, and non-oil and gas pipelines. A total of 21 projects with an average of 107 acres of disturbance per project were assumed as the level of development for this category (note wind energy projects make up the majority of the acreage). This level of development is not expected to vary by alternative or increase over the life of the plan. Estimated emissions are predicted to be very low for all alternatives and are not expected to contribute to significant air quality impacts.

## **Livestock Grazing**

Emissions generating activities associated with this category include primarily construction activities in support of grazing operations. Construction and maintenance of reservoirs, springs, wells, pipelines, and fences generate fugitive dust and combustion emissions from construction equipment. Estimated emissions are based on AUMs from cattle grazing permits. Because Alternative B is a conservative approach, grazing activities are less than other alternatives. Estimated emissions from this category are predicted to be very low for all alternatives and are not expected to contribute to significant air quality impacts.

## **Trails and Travel Management**

Estimated emissions and impacts on air quality are predicted to be the same as Alternative A.

## **Vegetation – Fire Management and Ecology and Mechanical Treatment**

Emissions generating activities associated with the category included smoke (particulate matter and other products of combustion) from prescribed and wild fires and combustion emissions from mechanical equipment used to manage vegetation and wildlife habitat. Estimated emissions were calculated based on no acres burned and an increase in weed treatment in the planning area. The magnitude of emissions from prescribed fire has the potential to result in impacts on visibility, ozone formation, and human and wildlife health.

### **4.3.7 Alternative C**

Alternative C emission estimates result in the greatest magnitude and increase in total air pollutant emissions. Alternative C proposes the least restrictive management actions for energy and commodity development and the least protective management actions for physical, biological, and cultural resources while maintaining protections required by laws and regulations. Under this alternative, development and use of resources within the planning area would occur with intensive management of surface disturbing and disruptive activities. This alternative has the highest potential for adverse impacts on air quality (Table 4-2 and Table 4-3). Tables of the estimated emissions calculations by source category and the key assumptions used in the calculations are provided in Appendix P.

## **Fluid Minerals**

Estimated emissions from oil and gas development for Alternative C were calculated using an RFD rate based on historical development rates for federal wells within the planning area over the last 20 years. Estimated emissions from oil and gas activities were based on installation of 4,776 new BLM wells and

associated drilling, completion, gas treatment, and compression activities over the life of the plan, with a rate of 75% of all new oil and gas wells being producing wells. Estimated emissions from 1,536 existing base year BLM wells and associated decline over a 20-year period were also included in the estimated emissions calculations at a rate of 12 oil and gas wells abandoned annually.

Estimated emissions from CBNG activities were based on installation of 143 new BLM wells and associated drilling, completion, gas treatment, and compression activities over the life of the plan, with a rate of 80% of all new oil and gas wells being producing wells. Estimated emissions from 28 existing base year BLM wells and associated decline over a 20-year period were also included in the estimated emissions calculations at a rate of one CBNG well abandoned annually. Appendix P includes additional details on the assumptions used in calculating emissions from oil and gas activities for this alternative. The general assumptions used to estimate emissions for Alternative A are the same for Alternative C.

The reasonably foreseeable potential for oil and gas development for Alternative C is greater than Alternatives A, B, and D for oil and gas activities. The estimated emissions for oil and gas development under this alternative reflect this substantially higher level of development compared to Alternative B and slightly higher than that of Alternatives A and D. The magnitude of NO<sub>x</sub> and VOC emissions would likely contribute to increased concentrations of ozone formation and has the potential to contribute to adverse impacts associated with ozone formation.

### **Solid Minerals**

Estimated emissions for solid mineral development activities for Alternative C include coal mining, trona mining, and sand and gravel mining. Solid mineral development and emissions estimates over the life of the plan for this alternative are the same as Alternative A except the assumption of an increase in sales of sand and gravel equivalent to the base year (6,500 tons mined per year) for each year of the plan.

### **Land Resources – Rights-Of-Way and Renewable Energy**

Emissions generating activities associated with ROWs include construction activities for wind energy projects, communication sites, transmission lines, and non-oil and gas pipelines. A total of 47 projects with an average of 113 acres of disturbance per project were assumed as the level of development for this category (note wind energy projects make up the majority of the acreage). Estimated emissions are predicted to be very low for all alternatives and are not expected to contribute to significant air quality impacts.

### **Livestock Grazing**

Emissions generating activities associated with this category include primarily construction activities in support of grazing operations. Construction and maintenance of reservoirs, springs, wells, pipelines, and fences generate fugitive dust and combustion emissions from construction equipment. Estimated emissions are based on AUMs from cattle grazing permits. Because Alternative C is the least restrictive management approach, grazing activities are expected to be more than other alternatives. Estimated emissions from this category are predicted to be very low for all alternatives and are not expected to contribute to significant air quality impacts.

### **Trails and Travel Management**

Estimated emissions and impacts on air quality are predicted to be the same as Alternative A.

### **Vegetation – Fire Management and Ecology and Mechanical Treatment**

Emissions generating activities associated with the category included smoke (particulate matter and other products of combustion) from prescribed and wild fires and combustion emissions from mechanical equipment used to manage vegetation and wildlife habitat. Estimated emissions were calculated based on historical acres burned and treated in the planning area. An increase of current practices was assumed for

this alternative. The magnitude of emissions from prescribed fire has the potential to result in impacts on visibility, ozone formation, and human and wildlife health.

### **4.3.8 Alternative D**

Alternative D results in the next to lowest emissions of all four alternatives for most emissions, including greenhouse gasses. Because the RFD predicted a larger number of CBNG wells for Alternative D than Alternative A, Alternative D has higher emissions than Alternative A for a few pollutants (Table 4-2 and Table 4-3). Tables of the estimated emissions calculations by source category and the key assumptions used in the calculations are provided in Appendix P.

#### **Fluid Minerals**

Estimated emissions from oil and gas development for Alternative D were calculated using an RFD rate based on historical development rates for federal wells within the planning area over the last 20 years. Estimated emissions from oil and gas activities were based on installation of 4,603 new BLM wells and associated drilling, completion, gas treatment, and compression activities over the life of the plan, with a rate of 75% of all new oil and gas wells being producing wells. Estimated emissions from 1,536 existing base year BLM wells and associated decline over a 20-year period were also included in the estimated emissions calculations at a rate of 12 oil and gas wells abandoned annually.

Estimated emissions from CBNG activities were based on installation of 134 new BLM wells and associated drilling, completion, gas treatment, and compression activities over the life of the plan, with a rate of 80% of all new oil and gas wells being producing wells. Estimated emissions from 28 existing base year BLM wells and associated decline over a 20-year period were also included in the estimated emissions calculations at a rate of one CBNG well abandoned annually. Appendix P includes additional details on the assumptions used in calculating emissions from oil and gas activities for this alternative. The general assumptions used to estimate emissions for Alternative A are the same for Alternative D.

The reasonably foreseeable potential for oil and gas development for Alternative D is less than Alternatives A and C for most activities with the exception of CBNG, where Alternative D is slightly higher than that of Alternative A. The estimated emissions for oil and gas development under this alternative reflect a lower level of development compared to Alternative A and C with exception to CBNG. The magnitude of NO<sub>x</sub> and VOC emissions would likely contribute to increased concentrations of ozone formation and has the potential to contribute to adverse impacts associated with ozone formation.

#### **Solid Minerals**

Estimated emissions for solid mineral development activities for Alternative D include coal mining, iron mining, and sand and gravel mining. Solid mineral development and emissions estimates over the life of the plan for this alternative are the same as Alternative A.

#### **Land Resources – Rights-Of-Way and Renewable Energy**

Estimated emissions and impacts on air quality are predicted to be the same as Alternative A.

#### **Livestock Grazing**

Estimated emissions and impacts on air quality are predicted to be the same as Alternative A.

#### **Trails and Travel Management**

Estimated emissions and impacts on air quality are predicted to be the same as Alternative A.

## **Vegetation – Fire Management and Ecology and Mechanical Treatment**

Estimated emissions and impacts on air quality are predicted to be the same as Alternative A for fire management. For vegetation management Alternative D has more weed treatment; however, the minor increase has little impact on the estimated emissions.

### **4.3.9 Air Quality Adaptive Management Strategy**

The RSFO has developed an Air Quality Adaptive Management Strategy in lieu of emissions modeling. The Air Quality Adaptive Management Strategy is intended to present the processes, procedures, and actions that support adaptive management principles for the protection of air resources and atmospheric values within the Rock Springs planning area. This Air Quality Adaptive Management Strategy describes air resources management and outlines specific requirements for proponents of projects that have the potential to generate air emissions and impact air resources. The Air Quality Adaptive Management Strategy provides the flexibility to respond to changing conditions that could not have been predicted during RMP development and allows for the use of new technology and methods that may minimize or reduce impacts. The Air Quality Adaptive Management Strategy can be found in Appendix Q.

## **4.4 SOIL RESOURCES**

### **4.4.1 Assumptions**

The analysis was based on the following assumptions:

- For purposes of this analysis, wind and water erosion are the primary mechanisms for loss of soil productivity.
- The presence of vegetation and biological soil crust increases soil organic matter, aggregation of soil particles, and soil porosity, all of which increase soil resistance to erosion.
- The removal of vegetation or biological soil crusts increases soil susceptibility to erosion via wind and water by decreasing soil strength, reducing infiltration, increasing runoff, altering soil structure, and reducing protection of the surface from raindrop impact.
- The intensity of short-term erosion impacts depends on soil texture and type, porosity and permeability, landscape position, slope of the land, magnitude, type of disturbance, type of vegetation, and the length of time it takes for the disturbed area to become revegetated with a self-sustaining, perennial plant community.
- Long-term erosion impacts are those impacts that continue after vegetation has become re-established. They are due in part to changes in the vegetation community but to a greater extent to a surface area that remains void of vegetation, such as roads and well pads.

### **4.4.2 Alternative A**

The primary impacts to soil resources would occur as a result of management activities that cause surface disturbance. Such activities would remove vegetative cover and thereby expose soils to wind and water erosion and subsequent soil loss; compact soils, which would reduce soil infiltration and productivity; reduce organic matter content; and potentially change the physical and biological properties of soils.

Air quality management actions that manage surface disturbing activities and minimize dust emissions would protect soil resources by preventing loss of soil from wind erosion.

Soil and geology management that prohibits or restricts surface occupancy and surface disturbing activities would provide the greatest protections to soil resources by minimizing vegetation removal, erosion, and subsequent runoff to surface water sources. Soils management that would allow surface disturbance or occupancy in areas with limited reclamation potential soils only if adverse impacts would not occur would help to protect these soils (approximately 283,183 acres) and ensure that erosion rates would not exceed natural rates.

Water management actions that prohibit or restrict surface occupancy and surface disturbing activities would minimize erosion and related soil loss. Surface disturbing activities and new permanent facilities would be avoided within 500 feet of 100-year floodplains, wetlands, riparian areas, perennial streams, and within 500 feet of the edge of the inner gorge of large ephemeral drainages. These restrictions would reduce surface disturbing activities in these areas and thereby reduce soil exposure, erosion, compaction, and loss. The use of best management practices (BMP) to minimize flood damage, reestablish vegetation cover, and stabilize watersheds, and management actions to protect groundwater recharge, riparian areas, wetlands, and floodplains would all help to maintain soil health within the planning area. Mineral leasing and development would involve land-clearing and surface disturbance, such as the construction of well pads, storage facilities, roads, and pipelines. These actions remove and disturb vegetation, expose soils to the erosive forces of water and wind, and result in soil erosion and reduction of soil productivity in both the short-term, during construction activities, and in the long-term, as permanent structures are maintained. Fluid mineral management that would limit the extent of surface disturbing activities would generally minimize impacts to soil resources in areas where applied. Application of a controlled surface use (CSU) stipulation on 721,132 acres would provide protections to susceptible soils by limiting the amount of surface disturbance and subsequent erosion and runoff that would occur. Application of timing limitation stipulations (TLS) on 1,840,967 acres would provide protections to soils in these areas in the short-term during the timeframe the restriction was in effect. Outside this timeframe, however, drilling operations could occur, in which case soil erosion, compaction, and increased runoff could occur. Applying no surface occupancy (NSO) stipulations on 158,611 acres would further protect soil resources as surface disturbing activities associated with fluid mineral leasing would be prevented and closing 540,021 acres to fluid mineral leasing would prevent the impacts to soil resources associated with new oil and gas development.

Development of locatable minerals would involve land-clearing, road development, construction of mining facilities, and other surface disturbing activities, which would remove vegetation, expose soil to wind and water erosion, and thereby result in soil loss and reduced soil productivity. The extent and magnitude of soil erosion from locatable mineral development activities would depend on the duration of activity, as well as the type of reclamation efforts implemented and how long it would take for disturbed areas to become stabilized and vegetated. Under this alternative, 556,558 acres would be pursued for withdrawal from locatable mineral entry (Table 2-3, Map 2-1), which would eliminate related impacts to soil resources in these areas.

Activities associated with saleable and solid leasable mineral development activities would include road development, construction of facilities, and other surface disturbance, which would remove vegetation, expose soil to wind and water erosion, and thereby result in soil loss and reduced soil productivity. The extent and magnitude of soil erosion would depend on the duration of activity, as well as the type of reclamation efforts implemented and how long it would take for disturbed areas to become stabilized and vegetated. Approximately 833,719 acres would be closed to mineral material disposals and sale areas (Table 2-8, Map 2-13), 485,964 acres would be closed to coal leasing, and 727,805 acres would be closed to oil shale leasing. The closures would eliminate impacts on soils from saleable and solid mineral development activities in these areas.

Wildland fire (prescribed fire and wildfire) impacts soil resources primarily by consuming litter, organic material, dead and down woody fuels, and vegetative cover. Because organic matter contributes to surface soil structure and porosity, burning of organic matter could result in soil structure degradation. Surface runoff and water and wind erosion would increase after fire as a result of these physical changes. Fires that consume large quantities of surface organic matter could reduce the productivity of soils by reducing

moisture-holding capacity. Fire also alters soil chemistry by volatilizing organic matter and by changing the form, distribution, and quantity of nutrients. Fire could have both long-term beneficial and short-term impacts on soil resources, the degree of which would depend on fire size, timing, and fuel type. Short-term impacts could include increased runoff from exposed soils, while over the long term, benefits could include increased age and species diversity of plant communities, enhanced nutrient cycling, and increased plant vigor, which would stabilize soils and slow erosion rates. Wildfires generally have more impacts than do prescribed burns because wildfires usually cover larger areas and remove more vegetation, and, if burning outside established prescription, often burn with enough heat to adversely affect soil organisms and damage the root system of some plants. This could result in long-term adverse impacts by compromising future plant rejuvenation and growth rates. Therefore, fire management actions that would prevent wildfire would likely provide protections to surface soil resources. Fire suppression activities could also disturb soils and increase the risk of localized erosion during fire line construction and heavy equipment transport. The significance of any impact would depend on the amount of area burned, fire type, and rate of revegetation.

Forest and woodland management actions that promote forest and woodland health, optimize cover, and protect soil values and stability would help to maintain soil quality. Promoting reforestation and minimizing erosion would provide protections to soil resources in these areas. In areas where firewood cutting would be allowed, localized surface disturbance, soil compaction, and erosion could occur. In areas where clear cutting would be allowed, more widespread erosion and sediment transport from tree removal and transportation would likely occur in both the short term and long term until vegetation cover was reestablished. Tree removal and transportation methods, skid trail design, and final soil surface cover would all affect the amount of post-harvest erosion and overland flow. Restrictions on clearcutting in sensitive areas, including within 100 feet of drainages or standing and flowing waters, and limiting logging operations on slopes steeper than 45% would provide protections to susceptible soil resources in these areas by minimizing erosion and sediment flow.

Vegetation management, including vegetation treatments for ecological purposes, rangeland treatments for livestock, or noxious weed treatments, could result in short-term vegetation removal, which would expose soil and degrade root structures that hold soils in place. Mechanical or manual vegetation treatments could result in soil disturbance and compaction at the treatment site. Short-term soil exposure and compaction would reduce water infiltration rates, thereby increasing erosion at a rate greater than natural rates from both water and wind. In the long-term, these actions could provide more protection to soil resources by promoting native, diverse vegetation communities that result in increased age and species diversity of plant communities, enhanced nutrient cycling, and increased plant vigor. Improved vegetation cover would maintain soil resources in place, protecting against water or wind erosion.

Protections to soil resources would be anticipated from fish and wildlife habitat management actions. Activities designed to improve fish and wildlife habitat (and reduce habitat loss or alteration) generally involve the promotion of diverse plant communities, which are better able to slow and filter overland flow and reduce erosive forces. Short-term impacts could occur where wildlife populations concentrate near water sources and water developments, potentially increasing erosion and sediment loads. Management that prohibits or restricts surface disturbing and disruptive activities in wildlife habitat, including seasonal restrictions on these activities, would provide protections to soil resources while those restrictions are in place. Management to protect Special Status Species could both protect and impact soil resources in the planning area. Designating seasonal avoidance and limitations for surface disturbing activities in and near Special Status Species' habitat would provide short-term protections to soil resources as vegetation removal and soil erosion would be minimized over this timeframe.

Management of cultural and paleontological resources would likely have minimal impacts on soil resources. Management actions generally focus on the protection or preservation of cultural and paleontological resources, which would protect localized soil resources by prohibiting or restricting surface disturbing activities on or near such sites. Indirect effects could occur if avoidance of cultural resources would direct activities to other areas, possibly concentrating uses and increasing impacts to soil resources. Protection measures afforded by the National Historic Preservation Act of 1966 (NHPA) would further mitigate



potential adverse impacts.

Management of visual resources would help to protect and maintain soil resources. Approximately 225,717 acres would be managed as Visual Resource Management (VRM) Class I and 582,672 acres would be managed as VRM Class II. The level of change to the characteristic landscape with VRM Class I areas should be very low and must not attract attention. Surface disturbance activities in VRM Class II areas can be visible but should not attract the attention of the casual observer. These designations would likely minimize the amount of surface disturbing activity occurring in these areas, and therefore provide protections to soil resources. Approximately 615,492 acres would be managed as VRM Class III, meaning the level of change in the landscape can be moderate. Approximately 2,180,423 acres would be managed as VRM Class IV. Under this classification, the level of change and visibility can be high, but measures should still be taken to reduce the visibility. Adverse impacts to soil resources as a result of surface disturbing activities would be more likely under these classifications.

Lands and realty actions would serve to manage land ownership and thereby the degree of protection of soil resources. Public lands that are retained in federal ownership would result in the continued level of protections for soil resources, and acquisition of public lands could result in increased levels of protections for soil resources. Disposal of lands would remove those protections from the affected lands and would impact soil resources if surface disturbing activities were to occur. However, wetland and riparian areas would not be suitable for disposal, which would provide continued protections to soils in these areas. By retaining and/or acquiring lands of equal or greater ecological and functional value, protections for soil resources would remain intact and potentially could be expanded.

Surface disturbing activities, such as those associated with the construction of linear ROWs for pipelines, transmission lines, and communication lines would impact soil resources. Land clearing and grading activities necessary for construction remove vegetation and compact soils, which contributes to increased erosion and loss of soil productivity. In areas designated as ROW exclusion areas (426,709 acres) and avoidance areas (736,138 acres), protections to soil resources would be in place, as surface disturbing activities associated with ROW construction activities would not occur (ROW exclusion) or would be limited (ROW avoidance). Furthermore, co-locating and co-sharing utilities ROWs would reduce the amount of surface disturbance and subsequent impacts to soil resources.

Livestock grazing and range improvements involve localized disturbance of soils from activities such as concentrated grazing, water source development, salt block placement, and construction of fences. These activities could result in localized vegetation removal and compaction through trampling, reduced soil infiltration, and increased potential for surface runoff and erosion. Restrictions on livestock grazing would reduce the amount of localized disturbance of soils and subsequent sediment loading, salinity, and turbidity to nearby streams. In areas where range improvement activities were allowed, surface disturbances from the construction of range improvements would remove vegetation and increase erosion by wind and water in localized areas; however, range improvements would also improve livestock distribution, reducing the magnitude of localized vegetation removal and subsequent soil erosion as a result of livestock congregation.

Areas in which public recreation use would be concentrated, such as campgrounds, trails, trailheads, and areas near visitor facilities, would experience soil compaction and erosion and a loss or reduction of vegetation cover, which would lead to increased overland flow and associated water erosion. Management actions that prohibit or restrict recreation-related surface disturbing activities such as camping, cutting of trees and firewood for camping, and construction of recreation site facilities, would provide localized protections to soil resources by minimizing trampling, compaction, and vegetation removal in these areas.

In areas where Special Recreation Management Areas (SRMA) would be designated (297,410 total acres), concentrated and localized surface disturbances would occur as a result of recreation activities, which could lead to prolonged vegetation removal and compaction, erosion, and loss of soil productivity.

Cross-country OHV use would be allowed on 12,831 acres which disturbs and reduces surface cover (i.e., soil-stabilizing vegetation, organic litter, rocks, and soil crusts), displaces soil particles, and increases soil compaction. Decreases in vegetation through crushing and soil compaction reduce the stabilizing characteristics of soil, and under these conditions, wind can entrain soil particles, thereby increasing wind erosion. Under this alternative, OHV use across most of the planning area would be limited to designated roads and trails (968,959 acres) or existing roads and trails (2,398,839 acres). OHV use in areas limited to existing roads and trails could lead to route proliferation because new user-created routes would be perceived as existing roads and trails by other users. OHV use on designated or existing established roads and trails would indirectly protect soils from increased erosion by focusing impacts on hardened surfaces that have already been affected. Soils on 225,537 acres that would be closed to OHV use would not be affected.

Land management and designation actions on or near National Historic Trails (NHT), Wilderness Study Areas (WSA) (227,960 acres), and Wild and Scenic Rivers (WSR) that restrict or prohibit surface disturbing activities would provide protections to soil resources by maintaining vegetation and soil stability. In addition, any Areas of Critical Environmental Concern (ACEC) designation that occurs under this alternative would likely result in restricted surface disturbing activities, which would provide protections to soil resources in these areas. Under this alternative, 286,450 acres would be managed as ACECs.

### 4.4.3 Alternative B

Impacts on soil resources resulting from implementing air quality would be the same as those presented under Alternative A.

Prohibiting surface disturbing activities in areas with limited reclamation potential soils would provide greater protections to soils, compared to Alternative A, as these areas would be prohibited areas, rather than avoidance areas. They would also be managed as NSO for fluid minerals, closed to mineral materials sales/disposals, and closed to all solid mineral leasing. Additional soils management actions would provide further protections to soils, including the use of photo point monitoring for all channel crossings and all surface disturbance greater than 0.5 acres, which would inform land managers when vegetation cover is removed and soil erosion or excess sedimentation is occurring in these areas. The preparation of site-specific activity and implementation plans (to reduce erosion and sediment yield, promote ground cover, and enhance water quality) would be required in all areas and more stringent requirements for activity and implementation planning and monitoring would be required, compared to Alternative A.

Impacts on soil resources resulting from implementing water management actions would be similar to those presented under Alternative A, except the restrictions near surface water sources would be increased. Surface disturbing activities would be prohibited within ¼ mile of 100-year floodplains, wetlands, riparian areas, perennial streams, and within 500 feet of the edge of the inner gorge of large ephemeral drainages. This would eliminate surface disturbance and related soil impacts within these areas and provide increased protections to soil resources over a larger area compared to Alternative A.

Managing lands with wilderness characteristics specifically to preserve those characteristics would prevent surface disturbance and protect soils in these areas, as management actions would include closing these lands to fluid minerals, mineral material sales/disposal, all solid mineral leasing, mineral location, and designating exclusion areas for all new ROWs. These lands would also be managed for VRM Class II, and the state parcels and inholdings within these areas would be pursued for acquisition. However, allowing motorized travel for access to state/private parcels within these areas could result in localized surface disturbance and resulting overland water flow and sediment loading.

In areas open to fluid mineral leasing under standard terms and conditions, the impacts to soil resources would be similar to those described under Alternative A. Under Alternative B, 99,674 acres would be managed with CSU stipulations (approximately 86% reduction in acreage compared to Alternative A) and

713,837 acres would have seasonal TLSs (approximately 61% fewer acres than under Alternative A). However, 813,354 acres would be managed with NSO stipulations, an acreage increase of approximately 412% compared with Alternative A. This NSO designation, along with 2,186,218 acres that would be closed to fluid mineral leasing (an approximately 305% increase in acreage compared to Alternative A) would eliminate surface disturbance from fluid mineral development and therefore protect soil resources across a larger area compared with Alternative A.

In areas open to coal resource inventory and exploration, along with leasing and development, impacts to soils would be the same as discussed in Alternative A; and 3,735,546 acres would be closed to exploration and leasing for coal development (433% increase), which would provide greater protections to soil resources in these areas, compared to Alternative A, as the surface disturbing activities associated with exploration and leasing would not occur. Approximately 2,122,282 acres would be excluded or closed for oil shale development (192% increase), which would reduce the extent of impacts compared with Alternative A.

Approximately 1,993,908 acres would be pursued for withdrawal from locatable mineral entry. This would result in protections for soil resources similar to Alternative A, but to a larger extent as there would be approximately 258% more acres withdrawn.

Impacts to soils from saleable minerals management actions would be similar to Alternative A, but to a lesser extent. Under Alternative B, 2,581,741 acres would be closed to saleable mineral disposal (an approximately 209% increase compared to Alternative A). In these additional closed areas, impacts would be reduced as surface disturbing activities associated with mineral material disposal, and subsequent erosion and sedimentation would not occur.

Fire and fuels management actions would have impacts to soils similar to those discussed in Alternative A, except stricter stipulations on heavy equipment use could provide more localized protections to soils in these areas.

Management actions for forest and woodland resources would also be similar to Alternative A, except logging operations on slopes steeper than 25% would be prohibited, which would provide more protections to soils, compared to Alternative A, by maintaining vegetative cover and soil stability.

Vegetation treatment actions would have similar impacts to soils as those discussed in Alternative A, but longer resting times for treated areas would likely provide greater protections to soils in these areas as vegetation and soil would have a longer timeframe to establish and stabilize. Requiring management plans to maintain, improve, or restore vegetation in all riparian areas within five years could provide greater long-term protections, compared to Alternative A, by defining a time-frame for implementation.

Habitat management actions for fish and wildlife would have similar impacts as discussed in Alternative A. Actions to maintain or improve habitat, such as reducing livestock grazing and requiring selective placement of water developments would reduce surface disturbance in the vicinity of streams and water bodies resulting in improved riparian and soil conditions. Applying seasonal surface disturbance restrictions to wildlife habitat would provide protections to soil resources similar to Alternative A, but to a greater extent, as the restrictions would cover the entire planning area. Locations where stipulations, mitigations, and surface occupancy and/or disturbance restrictions for mineral activity apply would all provide protections to soil resources by minimizing vegetation removal, erosion, and excess sediment, salt, and nutrient loading to surface water.

Surface disturbing and disruptive activities would be prohibited to maintain aquatic and terrestrial habitat. These areas would be NSO for fluid minerals, closed to mineral material sales/disposal, and closed to all solid mineral leasing. These actions would provide protections to soil resources similar to Alternative A, but to a greater extent, as these activities would now be prohibited year-round, rather than seasonally. Similarly, closing big game crucial winter ranges and birthing areas from coal leasing and development would provide greater protections to soil resources, compared to Alternative A, as the soil compaction,

vegetation removal, and subsequent erosion and sedimentation associated with these activities would not occur.

Applying NSO and closures in areas with special status plant species would result in the same protections to soil resources as discussed in Alternative A. Additional restrictions, such as designating ROW exclusion areas, would provide greater protections to soil resources, compared to Alternative A, as these areas would be exclusion areas, rather than avoidance areas. Prohibiting use of fire chemicals, salt or mineral supplements, and range improvements within ¼ mile of special status plant species could indirectly further protect soil quality in these areas.

Any management actions to protect Special Status Species that result in surface disturbance (e.g. burying power lines) would have similar impacts to soil resources as discussed in Alternative A. Designating seasonal avoidance and limitations for surface disturbing activities in and near Special Status Species' habitat would provide similar short-term protections to soil resources as discussed in Alternative A, but to a greater extent as there would also be seasonal surface disturbing and disruptive activities prohibitions and closures.

Protections to soils from management of specific cultural resource sites would be similar to Alternative A, but restrictions to mineral activities, including designating NSO and closed areas for fluid minerals, would be over a larger area compared to Alternative A, providing protections to a greater extent. Paleontological resource management activities would have the same impacts as discussed in Alternative A, but to a greater extent, as mitigation requirements and additional closures for mineral material sales and would also be in place.

VRM actions would provide greater protections to soils resources compared to Alternative A. Alternative B would have fewer VRM Class IV areas, and more VRM Class II areas. Under Alternative B, 2,148,902 acres would be managed as VRM Class II, an approximate 369% increase of acres compared to Alternative A. Approximately 563,754 acres would be managed as VRM Class IV, which would be an approximately 74% reduction of acres compared to Alternative A, and thus the potential for impacts to soils would be reduced.

Lands and realty management actions would be similar to Alternative A, except where additional lands are retained. Retention of additional public lands would result in the continued level of protections for soils. Conversely, any potential disposal of lands would remove those protections from the affected lands.

Impacts to soils from ROW management would be similar to Alternative A in areas open for ROW actions. However, under this alternative, 2,480,876 acres would be designated as ROW exclusion areas, an approximately 481% increase in acres compared to Alternative A, and ROW avoidance acres would decrease by approximately 82%, to 133,903 acres. Although ROW avoidance acres would decrease, the larger increase in ROW exclusion areas would result in less likelihood for surface disturbing activities in these areas, and thus protections to soil resources would be greater under this alternative, compared to Alternative A. Additional measures to co-locate pipelines, power lines and other utilities adjacent to or within existing ROWs to reduce new surface disturbance would provide further protections to soils.

Livestock grazing management actions would be similar to Alternative A, except where areas open to grazing under Alternative A would be prohibited or closed to livestock grazing (exclosures and recreation areas). In these areas, reduced grazing pressure on vegetation would provide greater protections to soils, compared to Alternative A.

Recreation management actions would provide more protections to soils, compared to Alternative A. Camping would be prohibited in riparian areas, or within 200 feet of water, and surface disturbing activities would be prohibited within three miles or the visual horizon of developed recreation sites. Recreation site facilities would also be prohibited within 500 feet of riparian areas. These additional stipulations would result in less localized surface disturbance, providing greater protections to soils, compared to Alternative

A. In addition, where surface disturbance is allowed, an approved plan would be required prior to site disturbance, which would likely reduce the extent of impacts.

Impacts to soils from OHV management actions would be similar to Alternative A, with 12,831 acres open, 225,537 acres closed, and 3,367,576 acres limited to designated roads and trails, including 2,352 miles of open routes, 4,505 miles of closed routes, 67 miles of limited routes (routes limited to either non-motorized vehicles (e.g., bicycles) or to foot traffic), and 10,006 miles of transportation linear disturbance (routes that are not part of the BLM transportation network and would be identified for decommissioning). These additional designations of closed routes (4,505 miles) and transportation linear disturbance (10,006 miles) would likely provide greater protections to soils compared to Alternative A, as surface disturbing activities associated with OHV use would not occur along these routes. In areas where OHVs are causing or will cause considerable adverse effects upon a range of resources, there would be less surface disturbance and reduced impacts to soils, compared to Alternative A, as these areas would be immediately closed until adverse effects are eliminated.

On NHTs, a five-mile area on each side of the NHTs would be managed as closed to mineral leasing and mineral material sales, as an exclusion area for ROWs, and a withdrawal would be pursued. Additionally, within five to 15 miles on each side of the NHTs, the area would be managed as open to mineral leasing and mineral material sales with CSU restrictions, available to locatable mineral entry, and would be a ROW avoidance area with CSU restrictions. The areas within the five miles of the NHTs would have the most protections to soils from surface disturbing activities, as the stipulations would be more restrictive. However, soils within five to 15 miles of the NHTs would also receive protections from these stipulations. Both of these areas would receive more protections to soils, compared to Alternative A.

WSA and WSR management would provide the same protections to soils as discussed in Alternative A. Management actions for ACECs would be similar to Alternative A, but to a greater extent as 1,605,660 acres would be managed as ACECs under this alternative. Additional stipulations that close, exclude, restrict, or prohibit surface disturbance and surface disturbing activities would provide further protections, compared to Alternative A.

#### **4.4.4 Alternative C**

Impacts on soil resources resulting from implementing air quality actions would be the same as those presented under Alternative A.

Surface disturbing activities would not be prohibited in areas with limited reclamation potential soils nor would these areas be designated avoidance areas for surface disturbing activities resulting in increased impacts on soil resources as compared to Alternatives A and B. Closure of Pilot Butte and Emmons Cone to mineral materials sales/disposals would provide greater protections to geological resources than Alternative A.

Impacts on soil resources resulting from implementing water management actions would increase compared to Alternative A, due to reduced restrictions on surface disturbing activities. Such activities would be considered within riparian areas, wetlands, and 100-year floodplains or adjacent to the inner gorge of large ephemeral drainages. This would increase the extent of potential vegetation removal and soil exposure, erosion, compaction, and loss compared with Alternative A. No limits to road density and surface occupancy would be designated in aquifer recharge areas resulting in impacts to groundwater quality and aquifer recharge greater than those presented under Alternative A.

Under this alternative, all lands identified as having wilderness characteristics would not be managed to protect those characteristics. This management could impact soil resources in areas where any surface disturbing activities were to occur, causing loss of vegetation, destabilized soils, and increased erosion.

approximately 58% compared to Alternative A), and 15,542 acres would be managed as NSO, also a decrease in acreage of approximately 90% compared to Alternative A. Approximately 215,890 acres would be managed as CSU (approximately 70% fewer acres than Alternative A) and 1,911,167 acres would have seasonal restrictions (an approximately 5% increase in acres compared to Alternative A) (Map 2-7) (Table 2-4). Although slightly more acres would have seasonal restrictions, there would be less acres designated as closed, NSO, and CSU, which would provide less protection to soils, compared to Alternative A. However, use of BMPs and required mitigation measures could help to reduce the extent of these impacts.

Impacts to soils from coal leasing and development would be similar to those discussed in Alternative A, but to a greater extent as 226,219 acres would be closed, a 66% decrease compared to Alternative A. Impacts to soils from oil shale leasing and development would increase compared to those discussed under Alternative A, as 225,965 acres would be closed to leasing and development of oil shale, a 69% decrease.

Under this alternative, 234,961 acres would be pursued for withdrawal from locatable mineral entry. Impacts on soil resources could slightly increase, as approximately 321,597 fewer acres would be closed compared to Alternative A.

Saleable minerals management actions would have impacts similar to Alternative A, but likely to a greater extent, as 226,421 acres would be closed to mineral material sales/disposal, a decrease of 72% compared to Alternative A.

Fuels and fire management actions would have impacts to soils similar to those discussed in Alternative A, except stricter stipulations on heavy equipment use could provide more localized protections to soils in these areas.

Impacts to soils from forest and woodland management actions would likely be greater, compared to Alternative A, as woodlands would be managed to provide forest and woodland products to the public, rather than protections to resources. Clear-cutting and thinning would be allowed in more areas, which could result in greater impacts to soils in both the short-term and long-term, compared to Alternative A.

Vegetation treatment and habitat management actions would have similar impacts to soils as those discussed in Alternative A. Management actions that would maintain, improve, or restore riparian habitat, would provide similar protections to soils as discussed in Alternative A. Requiring management plans to achieve these objectives in all riparian areas, within ten years, could provide greater long-term protections, compared to Alternative A, by defining a time-frame for implementation.

Habitat management actions for fish and wildlife would have similar impacts as discussed in Alternative A, but likely to a greater extent, as allowing more grazing areas, water developments, structures, and energy production in habitat areas could result in greater surface disturbance, vegetation removal, soil compaction, and subsequent erosion. Vegetation treatments would have similar impacts as discussed in Alternative B. In habitats where surface disturbance restrictions are in place, these actions would provide protections to soils similar to Alternative B.

Surface disturbing activities would be allowed within specific cultural resource sites resulting in increased impacts to soils as compared to Alternative A. Paleontological resource management actions would have increased impacts to soils as compared to Alternative A.

Impacts to soil resources from managing visual resources would be similar to those described under Alternative A, except 395,683 acres would be managed as VRM Class III, a decrease of 219,809 acres, compared to Alternative A and 2,374,706 acres would be managed as VRM Class IV, an increase of 194,283 acres compared to Alternative A. This change in VRM designations could result in greater impacts to soils in these areas.

Lands and realty management actions would be similar to Alternative A. ROW exclusion areas would

decrease by approximately 47% compared to Alternative A, to 225,784 acres. ROW avoidance areas would also decrease by approximately 96%, to 31,018 acres. Protections to soils would be reduced compared to Alternative A. ROW management actions that co-locate utilities and required mitigation measures would provide similar protections to soils as discussed in Alternative B, and withdrawal action impacts would be similar to those discussed in Alternative A.

Livestock grazing management actions differ from Alternative A, as 160,387 AUMs would be allocated for livestock, 158,260 (49.6%) fewer AUMs than Alternative A. Adjusting active use AUMs to facilitate proper grazing management or make significant progress towards rangeland standards and goals and objectives of the RMP could decrease localized impacts to soils.

Recreation management actions and impacts to soil resources would be similar to Alternative A, but could be to a larger extent. The development of permanent recreation sites and facilities in undeveloped recreation use areas would be allowed, which would provide fewer protections to soils, compared to Alternative A, as there would not be an avoidance or prohibited area within 500 feet of riparian areas. Surface disturbing activities would be permitted within ¼ mile of developed recreation sites and trails if they are determined to be compatible with or are done for meeting recreation objectives for the area, which would provide fewer protections to soils compared to Alternative A.

OHV area designations would be managed similar to Alternative A, as 13,332 acres would be managed as open, 225,537 acres would be managed as closed, and 3,369,418 acres limited to designated roads and trails. Of these designated routes, 16,256 would be open, 427 would be closed, 93 would be limited, and 165 would be designated as transportation linear disturbance. Impacts to soil resources from these designations would be similar to Alternative A.

Impacts from special designation, WSAs, and WSR management actions would be similar to Alternative A. No ACECs would be designated or retained under this alternative, which would likely reduce protections to soils in these areas.

#### **4.4.5 Alternative D**

Impacts on soil resources resulting from implementing actions associated with the management of air quality, water, wildlife, and Special Status Species, cultural resources, paleontological resources, and livestock grazing, fire and fuels, and forests and woodlands would be the same as those presented under Alternative A.

Impacts to soils from implementing soil management actions would be similar to those identified under Alternative A. Areas with limited reclamation potential soils (those with limited reclamation potential as per the Natural Resources Conservation Services (NRCS) soil rating) would be designated avoidance areas for surface disturbing activities, which would reduce the extent of surface disturbing activities in these areas and thereby reduce associated impacts to soil resources. However, under Alternative D, an operator must submit an approved mitigation plan before a proposed project on limited reclamation potential soils will be approved. This could provide a greater degree of protection to limited reclamation potential soils compared to Alternative A, as similar plans would be required under Alternative A only when deemed applicable. Closure of Pilot Butte and Emmons Cone to mineral materials sales/disposals and segregation and withdrawal of these areas would provide greater protections to geological resources than Alternative A.

Impacts on soil resources from managing lands with wilderness characteristics would be greatly increased compared to Alternative B. Under Alternative D, lands with wilderness characteristics would be managed for a variety of uses with only consideration of those characteristics. The management would help to reduce development activities within these areas, but to a far lesser degree than under Alternative B. These areas would not be closed to mineral development as they would be under Alternative B, which would increase

the potential occurrence of surface disturbing activities within the nine areas of lands with wilderness characteristics. The activities would result in vegetation removal, the exposure of soils, wind and water erosion and subsequent soil loss, soil compaction, and loss of soil productivity.

Impacts to soil resources from managing fluid mineral leasing and development would be similar to those discussed under Alternative A, except stipulations that prohibit fluid mineral leasing would be applied to a smaller area. Under Alternative D, 768,989 acres would be closed to fluid mineral leasing (42% increase compared with Alternative A). Fewer areas would be managed with NSO stipulations (2,172 acres would be managed with NSO stipulations, which is a 99% decrease compared with Alternative A (Table 2-4, Map 2-8). However, a larger area could be subject to CSU stipulations (1,238,899 acres, which is a 72% increase) and seasonal restrictions (1,911,167 acres which is a 5% increase) as compared with Alternative A. While prohibitions on fluid mineral leasing would reduce surface disturbance and thereby reduce related impacts to soil resources, managing more areas with NSO stipulations would result in decreased soil disturbance, compared with Alternative A.

Impacts on soil resources from solid leasable mineral development activities would be similar to those presented under Alternative A, except the area in which such mineral development is prohibited would be increased to 610,342 acres for coal (26% increase compared with Alternative A) and increased to 1,557,520 acres for oil shale (114% increase compared with Alternative A) (Table 2-7, Map 2-12). This would increase the area in which soil resources could be impacted by coal development and decrease oil shale development activities on soil resources.

Impacts on soil resources from locatable and saleable mineral development activities would be similar to those presented under Alternative A. Under Alternative D, the lands closed to saleable minerals would be decreased to 362,009 acres, a 57% decrease compared with Alternative A (Table 2-8, Map 2-16), which would increase the amount of land that could be subject to surface disturbance, vegetation removal, soil loss, and erosion. Lands withdrawn from locatable mineral development would decrease to 482,272 acres, a 13% decrease compared with Alternative A (Table 2-3, Map 2-4). This management would increase the area in which soil resources could be impacted by locatable mineral development activities, which would decrease the potential for soil exposure to wind and water erosion and subsequent soil degradation and loss.

Impacts on soil resources from managing vegetation resources would be similar to those presented under Alternative A. Under Alternative D, prescribed fire would not be the preferred method for vegetation treatments as it is under Alternative A; however, because all vegetation treatment types are available under Alternative D, the impacts on soil resources would be essentially the same.

Impacts on soil resources resulting from implementing VRM actions would be similar to those presented under Alternative A, except the number of acres designated as VRM Class II would be greatly increased to 1,178,718 acres (202% increase compared with Alternative A) (Table 2-9, Map 2-20), which could lead to decreased soil erosion and loss. Increasing the area managed as VRM Class II would increase the area in which development is restricted in order to be consistent VRM Class II objectives. This could reduce the overall level and intensity of development and result in less soil exposure, erosion, and loss.

Impacts on soil resources resulting from implementing lands and realty actions would be similar to those presented under Alternative A, except the extent of the impacts would be increased. The number of acres designated as ROW exclusion areas would be decreased to 286,289 acres (33% decrease compared with Alternative A) (Table 2-10, Map 2-24), which would decrease the area in which ROW development activities are prohibited. This would increase impacts on soils from ROW development in these areas and could lead to an overall increase of such development across the planning area, thereby degrading soil health and productivity. Considering authorization of renewable energy ROWs within the Known Sodium Leasing Area (KSLA) would provide less protections to soil resources, compared to Alternative A, as surface disturbing activities could occur in these areas. Closing the utility window located in the Little Mountain ACEC would eliminate impacts on soils in that area.



Impacts on soil resources from managing recreation resources would be similar to those presented under Alternative B, except no surface occupancy restrictions would be placed on areas within ¼ mile of developed recreation sites, which would reduce the intensity and extent of surface disturbance in these areas and thereby result in fewer associated impacts to soil resources.

Impacts on soil resources from managing OHV use would be similar to those presented under Alternative A, except the area currently designated as “limited to existing roads and trails” (2,398,617 acres) would be changed to “limited to designated roads and trails” and all routes within this area would be designated as open, closed, or limited.

Impacts on soil resources from managing special designation areas would be similar to those presented under Alternative A, except they would occur over a larger area and thereby offer greater protections to important historic, cultural, wildlife, and scenic values in these areas. This management would reduce surface disturbing activities and indirectly help to protect and maintain soil resources. The acres designated as ACECs would decrease to 246,634 acres (13.9 % decrease compared with Alternative A).

## **4.5 WATER RESOURCES**

### **4.5.1 Assumptions**

The analysis was based on the following assumptions:

- Substantial surface disturbance to soil, including compaction of soil or loss of vegetative cover, would increase water runoff and downstream sediment loads, thereby degrading water quality, altering channel structure, and affecting overall watershed health.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors, including location within the watershed, time, and degree of disturbance, existing vegetation, precipitation, and mitigating actions applied to the disturbance.
- An increase of pollutants in surface waters would affect other beneficial uses (e.g., aquatic life, stock watering, irrigation, and/or drinking water supplies).
- The State of Wyoming has primacy with regard to management of water quality and distribution of water (quantity). The BLM manages the public lands within the planning area. The management of these lands can affect the quality, quantity, and timing of flows of the waters through them. Because the state must comply with federal laws, compliance with state laws includes compliance with federal rules and regulations, including the Clean Water Act, Colorado River Salinity Control Act of 1974, Safe Drinking Water Act, and others. Therefore, it is assumed that any discharged water would meet effluent limits and/or water quality standards at the point of discharge.

### **4.5.2 Alternative A**

The discussion of impacts on water resources includes the effects of surface disturbing activities on water quality and watershed health. Surface disturbing activities, or activities that decrease vegetation cover or otherwise alter land surface cover, would potentially affect water quality and watershed health; these activities could include vegetation removal for any reason, construction and excavation activities, mineral and ROW development activities, and livestock grazing. Surface disturbing activities could result in removal of vegetative cover, soil compaction, and increased erosion rates due to the exposure of soil particles to wind and water. There is a close correlation between the condition of soil and vegetation and water quality. Removal of vegetation generally increases the rate at which water flows off the land. As the amount of surface disturbance increases, the ability of a watershed to buffer high flows, filter water and sediment, and provide habitat, such as stream cover, decreases.

Managing surface disturbing activities and controlling dust on unimproved dirt roads to prevent violation of air quality regulations could indirectly protect water resources by minimizing the amount of vegetation removal, erosion, runoff, and excess sediment, salt, and nutrient transport to water bodies.

Soil and geology management that prohibits or restricts surface occupancy and surface disturbing activities would provide protections to water resources by minimizing soil and vegetation removal, erosion, and subsequent runoff to surface water. Areas with highly erodible soils (approximately 283,183 acres) would be designated as avoidance areas for all surface disturbing activities, and activities would be allowed if no adverse impacts were to occur. The restrictions would provide for protections to water resources in these areas by limiting where surface disturbance could occur. However, any surface disturbing activity that would occur could result in vegetation removal and overland transport of excess sediment, salts, and nutrients into water bodies. Preparing site specific activity and implementation plans (to reduce erosion and sediment yield, promote ground cover, enhance water quality) in areas where needed would protect water resources by maintaining vegetation cover, soil stability, and water quality.

Water management actions that prohibit or restrict surface occupancy and surface disturbing activities would protect and maintain current water quality and minimize erosion and sedimentation. The use of BMPs to minimize flood damage, reestablish vegetation cover, and stabilize watersheds; and management actions to protect groundwater recharge, riparian areas, wetlands, and floodplains could maintain and enhance water quality in the planning area. Water resource management would also maintain water quality by emphasizing reductions in sediment, phosphate, and salinity loads, maintaining and improving drainage channel stability, prohibiting pesticide and herbicide use near water sources, floodplains, and riparian areas, and restoring damaged wetland areas throughout the planning area. Water quality would be further protected through BLM's participation with federal, state, and local government agencies to develop and implement salinity control plans for the Colorado River Basin. Water management actions that protect groundwater quality and recharge, including requiring hydrogeologic investigations in the Jack Morrow Hills (JMH) area, and obtaining legal protection of both consumptive and nonconsumptive water uses, would maintain both surface and groundwater quality.

Fluid mineral leasing activities involve land clearing and activities associated with the construction of well pads, roads, and pipelines. These activities result in surface disturbance and related impacts on water resources because of increased potential for exposed soils, erosion, runoff, sedimentation of surface waters, and salt and nutrient loading. Actions that would limit the extent of surface disturbing activities would generally minimize impacts on surface water sources and recharge areas. Applying NSO designations to 158,611 acres would further protect water resources as surface disturbing activities associated with fluid mineral leasing would be prevented and closing 540,021 acres to fluid mineral leasing would eliminate the impacts noted above associated with new oil and gas development (Map 2-5). Application of CSU stipulations to 721,132 acres, and timing stipulations to 1,840,967 acres could reduce some surface disturbance or prevent surface disturbance within specific timeframes.

Both surface and underground mineral development operations involve land-clearing, road development, construction of mining facilities, and surface disturbances. Under this alternative, 556,558 acres would be withdrawn from locatable mineral entry. Approximately 485,964 acres would be closed to coal leasing and 727,805 acres would be closed to oil shale leasing. The magnitude of long-term erosion and soil sediment loading to nearby surface water from mineral exploration would depend on the duration of activity, as well as the type of reclamation efforts implemented, and how long it would take for disturbed areas to become stabilized and revegetated.

Saleable minerals exploration and operations would include road development, construction of facilities, and other surface disturbing activities. Under this alternative, 833,719 acres would be closed to mineral material disposals, sale areas, community pits, and localized common use. The magnitude of long-term erosion and soil sediment loading to nearby surface water from mineral exploration would depend on the duration of activity, as well as the type of reclamation efforts implemented, and how long it would take for disturbed areas to become stabilized and revegetated.

Fire could have both long-term beneficial and short-term adverse impacts on water resources, the degree of which would depend on fire size, timing, and fuel type. Impacts could include increased runoff from exposed soils and sedimentation of surface waters. Over the long term, benefits could include increased age and species diversity of plant communities, enhanced nutrient cycling, and increased plant vigor, which would slow erosion rates and improve watershed health and water quality. Wildfires usually have more impacts than do prescribed burns because wildfires generally cover larger areas and remove more vegetation, and often burn with enough heat to adversely affect soil organisms and damage the root system of some plants. Wildfires could result in long-term impacts by compromising future plant rejuvenation and growth rates. Therefore, fire management actions that would prevent wildfire would likely provide protections to surface water resources. Fire suppression activities could also result in impacts on water resources by increasing soil erosion from fire line construction and heavy equipment transport. Use of chemical fire suppression agents could result in the transport of these chemicals to nearby water bodies, which could degrade water quality.

Forest and woodland management that promotes forest and woodland health, optimizes cover, and protects soil values and stability would also maintain water quality. Promoting reforestation and minimizing erosion would provide protections to water resources in these areas. In areas where firewood cutting would be allowed, localized surface disturbance, soil compaction, and erosion could occur. In areas where clear cutting would be allowed, more widespread erosion and sediment transport from tree removal and transportation would likely occur in both the short-term, and long-term until vegetation cover was reestablished. Tree removal and transportation methods, skid trail design, and final soil surface cover would all make a difference in the amount of post-harvest overland flow. Restrictions on clearcutting in sensitive areas, including within 100 feet of drainages or standing and flowing waters, and limiting logging operations on slopes steeper than 45% provides protections to water resources in these areas by minimizing erosion and sediment flow into these waterbodies.

Vegetation management would most likely result in positive effects to watershed resources and water quality. Preventing and controlling the spread of invasive plant species would also improve watershed health by reducing competition with native plants and maintaining biodiversity. Vegetation manipulation to enhance wildlife habitat could have short-term impacts on watershed resources by removing vegetation and consequently increasing erosion and sedimentation; however, long-term, positive effects could be realized through increased age and species diversity of plant communities, enhanced nutrient cycling, and increased plant vigor. Using mechanical, chemical, and biological methods, including prescribed fire and livestock grazing, along with vegetation treatments and resting of treated areas to achieve desirable vegetation communities could indirectly impact water resources in these areas in the short-term from any vegetation removal and erosion and increased sediment transport that occurs through implementation. In the long-term, the management could provide more protection to water resources in treated areas through increased age and species diversity of plant communities, enhanced nutrient cycling, and increased plant vigor. Prohibiting herbicide loading sites within 500 feet of water sources, floodplains, and riparian areas would provide direct protections to water resources in these areas.

Long-term positive effects on water resources would be likely from fish and wildlife habitat management. Actions to improve fish and wildlife habitat (and reduce habitat loss or alteration) such as the protection of water sources and habitat, including the promotion of diverse plant communities, would be better able to slow and filter overland flow, reduce erosive forces, and improve water quality. Short-term impacts could occur where wildlife populations concentrate near water sources and water developments, potentially increasing erosion and sediment loads. Management actions that prohibit or restrict surface disturbing and disruptive activities in wildlife habitat, including seasonal restrictions on these activities, would provide protections to water resources while those restrictions are in place.

Management to protect Special Status Species could both protect and indirectly impact water resources in the planning area. Management, such as burying power lines, would create short-term surface disturbances, and subsequent vegetation removal and erosion until new vegetation is established. Designating seasonal

avoidance and limitations for surface disturbing activities in and near Special Status Species' habitat would provide short-term protections to water resources. Actions such as vegetation removal and the resulting soil erosion, and overland transport of excess sediment, salts, and nutrients into water bodies would be minimized over the seasonal timeframe. In areas that contain special status plant species, closures, NSO, or CSU stipulations and ROW avoidance designations for surface disturbing activities and surface occupancy would also provide similar protections to water resources.

Management of cultural and paleontological resources would likely have minimal impacts on watershed health and water quality. Management actions generally focus on the protection or preservation of cultural resources, which would in turn benefit water resources by prohibiting or restricting surface disturbing activities on or near such sites. Data recovery excavations could adversely affect watershed resources through surface disturbances and vegetation removal if not properly conducted. Indirect effects could occur if avoidance of cultural resources would direct activities to other areas, possibly concentrating uses and increasing adverse impacts on local watersheds. Protection measures afforded by the NHPA would further mitigate potential adverse impacts.

Manage of visual resources would help to protect and maintain water resources. Approximately 225,720 acres would be managed as VRM Class I. The level of change to the characteristic landscape should be very low and must not attract attention in VRM Class I areas. Similarly, 582,670 acres would be managed as VRM Class II. Surface disturbance activities in VRM Class II areas may be visible but should not attract the attention of the casual observer. These designations would likely minimize the amount of surface disturbing activity occurring in these areas, and therefore provide indirect protections to water resources. Approximately 615,490 acres would be managed as VRM Class III, which would allow a moderate change in the landscape, and 2,180,420 acres would be managed as VRM Class IV. Under VRM Class IV, the level of change and visibility could be high, but measures would be taken to reduce the visibility. The potential for impacts to water resources as a result of surface disturbing activities would be more likely within areas managed as VRM Class III and IV.

Lands and realty actions would serve to manage land ownership and thereby the degree of protection of soil resources. Public lands that are retained in federal ownership would result in the continued level of protections for water resources in these areas, and acquisition of public lands could result in increased levels of protections for water resources. Disposal of lands would remove those protections from the affected lands, and indirectly impact water resources if surface disturbing activities were to occur. However, aquatic, wetland, and riparian areas would not be suitable for disposal, which would provide continued protections to these water resources. By retaining and/or acquiring lands of equal or greater ecological and functional value, protections for water resources would remain intact and potentially could be expanded. Finally, acquiring public lands and public water reserves where needed would provide additional protections for water resources in these areas.

Surface disturbing activities, such as those associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development, could impact water resources. Land clearing and grading activities necessary for construction would remove vegetation and compact soils, which contributes to increased erosion and subsequent sedimentation of local surface waters. In areas designated as ROW exclusion areas (426,709 acres), protections to water resources would be in place as surface disturbing activities associated with ROW construction activities would not occur. In lands designated as ROW avoidance areas (736,138 acres), reduced impacts to water resources from surface disturbing activities could occur, although ROWs could still be developed. Co-locating and co-sharing utility ROWs would reduce the amount of surface disturbance and subsequent impacts to water resources.

Livestock grazing could result in localized impacts on watershed resources and water quality. Soil compaction and loss of vegetative cover could result in reduced soil infiltration, increased runoff, and sedimentation of surface waters. Other potential impacts from livestock grazing activities could include channel destabilization, nutrient loading of surface waters, and promotion of invasive plant species. In

addition, surface alterations and water depletions resulting from development of livestock pits, ponds, and water wells could alter flow dynamics and cause overall degradation of the riparian corridor. Restrictions on livestock grazing would reduce the amount of localized soil disturbance and subsequent sediment loading, salinity, and turbidity to nearby streams.

Livestock grazing and range improvements could involve localized surface disturbance from activities such as water source development and construction of fences. These activities could result in localized vegetation removal and reduction of soil surface crusts through trampling, increasing potential for surface runoff and erosion, and reducing infiltration rates. In areas where range improvement activities were allowed, these activities would generally distribute livestock within the pasture/allotment in an effort to prevent livestock concentration and overuse of forage. The immediate area surrounding water developments would generally be affected by construction disturbances and livestock concentrations around the developments. This would accelerate runoff and erosion within the affected area and could impact nearby surface waters by increasing sediment and nutrient loads.

Recreational activities that occur in proximity to water sources could impact watershed resources and water quality. Camping and hiking adjacent to waterways could result in localized compaction of soils, vegetation removal, and streambank instability, which in turn would increase sediment, salt, and nutrient loads from increased runoff into water. Waste products from recreational activities near riparian areas could have localized effects on water quality. Management that prohibits or restricts recreation-related surface disturbing activities such as camping, cutting of trees and firewood for camping, and construction of recreation site facilities would provide protections to nearby water resources by reducing the amount of trampling, vegetation removal, and subsequent erosion and sediment loading to surface water.

The use of OHVs could impact water resources in the short- and long-term. Impacts could include erosion, soil compaction, and increased turbidity from stream crossings. A one-time disturbance resulting from OHV use would cause physical damage to vegetation by breaking stems and branches and could disturb the soil surface depending on soil conditions, slope, and ground cover. Often, with a one-time OHV disturbance, plants may be slightly damaged, but areas recover. However, with repeated off-road use, soil compaction would occur and new trails would be established, resulting in long-term soil erosion and runoff. The potential for formation of gullies along trails and roads would also increase with repeated use, which would increase the rate and amount of runoff and sediment transport in the long-term. Allowing cross-country OHV use on 12,831 acres, especially if use were concentrated in specific areas, could result in significant increases in erosion and overland transport of salts, sediments, and excess nutrients. In areas where OHV use was limited to designated roads and trails (968,959 acres), existing roads and trails (2,398,839 acres), or closed roads and trails (225,537 acres), water resources would receive increased protections, because OHV use would occur on already established roads or trails or would not occur altogether.

Land management and designation actions on or near NHTs, WSAs (227,960 acres), and WSRs that restrict or prohibit surface disturbing activities would provide protections to water resources by maintaining vegetation and soil, thereby decreasing the potential for erosion and sediment transport to water bodies. In addition, any ACEC designation under this alternative would likely result in restricted surface disturbing activities, which would provide protections to water resources in these areas. Under this alternative, 286,450 acres would be managed as ACECs.

### **4.5.3 Alternative B**

Impacts to water resources from air quality management would be similar to those described under Alternative A. Under Alternative B, additional management for dust abatement could reduce sediment runoff and erosion, which could support water quality to a greater degree than Alternative A.

Under Alternative B, prohibiting surface disturbing activities in areas with limited reclamation potential

soils would provide greater protections to water resources compared to Alternative A. These areas would be managed with NSO stipulations for fluid minerals, closed to mineral materials sales/disposals, and closed to all solid mineral leasing, which would provide additional protection to water resources. Additional soils management actions would provide further protections to water resources and could reduce soil loss, erosion, runoff, and the deposition of sediment, salts, pollutants, or excess nutrients into water bodies compared to Alternative A.

Under Alternative B, management for water resources, such as preventing or reducing surface disturbing activities, would provide greater protections to water when compared to Alternative A. Prohibiting the use of fire suppression chemicals within  $\frac{1}{4}$  mile of surface water would provide protections to surface water resources by minimizing the amount of potential runoff of these chemicals into nearby water bodies, supporting water quality. Prohibitions for herbicide and pesticide loading, maintenance, and refueling areas would provide greater protections to water resources, as the prohibited area would be greater ( $\frac{1}{4}$  mile around water resources, floodplains, riparian areas, and special status plant locations, instead of 500 feet in Alternative A).

Water management actions that require hydrogeologic investigations to protect groundwater quality and prevent commingling of aquifers and obtaining legal protection of both consumptive and nonconsumptive water uses would help to maintain both surface and groundwater quality.

Managing lands with wilderness characteristics could prevent surface disturbance and protect water resources in these areas. Management would include closing these areas to fluid minerals, mineral material sales/disposal, all solid mineral leasing, mineral location, designating exclusion areas for all new ROWs, and VRM Class II. The management would provide greater protections to water resources by preventing associated surface disturbing activities and subsequent vegetation removal, soil erosion, and overland transport of excess sediment, salts, and nutrients into water bodies.

In areas open to fluid mineral leasing, impacts to water resources from allowing development of oil and gas within these lands with standard terms and conditions would be similar to those described under Alternative A. Under Alternative B, 2,186,218 acres would be closed to new fluid mineral leasing, an approximately 305% increase in acreage compared to Alternative A, and 813,354 acres would be managed as NSO, an increase of approximately 412% acres, compared to Alternative A. 99,674 acres would be managed as CSU (approximately 86% fewer acres than Alternative A) and 713,837 acres would have seasonal restrictions (approximately 61% fewer acres than Alternative A) (Map 2-6). The increased amount of land managed as closed or with NSO stipulations could provide greater protections to surface and groundwater resources in these areas, compared to Alternative A.

Under this alternative, 3,735,546 acres would be closed to coal leasing, exploration and development, and 2,122,282 acres would be closed to oil shale. This management would provide greater protections to water resources compared to Alternative A by reducing the amount of land that could be vulnerable to surface disturbance, vegetation removal, soil loss, erosion, and runoff of excess sediment, salts, pollutants, and nutrients into water bodies.

Under Alternative B, 1,993,908 acres would be pursued for withdrawal from locatable mineral entry. Impacts to water resources would be similar to those described under Alternative A, but would provide greater protection to water resources, as approximately 258% more acres would be withdrawn compared to Alternative A.

Impacts to water resources from saleable minerals management would be similar to those described under Alternative A. Under Alternative B, 2,581,741 acres would be closed to mineral material sales/disposals, an approximately 209% increase compared to Alternative A. Impacts would be reduced as surface disturbing activities associated with mineral material disposal, and subsequent erosion, sediment, nutrient, and salt transport to surface water bodies would occur in fewer acres of land compared to Alternative A.

Impacts to water resources from fuels and fire management would be similar to those discussed in Alternative A, except stricter stipulations on heavy equipment use and use of chemical fire suppressants could provide greater protections to water quality in these areas.

Impacts to water resources from forest and woodland resource management would be similar to Alternative A, except that additional management to reduce forestry on steep slopes, and reduced surface disturbance would provide more protections to water resources by maintaining vegetative cover and soil stability, thereby limiting excess sediment and nutrient transport to nearby surface water.

Vegetation treatment actions would have similar impacts as those discussed in Alternative A, but longer resting times for treated areas would likely provide greater protections to water resources in these areas as vegetation and soil would have a longer timeframe to establish and stabilize, thereby minimizing excess salt, sediment, and nutrient flow to water bodies. Prohibiting chemical applications, including herbicide and pesticide loading within ¼ mile, aerial application of chemicals within 2,640 feet, and vehicle and hand application of chemicals within 1,320 feet of wetlands, riparian areas, aquatic habitats and special status plants would provide greater protections to water resources in these areas by minimizing surface disturbance, chemical exposure, and maintaining water quality.

Impacts to water resources from fish and wildlife habitat management would be similar to those described under Alternative A. Management that would maintain or improve habitat, such as selective placement of water developments, would reduce surface disturbance in the vicinity of streams and water bodies resulting in improved riparian and soil conditions, and thus, more protections for water resources. However, surface disturbing activities such as vegetation treatments, removing and building fences, and water developments would result in short-term vegetation loss, which could cause localized erosion and sediment transport to nearby surface water. Applying seasonal surface disturbance restrictions would provide protections to water resources similar to Alternative A, but to a greater extent as the restrictions would cover the entire planning area.

Impacts to water resources from the management of special status plant species by applying NSO and closures would be similar to those described under Alternative A. Additional restrictions such as designating ROW exclusion areas would provide greater protections to water resources compared to Alternative A. Prohibiting use of fire chemicals, salt or mineral supplements, and range improvements within ¼ mile of special status plant species could indirectly protect water quality in these areas. Designating seasonal avoidance and limitations for surface disturbing activities in and near Special Status Species' habitat would provide similar short-term protections to water resources as discussed in Alternative A. Under Alternative B, additional management such as closures and seasonal prohibitions of surface disturbing and disruptive activities could reduce the levels of vegetation removal, erosion, and excess sediment, salt, pollutant, and nutrient loading to surface water.

Protections to water resources from management of specific cultural resource sites would be similar to Alternative A, but to a greater extent as restrictions to mineral activities, including designating NSO and closed areas, would be over a larger area. Cultural resource management actions would include applying a CSU for fluid minerals, which would provide fewer protections to water resources for the specific areas, compared to Alternative A, as surface disturbing activities could still occur. Paleontological resource management activities would have the same impacts as discussed in Alternative A, but to a greater extent as mitigation requirements and additional NSO and closures for mineral sales and leasing would provide greater protections to water resources.

Impacts to water resources from VRM would be similar to those described in Alternative A, except that additional management would provide greater protections to water resources. Alternative B would have fewer VRM Class IV areas, and more VRM Class II areas. Approximately 2,148,900 acres would be managed as VRM Class II, a 269% increase of acres compared to Alternative A. Approximately 563,754 acres would be managed as VRM Class IV, which would be an approximately 74% reduction of acres compared to Alternative A, and thus the potential for impacts to water resources would be reduced.

Lands and realty management actions would be similar to Alternative A, except where additional lands are retained. Retention of public lands would result in the continued level of protections for water resources. Conversely, any potential disposal of lands would remove those protections from the affected lands.

ROW and corridor action impacts would be similar to Alternative A in areas open for ROW actions. Under this alternative, 2,480,876 acres would be designated as ROW exclusion areas, an approximately 481% increase in acres compared to Alternative A, and ROW avoidance acres would decrease by approximately 82%, to 133,903 acres. Exclusion areas would have less likelihood for surface disturbing activities than avoidance areas, and thus protections to water resources would be greater under this alternative, compared to Alternative A. Additional measures to co-locate pipelines, power lines, and other utilities adjacent to or within existing ROWs to reduce new surface disturbance would provide further protections to water resources.

Impacts to water resources from livestock grazing management would be similar to Alternative A. Under Alternative B, some areas would be prohibited or closed to livestock grazing. In these areas, reduced grazing pressure on vegetation would provide greater protections to water resources when compared to Alternative A.

Impact to water resources from recreation management would be similar to those described under Alternative A; however, Alternative B would provide additional management which would protect water resources. The additional management would result in less surface disturbance, providing greater protections to water resources.

Impacts to water resources from OHV management would be similar to Alternative A, with 12,831 acres open, 225,537 acres closed (including in WSAs), and 3,367,576 acres limited to designated roads and trails, including 2,352 miles of open routes, 4,505 miles of closed routes, 67 miles of limited routes (routes limited to either non-motorized vehicles (e.g., bicycles) or to foot traffic), and 10,006 miles of transportation linear disturbance (routes that are not part of the BLM transportation network and would be identified for decommissioning). The designations of closed routes (4,505 miles) and transportation linear disturbance (10,006 miles) would likely provide greater protections to water resources, compared to Alternative A, as surface disturbing activities associated with OHV use would not occur along these routes. In areas where OHVs could cause considerable impacts upon soil, vegetation, or other resources, there would be less surface disturbance and reduced impacts to water resources, compared to Alternative A, as these areas would be immediately closed until adverse effects are eliminated.

Impacts to water resources from the management of NHTs, WSAs, and WSRs would be the same as those described under Alternative A. Impacts to water resources from the management for ACECs would be similar to Alternative A, but 1,605,660 acres would be managed as ACECs under Alternative B. Additional stipulations that close, exclude, restrict, or prohibit surface disturbance and surface disturbing activities would provide further protections to water resources compared to Alternative A.

#### **4.5.4 Alternative C**

Impacts to water resources from the management of soil resources would be similar to those described under Alternative A. The management would provide greater protections to water resources compared to Alternative A by reducing surface disturbing activities associated with mineral activities in these areas. The preparation of site-specific activity and implementation plans (to reduce erosion and sediment yield, promote ground cover, enhance water quality) would provide similar protections to water quality resources as described in Alternative A, where implemented. These plans would not be required in all areas, and where not required, water quality resources could receive lesser protections, compared to Alternative A.

Water quality management actions would have impacts similar to those discussed in Alternative A. Prohibiting salt or mineral supplements near surface water would provide protections to water resources



similar to those discussed in Alternative B, but to a lesser extent as the prohibited area is smaller (100 feet of surface water, compared to 2,640 feet in Alternative B). Prohibiting the use of fire suppression chemicals would provide similar protections to surface water compared to Alternative B, but to a lesser extent as the prohibited area would be smaller (within 100 feet from surface water, compared to 1,320 feet in Alternative B).

Under Alternative C, all lands identified as having wilderness characteristics would not be managed to protect those characteristics. This management could result in more surface disturbing activities compared to Alternative B. Not managing lands with wilderness characteristics could result in a loss of vegetation, destabilized soils, and additional flow of salt, sediment, pollutants, and nutrients to water bodies.

Under Alternative C, 225,782 acres would be closed to new fluid mineral leasing (a decrease in acreage of approximately 58% compared to Alternative A), and 15,542 acres would be managed as NSO, also a decrease in acreage of approximately 90% compared to Alternative A. Approximately 215,890 acres would be managed as CSU (approximately 70% fewer acres than Alternative A) and 1,355,485 acres would have seasonal restrictions (an approximately 12% increase in acres compared to Alternative A) (Map 2-7). Although acres with seasonal restrictions would slightly increase, the reduction in closed, CSU, and NSO acres would provide fewer protections to water resources compared to Alternative A. However, use of BMPs and required mitigation measures could help to reduce the extent of these impacts to water resources.

Impacts to water resources from coal and oil shale leasing and development would be very similar to those described in Alternative A. Under Alternative C, 226,219 acres would be closed to coal leasing, 407,618 fewer acres than Alternative A, and 225,965 acres would be closed to oil shale leasing, 501,840 fewer acres than Alternative A. The smaller areas that would be closed to coal and oil shale leasing could result in increased impacts to water resources from surface disturbance, vegetation removal, soil erosion, and runoff of sediment, salts, pollutants, or nutrients into surface water, which could degrade water quality to a greater degree than Alternative A.

Impacts to water resources from locatable and saleable mineral development would be similar to those described under Alternative A. Under Alternative C, locatable minerals would be proposed for withdrawal on 234,961 acres (approximately 58% fewer acres than Alternative A), resulting in greater potential for impacts to water resources in these areas from related surface disturbing activities. Saleable minerals would be closed within 226,421 acres, 607,298 fewer acres and a 72% decrease compared to Alternative A. The smaller areas of available for mineral development could result in increased impacts to water resources from surface disturbance, vegetation removal, soil erosion, and runoff of sediment, salts, pollutants, or nutrients into surface water, which could degrade water quality to a greater degree than Alternative A.

Impacts to water resources from fuels and fire management would be similar to those discussed in Alternative A, except stricter stipulations on heavy equipment use could provide more localized protections to water resources in these areas.

Overall, impacts to water resources from forest and woodland management actions would likely increase compared to Alternative A, as woodlands would be managed to provide forest and woodland products to the public, rather than protections to resources. Clear-cutting and thinning would be allowed in more areas which could result in greater impacts to water resources in both the short-term and long-term, compared to Alternative A.

Impacts to water resources from the management of vegetation resources, including management actions that would maintain, improve, or restore riparian habitat, including achieving proper functioning condition (PFC), and removing or reducing livestock grazing in riparian areas, would have similar impacts as those discussed in Alternative A. Prohibitions to pesticide and herbicide applications would have similar impacts to those discussed in Alternative B, but to a lesser extent, as the prohibited areas would be smaller (100 feet instead of 2,640 feet for aerial application, and 25 feet by vehicle or 10 feet by hand application, compared

to 1,320 feet under Alternative B) and water resources could be more vulnerable to contamination.

Impacts to water resources from habitat management actions for fish and wildlife would be similar to those discussed in Alternative A. Under Alternative C, fewer restrictions for habitat protection would likely result in greater surface disturbance, vegetation removal, and subsequent erosion and sediment transport to nearby water bodies.

Impacts to water resources from Special Status Species management would be similar to Alternative A. Avoidance areas for surface disturbing activities in areas with special status plant species could provide protections to water resources, but not to the extent described Alternative A. Under this alternative, some areas restricted in Alternative A would have no restrictions in place; these areas would likely have greater impacts to water resources from more surface disturbing activities, compared to Alternative A. Prohibiting use of fire suppression chemicals, including foaming agents and surfactants, salt and mineral supplements, and range improvements within 100 feet of special status plant species populations would provide protections similar to Alternative B, but to a lesser extent as the prohibited area would be smaller (100 feet instead of ¼ mile).

Management actions for cultural resource sites that restrict or prohibit surface disturbing activities would provide similar protections to water resources as discussed in Alternative A. However, designation of additional ROW exclusion areas could provide greater protections to water resources, compared to Alternative A. Impacts to water resources from paleontological resource management would be the same as those discussed in Alternative A.

Under Alternative C, 607,900 acres would be managed as VRM Class II, which would be 25,230 more acres than under Alternative A. This increase in VRM Class II acreage would be approximately 3% acres, which could result in greater protections to water resources. Approximately 395,680 acres would be managed as VRM Class III, a decrease of 219,810 acres compared to Alternative A; and 2,374,710 acres would be managed as VRM Class IV, an increase of 194,290 acres compared to Alternative A. The increase of VRM Class IV could result in greater impacts to water resources from surface disturbance, vegetation loss, erosion, and runoff of sediment, salts, pollutants, or excess nutrients.

Impacts to water resources from lands and realty management would be similar to those described in Alternative A, except retention of public lands would result in the continued level of protections for water resources. ROW exclusion areas would decrease by approximately 47% compared to Alternative A, to 225,784 acres, and ROW avoidance areas would decrease by approximately 96%, to 31,018 acres. These reductions in exclusion and avoidance areas would provide fewer protections to water resources, compared to Alternative A. ROW management actions that co-locate utilities and required mitigation measures would provide similar protections to water resources as discussed in Alternative B.

Impacts to water resources from livestock grazing management would be similar to Alternative A, except larger areas of land would be open to livestock grazing, compared to Alternative A. Areas that would be open to grazing under this alternative could experience increased localized impacts to water resources. Soil compaction and loss of vegetative cover from increased grazing could result in reduced soil infiltration, increased runoff, and sedimentation of surface waters.

Impacts to water resources from recreation management would be similar to Alternative A, but to a larger extent. The development of permanent recreation sites and facilities in undeveloped recreation use areas would be allowed, which would provide fewer protections to water resources, compared to Alternative A. Surface disturbing activities would be permitted within ¼ mile of developed recreation sites and trails, which would provide fewer protections to water resources compared to Alternative A.

Impacts to water resources from OHV area designations would be similar to Alternative A, as 13,332 acres would be managed as open, 225,537 acres would be managed as closed, and 3,369,418 acres limited to designated roads and trails. Of these designated routes, 16,256 miles would be open, 427 miles would be

closed, 93 miles would be limited, and 165 miles would be designated as transportation linear disturbance. Impacts to water resources from route designations would be similar to those described under Alternative B, but many more miles of routes would be open to OHV use which would result in increased erosion, vegetation loss, soil compaction, and sediment, salt, pollutant, or nutrient runoff into nearby waterbodies when compared to Alternative B.

Impacts to water resources from special designations, WSAs, and WSR management would be similar to Alternative A, except the wild portion of the Sweetwater River would be revoked, which would reduce protections to water resources in this area compared to Alternative A. No ACECs would be designated or retained under this alternative, which would likely reduce protections to water resources in these areas. Under Alternative C, localized surface disturbance could occur, which could lead to increased erosion and sediment to flow to nearby surface water.

#### **4.5.5 Alternative D**

The impacts on water resources resulting from implementing actions associated with the management for air quality, fire and fuels, forests and woodlands, fish and wildlife, Special Status Species, cultural resources, paleontological resources, and livestock grazing would be the same as those presented under Alternative A.

Impacts to water resources from implementing soil management actions would be similar to those identified under Alternative A. Areas with limited reclamation potential soils (those with limited reclamation potential as per the NRCS soil rating) would be designated avoidance areas for surface disturbing activities, which would reduce the extent of surface disturbing activities in these areas and thereby reduce associated impacts to water resources. However, an operator must submit an approved mitigation plan before a proposed project on limited reclamation potential soils will be approved. This could provide a greater degree of protection to water resources compared to Alternative A, as similar plans would be required under Alternative A only when deemed applicable.

The impacts on water resources resulting from implementing water management actions would be similar to those presented under Alternative A, except two additional provisions under Alternative D would provide greater protection to water resources. Impoundment ponds, reserve pits, and evaporation ponds that could result in the contamination of sensitive water resources would be avoided or mitigated. This would serve to ensure that such ponds/pits do not pose a threat to surface and groundwater resources, which would further help to maintain or improve water quality. The second additional provision would require hydrogeologic investigations where there is a reasonable expectation that surface water features are connected with aquifers and geologic formations that are potentially impacted by BLM authorized activities. This would help to protect groundwater resources by informing surface users of the connection to groundwater sources and would provide additional protections compared with Alternative A because this requirement would be applied across the entire planning area (versus only the JMH Area).

The impacts to water resources from managing fluid mineral leasing and development would be similar to those discussed under Alternative A, except stipulations that prohibit fluid mineral leasing and surface occupancy would be applied to a smaller area. Under Alternative D, 768,989 acres would be closed to fluid mineral leasing (42% increase compared with Alternative A) and 2,172 acres would be managed with NSO stipulations (99% decrease compared with Alternative A) (Table 2-4, Map 2-8). Managing more areas that are closed to fluid mineral leasing or fewer areas with NSO stipulations would result in increased surface disturbance and related impacts to water resources.

The impacts on water resources from solid leasable mineral development activities would be similar to those presented under Alternative A, except the area in which coal and oil shale development are prohibited would be increased to 610,342 acres (26% increase compared with Alternative A) and 1,557,520 acres (114% increase compared with Alternative A), respectively (Table 2-7, Map 2-12). This would decrease the area

in which water resources could be impacted by coal and oil shale development activities.

The impacts on water resources from locatable and saleable mineral development activities would be similar to those presented under Alternative A. Under Alternative D, the lands closed to saleable mineral development would be decreased to 362,009 acres (57% decrease compared with Alternative A) (Table 2-8, Map 2-16) and lands proposed for withdrawal from locatable mineral entry would be decreased to 482,272 acres (13% decrease compared with Alternative A) (Table 2-3, Map 2-4). This would increase the potential for surface disturbance and related vegetation removal, soil erosion, and sedimentation and degradation of water resources.

The impacts on water resources from managing vegetation resources would be similar to those presented under Alternative A. Under Alternative D, prescribed fire would not be the preferred method for vegetation treatments as it is under Alternative A. However, because all the vegetation treatment types are available under Alternative D, the impacts on water resources would be essentially the same.

The impacts on water resources resulting from implementing VRM actions would be similar to those presented under Alternative A, except the number of acres designated as VRM Class II would be increased to 1,178,718 acres (102% increase compared with Alternative A) (Table 2-9, Map 2-20), which could lead to decreased surface disturbances and related impacts on water quality. Increasing the area managed as VRM Class II would increase the area in which development is restricted in order to be consistent VRM Class II objectives. This, in turn, could reduce the overall level and intensity of development and decrease the potential for surface disturbance and related vegetation removal, soil erosion, and sedimentation and degradation of water resources.

The impacts on water resources resulting from implementing lands and realty actions would be similar to those presented under Alternative A, except the extent of the impacts would be increased. The number of acres designated as ROW exclusion areas would be decreased to 286,289 acres (33% decrease compared with Alternative A) (Table 2-10, Map 2-24), which would decrease the area in which ROW development activities are prohibited. This would increase impacts on water resources from ROW development in these areas and could lead to an overall increase of such development across the planning area, thereby increasing the potential for degradation of water quality.

The impacts on water resources from managing recreation resources would be similar to those presented under Alternative A, except the areas designated as SRMAs would be decreased to 135,549 acres (55% decreased compared to Alternative A) (Table 2-12, Map 2-32), which could decrease intensive recreational activities in the former SRMAs and thereby decrease associated impacts to water resources.

The impacts on water resources from managing OHV use would be similar to those presented under Alternative A, except the area currently designated as “limited to existing roads and trails” (2,398,839 acres) would be changed to “limited to designated roads and trails” and all routes within this area would be designated as open, closed or limited.

The impacts on water resources from managing special designation areas would be similar to those presented under Alternative A, except they would occur over a smaller area and thereby offer fewer protections to important historic, cultural, wildlife, and scenic values in areas that were formerly special designations. This, in turn, could increase surface disturbing activities and related impacts on water resources. The acres designated as ACECs would be decreased to 246,634 acres (13.9% decrease compared with Alternative A).

## 4.6 VEGETATIVE COMMUNITIES

### 4.6.1 Assumptions

The analysis is based on the following assumptions:

- Current trends in plant succession and vegetation health would continue.
- Long-term vegetation impacts are considered a 20-year or longer time frame.
- Grassland and shrubland communities would be maintained with a mix of species composition, cover, and age classes.
- As more monitoring and survey data become available, additional populations of existing special status plant species may be found.
- Management of listed, proposed, candidate, threatened, and endangered plant species is subject to the Endangered Species Act of 1973 (ESA).

### 4.6.2 Alternative A

Management to prevent air pollutants would ensure overall health of native vegetation communities, ecosystems, and waters. Efforts to control dust on roads could reduce dust accumulation on vegetation, which affects photosynthesis and plant health. Management for air quality could reduce airborne pollutants or particulate matter that could damage vegetation. Dust control to prevent windblown dust could protect vegetation by preventing erosion and soil loss.

Management actions aimed at maintaining or improving soil conditions and minimizing soil erosion would also maintain or improve the condition of vegetation. Management for soil resources could protect native vegetation communities that provide sufficient plant cover and litter accumulation to protect soils from wind and water erosion.

Effective watershed management would result in healthy and diverse plant communities. Restricting surface disturbance around wetland/riparian areas, perennial surface waters, identified floodplains, and ephemeral channels would reduce soil erosion, vegetation loss, sediment loading of stream channels, and the potential for invasive weed establishment and spread.

Activities associated with water control structure maintenance, rehabilitation, or reclamation could create short-term damage or loss of vegetation. Enclosures to protect seeps and springs would preclude grazing of livestock, wild horses, and some big game. Developed water sources on uplands would be used to improve distribution of livestock in wetland/riparian areas. This management would help to improve species composition, vigor, and cover in wetland/riparian habitat.

Mineral resource development would result in long- and short-term impacts, including localized removal of vegetative surface cover. Mineral development would fragment vegetation communities, change plant community structure and diversity, and alter vegetation landscapes in the short-term until such time final reclamation can be achieved. Impacts would mostly be associated with permanent structures and construction of roads. Increased erosion and decreased vegetation cover would potentially occur from soil compaction and the channelization of surface runoff in ruts and road ditches. Areas below mid-slope roads would become drier, which would reduce plant productivity and potentially change species composition. Minerals management activities have the potential to introduce and spread noxious and invasive plant seeds from vehicles and equipment. Areas that would be most vulnerable to the introduction of invasive, non-

native plant species are within areas of surface disturbance or along roads and trails.

Restricting surface disturbing activities from mineral leasing through applying stipulations and closures would help retain existing vegetation and riparian and wetland functioning condition. Management actions that restrict surface disturbing activities include closing areas to oil and gas leasing (540,021 acres), managing areas as NSO (158,611 acres), CSU (721,132 acres), closing areas to mineral material sales (833,719 acres), and pursue areas for withdrawal from locatable mineral entry (556,558 acres). Where surface disturbance is reduced, the management would help maintain existing vegetation diversity and ecological health of rangelands, forests, woodlands, riparian and wetlands.

Geophysical exploration would compact soils and crush vegetation. These actions would degrade the protection that vegetation provides for soil stability and maintenance of the plant community. Any repeated vehicular travel associated with geophysical activity would increase the potential for erosion by crushing vegetation and compacting soils.

Table 4-4 lists the amount, in acres, of major vegetation communities that would be affected by oil and gas leasing stipulations.

**Table 4-4. Overlap of Vegetation Communities with Oil and Gas Lease Stipulations**

<b>Restriction</b>	<b>Acres* Alternative A</b>	<b>Acres Alternative B</b>	<b>Acres Alternative C</b>	<b>Acres Alternative D</b>
<b>Aspen/Conifer</b>				
Closed	18,896	28,488	499	21,586
NSO	8,235	1,341	166	57
CSU	2,421	17	10,760	6,265
Seasonal	9,945	1,234	26,806	20,630
<b>Grassland</b>				
Closed	30,621	71,766	8,105	31,240
NSO	14,516	22,665	1,877	1,961
CSU	44,533	2,271	48,244	51,420
Seasonal	55,102	28,537	75,491	69,716
<b>Riparian Vegetation</b>				
Closed	25,234	73,144	10,081	36,084
NSO	30,102	16,810	2,230	983
CSU	30,475	1,294	39,064	44,455
Seasonal	51,302	18,496	67,437	54,222
<b>Sagebrush</b>				
Closed	193,597	1,296,074	48,968	189,122
NSO	234,350	282,094	61,505	53,718
CSU	957,289	64,652	1,033,282	1,183,052
Seasonal	1,294,856	352,473	1,431,444	1,366,215

\* All acres rounded to the nearest whole number

Rangeland/Uplands within the planning area mainly consist of grassland and sagebrush communities.

Grasslands cover approximately 154,940 acres (excluding 551,040 acres of sagebrush/grassland). Based on Table 4-4, Alternative A would close approximately 30,621 acres (20%) of grasslands to oil and gas leasing and apply NSO stipulations to 14,516 acres (9%) of grasslands.

Sagebrush communities cover approximately 2,183,030 acres within the planning area (including 551,040 acres of sagebrush/grasslands). Based on Table 4-4, Alternative A would close approximately 193,597 acres of sagebrush to oil and gas leasing (9%) and apply NSO stipulations to 234,350 acres (11%) of sagebrush.

Wetlands and riparian areas occur throughout the planning area on approximately 146,540 acres of land. Based on Table 4-4, Alternative A would close approximately 25,234 acres of riparian vegetation to oil and gas leasing (17%) and apply NSO stipulations to 30,102 acres of riparian vegetation (21%).

Forest and woodland (aspen/conifer) communities occur on approximately 41,250 acres. Based on Table 4-4, Alternative A would close approximately 18,896 acres of aspen/conifer to oil and gas leasing (46%) and apply NSO stipulations to 8,235 acres of aspen/conifer vegetation (20%).

Effects from most mineral development would be temporary, as the vegetation conditions on most sites are ultimately reclaimed. Impacts on vegetation would result if development outpaces reclamation and reestablishment of vegetation. Constructing wells or access roads in stabilized dunes would cause direct loss of anchoring vegetation, creating active dunes that may not stabilize with natural vegetation for over 20 years. Reclamation of mineral resource development activity in accordance with the Wyoming Policy on Reclamation and the High Desert District Reclamation Program would offset impacts on vegetation resources by changing the species composition and increasing total perennial grass and forb cover in reclaimed areas. Plant surveys would be conducted in potential habitat locations for all project types, which would identify habitat and aid in developing vegetation maps and baseline data. In addition, reclamation activities would provide opportunities for experimentation and refinement of revegetation techniques and processes that ultimately help mitigate all types of surface-disturbing activities. Weed control measures could prevent further spread of noxious weeds.

Both wildfire and prescribed fires could have short-term localized impacts on vegetation. The long-term effect of fire would be improved vegetation conditions and the conversion of shrub habitat to grasslands. Prescribed burning, the preferred method of vegetation treatment, would cause a long-term decrease in sagebrush species, a short-term increase in annual weeds, and a long-term increase in grass species. Vegetative cover would be reduced during the first two growing seasons but would likely improve in the third year following a prescribed burn, resulting in more diversity of species and vegetation health. Surface disturbance associated with fire line construction, the use of heavy equipment, and other fire suppression activity would damage or destroy vegetation and could accelerate soil erosion. Fire suppression activities within special status plant species' habitat would be limited to existing roads and trails to prevent any further impact to these species from crushing or removal. Additional prescriptions for managing fire would include full suppression in the basin big sagebrush/lemon scurfpea plant community, providing protection for this unique vegetation association.

Forest management actions such as tree thinning, timber harvesting, and other practices used to improve forest health could increase vigor of the remaining trees and create a more open tree canopy, which would increase herbaceous plant cover. Fuel reduction would also reduce the frequency and intensity of wildfires. Harvesting of commercial forestlands would increase herbaceous vegetation in the short term. Roads and skid trails would have both short-term and long-term impacts on vegetation cover, depending on the scale of the timber harvest and whether the roads and skid trails are needed for future harvesting.

Management of noncommercial forestlands such as removing encroaching conifers from shrub and aspen stands, thinning diseased and insect-infested trees, and reducing fuel loads would support the health and vitality of vegetation communities. These practices would result in increased vegetation diversity, altered successional status, increased plant vigor, increased availability of water for herbaceous vegetation, and

improved watershed health. Avoiding or mitigating the known locations of special status plants and unique plant communities by the timber harvesting plan would ensure the stability of these species and communities. Restricting firewood gathering and Christmas tree cutting in areas supporting special status plant species and unique plant communities would reduce disturbance to these plants and surrounding habitat.

Impacts from vegetation treatments would include short-term losses of vegetation and changes in plant community structure. In the long term, treatments would be designed to improve the health and vigor of surviving vegetation, increase vegetation diversity, modify vegetation types (e.g., a change from shrubs to herbaceous vegetation), and modifying age class and structure. Construction of water developments would aid in livestock distribution and improve watershed condition through reducing

impacts from cattle grazing, such as loss of plant biomass, trampling of vegetation, soil compaction, and invasive species introduction.

Impacts from the management of invasive plant species would support the health and vitality of native vegetation communities within the planning area. Preventing the spread and treating invasive, non-native plant species would protect native vegetation and support healthy ecosystem function. If invasive, non-native plant species are introduced and allowed to spread, it would be extremely costly and time consuming to control and even harder to eradicate the species. Vehicles, equipment, machinery, horses, wildlife, livestock, campers, and hikers could spread invasive, non-native plant seeds from their source into disturbed areas.

Riparian areas are susceptible to grazing impacts during July and early August. Many grazing management strategies, such as rotation, deferment, and rest from use, would be implemented to manage vegetation composition, cover, and vigor. The implementation of riparian pastures and exclosures would increase the density, age class, and cover of desirable riparian plants, including willow, cottonwood, and herbaceous wetland/riparian plants, within the exclosures. Closing wetland, riparian, and 100-year floodplains to pits and tanks could protect vegetation, help to prevent runoff of soils, and protect riparian areas from sedimentation, erosion, and unsafe downstream water conditions.

Prohibiting herbicide application, livestock salt blocks, and other nutritional supplements within 500 feet of water sources, riparian areas, wetlands, and other sensitive resources could prevent vegetation loss, trampling of vegetation, introduction, or spread of invasive, non-native plant species. This management would reduce or prevent soil compaction, erosion, and the influx of nutrients into riparian areas, wetlands, or streambeds that could protect water quality and support riparian vegetation within these areas.

Impacts to vegetation from the management of wildlife and fisheries would be dependent on population levels, the distribution of those animals, and the ability of those animals to move. Key areas, including crucial winter range for mule deer and pronghorn where shrubs are heavily used, could exhibit vegetation shifts from sagebrush, bitterbrush, and mountain mahogany to conifers, grasses, forbs, and annuals, and in some cases, bare ground. The distribution, population, and grazing intensity of wildlife could change or delay vegetation treatments, and vegetation recovery following a treatment could be slowed if heavy wildlife use occurs. Most wildlife browsing or grazing has little impact on vegetation, because wildlife move frequently and tend not to re-graze forage unless they are confined. Minor effects to vegetation occur from wildlife trails, bedding areas, and other congregation areas. However, due to highways, fences, and loss of habitat, big game species could concentrate in some winter range areas, resulting in heavy browsing of shrubs, spreading cover and lower structure.

Management of cultural resources, such as the avoidance and protection of cultural resources, could decrease surface disturbing activities and protect vegetation communities within those areas. Data recovery excavations could cause minor additional surface disturbance and vegetation removal. However, standard protection measures and required reclamation practices would be applied to mitigate effects to native plant communities and to minimize the chance of weed establishment or proliferation. Paleontological research



activities could cause short-term, small, and localized impacts on vegetation by disturbing and removing vegetation and soil. Excavations of cultural or paleontological resource sites would disturb the soil surface, which could increase the opportunity for the establishment of invasive, non-native plant species. However, the amount of disturbed surface would be less than one acre per excavation.

Lands managed as VRM Class I (225,720 acres) would allow very little surface disturbing activity to occur, protecting vegetation resources from damage or removal. Lands managed as VRM Class II (582,670 acres) could remove or damage some vegetation resources, cause soil loss and erosion, the removal of habitat for plant species, and lead to the introduction or spread of invasive, non-native plant species. Lands managed as VRM Class III (615,490 acres) and Class IV (2,180,420 acres) could allow for the greatest surface disturbing activities to occur. Mitigating projects to reduce visual impacts could reduce damage or removal of vegetation, habitat fragmentation, soil loss, and could prevent the introduction or spread of invasive, non-native plant species.

Lands and realty management actions such as land exchanges and disposals could reduce fragmentation of BLM-administered lands, which could improve BLM's ability to implement management actions that result in increased vegetation diversity, improve the ecological health of rangelands, or increase riparian and wetland functioning conditions. Construction of utility systems and other facilities would cause short-term vegetation disturbance. Requirements for survey, avoidance, and protection of sensitive plants would reduce disturbance to vegetation within those communities. As proposed ROWs are surveyed before realty actions, new locations of special status plant species and communities could be discovered, increasing knowledge of these plant communities. Vegetation would be restored through reclamation within the first five years after construction, resulting in no long-term surface disturbance impact, except for access roads that may never be reclaimed. Reclamation would return some level of herbaceous and woody vegetation to the disturbed areas following construction, but would not achieve pre-disturbance vegetation composition, density, or production for many years.

Allowing development of renewable energy projects could result in damage or removal of vegetation, fragmentation of habitat, soil loss, and erosion of streambanks in riparian habitat. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species that could alter native vegetation.

Management of 349,940 acres of ROW exclusion and 736,138 acres of avoidance areas could prevent or reduce surface disturbance, damage, or removal of vegetation, help to prevent soil loss, erosion, and runoff to riparian habitat, and prevent the introduction or spread of invasive, non-native plant species if ROWs were not developed.

Surface disturbing activities associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and roads, and oil and gas development, including construction of well pads, mud pits, and roads, could impact vegetation resources. Land clearing and grading activities necessary for construction remove vegetation and compact soils, which could contribute to the introduction or spread of invasive, non-native plant species. Loss of vegetation could be short term or long term depending on the success of reclamation efforts for disturbed areas. Native grasses and forbs would dominate reclaimed sites initially, while shrubs would return over a longer period. If reclamation were successful, some original plant communities, particularly shrub communities and stabilized sand dunes, could take more than 20 years to become reestablished to their pre-disturbance structure and density.

Development of a transportation plan specific to JMH area would further reduce impacts to vegetation from roads, OHV use, and general access. Expansion of the transportation network would result in the permanent loss of vegetation. Areas disturbed during road construction, and which do not become part of the permanent road system, would be reclaimed. As proposed projects are reviewed before construction, new locations of sensitive vegetation communities would potentially be discovered and protected from disturbance. Transportation corridors could result in high density of noxious and invasive weeds occurring due to vehicles, and construction and maintenance activities. Concentrated human presence along routes could

lead to surface disturbance, damage, or loss of vegetation, soil compaction, and erosion. Closing 170,000 acres of off-road travel would prevent damage to vegetation from vehicles; prevent soil loss, erosion, and runoff to riparian habitat.

Impacts on vegetation resulting from livestock grazing management on BLM-administered lands include the removal of forage by livestock, which could alter the amount, condition, composition, and vigor of vegetation in grazed areas. Implementation of the Wyoming Land Health Standards as the minimum acceptable conditions for public rangelands would support the health and diversity of vegetation communities. Grazing during the growing season or summer months and concentration areas with supplemental minerals and water could result in reduced vigor of desired species and a change in species composition. If grazing permits are relinquished and allotments are no longer available to grazing, it would prevent vegetation loss, introduction or spread of invasive, non-native plant species, soil compaction, erosion, sedimentation, and the influx of nutrients into riparian areas associated with livestock grazing. Livestock Allotment Management Plans (AMP), or other activity plans intended to serve as the functional equivalent of an AMP, would address achievement of desired plant community (DPC) objectives, thereby minimizing impacts on uplands and riparian areas. Season-long grazing use of range grasses could diminish the physiological health of the grassland community. Grasses that are grazed too long, too closely, or too frequently at the same stage of growth could diminish the vigor and health, and become more susceptible to drought, injury, and lower production. Decline in soil condition, plant cover, and species composition could encourage the invasion and growth of noxious weeds. Early spring grazing on range grass and forb species could affect the health of the vegetation community from the trampling of wet soils, uprooting of seedlings, and injury to both mature plants and new seedlings.

Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels; thus, direct impacts on vegetation would likely be comparable to current conditions. Some localized overuse of forage would continue, primarily in riparian zones and around watering holes and dunal ponds. When forage is overused, plants cannot provide for their own growth, maintenance, and reproduction and are eventually replaced by less desirable species that have little or no forage value. Areas around existing livestock water sources receive more use than the adjacent uplands, which could increase vegetation loss, soil exposure, and invasion of non-native plant species. This could continue in the long term as new water developments were created. Fencing to manage livestock grazing could improve forage and habitat conditions on upland and wetland sites. Range conditions could improve in localized areas where fences are used to implement grazing management plans or to better distribute livestock. Herding control would be encouraged as an alternative to fencing, which could also support vegetation health, diversity, and function.

Range improvements that disturb the soil surface could provide locations for invasive, non-native plant species to become established. However, grazing plans that promote healthy ecosystem function would create conditions more resistant to the spread of invasive, non-native plant species.

Recreational activities, such as camping, hiking, and backpacking, could result in localized impacts to vegetation, such as vegetation disturbance, trampling, and removal. Not authorizing special permits could protect vegetation from human presence, surface disturbance, damage, or loss of vegetation, soil compaction, and erosion. Staging activities and events on designated roads would prevent surface disturbance and vegetation loss. Activities that do not require a permit, such as camping outside of designated campgrounds, could cause minor impacts on sensitive plants and their habitats. Recreation activities that occur in undisturbed and remote areas would increase the likelihood of distributing weed seeds into weed-free areas.

Designating the Continental Divide National Scenic Trail, Continental Divide Snowmobile Trail, the Green River, and the Wind River Front SRMAs, as well as retaining the Killpecker Sand Dunes, and Oregon and Mormon Pioneer NHTs (297,410 acres), would help protect, maintain, or enhance vegetation resources. However, SRMAs and historic trails promote visitor use and access, which would increase popularity and

visitation, resulting in increased vegetation disturbance from trampling and increased potential for the introduction and spread of invasive, non-native plant species.

The greatest loss of vegetation associated with OHV use would result from unauthorized use of previously undisturbed areas. All vegetation classifications could be damaged by unauthorized OHV use, but such damage would be most common in badlands, low-density sagebrush, juniper, saltbush, and sand dune vegetation communities. A long-term loss of native vegetation due to invasive, non-native plant species could occur with OHV use. However, these effects are anticipated to be localized. New road or trail construction could damage vegetation, cause soil loss, erosion, and runoff to riparian habitat. Opening 12,831 acres to OHV vehicle use could result in the introduction or spread of invasive, non-native plant species, which could alter or destroy native vegetation and ecosystems. Under Alternative A, 225,537 acres would be closed to OHV use, 968,959 acres limited to designated roads and trails, and 2,398,839 acres of OHV use would be limited to existing roads and trails.

River segments that have been identified as eligible for wild and scenic river designation (9.7 miles) would have greater restrictions relating to stream impoundments, vehicle crossings, diversions, channelization, or rip-rapping. These actions would limit projects in these river segments and thereby protect upland and riparian vegetation from surface disturbing activities.

The management actions established for Special Designations/Management Areas (SD/MA) such as ACECs (286,450 acres) and WSAs (227,960 acres) would generally benefit vegetation resources. Protections aimed at conserving sensitive vegetation communities, and limitations on mineral development and other surface disturbing activities, would benefit vegetation by enhancing overall conditions. Management of WSAs would preclude surface-disturbing activities in these areas; and land use restrictions in ACECs would limit the extent of surface disturbance. However, the designation of SD/MAs could increase popularity and actual use in these areas, resulting in increased potential for vegetation disturbance and removal and weed proliferation. The closure of roads within most WSAs would reduce the potential for vehicles distributing noxious and invasive weeds, compacting soil, and damaging vegetation, because vehicles would be limited to boundary roads. Designation of the special status plant species ACEC would protect an additional 1,200 acres of four candidate species of plants. Activities such as fencing, interpretive signs, or barriers for the purpose of ensuring protection of the plant species would be considered for both known and potential habitat areas.

### 4.6.3 Alternative B

Impacts to vegetation from watershed management would be the same as those under Alternative A. In addition, increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains would provide greater protections to riparian vegetation. Water developments for diversion from springs or seep sources could reduce surface disturbances from grazing and wildlife around springs and seeps by redistributing them around the diversions. Prohibiting the use of fire suppression chemicals within 1,320 feet (¼ mile) of surface water would protect vegetation and water quality from these chemicals within wetland and riparian habitat. Prohibiting salt blocks and other nutritional supplements within 2,640 feet (½ mile) of surface water sources, riparian areas, and wetlands could distribute livestock use of vegetation and reduce impacts on vegetation along water sources.

Impacts to vegetation from managing lands identified as having wilderness characteristics would provide increased protection to vegetation resources in these areas. Lands would be pursued for withdrawal from locatable mineral entry or closed to mineral material sales and solid mineral leasing which would prevent or reduce surface disturbing activities. Vegetation resources could remain in-tact, soils would remain stable, and the introduction and spread of invasive, non-native plant species would be less likely to occur.

Impacts to vegetation from oil and gas leasing would be similar to those described under Alternative A, but under Alternative B, more acres of habitat would be protected from surface disturbance due to fluid mineral

leasing (Table 2-4). Based on Table 4-4, Alternative B would close approximately 71,766 acres (46%) of grasslands to oil and gas leasing and apply NSO stipulations to 22,665 acres (15%) of grasslands. Alternative B would close approximately 1,296,074 acres of sagebrush to oil and gas leasing (59%) and apply NSO stipulations to 282,094 acres (13%) of sagebrush. The management under Alternative B would close approximately 73,144 acres of riparian vegetation to oil and gas leasing (50%) and apply NSO stipulations to 16,810 acres of riparian vegetation (11%); and would close approximately 28,488 acres of aspen/conifer to oil and gas leasing (69%) and apply NSO stipulations to 1,341 acres of aspen/conifer vegetation (3%).

Withdrawing 1,993,908 acres to locatable mineral entry and closing 2,581,741 acres to saleable mineral development could benefit vegetation. The decreased levels of mineral development proposed under Alternative B would result in reduced vegetation disturbance and a lower potential for weed invasion compared to Alternative A.

Impacts to vegetation resources from wildland fire and fuels management would be similar to Alternative A, except wildfires could be allowed to persist in lands that would benefit from fire. This alternative would require less fire line construction and other surface disturbance, which would reduce disturbance and removal of vegetation and limit areas where invasive non-native plant species could occur.

Impacts to vegetation from forest and woodland management would be similar to those described under Alternative A; however, Alternative B emphasizes the use of natural processes for forestry management in addition to not allowing clearcutting. The management in Alternative B would support forest and woodland habitat by encouraging natural habitat conditions, native vegetation, cover, forage, and functional ecosystems.

Vegetation management under Alternative B would support vegetation resources to a greater degree than under Alternative A. The additional management would result in riparian vegetation that consists of mid- to late-seral-stage communities with a mixture of herbaceous and multi-aged woody species. Other effects would include increased vegetation production, increased diversity, and a more stable riparian plant growth medium. Vegetation treatments would be designed to reestablish the natural role of fire in the ecosystem. This would result in lower-seral plant communities with less woody species. Impacts of noxious weed infestations on vegetation resources would be less than under Alternative A because of an anticipated decrease in access and activities that would introduce or aid in spreading the species in the planning area.

Impacts to vegetation from invasive species and pest management would be similar to those described under Alternative A. Additional management for invasive plant species control would protect vegetation and surrounding soils from damage from more invasive control methods, such as chemicals or fire. However, less invasive techniques may not be as effective in controlling large infestations of noxious weeds as would chemicals or fire. Under Alternative B, additional management for preventing and controlling the infestation of aquatic invasive species could support wetland and riparian vegetation. The management would help prevent the infestation of riparian and aquatic habitat from non-native species, which would help maintain and protect native ecosystems.

Impacts to vegetation from the management of wildlife, fish, and Special Status Species habitat would be similar to Alternative A. Additional management under Alternative B could help maintain or improve conditions for plants by preventing soil compaction, erosion, sedimentation, and the influx of nutrients into riparian areas, wetlands, or streambeds which could support the health and vitality of vegetation resources in these areas. Wildlife and fisheries objectives would be addressed during reclamation activities, which would influence the plant seed mix selection used in reclaimed areas. Impacts on vegetation from surface-disturbing activities would not occur within certain wildlife buffers, which would help to retain a native vegetation composition. Managing important waterfowl areas for preferred waterfowl habitat would benefit riparian and wetland vegetation.

Under Alternative B, 225,790 acres would be managed as VRM Class I, 2,148,902 acres would be managed

as VRM Class II 666,522 acres would be managed as VRM Class III, and 563,754 acres would be managed as VRM Class IV. This management would protect larger areas of land from surface disturbance and vegetation loss to a greater degree when compared with Alternative A.

The increased restrictions placed on livestock grazing activities under this alternative would likely support vegetation resources to a greater degree when compared to Alternative A. Closing all enclosures within the planning area to livestock grazing and suspend AUMs currently authorized in these enclosures would allow the forage in the enclosure area a chance to regrow.

Under Alternative B, impacts to vegetation resources from transportation management would be similar to those described under Alternative A. The adverse effects of vehicle use and other recreational activities would be less under this alternative than under Alternative A because of increased restrictions on use in the planning area and decreased development, which would decrease access. Development of a transportation plan specific to the planning area would further reduce adverse impacts on vegetation from ROWs, roads, OHV use, and general access. This plan would provide for appropriate access routes that would enable maximum protection of rare plant communities and sensitive resources.

Impacts from OHV management would be similar to Alternative A; however, a reduced amount of the area would be open to OHV use, so the likelihood of impacts would be less than Alternative A. Opening 12,831 acres to OHV use could result in the introduction or spread of invasive, non-native plant species, which could alter or destroy native vegetation and ecosystems. Closing routes to OHV use (225,537 acres) would help prevent these impacts to vegetation. Restricting vehicular travel would prevent damage to vegetation from vehicles; prevent soil loss, erosion, and runoff to riparian habitat. Under this Alternative, 3,367,576 acres of OHV use would be limited to designated roads and trails. Alternative B is only limited to designated roads and trails while Alternative A has areas limited to existing roads and trails.

Management of 2,480,876 acres of ROW exclusion and 133,903 acres of avoidance areas could prevent or reduce surface disturbance and vegetation loss through an increase of lands managed as exclusion areas compared to Alternative A.

Alternative B would apply greater protection for vegetation resources within SD/MAs. Impact to vegetation resources would be similar to those described under Alternative A; however additional management would protect vegetation from disturbance associated with roads, oil and gas activity, locatable mineral activity, logging, and OHV use.

River segments that have been identified as eligible for wild and scenic river designation (9.7 miles) would have greater restrictions relating to stream impoundments, vehicle crossings, diversions, channelization, or rip-rapping compared to Alternative A. These would limit projects in these river segments and thereby protect upland and riparian vegetation from surface disturbing activities.

Under Alternative B, WSAs (Map 2-30, 227,960 acres) would be managed to maintain suitability for preservation as wilderness. This would maintain or improve soil and water resources by limiting surface disturbance that could contribute to erosion and non-point sources of sediment and other pollutants. The BLM Manual 6330 for WSAs prohibits or restricts motorized equipment use, which would limit vegetation and weed treatment options in these areas. Dispersed hiking and equestrian use could increase the potential for the introduction or spread of noxious and invasive weeds.

SRMAs would not be retained, instead some areas will be managed as Areas of Critical Environmental Concern (ACEC).

Actions related to special management areas (1,605,660 acres of ACECs) could have a greater beneficial impact on vegetation resources under this alternative. Management actions associated with the addition of the paleosol deposition area to the Greater Sand Dunes ACEC, the face of Steamboat Mountain, and the area where elk crucial habitat and birthing areas overlap to Steamboat Mountain ACEC, would benefit rare

and sensitive plant communities through further restrictions on activities within these sensitive areas. Management actions associated with designating special status plant species habitat and the cushion plant community as ACECs, and designation of the new Pinnacles ACEC, would also benefit and protect these communities from disturbance.

#### 4.6.4 Alternative C

Impacts to vegetation from the management of riparian and wetland resources would be the same as those described under Alternative A. Impacts resulting from management of air quality, soils and geology, cultural resources, fire and fuels management, vegetation, and lands and realty would be similar to Alternative A. In general, this alternative would result in the greatest level of surface disturbance and vegetation loss due to less restrictive management actions.

The effects of watershed management actions would be the same as those of Alternative A, except these beneficial impacts would be reduced because of fewer restrictions on surface disturbing activities and smaller buffer zones around riparian areas and floodplains.

Under Alternative C, a larger portion of the planning area would be open to surface disturbing activities, including locatable mineral exploration and development and mineral material sales compared to Alternative A. Impacts to vegetation communities are expected to be greater than under Alternative A because of the increased amount of area available to development.

Impacts from oil and gas leasing and development would be similar to those described under Alternative A; however, smaller areas of habitat would be closed or have NSO stipulations, which could allow for greater loss of vegetation from development activities (Table 4-4). The management under Alternative C would close approximately 8,105 acres (5%) of grasslands to oil and gas leasing and apply NSO stipulations to 1,877 acres (1%) of grasslands; close approximately 48,968 acres of sagebrush to oil and gas leasing (2%) and apply NSO stipulations to 61,505 acres (3%) of sagebrush; close approximately 10,081 acres of riparian vegetation to oil and gas leasing (7%) and apply NSO stipulations to 2,230 acres of riparian vegetation (2%); and close approximately 499 acres of aspen/conifer to oil and gas leasing (1%) and apply NSO stipulations to 166 acres (0.4%) of aspen/conifer vegetation.

Impacts to vegetation from closing 226,421 acres to saleable mineral development and withdrawing 234,961 acres of lands from mineral location, 72% and 58% fewer acres respectively compared to Alternative A, could increase vegetation loss or damage to habitat. The management under Alternative C would allow more surface disturbance, damage, or removal of vegetation, soil loss, and the introduction or spread of invasive, non-native plant species.

Impacts to vegetation from wildland fire management and forest and woodland management would be the same as those described under Alternative A. Under Alternative C, allowing the harvest of cottonwood trees could remove critical components of riparian vegetation and degrade the overall ecosystem. The removal of large trees could lead to erosion and streambank degradation, which could continue in harvest areas until new vegetation was established.

Impacts to vegetation resources from the management of grassland and shrubland communities would be very similar to those described under Alternative A. Use of non-native species could help stabilize soils and prevent erosion in the short-term, and over the long-term could provide stable land for native species to re-establish. However, some non-native plants may out compete native species and alter the composition of the ecosystem, which could degrade overall vegetation health. The use of non-native plants could increase the risk of spread and possible degradation of native habitat values.

Impacts to vegetation resources from invasive species and pest management would be similar to those described under Alternative A. Additional management for invasive plant species control through various methods, including chemicals, the use of BMPs, and buffer distances for chemical use could reduce the

infestation and spread of invasive species to a greater degree than Alternative A. The management would help prevent the infestation of non-native species, which would help maintain native vegetation and ecosystems. Management to protect special status plants, wetlands, riparian areas, and aquatic habitats through buffers for chemical use would prevent accidental application or spills and protect vegetation from accidental contact with herbicides.

Impacts to vegetation from the management of wildlife, fish, and Special Status Species would be similar to Alternative A, and impacts would be similar to those described under Alternative A. Additional management under Alternative C by prioritizing livestock and allowing more areas to be open to livestock could increase competition for forage and habitat resources. Increased use by livestock could cause loss of vegetation, soil compaction, erosion, trampling of vegetation, and the spread of invasive, non-native plant species.

Impacts to vegetation resources from the management of visual resources would be very similar to those described under Alternative A. Management for VRM Class I would be 226,630 acres, 910 more acres than Alternative A; VRM Class II would be 607,900 acres, 25,230 more acres than Alternative A; VRM Class III would be 395,680 acres, 255,810 fewer acres than Alternative A; and VRM Class IV would be 2,374,710 acres, 194,290 more acres than Alternative A. There would be slightly more acres protected by VRM Classes I and II, but nearly 200,000 more acres subjected to surface disturbing and disruptive activities within VRM Class IV compared to Alternative A.

Impacts to vegetation from the management of 225,784 acres as ROW exclusion and 1,687,304 acres as avoidance areas would be similar to those described under Alternative A. Under Alternative C, approximately 200,925 fewer acres would be managed as ROW exclusion areas and 200,016 fewer acres would be managed as ROW avoidance areas, which could allow more vegetation loss and surface disturbance from the development of ROWs.

Livestock grazing management actions under this alternative could have greater impacts on vegetation resources than described under Alternative A. Together with forage use by big game species; this would further increase grazing pressure on vegetation resources, potentially affecting long-term productivity of vegetation. Less restrictive measures for range improvements, water developments, and salt and mineral placement could limit protections on vegetation resources. Full implementation of these management actions could cause difficulty in allotments meeting the Wyoming Land Health Standards. Reducing total authorized use to highest level of billed use over the last 10 years could provide increased vegetation resources for big game and other wildlife species. Reducing livestock use to 160,387 AUMs could reduce vegetation loss from livestock use, potentially increasing long-term productivity of vegetation. However, because management of livestock under this alternative would be very similar to the levels of actual use that have historically occurred in the planning area, it is likely that few changes would occur beyond those described under Alternative A.

Under Alternative C, the management of SRMAs (592,800 acres) could help protect, maintain, or enhance vegetation resources. Visitor use and access is promoted in SRMAs, which could increase popularity and visitation, resulting in increased vegetation disturbance from trampling and increased potential for weed introduction and spread of non-native, invasive plant species.

The effects of OHV use and other recreational activities would be greater and occur over more of the area under this alternative than compared to Alternative A. A larger area of land open to OHV use could allow for increased vehicle and associated human activity.

Under this alternative, no areas would be designated as ACECs and special management areas would not be retained. This would allow more surface disturbance, potentially reducing protection of vegetation resources.

## 4.6.5 Alternative D

Impacts on vegetation resulting from implementing management actions for air quality, water resources, fish and wildlife, Special Status Species, cultural resources, paleontological resources, and livestock grazing would be the same as those presented under Alternative A. The impacts on vegetation from managing fire and fuels and forests and woodlands would be the same as those presented under Alternative B.

Impacts on vegetation from implementing soil management actions would be similar to those identified under Alternative A. Areas with limited reclamation potential soils (those with limited reclamation potential as per the NRCS soil rating) would be designated avoidance areas for surface disturbing activities, which would reduce the extent of surface disturbing activities in these areas and thereby reduce the intensity and extent of vegetation removal and degradation of vegetation communities. However, an operator must submit an approved mitigation plan before a proposed project on limited reclamation potential soils will be approved. This could provide a greater degree of protection to vegetation resources compared to Alternative A, as similar plans would be required under Alternative A only when deemed applicable.

Impacts on vegetation from managing lands with wilderness characteristics could be increased compared to Alternative B. Under Alternative D, lands with wilderness characteristics would be managed for a variety of uses with only consideration of those characteristics. Such management could allow some development activities within these areas. These areas would not be closed to mineral development as they would be under Alternative B, which would increase the potential occurrence of surface disturbing activities within the nine lands with wilderness characteristics. Such activities would result in removal and damage to vegetation resources, which would degrade the overall health of vegetative communities.

Impacts on vegetation from managing fluid mineral leasing and development would be similar to those discussed under Alternative A, except stipulations that prohibit fluid mineral leasing would be applied to fewer acres (Table 2-4). Based on Table 4-4, under Alternative D approximately 31,240 acres (20%) of grasslands would be closed to oil and gas leasing and 1,961 acres (1%) would be managed with NSO stipulations; 189,122 acres (8%) of sagebrush would be closed to oil and gas leasing and 53,718 acres (2%) would be managed with NSO stipulations; 36,084 acres (22%) of riparian vegetation would be closed to oil and gas leasing and 983 acres (1%) would be managed with NSO stipulations; and 21,586 acres (22%) of aspen/conifer vegetation would be closed to oil and gas leasing and 57 acres (1%) would be managed with NSO stipulations.

Under Alternative D, withdrawing 482,272 acres to locatable mineral entry would apply to 13% fewer acres compared to Alternative A, resulting in impacts very similar to those described under Alternative A but more acres would be affected. Impacts to vegetation resources from closing 362,009 acres to saleable mineral development would be similar to those described under Alternative A; however, a 57% reduction in closed areas could allow for larger areas of vegetation damage or removal when compared to Alternative A.

Impacts on vegetation from managing vegetation resources would be similar to those presented under Alternative A. Under Alternative D, prescribed fire would not be the preferred method for vegetation treatments as it is under Alternative A. However, because the vegetation treatment types are available under Alternative D, the impacts on vegetation resources would be essentially the same.

Impacts on vegetation resulting from implementing VRM actions would be similar to those presented under Alternative A, except the number of acres designated as VRM Class II would be increased to 1,178,718 acres (102% increase compared with Alternative A) (Table 2-9, Map 2-20), which could lead to decreased vegetation removal and degradation when compared to Alternative A.

Impacts on vegetation resulting from implementing lands and realty actions would be similar to those presented under Alternative A. The number of acres designated as ROW exclusion areas would be



decreased to 286,289 acres (33% decrease compared with Alternative A) (Table 2-10, Map 2-24). More acres would be managed under ROW avoidance areas, 1,388,618 acres, compared to 736,138 acres under Alternative A. ROW avoidance areas could provide some additional protection to vegetation resources compared to lands that are open to ROW development.

Impacts on vegetation from managing recreation resources would be similar to those presented under Alternative A. Fewer SRMAs would be retained under Alternative D which could reduce the level of protection to vegetation resources from protective management within the SRMAs not carried forward from Alternative A.

Impacts on vegetation from managing OHV use would be similar to those presented under Alternative A, except the area currently designated as “limited to existing roads and trails” (3,367,576 acres) would be changed to “limited to designated roads and trails” and all routes within this area would be designated as open, closed, or limited.

Impacts on vegetation from managing special designation areas would be similar to those presented under Alternative A, except they would occur over a smaller area and thereby offer fewer protections to these areas. The management would reduce surface disturbing activities and indirectly help to protect and maintain healthy vegetative communities. The acres designated as ACECs would decrease to 246,634 acres (13.9% decrease compared with Alternative A).

## 4.7 WILDLIFE AND FISHERIES

### 4.7.1 Assumptions

The analysis is based on the following assumptions:

- The quality and quantity of winter ranges are generally considered to be the limiting factors on big game populations in the planning area. The ability of these areas to support wintering populations is a major factor in determining yearlong population levels.
- Significant modifications to habitat suitability can impact the survivability and viability of populations (e.g., higher winter mortality, reduced reproductive success).
- Crucial winter ranges, transitional ranges, and parturition areas are critically important wildlife habitat.
- Fish and wildlife populations would continue to be managed by Wyoming Game and Fish Department (WGFD). BLM would continue to manage wildlife habitat. Big game habitat would be managed in coordination with WGFD herd objectives and the Strategic Habitat Plan.
- Natural variability in wildlife health, population levels, and habitat conditions would continue. Periods of mild or severe weather as well as outbreaks of wildlife disease or insects/diseases that impact habitat (e.g., mountain pine beetle, blister rust, mistletoe, and bleeding rust) could impact wildlife population levels.
- The WGFD may adjust herd objectives in response to these periodic fluctuations in population levels. Occasional changes in movement patterns or habitat preference may occur in response to habitat changes or levels of human disturbance.
- BLM is responsible for impacts occurring from public land management activities and would coordinate fish and wildlife habitat management activities on public lands with the WGFD. BLM is not restricted from making any reasonable decision within the framework of multiple use management and applicable laws as a result of this coordination.

- Management of streams toward their potential natural condition would generally improve habitats for both native and introduced coldwater fishes, such as trout and sculpin.
- Consideration of aquatic habitat conditions when conducting BLM assessments, such as PFC and Land Health Assessments, would help to identify areas for stream habitat management and watershed management efforts.
- The health of fisheries within the planning area is directly related to the overall health and functional capabilities of riparian and wetland resources, which in turn reflect watershed health.
- Any activities that affect the ecological condition of the watershed and its vegetative cover would directly or indirectly affect the aquatic environment. The degree of impact attributed to any one disturbance or series of disturbances is influenced by location within the watershed, time, and degree of disturbance, existing vegetation, and hydrologic condition.
- As riparian systems adjust in response to the removal of vegetation or changes in hydrologic conditions, the availability of habitats required to fulfill the life history requirements of fish populations is likely to be affected.

## 4.7.2 Alternative A

Wildlife populations fluctuate, sometimes widely, in response to natural factors such as cycles in the abundance of prey base or extremes in seasonal weather (e.g., severe winters). It is often difficult to discern whether impacts on wildlife result from any specific management action or from population changes caused by natural factors. Changes to or stressors (e.g., increased human presence and noise) on habitat components such as vegetation, water, soil, or air are most likely to cause direct and indirect effects on wildlife and fish.

Management to prevent emissions, airborne pollutants, or particulate matter would contribute to overall health of native vegetation communities, ecosystems, and waters to support wildlife and fisheries. Efforts to control dust on roads could reduce dust accumulation on forage for wildlife that could diminish the quality of forage and make it less palatable. Dust control could reduce sediment runoff and accumulation of fine silt in stream channels which would prevent cementation of spawning gravel for fish species. Reduced sediment would support water quality and aquatic habitat for fish, waterfowl, macroinvertebrates, and other species dependent on these ecosystems.

Management to maintain or improve soil resources by preventing or reducing erosion, runoff, dust, salt, or sediment loading could protect habitat for wildlife by preventing subsequent loss of vegetation resources and sediment runoff into fisheries. Maintaining or improving soils would support fisheries by protecting water quality, preventing accumulation of sediment, and reducing in-stream erosion. Minimizing surface disturbance or disruption of limited reclamation potential soils could also protect habitat for wildlife by preventing or reducing loss of vegetation and habitat. Protecting limited reclamation potential soils could support aquatic habitat by preventing saline or sediment runoff, protecting water quality and aquatic habitat for fish, waterfowl, macroinvertebrates, and other species dependent on these ecosystems.

Management to protect water quality and hydrologic resources by reducing erosion, salt, phosphate, or sediment loading could support riparian and aquatic habitat by preventing saline or sediment runoff into aquatic habitat, protecting water quality, and protecting riparian areas from unsafe or saline downstream water conditions. The use of reclamation and restoration within riparian and wetland areas could provide renewed habitat and forage for wildlife. Reclamation and restoration could stabilize soils and help to reduce runoff of soils or pollutants into aquatic habitat, supporting water quality, and spawning habitat for aquatic species.

Avoiding or prohibiting development or linear crossings in wetlands and floodplains and closing wetlands,

riparian habitat, and 100-year floodplains to new permanent facilities could support intact wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The use of buffer distances for avoidance of development within the JMH planning area within 500 feet of 100-year floodplains and 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages could protect these areas from habitat loss, soil erosion, and resulting degradation of streambeds and habitat for aquatic species.

Management to protect aquifer and water recharge areas from contamination and protecting water quality would support any sources of surface waters (springs, creeks, and lakes) supplied by groundwater sources by limiting surface disturbing activities. This management could protect these areas from damage or removal of wildlife cover and forage, reduce fragmentation of habitat, and reduce disturbance of wildlife within these areas.

Approximately 4,733 oil, gas, and CBNG wells would be developed under Alternative A within the planning area. There would be 32,831 acres of initial surface disturbance and 9,466 acres of long-term disturbance from oil and gas development. The primary impacts on wildlife species from minerals development within the planning area would be the direct and indirect loss of wildlife habitat and the disruption of migration corridors that link crucial habitats (winter range) and parturition areas. Reductions of habitat could be particularly severe in areas with continuous surface disturbance. As discussed by Bartmann et al. (1992), crowding of animals may have a density-dependent impact of reducing animal survival and damaging resources.

As acreages of surface disturbance, infrastructure, and human activity levels increase, the quality and quantity of wildlife habitats likely would be reduced. Habitat fragmentation occurs when a contiguous habitat is intersected, divided, or segmented by disturbing activities. Fragmentation causes a reduction in usable ranges and the isolation of smaller, less mobile species, a loss of genetic integrity within species or populations, and an increase in abundance of habitat generalists that are characteristic of disturbed environments (i.e., competitors, predators, and parasites) (Harris 1984). Displaced big game and wildlife tend to use lower quality habitats or compete with existing herds and livestock for forage.

Vehicles, equipment, and machinery could increase the threat of the introduction and spread of invasive, non-native plant species which could alter the native plant ecosystem. Reclaimed areas would be more vulnerable to invasion of noxious weeds and would not initially provide the same level of habitat function, forage, or cover that the original area provided. Invasive, non-native plant species could change the frequency and vulnerability for wildfire, creating larger threats to native habitat from destruction from fire. The threat of accidental ignition from vehicles, machinery, or human presence could increase while development is occurring.

Elk (*Cervus canadensis*) have been shown to avoid disturbance by upwards of 1.25 miles from active oil and gas wells (Gussey 1986; Powell 2003; WGFD 2000), upwards of 2.4 miles from construction of drill sites (Hayden Wing Associates 1990), and upwards of 1.25 miles from major roads (Powell 2003). Studies specific to oil and gas activities have shown that elk tolerate some level of operating wells and associated facilities as long as there is no human presence or cover is available in the vicinity of the well site (Gussey 1986; Beak Consultants 1979; Bennington et al. 1982; Hayden-Wing Associates 1990). Kuck et al. (1985) showed that persistent disturbance weakened the tendency of elk (in forested environments) to return to the disturbed area and that selection of more marginal habitat occurred. However, abandonment of the traditional calf-rearing habitat did not result in abandonment of calves or a difference in survival rates between disturbed and control groups. This study also found no data to suggest that elk habituated to mining noises. Johnson and Wollrab (1987) also found that elk distribution changed during gas exploration and field development, with the abandonment of winter and calving habitat and changes in range. These authors discovered that although elk returned to disturbed sites, populations were lower (sometimes less than half) and use of the habitat was unpredictable. When studying elk response to roads, Lyon and Ward (1982) found that elk moved from 0.24 to 1.8 miles, depending on the amount and type of traffic, road quality, and

adjacent cover density. Generally, road avoidance has been reported to be greater in areas of open vegetation with less adjacent cover (Perry and Overly 1976; Lyon 1979) and in areas with increased density of high-quality roads (Hershey and Leege 1976). Road avoidance was also greater in shrub lands than in pine forests and juniper woodlands (Rost and Bailey 1979).

The Sublette Mule Deer Study was conducted between 1998 and 2003 by West Inc.; its goal was to determine whether natural gas development affected habitat selection patterns and, ultimately, the distribution of wintering mule deer in western Wyoming. Following one year of development, 17% of the study area classified as high use before development had changed to medium-low or low use, and by year three of development, 40% of the study area classified as low use before development had changed to medium-high or high use areas. Further, research conducted by Sawyer et al. (2006) suggests winter habitat selection and distribution patterns of mule deer were affected by well pad development. Changes in habitat selection by mule deer appeared to be immediate (i.e., year one of development), and through three years of development, no evidence was found that suggested mule deer acclimated or habituated to well pads. These results reflect the ability of mule deer to avoid localized disturbances and habitat perturbations without completely abandoning their home ranges (Sawyer et al. 2006).

The WGFD estimates that 170 acres surrounding each well pad is the minimum area in which impacts on pronghorn (*Antilocarpa americana*) would occur (WGFD 2004b). The greater mobility and adaptability of this species to human activity and disturbed areas likely would prevent long-term population impacts; however, it is feasible that pronghorn behavior or populations could be altered at some level of development.

Human disturbance near raptor nest sites could result in the abandonment of the nest, nestling mortality from overheating, chilling, or desiccation when young are left unattended, premature fledging, and ejection of eggs or young from the nest. Raptors that successfully nest during a disturbance may abandon the nesting territory the following year. Responses of nesting raptors to human disturbance typically are determined by the type, duration, magnitude, noise level, and timing of activity relative to nesting phenology. Although some level of habituation to disturbance could occur, repeated flushing of adult raptors increases energy expenditure during foraging and decreases energy ingestion, depleting energy reserves, and resulting in premature mortality during harsh conditions. Evidence suggests that some falcons (*Falco* sp.), ospreys (*Pandion haliaetus*), and owls are generally more tolerant of human-induced disturbance and human environments; golden eagles (*Aquila chrysaetos*), turkey vultures (*Cathartes aura*), northern harriers (*Circus hudsonius*), Cooper's hawks (*Accipiter cooperii*), and sharp-shinned hawks (*Accipiter striatus*) appear much less tolerant; and buteos exhibit a wide range of acceptance levels. Raptors are less tolerant of disturbance when populations of prey species are at low levels (Romin and Muck 2002).

The health of fisheries within the planning area is directly related to the overall health and functional capabilities of riparian resources, which reflect overall watershed health. Any activities that affect the ecological condition of the watershed and its vegetative cover would directly affect the aquatic environment. It is assumed that any substantial disturbance to soils or changes in vegetative cover would diminish watershed health and water quality and would therefore degrade associated fisheries. The degree of impact attributed to any one disturbance or series of disturbances is influenced by location within the watershed, time, and degree of disturbance, existing vegetation, and precipitation. Surface disturbances result in accelerated erosion and runoff, increasing stream flow and sediment and nutrient loads to local channels. Increased turbidity also results from increased sediment input, which decreases light penetration and inhibits visual predation by fish. Any surface disturbance near streams that results in substantial removal of riparian vegetation can increase current velocity, which puts additional strain on fish and reduces nutrient cycling. In addition to increased sediment input, streambank disturbance can affect fisheries by creating bank instability, which can alter flow and destroy pool-riffle formations necessary for fish survival. Increased nutrient loading of streams can impact fisheries by increasing primary production above natural levels, which degrades habitat and decreases oxygen levels.

Closing 540,021 acres to oil and gas leasing would prevent damage or loss of wildlife habitat from development activities, reduce disturbance to wildlife from the presence of humans, vehicles, or machinery, prevent erosion or runoff, and protect an in-tact ecosystem. Table 4-5 displays the acres of big game habitat within the lands closed to oil and gas development. Approximately 25,234 acres of closed acres within riparian vegetation would protect important habitat for fish species, avian, and would support waterquality within stream and river corridors. Approximately 30,621 acres of grassland would be closed which could protect habitat for wildlife.

Applying an NSO stipulation for oil and gas leasing could prevent surface disturbing activities from oil and gas leasing development within 158,611 acres of habitat. The NSO could prevent future barriers in migration routes for big game and other migratory species, allowing wildlife to move between crucial winter ranges, parturition, breeding, or nesting habitat, and would provide overall habitat protection (Table 4-5). Habitat within the NSO areas includes 30,102 acres of riparian vegetation and 234,350 acres of sagebrush shrub, which would protect habitat for numerous wildlife species.

Applying CSU stipulations to oil and gas leasing could reduce loss, damage, or degradation of wildlife habitat (721,132 acres of CSU stipulations). TLS could prevent surface disturbance only during specific timeframes, which could protect big game or other wildlife during the periods of closure from disruption or disturbance from humans or machinery (1,840,967 acres). Adjusting timing of disturbance could allow wildlife to remain in desired habitat during sensitive timeframes, such as winter range, a limiting factor in mule deer and other big game health and ultimate survival. Disturbance, damage, or loss of habitat could occur outside of the seasonal closures, ultimately leading to some loss of habitat from oil and gas development. Deer, elk, pronghorn, and moose habitat would receive some reduction in surface disturbance or disruption from this management (Table 4-5).

**Table 4-5. Acres of Big Game Habitat within Oil and Gas Closed and Stipulated Lands**

	Alternative A	Alternative B	Alternative C	Alternative D
<b>Oil and Gas—Closed</b>				
Elk	561,654	2,713,522	225,782	493,425
Elk Parturition	92,351	137,100	71	23,422
Mule Deer	561,656	2,713,530	225,782	493,430
Mule Deer Parturition	54,722	63,113	4,011	4,011
Moose	124,815	773,640	24,237	134,474
Pronghorn	561,656	2,716,103	225,782	496,002
<b>Oil and Gas—NSO</b>				
Elk	518,268	809,743	15,542	194,648
Elk Parturition	31,766	6,246	3,094	8,705
Mule Deer	518,270	809,800	15,542	194,648
Mule Deer Parturition	3,314	1,568	6,128	27,201
Moose	176,191	234,198	38,623	126,673
Pronghorn	518,270	815,556	15,542	194,648
<b>Oil and Gas—CSU</b>				
Elk	1,957,092	126,442	1,924,922	2,410,222
Elk Parturition	17,487	0	47,155	106,998
Mule Deer	1,957,104	126,426	1,924,917	2,410,233
Mule Deer Parturition	6,450	0	25,783	33,366
Moose	502,660	28,580	627,145	581,884

Pronghorn	1,978,008	127,383	1,929,014	2,418,158
<b>Oil and Gas—TLS</b>				
Elk	2,600,380	970,235	2,917,087	2,279,364
Elk Parturition	50,995	6,246	143,275	119,924
Mule Deer	2,600,433	970,257	2,917,141	2,729,435
Mule Deer Parturition	9,959	1,568	60,670	60,670
Moose	792,831	249,618	899,598	801,754
Pronghorn	2,602,246	982,994	2,918,958	2,731,596

Geophysical activities could result in damage or removal of vegetation and disturbance that could force wildlife to abandon habitat within these areas. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife.

Approximately 556,558 acres of the planning area would be withdrawn from locatable mineral entry, 833,719 acres would be closed to mineral material sales, and 540,021 acres would be closed to geothermal leasing. The remaining acres would be available to the exploration and development of locatable minerals and geothermal leasing. Managing the lands as available to geothermal leasing and locatable minerals could result in habitat damage, loss, and fragmentation from development activities and associated infrastructure such as roads, power lines, or pipelines. Table 4-6 displays the acres of big game habitat that would be protected from locatable and saleable mineral development.

**Table 4-6. Acres of Big Game Habitat within Lands Unavailable to Saleable, Solid Leasable, and Locatable Minerals**

	Alternative A	Alternative B	Alternative C	Alternative D
<b>Locatable Minerals—Proposed for Withdrawal from Mineral Entry</b>				
Elk	556,510	1,992,675	234,961	342,408
Elk Parturition	28,080	111,201	2,595	23,917
Mule Deer	556,513	1,992,686	234,961	342,409
Mule Deer Parturition	31,228	55,966	8,811	8,864
Moose	176,758	640,819	24,208	24,577
Pronghorn	556,513	1,993,835	234,961	324,409
<b>Saleable Minerals—Closed</b>				
Elk	1,021,641	2,816,047	319,045	452,982
Elk Parturition	119,071	142,996	520	26,710
Mule Deer	1,021,656	2,816,054	319,045	452,985
Mule Deer Parturition	45,674	64,681	4,173	13,192
Moose	217,245	783,126	63,032	71,388
Pronghorn	1,041,528	2,836,146	319,045	452,985
<b>Closed to Coal</b>				
Elk	612,795	3,734,530	226,219	277,606
Elk Parturition	33,019	143,896	10	10
Mule Deer	612,808	3,734,517	226,219	277,606

Mule Deer Parturition	17,608	65,059	4,012	4,012
Moose	214,820	1,107,682	24,237	33,918
Pronghorn	633,822	3,735,280	226,219	277,606
<b>Closed to Oil Shale</b>				
Elk	724,390	2,100,960	225,965	455,136
Elk Parturition	81,648	143,896	10	23,652
Mule Deer	724,368	2,100,961	225,965	455,141
Mule Deer Parturition	33,676	65,059	4,012	4,012
Moose	165,119	683,927	24,237	99,229
Pronghorn	727,795	2,122,167	225,965	458,227
<b>Closed to Trona</b>				
Elk	454,589	2,119,632	225,965	389,552
	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
Elk Parturition	10,952	143,896	10	10
Mule Deer	454,589	2,119,592	225,965	389,552
Mule Deer Parturition	9,510	65,059	4,012	4,012
Moose	108,117	637,478	24,237	33,918
Pronghorn	454,589	2,119,638	225,965	389,552

Closing 485,964 acres to coal exploration, 727,805 acres to oil shale exploration, and 423,633 acres to trona exploration would prevent damage or removal of wildlife cover and forage, reduce fragmentation of habitat, and prevent disturbance of wildlife caused by exploration in these areas. The closed acres that are adjacent to rivers or stream channels would protect important habitat for fish species such as mountain sucker, speckled dace, and game fish; avian species such as Northern pintail (*Anas acuta*), killdeer (*Charadrius vociferus*), and Northern harrier (*Circus hudsonius*); little brown myotis (*Myotis lucifugus*), beaver (*Castor canadensis*), big game, and other wetland and riparian wildlife species; and would support water quality within stream and river corridors. Table 4-6 displays the acres of big game habitat within the closed areas for solid leasable minerals.

Fire suppression removes vegetation, disturbs soil, and could have both short- and long-term impacts on big game and other habitats. Using heavy equipment to construct fire lines would cause habitat loss, degradation, and fragmentation in the short term. If not rehabilitated, these fire lines could cause erosion and provide opportunities for the spread of invasive, non-native plant species, which could result in degraded wildlife habitat. Timely rehabilitation following fire would be important to maintaining the quality of wildlife habitats. Disturbed areas from suppression activity could lead to the increase of predatory species of wildlife, which could reduce populations of smaller wildlife. Activity plans and site-specific analysis for fire management planning would reduce the level of habitat disturbance described above. Planned and unplanned wildland fire could affect wildlife habitats in the short term by removing vegetation and disturbing soil; but the long-term benefits of wildland fire often outweigh the short-term impacts. For example, prescribed fire could be used to restore conditions benefiting wildlife species favoring early plant succession stages and young age classes of woody plants (McAninch et al. 1984). Prescribed fires could be beneficial for species that depend on younger seral stages of vegetation. Wildlife would benefit from most wildfires and fuels management, due to an increase in vegetation productivity and increased plant diversity and age classes; providing additional forage, cover, and prey base. Mimicking natural periodic disturbance is often necessary in order to stimulate plant productivity, increase diversity, and increase nutritional value. Foraging

opportunities for big game and other herbivores would increase as understory grasses, forbs, and shrubs become re-established. There is generally more palatable browse available for wild ungulates directly following the occurrence or application of fire. The use or occurrence of fire in upland areas could provide more forage to big game species and other herbivorous species that occur in these areas.

Management of noncommercial forest lands would support wildlife habitat and woodland ecosystems by leaving forests intact and preventing disturbance or disruption of habitat. Protecting soil and watershed values would allow for natural runoff and surface flow regimes and support water quality for fish and other aquatic wildlife. Timber management for harvest using clearcutting and other harvest techniques would cause direct habitat loss and habitat fragmentation, which could result in mortality or force wildlife to relocate into lower quality, less desirable habitat. The noise from heavy equipment and chainsaws could temporarily disperse bird species from breeding and nesting habitat and force wildlife from occupied habitat. Soil disturbance from machinery and harvest activity could result in runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Timing limitations (such as those for big game birthing areas, raptor nesting, and big game winter habitat), limitation of slope grade (45%), prevention of habitat fragmentation, and limits on size of harvest could mitigate the disturbance to wildlife and loss of habitat.

Logged areas would provide early seral vegetation for big game and other wildlife. Cleared areas would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Disturbed areas may increase the number of predatory species of wildlife, which could reduce populations of other wildlife through hunting or relocation. Erosion and increased runoff could continue in harvest areas until new vegetation was established. The use of revegetation would support soil stability, reduce soil loss and erosion, which would support the re-establishment of native vegetation. Revegetation would also support aquatic systems by reducing sediment loading and in-channel erosion, support water quality, and maintain habitat for fish and aquatic species.

Silvicultural and vegetation treatments for aspen, conifers, or juniper could result in short-term damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force wildlife to abandon habitat within these areas. Surface disturbance could result in runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Disturbed areas could attract predatory species of wildlife, which could reduce populations of other wildlife through hunting or relocation. Not allowing harvest of cottonwood trees could support intact wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. Overall, management would support forest and woodland habitat for wildlife by encouraging natural habitat conditions, native vegetation, cover, forage, and functional ecosystems.

Fuelwood collection could lead to surface disturbance, damage, or loss of vegetation, soil compaction, erosion, and the spread of invasive, non-native plant species. Removal of down wood could create the absence of habitat for important insects, reptiles, amphibians, and small mammals. In addition, removal of dead and down wood removes part of the nutrient cycle; preventing decayed wood matter from returning to soils and providing nutrients back into the ecosystem.

The use of prescribed fire, mechanical, chemical, and biological actions for fuels management in grassland and shrubland communities could result in short-term habitat loss, displacement of wildlife, or erosion and runoff into riparian systems depending on the management tools used and the habitat being treated. If areas of non-native, invasive plant species were treated, habitat or forage for wildlife could benefit from treatments if the treated area were to revegetate with native plant species and re-establish a native ecosystem. Chemical control could damage habitat and could sicken or kill wildlife if treated vegetation were consumed or wildlife were in contact with herbicides. Use of prescribed fire would result in impacts



as described from prescribed fire management (above).

Reducing or preventing the introduction or spread of noxious weeds would help to protect habitat and forage for wildlife by limiting the degree and extent of habitat conversion by the infiltration of invasive, non-native plant species. Preventing or reducing competition of invasive, non-native species allows native vegetation to persist and reproduce without undue stress from other plants competing for space, sunlight, and water resources. Native ecosystems provide necessary habitat elements for wildlife species such as a diversity of forage, cover, or nesting habitat. Invasive, non-native plant species can proliferate in disturbed areas and permanently damage native ecosystems if not prevented or quickly eradicated. Most wildlife rely on native plant species for food and cover; when invasive, non-native plant species replace native habitat, wildlife must relocate in search of desired habitat. If wildlife must travel any distance to relocate, their systems could become stressed, and if large numbers of wildlife are forced to leave an area due to lack of forage or cover, the relocation area may not be able to support all of the relocating wildlife due to lack of forage. Treatment activity could result in short-term habitat loss, displacement of wildlife, or erosion and runoff into riparian systems depending on the management tools used and the habitat being treated.

Management of riparian and wetland resources including achieving and maintaining PFC would support riparian, wetland, and instream habitat for terrestrial and aquatic species. The management could help reduce soil runoff into aquatic systems, preventing siltation of spawning habitat, improving water quality, and preventing erosion of streambanks. Removing or reducing livestock grazing from riparian areas could help maintain or improve habitat by preventing vegetation loss, preventing trampling of vegetation or wildlife habitat, removing competition for forage, reducing the introduction or spread of invasive, non-native plant species, preventing soil compaction, erosion, sedimentation, and the influx of nutrients into riparian areas, wetlands, or streambeds.

Management to protect sensitive wildlife areas and big game species through seasonal protections, stipulations, closures, habitat management plans, and other improvements and protective measures could prevent or reduce damage or removal of wildlife cover and forage, reduce fragmentation of habitat, and reduce disturbance of wildlife within these areas. The management could help reduce soil runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion. Applying seasonal stipulations could prevent wildlife from abandoning habitat during specified timeframes and could reduce damage or removal of wildlife cover and forage during the seasonal timeframes. Seasonal preclusions of disturbance could protect big game within sensitive parturition habitat and could protect wildlife by reducing species dispersal to other less desirable habitat. Removing or modifying fences could allow for unimpeded movement of wildlife species, allow for contiguous habitat, and prevent collisions or entanglement in fencing.

Protective management for raptors through seasonal restrictions, buffer distances for disturbing or disruptive activities, and placement of certain structures could prevent nest abandonment, allow for uninterrupted breeding activities, and provide overall support to raptor species. Repeated flushing of adult raptors increases energy expenditure during foraging and decreases energy ingestion, depleting energy reserves, and could result in premature mortality during harsh conditions. The management would reduce the effects of human presence or development activities.

Seasonal restrictions for surface disturbance near spawning fish populations would support breeding and protect spawning nests. The management could also protect wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The restrictions could help reduce soil runoff into aquatic systems, reduce siltation of spawning habitat, improve water quality, and prevent erosion of streambanks.

Management to protect special status plant species could indirectly protect wildlife habitat adjacent to the plant populations and prevent the loss of habitat for wildlife, prevent soil loss, erosion, sediment runoff, and reduce the spread of invasive, non-native plant species. The protections could reduce or prevent

development, which would retain habitat connectivity, maintain forage and cover habitat, and allow wildlife to remain in desirable habitat.

Management for Special Status Species, such as predator control measures could reduce predation to small mammals and reptiles. The management could reduce the availability of hunting perches for raptors and decrease the hunting opportunities of avian predators. While the management would support small wildlife, it could remove relied upon hunting grounds for raptors and reduce availability of food, forcing raptors to relocate to other habitat.

Protecting cultural and paleontological resources could reduce habitat loss, protect habitat from damage to cover and forage, or reduce fragmentation of habitat. Reducing disturbance from development activities could prevent wildlife from moving away from high quality habitat to areas of lower quality, less desirable habitat. The management could prevent soil runoff into aquatic systems, preventing siltation of spawning habitat, improving water quality, and preventing erosion of streambanks.

Managing 225,720 acres as VRM Class I would allow for very little surface disturbance or disruptive activities to occur by preserving the existing character of the landscape. Some disturbance could take place within the 582,670 acres of VRM Class II, but the character of the landscape would be retained. Some disturbance could remove or damage wildlife habitat, cause soil loss and erosion, and lead to the introduction or spread of invasive, non-native plant species. Because very few disturbing activities would be allowed, fewer activities that could force wildlife to flee or abandon habitat could occur, lowering stress levels and allowing wildlife to remain in desired habitat. Lands managed as VRM Class III (615,490 acres) and VRM Class IV (2,180,420 acres) would be more likely to allow for the greatest surface disturbance or development, which could damage or remove wildlife habitat. Human presence, vehicles, and machinery could cause wildlife species to abandon habitat. Invasive, non-native plant species could be introduced and spread by vehicles and machinery during development activities, which could change habitat composition and function, reducing forage quality and usable habitat for wildlife species.

Construction and placement of the Gateway West Transmission Line could further fragment wildlife habitat and displace wildlife species. Invasive, non-native plant species could be introduced and spread by vehicles and machinery during development activities; which could change habitat composition and function, reducing forage quality and usable habitat for wildlife species. Predatory wildlife (coyote, fox, and raptors) use pipeline corridors for hunting small prey species (mice, lizards, and snakes). The development of corridors would be beneficial to the predators but could increase predation on the smaller wildlife within the corridors. Runoff from development could lead to streambank erosion, vegetation loss, sedimentation of streambeds, and stream channel alteration; reducing the quality of habitat for aquatic species. Full impacts from the construction and placement of the Gateway West Transmission Line project are analyzed in the EIS associated with that project.

Within the planning area, 349,940 acres are currently managed as ROW exclusion areas and 736,138 acres are managed as ROW avoidance areas. Management of lands within the exclusion areas would prevent surface disturbance; damage or removal of wildlife species habitat; help to prevent soil loss, erosion, and runoff to riparian habitat; prevent the introduction or spread of invasive, non-native plant species; retain contiguous, unfragmented habitat; and prevent additional predation within new corridors. Lands within the avoidance areas would be managed to prevent or reduce habitat loss from linear ROWs and could protect some wildlife habitat. Prohibiting new above ground structures would also prevent new habitat loss and species disturbance or life-cycle disruption. Preventing overhead structures in these areas could reduce the risk of predation from overhead predators, but also prevent the construction of overhead perches for hunting raptors. The risk of collision or electrocution of bird and bat species could be reduced where overhead structures are not allowed. Maintenance and upgrades of existing structures could result in short-term disturbance of wildlife from human and vehicle activity, but long-term impacts would be minimal.

Where existing ROWs are used for placement of new linear facilities, disturbance to wildlife habitat would likely be minimal. Placing pipelines and power lines in already disturbed locations would reduce overall habitat loss and fragmentation of habitat. Some species associated with grassland areas, such as mule deer and western meadowlark, could be disturbed or forced to abandon habitat if development of areas under existing ROWs occurred. Construction activities could disturb other wildlife if construction were to occur within occupied habitat, possibly causing species to vacate the area to lower quality habitat. Disturbed areas would be more vulnerable to invasion of noxious weeds and would not initially provide the same level of habitat function, forage, or cover that the original area provided. Some actions such as construction of pipelines, buried fiber-optic lines, and other subsurface actions likely would have short-term impacts, because proper reclamation could restore some level of habitat function in these areas that could be used in the future by wildlife. Because of the long timeframes required for some disturbed sites to return to pre-disturbance vegetation cover, or the re-disturbance of a ROW corridor, certain habitat loss could be long term.

Pursuing withdrawals from locatable mineral entry could prevent or reduce surface disturbing activities, which could prevent damage or removal of wildlife cover and forage, reduce fragmentation of habitat, and prevent disturbance of wildlife. Land disposals could affect wildlife species depending on the parcel of land and the entity that acquires the land. Most land disposals do not occur without review for major impacts to wildlife and wildlife habitat. Land acquisitions could affect wildlife species depending on the resources found on the parcel of land. Acquisitions could lead to obtaining valuable habitat for wildlife where possible.

The development of wind, solar, or other renewable energy would cause habitat loss, and both short- and long-term impacts to wildlife habitat. Large wind or solar energy fields involve surface disturbance, which could permanently change the habitat structure, affecting wildlife. Disturbance during installation of towers, solar panels, roads, and infrastructure could force wildlife away from preferred habitat. Some smaller prey species would avoid and abandon areas where overhead structures are present, such as power lines and towers, due to the increased risk of avian predators. However, overhead structures could provide perches for hunting raptors or other predatory birds. Construction of wind turbines throughout the planning area may create collision hazards for raptors, bats, and multiple avian species. Studies have documented deaths of avian and bat species from wind turbines, although the levels of collision and death vary in the scientific research (Cohn 2008; Madders and Whitfield 2006). Collision levels fluctuate based on habitat, terrain, elevation and even weather conditions (Madders and Whitfield 2006). Prediction of accurate bird or bat losses from wind development is currently not available; however, it can be assumed that some losses of these species will occur. Bats most commonly found within wind farms with the highest mortality are the eastern red bat and hoary bat; the hoary bat is found within the planning area (Cohn 2008). Studies have also shown avian mortalities associated with solar farms, where birds may mistakenly take solar panels as the reflective surface of a lake or water body (Kagen et al., 2014).

Specific wildlife impacts from wind energy development have been shown for some big game species. Sawyer et al. (2006) determined that mule deer are displaced from suitable habitat by human activity related to the development and operation of gas wells in western Wyoming. Similar displacement would be expected with the development of large-scale wind facilities. While these studies suggest a potential displacement effect from the development of wind energy, the magnitude of the displacement effect from wind development may be different from other developments that use different technology and have more human activity associated with their operations. For example, a recent study regarding interactions of a transplanted elk population with an operating wind facility in Oklahoma found no evidence that turbines had a significant impact on elk use of the surrounding area (Walter et al. 2006). Similarly, Johnson et al. (2000) found no effect on pronghorn use of the Phase I and II Foote Creek Rim project in Wyoming.

In the JMH area, transportation management, such as closing and rehabilitating unused roads and trails would help improve habitat for wildlife and would minimize vegetation loss and soil erosion which would maintain or improve water quality for fisheries. Removing linear disturbance areas could allow for more contiguous, uninterrupted habitat for wildlife. Avoiding construction in riparian and sensitive areas could

protect wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The management could help reduce soil runoff into aquatic systems, preventing siltation of spawning habitat, improving water quality, and preventing erosion of streambanks.

In the JMH area, use of over the snow vehicles could cause disturbance to wildlife from human presence, noise, and compaction of habitat. If vehicles were used within critical winter range for wildlife, severe stress from noise and human presence could force wildlife away from crucial forage and cover and could lead to diminished health or mortality. Damage to soils and habitat could occur if vehicles were used during low snow conditions.

Livestock grazing could lead to damage or loss of vegetation and habitat for wildlife, competition of resources with wildlife species, soil compaction, erosion, or sediment runoff if not properly managed. Livestock grazing management would maintain or improve wildlife habitat through not exceeding AUMs, range and vegetation improvement projects, meeting the Wyoming Land Health Standards, monitoring, and closing special management exclosures, including Palmer Draw (970 acres). Maintaining or improving vegetation resources would provide continued or increased forage and cover for wildlife, possibly reducing competition for resources between livestock and native wildlife. Closures of grazing areas could help maintain or improve habitat for fish and wildlife by preventing vegetation loss, the introduction or spread of invasive, non-native plant species, and the influx of nutrients into riparian areas, wetlands, or streambeds associated with livestock grazing.

Livestock management in riparian areas, prohibiting livestock salt blocks and other nutritional supplements within 500 feet of riparian and wetlands, and development of water sources could help maintain or improve habitat for fish and wildlife by preventing vegetation loss, trampling of vegetation, and the introduction or spread of invasive, non-native plant species. This management would reduce or prevent soil compaction, erosion, and sedimentation, which could protect water quality and fisheries habitat within these areas. Water developments could support wildlife in addition to wild horses and livestock and would provide additional sources of drinking water for big game and other wildlife. Wildlife species could be affected by West Nile virus if waters were not designed to prevent breeding of mosquitoes. Other range improvements could help maintain or improve habitat by reducing congregation of animals in sensitive areas and prevent or reduce damage to forage and cover. The management could prevent or reduce the influx of nutrients into riparian areas, wetlands, or streambeds, which could protect water quality and riparian vegetation within these areas.

Managing the Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Red Creek, Pine Mountain, Little Mountain, and Cedar Canyon areas to assure their continuing value for recreational opportunities could result in habitat loss, vegetation damage, and disturbance of wildlife from human and vehicle presence. Recreation use of public lands such as camping, non-motorized use of trails and developed recreation sites, and the use of scenic overlooks could result in minimal soil disturbance or damage to vegetation. The introduction or spread of invasive, non-native plant species could increase in highly used areas. Disturbed areas would be more vulnerable to invasion of noxious weeds and would not provide the same level of habitat function, forage, or cover that the original area provided. Human use and presence could disturb wildlife species; possibly causing species to vacate the area to lower quality habitat. Recreation management to protect water resources, wildlife, and providing vegetation buffers near water sources could protect wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The management would also reduce disturbance of wildlife when accessing water resources near campsites and recreation sites.

In addition to the impacts from recreation, described above, motorized recreation, heavily used areas, development of recreation sites and facilities, and SRPs for large recreation events could lead to vegetation loss, surface disturbance, and habitat damage. Mitigation could restore some habitat, however if there was continued use of the area, the habitat value could be lost. Motorized recreation would result in soil damage, increased erosion, and sediment runoff, which would be intensified during heavy rainfall. Runoff could lead to streambank erosion, vegetation loss, sedimentation of streambeds, and stream channel alteration; reducing the quality of habitat for aquatic species. Disturbed areas and human use could lead to the increase

of predatory species of wildlife, which could reduce populations of other smaller wildlife species through hunting or relocation.

Impacts from recreation use within the Wind River Front SRMA (257,680 acres) would be similar to the recreation impacts described above. In addition, protective management within the eastern unit (82,107 acres) could prevent or reduce surface disturbing activities. Within the western unit (175,573 acres), allowing mineral development and greater opportunities for surface disturbing activities could result in damage or loss of wildlife habitat. The reduction in usable wildlife habitat, disruption of migration corridors, and increased human presence or vehicle use could force wildlife to relocate to lower quality, less desirable habitat.

Managing 12,831 acres as OHV open areas and 2,398,839 acres as limited to existing roads and trails could result in damage or removal of vegetation, fragmentation of habitat, and disturbance that could force wildlife to abandon habitat within these areas. This type of use would result in increased erosion and runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Disturbed areas would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Disturbed areas and human use (resulting in litter or food waste) could lead to the increase of predatory species of wildlife, which could reduce populations of smaller wildlife through predation or forcing wildlife to relocate to other areas.

Limiting vehicle travel to designated routes, 968,959 acres, could reduce damage to fish and wildlife habitat from vehicles, and help to reduce soil loss, erosion, and runoff to riparian habitat by keeping vehicles on designated routes. Limiting vehicle use could help reduce the introduction or spread of invasive, non-native plant species, which could protect native habitat. Vehicle collisions could occur with wildlife causing injury or death. Linear disturbances could fragment habitat or important migratory corridors for wildlife which could diminish health, reproductive success, and the ability to reach critical seasonal habitat.

Closing routes to OHV use, 225,537 acres, seasonal closures, and not allowing new OHV open areas would prevent damage to fish and wildlife habitat and help to prevent soil loss, erosion, and runoff to riparian habitat, and could reduce the introduction or spread of invasive, non-native plant species. Removing linear disturbances and open OHV areas could allow for more contiguous, uninterrupted habitat for wildlife which protects species from human and other disturbance and is necessary for some wildlife species to breed, migrate, and complete their life histories.

Management of eligible and congressionally designated trails could reduce or prevent disturbance or loss of wildlife habitat within areas adjacent to trail corridors through 0.25-mile setbacks and other protective management. Preventing or reducing vegetation loss or surface disturbance would protect soils, reduce erosion and runoff, and support riparian habitat and waterways. Recreational use of trails and other trail management could result in soil disturbance or damage to vegetation along the trail corridor. The introduction or spread of invasive, non-native plant species could increase in highly used areas. Human use and presence could disturb wildlife species; possibly causing species to vacate the area to lower quality habitat.

Management of WSAs to protect wilderness characteristics could help maintain or improve wildlife habitat by preventing or reducing surface disturbance, damage, or removal of vegetation, help to prevent soil loss, erosion, and runoff into riparian habitat. Management for wilderness characteristics could allow for contiguous, uninterrupted habitat, which protects species from human and other disturbance, and is necessary for some wildlife species to breed, migrate, and complete their life histories. The management could reduce the introduction or spread of invasive, non-native plant species, which would protect native habitat. Reducing surface disturbance and erosion would support water quality, stream channel integrity, and prevent cementation of spawning gravel.

Protecting outstanding remarkable values of recommended eligible and suitable wild and scenic river segments would protect upland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other wildlife species from many surface disturbing activities within these areas. Protecting the river segments could help reduce soil runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion.

Management for the Red Desert Watershed Management Area (340,930 acres), Salt Wells (aka Pine Mountain) Management Area (62,760 acres), Four J Basin Portion of the Salt Wells Management Area, Sugarloaf Basin Management Area (87,240 acres), West Sand Dunes Archaeological District (17,780 acres), Pinnacles Geographic Area (1,340 acres), Pinnacles Geologic Feature (600 acres), and Monument Valley Management Area (69,960 acres) would protect wildlife habitat through limiting development and other surface disturbing activities. These areas contain habitat for big game species and could help reduce disturbance of wildlife from development or other construction activities. Where protective management is applied, it would support forage, habitat, migration corridors, and other important areas for wildlife species. The management could help to prevent soil runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion.

Retaining the designation of the Cedar Canyon ACEC (2,540 acres) and allowing the lands to be open for consideration of mineral leasing with restrictions to protect wildlife values could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force wildlife to abandon habitat. Surface disturbance could result in increased erosion and runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Disturbed areas would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Vegetation management, habitat enhancement, and other management could maintain or improve overall habitat for wildlife and could provide nesting habitat and hunting perches for raptors and other avian species. Limiting vehicle travel to designated routes could reduce damage to fish and wildlife habitat from vehicles, and help to reduce soil loss, erosion, and runoff to riparian habitat by keeping vehicles on designated routes. Use of over the snow vehicles could cause disturbance to wildlife from human presence, noise, and compaction of habitat. If vehicles were used within critical winter range for wildlife, severe stress from noise and human presence could force wildlife away from crucial forage and cover and could lead to diminished health or mortality. Damage to habitat could occur if vehicles were used during low snow conditions.

Designating and managing the Greater Red Creek ACEC (131,600 acres) for watershed and wildlife values would improve, enhance, or maintain fisheries and wildlife habitat. Emphasis of management to support the watershed and aquatic system would support fish, macroinvertebrates, waterfowl, and other aquatic species by reducing erosion and nutrient inputs. Reducing erosion and nutrient inputs would support water quality, stream channel integrity, and prevent cementation of spawning gravel. Allowing the lands to be open for consideration of mineral leasing with restrictions to protect wildlife values could reduce or prevent loss of habitat for wildlife in that area. However, development of minerals could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force wildlife to abandon habitat.

Allowing the Sage Creek portion of Greater Red Creek ACEC to be open for coal leasing with restrictions to protect wildlife values could minimize damage or loss habitat for wildlife in that area through mitigation. However, development of minerals could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force wildlife to abandon habitat. Approximately 9,600 acres of the coal development potential area (CDPA) lie within the Sage Creek portion of the Greater Red Creek ACEC and have screened as per 43 CFR 1610.7-1 and 3461.

Closing the Currant Creek Portion of the Greater Red Creek ACEC (23,740 acres), Red Creek Portion of the Greater Red Creek ACEC (55,880 acres), the Greater Sand Dunes ACEC, including the Crookston Ranch and Boar's Tusk Portions (39,290 acres), Oregon Buttes ACEC (3,440 acres), Pine Spring ACEC (6,030 acres), Special Status Plant Species ACEC (1,200 acres), and White Mountain Petroglyphs ACEC (20 acres) to mineral development and management as a ROW exclusion area and VRM Class II would

protect the habitat and waters for wildlife and fisheries.

Allowing the Eastern Portion of the Greater Sand Dunes ACEC and the South Pass Historic Landscape ACEC (53,940 acres) to be open for coal and mineral leasing and other surface disturbing and disruptive activity with restrictions to protect wildlife values could minimize damage or loss habitat for wildlife in that area through mitigation. However, development of minerals could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force wildlife to abandon habitat. Approximately 9,840 acres of the CDPA lie within the area and have been screened as per 43 CFR 1610.7-1 and 3461. Allowing about 10,500 acres as open to off-road vehicle use in the sand dunes area could result in disturbance of wildlife from human presence and noise and could lead to injury or mortality from possible collisions with vehicles. Because the dunes are an existing use area, it is likely that wildlife have already abandoned use or avoid the area. Impacts to big game species, specifically pronghorn, would be moderate and include displacement and increased stress during critical time periods. Off road, open OHV use could degrade vegetation and lead to erosion and habitat loss, reduced quality of habitat, and lead to the introduction and spread of invasive, non-native plants that can further degrade habitat quality and change habitat composition.

Managing the Natural Corrals ACEC (1,110 acres) with an NSO stipulation, prohibiting surface disturbing activity, and closing surface coal mining would protect the habitat and waters for wildlife and fisheries. Surface mining activity occurs about four miles to the east of the ACEC. Approximately 1,100 acres of the CDPA lie within the Natural Corrals ACEC and are restricted to subsurface coal mining activity as per 43 CFR 1610.7-1 and 3461. Preventing or reducing surface disturbing activities in the ACEC would maintain contiguous habitat for forage, cover, migration, and important life cycles of wildlife.

Designating and managing the Steamboat Mountain ACEC (47,280 acres) for watershed, sensitive big game habitat, wildlife, and other values could improve, enhance, or maintain fisheries and wildlife habitat. Allowing the lands to be open for consideration of mineral leasing with restrictions to protect wildlife values could reduce some damage to wildlife habitat in that area. However, development of minerals could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force wildlife to abandon habitat. Seasonal restrictions could support elk, deer, or other wildlife during critical life stages such as birthing, parturition, and in winter ranges. Vegetation, fire, and other management could support wildlife habitat and aquatic systems, and could support fish, macroinvertebrates, waterfowl, and other aquatic species' habitat by reducing erosion and nutrient inputs. Reducing erosion and nutrient inputs would support water quality, stream channel integrity, and prevent cementation of spawning gravel. Some surface disturbance could happen within the areas of VRM Class II, which could remove or damage wildlife habitat, cause soil loss and erosion, and lead to the introduction or spread of invasive, non-native plant species. Because limited disturbing activities would be allowed, fewer activities that could force wildlife to flee or abandon habitat could occur, lowering stress levels and allowing wildlife to remain in desired habitat. However, lands managed as VRM Class III would be more likely to allow surface disturbance or development, which could cause habitat loss or degradation of fish and wildlife habitat.

Reducing or minimizing risk to humans and the environment from hazardous materials could prevent damage to soils, habitat resources, or wildlife species.

### **4.7.3 Alternative B**

Impacts to wildlife and fisheries habitat from geophysical, land withdrawals, land disposals, land acquisitions, renewable energy, and wild and scenic rivers management would be the same as those described under Alternative A.

Impacts from air quality management would be the same as those described under Alternative A; however, measures to control dust could protect wildlife and fisheries habitat to a greater degree than compared to Alternative A.

Impacts to wildlife and fisheries from the management of soil resources would be similar to those described under Alternative A; however, additional management protection to soil resources could support wildlife habitat and fisheries resources to a greater degree compared to Alternative A.

Impacts to wildlife and fisheries from the management of water resources would be similar to those described under Alternative A. However, applying buffers to the prohibition of surface disturbing activities and new permanent structures within aquatic systems, applying mineral stipulations, and avoiding linear crossings would support wildlife habitat and aquatic systems. The additional management for aquifers and water quality could protect wildlife habitat and fisheries resources to a greater degree compared to Alternative A.

Managing all lands with wilderness characteristics for their wilderness characteristics would prevent damage or loss of wildlife habitat from development activities, reduce disturbance to wildlife from the presence of humans, vehicles, or machinery, prevent erosion or runoff, and protect an intact ecosystem. The closed acres that are adjacent to riparian habitat or stream channels would protect important habitat for fish species, such as avian species, big game, and other wetland and riparian wildlife species, and would support water quality within stream and river corridors. The lands with wilderness characteristics would be directly protected from damage and disturbance by oil and gas development. Precluding oil and gas development would prevent the introduction and spread of invasive, non-native plant species from machinery and vehicles, further supporting desired forage, cover, and contiguous habitat.

Under Alternative B, approximately 1,292 oil, gas, and CBNG wells would be developed within the planning area, 3,481 fewer wells as compared to Alternative A. There would be 8,892 acres of initial surface disturbance and 2,566 acres of long-term disturbance from oil and gas development. There would be 23,939 fewer acres of initial surface disturbance and 6,900 fewer acres of long-term disturbance compared with Alternative A.

Closing 2,186,218 acres to fluid mineral leasing would reduce habitat loss for wildlife and would close 1,646,197 more acres than under Alternative A. Closing land to new oil and gas development would protect larger areas of habitat for deer, elk, and pronghorn as compared to Alternative A (Table 4-5). This management would allow for contiguous, uninterrupted habitat, for wildlife to migrate, breed, hunt, and forage. Over one million more acres of sagebrush habitat would be closed to oil and gas leasing as compared to Alternative A. Wildlife that rely on sagebrush would have larger areas of undisturbed habitat free from disturbance and mineral development activity.

Under Alternative B, 813,354 acres would be managed with NSO stipulations, which is 654,743 more acres than under Alternative A. The NSO stipulation would protect larger areas of habitat for deer, elk, pronghorn, and moose as compared to Alternative A (Table 4-5). Larger areas of grassland and sagebrush would be protected from surface disturbance and disruptive activity under Alternative B, which could support greater habitat connectivity for numerous wildlife species.

Applying CSU stipulations to oil and gas leases could reduce damage or loss of vegetation and habitat for wildlife (99,674 acres of CSU). Impacts to wildlife and fisheries from the application of CSU stipulations would be similar to those described under Alternative A, but smaller areas of habitat could receive some reduced impacts from oil and gas development and production activities (Table 4-5).

Approximately 1,993,908 acres of the planning area would be proposed for withdrawal from locatable mineral entry, 1,437,350 acres more than Alternative A (Table 4-6), and 2,186,218 acres would be closed to geothermal leasing, 1,646,197 acres more than under Alternative A. The remaining acres in the planning area would be available for locatable mineral entry and geothermal leasing. Impacts to wildlife and fisheries would be similar to those under Alternative A; however, a much larger area of land would be unavailable for locatable mineral development and geothermal leasing compared to Alternative A.



Impacts to wildlife and fisheries habitat from the development of solid leasable minerals would be similar to those described under Alternative A. Under Alternative B, 3,735,546 acres would be closed to coal, 2,122,282 acres would be closed to oil shale, and 2,119,920 acres would be closed to trona leasing and development. The protections to lands closed to solid mineral development would be applied to 2,741,709 more acres of land closed to coal, 1,394,477 more acres of lands closed to oil shale, and 1,665,326 more acres of land closed to trona leasing and development compared to Alternative A. The larger areas of closures would prevent damage or loss of wildlife habitat from development activities when compared to Alternative A (Table 4-6).

Closing 2,581,741 acres of lands to saleable mineral development would prevent damage or loss of wildlife habitat from mineral excavation on 1,748,022 more acres compared to Alternative A. Impacts to big game, wildlife, and fish habitat would be similar to those described under Alternative A, but a much greater area of land would be closed to surface disturbing activities (Table 4-6).

Impacts from wildland fire management would be similar to those described under Alternative A. Additional management to protect sagebrush and other sensitive resources could protect habitat and wildlife within these areas from damage or loss from unplanned fires to a greater degree compared to Alternative A.

Under Alternative B, forest and woodland management would be similar to the management and impacts described under Alternative A; however, Alternative B emphasizes the use of natural processes for forestry management in addition to not allowing clearcutting. The management in Alternative B would support forest and woodland habitat for wildlife by encouraging natural habitat conditions, native vegetation, cover, forage, and functional ecosystems.

Impacts to wildlife and fish habitat from management of grassland and shrubland communities would be very similar to those described under Alternative A. Resting lands from livestock grazing a minimum of five seasons after treatments would allow treated areas to revegetate, soils to stabilize, and vegetation to mature to the point of withstanding livestock grazing pressure. Rested areas could provide wildlife with new vegetation for cover and forage without competition with livestock during the rest period.

Impacts to wildlife and fish habitat from invasive species and pest management would be similar to those described under Alternative A. Additional management for invasive plant species control through only mechanical or biological methods, would protect vegetation and wildlife habitat from damage from the use of more invasive control methods, such as chemicals or fire. However, less invasive techniques may not be as effective in controlling large infestations of noxious weeds as chemicals or fire. Under Alternative B, additional management for preventing and controlling the infestation of aquatic invasive species could support wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl and other species dependent on these ecosystems.

Impacts to wildlife and fish habitat from the management of riparian and wetland resources would be similar to those described under Alternative A. Additional management for achieving PFC would maintain or improve wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The management could help reduce soil runoff into aquatic systems, reducing siltation of spawning habitat, improving water quality, and preventing erosion of streambanks.

Management for wildlife and fish would be similar to Alternative A and impacts would be similar to those described under Alternative A. Additional management under Alternative B such as adjustments to livestock and wild horse management could help maintain or improve habitat by preventing vegetation loss, removing competition for forage, or reducing the introduction or spread of invasive, non-native plant species. The management could reduce soil compaction, erosion, sedimentation, and the influx of nutrients into riparian areas, wetlands, or streambeds. Maintaining and improving habitat for migratory bird species of conservation concern could support habitat for Neotropical migrants. The management could support

existing nesting, feeding, or breeding habitat, or could allow for mitigation to restore areas of habitat if losses were suffered elsewhere in the planning area. Alternative B would apply greater stipulations to protect important seasonal and sensitive habitat for fish and wildlife species. Stipulations for no net loss of habitat and prohibiting renewable energy projects in sensitive habitats would prevent the loss or damage of important habitat areas for forage, hunting, nesting, breeding, young rearing, and migration of wildlife species. The management could also protect wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems.

Impacts to wildlife and fish habitat from the management for big game would be similar to those described under Alternative A. Additional management to protect big game parturition habitat, crucial winter range, and migration corridors could ensure reproductive success and survival of young, reduce winter mortality associated with increased stress caused by human-induced disturbance, and provide migration corridors that link crucial habitats (winter range) and parturition areas.

Impacts to wildlife and fish habitat from the management of raptors would be similar to those described under Alternative A. Under Alternative B, additional management would protect raptors through seasonal closures, greater buffer distances, preventing surface disturbance or occupancy within one mile of active and historic nests, and locating infrastructure away from high avian-use areas. The management would provide greater protection by reducing disturbance to raptors during critical life phases, preventing the risk of collisions with wires or structures, and protecting important habitat for nesting, breeding, or hunting as compared to Alternative A.

Impacts to wildlife and fish habitat from the management of fish would be similar to those described under Alternative A. Under Alternative B, additional management would provide specific timeframes for seasonal restrictions and buffer distances (¼ mile), which could provide greater protection for fish and important habitat for fish reproduction to a greater degree than compared to Alternative A. Closing fish bearing streams to solid mineral leasing would support fisheries and stream health, and protect wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The restrictions could help prevent sediment runoff into aquatic systems, reduce siltation of spawning habitat, improve water quality, and prevent erosion of streambanks.

Impacts to wildlife and fish habitat from the management of special status plant species would be similar to those described under Alternative A. Under Alternative B, additional management could provide greater habitat protection and fewer disruptive activities, supporting wildlife and their habitat.

Impacts to wildlife and fish habitat from the management of special status wildlife species would be similar to those described under Alternative A. Under Alternative B, additional management to protect habitat and reintroduce species would provide greater habitat protection for wildlife and fish, and reintroduction of species could fill key niches in ecosystems.

Impacts to wildlife and fish habitat from the management of cultural resources would be similar to those described under Alternative A. Under Alternative B, additional management such as buffer distances, NSO stipulations, and closures to mineral sales to prevent surface disturbing activities would reduce damage or removal of wildlife cover and forage, reduce fragmentation of habitat, and prevent disturbance of wildlife to a greater degree than Alternative A.

Impacts to wildlife and fisheries from the management of visual resources would be the same as those described under Alternative A for VRM Class I (225,790 acres, 70 acres more than Alternative A), VRM Class III (666,522 acres, 51,030 acres more than Alternative A), and for the Gateway West Pipeline. Under Alternative B, 2,148,902 acres would be managed as VRM Class II, 1,566,230 more acres than Alternative A. The management for VRM Class II would retain the character of the landscape, which could allow for some surface disturbance, as described under Alternative A, but the classification of 2,148,902 acres would provide greater protection overall for wildlife and fisheries. Under Alternative B, 563,754 acres would be managed as VRM Class IV, 1,616,669 fewer acres as compared to Alternative A. Impacts to lands managed

as VRM Class IV would be the same as those described under Alternative A, but fewer acres would be subjected to the level of surface disturbance allowed within the VRM Class IV classification.

Impacts to wildlife and fisheries from ROW management would be the same as those described under Alternative A; however, under Alternative B, 2,480,876 acres would be managed as ROW exclusion areas. The management would protect fish and wildlife habitat from linear disturbances, surface disturbing activities, and habitat loss on 2,130,936 more acres as compared to Alternative A. Fewer acres would be managed as avoidance areas, 133,903 acres under Alternative B, 602,235 fewer acres than Alternative A. Although a smaller amount of land would be protected as avoidance areas, the difference is far offset by the over two million additional acres of land managed as exclusion areas.

Impacts to wildlife and fisheries from transportation management would be similar to those described under Alternative A. In addition, restoring roads could provide additional and contiguous habitat for sagebrush obligate wildlife. Under Alternative B, the route designations from the travel management plan would be applied. Within the area designated as limited to designated roads and trails, 2,352 miles of routes would be managed as open to vehicle use. The route designations could reduce damage to fish and wildlife habitat from off-road travel by vehicles, and help to reduce soil loss, erosion, and runoff to riparian habitat by keeping vehicles on designated routes. Limiting vehicle use could help reduce the introduction or spread of invasive, non-native plant species, which could protect native habitat. Vehicle collisions could occur with wildlife causing injury or death. Linear disturbances could fragment habitat or important migratory corridors for big game and other wildlife which could diminish health, reproductive success, and the ability to reach critical seasonal habitat. Designating routes would result in less erosion and runoff into aquatic systems, reducing siltation of spawning habitat and erosion of streambanks. About 67 miles of routes would be limited to non-motorized or non-mechanized use, 4,505 miles of routes would be closed to all use, and 10,006 miles of routes and linear disturbances would be removed from the transportation network and returned to natural conditions. These routes would receive lower use or no use at all. Closed areas would result in less disturbance or stress to wildlife from vehicles and human presence, which would support the overall health of big game, raptors, and other wildlife species.

Impacts to wildlife and fisheries from livestock grazing management would be similar to those described under Alternative A. In addition, application of monitoring, greater protection of riparian areas and springs, and additional range improvements would provide greater protection of fish and wildlife habitat as compared to Alternative A. The additional management could help maintain or improve habitat by reducing congregation of animals in sensitive areas and prevent or reduce damage to forage and cover. Removal of fences reduces threats of injury or death from collisions or entanglement with fences, enhances migration corridors, and could allow access to additional forage and cover.

Impacts to wildlife and fisheries from recreation management would be similar to those described under Alternative A. Additional management to consider other resource values, buffer distances, and mineral lease stipulations and closures could help maintain or improve habitat for fish and wildlife to a greater degree than Alternative A.

Under Alternative B, the Wind River Front SRMA (257,680 acres) would not be retained. This could reduce vegetation damage, surface disturbance, and disruption of wildlife from human or vehicle presence caused by recreation use to a greater degree than Alternative A. Other management within the Wind River Front area would have similar impacts to wildlife and fisheries compared to Alternative A, but with greater protection to lands from mineral stipulation and other surface disturbance prohibitions.

Impacts to wildlife and fisheries from managing OHV open and closed areas would be the same as those described under Alternative A. Under Alternative B, there would be no category called “limited to existing roads and trails.” While the routes would be moved under the “limited to designated roads and trails” for a total of 3,367,576 acres (the sum of limited to designated and limited to existing acres in Alternative A) impacts to wildlife and fish habitat would be similar to those described under both categories under

Alternative A. Additional management to prohibit and limit OHV use could provide greater protection to wildlife and fisheries from damage to fish and wildlife habitat and help to prevent soil loss, erosion, and runoff to riparian habitat, and the introduction or spread of invasive, non-native plant species as compared to Alternative A.

Impacts to wildlife and fisheries from the management of congressionally designated trails would be similar to those described under Alternative A. Under Alternative B, management of eligible and congressionally designated trails could reduce or prevent disturbance or loss of habitat for wildlife to a greater degree when compared to Alternative A.

Impacts to wildlife and fisheries from the management of WSAs would be similar to those described under Alternative A. Additional management under Alternative B for visual resources could provide greater habitat protection beyond the perimeter of the WSAs by preventing or reducing surface disturbing activities within viewsheds.

Under Alternative B, the Red Desert Watershed Management Area would be divided into a management area (164,140 acres) and the remainder added to the Steamboat Mountain ACEC (439,330 total acres). Impacts to fish and wildlife from the management of the area would be similar to those described in Alternative A, but additional management could further reduce surface disturbance, human and vehicle presence, and a reduction in predation of smaller wildlife species. Where protective management is applied, it would support forage, habitat, migration corridors, and other important areas for big game, raptors, and other wildlife species. The management could reduce soil runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion. The remaining management areas listed in Alternative A would be managed as ACECs under Alternative B.

The Greater Red Creek ACEC would be expanded from 131,600 acres in Alternative A to 468,170 acres, and the Monument Valley ACEC (69,960 acres), and Big Sandy Openings ACEC (2,020 acres) would be designated in Alternative B. The expansion and designations would allow for greater protection of habitat for wildlife and fisheries through management such as ROW exclusion, closed to mineral leasing, limited vehicle use, vegetation management, and protective management for wildlife.

Designating the Pinnacles ACEC (1,340 acres) would protect habitat for wildlife and fisheries through management such as ROW exclusion, closed to mineral sales, and limiting surface disturbing activities. The management would support forage, habitat, migration corridors, and other important areas for big game, raptors, and other wildlife species. The management could reduce soil runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion.

Impacts to wildlife and fisheries from retaining the designation of the Cedar Canyon ACEC (2,540 acres) would be similar to Alternative A, but additional management would allow for greater habitat protection under Alternative B.

Impacts to wildlife and fisheries from retaining the designation of the Greater Sand Dunes ACEC (including the Crookston Ranch and Boar's Tusk Portions, 39,290 acres) and the Oregon Buttes ACEC would be the same as those described under Alternative A.

Impacts to wildlife and fisheries from the management of the Eastern Portion of the Greater Sand Dunes ACEC would be similar to those described under Alternative A. Some additional protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to wildlife from vehicles, machinery, or human presence.

Impacts to wildlife and fisheries from the management of the Natural Corrals ACEC (1,110 acres) would be similar to those described under Alternative A. Some additional protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to wildlife from

vehicles, machinery, or human presence.

Impacts to wildlife and fisheries from the management of the Pine Springs ACEC (6,480 acres) would be similar to those described under Alternative A. The ACEC would be expanded an additional 430 acres under Alternative B. Some additional protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to wildlife from vehicles, machinery, or human presence.

Impacts to wildlife and fisheries from the management of the Special Status Plant Species ACEC (3,610 acres) would be similar to those described under Alternative A. The ACEC would be expanded an additional 2,510 acres under Alternative B. The inclusion of additional land and protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to wildlife from vehicles, machinery, or human presence.

Impacts to wildlife and fisheries from the management of the Steamboat Mountain ACEC (439,330 acres) would be similar to those described under Alternative A. The ACEC would be expanded an additional 392,050 acres under Alternative B. The inclusion of additional land and protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to wildlife from vehicles, machinery, or human presence.

Impacts to wildlife and fisheries from the management of the White Mountain Petroglyphs ACEC (20 acres) would be similar to those described under Alternative A. Some additional protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to wildlife from vehicles, machinery, or human presence.

Designating and managing the South Wind River ACEC (374,710 acres) for watershed, sensitive big game habitat, wildlife, and other values could improve, enhance, or maintain fisheries and wildlife habitat. Protective management to prevent or reduce surface disturbance, ROW exclusion, and closures to mineral leasing could provide protection of habitat and reduce disturbance to wildlife from vehicles, machinery, or human presence. Preventing or reducing surface disturbing activities in the ACEC would maintain contiguous habitat for forage, cover, migration, and important life cycles of big game, raptors, and other wildlife. The management could reduce the introduction or spread of invasive, non-native plant species, which would protect native habitat. Habitat for fish, macroinvertebrates, waterfowl, and other aquatic species could be protected by reducing soil loss, erosion, and runoff to riparian habitat. Reducing erosion would support water quality, stream channel integrity, and prevent cementation of spawning gravel. Managing lands as a separate offsite mitigation area could provide new seral stages of vegetation as new habitat regenerates. Wildlife such as elk, prairie dogs, and northern harrier could benefit from the low, early seral areas of vegetation.

Designating and managing the Big Game Migration Corridors ACEC (226,335 acres) to prohibit surface disturbing activities or facilities and other actions to restrict development and habitat fragmentation would support and protect big game and other species which use the area for habitat or migration. Management for no-net-loss of sensitive habitat would allow uninterrupted expanses of habitat for big game and other wildlife to use for forage, cover, or movement across the landscape. Providing protected corridors for big game and other wildlife species allows for passage from critical ranges such as winter habitat or parturition areas to summer habitat with reduced stress from human presence, danger of vehicle collisions, or disturbance from machinery within the ACEC. Because limited disturbing activities would be allowed, fewer activities that could force wildlife to flee or abandon habitat could occur, lowering stress levels and allowing big game, raptors, and other wildlife to remain in desired habitat. Managing lands as a separate offsite mitigation area could provide new seral stages of vegetation as new habitat regenerates. Wildlife such as elk, prairie dogs, and northern harrier could benefit from the low, early seral areas of vegetation within the mitigation area.

Impacts to wildlife from reducing or minimizing risk to humans and the environment from hazardous

materials would be similar to Alternative A. In addition, restoration of contaminated lands could reduce runoff of contaminants into riparian and aquatic systems and provide additional habitat for wildlife species.

#### 4.7.4 Alternative C

Impacts to wildlife and fisheries habitat from geophysical, riparian and wetland, raptors, cultural resources, pursuing land withdrawals, land disposals, land acquisitions, and renewable energy management would be the same as those described under Alternative A.

Impacts to wildlife and fisheries from air quality management would be the same as those described under Alternative B, with the exception of dust abatement measures, which would be the same as Alternative A.

Impacts to wildlife and fisheries from the management of soil resources would be similar to those described under Alternative A. Fewer protections to highly erodible soils under Alternative C could result in the potential for increased soil erosion, soil loss, and sediment runoff to a greater degree when compared to Alternative A.

Lands with wilderness characteristics would not be managed for wilderness characteristics under Alternative C. These lands would be managed for other resource uses or resource values. Protective management applied under Alternative B would not be applied in Alternative C and could allow surface disturbing or disruptive activities to occur on these lands. Surface disturbance or disruptive activities could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force wildlife to abandon habitat within these areas. Development could result in runoff into aquatic systems, causing siltation of spawning habitat, reduced water quality, and erosion of streambanks, diminishing stream function and health. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species which could alter native vegetation, making habitat less desirable to native wildlife. Disturbed areas could attract predatory species of wildlife which could reduce populations of small wildlife.

Approximately 4,919 oil, gas, and CBNG wells would be developed under Alternative C within the planning area, 146 more than under Alternative A. There would be 33,840 acres of initial surface disturbance and 9,758 acres of long-term disturbance from fluid mineral development. This would be 1,009 more acres of initial surface disturbance and 292 more acres of long-term disturbance compared with Alternative A.

Closing 225,782 acres to fluid mineral leasing would reduce habitat loss for wildlife and would allow for contiguous, uninterrupted habitat, and 314,239 fewer acres would be closed than under Alternative A. Impacts to wildlife and fisheries would be similar to those described under Alternative A; however, surface disturbance, habitat damage, and forage loss could occur over more acres under Alternative C. Closing fewer acres of land to new oil and gas development would reduce habitat protection for deer, elk, pronghorn, and moose as compared to Alternative A (Table 4-5). All vegetation types that provide habitat for big game as well as other wildlife species would have smaller areas of protection within closed areas.

Under Alternative C, 15,542 acres would be managed with NSO stipulations, which is 143,069 fewer acres than Alternative A. Outside of areas with NSO stipulations, impacts to wildlife and fisheries would be similar to those described under Alternative A, however, surface disturbance and disruptive activities could occur over 143,069 more acres under Alternative C. The NSO stipulation would reduce habitat protection for deer, elk, pronghorn, and moose from surface disturbance as compared to Alternative A (Table 4-5). Vegetation types that provide habitat for big game as well as other wildlife species would have smaller areas of protection under the NSO stipulation, which could lead to habitat fragmentation and lower quality forage or cover for wildlife.

wildlife, 505,242 fewer acres compared to Alternative A (Table 4-5). Impacts to wildlife and fisheries from the application of CSU stipulations would be similar to those described under Alternative A, but overall, less habitat would receive reduced impacts from oil and gas development and production activities.

Approximately 1,993,908 acres of the planning area would be pursued for withdrawal from locatable mineral entry, 321,597 fewer acres compared to Alternative A. Approximately 225,782 acres of the planning area would be closed to geothermal leasing, 314,239 fewer acres compared to Alternative A. Impacts to wildlife and fisheries would be the same as those described under Alternative A; however, surface disturbance and disruptive activities could occur over more acres under Alternative C (Table 4-6).

Impacts to wildlife and fisheries habitat from the development of coal resources would be similar to those described under Alternative A. Under Alternative C, 226,219 acres would be closed to coal, 225,965 acres would be closed to oil shale, and 225,965 acres would be closed to trona leasing and development. The smaller areas of closures, 407,618 acres fewer for coal, 501,840 for oil shale, and 228,629 fewer for trona, could result in increased damage or loss of wildlife habitat from development activities and increased disturbance to wildlife from the presence of humans when compared to Alternative A (Table 4-6).

Approximately 226,421 acres of the planning area would be closed to saleable mineral development, 607,298 fewer acres compared to Alternative A. Impacts to wildlife and fisheries would be the same as those described under Alternative A, however, surface disturbance and disruptive activities could occur over more acres under Alternative C.

Impacts to wildlife and fisheries from wildland fire management and forest and woodland management would be the same as those described under Alternative A. Under Alternative C, allowing the harvest of cottonwood trees could remove nesting habitat for birds and bats, disturb nearby wildlife from human presence, machinery and vehicles, and cause surface disturbance which could remove vegetation and cause erosion.

Impacts to wildlife and fish habitat from management of grassland and shrubland communities would be very similar to those described under Alternative A. Use of non-native species could help stabilize soils and prevent erosion in the short term, and over the long term could provide stable land for native species to re-establish. Some non-native plants may not provide appropriate cover or forage values for wildlife, and the use of non-native plants could increase the risk of spread and eventual degradation of native habitat values.

Impacts to wildlife and fish habitat from invasive species and pest management would be similar to those described under Alternative A. Additional management for invasive plant species control through various methods, including chemicals, the use of BMPs, and buffer distances for chemical use could reduce the infestation and spread of invasive species to a greater degree than Alternative A. Additional management for preventing and controlling the infestation of aquatic invasive species could support wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl and other species dependent on these ecosystems. The management would help prevent the infestation of riparian and aquatic habitat from non-native species, which would help maintain native ecosystems for forage and cover for wildlife and could support water quality and quantity.

Management for wildlife and fish would be similar to Alternative A, and impacts would be similar to those described under Alternative A. Additional management under Alternative C by prioritizing livestock and raising grazing levels could increase competition for forage resources between livestock and wildlife, especially for big game species. Increased use by livestock could cause loss of vegetation for forage and cover, soil compaction, erosion, trampling of vegetation and habitat, and the spread of invasive, non-native plant species. Retaining fences could impact wildlife by creating travel barriers, altering distribution patterns, increasing stress and energy loss, and could cause injury or death from entanglement or collisions.

Management to allow renewable energy projects in sensitive wildlife habitats could result in habitat damage or loss of big game crucial winter range and parturition habitat, raptor concentration areas (high-use/high-

density raptor nesting/roosting/perching areas), and unique habitats (e.g. aspen and mountain shrub). Renewable energy development could result in displacement of some wildlife and raptor species from breeding and foraging habitat within the construction area. Construction of wind turbines throughout the planning area may create collision hazards for raptors, bats, and multiple avian species. Studies have documented deaths of avian and bat species from wind turbines, although the levels of collision and death vary in the scientific research (Cohn 2008; Madders and Whitfield 2006). Collision levels fluctuate based on habitat, terrain, elevation and even weather conditions (Madders and Whitfield 2006). Prediction of accurate bird or bat losses from wind development is currently not available; however, it can be assumed that some losses of these species will occur. Physical or psychological barriers could lead to fragmentation of habitats, further limiting the availability of effective habitat. An area of intensive activity or construction becomes a barrier when animals cannot or will not cross it to access otherwise suitable habitat. These impacts are especially problematic when they occur within limiting habitat components such as crucial winter ranges and reproductive habitats (WGFD 2004b). Development of solar projects would result in the entire loss of all habitat within the project footprint. Studies have shown avian mortalities associated with solar farms, where birds may mistakenly see solar panels as the reflective surface of a lake or water body (Kagen, et al., 2014).

Impacts to wildlife and fish habitat from the management for big game would be the same as those described under Alternative A. Slightly more protections to seasonal habitat could be applied under Alternative C, which could reduce disruptive activities within sensitive big game habitat.

Under Alternative C, seasonal restrictions for surface disturbance near spawning fish populations would not be applied. Allowing surface disturbing activities along fish bearing streams near spawning, incubation, and fry rearing habitat could lead to sediment runoff and accumulation of fine silts in stream channels, which could cause cementation of spawning gravel for fish species. Increased sediment could affect water quality for and aquatic habitat for fish, waterfowl, macroinvertebrates, and other species dependent on these ecosystems.

Impacts to wildlife and fish habitat from the management of special status plant species would be similar to those described under Alternative A. Under Alternative C, allowing more opportunities for surface disturbing activities near special status plant species could force big game, raptors, or other wildlife to abandon habitat within these areas.

Impacts to wildlife and fisheries from the management of visual resources would be very similar to those described under Alternative A. Management for VRM Class I would be 226,630 acres, 910 acres more than Alternative A; VRM Class II would be 607,900 acres, 25,230 acres more than Alternative A; VRM Class III would be 395,680 acres, 255,810 fewer acres than Alternative A; and VRM Class IV, 2,374,710 acres, 194,290 acres more than Alternative A.

Impacts to wildlife and fisheries from ROW management would be similar to those described under Alternative A. Under Alternative C, 225,784 acres would be managed as ROW exclusion areas, 200,925 fewer acres compared to Alternative A. Under Alternative C, 1,687,304 acres would be managed as ROW avoidance areas, 1,498,984 more acres compared to Alternative A. Surface disturbing and disruptive activities from ROW development could damage or remove forage and habitat for wildlife species to a greater degree than under Alternative A.

Impacts to wildlife and fisheries from transportation management would be the same as those described under Alternative A. In addition, allowing roads to naturally deteriorate could reduce surface disturbance and human presence from restoration efforts. Revegetation of undesignated roads could take more time to restore, and species composition might not support sagebrush obligate species. Under Alternative C, the route designations from the travel management plan would be applied. Within the area designated as limited to designated roads and trails, 16,256 miles of routes would be managed as open to vehicle use. About 93 miles of routes would be limited to non-motorized or non-mechanized use, 425 miles of routes would be closed to all use, and 165 miles of routes and linear disturbances would be removed from the transportation



network and allowed to return to natural conditions. Impacts to fish and wildlife would be similar to those described under Alternative B, however nearly 14,000 more miles of designated routes would be open to vehicle use in Alternative C and about 4,000 fewer miles would be closed compared to Alternative B.

Impacts to wildlife and fisheries from livestock grazing management would be similar to those described under Alternative A. Additional management under Alternative C by allowing livestock in riparian areas could increase competition for forage resources between livestock and wildlife, especially big game species. Increased use by livestock could cause loss of vegetation for forage and cover, soil compaction, erosion, trampling of vegetation and habitat, and the spread of invasive, non-native plant species. Use of riparian areas by livestock could increase runoff and accumulation of fine silts in stream channels which could cause cementation of spawning gravel for fish species. Increased sediment could affect water quality and aquatic habitat for fish, waterfowl, macroinvertebrates, and other species dependent on these ecosystems. Water developments, particularly in winter and parturition ranges, could lead to reductions in forage due to distribution of animals; however, implementation of the Wyoming Land Health Standards could ensure that habitat for wildlife is not degraded by over-use of livestock.

Under Alternative C, reducing total authorized use to highest level of billed use over the last 10 years could provide increased forage and habitat resources for big game and other wildlife species. Reducing use to 160,387 AUMs could reduce habitat degradation from livestock, which could support water quality and availability, and allow a more natural grazing pattern from wildlife use. However, because management of livestock under this alternative would be very similar to the levels of actual use that have historically occurred in the planning area, it is likely that few changes would occur beyond those described under Alternative A.

Impacts to wildlife and fisheries from recreation management would be similar to those described under Alternative A; however, the emphasis of recreation use over other resources could result in more surface disturbing or disruptive activities to occur from recreation use.

Impacts to wildlife and fisheries from the management of the Wind River Front SRMA (257,680 acres) would be similar to those under Alternative A for recreation and the management of the SRMA. The emphasis of the SRMA management for recreation use, including increased use of motorized vehicles, allowing increased surface disturbing activities and mineral leasing would lead to habitat loss and abandonment of habitat to a greater degree when compared to Alternative A.

Impacts to wildlife and fisheries from managing OHV areas would be the same as those described under Alternative A; however, managing transportation routes as open, closed, and limited to designated roads and trails would protect fish and wildlife habitat to a greater degree than described under Alternative A.

Impacts to wildlife and fisheries from the management of eligible and congressionally designated trails would be similar to those described under Alternative A. Under Alternative C, allowing surface disturbing activities, mineral development, and other disruptive activities could result in more habitat damage or loss.

WSAs would be managed for multiple use, and wild and scenic rivers, ACECs, and other management areas would not be retained under Alternative C. This management would result in fewer protections to wildlife and fisheries habitat as compared to Alternative A and could allow surface disturbing or disruptive activities to occur on these lands.

Impacts to wildlife and fisheries from public safety management would be the same as those described under Alternative B.

#### **4.7.5 Alternative D**

Impacts to wildlife and fisheries habitat from geophysical activities, wildland fire, grassland and shrubland,

raptors, special status wildlife species, cultural, paleontological, pursuing land withdrawals, land disposals, land acquisitions, renewable energy, livestock grazing, and wild and scenic river management would be the same as those described under Alternative A.

Impacts to wildlife and fisheries from air quality management would be the same as those described under Alternative B, with the exception of dust abatement measures, which would not be required under Alternative D. Applying dust abatement measures on a case-by-case basis could reduce dust accumulation on forage for wildlife that could diminish the quality of forage and make it less palatable. Dust control could reduce sediment runoff and accumulation of fine silt in stream channels which would prevent cementation of spawning gravel for fish species. Reduced sediment would support water quality and aquatic habitat for fish, waterfowl, macroinvertebrates, and other species dependent on these ecosystems.

Impacts to wildlife and fisheries from the management of soil resources would be similar to those described under Alternative A. However, additional management protection to soil resources could support wildlife habitat and fisheries resources to a greater degree compared to Alternative A.

Impacts to wildlife and fisheries from the management of water resources would be similar to those described under Alternative A. Applying buffers and the avoidance of surface disturbing activities and construction within aquatic systems, applying mineral stipulations, and avoiding linear crossings could support wildlife habitat and aquatic systems. The management would protect streams and water resources lesser degree than Alternative A, due to the avoidance stipulation for development within stream buffers. Additional management for aquifers and water quality could protect wildlife habitat and fisheries resources to a greater degree compared to Alternative A.

Impacts to wildlife and fisheries from the management of lands with wilderness characteristics would be similar to those described under Alternative B. Fewer areas would be managed specifically for those characteristics and fewer restrictions on surface disturbance would be applied, providing fewer protections of wildlife habitat under this alternative.

Under Alternative D, approximately 4,737 oil, gas, and CBNG wells would be developed within the planning area, 36 fewer wells as compared to Alternative A. There would be 32,587 acres of initial surface disturbance and 9,397 acres of long-term disturbance from oil and gas development. There would be 244 fewer acres of initial surface disturbance and 69 fewer acres of long-term disturbance compared with Alternative A.

Closing 768,989 acres to fluid mineral leasing would reduce habitat loss for wildlife and would close 228,968 more acres than under Alternative A. Impacts to wildlife and fisheries would be similar to those described under Alternative A; however, surface disturbance, habitat damage, and forage loss could occur over more acres under Alternative C. Closing fewer acres of land to new oil and gas development would reduce habitat protection for deer, elk, pronghorn, and moose as compared to Alternative A (Table 4-5). All vegetation types that provide habitat for big game as well as other wildlife species would have smaller areas of protection within closed areas.

Under Alternative D, 2,172 acres would be managed with NSO stipulations, which is 156,439 fewer acres than under Alternative A. Fewer acres managed with NSO stipulations would protect smaller areas of habitat for deer, elk, pronghorn, and moose as compared to Alternative A (Table 4-5). The management could allow an increase disturbance within riparian, grassland, and aspen/conifer habitat from surface disturbance, vegetation loss, or migration corridors when compared with Alternative A.

Applying CSU stipulations to oil and gas leases could reduce damage or loss of vegetation and habitat for wildlife (1,238,899 acres of CSU). Impacts to wildlife and fisheries from the application of CSU would be similar to those described under Alternative A. About 517,767 more acres of habitat could receive some reduced impacts from oil and gas development and production activities from CSU stipulations as compared to Alternative A (Table 4-5).

Approximately 482,272 acres of the planning area would be pursued for withdrawal from locatable mineral entry, 74,286 fewer acres than Alternative A, and 768,989 acres would be closed to geothermal leasing, 228,968 more acres than under Alternative A. The remaining acres in the planning area would be available for development of locatable minerals and geothermal leasing. Impacts to wildlife and fisheries would be similar to those under Alternative A; however, fewer acres of land would be pursued for withdrawal from locatable mineral entry and closed to geothermal leasing compared to Alternative A. Lands within those areas would not have surface disturbance from geothermal development, and habitat for big game, wildlife, and fish would not be damaged from those activities (Table 4-6).

Impacts to wildlife and fisheries habitat from the development of solid leasable minerals would be similar to those described under Alternative A. Under Alternative D, 610,342 acres would be closed to coal leasing, 124,378 more acres than under Alternative A, 1,557,520 acres would be closed to oil shale leasing, 829,715 more acres than Alternative A, and 389,552 acres would be closed to trona leasing, 34,081 fewer acres than Alternative A. The smaller areas of coal, oil shale, and trona closed to leasing could result in increased damage or loss of wildlife habitat from development activities and increased disturbance to wildlife from the presence of humans when compared to Alternative A.

Closing 362,009 acres of lands to saleable mineral development would prevent damage or loss of wildlife habitat from mineral excavation on 471,710 fewer acres compared to Alternative A. Impacts to big game, wildlife, and fish habitat would be similar to those described under Alternative A, but a smaller area of land would be closed to surface disturbing activities (Table 4-6).

Impacts to wildlife and fisheries from forest and woodland management would be similar to those described under Alternative A. In addition, Alternative D would limit logging operations on slopes steeper than 25%, which could help prevent or reduce soil loss and erosion from logging operations. Reducing or preventing soil loss and erosion could reduce sediment build up in streams, which could protect water quality and spawning gravel for fisheries. Under Alternative D, allowing the harvest of cottonwood trees could remove nesting habitat for birds and bats. Harvest could disturb nearby wildlife from human presence, machinery, and vehicles, and cause surface disturbance which could remove vegetation and cause erosion. Surface disturbance could result in runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Erosion and increased runoff could continue in harvest areas until new vegetation is established.

Impacts to wildlife and fish habitat from management of riparian and wetland resources would be similar to those described under Alternative A. Additional management for achieving Wyoming Rangeland Standards and PFC would maintain or improve wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems.

Management for wildlife and fish would be similar to Alternative A and impacts would be similar to those described under Alternative A. Additional management to maintain or improve habitat for migratory birds on a case-by-case basis would support bird species to a greater degree compared to Alternative A. Alternative D would apply greater stipulations to protect important seasonal and sensitive habitat for fish and wildlife species compared to Alternative A.

Impacts to wildlife and fish habitat from the management for big game would be the same as those described under Alternative A. Impacts to wildlife from additional management in Alternative D to protect big game parturition habitat, crucial winter range, and migration corridors would be similar to those described under Alternative A, but would not provide as much protection as Alternative D. The CSU management for migration corridors under Alternative D would provide greater protection for big game and could provide uninterrupted pathways for wildlife movement.

Impacts to wildlife and fish habitat from the management of fish would be similar to those described under Alternative A. Under Alternative D, additional management including avoiding surface disturbance within

100-year floodplains and fish-bearing streams would provide similar protection for fish and important habitat for fish reproduction than compared to Alternative A.

Impacts to wildlife and fish habitat from the management of special status plant species would be similar to those described under Alternative A. Under Alternative D, additional management could provide greater habitat protection and fewer disruptive activities, supporting wildlife and their habitat.

Impacts to wildlife and fisheries from the management of visual resources would be the same as those described for VRM Class I under Alternative A (225,703 acres). Under Alternative D, 1,178,718 acres would be managed as VRM Class II, 569,046 acres more than Alternative A; 738,311 acres would be managed as VRM Class III, 122,819 more acres than Alternative A; and 1,455,234 acres would be managed as VRM Class IV, 725,189 acres fewer than Alternative A. There would be more acres protected by VRM Class II, and less managed under VRM Class IV, which could support overall habitat health and habitat connectivity.

Impacts to wildlife and fisheries from ROW management would be the same as those described under Alternative A; however, under Alternative D, 286,289 acres would be managed as ROW exclusion areas. The management would protect fish and wildlife habitat from linear disturbances, surface disturbing activities, and habitat loss on 117,493 fewer acres as compared to Alternative A. Larger areas would be managed as avoidance areas, 1,388,618 acres under Alternative D, 652,480 more acres than Alternative A.

Impacts to wildlife and fisheries from transportation management would be similar to those described under Alternative B. Within the area designated as limited to designated roads and trails, 13,613 miles of routes would be managed as open to vehicle use. About 88 miles of routes would be limited to non-motorized or non-mechanized use, 440 miles of routes would be closed to all use, and 2,781 miles of routes and linear disturbances would be removed from the transportation network and return to natural conditions.

Impacts to wildlife and fisheries from recreation management would be similar to those described under Alternative A. Management of SRMAs would be similar to Alternative A, however fewer SRMAs and management for those SRMAs could reduce or prevent surface disturbing activities in some areas but to a lesser degree when compared to Alternative A.

Impacts to wildlife and fisheries from managing OHV areas would be the same as those described under Alternative A; however, managing transportation routes as open, closed, and limited to designated roads and trails would protect fish and wildlife habitat to a greater degree than described under Alternative A.

Impacts to wildlife and fisheries from the management of congressionally designated trails would be similar to those described under Alternative A. Under Alternative D, additional management of eligible and congressionally designated trails could reduce or prevent disturbance or loss of habitat for wildlife to a greater degree when compared to Alternative A.

Impacts to wildlife and fisheries from the management of WSAs would be similar to those described under Alternative B. Under Alternative D, if WSAs were not designated as wilderness, most of the areas would be managed as ACECs. Impacts to wildlife and fisheries from the management of ACECs are described further below.

Impacts to wildlife and fisheries from the management of the Red Desert Management Area (162,980 acres), Pine Mountain Management Area (62,760 acres), and Sugarloaf Basin Management Area (87,240 acres) would be very similar to Alternative A, although fewer management areas would be retained under Alternative D. Where protective management is applied, it would support forage, habitat, migration corridors, and other important areas for big game, raptors, and other wildlife species. The management could help prevent sediment runoff into aquatic habitat, support water quality, and protect riparian areas

from sedimentation and erosion.

Impacts to wildlife and fisheries from the management of South Pass Historic Landscape ACEC, Little Mountain ACEC, Steamboat Mountain ACEC, and Special Status Plants ACEC would be the same as those described under Alternative A.

Impacts to wildlife and fisheries from not retaining the ACEC designations for Cedar Canyon, Greater Sand Dunes, Natural Corrals, Oregon Buttes, Pinnacles, and Pine Springs ACECs would be the same as those described under Alternative C.

Impacts to wildlife and fisheries from the management of National Historic Landmarks would be the same as those described under Alternative B.

Impacts to wildlife from reducing or minimizing risk to humans and the environment from hazardous materials would be the same as Alternative B.

## **4.8 SPECIAL STATUS SPECIES**

### **4.8.1 Assumptions**

The analysis is based on the following assumptions:

- Special status fish and wildlife populations would continue to be managed by appropriate agency. BLM would continue to manage species' habitat.
- The U.S. Fish and Wildlife Service (USFWS) would have jurisdiction over the management of federally listed fish, wildlife and plant populations, critical habitat, and migratory birds.
- Natural variability in wildlife health, population levels, and habitat conditions would continue. Periods of mild or severe weather as well as outbreaks of wildlife disease or insects/diseases that impact habitat could impact wildlife population levels.
- Impacts to special status wildlife species are primarily based on potential impacts to habitats that the BLM manages.
- Precise, quantitative estimates of impacts generally are not possible because the exact locations of future actions are unknown, population data for special status wildlife species are often lacking, or habitat types affected by surface-disturbing activities cannot be predicted.
- The more acreage of habitat protected, the greater the benefit to the targeted species.
- Anticipated impacts from management for oil and gas development would only apply to new leases; existing development or existing leaseholders would generally not be impacted by implementation of the action alternatives, unless specifically described under the management actions.
- Removal of sagebrush habitat would have a long-term adverse impact on sage-obligate species.
- Because of the migratory nature and relative mobility of some special status wildlife species (e.g., waterfowl, neo-tropical migrants, and raptors), these species also would be impacted by actions on non-BLM lands. Adverse impacts to special status wildlife during different life stages on non-BLM-administered lands can reduce populations regardless of BLM protective measures.
- The total amount of new surface disturbance allowed by an alternative is a good index of potential impacts to Special Status Species. Success of reclamation measures prescribed as a condition of development is unknown and could underestimate the potential impact of surface disturbance on Special Status Species populations.

- The health of fisheries within the planning area is directly related to the overall health and functional capabilities of riparian and wetland resources, which in turn reflect watershed health.
- Any activities that affect the ecological condition of the watershed and its vegetative cover would directly or indirectly affect the aquatic environment. The degree of impact attributed to any one disturbance or series of disturbances is influenced by location within the watershed, time and degree of disturbance, existing vegetation, and hydrologic condition.
- Appropriate BMPs (Appendix A) will be applied; the analysis discloses the residual impacts that have the potential to occur after application of the BMPs.

## 4.8.2 Alternative A

Management to prevent emissions, airborne pollutants, or particulate matter would ensure overall health of native vegetation communities, including special status plants, as well as for ecosystems, and waters to support special status wildlife and fisheries. Efforts to control dust on roads could reduce dust accumulation on forage for special status wildlife that could diminish the quality of forage and make it less palatable. Dust control could reduce sediment runoff and accumulation of fine silt in stream channels which would prevent cementation of spawning gravel for special status fish species. Reduced sediment would support water quality and aquatic habitat for special status fish, waterfowl, macroinvertebrates, and other species dependent on these ecosystems.

Management to maintain or improve soil resources by preventing or reducing erosion, runoff, dust, salt, or sediment loading could protect habitat for Special Status Species by preventing subsequent loss of vegetation resources and sediment runoff into fisheries. Maintaining or improving soils would support special status fish species by protecting water quality, preventing accumulation of sediment, and reducing in-stream erosion. Minimizing surface disturbance or disruption of limited reclamation potential soils could also protect habitat for special status wildlife by preventing or reducing loss of vegetation and habitat. Protecting limited reclamation potential soils could support aquatic habitat by preventing saline or sediment runoff, protecting water quality and aquatic habitat for special status fish, waterfowl, macroinvertebrates, and other species dependent on these ecosystems.

Management to protect water quality and hydrologic resources by reducing erosion, runoff, salt, phosphate, or sediment loading could support riparian and aquatic habitat for Special Status Species by preventing saline or sediment runoff into aquatic habitat, protecting water quality, and protecting riparian areas from unsafe or saline downstream water conditions. Maintaining or improving riparian and aquatic habitat would support special status wildlife that use wetland and aquatic ecosystems for forage, nesting, or cover, as well as supporting fish, macroinvertebrates, and other aquatic wildlife. The use of reclamation and restoration within riparian and wetland areas could provide renewed habitat and forage for wildlife such as yellow-billed cuckoo (*Coccyzus americanus*), white-faced ibis (*Plegadis chihi*), Columbia spotted frog (*Rana luteiventris*), long-eared myotis (*Myotis evotis*), and whooping crane (*Grus americana*). Reclamation and restoration could stabilize soils and help to prevent sediment runoff into aquatic habitat, supporting water quality, and spawning habitat for aquatic species such as bonytail chub (*Gila elegans*), pallid sturgeon (*Scaphirhynchus albus*), and Colorado River cutthroat trout (*Oncorhynchus clarkia pleuriticus*). Habitat for special status plants such as the Ute ladies' tresses (*Spiranthes diluvialis*) and meadow pussytoes (*Antennaria arcuata*) could receive protection from the management of water resources.

Mineral development would likely deplete water from the Colorado and Platte River systems. Water depletion can affect fisheries locally and downstream from the planning area. Though not calculated in this land use planning document for each alternative (amounts will be handled through site-specific environmental documents by project and proponent), depletions may affect, and are likely to adversely affect, Colorado and Platte River species. Appendix H analyzes the Preferred Alternative water depletion expectations.

Avoiding or prohibiting development or linear crossings in wetlands and floodplains and closing wetlands, riparian habitat, and 100-year floodplains to new permanent facilities could support intact wetland, riparian, and aquatic habitat for special status fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The use of buffer distances for avoidance of development within the JMH planning area within 500 feet of 100-year floodplains and 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages could protect these areas from habitat loss, soil erosion, runoff, sedimentation, and resulting degradation of streambeds and habitat for Colorado River cutthroat trout, razorback sucker (*Xyrauchen texanus*), and humpback chub (*Gila cypha*). Buffers would also support habitat for special status plant species such as Ute ladies' tresses and meadow pussytoes. The buffer distance for prohibiting herbicide loading within 500 feet of water sources, floodplains, riparian areas, and special status plant locations would support special status plants by protecting them from accidental contact with herbicides. The buffer would also protect special status wildlife and fish from contact with herbicides, as well as loss of forage and cover from damage from herbicides.

Management to protect aquifer and water recharge areas from contamination and protecting water quality would support any sources of surface waters (springs, creeks, and lakes) supplied by groundwater sources by limiting surface disturbing activities. This management could protect these areas from damage or removal of wildlife cover and forage, reduce fragmentation of habitat, and reduce disturbance of wildlife within these areas. The management could help reduce soil runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion. Protecting water resources could support wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems.

Approximately 4,773 oil, gas, and CBNG wells would be developed under Alternative A within the planning area. There would be 32,831 acres of initial surface disturbance and 9,466 acres of long-term disturbance from oil and gas development. The primary impacts on special status wildlife species from minerals development within the planning area would be the reduction in usable wildlife habitat and disruption of migration corridors that link crucial habitats for Special Status Species. Reductions could be particularly severe in areas with continuous surface disturbance. Human disturbance of wildlife results in increased energy costs to the alerted animal (Bromley 1985). The disturbed animal can incur a physiological cost either through excitement (preparation for exertion) or locomotion. A fleeing or displaced animal incurs additional costs through loss of food intake and potential displacement to poorer (lower) quality habitat. If the disturbance becomes chronic or continuous, these costs can result in reduced animal fitness and reproductive potential (Geist 1978).

As acreages of surface disturbance, infrastructure, and human activity levels increase, the quality and quantity of wildlife habitats likely would be reduced. Habitat fragmentation occurs when a contiguous habitat is intersected, divided, or segmented by disturbing activities. Fragmentation causes a reduction in usable ranges and the isolation of smaller, less mobile species, a loss of genetic integrity within species or populations, and an increase in abundance of habitat generalists that are characteristic of disturbed environments (i.e., competitors, predators, and parasites) (Harris 1984). Displaced wildlife tend to use lower quality habitats or compete with existing herds and livestock for forage. Fragmentation of habitat leads to patches of native vegetation with edges of disturbance which are vulnerable to invasive, non-native plant species. The disturbed areas could make smaller wildlife such as the pygmy rabbit more vulnerable to predators.

Vehicles, equipment, and machinery could increase the threat of the introduction and spread of invasive, non-native plant species which could alter the native plant ecosystem. Reclaimed areas would be more vulnerable to invasion of noxious weeds and would not initially provide the same level of habitat function, forage, or cover that the original area provided. Invasive, non-native plant species could change the frequency and vulnerability for wildfires creating larger threats to native habitat from destruction from fire.

The threat of accidental ignition from vehicles, machinery, or human presence could increase while

development is occurring. Some invasive, non-native plant species could compete for habitat with native, special status plant species if surface disturbance or other disruptive activities occurred in nearby areas.

Human disturbance near raptor nest sites and other bird nest sites, such as bald eagle (*Haliaeetus leucocephalus*) and sage thrasher (*Oreoscoptes montanus*), could result in the abandonment of the nest, nestling mortality from overheating, chilling, or desiccation when young are left unattended, premature fledging, and ejection of eggs or young from the nest. Raptors that successfully nest during a disturbance may abandon the nesting territory the following year. Responses of nesting raptors to human disturbance typically are determined by the type, duration, magnitude, noise level, and timing of activity relative to nesting phenology. Although some level of habituation to disturbance could occur, repeated flushing of adult raptors and other special status birds could increase energy expenditure during foraging and decrease energy ingestion, depleting energy reserves and resulting in premature mortality during harsh conditions. Evidence suggests that some falcons and owls are generally more tolerant of human-induced disturbance and human environments; Northern goshawks appear much less tolerant; and buteos exhibit a wide range of acceptance levels; however, some speculate that ferruginous hawks (*Buteo regalis*) should be considered the raptor most sensitive to human disturbance. Raptors are less tolerant of disturbance when populations of prey species are at low levels (Romin and Muck 2002).

The health of special status fisheries within and outside the planning area is directly related to the overall health and functional capabilities of riparian resources, which are a reflection of watershed health. Any activities that affect the ecological condition of the watershed and its vegetative cover would directly affect the aquatic environment. It is assumed that any substantial disturbance to soils or changes in vegetative cover would diminish watershed health and water quality and would therefore degrade associated fisheries. The degree of impact attributed to any one disturbance or series of disturbances is influenced by location within the watershed, time, and degree of disturbance, existing vegetation, and precipitation. Surface disturbances result in accelerated erosion and runoff, increasing stream flow and sediment and nutrient loads to local channels. Sedimentation of a given channel can degrade fisheries by reducing habitat complexity, which results in a lower diversity of prey organisms. Increased turbidity also results from increased sediment input, which decreases light penetration and inhibits visual predation by fish. Any surface disturbance near streams that results in substantial removal of riparian vegetation could increase current velocity, which puts additional strain on fish, and reduces nutrient cycling. In addition to increased sediment input, streambank disturbance could affect fisheries by creating bank instability, which can alter flow and destroy pool-riffle formations necessary for fish survival. Increased nutrient loading of streams can impact fisheries by increasing primary production above natural levels, which degrades habitat and decreases oxygen levels.

Closing a combined total of 540,021 acres to oil and gas leasing would prevent damage or loss of Special Status Species wildlife habitat from development activities, reduce disturbance to wildlife from the presence of humans, vehicles, or machinery, prevent erosion or runoff, and protect an in-tact ecosystem. The closed acres that are adjacent to riparian habitat or stream channels (28,491 acres) would protect important habitat for fish species such as flannelmouth sucker, bluehead sucker, and roundtail chub; avian species such as trumpeter swan (*Cygnus buccinator*), long-billed curlew (*Numenius americanus*), and bald eagle; amphibians, and other wetland and riparian wildlife species; and would support water quality within stream and river corridors. Precluding oil and gas development would prevent the introduction and spread of invasive, non-native plant species by machinery and vehicles, further supporting desired forage, cover, and contiguous habitat. Special status plant species within the closed areas (18 acres) would be protected from surface disturbance, soil loss, and damage of surrounding habitat.

Applying an NSO stipulation for oil and gas leasing could prevent surface disturbing activities from oil and gas leasing development within 158,611 acres. The NSO stipulation could protect Special Status Species habitat from damage, removal, or degradation; reduce the presence of infrastructure, humans, and machinery; and reduce habitat fragmentation. Removing future disturbance from roads, structures, drilling operations, and human disturbance from mineral development could reduce a majority of stressors and



disruption of habitat and could allow for continued habitat connectivity. The NSO could prevent future barriers in migration corridors for migratory species allowing wildlife to move between crucial winter ranges, parturition, breeding, or nesting habitat, and would provide overall habitat protection. The prevention of surface disturbance would reduce the potential for the introduction and spread of invasive, non-native plant species, supporting intact habitat, and desired forage and cover for wildlife. Lands that are adjacent to riparian habitat or stream channels (50,815 acres) could protect important habitat for fish, amphibians, birds, plant species, and would help support water quality. Special status plant species within the NSO stipulated areas (498 acres) would be protected from surface disturbance, soil loss, and damage of surrounding habitat.

Applying CSU and timing limitation stipulations to oil and gas leasing could reduce loss, damage, or degradation of wildlife habitat (721,132 acres of CSU stipulations and 1,840,967 acres of TLS). The TLS would prevent surface disturbance during specific timeframes, which could protect raptors and other wildlife during the periods of closure from disruption or disturbance from humans or machinery. Adjusting timing of disturbance could allow wildlife to remain in desired habitat during sensitive timeframes and within important habitat, such as nesting, breeding, or early brood rearing. Disturbance, damage, or loss of habitat could occur outside of the seasonal closures, ultimately leading to some loss of habitat from oil and gas development. The CSU stipulations could minimize surface disturbance, habitat loss or damage, erosion, runoff, and reduce the introduction and spread of invasive, non-native plant species.

Geophysical exploration could impact Special Status Species in many ways. Use of vehicles for seismic projects or vibroseis trucks in the open landscape could crush vegetation or special status plants, and human and vehicle presence could cause wildlife to vacate the area. During this time, wildlife could be forced to inhabit lower quality habitat for forage or cover, which could impact health and reproduction until species could return to the area. Once exploration was complete, habitat conditions in the area would return over time, depending on habitat and weather conditions. Seismic lines from vibroseis trucks could open up corridors that could be used by predatory animals. Vehicles could cause mortality by crushing nesting birds or colliding with wildlife.

Approximately 556,558 acres of the planning area would be proposed for withdrawal from locatable mineral entry and 540,021 acres would be closed to geothermal leasing. Lands within the area proposed for withdrawal from locatable mineral entry and closed to geothermal leasing would include known locations of special status plant species and the special status plant ACEC, which would provide protection for special status plants. The remaining acres would be available to the exploration and development of locatable minerals and geothermal leasing. Managing lands as open to geothermal leasing and locatable mineral development could result in habitat damage, loss, and fragmentation from lease development activities and associated infrastructure such as roads, power lines, or pipelines. The use of machinery, vehicles, and human presence could disturb wildlife, causing species to abandon habitat and relocate in lower quality, less desirable areas that could reduce viability and health of species. Introduction and spread of invasive, non-native plant species could occur through surface disturbance and vehicle traffic, which could degrade native ecosystems and reduce desired forage and cover for wildlife. Soil loss, erosion, and runoff from mineral development could result in runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks.

Surface disturbing activities involved with the leasing and development of solid minerals and disposal of saleable minerals could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force wildlife to abandon habitat. Surface disturbance could result in runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species which could alter native vegetation, making habitat less desirable to special status wildlife, and compete with special status plants. Disturbed areas could cause the increase of predatory species of wildlife which could reduce populations of other wildlife through hunting or relocation. Protections and mitigation could reduce some of the impacts described above. Closing 485,964 acres to

coal exploration, 727,805 acres to oil shale leasing, 423,633 acres to trona leasing, and 833,719 acres of lands to saleable mineral development would prevent damage or removal of wildlife cover and forage, reduce fragmentation of habitat, and prevent disturbance of wildlife caused by exploration in these areas. Closing these areas would help prevent sediment runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion. Preventing surface disturbance could reduce the introduction and spread of invasive, non-native plant species, protecting native ecosystems for wildlife habitat and forage. The closed acres that are adjacent to riparian habitat or stream channels would protect important habitat for fish species such as flannelmouth sucker, Colorado River cutthroat trout, and roundtail chub; avian species such as yellow-billed cuckoo, long-billed curlew, bald eagle, and other wetland and riparian wildlife species; and would support water quality within stream and river corridors. Special status plant species within the areas closed to coal (247 acres) would be protected from surface disturbance, soil loss, and damage of surrounding habitat.

Fire suppression removes vegetation, disturbs soil, and could have both short- and long-term impacts on special status wildlife habitat and fisheries. Using heavy equipment to construct fire lines would cause habitat loss, degradation, and fragmentation in the short-term. If not rehabilitated, these fire lines could cause erosion and provide opportunities for the spread of invasive, non-native plant species, which could result in degraded wildlife habitat. Timely rehabilitation following fire would be important to maintaining the quality of wildlife habitats. Unplanned fires could damage or destroy special status plants or their surrounding habitat. Soil disturbance from machinery and suppression activity could result in runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Disturbed areas could lead to the increase of predatory species of wildlife, which could reduce populations of smaller wildlife. Activity plans and site-specific analysis for fire management planning would reduce the level of habitat disturbance described above.

Prescribed fires could support Special Status Species habitat. In the long term, wildlife would benefit from most wildfires and fuels management, due to an increase in vegetation productivity and increased plant diversity and age classes. This would provide additional forage, cover, and prey base. Mimicking natural periodic disturbance is often necessary in order to stimulate plant productivity, increase diversity, and increase nutritional value. Foraging opportunities for herbivores would increase as understory grasses, forbs, and shrubs become re-established. Special status wildlife species that require low vegetation or early seral growth could benefit from lands treated with fire, such as swift fox (*Vulpes velox*), mountain plover (*Charadrius montanus*), and long-billed curlew.

Management of noncommercial forest lands would support special status wildlife habitat and woodland ecosystems by leaving forests intact and preventing disturbance or disruption of habitat. Protecting soil and watershed values would allow for natural runoff and surface flow regimes and support water quality for special status fish and other aquatic wildlife. This management would provide undisturbed habitat for species such as spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), Northern goshawk (*Accipiter gentilis*), and grizzly bear (*Ursus arctos horribilis*).

Timber management for harvest using clearcutting and other harvest techniques would cause direct habitat loss and habitat fragmentation, which could result in mortality or could force special status wildlife to relocate into lower quality, less desirable habitat. The noise from heavy equipment and chainsaws could temporarily disperse special status bird species from breeding and nesting habitat and wildlife from occupied habitat. Timber harvest activities could remove suitable habitat or other desirable vegetation. Soil disturbance from machinery and harvest activity could result in runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Disturbances from heavy equipment, chainsaws, and human presence would be localized and short-term. Timing limitations (such as those for big game birthing areas, raptor nesting, and big game winter habitat), limitation of slope grade (45%), prevention of habitat fragmentation, and limits on size of harvest could mitigate the disturbance to special status wildlife and loss of habitat.

Logged areas would provide early seral vegetation for special status wildlife. Cleared areas would be

vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Disturbed areas could lead to increases in the number of predatory species of wildlife, which could prey upon smaller special status wildlife. Erosion and increased runoff could continue in harvest areas until new vegetation was established. The use of revegetation would support soil stability, reduce soil loss and erosion, which would support the re-establishment of native vegetation. Revegetation would also support aquatic systems by reducing sediment loading and in-channel erosion, support water quality, and maintain habitat for special status fish and aquatic species.

Silvicultural and vegetation treatments for aspen, conifers, or juniper could result in short-term damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force special status wildlife to abandon habitat within these areas. Surface disturbance could result in runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to special status wildlife species. Long-term impacts could support special status wildlife from a variety of seral stages of habitat for forage and cover. Not allowing harvest of cottonwood trees could support intact wetland, riparian, and aquatic habitat for Colorado River cutthroat trout, Northern goshawk, Great Basin spadefoot toad (*Spea intermontana*), macroinvertebrates, and other species dependent on these ecosystems. Overall, management would support forest and woodland habitat for special status wildlife by encouraging natural habitat conditions, native vegetation, cover, forage, and functional ecosystems.

Fuelwood collection could lead to surface disturbance, damage, or loss of vegetation, soil compaction, erosion, and the spread of invasive, non-native plant species. Removal of down wood could create the absence of habitat for important insects, reptiles, amphibians, and small mammals. In addition, removal of dead and down wood removes part of the nutrient cycle; preventing decayed wood matter from returning to soils and providing nutrients back into the ecosystem. Collecting down wood in riparian areas could result in trampling of understory vegetation, and the risk of crushing special status plants such as Ute ladies' tresses and meadow pussytoes.

The use of prescribed fire, mechanical, chemical, and biological actions for fuels management in grassland and shrubland communities could result in short-term habitat loss, displacement of special status wildlife, or erosion and runoff into riparian systems depending on the management tools used and the habitat being treated. If areas of non-native, invasive plant species were treated, habitat or forage for special status wildlife could benefit from treatments if the treated area were to revegetate with native plant species and re-establish a native ecosystem. Chemical control could damage habitat and could sicken or kill special status wildlife if treated vegetation were consumed or wildlife were in contact with herbicides. Use of prescribed fire could stimulate plant productivity, increase diversity, and increase nutritional value. Foraging opportunities for herbivores would increase as understory grasses, forbs, and shrubs become re-established. This management could support special status wildlife such as mountain plover, , and white-tailed prairie dog (*Cynomys leucurus*). Improving vegetation in upland areas would provide more forage to and cover for species that occur in these areas. In addition, fuels treatments in upland areas often result in increased forage production, which diverts livestock and wildlife use from riparian and wetland areas. This would increase the vigor and structural diversity of these plant communities. Over the long-term, vegetation treatments could benefit special status wildlife by providing a variety of seral habitat stages for forage and cover.

Reducing or preventing the introduction or spread of noxious weeds would protect habitat and forage for special status wildlife by preventing habitat conversion by the proliferation of invasive, non-native plant species. Preventing or reducing the competition of invasive, non-native plant species allows native vegetation to persist and reproduce without undue stress from other plants competing for space, sunlight, and water resources. Native ecosystems provide necessary habitat elements for Special Status Species such as a diversity of forage, cover, or nesting habitat. Invasive, non-native plant species can spread in disturbed areas and permanently damage native ecosystems if not prevented or quickly eradicated. Most special status

wildlife rely on native plant species for food and cover; when invasive, non-native plant species replace native habitat, wildlife must relocate in search of desired habitat. If special status wildlife must travel any distance to relocate, their systems could become stressed, and if large numbers of wildlife are forced to leave an area due to lack of forage or cover, the relocation area may not be able to support all of the relocating wildlife due to lack of forage. Treatment activity could result in short-term habitat loss, displacement of special status wildlife, or erosion and runoff into riparian systems depending on the management tools used and the habitat being treated.

Management of riparian and wetland resources through achieving and maintaining PFC, range improvements, and other livestock management would support riparian, wetland, and instream habitat for special status wildlife, fish, and other aquatic species. The management would maintain or improve wetland, riparian, and aquatic habitat for bonytail chub, Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub, yellow-billed cuckoo, long-eared myotis, macroinvertebrates, and other species dependent on these ecosystems. The management could help reduce sediment runoff into aquatic systems, reducing siltation of spawning habitat for special status fish, improving water quality, and preventing erosion of streambanks. Removing or reducing livestock grazing from riparian areas could help maintain or improve habitat by preventing vegetation loss, preventing trampling of vegetation or wildlife habitat, removing competition for forage, and reducing the introduction or spread of invasive, non-native plant species. Habitat for special status fish would be protected by preventing or reducing soil compaction, erosion, sedimentation, and the influx of nutrients into riparian areas, wetlands, or streambeds.

Management to protect sensitive wildlife areas and big game species through seasonal protections, stipulations, closures, habitat management plans, and other improvements and protective measures could prevent or reduce damage or removal of special status wildlife cover and forage, reduce fragmentation of habitat, and reduce the disturbance of special status wildlife within these areas. The management could help reduce sediment runoff into aquatic habitat, support water quality, protect riparian areas from sedimentation and erosion, and support special status fish species. Applying seasonal stipulations could prevent special status avian or wildlife species from abandoning habitat during stipulated timeframes and could reduce damage or removal of cover and forage during the seasonal timeframes. Removing or modifying fences could allow for unimpeded movement of wildlife species, allow for contiguous habitat, and prevent collisions or entanglement in fencing.

Protective management for raptors through seasonal restrictions, buffer distances for disturbing or disruptive activities, and placement of certain structures could prevent nest abandonment, allow for uninterrupted breeding activities, and provide overall support to raptor species. Repeated flushing of adult raptors increases energy expenditure during foraging and decreases energy ingestion, depleting energy reserves and could result in premature mortality during harsh conditions. The management would reduce the effects of human presence or development activities. Buffers and seasonal restrictions would protect bald eagle, ferruginous hawk, Northern goshawk, and peregrine falcon (*Falco peregrinus*). The management could also reduce disturbance or habitat loss for other special status wildlife species within the protected areas.

Seasonal restrictions for surface disturbance near spawning fish populations would support breeding and protect spawning nests for special status fish. The management could also protect wetland, riparian, and aquatic habitat for special status fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The restrictions could help reduce sediment runoff into aquatic systems, preventing siltation of spawning habitat, improving water quality, and preventing erosion of streambanks.

Management to protect special status plant species would directly protect special status plants and surrounding habitat. Many of the special status plant species inhabit specialized niches in the landscape, and suitable habitat is limited. Applying protective management would prevent surface disturbance, soil loss, and direct damage or mortality of special status plants within the planning area. Acquisition of 1,920 acres of Wyoming tansymustard (*Descurania torulosa*) habitat would protect the plants along with surrounding habitat to ensure the continued existence of the species. The management would indirectly

protect special status wildlife habitat adjacent to the plant populations and prevent the loss of habitat for special status wildlife. Reduced surface disturbance would prevent soil loss, erosion, sediment runoff, and reduce the spread of invasive, non-native plant species. The protections could reduce or prevent development, which would retain habitat connectivity, maintain forage and cover habitat, and allow special status wildlife to remain in desirable habitat.

Management for Special Status Species, such as predator control measures could reduce predation to small mammals such as white-tailed prairie dog and Wyoming pocket gopher, and reptiles such as midget-faded rattlesnake. The management could reduce the availability of hunting perches for special status raptors and decrease the hunting opportunities of avian predators. While the management would support small special status wildlife, it could remove relied-upon hunting grounds for special status raptors and reduce availability of food, forcing raptors such as ferruginous hawk and peregrine falcon to relocate to other habitat, possibly stressing the species and their survival. Management for mountain plover would protect nesting aggregation areas to support nesting birds and ensure nest success and survival of the species.

Seasonal restrictions in the JMH area for surface disturbance near spawning fish populations would support breeding and protect spawning nests for special status fish. The management would maintain or improve wetland, riparian, and aquatic habitat for bonytail chub, Colorado pikeminnow, humpback chub, yellow-billed cuckoo, long-eared myotis, macroinvertebrates, and other species dependent on these ecosystems. The management could help reduce sediment runoff into aquatic systems, preventing siltation of spawning habitat for special status fish, improving water quality, and preventing erosion of streambanks.

Protecting cultural resources could reduce habitat loss, protect habitat from damage to cover and forage, or reduce fragmentation of habitat. Reducing disturbance from development activities could prevent special status wildlife moving from high quality habitat to areas of lower quality, less desirable habitat. The management could prevent soil runoff into aquatic systems, preventing siltation of spawning habitat, improving water quality, and preventing erosion of streambanks.

Managing 225,720 acres as VRM Class I would allow for very little surface disturbance or disruptive activities to occur by preserving the existing character of the landscape. Approximately 935 acres of sage-grouse leks and 5,338 acres of rivers or navigable waters would be protected from surface disturbance within the VRM Class I areas. Some disturbance could happen within the 582,670 acres of VRM Class II, but the character of the landscape would be retained. Some disturbance could remove or damage wildlife habitat, cause soil loss and erosion, and lead to the introduction or spread of invasive, non-native plant species. Because very few disturbing activities would be allowed, fewer activities that could force wildlife to flee or abandon habitat could occur, lowering stress levels and allowing wildlife to remain in desired habitat. Approximately 19 acres of special status plants, and 30,960 acres rivers or navigable waters could be protected from surface disturbance within the VRM Class II areas. Lands managed as VRM Class III (615,490 acres) and Class IV (2,180,420 acres) would be more likely to allow for the greatest surface disturbance or development, which could damage or remove wildlife habitat. Human presence, vehicles, and machinery could cause wildlife species to abandon habitat. Invasive, non-native plant species could be introduced and spread by vehicles and machinery during development activities; which could change habitat composition and function, reducing forage quality and usable habitat for wildlife species. Approximately 105 acres of special status plants, and 33,837 acres of rivers or navigable waters could be vulnerable to surface disturbing activities within the VRM Class III areas. Approximately 363 acres of special status plants, and 53,955 acres of rivers or navigable waters could be affected by surface disturbing activities within the VRM Class IV areas. Runoff from development could lead to streambank erosion, vegetation loss, sedimentation of streambeds, and stream channel alteration; reducing the quality of habitat for aquatic species. The use of mitigation to reduce visual impacts could reduce damage or removal of wildlife cover and forage, reduce fragmentation of habitat, and reduce disturbance of wildlife within these areas. The management could reduce runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion.

Species habitat and displace wildlife species. Invasive, non-native plant species could be introduced and spread by vehicles and machinery during development activities, which could change habitat composition and function, reducing forage quality and usable habitat for wildlife species. Predatory wildlife could use pipeline corridors for hunting small prey species. The development of corridors would be beneficial to the predators but could increase predation on the smaller wildlife within the corridors. Runoff from development could lead to streambank erosion, vegetation loss, sedimentation of streambeds, and stream channel alteration; reducing the quality of habitat for aquatic species.

Within the planning area, 349,940 acres are currently managed as ROW exclusion areas and 736,138 acres are managed as ROW avoidance areas. Approximately 186 acres of special status plants, and 21,425 acres of rivers or navigable waters would be protected from disruptive activities within the exclusion areas. Management of lands within the exclusion areas would prevent surface disturbance, damage, or removal of special status wildlife habitat. The management would help to prevent soil loss, erosion, and runoff to riparian habitat. Reduced surface disturbance could prevent the introduction or spread of invasive, non-native plant species, retain contiguous, unfragmented habitat, and prevent additional predation within new corridors. Approximately 300 acres of special status plants, and 68,361 acres of rivers or navigable waters would be less likely to be subject to disruptive activities within the avoidance areas. Lands within the avoidance areas would be managed to prevent or reduce habitat loss from linear ROWs and could protect special status wildlife habitat from removal, degradation, and invasion of exotic plant species. Prohibiting new above ground structures would also prevent new habitat loss, disturbance, or life-cycle disruption, all of which would protect Special Status Species habitat. Linear corridors could be desirable areas for predatory animals, reducing these areas could be beneficial to prey species. Preventing overhead structures in these areas could reduce the risk of predation from overhead predators, but also remove overhead perches for hunting raptors. The risk of collision or electrocution of special status bird and bat species could be reduced where overhead structures are not allowed. Maintenance and upgrades of existing structures could result in short-term disturbance of special status wildlife from human and vehicle activity, but long-term impacts would be minimal.

Where existing ROWs are used for placement of new linear facilities, disturbance to special status wildlife habitat would likely be minimal due to the conditions of ROW corridors, where the land has been previously disturbed from prior facility construction. Placing pipelines and power lines in already disturbed locations would reduce overall habitat loss and fragmentation of habitat. Some species associated with grassland areas, such as mountain plover and burrowing owl, could be disturbed or forced to abandon habitat if development of areas under existing ROWs occurred. Construction activities could disturb other special status wildlife if construction were to occur within occupied habitat, possibly causing species to vacate the area to lower quality habitat. Moving from desirable habitat can result in reduced health of animals, making them susceptible to disease or predation. Disturbed areas would be more vulnerable to invasion of noxious weeds and would not initially provide the same level of habitat function, forage, or cover that the original area provided. Some actions such as construction of pipelines, buried fiber-optic lines, and other subsurface actions likely would have short-term impacts, because proper reclamation could restore some level of habitat function in these areas. Other areas could take 10 years or more to recover due to vegetation species or rainfall variables.

Pursuing land withdrawals could prevent or reduce surface disturbing activities, which could prevent damage or removal of vegetation, reduce fragmentation of habitat, and prevent disturbance of wildlife. Preventing or reducing surface disturbing activities could help reduce sediment runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion. Limiting surface disturbance could prevent the introduction and spread of invasive, non-native plant species, protecting native ecosystems for special status wildlife habitat and forage.

Land disposals could affect special status wildlife species depending on the parcel of land and the entity that acquires the land. Most land disposals do not occur without review for major impacts to Special Status Species habitat. Land acquisitions could affect special status wildlife species depending on the resources found on the parcel of land. Acquisitions could lead to obtaining valuable habitat for Special Status Species

where possible.

The development of wind, solar, or other renewable energy would cause habitat loss, and both short- and long-term impacts to special status wildlife habitat. Large wind or solar energy fields also involve surface disturbance, which could permanently change the habitat structure, affecting Special Status Species. Disturbance during installation of towers, solar panels, roads, and infrastructure could force wildlife away from preferred habitat. Some smaller prey species will avoid and abandon areas where overhead structures such as power lines and towers are present due to the increased or perceived risk of avian predators. However, overhead structures could provide perches for hunting special status raptors or other predatory birds.

Initial construction of renewable energy projects may result in displacement of some special status wildlife and raptor species from breeding and foraging habitat within the construction area. Construction of wind turbines throughout the planning area may create collision hazards for special status raptors, bats, and multiple avian species. Studies have documented deaths of avian and bat species from wind turbines, although the levels of collision and death vary in the scientific research (Cohn 2008; Madders and Whitfield 2006). Collision levels fluctuate based on habitat, terrain, elevation and even weather conditions (Madders and Whitfield 2006). Prediction of accurate special status bird or bat losses from wind development is currently not available; however, it can be assumed that some losses of these species will occur. Studies have also shown avian mortalities associated with solar farms, where birds may mistakenly take solar panels as the reflective surface of a lake or water body (Kagen, et al., 2014).

In the JMH area, transportation management, such as closing and rehabilitating unused roads and trails would help improve habitat for Special Status Species and would minimize vegetation loss and soil erosion, which would maintain or improve water quality for fisheries. Removing linear disturbances could allow for contiguous, uninterrupted habitat for wildlife. Avoiding construction in riparian areas could protect wetland, riparian, and aquatic habitat for special status fish, macroinvertebrates, and other Special Status Species dependent on these ecosystems. The management could help reduce sediment runoff into aquatic systems, preventing siltation of spawning habitat, improving water quality, and preventing erosion of streambanks. Co-locating infrastructure within travel corridors could cause disturbance to habitat, but it would likely be to early seral vegetation in areas within previously disturbed habitat. There is an increase for soil loss, erosion, and the introduction or spread of invasive, non-native plant species within the existing site. Construction activities could disturb special status wildlife species; possibly causing species to vacate the area to lower quality habitat.

In the JMH area, use of over the snow vehicles could cause disturbance to Special Status Species from human presence, noise, and compaction of habitat. If vehicles were used within critical winter range for wildlife, severe stress from noise and human presence could force wildlife away from crucial forage and cover and could lead to diminished health or mortality. Damage to habitat could occur if vehicles were used during low snow conditions.

Livestock grazing could lead to damage or loss of vegetation and habitat for special status wildlife, competition of resources with special status wildlife species, soil compaction, erosion, or sediment runoff if not properly managed. Livestock grazing management would maintain or improve wildlife habitat through meeting AUMs, range and vegetation improvement projects, meeting the Wyoming Land Health Standards, monitoring, and closing special management exclosures, including Palmer Draw (970 acres). Maintaining or improving vegetation resources would provide continued or increased forage and cover for wildlife, possibly reducing competition for resources between livestock and native wildlife. Soils could be stabilized, supporting water quality and stream conditions for special status fish and other aquatic species. Closures of grazing areas could help maintain or improve habitat for special status fish and wildlife by preventing vegetation loss, introduction or spread of invasive, non-native plant species, soil compaction, erosion, sedimentation, and the influx of nutrients into riparian areas, wetlands, or streambeds associated with livestock grazing.

Livestock management in riparian areas, prohibiting livestock salt blocks and other nutritional supplements within 500 feet of riparian and wetlands, and development of water sources could help maintain or improve habitat for special status fish and wildlife by preventing vegetation loss, trampling of vegetation, and the introduction or spread of invasive, non-native plant species. This management would reduce or prevent soil compaction, erosion, sedimentation, and the influx of nutrients into riparian areas, wetlands, or streambeds, which could protect water quality and support riparian vegetation within these areas. Buffers would also support habitat for special status plant species such as Ute ladies' tresses (*Spiranthes diluvialis*) and meadow pussytoes (*Antennaria arcuata*). Wildlife waters designed to support wildlife in addition to wild horses and livestock would help maintain or improve habitat for wildlife and could provide additional sources of drinking water for special status wildlife. Wildlife species could be affected by West Nile virus if waters were not designed to prevent breeding of mosquitoes. Other range improvements could help maintain or improve habitat by reducing congregation of animals in sensitive areas and prevent or reduce damage to forage and cover.

Managing the Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Red Creek, Pine Mountain, Little Mountain, and Cedar Canyon areas to assure their continuing value for recreational opportunities could result in habitat loss, vegetation damage, and disturbance of special status wildlife from human and vehicle presence. Recreation use of public lands such as camping, non-motorized use of trails and developed recreation sites, and the use of scenic overlooks could result in minimal soil disturbance or damage to vegetation. The introduction or spread of invasive, non-native plant species could increase in highly used areas. Repeated human use and presence could cause species to vacate the area to lower quality habitat. Moving from desirable habitat can result in reduced health of animals, making them susceptible to disease or predation. Management to protect water resources, wildlife, and providing vegetation buffers near water sources could protect wetland, riparian, and aquatic habitat for special status fish, macroinvertebrates, and other species dependent on these ecosystems. The management could prevent contaminants or runoff into aquatic systems, preventing siltation of spawning habitat for special status fish, protecting water quality, and preventing erosion of streambanks. The management would also reduce disturbance of special status wildlife when accessing water resources near campsites and recreation sites.

In addition to impacts from recreation described above, motorized recreation, heavily used areas, development of recreation sites and facilities, and SRPs for large recreation events could lead to vegetation loss, surface disturbance, and habitat damage. During large recreation events or construction, wildlife habitat could be damaged or removed. Mitigation could restore some habitat; however, if there was continued use of the area, the habitat value could be lost. Motorized recreation would result in soil damage, increased erosion, and sediment runoff, which would be intensified during heavy rainfall. Runoff could lead to streambank erosion, vegetation loss, sedimentation of streambeds, and stream channel alteration, reducing the quality of habitat for aquatic Special Status Species. Disturbed areas and human use could cause the increase of predatory species of wildlife, which could reduce populations of other smaller wildlife species through hunting or relocation.

Impacts from recreation use within the Wind River Front SRMA (257,680 acres) would be similar to the recreation impacts described above. In addition, management within the eastern unit (82,107 acres) by closing it to mineral leasing, closing portions to mineral location, prohibiting major and linear facilities, and other protective management could prevent or reduce surface disturbing activities. The management could reduce or prevent damage or removal of special status fish and wildlife habitat, help to prevent habitat fragmentation, and prevent overall disturbance of wildlife. Preventing linear disturbances could preclude the increase of predatory species of wildlife and prevent the predation of smaller wildlife. Closing these areas to mineral leasing, development, and other disruptive activities would help prevent sediment runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion. Preventing surface disturbance could reduce the introduction and spread of invasive, non-native plant species, protecting native ecosystems for special status wildlife habitat and forage. Within the western unit (175,573 acres), allowing mineral development and greater opportunities for surface disturbing activities could result in damage or loss of special status wildlife habitat. The reduction in usable wildlife habitat.



disruption of migration corridors, and increased human presence or vehicle use could force special status wildlife to relocate to lower quality, less desirable habitat. Relocation could lead to diminished health, lower reproductive potential, and possible mortality. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Disturbed areas could lead to the increase of predatory species of wildlife, which could reduce populations of other smaller wildlife species through hunting or relocation. Development would result in soil damage, increased erosion, and sediment runoff. Runoff could lead to streambank erosion, vegetation loss, sedimentation of streambeds, and stream channel alteration, reducing the quality of habitat for aquatic species.

Managing 12,831 acres as OHV open areas and 2,398,839 acres as limited to existing roads and trails could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force wildlife to abandon habitat within these areas. This type of use would result in increased erosion and runoff into aquatic systems, causing siltation of spawning habitat for special status fish, diminished water quality, and erosion of streambanks. Disturbed areas would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Disturbed areas and human use (resulting in litter or food waste) could lead to the increase of predatory species of wildlife, which could reduce populations of smaller wildlife through predation or forcing relocation to other areas. Within the open areas, there are 123 acres of rivers, which could be subject to noise, dust, possible habitat damage, and sediment runoff that could degrade water quality and spawning habitat for special status fish. Within the existing areas, there are 65,838 acres of land adjacent to rivers, and 88 acres of special status plant habitat. These areas could be disturbed or damaged by OHV use if lands were mistaken for existing routes.

Limiting vehicle travel to designated routes, 968,959 acres, could reduce damage to fish and wildlife habitat from off-road travel by vehicles, and help to reduce soil loss, erosion, and runoff to riparian habitat by keeping vehicles on designated routes. Limiting vehicle use could help reduce the introduction or spread of invasive, non-native plant species, which could protect native habitat. Vehicle collisions could occur with wildlife causing injury or death. Linear disturbances could fragment habitat or important migratory corridors for wildlife which could diminish health, reproductive success, and the ability to reach critical seasonal habitat. This type of use would result in less erosion and runoff into aquatic systems, reducing siltation of spawning habitat and erosion of streambanks. Within the designated areas, there are 53,148 acres of land adjacent to rivers, and 399 acres of special status plant habitat which could be subject to noise, dust, and sediment runoff.

Closing routes to OHV use, 225,537 acres, seasonal closures, and not allowing new OHV open areas would prevent damage to fish and wildlife habitat and help to prevent soil loss, erosion, and runoff to riparian habitat, and the introduction or spread of invasive, non-native plant species. Removing linear disturbances and open OHV areas could allow for more contiguous, uninterrupted habitat for wildlife. Contiguous, uninterrupted habitat protects species from human and other disturbance and is necessary for some wildlife species to breed, migrate, and complete their life histories. Closed areas would result in less disturbance or stress to wildlife from vehicles and human presence, which would support the overall health of wildlife species. Within the closed areas, there are 5,341 acres of land adjacent to rivers which would have reduced surface disturbance, less noise from vehicles, and less runoff into streams.

Management of eligible and congressionally designated trails could reduce or prevent disturbance or loss of habitat for special status wildlife within areas adjacent to trail corridors through 0.25-mile setbacks and other protective management. Preventing or reducing vegetation loss or surface disturbance would protect soils, reduce erosion and runoff, and support riparian habitat and waterways. Recreational use of trails and other trail management could result in soil disturbance or damage to vegetation along the trail corridor. The introduction or spread of invasive, non-native plant species could increase in highly used areas. Human use and presence could disturb special status wildlife species; possibly causing species to vacate the area to lower quality habitat. Moving from desirable habitat can result in reduced health of animals, making them

susceptible to disease or predation. Disturbed areas could increase the presence of predatory species of wildlife, which could reduce populations of other smaller wildlife species. Vehicle use would result in soil damage, increased erosion, and sediment runoff. Runoff could lead to streambank erosion, vegetation loss, sedimentation of streambeds, and stream channel alteration; reducing the quality of habitat for special status fish species.

Management of WSAs to protect wilderness characteristics could help maintain or improve Special Status Species habitat by preventing or reducing surface disturbance, damage, or removal of vegetation. Management for wilderness characteristics could allow for contiguous, uninterrupted habitat, which protects species from human and other disturbance and is necessary for some special status wildlife species to breed, migrate, and complete their life histories. The management could reduce the introduction or spread of invasive, non-native plant species, which would protect native habitat. The management would help to prevent soil loss and erosion and protect wetland and riparian habitat. Reducing erosion would support water quality, stream channel integrity, and prevent cementation of spawning gravel for special status fisheries.

Protecting outstanding remarkable values of recommended eligible and suitable wild and scenic river segments would protect upland, riparian, and aquatic habitat for special status fish and other Special Status Species from many surface disturbing activities within these areas. Protecting the river segments could help reduce sediment runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion.

Management for the Red Desert Management Area (341,060 acres), Salt Wells (aka Pine Mountain) Management Area (62,760 acres), Four J Basin Portion of the Salt Wells Management Area, Sugarloaf Basin Management Area (87,240 acres), West Sand Dunes Archaeological District (17,780 acres), Pinnacles Geographic Area, Pinnacles Geologic Feature (600 acres), and Monument Valley Management Area (69,960 acres) would protect Special Status Species habitat through limiting mineral development, limiting ROWs and roads, and preventing other surface disturbing activities. The management of these areas could help reduce disturbance of special status wildlife from development or other construction activities. Where protective management is applied, it would support forage, habitat, migration corridors, and other important areas for Special Status Species. The management could help reduce soil runoff into aquatic habitat, support water quality, and protect riparian areas from sedimentation and erosion. Management to protect special status plant species could help prevent disturbance or damage to special status plants and could help maintain the integrity of surrounding soils and vegetation.

Retaining the designation of the Cedar Canyon ACEC (2,550 acres) and allowing the lands to be open for consideration of mineral leasing with restrictions to protect wildlife values could reduce or prevent loss of habitat for special status wildlife in that area. However, development of minerals could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force Special Status Species to abandon habitat. Surface disturbance could result in increased erosion and runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Disturbed areas would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Vegetation management, habitat enhancement, and other management could maintain or improve overall habitat for Special Status Species and could provide nesting habitat and hunting perches for raptors and other special status avian species. Limiting vehicle travel to designated routes could reduce damage to special status fish and wildlife habitat from vehicles, and help to reduce soil loss, erosion, and runoff to riparian habitat by keeping vehicles on designated routes. Limiting vehicle use could help reduce the introduction or spread of invasive, non-native plant species, which could protect native habitat. Vehicle collisions could occur with wildlife causing injury or death. Linear disturbances could fragment habitat or migratory corridors for special status wildlife. Contiguous, uninterrupted habitat protects species from human and other disturbance and is necessary for some special status wildlife species to breed, migrate, and complete their life histories. Use of over the snow vehicles could cause disturbance to wildlife from human presence, noise, and compaction of habitat. If vehicles were used within critical winter range for special status wildlife, severe

stress from noise and human presence could force wildlife away from crucial forage and cover and could lead to diminished health or mortality. Damage to habitat could occur if vehicles were used during low snow conditions. Some surface disturbance could happen within the areas of VRM Class II, which could remove or damage special status wildlife habitat, cause soil loss and erosion, and lead to the introduction or spread of invasive, non-native plant species. Because very few disturbing activities would be allowed, fewer activities that could force Special Status Species to flee or abandon habitat could occur, lowering stress levels and allowing wildlife to remain in desired habitat. Lands managed as VRM Class III and Class IV would be more likely to allow for the greatest surface disturbance or development, which would have similar impacts from the surface disturbing activities, described above.

Designating and managing the Greater Red Creek ACEC (131,600 acres) for watershed, Special Status Species, and wildlife values would improve, enhance, or maintain special status fisheries and wildlife habitat. Emphasis of management to support the watershed and aquatic system would support special status fish, macroinvertebrates, and other aquatic species by reducing erosion and nutrient inputs. Reducing erosion and nutrient inputs would support water quality, stream channel integrity, and prevent cementation of spawning gravel for Colorado River cutthroat trout. Allowing the lands to be open for consideration of mineral leasing with restrictions to protect wildlife values could reduce or prevent loss of habitat for special status wildlife in that area. However, development of minerals could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force special status wildlife to abandon habitat. Surface disturbance could result in increased erosion and runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Disturbed areas would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Limiting vehicle travel to designated routes and making the area a ROW avoidance area could reduce damage to special status fish and wildlife habitat from vehicles and construction of ROWs, and help to reduce soil loss, erosion, and runoff to riparian habitat by keeping vehicles on designated routes. Limiting vehicle use could help reduce the introduction or spread of invasive, non-native plant species, which could protect native habitat. Vehicle collisions could occur with special status wildlife causing injury or death. Linear disturbances could fragment habitat or migratory corridors for Special Status Species. Contiguous, uninterrupted habitat protects species from human and other disturbance and is necessary for some special status wildlife species to breed, migrate, and complete their life histories.

Allowing the Sage Creek portion of Greater Red Creek ACEC to be open for coal leasing with restrictions to protect wildlife values could minimize damage or loss habitat for special status wildlife in that area through mitigation. However, development of minerals could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force special status wildlife to abandon habitat. Surface disturbance could result in increased erosion and runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Disturbed areas would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Lands managed as VRM Class III would be more likely to allow surface disturbance or development, which would have similar impacts from the surface disturbing activities, described above.

Closing the Currant Creek Portion of the Greater Red Creek ACEC (23,740 acres), Red Creek Portion of the Greater Red Creek ACEC (55,880 acres), the Greater Sand Dunes ACEC, including the Crookston Ranch and Boar's Tusk Portions (39,290 acres), Oregon Buttes ACEC (3,440 acres), Pine Spring ACEC (6,030 acres), Special Status Plant Species ACEC (1,200 acres), and White Mountain Petroglyphs ACEC (20 acres) to mineral development and management as a ROW exclusion area and VRM Class II would protect the habitat and waters for wildlife and fisheries. Preventing or reducing surface disturbing activities in the ACECs would maintain contiguous habitat for forage, cover, migration, and important life cycles of special status wildlife. The management could reduce the introduction or spread of invasive, non-native plant species, which would protect native habitat for Special Status Species. Habitat for special status fish and other aquatic species could be protected by reducing soil loss, erosion, and runoff to riparian habitat.

Reducing erosion would support water quality, stream channel integrity, and prevent cementation of spawning gravel to support quality habitat for special status fish. Management to protect special status plant species would prevent disturbance or damage to special status plants and could help maintain the integrity of surrounding soils and vegetation. Specific management for the Special Status Plant ACEC would provide additional protection for suitable plant habitat, which would support continued existence and regeneration of small rock cress (*Arabis pusilla*), precocious milkvetch (*Astragalus proimanthus*), Wyoming tansymustard, and hairy greenthread (*Thelesperma pubescens*).

Allowing the Eastern Portion of the Greater Sand Dunes ACEC and the South Pass Historic Landscape ACEC (53,940 acres), to be open for coal and mineral leasing, mineral development/sales, ROW avoidance areas, and travel on existing roads and trails with restrictions to protect wildlife values could minimize damage or loss of habitat for Special Status Species in that area through mitigation. However, development of minerals could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force special status wildlife to abandon habitat. Surface disturbance could result in increased erosion and runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Disturbed areas would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Allowing about 10,500 acres as open to off-road vehicle use in the sand dunes area could result in disturbance of wildlife from vehicles, human presence, and noise, and could lead to injury or mortality from possible collisions with vehicles. Because the dunes are an existing use area, it is likely that Special Status Species have already abandoned or avoid the area. Off road, open OHV use could degrade vegetation and lead to erosion and habitat loss, reduced quality of habitat, and lead to the introduction and spread of invasive, non-native plants that can further degrade habitat quality and change habitat composition.

Managing the Natural Corrals ACEC (1,110 acres) with an NSO stipulation, prohibiting surface disturbing activity, and closing surface coal mining would protect the habitat and waters for special status wildlife and fisheries. Preventing or reducing surface disturbing activities in the ACEC would maintain contiguous habitat for forage, cover, migration, and important life cycles of Special Status Species. The management could reduce the introduction or spread of invasive, non-native plant species, which would protect native habitat. Habitat for special status fish, macroinvertebrates, and other aquatic species could be protected by reducing soil loss, erosion, and runoff to riparian habitat. Reducing erosion would support water quality, stream channel integrity, and prevent cementation of spawning gravel. However, lands managed as VRM Class III would be more likely to allow surface disturbance or development, which could cause habitat loss or degradation of special status fish and wildlife habitat.

Designating and managing the Steamboat Mountain ACEC (47,280 acres) for watershed, sensitive big game habitat, wildlife, and other values could improve, enhance, or maintain special status fisheries and wildlife habitat. Allowing the lands to be open for consideration of mineral leasing with restrictions to protect wildlife values could reduce or prevent loss of habitat for Special Status Species in that area. However, development of minerals could result in damage or removal of cover and forage, fragmentation of habitat, and disturbance that could force special status wildlife to abandon habitat. Surface disturbance could result in increased erosion and runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Disturbed areas would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation, making habitat less desirable to native wildlife. Seasonal restrictions could support bald eagle, or other special status wildlife during critical life stages such as nesting, brood rearing, and in winter ranges. Limiting vehicle travel to designated routes and making it a ROW avoidance area could reduce damage to special status fish and wildlife habitat from vehicles and construction of ROWs, and help to reduce soil loss, erosion, and runoff to riparian habitat by keeping vehicles on designated routes. Limiting vehicle use could help reduce the introduction or spread of invasive, non-native plant species, which could protect native habitat. Vehicle collisions could occur with wildlife causing injury or death. Linear disturbances could fragment habitat or migratory corridors for Special Status Species. Contiguous, uninterrupted habitat protects species from human and other disturbance and is necessary for some Special Status Species to breed, migrate, and complete their life

histories. Vegetation, fire, and other management could support special status wildlife habitat and aquatic systems, and could support special status fish, macroinvertebrates, waterfowl, and other aquatic species' habitat by reducing erosion and nutrient inputs. Reducing erosion and nutrient inputs would support water quality, stream channel integrity, and prevent cementation of spawning gravel. Some surface disturbance could happen within the areas of VRM Class II, which could remove or damage special status wildlife habitat or cause soil loss and erosion. Because limited disturbing activities would be allowed, fewer activities that could force Special Status Species to flee or abandon habitat could occur, lowering stress levels and allowing wildlife to remain in desired habitat. However, lands managed as VRM Class III would be more likely to allow surface disturbance or development, which could cause habitat loss or degradation of special status fish and wildlife habitat.

Reducing or minimizing risk to humans and the environment from hazardous materials could prevent damage to soils, habitat resources, or Special Status Species.

### 4.8.3 Alternative B

Impacts to Special Status Species from geophysical activities, pursuing land withdrawals, land disposals, land acquisitions, renewable energy, and wild and scenic rivers management would be the same as those described under Alternative A.

Impacts from air quality management would be the same as those described under Alternative A; however, measures to control dust could protect special status wildlife and fisheries habitat to a greater degree than compared to Alternative A.

Impacts to Special Status Species from the management of soil resources would be similar to those described under Alternative A. However, additional management protection to soil resources could support special status wildlife habitat and fisheries resources to a greater degree compared to Alternative A.

Impacts to Special Status Species from the management of water resources would be similar to those described under Alternative A. However, applying buffers to the prohibition of surface disturbing activities and new permanent structures within aquatic systems, applying mineral stipulations, and avoiding linear crossings would support wildlife habitat and aquatic systems. The management would support special status fish, macroinvertebrates, and other aquatic species' habitat by reducing erosion and nutrient inputs. Reducing erosion and nutrient inputs would support water quality, stream channel integrity, and prevent cementation of spawning gravel. The management could protect a larger area of riparian and wetland habitat that could support Ute ladies' tresses and meadow pussytoes. The additional management for aquifers and water quality could protect special status wildlife habitat and fisheries resources to a greater degree compared to Alternative A.

Managing all lands with wilderness characteristics to preserve those characteristics would prevent damage or loss of special status wildlife habitat from development activities, reduce disturbance to Special Status Species from the presence of humans, vehicles or machinery, prevent erosion or runoff, and protect an intact ecosystem. The closed acres that are adjacent to riparian habitat or stream channels would protect important habitat for special status fish species such as flannelmouth sucker, bluehead sucker, and roundtail chub; avian species such as trumpeter swan, yellow-billed cuckoo, and bald eagle, amphibians, and other wetland and riparian wildlife species; and would support water quality within stream and river corridors. Precluding oil and gas development would prevent the introduction and spread of invasive, non-native plant species from machinery and vehicles, further supporting desired forage, cover, and contiguous habitat.

Under Alternative B, approximately 1,292 oil, gas, and CBNG wells would be developed within the planning area, 3,481 fewer wells as compared to Alternative A. There would be 8,892 acres of initial surface disturbance and 2,566 acres of long-term disturbance from oil and gas development, which is 23,939 fewer acres of initial surface disturbance and 6,900 fewer acres of long-term disturbance compared with

## Alternative A.

Closing 2,186,218 acres to fluid mineral leasing would reduce habitat loss for Special Status Species. The closures would allow for contiguous, uninterrupted habitat, and would prevent oil and gas development on 1,646,197 more acres than under Alternative A. Closed lands that are adjacent to riparian habitat or stream channels (295,614 acres) could protect important habitat for special status fish, amphibians, birds, plant species, and would help support water quality. Special status plant species within the closed areas (319 acres) would be protected from surface disturbance, soil loss, and damage of surrounding habitat. Sage-grouse leks (86,447 acres) would be protected from surface disturbance or disruptive activity from oil and gas development within the closed areas.

Under Alternative B, 813,354 acres would be managed with NSO stipulations, which is 654,743 more acres than under Alternative A. Lands that are adjacent to riparian habitat or stream channels (77,487 acres) could protect important habitat for fish, amphibians, birds, plant species, and would help support water quality. Special status plant species within the NSO stipulated areas (197 acres) would be protected from surface disturbance, soil loss, and damage of surrounding habitat.

Applying CSU and timing limitation stipulations to oil and gas leases could reduce damage or loss of vegetation and habitat for Special Status Species (99,674 acres of CSU stipulations and 713,837 acres of TLS). Impacts to Special Status Species from the application of CSU and timing limitation stipulations would be similar to those described under Alternative A, but smaller areas of habitat could receive some reduced impacts from oil and gas development and production activities, but much larger areas are managed as closed and NSO, providing greater habitat protection.

Approximately 1,993,908 acres of the planning area would be pursued for withdrawal from locatable mineral entry, 1,437,350 more acres than Alternative A, and 2,186,218 acres would be closed to geothermal leasing, 1,646,197 acres more than under Alternative A. The remaining acres in the planning area would be available for the development of locatable minerals and geothermal leasing. Impacts to special status wildlife and fisheries would be similar to those under Alternative A; however, a much larger area of land would be closed to geothermal leasing compared to Alternative A. Lands within the closed areas would not have surface disturbing activities from geothermal development, and special status wildlife and fish habitat would not be damaged from those activities.

Impacts to special status wildlife and fisheries habitat from the development of solid leasable minerals would be similar to those described under Alternative A. Under Alternative B, 3,735,546 acres would be closed to coal, 2,122,282 acres would be closed to oil shale, and 2,119,920 acres would be closed to trona leasing and development. The protections to lands closed to solid mineral development would be applied to 2,741,709 more acres of land closed to coal, 1,394,477 more acres of land closed to oil shale, and 1,665,326 more acres of land closed to trona compared to Alternative A.

Closing 2,581,741 acres of lands to saleable mineral development would prevent damage or loss of Special Status Species habitat from mineral excavation on 1,748,022 more acres compared to Alternative A. Impacts to Special Status Species habitat would be similar to those described under Alternative A, but a much greater area of land would be closed to surface disturbing activities, protecting vegetation, preventing erosion and runoff, and ensuring greater habitat connectivity.

Impacts to Special Status Species from wildland fire management would be similar to those described under Alternative A. Additional management to protect water quality would support special status fish, wetland birds, and amphibians to a greater degree compared to Alternative A.

Under Alternative B, forest and woodland management would be similar to the management and impacts described under Alternative A; however, Alternative B emphasizes the use of natural processes for forestry management in addition to not allowing clearcutting. The management in Alternative B would support

forest and woodland habitat for Special Status Species by encouraging natural habitat conditions, native vegetation, cover, forage, and functional ecosystems.

Impacts to Special Status Species habitat from management of grassland and shrubland communities would be very similar to those described under Alternative A. Resting lands from livestock grazing for a minimum of five seasons after treatments would allow treated areas to revegetate, soils to stabilize, and vegetation to mature to the point of withstanding livestock grazing pressure. Rested areas could provide wildlife with new vegetation for cover habitat and forage without competition with livestock during the rest period.

Impacts to Special Status Species habitat from invasive species and pest management would be similar to those described under Alternative A. Additional management for invasive plant species control through only mechanical or biological methods would protect vegetation and Special Status Species habitat from damage from more invasive control methods, such as chemicals or fire. However, less invasive techniques may not be as effective in controlling large infestations of noxious weeds as chemicals or fire. Under Alternative B, additional management for preventing and controlling the infestation of aquatic invasive species could support wetland, riparian, and aquatic habitat for special status fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The management would help prevent the infestation of riparian and aquatic habitat from non-native species, which would help maintain native ecosystems for forage and cover for special status wildlife and could support water quality and quantity for special status fish and amphibians.

Impacts to Special Status Species habitat from management of riparian and wetland resources would be similar to those described under Alternative A. Additional management for achieving PFC would maintain or improve wetland, riparian, and aquatic habitat for special status fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The management could help reduce sediment runoff into aquatic systems, reducing siltation of spawning habitat for special status fish, improving water quality, and preventing erosion of streambanks.

Impacts to Special Status Species from the management for wildlife and fish would be similar to Alternative A. Additional management under Alternative B such as adjustments to livestock and wild horse management could help maintain or improve habitat by preventing vegetation loss, removing competition for forage, and reducing the introduction or spread of invasive, non-native plant species. Maintaining and improving habitat for migratory bird species of conservation concern could support habitat for avian species such as the ferruginous hawk, Northern goshawk, and trumpeter swan. The management could support existing nesting, feeding, or breeding habitat, or could allow for mitigation to restore areas of habitat if losses were suffered elsewhere in the planning area. Alternative B would apply greater stipulations to protect important seasonal and sensitive habitat for special status fish and wildlife species. Stipulations for no net loss of habitat and prohibiting renewable energy projects in sensitive habitats would prevent the loss or damage of important habitat areas for forage, hunting, nesting, breeding, young rearing, and migration of special status wildlife species. The management could also protect wetland, riparian, and aquatic habitat for special status fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems.

Impacts to Special Status Species habitat from the management for big game would be similar to those described under Alternative A. Additional management to protect big game parturition habitat, crucial winter range, and migration corridors could support Special Status Species that use seasonal habitat. The management could ensure reproductive success and survival of young, reduce winter mortality associated with increased stress caused by human-induced disturbance, and provide migration corridors that link crucial habitats (winter range) and breeding, nesting, and brood rearing areas.

Impacts to Special Status Species habitat from the management of raptors would be similar to those described under Alternative A. Under Alternative B, additional management would protect raptors through seasonal closures, greater buffer distances, preventing surface disturbance or occupancy within one mile of active and historic nests, and locating infrastructure away from high avian-use areas. The management would provide greater protection by reducing disturbance to raptors during critical life phases, preventing

the risk of collisions with wires or structures, and protecting important habitat for nesting, breeding, or hunting as compared to Alternative A.

Impacts to Special Status Species habitat from the management of fish would be similar to those described under Alternative A. Under Alternative B, additional management would provide specific timeframes for seasonal restrictions and buffer distances (¼ mile), which could provide greater protection for special status fish and important habitat for fish reproduction to a greater degree than compared to Alternative A. Closing fish bearing streams to solid mineral leasing would support fisheries and stream health, and protect wetland, riparian, and aquatic habitat for fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The restrictions could help prevent sediment runoff into aquatic systems, preventing siltation of spawning habitat, improving water quality, and preventing erosion of streambanks. The management could also provide additional protection to special status plants that inhabit riparian areas, such as Ute ladies' tresses.

Impacts to Special Status Species habitat from the management of special status plant species would be similar to those described under Alternative A. Under Alternative B, additional management could provide greater habitat protection and fewer disruptive activities, supporting special status plant and wildlife species and their habitat. The additional management could help prevent sediment runoff into aquatic systems, preventing siltation of spawning habitat, improving water quality, and preventing erosion of streambanks. Protecting some basin big sagebrush/lemon scurfpea areas along the base of Steamboat Mountain would protect these ecosystems from damage or disturbance and protect the special status wildlife that inhabit these areas.

Impacts to Special Status Species habitat from the management of special status wildlife species would be similar to those described under Alternative A. Under Alternative B, additional management to protect habitat and reintroduce species would provide greater habitat protection for special status wildlife and fish, and reintroduction of species could fill key niches in ecosystems.

Impacts to Special Status Species habitat from the management of cultural resources would be similar to those described under Alternative A. Under Alternative B, additional management such as buffer distances, NSO stipulations, and closures to mineral sales to prevent surface disturbing activities would prevent damage or removal of Special Status Species cover and forage, reduce fragmentation of habitat, and prevent disturbance of wildlife.

Impacts to Special Status Species from the management of visual resources would be similar to those described under Alternative A for VRM Class I (225,790 acres, 70 acres more than Alternative A), VRM Class III (666,520 acres, 51,030 acres more than Alternative A), and for the Gateway West Pipeline. Approximately 14,081 acres of rivers or navigable waters would be protected from surface disturbance within the VRM Class I areas. Approximately 11,675 acres of sage- grouse leks, 374 acres of special status plants, and 57,171 acres of rivers or navigable waters could be vulnerable to surface disturbing activities within the VRM Class III areas. Under Alternative B, 2,148,900 acres would be managed as VRM Class II, 1,566,230 more acres than Alternative A. The management for VRM Class II would retain the character of the landscape, which could allow for some surface disturbance, as described under Alternative A, but the classification of 2,118,880 acres would provide greater protection overall for Special Status Species. Approximately 19 acres of special status plants, and 211,579 acres of rivers or navigable waters could be protected from surface disturbance within the VRM Class II areas. Under Alternative B, 563,750 acres would be managed as VRM Class IV, 1,616,670 fewer acres as compared to Alternative A. Impacts to lands managed as VRM Class IV would be the same as those described under Alternative A, but fewer acres would be subjected to the level of surface disturbance allowed within the VRM Class IV classification. Approximately 12,524 acres of sage-grouse leks, 94 acres of special status plants, and 48,946 acres of rivers or navigable waters could be affected by surface disturbing activities within the VRM Class IV areas.

Impacts to Special Status Species from ROW management would be the same as those described under Alternative A; however, under Alternative B, 2,480,876 acres would be managed as ROW exclusion areas.



The management would protect Special Status Species habitat from linear disturbances, surface disturbing activities, and habitat loss on 2,130,936 more acres as compared to Alternative A. Approximately 486 acres of special status plants, and 270,305 acres of rivers or navigable waters would be protected from disruptive activities within the exclusion areas. Larger areas would be managed as avoidance areas, 133,903 acres under Alternative B, 602,235 more acres than Alternative A. Approximately 24,033 acres of rivers or navigable waters would be less likely to be subject to disruptive activities within the avoidance areas.

Impacts to Special Status Species from transportation management would be the similar to those described under Alternative A. In addition, restoring roads could provide additional and contiguous habitat for sagebrush obligate wildlife such as pygmy rabbit, swift fox, sage- grouse, and sage thrasher. Under Alternative B, the route designations from the travel management plan would be applied. Within the areas identified as limited to designated roads and trails, 2,352 miles of routes would be managed as open to vehicle use. The route designations could reduce damage to special status fish and wildlife habitat from off-road travel by vehicles, and help to reduce soil loss, erosion, and runoff to riparian habitat by keeping vehicles on designated routes. Limiting vehicle use could help reduce the introduction or spread of invasive, non-native plant species, which could protect native habitat. Vehicle collisions could occur with wildlife causing injury or death. Linear disturbances could fragment habitat or important migratory corridors for Special Status Species, which could diminish health, reproductive success, and the ability to reach critical seasonal habitat. Designating routes would result in less erosion and runoff into aquatic systems, reducing siltation of spawning habitat and erosion of streambanks.

About 67 miles of routes would be limited to non-motorized or non-mechanized use, 4,505 miles of routes would be closed to all use, and 10,006 miles of routes and linear disturbances would be removed from the transportation network and allowed return to natural conditions. These routes would receive lower use or no use at all. The management would prevent or reduce soil loss, erosion, and runoff to riparian habitat, and the introduction or spread of invasive, non-native plant species. Reducing linear disturbances and vehicle use could allow for more contiguous, uninterrupted habitat for Special Status Species. Contiguous, uninterrupted habitat protects species from human and other disturbance and is necessary for some Special Status Species to breed, migrate, and complete their life histories.

Impacts to Special Status Species from livestock grazing management would be similar to those described under Alternative A. In addition, application of monitoring, greater protection of riparian areas and springs, and additional range improvements would provide greater protection of special status fish and wildlife habitat as compared to Alternative A. The additional management could help maintain or improve habitat by reducing congregation of livestock in sensitive areas and prevent or reduce damage to forage and cover. The management could prevent or reduce compaction or erosion of soils, and reduce the influx of nutrients into riparian areas, wetlands, or streambeds, which could support water quality and riparian vegetation within these areas. Removal of fences reduces threats of injury or death from impacts with fences, enhances migration corridors, and could allow access to additional forage and cover.

Impacts to Special Status Species from recreation management would be similar to those described under Alternative A. Additional management to consider other resource values, buffer distances, and mineral lease stipulations and closures could help maintain or improve habitat for special status fish and wildlife to a greater degree than Alternative A.

Under Alternative B, the Wind River Front SRMA (257,680 acres) would not be retained. This could reduce vegetation damage, surface disturbance, and disruption of special status wildlife from human or vehicle presence caused by recreation use to a greater degree than Alternative A. Other management within the Wind River Front area would have similar impacts to special status wildlife and fisheries compared to Alternative A, but with greater protection to lands from mineral stipulations and other surface disturbance prohibitions.

Impacts to Special Status Species from managing OHV open and closed areas would be the same as those described under Alternative A. Under Alternative B, there would be no category called “limited to existing roads and trails.” While the routes would be moved under the “limited to designated roads and trails” for a

total of 3,367,576 acres impacts to wildlife and fish habitat would be similar to those described under both categories under Alternative A. Additional management to prohibit and limit OHV use could provide greater protection to Special Status Species from damage to habitat and help to prevent soil loss, erosion, and runoff to riparian habitat, and the introduction or spread of invasive, non-native plant species as compared to Alternative A. Within the open areas, there are 377 acres of land adjacent to rivers which could be subject to noise, dust, possible habitat damage, and sediment runoff that could degrade water quality and spawning habitat for special status fish species. Within the designated areas, there are 85,407 acres of sage-grouse leks, 318,113 acres of land adjacent to rivers, and 487 acres of special status plant habitat which could be subject to noise, dust, and some sediment runoff. Within the closed areas, there are 136 acres of special status plant habitat, and 13,908 acres of land adjacent to rivers which would have reduced surface disturbance, less noise from vehicles, and less runoff into streams.

Impacts to Special Status Species from recreation management would be similar to those described under Alternative A. Under Alternative B, management of eligible and congressionally designated trails could reduce or prevent disturbance or loss of habitat for Special Status Species to a greater degree when compared to Alternative A. Managing historic trail segments under Alternative B could prevent or reduce surface disturbance, damage, or removal of wildlife cover and forage, reduce fragmentation of habitat, and reduce disturbance of Special Status Species.

Impacts to Special Status Species from the management of WSAs would be similar to those described under Alternative A. Additional management under Alternative B for visual resources could provide greater habitat protection beyond the perimeter of the WSAs by preventing or reducing surface disturbing activities within viewsheds. Preventing or reducing surface disturbing activities from VRM Class I and II areas would maintain contiguous habitat for forage, cover, migration, and important life cycles of Special Status Species.

Under Alternative B, the Red Desert Watershed Management Area would be divided into a management area (164,140 acres) and the remainder added to the Steamboat Mountain ACEC (439,330 acres). Impacts to Special Status Species from the management of the area would be similar to those described in Alternative A, but additional management could further reduce surface disturbance, human and vehicle presence, and a reduction in predation of smaller special status wildlife species. The remaining management areas listed in Alternative A would be managed as ACECs under Alternative B.

The Greater Red Creek ACEC would be expanded from 131,600 acres in Alternative A to 468,170 acres, and the Monument Valley ACEC (69,960 acres), and Big Sandy Openings ACEC (2,020 acres) would be designated in Alternative B. The expansion and designations would allow for greater protection of habitat for Special Status Species through management such as ROW exclusion, closed to mineral leasing, limited vehicle use, vegetation management, and protective management for wildlife. The management would support forage, habitat, migration corridors, and other important areas for Special Status Species, especially sagebrush obligate species. Closed areas would result in less disturbance or stress to wildlife from vehicles and human presence, which would support the overall health of Special Status Species. Management to protect special status plant species could help prevent disturbance or damage to special status plants and could help maintain the integrity of surrounding soils and vegetation.

Designating the Pinnacles ACEC (1,340 acres) would protect habitat for Special Status Species through management such as ROW exclusion, closed to mineral sales, and limiting surface disturbing activities. The management would support forage, habitat, migration corridors, and other important areas for special status wildlife species.

Impacts to wildlife and fisheries from retaining the designation of the Cedar Canyon ACEC (2,550 acres) would be similar to Alternative A, but additional management would allow for greater habitat protection under Alternative B. Closing the area to mineral development, prohibiting motorized and non-motorized use, preparing reclamation plans, and other resource protection could reduce or prevent loss of habitat for special status wildlife in that area. Vegetation management and habitat enhancement for special status raptors and other wildlife could maintain or improve overall habitat for Special Status Species and could

provide nesting habitat and hunting perches for raptors and other avian species.

Impacts to Special Status Species from retaining the designation of the Greater Sand Dunes ACEC (including the Crookston Ranch and Boar's Tusk Portions, 39,290 acres) and the Oregon Buttes ACEC would be the same as those described under Alternative A.

Impacts to Special Status Species from the management of the Eastern Portion of the Greater Sand Dunes ACEC would be similar to those described under Alternative A. Some additional protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to wildlife from vehicles, machinery, or human presence.

Impacts to Special Status Species from the management of the Natural Corrals ACEC (1,110 acres) would be similar to those described under Alternative A. Some additional protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to special status wildlife from vehicles, machinery, or human presence. Preventing or reducing surface disturbing activities in the ACEC would maintain contiguous habitat for forage, cover, migration, and important life cycles of Special Status Species.

Impacts to Special Status Species from the management of the Pine Springs ACEC (6,480 acres) would be similar to those described under Alternative A. The ACEC would be expanded an additional 430 acres under Alternative B. Some additional protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to Special Status Species from vehicles, machinery, or human presence.

Impacts to Special Status Species from the management of the Special Status Plant Species ACEC (3,610 acres) would be similar to those described under Alternative A. The ACEC would be expanded an additional 2,510 acres under Alternative B and additional protective management for special status plants would be applied. The additional acres and management would provide greater protection for suitable plant habitat, which would support continued existence and regeneration of small rock cress, precocious milkvetch, Wyoming tansymustard, and hairy greenthread.

Impacts to Special Status Species from the management of the Steamboat Mountain ACEC (439,330 acres) would be similar to those described under Alternative A. The ACEC would be expanded an additional 392,050 acres under Alternative B. The inclusion of additional land and protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to Special Status Species from vehicles, machinery, or human presence. Management to protect special status plant species would prevent disturbance or damage to special status plants and could help maintain the integrity of surrounding soils and vegetation.

Impacts to Special Status Species from the management of the White Mountain Petroglyphs ACEC (20 acres) would be similar to those described under Alternative A. Some additional protective measures to prevent or reduce surface disturbance could provide greater protection of habitat and reduce disturbance to Special Status Species from vehicles, machinery, or human presence.

Designating and managing the South Wind River ACEC (374,710 acres) for visual, crucial habitat, special status plants, and other values could improve, enhance, or maintain Special Status Species habitat. Protective management to prevent or reduce surface disturbance, ROW exclusion, and closures to mineral leasing could provide protection of habitat and reduce disturbance to special status wildlife from vehicles, machinery, or human presence. Preventing or reducing surface disturbing activities in the ACEC would maintain contiguous habitat for forage, cover, migration, and important life cycles of Special Status Species.

The management could reduce the introduction or spread of invasive, non-native plant species, which would protect native habitat. Managing land as a separate offsite mitigation area could provide new seral stages

of vegetation as new habitat regenerates. Special status wildlife such as mountain plover, white-tailed prairie dogs, and swift fox could benefit from the low, early seral areas of vegetation.

Impacts to Special Status Species from reducing or minimizing risk to humans and the environment from hazardous materials would be similar to Alternative A. In addition, restoration of contaminated lands could reduce damage to wildlife habitat, help reduce runoff of contaminants into riparian and aquatic systems, and provide additional habitat for Special Status Species.

#### 4.8.4 Alternative C

Impacts to Special Status Species from the management of water, geophysical, riparian and wetland, raptors, cultural, pursuing land withdrawals, land disposals, land acquisitions, and renewable energy resources would be the same as those described under Alternative A.

Impacts to Special Status Species from air quality management would be the same as those described under Alternative B, with the exception of dust abatement measures, which would be the same as Alternative A.

Impacts to Special Status Species from the management of soil and water resources would be similar to those described under Alternative A. Fewer protections to highly erodible soils under Alternative C could result in the potential for increased soil erosion, soil loss, and sediment runoff to a greater degree when compared to Alternative A.

Lands with wilderness characteristics would not be managed for wilderness characteristics under Alternative C. These lands would be managed for other resource uses or resource values. Protective management applied under Alternative B would not be applied in Alternative C and could allow surface disturbing or disruptive activities to occur on these lands.

Approximately 4,919 oil, gas, and CBNG wells would be developed under Alternative C within the planning area, 146 more wells compared to Alternative A. There would be 33,840 acres of initial surface disturbance and 9,758 acres of long-term disturbance from oil and gas development, with 1,009 more acres of initial surface disturbance and 292 more acres of long-term disturbance compared with Alternative A.

Closing 225,782 acres to fluid mineral leasing would reduce habitat loss, would allow for contiguous, uninterrupted habitat, and would close 314,239 fewer acres than under Alternative A. Impacts to special status wildlife and fisheries would be the same as those described under Alternative A, however, surface disturbance and disruptive activities could occur over larger areas under Alternative C. No river or navigable waters and habitat for special status plant species would be included within the closed areas under Alternative C.

Under Alternative C, 15,542 acres would be managed with NSO stipulations, which is 143,069 fewer acres than Alternative A. Impacts to special status wildlife and fisheries would be the same as those described under Alternative A; however, surface disturbance and disruptive activities could occur over larger areas under Alternative C. No river or navigable waters and habitat for special status plant species would be included within the NSO stipulated areas under Alternative C.

Applying CSU stipulations to 215,890 acres could reduce damage or loss of vegetation and habitat for wildlife, 505,242 fewer acres compared to Alternative A. Applying TLS to 1,355,485 acres could seasonally reduce surface disturbance or disruptive activities in sensitive habitat for raptors, or other Special Status Species, 485,482 less acres compared to Alternative A. Impacts to special status wildlife and fisheries from the application of CSU and timing limitation stipulations would be similar to those described under Alternative A, but overall, less habitat would receive reduced impacts from oil and gas development and

production activities.

Approximately 1,993,908 acres of the planning area would be pursued for withdrawal from locatable mineral entry, 321,597 fewer acres compared to Alternative A. Approximately 225,782 acres of the planning area would be closed to geothermal leasing, 314,239 fewer acres compared to Alternative A. Impacts to Special Status Species would be the same as those described under Alternative A, however, surface disturbance and disruptive activities could occur over more acres under Alternative C.

Impacts to Special Status Species from the development of coal, oil shale, and trona resources would be similar to those described under Alternative A. Under Alternative C, 226,219 acres would be closed to coal, which would be a 407,618 acre reduction compared with Alternative A. Approximately 225,965 acres would be closed to both oil shale and trona leasing and development, which would be a 501,840 acre reduction for oil shale and a 228,629 acre reduction for trona. The smaller areas of closures could result in increased damage or loss of habitat from development activities and increased disturbance to Special Status Species from the presence of humans when compared to Alternative A.

Approximately 226,421 acres of the planning area would be closed to saleable mineral development, 607,298 fewer acres compared to Alternative A. Impacts to Special Status Species would be the same as those described under Alternative A, however, surface disturbance and disruptive activities could occur over larger areas of land under Alternative C.

Impacts to Special Status Species from wildland fire management and forest and woodland management would be the same as those described under Alternative A. Under Alternative C, allowing the harvest of cottonwood trees could remove nesting habitat for bald eagle and long-eared myotis. Harvest activities could disturb nearby wildlife from human presence, machinery, and vehicles, and cause surface disturbance, which could remove vegetation and cause erosion. Surface disturbance could result in runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Erosion and increased runoff could continue in harvest areas until new vegetation was established.

Impacts to Special Status Species habitat from the management of grassland and shrubland communities would be very similar to those described under Alternative A. Use of non-native species could help stabilize soils and prevent erosion in the short-term, and over the long-term could provide stable land for native species to re-establish. Some non-native plants may not provide appropriate cover or forage values for special status wildlife, and the use of non-native plants increases the risk of spread and eventual degradation of native habitat values.

Impacts to Special Status Species habitat from invasive species and pest management would be similar to those described under Alternative A. Additional management for invasive plant species control through various methods, including chemicals, the use of BMPs, and buffer distances for chemical use could reduce the infestation and spread of invasive species to a greater degree than Alternative A. The management would help prevent the infestation of riparian and aquatic habitat from non-native species, which would help maintain native ecosystems for forage and cover for special status wildlife and could support water quality and quantity. Management to protect special status plants, wetlands, riparian areas, and aquatic habitats through buffers for chemical use would prevent accidental application or spills and protect special status plants from accidental contact with herbicides.

Impacts to Special Status Species habitat from the management for wildlife and fish would be similar to Alternative A, and impacts would be similar to those described under Alternative A. Additional management under Alternative C by prioritizing livestock and raising grazing levels could increase competition for forage and habitat resources between livestock and special status wildlife. Increased use by livestock could cause loss of vegetation for forage and cover, soil compaction, erosion, trampling of vegetation and habitat, and the spread of invasive, non-native plant species. Retaining fences could impact special status wildlife by creating travel barriers, altering distribution patterns, increasing stress and energy

loss, and could cause injury or death from entanglement.

Management to allow renewable energy projects in sensitive wildlife habitats could result in habitat damage or loss of raptor concentration areas (high-use/high-density raptor nesting/roosting/perching areas), and unique habitats (e.g. aspen and mountain shrub). Renewable energy development could result in displacement of some special status wildlife and raptor species from breeding and foraging habitat within the construction area. Construction of wind turbines throughout the planning area may create collision hazards for raptors, bats, and multiple avian species. Studies have documented deaths of avian and bat species from wind turbines, although the levels of collision and death vary in the scientific research (Cohn 2008; Madders and Whitfield 2006). Collision levels fluctuate based on habitat, terrain, elevation, and even weather conditions (Madders and Whitfield 2006). Prediction of accurate bird or bat losses from wind development is currently not available; however, it could be assumed that some losses of these species will occur.

Impacts to Special Status Species habitat from the management for big game of would be the same as those described under Alternative A. Impacts to Special Status Species from additional management in Alternative C would protect big game parturition habitat, crucial winter range, and migration corridors.

Under Alternative C, seasonal restrictions for surface disturbance near spawning fish populations would not be applied. Allowing surface disturbing activities along fish bearing streams near spawning, incubation, and fry rearing habitat could lead to sediment runoff and accumulation of fine silts in stream channels which could cause cementation of spawning gravel for special status fish species. Increased sediment could affect water quality for and aquatic habitat for special status fish, waterfowl, macroinvertebrates, and other species dependent on these ecosystems.

Impacts to Special Status Species habitat from the management of special status plant species would be similar to those described under Alternative A. Under Alternative C, allowing more opportunities for surface disturbing activities near special status plant species could degrade habitat in surrounding areas or allow for the introduction and spread of invasive, non-native plant species. Invasive plants could compete with special status plants and reduce available habitat for special status plants to reproduce. Eventually, non-natives could out-compete some special status plant species if monitoring did not identify the threat in time.

Impacts to Special Status Species from the management of visual resources would be very similar to those described under Alternative A. Management for VRM Class I would be 226,630 acres, 910 acres more than Alternative A; VRM Class II would be 607,900 acres, 25,230 acres more than Alternative A; VRM Class III would be 395,680 acres, 255,810 fewer acres than Alternative A; and VRM Class IV, 2,374,710 acres, 194,290 acres more than Alternative A. There would be slightly more acres protected by VRM Classes I and II, but nearly 200,000 more acres subjected to surface disturbing and disruptive activities within VRM Class IV compared to Alternative A.

Impacts to Special Status Species from ROW management would be similar to those described under Alternative A. Under Alternative C, 225,784 acres would be managed as ROW exclusion areas, 200,925 fewer acres compared to Alternative A. Under Alternative C, 1,687,304 acres would be managed as ROW avoidance areas, 1,498,984 more acres compared to Alternative A. Surface disturbing and disruptive activities from ROW development could damage or remove forage and habitat for wildlife species to a greater degree than under Alternative A.

Impacts to Special Status Species from transportation management would be similar to those described under Alternative A. Revegetation of undesignated roads could take more time to restore, and species composition might not immediately supportsagebrush obligate species. Under Alternative C, the route designations from the travel management plan would be applied. Within the area designated as limited to designated roads and trails, 16,256 miles of routes would be managed as open to vehicle use. About 93 miles of routes would be limited to non- motorized or non-mechanized use, 425 miles of routes would be

closed to all use, and 165 miles of routes and linear disturbances would be removed from the transportation network and return to natural conditions. Impacts to special status fish and wildlife would be similar to those described under Alternative B, however nearly 14,000 more miles of designated routes would be open to vehicle use in Alternative C and about 4,000 fewer miles would be closed compared to Alternative B.

Impacts to Special Status Species from livestock grazing management would be similar to those described under Alternative A. Additional management under Alternative C by allowing livestock in riparian areas could increase competition for forage and habitat resources between livestock and Special Status Species. Increased use by livestock could cause loss of vegetation for forage and cover, soil compaction, erosion, trampling of vegetation and habitat, and the spread of invasive, non-native plant species. Use of riparian areas by livestock could increase runoff and accumulation of fine silts in stream channels which could cause cementation of spawning gravel for special status fish species. Increased sediment could affect water quality and aquatic habitat for special status fish, amphibians, macroinvertebrates, and other species dependent on these ecosystems. Implementation of the Wyoming Land Health Standards could ensure that habitat for wildlife is not degraded by over-use of livestock.

Under Alternative C, reducing total authorized use to highest level of billed use over the last 10 years could provide increased forage and habitat resources for Special Status Species. Reducing use to 160,387 AUMs could reduce habitat degradation from livestock, which could support water quality and availability, and allow a more natural grazing pattern from wildlife use. However, because management of livestock under this alternative would be very similar to the levels of actual use that have historically occurred in the planning area, it is likely that few changes would occur beyond those described under Alternative A.

Impacts to Special Status Species from recreation management would be similar to those described under Alternative A; however, the emphasis of recreation use over other resources could result in more surface disturbing or disruptive activities to occur.

Impacts to Special Status Species from the management of the Wind River Front SRMA (257,680 acres) would be similar to those under Alternative A for recreation and the management of the SRMA. The emphasis of the SRMA management for recreation use, including increased use of motorized vehicles, and allowing increased surface disturbing activities and mineral leasing would lead to habitat loss and abandonment of habitat to a greater degree when compared to Alternative A.

Impacts to Special Status Species from managing OHV areas would be the same as those described under Alternative A. Under Alternative B, there would be no category called “limited to existing roads and trails.” While the routes would be moved under the “limited to designated roads and trails” for a total of 3,367,576 acres, impacts to Special Status Species habitat would be similar to those described under both limited to designated and existing categories under Alternative A.

Impacts to Special Status Species from the management of eligible and congressionally designated trails would be similar to those described under Alternative A. Under Alternative C, allowing surface disturbing activities, mineral development, and other disruptive activities could result in more habitat damage or loss.

WSAs would be managed for multiple use and wild and scenic rivers, ACECs, and other management areas would not be retained under Alternative C. This management would result in fewer protections to Special Status Species fish, wildlife, and plants as compared to Alternative A.

Impacts to Special Status Species from public safety management would be the same as those described under Alternative B.

## **4.8.5 Alternative D**

Impacts to Special Status Species habitat from geophysical activities, wildland fire, raptors, special status

wildlife species, cultural, paleontological, pursuing land withdrawals, land disposals, land acquisitions, renewable energy, and wild and scenic river management would be the same as those described under Alternative A.

Impacts to Special Status Species from air quality management would be the same as those described under Alternative B, with the exception of dust abatement measures, which would not be required under Alternative D. Applying dust abatement measures on a case-by-case basis could reduce dust accumulation.

Impacts to Special Status Species from the management of soil resources would be similar to those described under Alternative A. However, additional management to protect soil resources could support special status wildlife, fisheries, or plants a greater degree compared to Alternative A.

Impacts to Special Status Species from the management of water resources would be similar to those described under Alternative A. Applying buffers and the avoidance of surface disturbing activities and construction within aquatic systems, applying mineral stipulations, and avoiding linear crossings could support Special Status Species habitat and aquatic systems, but to a lesser degree compared to Alternative A.

Impacts to Special Status Species from the management of lands with wilderness characteristics would be similar to those described under Alternative B; however, fewer areas would be managed specifically for those characteristics and fewer restrictions on surface disturbance would be applied. Managing lands for a variety of uses could reduce some damage or loss of Special Status Species habitat from development activities, reduce disturbance to special status wildlife from the presence of humans, vehicles, or machinery, or reduce erosion or runoff.

Under Alternative D, approximately 4,737 oil, gas, and CBNG wells would be developed within the planning area, 36 fewer wells as compared to Alternative A. There would be 32,587 acres of initial surface disturbance and 9,397 acres of long-term disturbance from fluid mineral development; which is 244 fewer acres of initial surface disturbance and 69 fewer acres of long-term disturbance compared with Alternative A.

Closing 768,989 acres to fluid mineral leasing would close 228,968 more acres than under Alternative A. Closing land to new oil and gas development would protect smaller areas of habitat compared to Alternative A. Riparian areas and stream habitat (67,224), and special status plants (170 acres) would be protected from surface disturbance or disruptive activity from oil and gas development within the closed areas to a lesser degree compared to Alternative A.

Under Alternative D, 2,172 acres would be managed with NSO stipulations, which is 156,439 fewer acres than under Alternative A. Smaller areas of grassland and sagebrush would be protected from surface disturbance and disruptive activity under Alternative D, which could reduce habitat connectivity for swift fox, ferruginous hawk, burrowing owl, and pygmy rabbit. Lands that are adjacent to riparian habitat or stream channels (35,384 acres) could protect important habitat for fish, amphibians, birds, and plant species, and would help support water quality within a smaller area compared to Alternative A. Special status plant species within the NSO stipulated areas (177 acres) would be protected from surface disturbance, soil loss, and damage of surrounding habitat within about 321 fewer acres compared to Alternative A.

Applying CSU and timing limitation stipulations to oil and gas leases could reduce damage or loss of vegetation and habitat for special status wildlife species (1,238,899 acres of CSU stipulations and 1,911,167 acres of TLS). Impacts to Special Status Species from the application of CSU and timing limitation stipulations would be similar to those described under Alternative A, but slightly larger areas of habitat could receive some reduced impacts from CSU and TLS for oil and gas development and production activities.

Approximately 482,272 acres of the planning area would be pursued for withdrawal from locatable mineral



entry, 74,286 fewer acres than Alternative A, and 768,989 acres would be closed to geothermal leasing, 228,968 more acres than under Alternative A. The remaining acres in the planning area would be available for the development of locatable minerals and geothermal leasing. Impacts to Special Status Species would be similar to those described under Alternative A. Lands within the closed and withdrawn areas would be affected by surface disturbing activities from excavation of locatable minerals and geothermal development, and habitat for Special Status Species would not be damaged from those activities.

Impacts to Special Status Species habitat from the development of solid leasable minerals would be similar to those described under Alternative A. Under Alternative D, 610,342 acres would be closed to coal leasing, 124,378 more acres than under Alternative A, 1,557,520 acres would be closed to oil shale leasing, 829,715 more acres than Alternative A, and 389,552 acres would be closed to trona leasing, 34,081 fewer acres than Alternative A. The smaller areas of coal, and trona closures could result in increased damage or loss of habitat from development activities and increased disturbance to Special Status Species from the presence of humans when compared to Alternative A.

Closing 362,009 acres of lands to saleable mineral development would prevent damage or loss of Special Status Species habitat from mineral excavation on 471,710 fewer acres compared to Alternative A. Impacts to Special Status Species habitat would be similar to those described under Alternative A, but smaller areas of land would be closed to surface disturbing activities, allowing for surface disturbance, erosion, vegetation loss, and habitat fragmentation.

Impacts to Special Status Species from forest and woodland management would be similar to those described under Alternative A. In addition, Alternative D would limit logging operations on slopes steeper than 25%, which could help prevent or reduce soil loss and erosion from logging operations. Reducing or preventing soil loss and erosion could reduce sediment build up in streams, which could protect water quality and spawning gravel for fisheries. Under Alternative D, allowing the harvest of cottonwood trees could remove nesting habitat for birds and bats, disturb nearby wildlife from human presence, machinery and vehicles, and cause surface disturbance which could remove vegetation and cause erosion. Surface disturbance could result in runoff into aquatic systems, causing siltation of spawning habitat, diminished water quality, and erosion of streambanks. Erosion and increased runoff could continue in harvest areas until new vegetation is established.

Impacts to Special Status Species habitat from management of grassland and shrubland communities would be the same as those described under Alternative C.

Impacts to Special Status Species habitat from management of riparian and wetland resources would be similar to those described under Alternative A. Additional management for achieving Wyoming Rangeland Standards and PFC would maintain or improve wetland, riparian, and aquatic habitat for special status fish, macroinvertebrates, waterfowl, and other species dependent on these ecosystems. The management could reduce runoff into aquatic systems, reducing siltation of spawning habitat, improving water quality, and preventing erosion of streambanks.

Management for Special Status Species would be similar to Alternative A and impacts would be similar to those described under Alternative A. Additional management to maintain or improve habitat for migratory birds on a case-by-case basis would support special status bird species to a greater degree compared to Alternative A. Alternative D would apply greater stipulations to protect important seasonal and sensitive habitat for Special Status Species compared to Alternative A.

Impacts to Special Status Species habitat from the management for big game would be the same as those described under Alternative A. Impacts to wildlife from additional management in Alternative D to protect big game parturition habitat, crucial winter range, and migration corridors would be similar to those described under Alternative B, but would not provide as much protection as Alternative B.

Impacts to Special Status Species habitat from the management of fish would be similar to those described under Alternative A. Under Alternative D, additional management including avoiding surface disturbance within 100-year flood plains and fish-bearing streams could provide greater protection for special status fish and important habitat for fish reproduction than compared to Alternative A.

Impacts to Special Status Species habitat from the management of special status plant species would be similar to those described under Alternative A. Under Alternative D, additional management could prevent surface disturbance, soil loss, and direct damage or mortality of special status plants within the planning area.

Impacts to Special Status Species from the management of visual resources would be the same as those described under Alternative A for VRM Class I (225,703 acres, 14 acres fewer than Alternative A), and for the Gateway West Pipeline. Under Alternative D, 1,178,718 acres would be managed as VRM Class II, 569,046 more acres than Alternative A. The management for VRM Class II would retain the character of the landscape, which could allow for some surface disturbance, as described under Alternative A, but the classification of 1,178,718 acres would provide greater protection overall for Special Status Species. Approximately 147,976 acres of streams and riparian habitat could be protected from surface disturbance within the VRM Class II areas. Under Alternative D, 738,311 acres would be managed as VRM Class III, 122,819 more acres than Alternative A, and 1,455,234 acres would be managed as VRM Class IV, 725,189 fewer acres as compared to Alternative A. Impacts to lands managed as VRM Class III and IV would be the same as those described under Alternative A, but fewer acres would be subjected to the level of surface disturbance allowed within the VRM Class IV classification. Approximately 98,271 acres of streams and riparian habitat could be vulnerable to surface disturbing activities within the VRM Class III areas. Approximately 70,276 acres of streams and riparian habitat could be affected by surface disturbing activities within the VRM Class IV areas.

Impacts to Special Status Species from ROW management would be the same as those described under Alternative A; however, under Alternative D, 286,289 acres would be managed as ROW exclusion areas. The management would protect Special Status Species habitat from linear disturbances, surface disturbing activities, and habitat loss on 117,493 fewer acres as compared to Alternative A. Approximately 238 acres of special status plant habitat, and 17,650 acres of streams and riparian habitat would be protected from disruptive activities within the exclusion areas. Fewer acres would be managed as avoidance areas, 1,388,618 acres under Alternative D, 652,480 more acres than Alternative A. Approximately 244,969 acres of stream and riparian habitat could be protected from disruptive activities within the avoidance areas, which is more acres when compared to Alternative A.

Impacts to Special Status Species from transportation management would be similar to those described under Alternative B. Within the area designated as limited to designated roads and trails, 13,613 miles of routes would be managed as open to vehicle use. About 88 miles of routes would be limited to non-motorized or non-mechanized use, 440 miles of routes would be closed to all use, and 2,781 miles of routes and linear disturbances would be removed from the transportation network and returned to natural conditions.

Impacts to Special Status Species from livestock grazing management would be very similar to those described under Alternative A. In addition, the Pine Creek Special Status Plant enclosure would protect the only known population of small rockcress (*Arabis pusilla*) from livestock grazing and OHV use. The McKinnon Special Status Plant Enclosure is designed to protect precocious milkvetch (*Astragalus proimanthus*), which is only known to occur within 10 square miles near McKinnon. The enclosure would also protect this species from livestock grazing and OHV use.

Impacts to Special Status Species from recreation management would be the same as those described under Alternative A. Management of SRMAs would be similar to Alternative A, however fewer SRMAs but to a lesser degree compared to Alternative A.

Impacts to Special Status Species from managing OHV areas would be the same as those described under Alternatives A and B. Within the areas closed to OHV use under Alternative D there are 932 acres of sage-grouse leks which would be subject to reduced surface disturbance, less noise from vehicles, and reduced habitat fragmentation. Within the designated areas, there are 487 acres of Special Status Species habitat which could be subject to noise, dust, possible habitat damage, and disturbance from vehicles and human presence.

Impacts to Special Status Species from the management of congressionally designated trails would be similar to those described under Alternative A. Under Alternative D, additional management of eligible and congressionally designated trails could reduce or prevent disturbance or loss of habitat for Special Status Species to a greater degree when compared to Alternative A.

Impacts to Special Status Species from the management of WSAs would be similar to those described under Alternative B. Under Alternative D, if WSAs were not designated as wilderness, most of the areas would be managed as ACECs. Impacts to Special Status Species from the management of ACECs are described in detail under Alternative A.

Impacts to Special Status Species from the management of the Red Desert Management Area (162,980 acres), Pine Mountain Management Area (62,760 acres), and the Sugarloaf Basin Management Area (87,240 acres) would be very similar to Alternative A although fewer management areas would be retained under Alternative D. Where protective management is applied, it would support forage, habitat, migration corridors, and other important areas for raptors and other Special Status Species.

Impacts to Special Status Species from the management of South Pass Historic Landscape, Little Mountain, Special Status Plants, and Steamboat Mountain ACECs would be the same as those described under Alternative A.

Impacts to Special Status Species from not retaining the ACEC designations for Cedar Canyon, Greater Sand Dunes, Natural Corrals, Oregon Buttes, Pinnacles, and Pine Springs ACECs would be the same as those described under Alternative C.

Impacts to Special Status Species from the management of National Historic Landmarks would be the same as those described under Alternative B.

Impacts to Special Status Species from reducing or minimizing risk to humans and the environment from hazardous materials would be the same as Alternative B.

## **4.9 WILD HORSES**

### **4.9.1 Assumptions**

The analysis is based on the following assumptions:

- Approximately five acres would be disturbed, and vegetation and forage removed, through constructing and using wild horse traps every three to four years for gathering.
- The number of wild horses would increase about 20% annually and be maintained by periodic removals.
- Wild horse removals (gathers) would occur about every four to five years in each herd management area (HMA).
- Maintenance of wild horse populations at appropriate management levels (AML) within existing

HMAAs would be accomplished through removals and selected application of other population growth suppression methods.

- Wild horse gathers would use existing trap locations for the most part. About 30 acres have been disturbed from the development of existing traps.
- Wild horse management would be in compliance with the Wild Free Roaming Horses and Burros Act of 1971 implementing applicable regulations and BLM policies.

## 4.9.2 Alternative A

Impacts to wild horses would not occur from forest and woodlands, cultural, and paleontological management.

Management to prevent emissions, airborne pollutants, or particulate matter would ensure overall health of forage resources, ecosystems, and water resources for wild horses. Efforts to control dust on roads could reduce dust accumulation on forage for wild horses. Indirectly, management for air quality could reduce airborne pollutants or particulate matter that could protect forage resources or water quality for wild horses.

Impacts to wild horses from soils, water quality, and watershed management, such as avoiding disturbance near water and limited reclamation potential soil resources and conducting stream restoration projects aimed at reducing erosion in watersheds and improving water quality, would provide long-term benefits to wild horses by enhancing habitat and increasing forage production. This would also contribute to the attainment of the Wyoming Land Health Standards. Closing 100-year flood plains, wetlands, and riparian areas to new, permanent facilities would protect these areas from vegetation removal and support water quality for wild horses.

Impacts on wild horses from mineral development and other surface disturbances would include temporary displacement of wild horses and direct removal of forage. Effects from most mineral development would be temporary, as the vegetative conditions on most sites are ultimately reclaimed, and displacement from areas experiencing increased human activity related to mineral development would likely not be long-term. Oil and gas development activities would involve land-clearing and surface disturbances, such as the construction of well pads, roads, and pipelines. These actions remove and disturb vegetation and increase the potential for the introduction and proliferation of noxious weeds, subsequently decreasing the overall health of available forage both in the short term during construction activities, and long term, as permanent structures, such as well pads, pits, and roads are maintained. In addition, fluid mineral development activities could increase the potential for harassment and loss from vehicle collisions.

Management actions that restrict surface disturbing activities include site-specific TLSs (for all HMAAs) (1,442,957 acres), CSU stipulations (1,182,733 acres), and NSO stipulations (240,107 acres). Applying CSU or timing limitation stipulations to geothermal and oil and gas leasing could reduce seasonal disturbance from human activity. Applying NSO stipulations to geothermal and oil and gas leasing could prevent damage or removal of forage and could help reduce runoff of soils or pollutants into aquatic habitat, supporting water quality.

Closing lands within HMAAs to oil and gas leasing (193,885 acres), mineral material sales (for all HMAAs) (364,016 acres), and areas proposed for withdrawal from locatable mineral entry (for all HMAAs) (234,197 acres) would prevent forage loss and support water quality for horses. Preventing surface disturbance could reduce the introduction and spread of invasive, non-native plant species which would support native vegetation and forage levels.

Geophysical exploration subject to appropriate BMPs, and adherence to state of Wyoming standards for geophysical operations, would result in minor, short-term increased stress, displacement, and disruption of wild horse activities resulting from human presence, noise, equipment, and vehicles present during

geophysical activities.

Solid leasable mineral exploration and mining could disrupt wild horses from human presence and noise and could result in vegetation (forage) loss during mining operations. Disturbance from mining activities could result in wild horses moving from high quality habitat to areas of lower quality, less desirable habitat.

Mitigation measures for mineral leasing could reduce damage or removal of forage, soil loss, and erosion. Mitigation would reduce the amount of runoff into aquatic habitat, supporting water quality Reclamation of vegetation could increase forage, stabilize soils, and support water quality for wild horses.

The impacts to wild horses from wildland fire management would be direct and indirect, and most likely short-term and localized. Wildfires and prescribed fires would result in a temporary displacement of wild horses and short-term reduction in available forage. However, burned areas would provide improved forage production in the long term and create a mixture of vegetative communities with diverse species, cover, and age classes. Wildfire suppression activities, such as fire lines and staging areas, would also result in short-term forage losses. These areas would be reseeded and/or fenced, where necessary, until the vegetation recovers. Concentration of horses on new growth in wildfire areas could increase, which would slow the recovery of the vegetation.

As with wildfire, implementation of fuels management activities would create short- and long-term impacts to wild horses. In the short term, fuels reduction activities would temporarily displace wild horses from a localized area. In the long term, fuels reduction treatments, including returning fire to its natural role in the ecosystem, would result in improved forage production for wild horses.

Vegetation management activities could benefit wild horses and their habitat. Management actions designed to enhance vegetative conditions would increase vegetative diversity and forage available to wild horses. Vegetation treatments in the HMAs, including treatments for ecologic health, rangeland treatments for livestock, or noxious weed treatments would displace wild horses and result in a short-term loss of forage. In the long term, vegetation treatments would improve overall vegetation health and diversity. If vegetation treatments were adequately protected from grazing in the short-term following the treatment, the quantity or quality of forage could increase. Noxious and invasive weed treatments would reduce competition with native vegetation, which would provide increased forage in treated areas. However, weed infestations that are left untreated would continue to reduce available forage for wild horses. Implementation of the Wyoming Land Health Standards would help support the health of range resources upon which wild horses rely.

Requiring PFC as the minimum acceptable level of ecological condition for riparian and wetland habitat would maintain and improve the health of both upland and riparian vegetation, which would have the indirect effect of increasing forage levels available for wild horses. Managing wetlands in accordance with current laws, limiting surface disturbance, and herbicide application within 500 feet of riparian areas and floodplains would aid in maintaining or improving forage conditions within these areas. Reclamation of riparian vegetation could stabilize soils, support water quality, and indirectly increase forage for wild horses.

Management actions to improve habitat for wildlife, prevent habitat fragmentation, and provide protection from human activity would benefit wild horses by maintaining and improving forage production, reducing human disturbance, and enhancing habitat conditions. Allowing wild horse water developments in crucial habitat would benefit wild horses by providing an additional source of water. There is potential that competition for resources between wild horses and big game species would occur. Management actions to improve wildlife habitat would decrease competition for forage and other habitat components between wildlife and wild horses if improvements took place within any HMA.

Protections aimed at conserving sensitive vegetation communities and Special Status Species would affect wild horses by enhancing overall vegetation conditions and consequently increasing forage production.

Fencing would affect the wild and free-roaming character of the wild horses and could limit the amount of available forage. However, fenced areas would be relatively small in comparison to the acreage available in the HMAs.

Impacts to wild horses from VRM would be minimal. Available forage for wild horses would not be impacted by development and associated surface disturbance within VRM Class I designation (225,720 acres), which precludes development. Lands managed as VRM Class II (582,670 acres) could allow some surface disturbance. VRM Class III (615,490 acres) and VRM Class IV (2,180,420 acres) could allow for the greatest surface disturbing activities to occur, which could remove or damage forage resources, removal of vegetation for wild horses, and lead to the introduction or spread of invasive, non-native plant species.

Allowing development of renewable energy projects could result in damage or removal of forage and could result in runoff into aquatic systems and diminished water quality. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation for wild horses. Applying BMPs could prevent or reduce surface disturbing activities, which prevent damage or removal of forage, reduce fragmentation of habitat, and prevent disturbance to wild horses.

Management of 426,709 acres of ROW exclusion and 736,138 acres of avoidance areas could prevent or reduce surface disturbance, prevent damage or removal of forage, reduce fragmentation of habitat, and prevent disturbance to wild horses if ROWs were not developed. Development in existing sites could reduce impacts to forage as the surface disturbing activities would be more concentrated, resulting in less forage removal and disturbance by human activity.

Management for transportation, including closing and rehabilitating unused roads and trails would help improve habitat for wild horses, minimize forage loss, and soil erosion, which would maintain or improve water quality for wild horses. Co-locating infrastructure within travel corridors could cause disturbance to vegetation, but it would likely be in previously disturbed habitat and have limited impact on available forage. Construction activities could disturb wild horses, possibly causing species to vacate the area to lower quality habitat. Reclamation or restoration of existing roads, trails, or other linear disturbances could create new forage and support expanded biophysical settings.

Livestock grazing activities could affect wild horses, since their food source overlaps with that of domestic livestock. However, because of the provisions and restrictions of grazing management actions, the overall effects would likely be beneficial. Implementation of the Wyoming Land Health Standards would help ensure a healthy rangeland conditions, thereby providing adequate forage levels for wild horses. Most range improvements or water developments designed to facilitate livestock management would also benefit wild horses and their management.

Although livestock operators could activate AUM use to the fully permitted amount, anticipated use of AUMs would continue to be similar to historic levels and not result in additional grazing pressure on available forage for wild horses. Because adjustments to livestock grazing use only occur after monitoring or field evaluations and documentation indicates that such an adjustment is necessary, some isolated cases of increased competition for, or overuse of, forage and water could occur during periods of drought or other adverse conditions, affecting overall productivity within the HMAs. The extent of the competition or overuse, and thereby the intensity of the impacts, would vary based on the time between monitoring findings and adjustments to grazing use. Wild horses would be excluded from riparian habitat where necessary to meet the Wyoming Land Health Standards, which would limit access by wild horses to some water sources and riparian forage. Prohibiting placement of salt and mineral supplements within 500 feet of riparian areas would help protect water quality. Water developments would improve distribution of wild horses within each HMA. Attainment of the Wyoming Land Health Standards in upland areas would result in improved plant vigor, production, and diversity of species available as forage for wild horses as well as other grazing animals.

Recreation management would result in localized short-term impacts. Specifically, wild horses would be temporarily displaced from preferred locations from direct human disturbance, such as recreational wild horse viewing, hiking, hunting, and camping. Some impacts could result from the temporary removal of vegetation in concentrated areas used by special recreation groups. Staging activities and events on designated roads would prevent surface disturbance and forage loss. Long-term, repeated interactions with recreationists could desensitize wild horses' reactions to human presence and reduce this wild nature of the horse herds.

Short-term direct impacts to wild horses would be caused by proximity to OHV use, whether for research, recreational OHV use, or recreational wild horse observation. Recreational OHV use within HMAs would result in temporary displacement of wild horses from preferred habitats. Fugitive dust from vehicle use would settle on forage adjacent to existing roads, making it less palatable for consumption until removed by either wind or precipitation. This would reduce the available forage for livestock, wildlife, and wild horses in areas where vehicle traffic is frequent and increase competition for remaining forage. Under this Alternative, 968,959 acres of OHV use would be limited to designated roads and trails and 2,398,839 acres of OHV use would be limited to existing roads and trails. OHV use limited to existing roads and vehicle routes would continue, which could contribute to accelerated soil erosion and desertification associated with gullies, resulting in reduced plant cover, production, and species composition.

The recreational opportunities provided by retaining historic trails and the Continental Divide National Scenic Trail and the Green River as SRMAs would encourage recreational use, which could cause temporary displacement of wild horses from preferred foraging areas. Such impacts would be short term and minimal because of the limited use these trails receive. Developing suitable wild horse herd viewing areas to enhance public viewing of horses would provide an opportunity to educate the public on the importance of appropriately managing the wild horse program that would benefit the intent of the wild horse herd viewing areas and ensure that minimal impacts on the horses would occur.

By not designating the Red Desert Watershed area as an ACEC, the area would be open to potential impacts to wild horses. However, there would be little impacts since wild horse herd management would remain consistent with the wild horse herd management plan for the area. Construction of wild horse traps and range improvements would be allowed provided the management objectives of the area can be met.

Potential impacts to wild horses resulting from the management of special designations would be negligible and restricted to the management area and to areas directly adjacent to the historic trails. Restrictions on development in the SD/MAs preclude, restrict, or require mitigation for surface disturbing activities, which would protect vegetation within these areas. Protections aimed at conserving sensitive vegetation communities, and limitations on mineral development and other surface disturbing activities, would benefit wild horses by enhancing overall vegetation conditions and subsequently increasing forage production. Short-term effects to vegetation and soils would occur at wild horse trap sites when gathers are being conducted. Vegetation would be disturbed by trap construction, and short-term trails and soil compaction may develop near and in the trap. Any vegetation removed would be minimal and localized.

### **4.9.3 Alternative B**

Impacts to wild horses from transportation management, and backcountry byways would be the same as those described under Alternative A.

Impacts to wild horses from air quality management would be similar to those described under Alternative A. Under Alternative B, additional management to reduce dust and emissions could support forage quality by reducing accumulation of dust particles on vegetation to a greater degree compared to Alternative A.

Under Alternative B, soil, water quality, and watershed management activities would benefit wild horses through enhancement of vegetation resources aimed at reducing erosion and improving water quality.

Prohibiting the use of fire suppression chemicals within 1,320 feet (¼ mile) of surface water would protect forage for horses and water quality from these chemicals to a greater degree compared to Alternative A. Prohibiting salt blocks and other nutritional supplements within 2,640 feet (½ mile) of surface water sources, riparian areas, and wetlands could distribute forage use and reduce impacts on water sources from over use or degraded water quality.

Managing lands with wilderness characteristics could protect forage from surface disturbing activities and prevent the removal or damage of forage, prevent soil loss, erosion, or removal of habitat for plant species, and prevent the introduction or spread of invasive, non-native plant species. Closing all lands with wilderness characteristics to mineral leasing and development, and management as exclusion areas for ROWs could protect these areas from surface disturbing activities and could benefit wild horses. Increased restrictions on surface disturbing activities would protect forage and water quality and would reduce human activity, thereby reducing potential stress to animals.

Impacts to wild horses from the management of mineral resources would be similar to those described under Alternative A. Under Alternative B, increased restrictions on surface disturbing activities from mineral development would support forage and water resources to a greater degree. Applying lease stipulations and closing lands to mineral leasing and development within this alternative would decrease the amount of surface disturbing activities, thereby maintaining vegetation for wild horses. Management actions that restrict surface disturbing activities include TLSs (for all HMAs) (638,521 acres), CSU stipulations (107,371 acres), and NSO stipulations (489,689 acres). Closing HMA lands to oil and gas leasing (1,116,705 acres, a 476% increase over Alternative A), mineral material sales (2,152,715 acres), and proposed for withdrawal from locatable mineral entry (1,618,782 acres) would protect larger areas of forage and habitat compared to Alternative A.

Impacts from fire and fuels management would be similar to Alternative A, except wildfire for resource benefit would be emphasized to improve forage condition in HMAs when they occur. As a result, more vegetation could be burned during the life of the plan, thereby increasing the likelihood of maintaining vegetation in an early seral stage and improving the condition of the forage. Where wildfire for resource benefit occurs, short-term impacts would be loss of vegetation and localized increased competition for forage; and long-term impacts would result in possible concentration on burned areas and associated delays in vegetation community responses.

Impacts to wild horses from vegetation management would be similar to those described under Alternative A. Management, such as riparian management exclosures under Alternative B would provide additional benefits for wild horses and their habitat compared to Alternative A. Short-term, horses could be excluded from water and forage; long term, exclosures could benefit wild horses by improving water quality and riparian forage conditions. However, the provision under this alternative that allows exclosures to be removed could partially offset these impacts.

Impacts to wild horses from wildlife and fisheries management would be similar to Alternative A; however, additional measures for wildlife protection would be implemented under this alternative. Impacts to wild horses from the management to improve habitat for wildlife, prevent habitat fragmentation, and provide protection from human activity would benefit wild horses and their habitat by maintaining and improving forage production to a greater degree when compared to Alternative A. Surface disturbing and disruptive activities in sensitive species habitat, as well as migration and transitional ranges, would be managed and could decrease disturbance during sensitive periods, such as foaling.

Impacts to wild horses from VRM would be similar to Alternative A, except 2,148,902 acres would be designated as VRM Class II. The VRM Class II designation, in some cases, could preclude surface disturbing activities or preclude facility placement, which could protect forage available to wild horses.

Impacts to wild horses from the management of renewable energy and ROWs would be similar to those



described under Alternative A. Under Alternative B, 2,480,876 acres of ROW exclusion and 133,903 acres of avoidance areas could prevent or reduce surface disturbance, removal of vegetation, and prevent the introduction or spread of invasive, non-native plant species to a greater degree when compared to Alternative A. The management could support more forage and undisturbed habitat for wild horses than Alternative A.

Impacts to wild horses from livestock grazing management would be very similar to those described under Alternative A. Under Alternative B, the construction and maintenance of livestock range improvements and water developments would maintain healthy forage conditions, prevent overuse of vegetation resources, and ultimately benefit wild horses.

Impacts to wild horses from recreation management would be similar to Alternative A; however, additional management to protect natural resources could support vegetation health and water quality for horses to a greater degree than Alternative A.

Impacts to wild horses from OHV use would be the same as those described under Alternative A. Routes would only be managed as limited to designated road and trails within 3,367,576 acres which could focus vehicle use to only well used routes, preventing further vegetation loss or disruption of animals from vehicle use on 'existing' routes.

Management for special designations would protect wild horses to a greater degree than Alternative A. Management aimed at conserving sensitive vegetation communities, and limitations on mineral development and other surface disturbing activities, would benefit wild horses by enhancing overall vegetation conditions and subsequently increasing forage production.

#### **4.9.4 Alternative C**

Impacts to wild horses would not occur from forest and woodlands, cultural, paleontological, and lands and realty management. Impacts to wild horses from VRM, ROWs, transportation management, and backcountry byways would be the same as those described under Alternative A.

Impacts to wild horses from soils, water quality, and watershed management actions would be similar to those described under Alternative A. Less protective management, such as considering the avoidance area around riparian zones and floodplains on a case-by-case basis would provide less protection to vegetation resources from surface disturbing activities and possibly result in degraded forage conditions in these areas when compared to Alternative A.

Under this alternative, lands with wilderness characteristics would not be managed to protect the characteristics, which could allow for surface disturbing or disruptive activities to occur within these areas. This could result in damage or loss of forage, soil compaction, and degradation of water quality. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species that could alter native vegetation, which could degrade forage for wild horses.

Impacts to wild horses from the management of mineral resources would be the same as those described under Alternative A. Under Alternative C, management actions that restrict surface disturbing activities include TLSs (for all HMAs) (1,460,801 acres), CSU stipulations (1,1016,435 acres), and management of areas as NSO (43,807 acres). Closing areas to oil and gas leasing (150,403 acres, a 22% decrease compared to Alternative A), closing areas to mineral material sales (193,870 acres), and proposing areas for withdrawal from locatable mineral entry (150,581 acres) would protect habitat for wild horses to a lesser degree when compared to Alternative A.

Impacts to wild horses from fire and fuels management are similar to Alternative A. In addition, additional fire suppression efforts would possibly maintain existing forage in HMAs that would otherwise burn in

wildfires.

Impacts to wild horses from vegetation, wildlife and fisheries, and Special Status Species would be the same as those described under Alternative A. However, benefits from wildlife habitat management would be less extensive than under the other alternatives because of less restrictive actions to protect wildlife habitat. This management could reduce availability of vegetation resources for wild horses when compared to Alternative A.

Impacts to wild horses from livestock grazing management would be the same as those described under Alternative A, except more water development actions would occur, which would increase the availability of water for wild horses.

Impacts from recreation management would be similar to Alternative A; however, increased recreation opportunities could reduce the wild and free-roaming nature of the horses.

The effects on wild horses resulting from the development of ROWs would be similar to those identified for Alternative A. The difference is that 225,784 acres would be excluded from ROW development (200,925-acre decrease), increasing areas of disturbance and vegetation removal that would be vulnerable to the introduction and spread of invasive, non-native plant species, which could alter native vegetation for wild horses.

Increasing open OHV use within approximately 500 additional acres would result in impacts similar to those described under Alternative A, but additional habitat for wild horses could be affected.

Under this alternative, no areas would be designated as ACECs and special management areas would not be retained. Removing the restrictions could increase surface disturbance which could increase the short-term displacement of wild horses and decrease available forage, leading to a greater loss in the wild and free-roaming nature of wild horses than any other alternative.

#### **4.9.5 Alternative D**

Impacts to wild horses would not occur from forest and woodlands, cultural, paleontological, and lands and realty management.

Impacts on wild horses resulting from implementing management actions for air quality, water resources, fish and wildlife, Special Status Species, cultural resources, paleontological resources, recreation, and livestock grazing would the same as those presented under Alternative A.

Impacts on wild horses from soils, water quality, and watershed management would be similar to those identified under Alternative A. However, less restrictive management in floodplains and riparian areas would allow increased vegetation removal within these areas, possibly leading to forage reduction for wild horses to a greater degree when compared to Alternative A.

Under Alternative D, lands with wilderness characteristics would be managed for multiple use which could reduce development activities within these areas, but to a far lesser degree than under Alternative B. Surface disturbing activities could result in removal and damage to vegetation resources, which would reduce available forage for wild horses.

Impacts on wild horses from managing fluid mineral leasing and development would be similar to those presented under Alternative A. Under Alternative D, management actions that restrict surface disturbing activities include TLSs (for all HMAs) (673,078 acres), CSU stipulations (634,756 acres), and NSO stipulations (20,105 acres). Across the HMAs, 62,327 acres would be closed to fluid mineral leasing (77% decrease compared with Alternative A). The decrease of closed lands could allow for more vegetation

resources to be damaged or removed by fluid mineral leasing activities when compared to Alternative A.

Impacts on wild horses from locatable and saleable mineral development activities would be similar to those presented under Alternative A, except the area in which such mineral development is prohibited across HMAs would be reduced to 61,153 acres for locatable minerals (87% decrease compared with Alternative A) (Table 2-3, Map 2-4) and to 82,471 acres for saleable minerals (44% decrease compared with Alternative A) (Table 2-8, Map 2-16). This would increase the area in which vegetation resources could be impacted by locatable and saleable mineral development activities, which would increase the potential for vegetation removal and thereby decrease forage levels for wild horses.

Impacts on wild horses from managing fire and fuels would be the same as those presented under Alternative B.

Impacts on wild horses from managing vegetation resources would be similar to those presented under Alternative A. Under Alternative D, prescribed fire would not be the preferred method for vegetation treatments as it is under Alternative A. However, because all vegetation treatment types are available under Alternative D, the impacts on forage resources would be essentially the same.

Impacts on wild horses resulting from implementing VRM actions would be similar to those presented under Alternative A, except the number of acres designated as VRM Class II would be greatly increased to 1,178,718 acres (102% increase compared with Alternative A) (Table 2-9 Map 2-20), which could lead to decreased degradation and removal of forage.

Impacts on wild horses resulting from implementing lands and realty actions would be similar to those presented under Alternative A, except the extent of the impacts would be reduced. The number of acres designated as ROW exclusion areas would be decreased to 286,289 acres (33% decrease compared with Alternative A) (Table 2-10, Map 2-24), which would decrease the area in which ROW development activities are prohibited compared to Alternative A.

Impacts on wild horses from managing OHV use would be similar to those presented under Alternative A, except the area currently designated as “limited to existing roads and trails” (3,367,576 acres) would be changed to “limited to designated roads and trails” and all routes within this area would be designated as open, closed, or limited.

Impacts on wild horses from managing special designation areas would be similar to those presented under Alternative A, except they would occur over a smaller area (246,634 acres) and thereby offer fewer protections to important values in these areas. This would increase surface disturbing activities and indirectly help to protect and maintain healthy forage resources.

## **4.10 WILDLAND FIRE ECOLOGY AND MANAGEMENT**

Impacts on wildland fire ecology management primarily affect the ability to utilize prescribed fire and other vegetation treatments (e.g., mechanical, chemical, and biological) to manipulate vegetation for improved wildland fire management. Impacts on wildland fire management primarily result from activities that affect fire intensity, size, frequency, and the ability to suppress/fight wildfire. Activities that impact fire intensity, size, and frequency include the presence of human ignition sources and changes in vegetation health, composition, and volumes that lead to fire fuel loading and loss of natural fire fuel breaks.

Impacts to wildland fire ecology and management would be minimal or not be anticipated as a result of implementing management actions for riparian and wetlands resources.

### **4.10.1 Assumptions**

The analysis is based on the following assumptions:

- Fire is an important functional and natural disturbance in many of the ecological systems found in the Rock Springs planning area.
- The Greater Little Mountain area is where fire occurrence suppression efforts and fuels reduction projects have been primarily concentrated.
- Four types of fuels reduction treatments are being utilized or considered for use in the planning area. The treatments are prescribed fire (planned ignitions); mechanical (e.g., mowing, mastication, and cutting.); chemical (e.g., aerial application of a pre-emergent herbicide to reduce cheatgrass); and biological (e.g., use of the *Diorhabda* beetle to control the spread of tamarisk (salt cedars) along waterways.
- Aspen, mountain shrubs, sagebrush, conifer, and juniper types are the primary fire fuel types in the planning area.
- Historic exclusion of fire through aggressive suppression activities in the planning area have resulted in fuels and vegetation becoming misaligned with natural fire regimes. Plants whose distribution and habitat were controlled naturally through fire have been allowed to increase in size and extent. Dead vegetation has been allowed to accumulate, creating a high fuel load that is prime for supporting wildfires.
- The overall fire effect in the planning area has been the opening of dense vegetation (brush or tree) and the setting back of ecological systems to a highly productive perennial grass/brush stage.
- A direct relationship exists between the density of human use within the planning area and the frequency of human-caused fires.
- Fire suppression costs are largely dependent on site-specific factors which vary on a case-by-case basis and would not vary by management alternative.

#### **4.10.2 Alternative A**

Management actions to meet, maintain, or improve air quality could affect wildland fire through the application of air quality measures resulting in the prevention or reduction in the use of fire to maintain air quality. Air quality regulations, restrictions, and BMPs would be imposed on wildland fire ecology and management activities in the planning area. The utilization of mechanical and/or chemical fuel reduction treatment methods (and the surface disturbing activities associated with all treatment methods) would also be impacted by air quality regulations. Those air quality regulations could potentially limit the application, timing, and/or frequency of prescribed burns to accomplish wildland fire management objectives, including those that are for habitat improvements. Limiting the use of prescribed fire and other vegetation treatments could result in fuel loading which could increase the frequency and intensity of future wildfires and thereby require greater efforts to accomplish suppression of those fires.

Management actions to maintain or improve soil condition and productivity could incorporate prescribed fire, mechanical, and/or chemical treatments of vegetation in their efforts. Prohibitions or limits on surface disturbing activities and surface occupancy to directly benefit soils and plant communities could decrease human presence and construction, operations, and vehicular activities; which would reduce potential ignition sources (and wildfire occurrence) in the planning area. Management that would prohibit the use of prescribed fire for fuel treatments to improve soil health could result in the establishment of unhealthy, non-diverse vegetation communities and high fuel loading which could increase the frequency and intensity of future wildfires and thereby require greater efforts to accomplish suppression of those fires.

Management actions to maintain, enhance, and protect watershed health such as prescribed fire, mechanical,

and chemical treatments of vegetation could be applied in the development of mosaic communities and natural fire fuel breaks that could help reduce wildfire frequency and intensity. Prohibitions or limits on surface disturbing activities and surface occupancy to directly benefit water resources could decrease human presence and construction, operations, and vehicular activities, which would reduce potential ignition sources (and wildfire occurrence) in the planning area. Management that would prohibit the use of prescribed fire for fuel treatments to improve vegetation health could result in the establishment of unhealthy, non-diverse vegetation communities and high fuel loading which could increase the frequency and intensity of future wildfires and thereby require greater efforts to accomplish suppression of those fires.

Activities associated with mineral exploration and development would increase human presence, the use of heavy equipment, surface disturbances, and infrastructure development and occupancy (e.g., powerlines, compressors, pipelines, and fuel tanks) in the planning area. Those actions would introduce additional ignition sources (e.g., related to construction, operations, and vehicular activities) and increase the probability of wildfire occurrence; and thereby increase the need for fire suppression activities. Suppression activities within highly developed areas could be more dangerous, time-consuming, and expensive than suppression in undeveloped areas. Surface disturbance caused by mineral resource development activities could result in damage or removal of vegetation. Intact healthy native plant communities contribute to a mosaic vegetation structure and natural fire fuel breaks that could help reduce wildfire frequency and intensity. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species. The establishment of non-native, vegetation communities that lack diversity could alter the natural fire regime and lead to high fuel loading which could increase potentials for high-intensity wildfires. Limiting or closing areas to surface disturbing activities by identifying closure areas and applying lease stipulations could help protect existing native plant communities and reduce the potential for non-native plant invasions. Mineral development areas could also provide increased accessibility to remote areas for fire suppression equipment.

Under this alternative, 540,021 acres in the planning area are closed to fluid mineral (oil, gas, and geothermal) exploration, leasing, and development; 556,558 acres are proposed for withdrawal from locatable mineral entry; and 833,719 acres are closed to saleable mineral development and/or disposals (Tables 2-3, 2-4, and 2-8 and Maps 2-1, 2-5, and 2-13).

Wildland fire ecology and management is focused on restoring natural fire regimes and frequencies to the landscape to meet multiple-use resource objectives; and applying control and suppression methods as necessary (ecologically, socially, and legally) to protect life, property, and resource values in the planning area. Prescribed fire, mechanical, chemical, and/or biological treatments of vegetation would be utilized in fire ecology management efforts. Treatments would prepare areas for restoration, enhance the growth and health of native plant communities, eliminate/reduce invasive species, and result in the development of mosaic communities and natural fire fuel breaks that could help reduce wildfire frequency and intensity. Low-intensity wildfires would be more easily controlled and could even be managed to benefit the ecology of the planning area.

Management response for wildfires would be identified and implemented depending on the resources and management objectives for the area. Applying maximum fire suppression in developed or sensitive areas would reduce fire size and intensity and increase the ability to control fires and protect important resources from fire damage. Fire suppression actions could prohibit or limit wildfire from functioning in its natural role in the ecosystem. Prohibiting the use of chemical fire suppression agents at rock art sites and other special management areas could limit the ability to control fires, fire damage, or destruction in those areas. Without natural wildfire, vegetation volumes grow and become old (and usually less diverse and healthy), fuel loads build, and the likelihood of high-intensity, more destructive fires would increase. Large, intense fires would put additional strain on fire management programs to accomplish control or suppression.

Management to allow multiple fuels and fire management tools would facilitate the reduction of fuel loads and allow a greater variety of suppression methods, which in turn could decrease the occurrence of high

frequency and high-intensity wildfires.

Managing for the health and composition of the forest and woodlands to improve vegetative health in forest and woodland communities through harvest, treatments, and collection, of forest products would reduce fuel accumulation in wooded areas and subsequently could reduce wildfire intensity and extent. Timber harvests could also reduce overall canopy bulk density, (which would inhibit the movement of fire through the canopy), open areas to regeneration of vegetation, and promote mosaic patterns of plant communities and natural fire breaks. Clear cut harvests would create fire breaks that could be effective in preventing the spread of wildfires. Activities associated with commercial harvests (and to a much lesser extent, non-commercial harvests) would increase human presence, the use the heavy equipment, and surface disturbance, which would increase the potential for unintentional ignitions, damage, or destruction of existing vegetation, and create areas of disturbance that could be vulnerable to the introduction and spread of non-native plant species. This, in turn, could increase wildfire occurrences, and thereby increase the need for fire suppression activities. Management to promote successful forest revegetation could help to reduce the spread of invasive, non-native plant species and create a natural diversity of vegetation and seral stages which could prevent or reduce future catastrophic wildfires. Management to suppress wildfires occurring in or directly threatening a developed or active timber sale would reduce fire intensity and extent and increase the ability to control fires and protect important timber resources from fire damage.

Management actions to prevent the introduction, establishment, and proliferation of invasive species (vertebrate, non-vertebrate, and plant), noxious weeds, pests, and/or diseases by implementing control techniques, treatment methods, and BMPs could help reduce the risk of catastrophic wildfire in the planning area. Management such as prescribed fire, mechanical, chemical and/or biological habitat treatments could support healthy native vegetative communities that contain mosaic patterns and natural fuel breaks which help to slow the spread of wildfires, fuel lower-intensity fires, and allow fires to be more easily controlled. Humans, vehicles, and equipment associated/utilized in fire management activities could be potential conduits for the inadvertent relocation of invasive species, pests, and diseases. Treatments to control or remove invasive species, pests, and diseases could prevent or slow the spread of invasive, non-native vegetation or the die off of native vegetation, both leading to the build-up of fuels and the increased threat of fire. The management could reduce the occurrence of high-intensity fires that could result in changes to soil chemistry, damage to root structure, loss of vegetation, a greater potential for non-native species to become established, and direct damage or destruction of natural resources and manmade structures. Catastrophic wildfires would put additional strain on fire management programs to accomplish control or suppression.

Management for fish and wildlife resources through maintaining, restoring, or improving the biological integrity of terrestrial and aquatic ecosystems by reducing habitat loss, supporting long-term recreational and educational benefits, and by providing for consumptive and non-consumptive wildlife and fisheries resource uses could help reduce fuel loads and prevent large wildfires. Seasonal and/or distance limitations for wildlife habitat are applied as necessary to protect sensitive wildlife areas from development and/or disruptive activities during sensitive time periods in animals' life cycles, such as nesting, birthing, and wintering would impact the application of fire fuel treatments and suppression methods to these habitats. Management to avoid, minimize, or mitigate environmental impacts to fish, wildlife and their habitats could include the use of prescribed fire, mechanical, chemical and/or biological treatments of vegetation to attain habitat objectives. The use of prescribed fire could reduce fuel accumulations and subsequently reduce occurrences of high-intensity wildfires.

Management actions to protect high priority and Special Status Species by developing and implementing habitat management plans, invasive species/pest management plans, activity plans, mitigation measures, or land use restrictions could help reduce fuel loads and prevent the occurrence of large, catastrophic wildfires. Prescribed fire, mechanical, chemical and/or biological treatments of vegetation could be used to prepare areas for restoration, enhance the growth and health of native and/or special species communities, and eliminate/reduce invasive species. Prescribed fire could reduce hazardous fuel accumulations and promote the development of mosaic communities of varied seral stages and natural fire fuel breaks. The management

could potentially reduce the occurrence of high-intensity wildfires.

Management actions designed to protect cultural and paleontological resources could both reduce the risk of fires and reduce the ability to suppress fires in certain areas. Management plans would include analyzing and considering the potential effect of fires and fire suppression methods on known or possible locations of cultural and paleontological resources so that site specific protection, mitigation, and restoration actions could be developed and implemented as needed. Cultural and paleontological sites could have land use and surface disturbing restrictions that could prevent or limit certain fire fuel treatment and suppression techniques. The use of fire-retardant chemicals containing dyes would be prohibited at the Tolar, White Mountain, Cedar Canyon, Sugarloaf, and La Barge petroglyph sites. This management could reduce the ability to suppress wildfires in those areas, which could lead to more intense fires and increased firefighting efforts.

Management actions to minimize impacts to areas of tribal importance (sacred, spiritual, respected, and/or traditional cultural settings, properties, or resources) could affect the use of fuel treatments and suppression techniques. The management could result in intensified efforts to suppress fires in these areas, along with increased costs and staffing needs.

Management to meet the objectives of the established VRM classifications could affect wildland fire management in areas where visual resources would prohibit fire management activities such as the construction of fire lines, use of prescribed fire for fuel reduction, or suppression activities. Managing for VRM Class I or II could potentially limit fuel vegetation treatments and suppression methods. Fuel reduction and fire suppression techniques could be applied in areas within VRM Class III and IV to reduce wildfire severity and occurrence on portions of the landscape. Prescribed fire could reduce hazardous fuel accumulations and promote the development of mosaic communities and natural fire fuel breaks, reducing the threat of destructive wildfires. Applying maximum fire suppression would reduce fire intensity and extent and increase the ability to control fires and protect important resources from fire damage. Fire suppression actions to protect visually sensitive areas could prohibit or limit wildfire from functioning in its natural role in the ecosystem.

The management for lands and realty, including real estate transactions of acquisition, disposal, and/or pursuing withdrawals would have different impacts on wildland fire management depending on whether the actions place more or fewer acres under protective land use management stipulations. Approximately 300 acres of easements would be pursued where practical and approximately 28,000 acres are proposed for acquisition in the planning area. Land and realty management actions that make more land available for human access, recreation, mineral/timber harvest, and development in the planning area would increase human, vehicle, and equipment presence, and surface disturbances in the planning area. Those actions would increase the potential for unintentional ignitions, damage or destruction of existing vegetation, and create areas of disturbance that are vulnerable to the introduction and spread of invasive, non-native plant species. These could increase wildfire occurrences, and thereby also increase the need for fire suppression activities. Management actions that limit or reduce land availability and access/occupancy (e.g., closures, OHV restrictions, ROW avoidance stipulations) could promote healthy, diverse vegetation communities that contain mosaic patterns and natural fuel breaks. In turn, those actions could potentially reduce occurrences of high-intensity wildfires that cause direct damage or destruction of natural resources and manmade structures.

Management to explore, lease, and/or develop renewable energy projects in the planning area would primarily impact fire management techniques and plans through the impacts of increased human, vehicle, and equipment presence, and surface disturbances. The management would increase the potential for unintentional ignitions, damage or destruction of existing vegetation, and create areas of disturbance that are vulnerable to the introduction and spread of invasive, non-native plant species. This could increase wildfire occurrences, and thereby increase the need for fire suppression activities.

management techniques and plans through the impacts of increased human, vehicle, and equipment presence, and surface disturbance. The management would increase the potential for unintentional ignitions, damage or destruction of existing vegetation, and create areas of disturbance that are vulnerable to the introduction and spread of invasive, non-native plant species. These could increase wildfire occurrences, and thereby also increase the need for fire suppression activities. Some ROW developments such as powerlines and pipelines require a large-scale removal of vegetation along a linear corridor to accommodate those structures. ROWs could provide fire breaks or transportation access that would aid in wildfire suppression efforts.

Management to provide, maintain, and improve opportunities for livestock grazing could support vegetation health and could reduce hazardous fuel loads directly through grazing or from vegetation treatments. Decreasing fuel loads would potentially reduce occurrences of wildfires, thereby reducing the need for other fire fuel treatments and/or suppression activities and resources. Range and vegetation improvements promote healthy, diverse vegetation communities that contain mosaic patterns and natural fuel breaks that help to reduce fire frequency and intensity.

Recreational activities in the planning area could significantly affect wildland fire management. Four SRMAs would be designated: Continental Divide Scenic Trail (60 acres), Continental Divide Snowmobile Trail (90 acres), Green River (700 acres), and the Wind River Front (257,680 acres); and the Killpecker Sand Dunes (39,290 acres) and Oregon and Mormon Pioneer Trails (290 acres) SRMAs would be retained (Map 2-29). The Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Red Creek, Pine Mountain, Little Mountain, and Cedar Canyon areas would be managed to assure their continuing value for recreational opportunities. The Green River, Sweetwater River, Big Sandy River, and the Bitter Creek segment between the towns of Rock Springs and Green River would be managed for recreation values. The recreational opportunities that exist in the planning area attract increasing numbers of visitors. The various highways, roads, trails and methods of transportation (e.g., OHV, motorcycle, snowmobile, horse, biking, hiking) facilitate access to the public lands within the planning area and increase the distribution of visitors throughout the planning area. Maintaining developed recreation sites would encourage the use of campfires, which are a primary cause of human-caused wildfires. Careless smoking and the exhaust systems on motorized vehicles could also result in unintentional ignitions. The probability of fire ignitions and the need for fire suppression activities would increase under these conditions and allowable activities. Closing or limiting areas to recreational use or mineral development would decrease potential impacts from accidental ignitions.

This alternative allows cross country OHV use in 12,831 acres, closes 225,537 acres to OHV use, limits OHV use to designated roads and trails on 968,959 acres, and limits OHV use to existing roads and trails on 2,398,839 acres (Table 2-11, Map 2-25). OHV use under those conditions allows for a large variety of travel routes that could potentially increase the presence and distribution of OHVs in the planning area. Increases in potential ignition sources could result from greater human presence and OHV use, thereby increasing the potential for fire occurrences and the need for fire suppression actions. OHV trail availability could facilitate access to areas requiring fire suppression and could provide some usefulness as fire breaks.

Management actions to preserve and protect historical remains and historical settings/context of congressionally designated NHTs and NHT-related resources could restrict application of, or the flexibility to use prescribed fire as a tool surrounding those areas due to the VRM Class II management. Controlling surface disturbances and occupancy could reduce the introduction and spread of invasive species, and additional ignition sources; however human use of the trails could conversely increase the risk of accidental ignition. Fire suppression within these areas could be limited due to the sensitive nature of the resource and the restrictive management surrounding the trails.

Management of WSAs and WSRs could reduce the risk of accidental ignitions from machinery, vehicles, development, and humans through the prohibitions of mineral, ROW, or other development within these areas. These areas would also be managed as VRM Class I and II areas which would also prevent accidental ignitions from development or construction activities. The management could promote healthy, diverse



vegetation communities that contain mosaic patterns and natural fuel breaks and generally fuel low-intensity fires. Prohibiting or limiting human and vehicle access could also reduce ignition sources in the area, which would decrease the probability of wildfire occurrence. However, the management could preclude certain types of fire suppression activities, which would limit the ability to control large, intense wildfires.

Management actions for designated ACECs such as habitat prescriptions to manage land development, occupancy, and viewsheds could limit fire fuel treatments and suppression techniques. The management established for special management areas (e.g., reductions in surface use and disturbing activities, vehicle travel, developments) would generally benefit vegetation resources. This could help to promote healthy, diverse vegetation communities that contain mosaic patterns and natural fuel breaks and generally fuel low-intensity fires, helping to reduce fire frequency and intensity. The management could also reduce ignition sources in the area, which would decrease the probability of wildfire occurrence.

### 4.10.3 Alternative B

Impacts to wildland fire ecology and management from the management of air resources, Greater Sage-Grouse, and livestock grazing would be the same as those discussed under Alternative A.

Impacts to wildland fire ecology and management from the management of soil and geologic resources would be similar to those discussed under Alternative A, except that surface disturbing activities in areas that are highly erodible or difficult to reclaim would be managed as NSO for fluid minerals, closed to mineral material sales/disposals, and closed to all solid mineral leasing. This could help to promote healthy, diverse vegetation communities that contain mosaic patterns and natural fuel breaks and generally fuel low-intensity fires.

Impacts to wildland fire ecology and management from the management of water resources would be similar to those discussed under Alternative A, except that greater surface disturbing protections would be in place. These restrictions could help to promote healthy, diverse vegetation communities that contain mosaic patterns and natural fuel breaks and generally fuel low-intensity fires; which could help to reduce fire frequency and intensity. Use of fire suppression chemicals (including foaming agents and surfactants) would be prohibited within 1,320 feet ( $\frac{1}{4}$  mile) of surface water. Fire control/suppression could be impacted by those restrictions.

Managing all lands identified as having wilderness characteristics specifically to preserve those characteristics would provide additional restrictions on wildland fire management in the planning area. Management actions to limit surface disturbing activities, surface occupancy, and degradation of viewshed or setting impacts, and help preserve wilderness characteristics would restrict surface disturbing activities and transportation routes. These management actions would help to promote healthy, diverse vegetation communities that contain mosaic patterns and natural fuel breaks and generally fuel low-intensity fires; which helps to reduce fire frequency and intensity.

Under this alternative, 2,186,218 acres in the planning area are closed to fluid mineral (oil, gas, and geothermal) exploration, leasing, and development (1,646,197 more acres than Alternative A); 1,993,908 acres are proposed for withdrawal from locatable mineral entry (1,437,350 more acres than Alternative A); and 2,581,741 acres are closed to saleable mineral development and/or disposals (1,748,022 more acres than Alternative A) (Tables 2-3, 2-4, and 2-8 and Maps 2-2, 2-6, and 2-14). Compared to Alternative A, more acres would be unavailable to the exploration, leasing, and/or development of fluid minerals, unavailable for saleable mineral disposal, and withdrawn from locatable mineral entry. This management would reduce surface disturbing activities and occupancy which help to promote healthy, diverse vegetation communities that contain mosaic patterns and natural fuel breaks.

Wildland fire and ecology management actions would be similar to Alternative A, except more emphasis

would be placed on allowing wildfire to function as a natural management tool for improving diversity of plant species and age classes. Wildfire response would vary from full suppression in areas where fire is undesirable, to monitoring fire behavior in areas where fire can be used as a management tool in achieving resource objectives. The use of heavy equipment would be restricted to uses that are necessary to protect life or property. The prohibitions on the use of chemical fire suppression agents within ¼ mile of rock art sites, lands with special designations, and where it could adversely affect other resources is more restrictive than Alternative A. These restrictions could limit certain fire control or suppression techniques.

Similar to Alternative A, emphasis would be on forest and woodlands management that improves vegetative health and benefits other resources, except that the use of natural processes like decay, succession, and wildfire would be allowed and utilized to the greatest extent possible. This priority directly impacts the ability to utilize prescribed burns and fire control techniques to accomplish resource management objectives and/or improve habitats. Managing wildfire to most benefit the forest and woodlands ecology of the planning area requires actions to limit high-intensity fires that can directly damage or destroy commercially valuable timber stands, other non-commercial forest products, wildlife habitats, recreation areas, and manmade structures and development. Clear cut harvests create fire breaks and fire equipment access avenues that could be effective in preventing the spread of wildfires; prohibiting them under this alternative would reduce that benefit to fire control/suppression efforts. Limiting logging operations on slopes steeper than 25% (compared to 45%, under Alternative A) would reduce lands where commercial harvests could be conducted, thereby increasing fuel loading that support high-intensity fires.

Impacts to wildland fire ecology and management from the management of invasive species and pests is similar to Alternative A. Additional BMPs would be applied to protect vegetation communities from threats from noxious weed infestations. This alternative prohibit aerial application of chemicals within 2,640 feet (½ mile) of wetlands, riparian areas, aquatic habitats, and special status plants; and prohibiting vehicle and hand application of chemicals within 1,320 feet (¼ mile) would impact applications of fire retardants and suppression chemicals. The management could make fire suppression efforts more difficult or expensive due to the inability to use retardant or suppression chemicals.

Impacts to wildland fire ecology and management from the management of fish and wildlife resources and Special Status Species are similar to Alternative A. Surface use restrictions would be utilized to accomplish no-net-loss of sensitive terrestrial and aquatic wildlife habitats. NSO and TLS for fluid minerals, closures to solid mineral leasing and mineral material sales/disposals, ROW avoidance or exclusions, and vehicle access and travel limitations would also be applied at various sites to reduce surface disturbances and occupancy. These restrictions would help to promote healthy vegetation communities and reduce wildfire occurrence and intensity. Prohibiting the use of fire suppression chemicals within 1,320 feet (¼ mile) of special status plant species populations would limit fire control/suppression actions.

Impacts to wildland fire ecology and management from the management of cultural and paleontological resources would be similar to Alternative A, except this alternative applies more protective measures such as NSOs and CSUs for fluid minerals; closures to mineral material sales/disposal, mineral location, and all solid mineral leasing; and ROW exclusions. These restrictions would help to reduce wildfire occurrence and intensity and the resultant need for fire suppression activities.

VRM impacts would be similar to Alternative A, except that approximately 225,785 acres would be classified as VRM Class I (68 more acres than Alternative A), 2,148,902 acres as VRM Class II (1,566,230 more acres than Alternative A), 666,522 acres as VRM Class III (51,030 more acres than Alternative A) and 563,754 acres as VRM Class IV (1,616,669 fewer acres than Alternative A). This would likely lead to less surface disturbance and thereby a reduction in impacts to fire management.

Land resource management actions related to the real estate transactions of acquisition, disposal, and/or pursuing withdrawals would have similar impacts to wildland fire ecology and management as Alternative A. Impacts to wildland fire ecology from the management of ROWs and transportation corridors would be

similar to Alternative A, except no new corridors would be designated. In total, 2,416,660 acres would be designated as exclusion for ROWs (2,235,560 more than Alternative A) and 541,626 acres would be designated as ROW avoidance areas (1,511,688 fewer than Alternative A). This would likely lead to less surface disturbance and thereby a reduction in impacts to fire management. Impacts to wildland fire ecology from the management of renewable energy projects would be similar to Alternative A, except an increase in ROW exclusion areas would result in fewer renewable energy projects and thereby fewer related impacts on fire management.

Impacts to wildland fire ecology from the management of recreation would be similar to Alternative A. The Continental Divide National Scenic Trail, Continental Divide Snowmobile Trail, the Green River, Killpecker Sand Dunes, Oregon and Mormon Pioneer National Historic Trails, and the Wind River Front SRMAs would not be retained. Not retaining the SRMAs, releasing lands from an emphasis on recreation resource development, and applying a greater zone of restriction against surface disturbing activities and visual disturbances on land surrounding developed recreation sites, certain designated trails, and the Wind River Front SRMA could potentially reduce human and vehicle access to those areas; thereby decreasing potential ignition sources (and wildfire occurrence) and the need for fire control/suppression actions. Not retaining SRMAs could allow more opportunities to utilize fire fuel treatments to manipulate vegetation in those areas. Greater buffer zones against surface and visual disturbances could limit fuel treatments and suppression techniques.

The actions to manage OHV travel in the planning area would be similar to Alternative A, except OHV use is limited to the roads and trails designated for OHV use (these designations are applied to 3,367,576 acres, which is 2,398,617 more acres than Alternative A). Limiting new OHV areas could decrease the extent of surface disturbances that could result in damage or removal of vegetation and thereby reduce related impacts to wildland fire.

Impacts to wildland fire ecology from the management to protect congressionally designated and/or eligible trails, and NHTs are similar to Alternative A, except there are greater protective measures proposed such as larger buffer zones ("setbacks") and specific closures and restrictions. The greater restrictions on surface disturbing activities, vehicle travel, and stricter VRM classifications under this Alternative could potentially place limitations on wildland fire fuel treatments and fire control/suppression actions. Any land protection measures or reduction of surface disturbances would prevent or reduce vegetation loss or damage, and could reduce the introduction and spread of invasive, non-native plant species. Reducing human and vehicle access could also reduce ignition sources in the area, which would decrease the probability of wildfire occurrence.

Impacts to wildland fire ecology from the management of WSAs and WSRs would be similar to Alternative A, but there would be a greater emphasis on protecting wilderness setting and viewshed values. The greater restrictions on surface disturbing activities, stricter VRM classifications, and restricted vehicle travel under this alternative could place limitations on the use of prescribed fire for fuel treatments and fire control or suppression actions. This would also reduce the potential for degraded landscapes that increase fire occurrence and intensity.

Impacts to wildland fire ecology from the management of ACECs would be similar to those described under Alternative A, except 1,605,660 acres (1,319,210 more than Alternative A) would be designated as ACECs. This alternative emphasizes managing important habitats for no-net-loss of habitat, retaining habitat health and function by applying surface use restrictions, and addressing human access and activities that could degrade or destroy resources. Additional stipulations to individual ACECs (e.g., eliminating ROW windows, excluding ROWs, and limiting road development) would provide greater restrictions on surface disturbances. The greater restrictions on surface disturbing activities, additional ACEC stipulations, and stricter VRM classifications under this alternative could potentially place limitations on fuel treatments using prescribed fire and fire control/suppression actions. This would also reduce the potential for degraded landscapes that increase fire occurrence and intensity.

#### 4.10.4 Alternative C

Impacts to wildland fire ecology and management from the management of air resources, soil resources, riparian and wetland resources would be the same as those presented under Alternative A.

Impacts to wildland fire ecology from the management of water resources would be similar to Alternative A, except surface disturbing activities occurring in or near the 100-year flood plains, wetlands, riparian areas, and gorges would each be considered on a case-by-case basis (rather than be protected by a full closure stipulation). The less restrictive stipulations under this alternative could increase the allowance of surface disturbances, occupancy, human presence, and vehicle access. Those activities can contribute to soil and vegetation damages that can lead to more fire-prone habitat and increase wildfire ignition sources. The use of fire suppression chemicals, including foaming agents and surfactants, would be prohibited within 100 feet of surface water (as compared to 1,320 feet under Alternative A). This smaller buffer distance would allow greater use of this fire control/suppression technique and the improved ability to suppress wildfires.

The management measures proposed under Alternative B to protect lands with wilderness characteristics would not be implemented under this alternative. The impacts of not managing to protect wilderness characteristics could allow for surface disturbing activities to occur within these areas which could result in increased ignition sources and damage to vegetation, thereby increasing the potential for wildfire occurrence and intensity. Fewer prohibitions could also improve the ability and increase the flexibility to utilize fuel treatments and fire control/suppression techniques.

Under this alternative, 225,782 acres in the planning area are closed to fluid mineral (oil, gas, and geothermal) exploration, leasing, and development (314,239 fewer acres than under Alternative A, Table 2-4 and Map 2-7). Approximately 234,961 acres are proposed for withdrawal from locatable mineral entry (321,597 fewer than Alternative A) and 226,421 acres are unavailable for saleable mineral development and/or disposals (607,298 fewer acres than Alternative A) (Tables 2-3 and 2-8 and Maps 2-3 and 2-15). Impacts to wildland fire ecology and management would be similar to those described under Alternative A, except fewer acres would be closed to the exploration, leasing, and/or development of fluid minerals and fewer acres would be available for development of locatable and salable minerals. More land available for mineral development allows more surface disturbing activities and human access, which would increase the potential for wildfire occurrence and intensity. In addition, the ability and flexibility to utilize fuel treatments and fire control/suppression techniques could be greater where there are fewer restrictions.

The management of wildland fire would be similar to Alternative A, except that full wildfire suppression would be used on all unplanned ignitions to limit the total number of acres burned. Planned ignitions would be managed the same as Alternative B to maintain or improve biological diversity and the overall health of the public lands. The use of heavy equipment could be utilized outside of a 100-foot buffer zone around special management areas; and chemical fire suppression agents could be used within 300 feet of rock art site and special designations. These are both less restrictive than Alternative A. These allowances could allow greater use of fire control or suppression techniques, which would reduce the threat of large wildfires. However, full suppression of wildfire in the long-term disrupts the natural fire regime and can eventually result in larger, more intense and destructive wildfires.

Compared to Alternative A, forest and woodlands management would emphasize actions that maintain and enhance forest and woodland health across the landscape to provide forest and woodland products to the public. This could open areas to harvests, allow greater flexibility in harvest methods and timber treatments, and thereby potentially increase harvest volumes. Clear-cuts of any size would be allowed (compared to a 25-acre size limit for individual clear-cut units in Alternative A). Any slope greater than 45% could be logged with cable systems or by helicopter. Pre-commercial thinning would also be allowed to reduce overstocked areas and decrease fire loads. All of these types of harvests would reduce fuel loads, which could decrease the intensity and size of wildfires, allow fires to be more easily controlled, and thereby

reduce fire-fighting costs and efforts.

Impacts to wildland fire ecology from the management of invasive species and pests would be similar to those described under Alternative A. Allowing chemical treatments would result in an additional method that supports fire fuel reduction. Prohibiting aerial application of chemicals within 100 feet (compared to 2,640 feet under Alternative B) of wetlands, riparian areas, aquatic habitats, and special status plants; and prohibiting vehicle and hand application of chemicals within 25 feet (by vehicle) and 10 feet (by hand) as compared to 1,320 feet under Alternative B, would allow the application of fire retardants and suppression chemicals. This smaller buffer distance would allow greater use of this fire control/suppression technique and the improved ability to suppress wildfires.

Impacts to wildland fire ecology and management from the management of fish and wildlife resources and Special Status Species is similar to Alternative A, except that smaller surface disturbing and/or surface use distance buffer zones would be applied around developments and operations. Allowing project development and greater surface disturbances could result in damage or removal of plant communities. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species which could alter native vegetation, creating vegetation communities that fuel high-intensity fires. Allowing these activities could also increase ignition sources in the area, which would increase the probability of wildfire occurrence. Avoiding surface disturbance near special status plants could protect vegetation in these areas and help to promote healthy, diverse vegetation communities, which would reduce the potential for wildfire occurrence and intensity.

Impacts to wildland fire ecology and management from the management of cultural and paleontological resources is similar to Alternative A, except that smaller surface disturbing/setting buffer distances would be applied around known cultural and paleontological sites. Smaller sized buffer distances under this alternative could open areas in the planning area to more surface disturbing activities and human access. Surface disturbing activities could result in damage or removal of vegetation and an increased potential for wildfire occurrence and intensity. The ability and flexibility to utilize fuel treatments and fire control/suppression techniques could be greater where there are fewer restrictions. The use of fire retardant chemicals would be allowed within 300 feet of the rock art sites as compared to ¼ mile of them under Alternative B; allowing greater use of fire control or suppression techniques.

Impacts to wildland fire ecology and management from VRM would be similar to Alternative A, except that approximately 226,629 acres would be classified as VRM Class I (912 more than Alternative A), 607,899 acres VRM Class II (25,229 more than Alternative A), 395,683 acres VRM Class III (219,809 fewer than Alternative A), and 2,374,706 acres as VRM Class IV (194,283 more than Alternative A). More acreage managed under VRM Class I and II could potentially limit the ability and flexibility to utilize fuel treatments and fire control/suppression techniques. More acres under VRM Class IV, and a smaller VRM buffer distances along the Continental Divide National Scenic Trail would place fewer overall prohibitions on surface disturbing activities. The management could open areas in the planning area to more surface disturbing activities and human access, thereby increasing the potential for wildfire occurrence and intensity.

Impacts to wildland fire ecology and management from management of lands and realty would be similar to those described under Alternative A, except acres of ROW exclusion and avoidance areas would be fewer (225,784 acres excluded, and 31,018 acres avoided; 200,925 and 705,120 fewer acres than Alternative A, respectively). Fewer exclusions and avoidance areas could open lands to more surface disturbing activities and human access. Surface disturbing activities could result in damage or removal of vegetation. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species which could alter native vegetation, creating vegetation communities that fuel high-intensity fires. Human presence and construction, operations, and vehicular activities would increase potential ignition sources (and wildfire occurrence) in the planning area; thereby increasing the need for fire suppression actions.

similar to those described under Alternative A, except preferred energy corridors would be retained; new corridors could be designated; and there would be no preferred location of ROWs within ROW concentration areas and corridors. Retaining and/or designating new corridors, reducing restrictions on the placement of ROWs, and fewer ROW exclusion and avoidance areas, could open areas in the planning area to more surface disturbing activities and human access. Surface disturbing activities could result in damage or removal of vegetation. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species which could alter native vegetation, creating vegetation communities that fuel high-intensity fires. Human presence, construction, and vehicular activities would increase potential ignition sources (and wildfire occurrence) in the planning area; thereby increasing the need for fire suppression actions. ROW corridors could provide fire breaks that could aid in fire control/suppression efforts.

Impacts to wildland fire ecology and management from the management to designate and manage travel would be similar to Alternative A, except five backcountry byways would not be retained (Tri-Territory Loop, the Lander Road, Red Desert, Fort LaCledde Loop, and the Firehole-Little Mountain Loop), and additional travel routes that meet the criteria for designation as backcountry byways would not be considered. The actions of not retaining existing backcountry byways or designating new ones under this alternative would reduce public visitation to these areas, which would decrease potential ignition sources; thereby decreasing the probability of wildfire occurrences.

Impacts to wildland fire ecology and management from livestock grazing management would have similar impacts as those described under Alternative A except that more planning area acreage would be open to livestock grazing. Properly managed grazing can serve as a vegetation treatment that supports soil and vegetation health, and the reduction of hazardous fuel loads. Livestock grazing that is not managed correctly can result in excessive vegetation loss and surface disturbances, and cause the introduction or spread of invasive, non-native plant species. Those conditions could result in the eventual development of vegetation communities that could load fuels and increase potentials for wildfire occurrences.

Impacts to wildland fire ecology and management from recreation management would be similar to Alternative A, except that undeveloped recreation would be managed with a priority consideration for recreation use. Allowing and encouraging recreational use attracts increasing numbers of visitors, which increases the probability of unintentional ignitions and the need for wildfire suppression activities. Surface disturbances from recreational activities could result in damage or removal of vegetation that can result in conditions that favor ignitions and fuel wildfires. Overall, the fewer restrictions under this alternative, could open areas in the planning area to more surface disturbing activities and human access and thereby increase the potential for wildland fire occurrence and intensity.

Impacts to wildland fire ecology and management from OHV travel would be similar to Alternative A, except that this alternative allows cross country OHV use in 13,332 acres (501 more acres than Alternative A). OHV use could increase the extent of surface disturbances that could result in damage or removal of vegetation. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species which could alter native vegetation, creating vegetation communities that fuel high-intensity fires.

Impacts to wildland fire ecology and management from management to protect congressionally designated and/or eligible trails, and NHTs are similar to Alternative A, except that fewer restrictions on surface disturbing activities and vehicle travel could place fewer limitations on fuel treatments and fire control/suppression actions. Any land management that allow surface disturbance could result in increased vegetation loss or damage and resultant increases in the potential for wildfire occurrence and intensity. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species which could alter native vegetation, creating vegetation communities that fuel wildfires. Increasing human and vehicle access could also increase ignition sources in the area, which would increase the probability of wildfire occurrence.

Impacts to wildland fire ecology and management from the management of WSAs and WSRs would be similar to Alternative A, but there would be a greater emphasis on managing designated areas for multiple use. Under this alternative, the Sweetwater River designation would not be retained, so no WSR management actions would be developed or applied. No management for WSRs could potentially increase access, travel, and surface disturbances to these sites, which could increase potentials for wildfire occurrence.

Under this alternative, no ACECs would be retained (as compared to all being retained under Alternative A). Removing all the ACEC-specific land use and relaxing surface disturbing restrictions under this alternative could result in increased vegetation loss or damage. Areas of disturbance would be vulnerable to the introduction and spread of invasive, non-native plant species which could alter native vegetation, creating vegetation communities that fuel wildfires. Increased human and vehicle access could also increase ignition sources in the area, which would increase the probability of wildfire occurrence.

#### **4.10.5 Alternative D**

Impacts on wildland fire ecology and management from implementing management actions for air quality, water resources, fish and wildlife, Special Status Species, cultural resources, paleontological resources, and livestock grazing would be the same as those presented under Alternative A. The impacts on wildland fire ecology and management from managing forests and woodlands would be the same as those presented under Alternative B.

Impacts on wildland fire management from implementing soil management actions would be similar to those identified under Alternative A. Areas with limited reclamation potential soils (those with limited reclamation potential as per the NRCS soil rating) would be designated avoidance areas for surface disturbing activities, which would reduce the extent of surface disturbing activities in these areas and thereby reduce the number of ignition sources (e.g., people, vehicles) and consequently the probability of wildfire occurrence. Reductions in surface disturbing activities would also reduce the intensity and extent of vegetation removal and degradation, which would reduce the potential for wildfire occurrence and intensity.

Under Alternative D, lands with wilderness characteristics would be managed for multiple use, which could reduce development activities within these areas, but to a far lesser degree than under Alternative B. These areas would not be closed to mineral development as they would be under Alternative B, which would increase surface disturbing activities within the nine lands with wilderness characteristics. Such activities could increase the number of ignition sources (e.g., people, vehicles) and consequently the probability of wildfire occurrence.

Impacts on wildland fire ecology and management from managing fluid mineral leasing and development would be similar to those discussed under Alternative A, except stipulations that prohibit fluid mineral leasing or prohibit surface occupancy would be applied to a smaller area. Under Alternative D, 768,989 acres would be closed to fluid mineral leasing (228,968 acres more than Alternative A). These stipulations would decrease surface disturbance from fluid mineral development and thereby decrease related impacts on wildfire across a larger area compared with Alternative A.

Impacts on wildland fire ecology and management from locatable mineral development activities would be similar to those presented under Alternative A, except the area in which such mineral development is prohibited would be increased to 482,272 acres (13% decrease compared with Alternative A) (Table 2-3, Map 2-4). This would greatly decrease the area in which vegetation could be impacted by locatable mineral development activities, which would decrease the number of potential ignition sources and degradation of vegetation communities and thereby make them less susceptible to fire.

Impacts on wildland fire ecology and management from saleable mineral development activities would be similar to those presented under Alternative A, except the area in which such mineral development is prohibited would be decreased to 362,009 acres (57% decrease compared with Alternative A) (Table 2- 8, Map 2-16.). This would greatly increase the area in which vegetation could be impacted by saleable mineral development activities, which would increase the number of potential ignition sources and degradation of vegetation communities and thereby make them more susceptible to fire.

Impacts on wildland fire ecology and management from implementing actions designed to manage fire within the planning area would be similar to those presented under Alternative A, except greater restrictions on the use of fire suppression agents could make it more difficult to suppress and control wildfires. This could result in more intense wildfires that burn more acres and cause extreme damage to vegetation resources, which in turn could lead to further degradation of vegetation resources. Under this alternative, the use of aerial and ground fire suppression agents would be prohibited within ¼ mile and 300 feet, respectively, of rock art sites, Special Status Species, surface water sources, and riparian areas. Compared with Alternative A, which prohibits such use only directly on rock art sites, this would create a greater degree of impact on wildfire management.

Impacts on wildland fire ecology and management from managing vegetation resources would be similar to those presented under Alternative A, except the use of prescribed fire to treat vegetation communities would be reduced given that prescribed fire would not be the preferred method for such treatments. However, because all vegetation treatment types are available under Alternative D, the impacts on the occurrence and intensity of wildfire would be the same as those presented under Alternative A.

Impacts on wildland fire ecology and management resulting from implementing VRM actions would be similar to those presented under Alternative A, except the number of acres designated as VRM Class II would be greatly increased to 1,178,719 acres (202% increase compared with Alternative A) (Table 2-9, Map 2-20), which could lead to decreased vegetation removal and degradation. Increasing the area managed as VRM Class II would increase the area in which development is restricted in order to be consistent with VRM Class II objectives. This, in turn, could reduce the overall level and intensity of development and help to reduce wildfire occurrence and intensity.

Impacts on wildland fire ecology and management resulting from implementing lands and realty actions would be similar to those presented under Alternative A, except the extent of the impacts would be reduced. The number of acres designated as ROW exclusion areas would be decreased to 286,289 acres (33% decrease compared with Alternative A) (Table 2-10, Map 2-24), which would greatly decrease the area in which ROW development activities are prohibited. This would cause impacts on wildland fire from ROW development in these areas and could lead to an overall increase of such development across the planning area, thereby helping to maintain healthy vegetative communities that are less susceptible to fire.

Impacts on wildland fire ecology and management from managing recreation resources would be similar to those presented under Alternative A, except additional surface use restrictions would be placed on many of the SRMAs. Mineral and ROW development activities would be limited or precluded in the Killpecker Sand Dunes, Oregon and Mormon Pioneer National Historic Trail, and Little Mountain, SRMAs, which would reduce the intensity and extent of surface disturbance in these areas and thereby reduce wildfire intensity and the probability of fire occurrence.

Impacts on wildland fire ecology and management from managing OHV use would be similar to those presented under Alternative A, except the area currently designated as “limited to existing roads and trails” would be changed to “limited to designated roads and trails” (3,367,576 acres) and all routes within this area would be designated as open, closed or limited.

Impacts on wildland fire ecology and management from managing special designation areas would be similar to those presented under Alternative A, except they would occur over a larger area and thereby offer greater protections to important historic, cultural, wildlife, and scenic values in these areas. This, in turn,



would reduce surface disturbing activities and indirectly help to protect and maintain healthy vegetative communities, which would reduce the potential wildfire occurrence and intensity. The acres designated as ACECs would decrease to 246,634 acres (39,816 acres less than Alternative A).

## 4.11 ENERGY AND MINERALS

### 4.11.1 Assumptions

The analysis is based on the following assumptions:

- Leasing, permitting, exploration, and development would occur throughout the planning area, except where restricted by management actions described in Chapter 2.
- Valid existing rights would be maintained even if the area containing those rights was proposed for closure or withdrawal.
- Valid existing rights would be managed under the stipulations in effect when the rights were issued.
- New stipulations proposed under this RMP would apply upon reinstatement, readjustment, renewal.
- Surface use restrictions, including TLSs, NSO stipulations, and CSU stipulations, as well as unavailable for leasing designations, cannot be retroactively applied to valid, existing oil and gas leases or to valid, existing use authorizations (e.g., Application for Permit to Drill [APD]). Postlease actions/authorizations (e.g., APDs, road/pipeline ROWs), however, could be encumbered by COAs restrictions on a case-by-case basis, as required through project-specific NEPA analysis or other environmental review.
- Leasable mineral resources would be considered unrecoverable in areas designated unavailable for leasing. They would also be considered unrecoverable in areas open to leasing but where surface use constraints prohibit development operations on areas larger than can be technically and economically developed from offsite locations. Leasable mineral resources within leased in-holdings would be considered recoverable.
- As population growth and the demand for energy increases, so will the demand for locatable minerals, mineral materials and other energy sources.
- Mineral material resources would be considered unrecoverable in areas unavailable to mineral material development.
- Locatable mineral resources would be considered unrecoverable in areas already withdrawn to mineral location. Between the alternatives, acreages already withdrawn from mineral location are the same.

### 4.11.2 Alternative A

Any management actions that include restrictions on mineral resource development as a result of conflicts with other resource values and uses would affect the recovery of mineral resources.

Under this alternative, 556,558 acres would be pursued for withdrawal from mineral location (Table 2-3, Map 2-1). Withdrawing areas from mineral location would preclude possible mineral development. No associated income or related economic activity would be realized from this resource, and the lost opportunity for development represents an unknown impact for resource users.

Under Alternative A, it is projected that a total of 4,773 federal fluid mineral wells would be drilled during the next 20 years, which could result in short-term surface disturbance of 32,831 acres and future long-term surface disturbance of 9,466 acres (BLM RFD 2016). Approximately 540,021 acres would be closed to new fluid mineral leasing (Table 2-4, Map 2-5). These closures would preclude oil and gas exploration and development, and render energy resources unreachable, which could potentially contribute to energy shortages and result in price increases. However, there are many global factors that influence supply and the price of oil and gas, well beyond those decisions being made in this field office.

Applying NSO stipulations to 158,611 acres could require directional drilling or other extraction methods to access resources. NSO stipulations could result in the relocation of facilities, increased energy costs, and the possible loss of energy resources that cannot be extracted by current or future drilling technology. Applying CSU stipulations to 721,132 acres could influence the placement of oil and gas facilities and, as a result, increase the cost of developing the resources. When operating costs increase, some price increases could be passed onto the user. Under this Alternative, 1,840,967 acres would have TLSs/seasonal restrictions. Seasonal restrictions could limit oil and gas activities during specific time periods, increase costs to the operator, and possibly delay resource development. Where seasonal restrictions severely limit the time available to complete activities, relocation of surface facilities may be required. Developing the energy resource could be infeasible or uneconomical, which could contribute to energy shortages and a potential increase in energy prices; however, allowing exceptions to TLSs on a case-by-case basis would, in some cases, allow development activities to occur.

Approximately 485,964 acres would be closed to coal leasing and development activities (Table 2-7, Map 2-9). Restrictions on mining activity, such as no surface facilities or subsurface mining with controls on surface facilities, would be required on coal leases where needed for resource protection, which could influence the placement of facilities and, as a result, increase the cost of developing the resources. When operating costs increase, some price increases could be passed onto the user.

Oil shale leasing would be prohibited on 727,805 acres (Table 2-7, Map 2-9). These closures would preclude possible mineral leasing, development and exploration.

Land use restrictions under Alternative A result in the closure of 423,633 acres to trona (sodium) leasing and development (Table 2-7, Map 2-9). However, because trona leasing and development generally occur within the KSLA, located in the southwestern region of the planning area (356,960 acres; Map 3-10), only closures within this area would substantially impact trona leasing and development. Due to the importance of this relatively small area as a major source of the rare sodium carbonate mineral, areas closed to trona leasing and development within the KSLA to protect other resources would cover only 24,458 acres. Therefore, potentially significant impacts to trona-related activities from the management of other resources would occur only within these closure areas. This would influence the placement of facilities in these areas, potentially increase the cost of developing trona resources, and could result in a reduction in trona resources extracted via mining activities.

Approximately 833,719 acres would be closed to mineral material sales/disposals, which would preclude possible mineral development in these areas.

ROWs are provided for access roads, communication facilities, transmission lines, and gas transportation pipelines from well pads. ROW exclusion areas (426,709 acres) and avoidance areas (736,138 acres) (Table 2-10, Map 2-21) would limit future access to mineral exploration and development sites and could restrict the placement of facilities associated with mineral exploration and development.

Approximately 225,717 acres would be managed as VRM Class I (Table 2-9, Map 2-17). The level of change to the characteristic landscape should be very low and must not attract attention in VRM Class I areas; therefore, this designation would require relocating certain projects, combining them in areas out of view, or otherwise mitigating them. Approximately 582,672 acres would be managed as VRM Class II. Because surface disturbance activities in VRM Class II areas may be visible but should not attract the

attention of the casual observer, meeting this objective would require relocating certain projects, combining them in areas out of view, or otherwise mitigating them. Relocation would then require the use of directional drilling to reach the original target. If the relocation is to an area where the resources are beyond the technical and economic reach of directional drilling, some mineral resources could become unrecoverable.

Approximately 615,492 acres would be managed as VRM Class III. Under this classification, the level of change in the landscape can be moderate. Projects can be visible, but still should not dominate the viewshed. Less impacting measures such as facility design, arrangement, and coloration may be sufficient to meet the VRM Class III objectives. Facility design that requires the retooling and manufacture of new components when standard components are available could increase the project cost borne by the leaseholder/operator. Extensive redesign could render some oil and gas wells uneconomic. Some project relocation could still be required. Relocation impacts would be the same as previously described.

Approximately 2,180,423 acres would be managed as VRM Class IV. Under this classification, the level of change and visibility can be high, but measures should still be taken to reduce the visibility. Centralized facilities, facility arrangements, and coloration should meet the VRM Class IV objectives. Project relocation warranting directional drilling would typically not be needed.

### 4.11.3 Alternative B

Under this alternative, 1,993,908 acres would be pursued for withdrawal from mineral location (Table 2-3, Map 2-2). This represents a 258% increase in acres compared to Alternative A, and therefore impacts to locatable minerals would be increased compared to Alternative A, as fewer areas would be available for such mineral development.

Under Alternative B, it is projected that a total of 1,292 federal wells would be drilled during the next 20 years (73% decrease compared to Alternative A). The decrease in the number of wells drilled is due to an increase in areas that are closed to fluid mineral leasing and managed with NSO stipulations. Approximately 2,186,218 acres would be closed to new fluid mineral leasing (305% increase compared with Alternative A) and 813,354 acres would be managed as NSO areas (412% increase compared with Alternative A) (Table 2-4, Map 2-6). Although fewer acres would be managed with CSU and seasonal restrictions, there would be far more acres managed as NSO or closed to new fluid mineral leasing, compared to Alternative A, which would result in greater impacts to fluid mineral leasing exploration, development, and operations in these areas.

Impacts to oil shale leasing and development would be similar to those presented under Alternative A, except the areas closed to oil shale leasing would increase to 2,122,282 acres (192% increase compared to Alternative A) (Table 2-7, Map 2-10), which would preclude oil shale development in these areas and result in significantly less production from activities within the planning area.

Under Alternative B, 3,735,546 acres would be closed to coal exploration and development activities (433% increase compared to Alternative A) (Table 2-7, Map 2-10), including areas outside the coal occurrence and development potential area.

Impacts to trona development would be similar to those described under Alternative A, except more areas would be closed to trona leasing and development. Under Alternative B, 49,224 acres would be closed to trona leasing and development within the KSLA (Table 2-7, Map 2-10), which represents a 101% increase compared to Alternative A. This would increase the level of impacts to trona development and could result in further reduction of trona extracted via mining activities.

Under Alternative B, 2,581,741 acres would be closed to mineral material sales/disposals (Table 2-8, Map 2-14). This would be an approximately 209% increase in acreage compared to Alternative A. Additionally, no new community pits, localized common use areas, or new mineral material sites would be established.

These management actions would cause greater impacts to saleable minerals by further precluding saleable mineral development and exploration, compared to Alternative A.

Approximately 2,480,876 acres would be designated as ROW exclusion areas, an approximately 481% increase in acres compared to Alternative A, and ROW avoidance acres would decrease by approximately 82%, to 133,903 acres (Table 2-10, Map 2-22). Although ROW avoidance acres would decrease, the larger increase in ROW exclusion areas would result in greater impacts to mineral resources, by likely limiting future access to mineral exploration and development sites and could restrict the placement of facilities associated with mineral exploration, development, and operations, including pipelines, transmission lines, communication facilities, and roads.

Impacts to mineral development activities resulting from management of visual resources would be similar to those described under Alternative A, except more acres would be managed as VRM Class I, II, and III and fewer acres would be managed as VRM Class IV. Under Alternative B, 225,785 acres would be managed as VRM Class I (0.03% increase compared to Alternative A), 2,148,666,522 acres would be managed as VRM Class II (269% increase compared to Alternative A), 666,522 acres would be managed as VRM Class III (8% increase compared to Alternative A), and 563,754 acres would be managed as VRM Class IV (74% decrease compared to Alternative A) (Table 2-9, Map 2-18). The large increase in VRM Class II acreage and large decrease in VRM Class IV acreage would greatly increase the impacts of visual resource management on mineral development activities.

#### 4.11.4 Alternative C

Under this alternative, 234,961 acres would be pursued for withdrawal from mineral location (Table 2-3, Map 2-3). Compared to Alternative A, impacts on mineral location would be reduced, as approximately 60% fewer acres would be pursued for withdrawal. Locatable mineral development activities would be precluded, sites would be relocated, and additional development costs could be incurred, but to a lesser degree than under Alternative A.

Under Alternative C, it is projected that a total of 4,919 federal fluid mineral wells would be drilled during the next 20 years (3% increase compared with Alternative A) (BLM RFD 2016). The increase in the number of wells drilled is due to a decrease in areas closed to fluid mineral development and managed with NSO stipulations. Approximately 225,782 acres would be closed to new fluid mineral leasing (58% decrease compared with Alternative A) and 15,542 acres would be managed as NSO areas (90% decrease compared to Alternative A) (Table 2-4, Map 2-7). Although slightly more acres would have seasonal restrictions, there would be fewer acres designated as closed, NSO, and CSU, which would reduce impacts to fluid mineral leasing compared to Alternative A.

Impacts to oil shale leasing and development would be less than those discussed under Alternative A. The areas closed to oil shale leasing would decrease to 225,965 acres (Table 2-7, Map 2-11), which represents a 70% decrease in such closures.

Impacts to coal leasing and development would be similar to those presented under Alternative A, except 226,219 acres would be closed to coal exploration and development activities (64% decrease compared to Alternative A) (Table 2-7, Map 2-11). This would increase the area in which coal leasing is allowed and thereby could result in increased coal development and production and reduce the need to relocate facilities.

Impacts to trona development would be similar to those described under Alternative A, except fewer areas would be closed to trona leasing and development. Under Alternative C, 21,412 acres would be closed to trona leasing and development within the KSLA (Table 2-7, Map 2-11), which represents a 12% decrease compared to Alternative A. This would reduce related impacts to trona mining activities, as more areas would be available for such mining.

Impacts to saleable mineral development would be similar to those presented under Alternative A, except the areas closed to mineral material sales would decrease to 226,421 acres (72% decrease compared with Alternative A). This would increase the area in which saleable mineral development is allowed and thereby could result in increased production of such mineral resources.

Under this alternative, ROW exclusion areas would decrease by approximately 47% compared to Alternative A, to 225,784 acres (Table 2-10, Map 2-23). ROW avoidance areas would also decrease by approximately 96%, to 31,018 acres. These designations would likely reduce potential impacts to mineral resources by allowing increased future access to mineral exploration and development sites, and placement of facilities associated with mineral exploration and development, including pipelines, transmission lines, communication facilities, and roads.

Approximately 226,629 acres would be managed as VRM Class I, an increase of 912 acres (Table 2-9, Map 2-19). Approximately 607,899 acres would be managed as VRM Class II, which represents an increase of 25,227 acres compared with Alternative A. This increase in VRM Class I and II acreage would be approximately 3%, which could result in greater impacts to mineral resources, compared to Alternative A, and could increase the cost of energy, renewable energy, and mineral development proposed in these areas. In areas with high mineral potential and topographical challenges, energy and mineral resources could be challenging or infeasible to recover and meet VRM Class II objectives. Under Alternative C, 395,683 acres would be managed as VRM Class III, a decrease of 219,809 acres compared to Alternative A. 2,374,706 acres would be managed as VRM Class IV, an increase of 194,283 acres compared to Alternative A; this would likely result in reduced impacts to mineral resources in these areas.

#### **4.11.5 Alternative D**

Under this alternative, 482,272 acres would be pursued for withdrawal from mineral location (Table 2-3, Map 2-4). Compared to Alternative A, impacts on mineral location would be decreased, as approximately 40% fewer acres would be pursued for withdrawal.

Under Alternative D, it is projected that a total of 4,737 federal fluid mineral wells would be drilled during the next 20 years (1% decrease compared to Alternative A). The decrease in the number of wells drilled is due to an increase in areas that are closed to fluid mineral leasing. Approximately 768,989 acres would be closed to new fluid mineral leasing (42% increase compared with Alternative A) and 2,172 acres would be managed with NSO stipulations (99% decrease compared with Alternative A) (Table 2-4; Map 2-8). Although more acres would be managed with seasonal restrictions and CSU stipulations, there would be significantly more acres managed as closed and with NSO stipulations compared to Alternative A, which would result in a reduced level of impact to fluid mineral leasing and development.

Impacts to oil shale leasing and development would be similar to those presented under Alternative A, except the areas closed to oil shale leasing would increase to 1,557,520 acres (114% increase compared to Alternative A) (Table 2-7, Map 2-12), which would increase impacts on oil shale development and could result in decreased production of oil from shale resources.

Under Alternative D, 610,342 acres would be closed to coal exploration and development activities (26% increase compared to Alternative A) (Table 2-7, Map 2-12).

Impacts to trona development would be the same as those described under Alternative A. Under Alternative D, 24,290 acres would be closed to trona leasing and development within the KSLA, which represents a <1% decrease compared to Alternative A (Table 2-7, Map 2-12).

Impacts to saleable mineral development would be similar to those presented under Alternative A, except the areas closed to mineral material sales would decrease to 362,009 acres (57% decrease compared with Alternative A). This would increase the area in which saleable mineral development is allowed and thereby

could result in increased production of such mineral resources.

Approximately 286,289 acres would be designated as ROW exclusion areas, an approximately 33% decrease in acres compared to Alternative A, and ROW avoidance acres would increase by approximately 88% to 1,388,618 acres. The significant decrease in ROW exclusion areas would likely reduce potential impacts to mineral resources by allowing increased future access to mineral exploration and development sites, and placement of facilities associated with mineral exploration, development, and operations, including pipelines, transmission lines, communication facilities, and roads.

Compared to Alternative A, this alternative would have fewer VRM Class IV areas and more VRM Class II and VRM Class III areas. Approximately 1,178,718 acres would be managed as VRM Class II, which represents a 102% increase in acres compared to Alternative A. Approximately 1,455,234 acres would be managed as VRM Class IV, which would be an approximately 44% reduction of acres compared to Alternative A. The large increase in VRM Class II acreage and large decrease in VRM Class IV acreage would greatly increase the impacts of visual resource management on mineral development activities.

## 4.12 CULTURAL RESOURCES

### 4.12.1 Assumptions

The analysis was based on the following assumptions:

- The identification, preservation, and protection of significant cultural resources to ensure that they are available for appropriate uses by present and future generations is directed in large part by Section 103 of the BLM's Federal Land Policy and Management Act of 1976, as amended; NHPA; and the Archaeological Resources Protection Act of 1979, as amended.
- The BLM usually follows the Wyoming BLM-SHPO State Protocol when dealing with federal undertakings for compliance with Section 106 of NHPA; therefore, adverse effects to known historic properties will be appropriately mitigated through the processes in the Wyoming State Protocol. The Archaeological Resources Protection Act of 1979 provides enforcement and legal remedies for all unauthorized removal of archaeological resources from federal land.
- Cultural resource protection and mitigation measures apply to all proposed federal or federally-assisted undertakings and to leases granted by the BLM and would be applied at project design and implementation phases.
- Cultural resource inventories, resulting from either federal undertakings or other programs, would result in the continued identification of cultural resources. The resource data acquired through these inventories and evaluations would increase overall knowledge of cultural resources in the region.
- Impacts on known cultural resources from authorized uses would be mitigated after appropriate NHPA Section 106 or Wyoming State Protocol consultation requirements are met. Mitigation can include avoidance, redesign, or data recovery.
- There are likely to be many unknown cultural resources that exist, having yet to be discovered.
- The number of cultural resources that could be affected by various actions directly correlates with the degree, nature, and quantity of surface disturbing activities within the Rock Springs RMP planning area, and the cultural sensitivity of the area.
- All areas within the planning area are open to all specific uses, unless otherwise noted as closed.

## 4.12.2 Alternative A

Under this alternative, impacts on cultural resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for air quality, and invasive species and pest management. No management actions are proposed under this alternative for lands with wilderness characteristics.

Management to maintain or improve soil health and protect special geological features would improve soil and rock stability and would minimize surface disturbance. The management could indirectly protect unknown and known cultural resources from exposure, damage, or destruction resulting from surface disturbing activities that cause soil and/or rock instability and erosion. Prohibiting surface disturbing activities or surface occupancy in areas containing unique geologic features (unless such activities would enhance their management) could also provide indirect protections to known and unknown cultural resources present in those areas by reducing the potential for direct damage or destruction, setting degradation, or vandalism.

Water resource management to maintain, improve, or reestablish proper watershed function would reduce the potential exposure, damage, or destruction of known and unknown cultural resources by erosional forces. Under this alternative, requiring design strategies for land use, limiting surface occupancy, and applying buffer distances to hydrologic areas would support water flow control, and could reduce the potential for erosion. Maintaining and improving drainage channel stability, floodplains, wetlands, and riparian areas would support soil stability and could reduce the potential exposure, damage, or destruction of known and unknown cultural resources.

Allowing opportunities to explore, locate, and develop fluid minerals in the planning area could increase surface disturbing activities, which could expose previously unknown cultural resources to discovery, thereby enhancing scientific knowledge. Surface disturbing activities also have the potential to cause direct and indirect destruction or damage to cultural resources. Surface disturbing activities could impact soil and rock stability and amplify erosion, which could damage or destroy cultural resources and could cause degradation of the setting in which the cultural resource exists. Limiting the placement of structures that visually intrude on the cultural resources could help to preserve and protect settings. Increased human presence could cause unintentional damage to both known and unknown resources through their surface disturbing activities; as well as intentional destruction through vandalism, and the unauthorized removal of structures or artifacts.

Approximately 4,773 oil, gas, and CBNG wells would be developed under Alternative A within the planning area. There would be 32,831 acres of initial surface disturbance and 9,466 acres of long-term disturbance from fluid mineral development. Applying COAs attached to APDs based on site-specific NEPA analysis and resource surveys could add protections to cultural resources identified in those areas, and appropriate mitigation and management measures could be developed to protect those resources. Lease stipulations would be applied to protect sensitive cultural resources in specific areas.

Management to close oil and gas leasing (540,021 acres) or applying NSO stipulations (158,611 acres) could provide indirect protections to known and unknown cultural resources present in those areas by reducing the potential for direct damage or destruction, erosion, setting degradation, or vandalism. Applying CSU stipulations on 721,132 acres and applying TLS on 2,465,466 acres could reduce surface disturbing activities within these areas.

Under Alternative A, most of the planning area would be open to consideration for geophysical exploration through the use of off-road vehicles and detonation of explosive charges which could potentially expose previously unknown cultural resources to discovery. Geophysical exploration would be prohibited in sensitive cultural resource and geologic feature areas which would provide additional protections to known and unknown cultural resources present in those areas by reducing the potential for direct damage or

destruction from explosive charges, erosion, setting degradation, and vandalism.

Under this alternative, 556,558 acres would be pursued for withdrawal from locatable mineral entry; 485,964 acres would be closed to coal leasing, 727,805 acres would be closed to oil shale leasing, 423,633 acres would be closed to trona leasing, and 833,719 acres would be unavailable for saleable mineral disposal, which would thereby eliminate impacts to cultural resources from such mineral development within those areas.

Wildland fire ecology and management such as the use of prescribed fire, mechanical, chemical, and/or biological treatments of vegetation could result in the direct damage or destruction of cultural resources. Wildfire could expose previously unknown resources to discovery, thereby enhancing scientific knowledge. Indirect degradation could also occur from exposure of those resources to fire suppression chemicals. Prohibiting the use of chemical fire suppression agents in rock art sites fully protects these special features from degradation or destruction by these chemicals. Overall, this management would help to protect and maintain cultural resources in the planning area.

Under Alternative A, management actions to maintain, restore, and enhance forest and woodlands would generally improve the soil health over the long term. Healthy soils provide stability and greater protections against erosional forces that could detrimentally expose, damage, or destroy cultural resources.

The application of prescribed fire, mechanical, chemical, and/or biological treatments of forest and woodland resources would increase human presence, the use of heavy equipment, and surface disturbance in the planning area. The management could increase the potential direct damage or destruction of cultural resources, increase erosion, setting degradation, and could lead to vandalism of known and unknown cultural and historic resources. Conversely, the activities could also expose previously unknown cultural resources to discovery, thereby enhancing scientific knowledge.

Managing vegetation resources, including riparian and wetland resources, would improve soil health over the long term, which could indirectly help to protect cultural resources by limiting surface disturbing activities. Vegetation treatment methods could initially increase the potential for erosion, but in the long-term, these actions could improve vegetative health and soil cover, and thereby reduce erosion and runoff, protecting cultural resources from damage. Conversely, those activities could expose, damage, or destroy previously unknown cultural resources; although the discovery could enhance scientific knowledge.

Management for fish and wildlife and Special Status Species such as managing and rehabilitating wildlife habitat by reducing the amount of surface disturbance, limiting occupancy, and improving soil and vegetation health could provide protections to known and unknown cultural resources. The management could reduce the potential for direct damage or destruction, erosion, setting degradation, and vandalism of cultural resources. Habitat improvement or restoration actions could result in some surface disturbing activity that could expose, damage, or destroy previously unknown cultural resources; although the discovery could enhance scientific knowledge.

Management actions designed to protect the cultural and paleontological resources focus largely on human activities that could inflict direct damage or destruction of those resources, which could lead to the loss of these cultural resources as well as indirectly leading to the loss of scientific information. Human activity could cause surface disturbance which has the potential to impact soil stability, amplify erosion, and/or degrade the setting or context of the resources. Increased human access in the planning area could increase the potential for damages through unauthorized removal of artifacts or intentional acts of vandalism. To reduce these potential impacts, identification of culturally and historically significant sites would be followed by initiating individual or combined management actions related to the conservation, protection, stabilization, data collection, interpretation, mitigation, restoration, and maintenance of those sites. Sites eligible for or listed on the National Register of Historic Places (NRHP) would be managed for their local, regional, and national significance, under the guidelines of the NHPA and the Archaeological Resources



Protection Act of 1979. These sites would be managed to ensure against adverse effects through proper mitigation, if disturbance and destruction is not avoidable. An appropriate level of analysis of all surface disturbing activities would be conducted to determine the potential effect of the activity on the resource and its eligibility. Closure of these types of sites to surface disturbing activities, especially mineral location, would provide greater protections to those sites, as would exchanges for acquisition and cooperative agreements pursued to enhance protection. Not managing sites according to their specific uses could result in sites being managed inappropriately and could result in direct (feature degradation) and indirect (loss of scientific information, context, etc.) damage to the cultural resource structures and/or artifacts.

The preparation of site/project specific activity or development plans for five significant rock art sites in the planning area: Tolar, White Mountain, Cedar Canyon, Sugarloaf, and La Barge petroglyph sites (as well as for significant rock art sites identified in the future) as well as protective management for other cultural and historic sites could reduce or prevent damage or degradation of those sites. Surface disturbing activities could impact soil/rock stability and amplify erosion, which could damage or destroy cultural resources. Limiting the placement of structures that visually intrude on the cultural resources would help to preserve and protect settings. The management could increase protection of cultural resources from human-caused surface disturbances and the potential for loss of resources through unauthorized removals of artifacts or vandalism.

Management actions to minimize impacts to areas of tribal importance within the planning area would minimize surface disturbing activities, human presence, and lower the potential for direct damage or destruction to those areas. Fewer visitors accessing these areas could reduce the potential for vandalism or the unauthorized removal of artifacts.

The GRRMP and the JMH identify several general areas as containing tribally respected places. Although no specific sites or locations were identified, both documents say that areas on Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, Joe Hay Rim and the Indian Gap Trail have been identified as respected places. In 2000, Native American representatives advised the BLM that all evidence left by their ancestors, or by other people who lived in the area before the present time, deserves respect, hence their use of the term ‘respected place’. It should be noted that the term ‘respected places’ is not from the NRHP or other existing laws but is verbiage BLM and others use in discussions with tribal representatives in order to retrieve the broadest range of information to assist in managing the various kinds of historical and cultural manifestations on the landscape. A 2003 discussion of the results of Native American consultation states that respected places vary considerably in their importance to tribal people, as well as their physical manifestation. Specific projects and activities also vary greatly in the kind and extent of potential impacts to these places of concern. For these reasons, the BLM believes that project specific/site specific consultation and mitigation to determine effects to respected places is a more efficient way to manage these sites rather than developing special management that attempts to encompass the wide variety of resources that are considered respected places throughout the entire field office. For these reasons, no special management beyond existing laws, regulations and project/site-specific tribal consultation has been developed for these widely varying types of sites.

The management of paleontological sites through the closure of significant sites to surface disturbing activities, especially mineral location, would provide greater protection of cultural resources within those sites. Protections applied to paleontological sites would generally provide similar protections to known and/or unknown cultural resources in those same locations. Excavation of paleontological resources and human use could expose or discover previously unknown cultural resources to discovery, thereby enhancing scientific knowledge.

Managing the planning area under VRM classifications would offer added protections to cultural resources through reductions in surface disturbing activities. Under this alternative, approximately 225,720 acres would be classified as VRM Class I, 582,670 acres as VRM Class II, 615,490 acres as VRM Class III, and 2,180,420 acres as VRM Class IV (Map 2-17). Surface disturbing activities within the VRM Class III and IV areas could impact soil/rock stability and amplify erosion, which could potentially damage or destroy

known or unknown cultural resources. Surface disturbing activities could cause degradation of the setting of the cultural resources. Surface disturbing restrictions imposed by VRM Class I and II would impose limits on site development activities in those areas. Development restrictions would help maintain the appropriate historical visual setting of cultural resources such as NRHP eligible sites, National Historic Landmarks or Trails by limiting or prohibiting roads, structures, facilities, etc. that would impact views on or from those sites. Limiting the placement of structures that visually intrude on the cultural resource could help to preserve and protect settings. Scenic setting and good visual quality would support the context and could add value to most cultural resources.

The land resource management actions related to the real estate transactions of acquisition, disposal, and pursuing withdrawal would have different impacts on cultural and historic resources depending on whether the actions increase or decrease surface disturbance and occupancy by humans, and whether they place more or fewer acres under protective management stipulations. Lands that are acquired (and any cultural resources present on them) could receive greater levels of protection than they had been receiving under private ownership where protective measures were not applied.

The planning area would be open to renewable energy development projects which could cause surface disturbance that could expose previously unknown cultural resources to discovery, thereby enhancing scientific knowledge. Surface disturbing activities would have the potential to cause direct and indirect damage or destruction to cultural resources. Limiting the placement of structures that visually intrude on the cultural resource would help to preserve and protect settings.

ROW development could cause surface disturbance that could expose previously unknown cultural resources to discovery, thereby enhancing scientific knowledge; however, surface disturbing activities also have the potential to cause direct and indirect damage or destruction to those resources. Restricting National Historic Trail crossings from ROW projects would aid in protecting NHTs from adverse impacts to the visual and cultural setting. Approximately 349,940 acres would be designated as exclusion for ROWs and 736,138 acres would be designated as ROW avoidance areas (Map 2-21). Areas closed or limiting access would have fewer impacts to cultural resources from surface disturbing activities.

Management for livestock grazing, such as fencing and water developments, could involve localized surface disturbances and vegetation removal that could lead to the discovery of cultural and historic resources. Livestock trampling could cause soil compaction or erosion, and livestock could cause damage to existing resources through direct contact. Restricting the use of salt and mineral supplements to herds could help protect both the physical and visual integrity of NHTs (and other cultural resources) by reducing unnatural congregations of both domestic and wild animals that could result in excessive occupancy, trampling, soil compaction, or accelerated erosion.

Recreation management, including designating SRMAs, would increase public use in some areas but additional management would be applied to support recreationists and protect resources. Recreation opportunities would draw people to the planning area which could result in an increased potential for damage or destruction of cultural resources. Visitors could cause unintentional damage to both known and unknown cultural resources through surface occupancy, and intentional destruction through vandalism or unauthorized removal of structures and artifacts. Specific restrictions and prohibitions applied to undeveloped recreation sites in places where cultural resources may be adversely affected could offer further protection to the resources at those sites.

Under Alternative A, management for OHV use in the planning area allows cross country OHV use within 12,831 acres, 225,537 acres are closed to OHV use, 968,959 acres are limited to use of designated roads and trails, and 2,398,839 acres are limited to existing roads and trails. Human access to resources and features is more easily accomplished by the utilization of OHVs, and therefore visitation to cultural sites is likely to increase. Vehicular travel would be restricted to designated roads and trails in cultural resource management areas and historic landscape ACECs, which would provide greater protections against erosion and human-caused damage or destruction. Humans could cause unintentional damage to both known and

unknown cultural resources through their surface occupancy and disturbing activities, as well as intentional destruction through vandalism or unauthorized removal of structures and artifacts.

Management to preserve and protect historical remains and historical settings/context of congressionally designated NHTs and NHT-related resources would protect the resources and settings where the resources are found. The management would reduce surface disturbing activities that have the potential to cause direct and indirect damage or destruction to cultural resources, including NHTs. Limiting the placement of structures that visually intrude on the NHT or cultural resources would help to preserve and protect settings.

Management of WSAs and wild and scenic rivers in the planning area (see Map 2-29) would focus on prohibiting development. The management could result in less surface disturbance and fewer human visitors. A decreased presence of humans in WSA and wild and scenic rivers also reduces the potential for vandalism and the unauthorized removal of artifacts. These areas would be managed as VRM Class I and II or with scenic river classifications to help preserve the natural setting and existing character of the landscape, which supports the scenic value of cultural resources.

Management of 286,450 acres of lands as ACECs with actions such as maintaining or improving habitat and the setting that enhance the existing character of the landscape and prohibiting or limiting development could support the integrity of cultural and historic resources. Habitat maintenance, enhancement, and restoration actions typically improve soil health over the long term, which could protect undiscovered cultural resources from damage or theft. Managing the access of humans in ACEC areas could provide some protection against the potential for vandalism and unauthorized removal of cultural artifacts.

Special management areas that are not designated ACECs (580,010 acres), would be managed to maintain or enhance the specific resource values and characteristics for which they were designated as special management areas. Inventory activities could result in the location of previously unknown cultural resources to discovery, thereby enhancing scientific knowledge. Most special management area management would extend surface disturbing protections to cultural resources within those areas. Reducing disturbance could have the potential to reduce direct damage or destruction of resources, protect soil stability, reduce erosion, preserve setting or context, and reduce unauthorized removals of artifacts or intentional acts of vandalism.

### **4.12.3 Alternative B**

Impacts to cultural resources from wild horses would be the same as those described under Alternative A. Under this alternative, impacts on cultural resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for air quality, invasive species and pest management, and public safety.

Impacts to cultural resources from the management of soil and geologic resources would be similar to those discussed under Alternative A, except there would be more measures to protect soil and maintain or improve soil health. Under this alternative, prohibiting surface disturbing activities and management for soil health, cover, and stability could provide greater protections to unknown and known cultural resources by reducing the potential for detrimental erosion impacts to a greater degree compared to Alternative A.

Water resource management would have similar impacts to cultural resources compared to Alternative A. Alternative B offers greater protections to unknown and known cultural resources by reducing the extent of human-caused surface disturbing activities and human presence in the planning area.

Managing all lands identified as having wilderness characteristics specifically to preserve those characteristics would reduce surface disturbing activities that could directly or indirectly expose, damage, or destroy known and unknown cultural resources. Limiting human access and activities could reduce the potential for structure and artifact vandalism. Under Alternative B, closing lands with wilderness characteristics to fluid minerals development, mineral material sales/disposal, solid mineral leasing, and

management as an exclusion area for ROWs would offer additional protections from surface occupancy and surface disturbing activities.

Impacts to cultural and historic resources from fluid mineral management would be similar to those described under Alternative A; however, larger areas of land would be closed to fluid mineral development and managed with NSO stipulations. Compared to Alternative A, opportunities to explore, locate, and develop fluid minerals in the planning area would be reduced overall. Under Alternative B, approximately 1,292 oil, gas, and CBNG wells would be developed within the planning area (Map 2-5), which would be 3,481 fewer wells as compared to Alternative A. There would be 8,892 acres of initial surface disturbance and 2,566 acres of long-term disturbance from fluid mineral development, 23,939 fewer acres of initial surface disturbance, and 6,900 fewer acres of long-term disturbance compared with Alternative A. Under this alternative, 2,186,218 acres in the planning area are closed to fluid mineral exploration, leasing, and development (1,646,197 more acres than Alternative A). Under Alternative B, 813,354 acres would be managed with NSO stipulations, which is 654,743 more acres than under Alternative A. Applying CSU stipulations (99,674 acres, 621,458 fewer acres than Alternative A) and TLS (713,837 acres, 1,127,130 fewer acres than Alternative A) would offer greater protections than Alternative A by reducing the amount of land available for oil and gas development potentially impacted by surface disturbing activities.

Approximately 2,186,218 acres would be closed to geothermal resource development, 1,646,197 more acres than Alternative A. Limiting human access and activities could reduce the potential for structure and artifact vandalism. The discovery of previously unknown cultural resources would be less likely to occur in areas where surface disturbing activities are low. In the areas where geothermal resources could be developed, lease stipulations could provide greater protections to cultural resources by reducing the impacts of surface disturbing activities and human presence in the planning area.

Impacts from locatable and saleable mineral exploration, developments, and operations would be similar to those under Alternative A. Approximately 1,993,908 acres would be proposed for withdrawal from locatable mineral entry (1,437,350 more than Alternative A) and 2,581,741 more acres would be unavailable for mineral material sales and disposals, 1,748,022 acres more than Alternative A (Maps 2-2 and 2-14).

Impacts to cultural resources from the development of solid leasable minerals would be similar to those described under Alternative A. Under Alternative B, 3,735,546 acres would be closed to coal, 2,122,282 acres would be closed to oil shale, and 2,119,920 acres would be closed to trona leasing and development. The protections to lands closed to solid mineral development would be applied to 2,741,709 more acres of land closed to coal, 1,394,477 more acres of lands closed to oil shale, and 1,665,326 more acres closed to trona compared to Alternative A. The management could provide greater protections to cultural resources by reducing the extent of human-caused surface disturbing activities and human presence in the planning area.

Wildland fire and ecology management actions would have similar impacts to cultural resources compared to Alternative A. The prohibition on the use of chemical fire suppression agents within  $\frac{1}{4}$  mile of rock art sites and special designations could protect cultural and historic resources to a greater degree compared to Alternative A. The management would generally provide greater protections to soil stability and thereby reduce the potential for detrimental erosion that could impact unknown and known cultural resources and sites.

Management actions to maintain, restore, and enhance forest and woodlands would have similar impacts to cultural and historic resources as Alternative A, although there would be an emphasis on using natural processes to improve vegetative health and to benefit other resources. The management could benefit known and unknown cultural resources by reducing the potential for amplified erosion and setting degradation to a greater degree compared to Alternative A.

Management actions to maintain, restore, and enhance grassland, shrubland, riparian, and wetland habitats

would have similar impacts to cultural resources when compared to Alternative A. Under Alternative B, the management could benefit known and unknown cultural resources by reducing damage or destruction of resources, indirect impacts from erosional forces, and setting degradation to a slightly greater degree when compared to Alternative A.

Impacts to cultural resources from the management of fish and wildlife resources and Special Status Species are similar to those described under Alternative A. In addition, surface use restrictions, NSO and timing limitations stipulations for fluid minerals, closures to solid mineral leasing and mineral material sales/disposals, ROW avoidance or exclusions, and vehicle access and travel limitations would also be applied at various sites to reduce surface disturbance. The management under Alternative B could provide greater protection to cultural resources by reducing the extent of human-caused surface disturbing activities and human presence in the planning area.

Management actions designed to protect the cultural resources focus largely on human activities that cause surface disturbances which have the potential to impact soil stability, amplify erosion, inflict direct damage or destruction, cause indirect loss of scientific information, and degrade setting. Compared to Alternative A, actions emphasizing avoidance of development activities at National Register-eligible properties offers greater protections to cultural resources by reducing potentials for detrimental surface disturbing activities. The conservation and preservation of cultural resources would support accomplishing the recovery of scientific data; site stewardship programs and public education opportunities for NHTs and other sites would help to protect sites from visitor actions that could harm or destroy resources. The management under Alternative B could provide greater protection to known and unknown cultural resources by reducing the potential for direct damage or destruction of resources, indirect impacts from erosional forces, and setting degradation. Less human presence could reduce the potential for vandalism and unauthorized removal of artifacts. The discovery of previously unknown cultural resources would be less likely to occur in areas where surface disturbing activities are low.

Management actions to minimize impacts to areas of tribal importance (sacred, spiritual, respected, and/or traditional cultural settings, properties, or resources) within the planning area would be have similar impacts on cultural resources as described under Alternative A. Additional management to reduce surface disturbing activities and human presence in areas of tribal importance could lower the potential for direct damage or destruction to cultural and historic resources, indirect impacts from erosional forces, and setting degradation.

Paleontological resource management actions would have similar impacts on cultural resources as those described under Alternative A. The prohibition of surface disturbing activities in Adobe Town and Desolation Flat/Desolation Point areas could provide additional protections to known and unknown cultural resources that exist in those areas.

Impacts to cultural resources from VRM would be similar to Alternative A, except that the VRM Class II acreage is greater under this alternative. Approximately 225,785 acres would be classified as VRM Class I (68 acres more than Alternative A), 2,148,902 acres VRM Class II (1,566,230 more acres than Alternative A), 666,522 acres VRM Class III (51,030 acres more than Alternative A) and 563,754 acres as VRM Class IV (1,616,669 fewer acres than Alternative A). More acreage managed under VRM Class II would provide greater protections to known and unknown cultural resources by minimizing surface disturbing activities, human presence, and occupancy which could lower the potential for direct damage or destruction, indirect impacts from erosional forces, and setting degradation

Land resource management actions related to the real estate transactions of acquisition, disposal, and/or pursuing withdrawal would have similar impacts to cultural resources as described under Alternative A, depending on the lands withdrawn or acquired.

Impacts to cultural resources from the management of renewable energy projects are similar to Alternative A, except additional measures and BMPs to protect resources and resource uses would be applied. These

stipulations could provide greater protections to cultural resources by reducing the extent of human-caused surface disturbing activities and human presence.

Impacts to cultural resources from the management of ROWs would be similar to those described under Alternative A. In total, 2,480,876 acres would be designated as exclusion areas for ROWs (2,130,936 more than Alternative A) and 133,903 acres would be designated as ROW avoidance areas (602,235 fewer than Alternative A). Alternative B would provide greater protections to cultural resources by reducing the extent of human-caused surface disturbing activities and human presence.

Impacts to cultural resources from the management to designate and manage backcountry byways would be similar to Alternative A, except additional backcountry byways would be considered. Byways could provide opportunities for enhancing visitor knowledge and understanding of the significant natural and cultural resources located in their vicinity, which could improve appreciation and protection. Additional byways could increase the presence of visitors, which could increase the potential for surface disturbing activities and damages to cultural resources through unauthorized removal of artifacts or intentional acts of vandalism.

Impacts to cultural resources from the management of livestock grazing would be similar to those described under Alternative A. The management under Alternative B could provide greater protections to cultural resources by reducing surface disturbance. The management could reduce the opportunities for livestock making direct physical contact to cultural or historic structures or artifacts which could prevent damage or destruction of the resources to a greater degree compared to Alternative A.

Impacts to cultural resources from the management of recreation would be similar to Alternative A. The Continental Divide National Scenic Trail, Continental Divide Snowmobile Trail, the Green River, Killpecker Sand Dunes, Oregon and Mormon Pioneer National Historic Trails, and the Wind River Front SRMAs would not be retained. Not retaining the SRMAs and greater restriction for surface disturbing activities and visual disturbances could potentially reduce human and vehicle access to those areas. The management could provide greater protections to cultural resources by reducing the extent of surface disturbing activities and human presence. Reducing surface disturbing activities would lower potentials for direct resource damage or destruction, indirect impacts from erosional forces, and setting degradation. Reduced human presence could lower the potential for vandalism and unauthorized removal of artifacts. The discovery of previously unknown cultural resources would be less likely to occur in areas where surface disturbing activities are low.

Impacts to cultural resources from the management of OHV use would be similar to Alternative A, except under Alternative B, OHV use is limited to designated roads and trails (3,367,576 acres, 2,398,617 more than Alternative A). OHV use under those conditions shifts OHV use from any road or trail to only the designated routes, which could potentially decrease the distribution of OHVs in the planning area. Transportation management route designations under Alternative B would allow 2,352 miles of open routes, 4,505 miles would be closed, 67 miles would be limited use, and 10,006 miles would be identified for decommissioning and would be allowed to naturally restore without vehicular use. Managing vehicle and OHV use to minimize effects on resources provides similar protections to the unknown and known cultural resources, reducing the extent of surface disturbing activities and human presence.

Management to protect congressionally designated and/or eligible trails, and NHTs would have similar impacts to cultural resources compared to Alternative A, except there would be greater protective measures proposed such as larger buffer zones and specific closures and restrictions.

Management of WSAs and wild and scenic rivers would impact cultural resources similar to those described under Alternative A, but there would be a greater emphasis on protecting wilderness setting and viewshed values. The management would reduce the potential for surface disturbing activity. Reducing surface disturbing activities would lower the potential for direct resource damage or destruction, indirect impacts from erosional forces, and setting degradation of cultural resources.

Impacts to cultural resources from the management of ACECs would be similar to those described under Alternative A. Under Alternative B, 1,605,660 acres of lands would be managed as ACECs, 1,319,210 more acres compared to Alternative A. The additional management for ACECs would provide greater protections against surface disturbance. Managing all the ACECs consistent with VRM Class II objectives would provide greater protection of the viewsheds and would maintain the cultural and historic settings surrounding protected sites. The management could provide greater protection to known and unknown cultural resources by reducing the potential for direct resource damage or destruction, indirect impacts from erosional forces, and setting degradation.

#### 4.12.4 Alternative C

Impacts to cultural resources from the management of soil, geologic, water, grassland and shrubland, areas of tribal importance, lands and realty, and renewable energy resources would be the same as those described under Alternative A. Under Alternative C, impacts on cultural resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for air quality, invasive species and pest management, and public safety.

Impacts to cultural resources from managing lands with wilderness characteristics to not protect those characteristics would result in greater surface disturbing activities and increased presence of humans. This could potentially increase impacts on known and unknown cultural resources through direct resource damage or destruction, amplification of erosional forces, degradation of setting, and vandalism.

Impacts to cultural resources from the management of leasable minerals would be the same as those described under Alternative A. Under this alternative, approximately 4,919 oil, gas, and CBNG wells would be developed within the planning area (Map 2-7), which would be 146 more wells as compared to Alternative A. There would be 33,840 acres of initial surface disturbance and 9,758 acres of long-term disturbance from fluid mineral development; 1,009 additional acres of initial surface disturbance and 292 more acres of long-term disturbance compared with Alternative A.

Approximately 225,782 acres in the planning area would be closed to fluid mineral exploration, leasing, and development (314,239 fewer acres than under Alternative A). Under Alternative C, 15,542 acres would be managed with NSO stipulations, which is 143,069 fewer acres than under Alternative A. Applying CSU stipulations (215,890 acres; which is 505,242 fewer than Alternative A) and TLS (1,355,485 acres; which is 485,482 less than Alternative A) would overall offer fewer protections than Alternative A due total fewer acres with lease stipulations (Map 2-7).

Impacts to cultural resources from the development of solid leasable minerals would be similar to those described under Alternative A. Under Alternative C, 279,550 acres would be closed to coal and 225,965 acres would be closed to oil shale and trona. Approximately 407,618 fewer acres would be closed to coal leasing, 501,840 fewer acres would be closed to oil shale leasing, and 228,629 fewer acres would be closed to trona leasing compared with Alternative A. The smaller areas of closures could result in increased surface disturbance, possibly increasing the potential for damage to cultural resources.

Impacts from locatable and saleable mineral management on cultural resources would be similar to those described under Alternative A. Under Alternative C, 234,961 acres would be proposed for withdrawal from locatable mineral entry (321,597 fewer than Alternative A) and 226,421 acres would be unavailable for mineral material sales and disposals (607,298 fewer than Alternative A) (Maps 2-3 and 2-15). The management would provide fewer protections to cultural resources by increasing the potential extent of surface disturbing activities and human presence in the planning area compared to Alternative A.

Impacts from wildland fire management on cultural resources would be similar to those described under Alternative A. Management such as wildfire suppression and a smaller buffer distance for the use of

chemical fire suppression agents could lead to fewer protections for cultural resources from fire suppression activities and possible damage to rock art sites from suppression chemicals. The management under Alternative C could decrease the potential for direct fire damage to known cultural resources, but if suppression activities involved significant land surface disturbances, direct and indirect impacts to cultural resources could occur compared to Alternative A.

Impacts to cultural resources from forest and woodlands management would be similar to those described under Alternative A. The management could open areas to harvests, allow greater flexibility in harvest methods and timber treatments, and thereby potentially increase the extent of surface disturbing activities compared to Alternative A.

Impacts to cultural and historic resources from the management of riparian, wetland, fish, wildlife, and Special Status Species habitats would be similar to those described under Alternative A, except that smaller surface disturbing and/or surface use distance buffer zones would be applied around developments and operations. The management could increase the potential for direct destruction or damage to known and unknown cultural resources through surface disturbance, impacts to soil/rock stability, and amplified detrimental erosion.

Impacts from the management of cultural and paleontological resources would be similar to those described under Alternative A, except that smaller surface disturbance and setting buffer distances would be applied around known cultural and paleontological sites. Smaller sized buffer zones under this alternative could open land in the planning area to more surface disturbing activities and human access. Protections applied to paleontological sites would generally provide similar protections to any known or unknown cultural sites in those same locations.

Impacts to cultural resources from VRM would be the same as those described under Alternative A. Under Alternative C, 226,630 acres would be managed as VRM Class I (910 more than Alternative A), 607,900 acres VRM Class II (25,230 more than Alternative A), 395,680 acres VRM Class III (219,810 fewer than Alternative A), and 2,374,710 acres as VRM Class IV (194,290 more than Alternative A).

Under Alternative C, 225,784 acres would be managed as ROW exclusion areas and 1,687,304 acres would be managed as ROW avoidance areas (200,925 and 200,016 fewer acres than Alternative A, respectively). Fewer acres of ROW exclusion and avoidance areas could open areas in the planning area to more surface disturbing activities and human access compared to Alternative A. These actions could increase the potential for direct destruction or damage to known and unknown cultural resources through surface disturbance and occupancy, impacts to soil or rock stability, and amplified detrimental erosion.

Under Alternative C, the management of not retaining backcountry byways could reduce public visitation to these areas, which could decrease the potential for damage to cultural resources through unauthorized removal of cultural artifacts or intentional acts of vandalism. However, opportunities for public education or enjoyment of cultural resources would be reduced or lost under Alternative C by not retaining or designating byways.

Impacts to cultural resources from the management of livestock grazing would be similar to Alternative A. Additional management under Alternative C allowing livestock in riparian areas could result in vegetation loss, surface disturbance and amplified erosion, which could inflict direct damage or destruction to cultural resources, and/or degrade their settings. Reducing total authorized use for grazing could reduce contact from livestock on cultural resources; however, because management is continuing actual livestock use, it is likely that further impacts would occur beyond those described under Alternative A.

Impacts to cultural resources from recreation management would be similar to Alternative A. Fewer restrictions under Alternative C could open areas in the planning area to more surface disturbing activities and allow more access into areas with fewer recreational management controls. The management could increase the potential for direct destruction or damage to known and unknown cultural resources through



surface disturbance, impacts to soil/rock stability, and amplified erosion. Surface disturbing activity or occupancy could cause degradation of the setting in which the cultural resource exists. Increased presence of humans could result in artifact vandalism or removal.

Impacts to cultural resources from the management to protect congressionally designated and/or eligible trails, and NHTs would be similar to those described under Alternative A. Fewer restrictions on surface disturbing activities, vehicle travel, and more relaxed VRM classifications under this alternative could impact known and unknown cultural resources through an increase in surface disturbing activity and human presence compared to Alternative A.

Impacts to cultural resources from the management of WSAs would be to the same as those described under Alternative A. No management for wild and scenic rivers could potentially increase access, travel, and surface disturbance along the Sweetwater River, which could increase the potential for impacts to known and unknown cultural resources in those locations. An increase in surface disturbing activities could result in direct resource damage or destruction, indirect impacts from erosional forces, and setting degradation.

Under this alternative, no ACECs would be retained. The management would provide fewer protections to known and unknown cultural resources in these areas by increasing the potential for surface disturbing activities or occupancy, and an increase in the presence of humans. Surface disturbing activity or occupancy has the potential to degrade or destroy cultural resources through impacts to soil stability, amplified erosion, direct damage or destruction to resources, and diminished viewshed or setting. An increased presence of humans could raise the potential for vandalism and the unauthorized removal of artifacts. The discovery of previously unknown cultural resources would be more likely to occur in areas where surface disturbing and occupancy activities are high.

#### **4.12.5 Alternative D**

Impacts to cultural resources from soil, geologic, water, fire and fuels, woodlands, vegetation, riparian and wetland, fish and wildlife, Special Status Species, paleontology, backcountry byways, and livestock grazing management would be the same as those described under Alternative A. Under Alternative D, impacts on cultural resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for air quality, invasive species and pest management, and public safety.

Impacts to cultural resources from the management of lands with wilderness characteristics would be very similar to those described under Alternative B. Fewer areas would have management specifically for preservation of wilderness characteristics, which could allow for more surface disturbing activities compared to Alternative B.

Under Alternative D, approximately 4,737 oil, gas, and CBNG wells would be developed within the planning area (Map 2-8), which would be 36 fewer wells as compared to Alternative A. There would be 32,587 acres of initial surface disturbance and 9,397 acres of long-term disturbance from oil and gas development, 244 fewer acres of initial surface disturbance, and 69 fewer acres of long-term disturbance compared with Alternative A. Under this alternative, 768,989 acres in the planning area are closed to fluid mineral exploration, leasing, and development (228,968 more acres than Alternative A). Under Alternative D, 2,172 acres would be managed with NSO stipulations, which is 156,439 fewer acres than Alternative A. Applying CSU stipulations on 1,238,899 acres (517,767 more acres than Alternative A) would offer similar protections to cultural resources within these areas as described under Alternative A.

Impacts to cultural resources from geophysical exploration would be the same as those described under Alternative B.

Impacts from locatable mineral exploration, development, and operations would be very similar to those described under Alternative A. Under Alternative D, 482,272 acres of land would be proposed for

withdrawal from locatable mineral entry, 74,286 fewer acres compared to Alternative A. Managing less land available for locatable mineral development activities could provide fewer protections to cultural resources from human-caused surface disturbing activities and human presence in the planning area.

Impacts from saleable mineral development would be similar to those described under Alternative A. Under Alternative D, 362,009 acres would be unavailable for saleable mineral disposal, 471,710 more acres compared to Alternative A. Cultural resources could be vulnerable to surface disturbance and human activities to a greater degree compared to Alternative A.

Impacts to cultural resources from solid mineral leasing would be similar to those described under Alternative A. Under Alternative D, 227,606 acres of land would be closed to coal leasing, 124,378 more acres compared to Alternative A, 1,557,520 acres would be closed to oil shale leasing, 829,715 more acres compared to Alternative A, and 389,552 acres would be closed to trona leasing, 34,081 fewer acres compared to Alternative A. The smaller areas of land closed to coal, oil shale, and trona leasing could result in increased surface disturbance and thereby increase the potential for damage to cultural resources.

Under Alternative D, management of cultural resources would be similar to Alternative A, however additional management to protect resources from surface disturbance or disruptive activities would be applied. Minimizing surface disturbing activities and human presence in areas of cultural resources and of tribal importance would lower the potential for direct damage or destruction to known and unknown cultural resources that exist in those same areas; as well as indirect impacts from erosional forces and setting degradation.

Impacts to cultural resources from the management of visual resources would be similar to those described under Alternative A. Approximately 225,703 acres would be classified as VRM Class I (14 acres fewer than Alternative A), 1,178,718 acres as VRM Class II (596,046 acres more than Alternative A), 738,311 acres as VRM Class III (122,819 acres more than Alternative A) and 1,455,234 acres as VRM Class IV (725,189 acres less than Alternative A). More acreage managed under VRM Class II and less acreage under VRM Class IV would provide greater protections to known and unknown cultural resources compared to Alternative A.

Impacts on cultural resources resulting from implementing lands and realty actions would be similar to those presented under Alternative A. The number of acres designated as ROW exclusion areas would be decreased to 286,289 acres, 140,420 fewer acres compared with Alternative A and 1,388,618 acres would be managed as ROW avoidance areas, 652,480 more acres compared with Alternative A (Table 2-10, Map 2-24). Exclusion and avoidance areas could reduce potential impacts to cultural resources from ROW development, thereby helping to maintain the integrity of cultural resources in the planning area.

Impacts to cultural resources from recreation management would be similar to those described under Alternative A. SRMA management could reduce surface disturbance in some areas and protect cultural resources from damage or exposure from excavation or erosion. However, increased use in the remaining SRMAs could lead to vegetation loss or erosion, which could expose unknown cultural resources, but could put the resources at risk from vandalism, damage, or illegal collection.

Impacts to cultural resources from the management to protect congressionally designated and/or eligible trails, and NHTs would be similar to those described under Alternative A. Under Alternative D, additional protective measures proposed such as larger buffer distances, specific closures, and restrictions would be applied to these areas to a greater degree when compared to Alternative A.

Impacts to cultural resources from the management of WSAs would be very similar to those described under Alternative B. Fewer protections for surface disturbance within these areas could increase the potential for direct or indirect damage or destruction to cultural resources as compared to Alternative B. However, the discovery of previously unknown cultural resources could increase in areas where surface disturbing activities occur.

Impacts to cultural resources from the management of wild and scenic rivers would be the same as those described under Alternative B.

Impacts to cultural resources from the management of ACECs and special management areas would be similar to those described under Alternative A. Under Alternative D, 246,634 acres would be managed as ACECs, 39,816 fewer acres compared to Alternative A. Approximately 312,980 acres would be special management areas, 267,030 fewer acres compared to Alternative A.

## 4.13 PALEONTOLOGICAL RESOURCES

### 4.13.1 Assumptions

The analysis was based on the following assumptions:

- Significant Paleontological Resource (syn. Significant Fossil Resource) are defined by BLM policy as any paleontological resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered scientifically important because it is a rare or previously unknown species, it is of high quality and well preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has identified educational or recreational value. Paleontological resources that may be considered to not have paleontological significance include those that lack provenience or context, lack physical integrity because of decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities.
- Management recommendations are developed to promote the scientific, educational, and recreational uses of fossils.
- Scientifically significant fossils would continue to be discovered throughout the planning area. Most discoveries would occur in the Potential Fossil Yield Classification (PFYC) Class 3, 4, and 5 Paleontological Areas.
- Inventories conducted before surface disturbance in high-probability areas could result in the identification and evaluation of previously undiscovered resources, which the BLM would manage accordingly.
- Unmitigated surface disturbing activities could dislodge or damage paleontological resources and features that were not visible before surface disturbance.
- The number of sites that could be affected by various actions directly correlates with the degree, nature, and quantity of surface disturbing activities within the Rock Springs RMP planning area, and the paleontological sensitivity of the area
- All areas within the planning area are open to all specific uses, unless otherwise noted as closed.

### 4.13.2 Alternative A

Under this alternative, impacts on paleontological resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for air quality, invasive species and pest management, and public safety. No management actions are proposed under this alternative for lands with wilderness characteristics.

Surface disturbing activities could expose previously undiscovered (“unknown”) paleontological resources to discovery, thereby enhancing scientific knowledge; however, surface disturbing activities also have the potential to cause direct and indirect destruction or damage to those resources. Surface disturbing activities can impact soil/rock stability and amplify erosion, which could damage or destroy paleontological resources. Known paleontological resources could similarly be impacted by unmitigated surface disturbing activities. Surface disturbing activities and occupancy could cause degradation of the setting in which the paleontological resource exists. Settings can add valuable context to paleontological sites and generally enhance the overall experience and education of visitors exploring them. Limiting surface disturbances and the placement of structures that visually intrude on the paleontological site could help to preserve and protect settings. Human visitors could cause unintentional damage to both known and unknown resources through their surface disturbing activities; as well as intentional destruction through vandalism, including unauthorized removal of paleontological resource items. When a paleontological resource (e.g., a fossil, dinosaur bone fragment) is moved from its original position (in a soil or rock strata) without mapping and supporting scientific studies applied, critical scientific and historical context information is irrevocably lost. A vital portion of the scientific value of that item is directly linked to its time and place in history.

Management actions to maintain or improve soil health, and protect special geological features improves soil/rock stability and minimizes surface disturbances. These management actions could also indirectly protect unknown and known paleontological resources from exposure, damage, or destruction resulting from surface disturbing activities that cause soil and/or rock instability and erosion. Prohibitions on ground disturbing activities or surface occupancy in the highest ranked PFYC areas (Classes 3, 4 and 5) could provide indirect protections to known and unknown paleontological resources present in those areas by reducing the potential for direct damage or destruction, erosion, setting degradation, and vandalism.

Water resource management to maintain, improve, or reestablish proper watershed function would reduce the potential exposure, damage, or destruction of known and unknown paleontological resources by erosional forces. Under this alternative, adopting, and/or requiring design strategies for land uses and surface disturbing activities supports water flow control; and thereby reduces the potential for erosion. Maintaining and improving drainage channel stability, floodplains, wetlands and riparian areas would support soil stability which could protect paleontological resources from weathering, setting degradation, or direct damage. Water resource management that results in surface disturbing activities could potentially expose unknown paleontological resources to discovery, thereby enhancing scientific knowledge.

Allowing opportunities to explore, locate, and develop fluid minerals, solid minerals, and saleable minerals in the planning area would result in surface disturbing activities which could expose previously unknown paleontological resources to discovery, thereby enhancing scientific knowledge. Surface disturbing activities from mineral development could cause direct and indirect destruction or damage to those resources. Surface disturbing activities could indirectly impact soil/rock stability and amplify erosion, which could damage or destroy paleontological resources. Surface disturbing activities and occupancy could cause degradation of the setting in which the paleontological resource exists. Humans could cause unintentional damage to both known and unknown resources through surface disturbing activities, as well as intentional destruction through vandalism, including the unauthorized removal of fossils.

Approximately 4,773 oil, gas, and CBNG wells would be developed under Alternative A. There would be 32,831 acres of initial surface disturbance and 9,466 acres of long-term disturbance from fluid mineral development. Applying COAs attached to APDs based on site-specific NEPA analysis and resource surveys would add protections to paleontological resources in those areas through identification of the presence of resources in the area, and the development of appropriate protection, mitigation, and management measures for them. Lease stipulations would be applied to protect sensitive resources in specific areas.

Management of lands as closed to oil and gas leasing (540,021 acres) or that are managed with NSO stipulations (158,611 acres) would prevent surface disturbing activities, which could protect unknown paleontological resources from damage or destruction.

Applying CSU stipulations on 721,132 acres under Alternative A would restrict oil and gas leasing opportunities and reduce the number of wells that are developed within the CSU areas. Applying TLS (1,840,967 acres) to oil and gas leasing would reduce surface disturbance and occupancy durations. These stipulations could provide protections to paleontological resources present in those areas by reducing the potential for direct damage or destruction, erosion, setting degradation, and/or vandalism (Map 2-5).

Under Alternative A, most of the planning area would be open to consideration for geophysical exploration through the use of off-road vehicles and detonation of explosive charges. Surface disturbing activities could potentially expose previously unknown paleontological resources to discovery, thereby enhancing scientific knowledge. Applying stipulations and mitigation requirements could provide additional protections to known and unknown paleontological resources present in those areas by reducing the potential for direct damage or destruction from explosive charges, erosion, setting degradation, and vandalism.

Under Alternative A, 485,964 acres would be closed to coal leasing, 727,805 acres would be closed to oil shale leasing, and 423,633 acres would be closed to trona leasing. Under this alternative, 556,558 acres would be withdrawn from locatable mineral entry and 833,719 acres would be closed to saleable mineral disposal.

Wildland fire ecology and management such as restoring natural fire regimes and frequencies, suppression methods, the use of prescribed fire, and treatments of vegetation could result in the direct damage or destruction of paleontological resources. Fires could expose previously unknown resources to discovery, thereby enhancing scientific knowledge. Under Alternative A, site-specific analyses would be prepared for sensitive resource areas, such as known paleontological sites, to protect and preserve those resources. Prohibiting the use of chemical fire suppression agents in known fossil bed sites would protect these special features from degradation or destruction by these chemicals. Managing planned and unplanned ignitions could improve soil stability and reduce erosion potential. Overall, this management would help to protect and maintain paleontological resources in the planning area.

Under Alternative A, management actions to maintain, restore, and enhance forest and woodlands would generally improve soil health and stability over the long term, providing protection for paleontological resources. The management would support soil stability and greater protection against erosional forces that could detrimentally expose, damage, or destroy paleontological resources.

The application of prescribed fire, mechanical, chemical, and/or biological treatments of vegetation would increase human presence, the use of heavy equipment, and surface disturbance. The management could increase the potential of erosion, setting degradation, direct damage or destruction of paleontological resources, and could lead to vandalism of known and unknown paleontological resources. Conversely, the activities could also expose previously unknown paleontological resources to discovery, thereby enhancing scientific knowledge.

Management actions to maintain, improve, enhance, and/or restore grassland and shrubland vegetation communities could provide indirect support of paleontological resources by possibly revealing resources during treatment activities. Managing vegetation resources would improve soil health over the long term, which could indirectly protect paleontological resources by limiting surface disturbing activities in specific vegetation communities. Surface disturbances associated with vegetation treatments could cause direct damage or destruction, erosion, and setting degradation of paleontological resources.

Management actions to maintain, restore, and enhance riparian and wetland resources would lead to stable soils which provide protection against erosional forces that can detrimentally expose, damage, or destroy paleontological resources. Vegetation improvement or protection actions in riparian and wetland areas would potentially improve soil stability and reduce erosion, thereby helping to maintain paleontological resources. Riparian/wetland area habitat improvement or restoration actions could result in some surface disturbing activities that could expose previously unknown paleontological resources to discovery, thereby

enhancing scientific knowledge.

Management actions for fish and wildlife resources such as managing and rehabilitating wildlife habitat could provide protection to known and unknown paleontological resources. The management could reduce the potential for direct damage or destruction, erosion, and setting degradation of paleontological resources. Habitat improvement or restoration actions could result in some surface disturbing activities that could expose previously unknown paleontological resources to discovery, thereby enhancing scientific knowledge.

Management actions to protect Special Status Species such as prohibiting or limiting motorized vehicle use, surface uses, explosive charges, or any other surface disturbing or disruptive activity could provide additional protection to known and unknown paleontological resources. The management could reduce the potential for direct damage or destruction, erosion, setting degradation, and vandalism. Special Status Species habitat improvement and restoration actions could result in some surface disturbing activities that could expose previously unknown paleontological resources to discovery, thereby enhancing scientific knowledge.

Management designed to protect the cultural resources from human activities that inflict direct damage or destruction of those resources, and indirect loss of scientific information, would protect paleontological resources from similar effects. Human activity could cause surface disturbance which could impact soil stability, amplify erosion, and degrade the setting of the resource. Increased human access in the planning area could increase the potential for damages through unauthorized removal of paleontological resources or intentional acts of vandalism.

Management for rock art sites could reduce detrimental surface disturbing activities and occupancy which would protect paleontological resources within those areas. However, any surface disturbing activities could expose previously unknown paleontological resources to discovery, thereby enhancing scientific knowledge. Protections applied to cultural resources would generally provide similar protections to known and unknown paleontological sites in those same locations.

Management actions to minimize impacts to areas of tribal importance within the planning area would advance the protection of paleontological resources within those areas. Minimizing surface disturbing activities and human presence in areas of tribal importance would lower the potential for direct damage or destruction to paleontological sites that exist in those same areas; as well as indirect impacts from erosional forces and setting degradation. Fewer visitors accessing these areas would reduce the potential for vandalism and unauthorized removal of fossils.

Management actions designed to protect paleontological resources, such as reducing surface disturbance or disruptive actions, could enhance soil stability, reduce erosion, retain scientific information, and preserve setting or context. Closure of significant sites to surface disturbing activities, especially mineral location, would provide greater protection to those sites, as would exchanges for acquisition and cooperative agreements pursued to enhance protection. Under this alternative, paleontological research opportunities would be provided for qualified scientists/academia on BLM-administered land in conjunction with the Wyoming State Office Paleontologist which could expand the knowledge and understanding of the paleontological resources within the planning area. There would be opportunities provided to the public to enjoy limited recreational collection of common invertebrate and plant fossils and petrified wood for hobby purposes. Those activities would likely enhance public knowledge and enjoyment, but it also could potentially result in unauthorized disturbances or removals of significant paleontological resources by individuals who do not understand or respect how the restrictions or prohibitions are different for the varying types of fossil items. Visitor use management including interpretive signing, fencing, barriers, and other management activities would increase protection of paleontological resources from human-caused surface disturbance and the potential for loss of resources through vandalism.

Managing the planning area under VRM classifications would offer added protections to paleontological resources through reductions in surface disturbing activities and occupancy. The extent of surface disturbing activities ranges from “very little disturbance” of VRM Class I to the “most disturbance” of VRM Class IV. Under this alternative, approximately 225,720 acres would be classified as VRM Class I, 582,670 acres as VRM Class II, 615,490 acres as VRM Class III, and 2,180,420 acres as VRM Class IV (Map 2-17). VRM Class III and IV would allow greater surface disturbance and occupancy which could expose previously unknown paleontological resources to discovery, thereby enhancing scientific knowledge. Surface disturbing activities within the VRM Class III and IV areas could impact soil or rock stability and amplify erosion, which could potentially damage or destroy known or unknown paleontological resources. VRM Class I and II management would impart greater restrictions on surface disturbing and occupancy activities and would thereby offer greater protections against potential damages to those resources.

The land resource management actions related to the real estate transactions of acquisition, disposal, and/or pursuing withdrawal would have different impacts on paleontological resources depending on whether the actions increase or decrease surface disturbances and occupancy by humans, and/or whether they place more or fewer acres under protective management stipulations. Lands that are acquired (and any paleontological resources present on them) could receive greater levels of protection than they had been receiving under private ownership where protective measures were not applied.

The planning area would be open to renewable energy development projects. Renewable energy development would cause surface disturbing activities that could expose previously unknown paleontological resources to discovery, thereby enhancing scientific knowledge.

Under Alternative A, areas would be designated for avoidance or exclusion to ROWs where uses are incompatible with management of sensitive resources. Approximately 349,940 acres would be designated as exclusion areas for ROWs and 736,138 acres would be designated as ROW avoidance areas (Map 2- 21). Areas closed or limiting access would have fewer impacts from surface disturbing activities. In areas where ROW development is allowed, surface disturbance could expose previously unknown paleontological resources to discovery, thereby enhancing scientific knowledge; however, surface disturbing activities would have the potential to cause direct and indirect damage or destruction to those resources.

Management of backcountry byways such as use restrictions, seasonal limitations, and mitigation requirements, would be applied to road and trail routes which could provide additional protections to adjacent paleontological resources. The management could provide additional protections to known and unknown paleontological resources present in those areas by reducing the potential for direct damage or destruction, erosion, setting degradation, and vandalism.

Management for livestock grazing such as fencing and water developments could involve localized surface disturbances and vegetation removal which could expose paleontological resources to discovery or damage from exposure. The discovery of previously unknown paleontological resources could occur in areas where grazing, fencing, and water developments were to occur through the associated surface disturbing and occupancy activities by humans. Restricting use of salt and mineral supplements could help protect both the physical and visual integrity of paleontological sites by reducing unnatural congregations of both domestic and wild animals that could result in excessive occupancy, trampling, soil compaction, or accelerated erosion.

Management of recreation resources, including SRMAs, would have varying effects on paleontological resources. Recreation management could increase use in some areas and also apply surface disturbance or development restrictions on those areas. The management could both protect and lead to damage to paleontological resources. Management of SRMAs would restrict surface disturbing activities and apply distance stipulations for structures or facilities to minimize impacts to visual settings or viewsheds, which could protect paleontological resources from damage, and help protect the visual setting of resources. The

remainder of the planning area would be managed as an ERMA. Recreational activities could impact paleontological resources through human use, occupancy, surface disturbing activities, and resource degradation or depletion. Recreation opportunities would draw people SRMAs which could result in an increased potential for damage or destruction of paleontological resources. Visitors could cause unintentional damage to both known and unknown paleontological resources through their surface occupancy and disturbing activities, as well as intentional destruction through vandalism or unauthorized removal of fossils. Use restrictions would help reduce those impacts. Specific restrictions and prohibitions applied to undeveloped recreation sites in places where paleontological sites may be adversely affected could offer further protection to those sites.

Management for OHV use in the planning area allows cross country OHV use on 12,831 acres, closes 225,537 acres to OHV use, limits OHV use to designated roads and trails on 968,959 acres, and limits OHV use to existing roads and trails on 2,398,839 acres (Map 2-25). OHV travel could impact soil stability by disturbing soil surfaces, damaging vegetation, compacting soil, and promoting gully formation along trails and roads, which increases the potential for erosion. Erosional forces can damage or destroy unknown and known paleontological resources. Human access is more easily accomplished by the utilization of OHVs. Access to remote paleontological sites could result in vandalism or the unauthorized removal of fossils.

Management actions to preserve and protect historical remains and historical settings/context of congressionally designated and eligible NHTs and NHT-related resources would reduce surface disturbing activities that have the potential to cause direct and indirect damage or destruction to paleontological resources. Limiting the placement of structures or actions that visually intrude on the NHT or paleontological site would help to preserve and protect settings.

Management of WSAs and wild and scenic rivers would focus on reducing development and surface disturbing activities. A decreased presence of humans and vehicles in WSA and wild and scenic river areas could reduce the potential for vandalism and unauthorized removal of fossils. The management would support soil stability and greater protection against erosional forces that could detrimentally expose, damage, or destroy paleontological resources.

Under this alternative, 286,450 acres would be managed as ACECs. Management for ACECs such as maintaining or improving habitat and the viewsheds that enhance the existing character of the landscape and prohibiting or limiting development could support the integrity of paleontological resources. ACEC habitat prescriptions could benefit known and unknown paleontological resources by reducing the potential for irreparable damage by surface disturbance or indirect damage from amplified erosion.

Under Alternative A, 580,010 acres would be managed as special management areas, which could provide protective management for paleontological resources within those areas. The Monument Valley area (69,960 acres) has unique scenic features and has the apparent high potential for significant paleontological resources. This area would be targeted for additional paleontological inventories to determine whether it could meet ACEC designation criteria. Inventory activities could result in the location of previously unknown paleontological resources to discovery, thereby enhancing scientific knowledge.

### **4.13.3 Alternative B**

Impacts to paleontological resources from areas of tribal importance, lands and realty, and renewable energy management would be the same as those presented under Alternative A. Under this alternative, impacts on paleontological resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for air quality, invasive species and pestmanagement, and public safety.

Impacts to paleontological resources from the management of soil and geologic resources would be similar to those discussed under Alternative A, except there would be more measures to protect soil properties and maintain or improve soil health. This alternative could provide greater protections to unknown and known



paleontological resources by reducing the potential for detrimental erosion impacts as compared to Alternative A.

Impacts to paleontological resources from the management of water resources would be similar to those discussed under Alternative A except that greater surface disturbing protections would be applied. Alternative B offers greater protections to unknown and known paleontological resources by reducing the extent of human-caused surface disturbing activities and human presence in the planning area.

Managing all lands identified as having wilderness characteristics specifically to preserve those characteristics would provide additional protections to soil health and stability, and from surface disturbing activities that could directly or indirectly expose, damage, or destroy known and unknown paleontological resources. Surface disturbing activities and occupancy could cause degradation of the setting in which the paleontological resource exists. Limiting human access and activities could reduce the potential for fossil vandalism. Under Alternative B, closing lands with wilderness characteristics to fluid minerals development, mineral material sales/disposal, solid mineral leasing, and management as an exclusion area for ROWs would offer additional protections from surface occupancy and surface disturbing activities. The discovery of previously unknown paleontological resources would be less likely to occur in areas where surface disturbing and occupancy activities are low.

Impacts to paleontological resources from fluid mineral management would be similar to those described under Alternative A. Under Alternative B, approximately 1,292 oil, gas, and CBNG wells would be developed within the planning area (Map 2-6), which would be 3,481 fewer wells as compared to Alternative A. There would be 8,892 acres of initial surface disturbance and 2,566 acres of long-term disturbance from fluid mineral development, 23,939 fewer acres of initial surface disturbance, and 6,900 fewer acres of long-term disturbance compared with Alternative A. Under this alternative, 2,186,218 acres in the planning area are closed to fluid mineral exploration, leasing, and development, 1,646,197 more acres than Alternative A. Under Alternative B, 813,354 acres would be managed with NSO stipulations, which is 654,743 more acres than under Alternative A. Applying CSU stipulations (within 99,674 acres, 621,458 fewer than Alternative A) and TLS (within 713,837 acres, 1,127,130 fewer than Alternative A) would offer greater protections than Alternative A due to fewer acres in the Alternative B scenario being potentially impacted by surface disturbing activities.

Impacts from locatable, leasable, and saleable mineral exploration, development, and operations would be similar to those under Alternative A. Approximately 1,993,908 acres would be withdrawn from locatable mineral entry (1,437,350 more than Alternative A) and 2,581,741 acres would be closed to mineral material sales (1,748,022 more than Alternative A) (Maps 2-2, 2-6, and 2-10). Under Alternative B, 3,735,546 acres would be closed to coal, 2,122,282 acres would be closed to oil shale, and 2,119,920 acres would be closed to trona leasing and development. The protections to lands unavailable to solid mineral development would be applied to 2,741,709 more acres of land closed to coal, 1,394,477 more acres of lands closed to oil shale, and 1,665,326 more acres of land closed to trona compared to Alternative A. The management could provide greater protections to paleontological resources by reducing the extent of human-caused surface disturbing activities and human presence in the planning area.

Impacts to paleontological resources from wildland fire and ecology management would be similar to those described under Alternative A. The prohibition on the use of chemical fire suppression agents within ¼ mile of rock art sites and other sensitive areas is more restrictive than under Alternative A. These actions could provide greater protections to soil stability and thereby reduce the potential for detrimental erosion that could impact unknown and known paleontological resources and sites.

Management actions to maintain, restore, and enhance forest and woodlands would have similar impacts to paleontological resources as Alternative A. The management could benefit known and unknown paleontological resources by reducing the potential for amplified erosion and setting degradation. Prohibiting pre-commercial thinning would reduce surface disturbing activities. Management to leave timber harvest areas to revegetate naturally could potentially result in a lengthier period of soil instability.

which could amplify detrimental erosion and lead to damage to paleontological resources. However, increased erosion could expose unknown resources to discovery and study.

Management to maintain, restore, and enhance grassland, shrubland, riparian, and wetland habitats would have similar impacts to paleontological resources when compared to Alternative A. All plans and projects applied to these habitats would be designed to reduce surface disturbing/occupancy activities. The management could benefit known and unknown paleontological resources by reducing direct damage or destruction, indirect impacts from erosional forces, and setting degradation.

Impacts to paleontological resources from the management of fish and wildlife resources and Special Status Species are similar to those described under Alternative A. In addition, surface use restrictions would be applied at various sites to reduce surface disturbance. The management under Alternative B could provide greater protection to paleontological resources by reducing the extent of human-caused surface disturbing activities and human presence in the planning area.

Cultural resource management actions would have similar impacts to paleontological resources as those described under Alternative A, except decreasing the setting to be protected surrounding significant rock art sites would provide fewer protections to the setting of paleontological resources that exist in those same areas. Additional management under Alternative B could decrease the potential for direct destruction or damage to known and unknown paleontological resources through surface disturbance and occupancy, impacts to soil or rock stability, amplified detrimental erosion, degradation of setting, and vandalism.

Impacts from paleontological resource management would be similar to Alternative A, except that site-specific analysis and potential adverse effect mitigation would occur prior to considering surface disturbing activities at known significant paleontological resource localities. Additionally, surface disturbing activities would be prohibited in Adobe Town and Desolation Flat/Desolation Point areas. This management would provide additional protections to known and unknown paleontological resources. The conservation and preservation of paleontological sites supports accomplishing the recovery of scientific data. Site stewardship programs and public education opportunities for these sites would help to protect sites from visitor actions that could harm or destroy these resources.

Impacts to paleontological resources from VRM would be similar to Alternative A, except that the VRM Class II acreage is greater under this alternative. Approximately 225,790 acres would be managed as VRM Class I (same as Alternative A), 2,148,902 acres as VRM Class II (1,566,230 acres more than Alternative A), 666,522 acres VRM Class III (51,030 acres more than Alternative A), and 563,754 acres as VRM Class IV (1,616,669 acres less than Alternative A). More acreage managed under VRM Class II would provide greater protection to paleontological resources by minimizing surface disturbing activities and human presence in these areas, which could lower the potential for direct damage or destruction, indirect impacts from erosional forces, and setting degradation.

Impacts to paleontological resources from the management of ROWs would be similar to those described under Alternative A, except no new corridors would be designated under Alternative B. In total, 2,480,876 acres would be managed as ROW exclusion areas, 2,130,936 more than Alternative A, and 133,903 acres would be managed as ROW avoidance areas, 602,235 fewer than Alternative A. Fewer acres of ROWs would provide greater protections to paleontological resources by reducing the extent of human-caused surface disturbing activities and human presence in the planning area.

Impacts to paleontological resources from the management of backcountry byways would be similar to Alternative A, except additional backcountry byways would be considered. Byways could provide opportunities for enhancing visitor knowledge and understanding of the significant natural and paleontological resources located in their vicinity, which could improve appreciation and protection. Backcountry byways could increase the presence of visitors, which could increase the potential for surface disturbing activities and damage to paleontological resources through unauthorized removal of fossils or intentional acts of vandalism.

Impacts to paleontological resources from the management of livestock grazing would be similar to those described under Alternative A. The management could provide greater protections to paleontological resources by reducing surface disturbance. The management could reduce the opportunities for livestock to make direct physical contact to fossil sites which could prevent damage or destruction to the resource.

Impacts to paleontological resources from the management of recreation in the planning area would be similar to Alternative A, except that the entire planning area would not be managed as an ERMA and SRMAs would not be retained. Under Alternative B, more emphasis would be placed on management for resource values instead of recreation values. The management could provide greater protections to paleontological resources by reducing the extent of surface disturbing activities and human presence. Reducing surface disturbing activities could prevent direct resource damage or destruction, indirect impacts from erosional forces, and setting degradation.

Impacts to paleontological resources from OHV management would be similar to Alternative A, except the 2,630,155 acres designated as “limited to existing roads and trails” under Alternative A would be designated as “limited to designated roads and trails” for a total of 3,367,576 acres where OHV use would be allowed only on designated routes under Alternatives B, C, and D. Managing OHV use to minimize adverse effects on resources would provide similar protections to the unknown and known paleontological resources in the planning area by reducing the extent of human-caused surface disturbing activities and human presence when compared to Alternative A.

Management to protect congressionally designated and/or eligible trails, and NHTs would have similar impacts to paleontological resources as Alternative A, except there are greater protective measures proposed such as larger buffers and specific closures and restrictions. Reducing surface disturbing activities would lower the potential for direct resource damage or destruction, indirect impacts from erosional forces, and setting degradation at paleontological sites.

Management of WSAs and wild and scenic rivers would impact paleontological resources similar to those described under Alternative A, but there would be a slightly greater emphasis on protecting wilderness setting and viewshed values over recreational values. The management would reduce the potential for surface disturbing activity which could protect known and unknown paleontological resources.

Impacts to paleontological resources from the management of ACECs would be very similar to those described under Alternative A; however, 1,605,660 acres of lands would be managed as ACECs under Alternative B, 1,319,210 more acres compared to Alternative A. Additional stipulations to individual ACECs could reduce surface disturbance, which could provide greater protections to known and unknown paleontological resources by reducing the potential for direct resource damage or destruction, indirect impacts from erosional forces, and setting degradation. Reduced human presence could decrease the potential for vandalism and unauthorized removal of fossils.

#### **4.13.4 Alternative C**

Impacts to paleontological resources from soil and geologic resources, water, geothermal, geophysical, forest and woodlands, grassland and shrubland, areas of tribal importance (sacred, spiritual, respected, and traditional cultural settings, properties, or resources), lands and realty, and renewable energy management would be the same as those described under Alternative A. Under this alternative, impacts on paleontological resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for air quality, invasive species and pest management, and public safety.

Impacts to paleontological resources from managing lands with wilderness characteristics to not protect those characteristics would result in fewer protections for soil health and stability and could allow more surface disturbing activities and occupancy. This could potentially increase impacts on known and unknown paleontological resources through direct resource damage or destruction, amplification of erosional forces,

degradation of setting, or vandalism.

Compared to Alternative A, opportunities to explore, locate, and develop fluid minerals in the planning area would increase under Alternative C. Mineral development activities could cause direct destruction or damage to known and unknown paleontological resources through surface disturbances and occupancies, adverse impacts to soil and rock stability that amplify detrimental erosion. Surface disturbing activities or surface occupancy could cause degradation of the setting in which the paleontological resources exist. Humans could cause unintentional damage to both known and unknown resources through their surface disturbing activities; as well as intentional destruction through vandalism, including the unauthorized removal of fossils.

Under Alternative C, approximately 4,919 oil, gas, and CBNG wells would be developed within the planning area (Map 2-7), which would be 146 more wells as compared to Alternative A. There would be 33,840 acres of initial surface disturbance and 9,758 acres of long-term disturbance from oil and gas development; 1,009 more acres of initial surface disturbance and 292 more acres of long-term disturbance compared with Alternative A. Approximately 225,782 acres in the planning area would be closed to fluid mineral exploration, leasing, and development; 314,239 fewer acres than under Alternative A. Under Alternative C, 15,542 acres would be managed with NSO stipulations, which is 143,069 fewer acres than under Alternative A. Applying CSU stipulations to 215,890 acres, 505,242 fewer than Alternative A and applying TLS to 1,355,485 acres, 47,258 more than Alternative A, would overall offer fewer protections than Alternative A due to total fewer acres of land protected by closures or lease stipulations.

Impacts from locatable, leasable, and saleable mineral exploration, development, and operations on paleontological resources would be similar to those under Alternative A. Under Alternative C, 1,993,908 acres would be withdrawn from locatable mineral entry, 321,597 fewer than Alternative A, and 226,421 acres would be closed to mineral material sales and disposals, 607,298 fewer than Alternative A (Map 2-3, 2-11, and 2-15). Approximately 226,219 acres would be closed to coal leasing, 407,617 fewer acres than Alternative A, 225,965 acres would be closed to oil shale leasing, 501,840 fewer acres than Alternative A, and 225,965 acres would be closed to trona leasing, 228,629 fewer acres than Alternative A. The management would provide fewer protections to paleontological resources by increasing the potential extent of surface disturbing activities and human presence in the planning area compared to Alternative A.

Impacts to paleontological resources from wildland fire management would be similar to Alternative A. Additional management such as wildfire suppression, heavy equipment usage, and prohibitions for using chemical fire suppression agents in special designations and rock art sites would not be as restrictive. The management under Alternative C could decrease the potential for direct fire damage to known paleontological resources in those areas, but if suppression activities involved significant land surface disturbances, direct and indirect impacts to paleontological resources could occur.

Impacts to paleontological resources from the management of riparian, wetland, fish, wildlife, and Special Status Species habitats would be similar to those described under Alternative A, except that smaller surface disturbing and/or surface use distance buffer zones would be applied around developments and operations. The management could increase the potential for direct destruction or damage to known and unknown paleontological resources through surface disturbance, impacts to soil/rock stability, and amplified detrimental erosion when compared to Alternative A.

Impacts from the management of cultural resources would have similar impacts on paleontological resources as those described under Alternative A, except that only imposing minimum required restrictions would provide fewer protections against surface occupancy or disturbances that could lead to detrimental erosion, paleontological site or fossil damage, or degradation of scenic views.

Paleontological resource management actions under this alternative are the same as Alternative A. Impacts from this management are the same as those described under Alternative A.

Impacts to paleontological resources from the management of visual resources would be the same as those described under Alternative A. Under Alternative C, approximately 226,630 acres would be classified as VRM Class I (910 more than Alternative A), 607,900 acres VRM Class II (25,230 more than Alternative A), 395,680 acres VRM Class III (219,810 fewer than Alternative A), and 2,374,710 acres as VRM Class IV (194,290 more than Alternative A).

Impacts to paleontological resources from the management of ROWs is similar to Alternative A, except 225,784 acres would be designated as exclusion for ROWs, 200,925 fewer than Alternative A, and 1,687,304 acres would be designated as ROW avoidance areas, 200,016 fewer than Alternative A. This management could increase the potential for direct destruction or damage to known and unknown paleontological resources through surface disturbance, impacts to soil or rock stability, and amplified erosion.

Impacts to paleontological resources from the management of backcountry byways could reduce public visitation areas along these routes, which could decrease the potential for damage to paleontological resources through unauthorized removal of fossils or intentional acts of vandalism.

Impacts to paleontological resources from the management of livestock grazing would be similar to Alternative A. Properly managed grazing could serve as a vegetation treatment that supports soil and vegetation health. Livestock grazing that is not managed correctly could result in excessive vegetation loss and surface disturbances that degrade soil health and stability and amplify erosion which could inflict direct damage or destruction to paleontological resources. Reducing total authorized use for grazing could reduce damage to paleontological resources from livestock; however, because management is continuing actual livestock use, it is likely that few changes would occur beyond those described under Alternative A.

Impacts to paleontological resources from recreation management would be similar to those described under Alternative A. Under this alternative, the management could open areas in the planning area to more surface disturbing activities from recreation use and allow greater access by humans into areas with fewer recreational management controls. The management could increase the potential for direct damage to known and unknown paleontological resources through surface disturbance, impacts to soil and rock stability, and amplified detrimental erosion. Increased presence of humans could result in fossil vandalism or removal. However, the discovery of previously unknown paleontological resources would be more likely to occur in areas where surface disturbing activities and human presence are high.

Impacts to paleontological resources from OHV management would be similar to those described under Alternative A, except that this alternative would allow approximately 500 more acres of open areas within 13,333 acres compared to Alternative A. Under Alternative C, 225,537 acres would be closed to vehicle use, and 3,365,374 acres would be limited to designated roads and trails.

Impacts to paleontological resources from the management to protect congressionally designated and/or eligible trails, and NHTs would be similar to those described under Alternative A. Alternative C would include less restrictive management for surface disturbing activities which could increase human-caused surface disturbing activities and human presence compared to Alternative A.

Impacts to paleontological resources from the management of WSAs and wild and scenic rivers would result in fewer protections to fossil resources within the 9.7 miles of rivers described under Alternative A.

Under this alternative, no ACECs would be retained and the management would provide fewer protections to known and unknown paleontological resources in these areas by increasing the potential for surface disturbing activity and occupancy.

### 4.13.5 Alternative D

Impacts to paleontological resources from water resource management, geophysical exploration, fire and fuels, forest and woodlands, vegetation, riparian and wetland, fish and wildlife, Special Status Species, cultural resource, backcountry byways, and livestock grazing management would be the same as those described under Alternative A. Under this alternative, impacts on paleontological resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for air quality, invasive species and pest management, and public safety.

Impacts to paleontological resources from the management of soil and geologic resources would be similar to those discussed under Alternative A, except there would be more measures to protect soil properties and maintain or improve soil health. Management for soil health, cover, and stability could provide greater protections to unknown and known paleontological resources by reducing the potential of erosion.

Under Alternative D, lands with wilderness characteristics would be managed for multiple use or existing management, which could allow for more surface disturbing activities compared to Alternative B.

Under Alternative D, approximately 4,737 oil, gas, and CBNG wells would be developed within the planning area (Map 2-8), which would be 36 fewer wells as compared to Alternative A. There would be 32,587 acres of initial surface disturbance and 9,397 acres of long-term disturbance from oil and gas development; 244 fewer acres of initial surface disturbance and 69 fewer acres of long-term disturbance compared with Alternative A. Under this alternative, 768,989 acres in the planning area are closed to fluid mineral (oil, gas, and geothermal) exploration, leasing, and development, 228,968 more acres than Alternative A. Under Alternative D, 2,172 acres would be managed with NSO stipulations, which is 156,439 fewer acres than Alternative A. Applying CSU stipulations on 1,238,899 acres, 517,767 acres more than Alternative A, and TLS on 1,911,167 acres, 70,200 acres more than Alternative A, would offer similar protections as Alternative A.

Impacts from locatable, leasable, and saleable mineral exploration, development, and operations would be similar to those described under Alternative A, although smaller areas of land are closed to solid mineral leasing. Approximately 482,272 acres would be proposed for withdrawal from locatable mineral entry, 74,286 fewer acres than Alternative A, and 362,009 acres would be closed to mineral material sales and disposals, 471,710 fewer acres than Alternative A. Under Alternative D, 610,342 acres would be closed to oil leasing, 124,378 more acres than Alternative A, 1,557,520 acres would be closed to oil shale leasing, 829,715 more acres than Alternative A, and 389,552 acres would be closed to trona leasing, 34,081 fewer acres than Alternative A.

Under Alternative D, management of paleontological resources would have impacts similar to Alternative A; however, additional management for the Farson Fossil Fish Beds could protect the paleontological site.

Impacts to paleontological resources from VRM would be similar to Alternative A except that more acres would be managed as VRM Class II and III, and fewer acres as Class IV compared to Alternative A. Approximately 225,703 acres would be classified as VRM Class I, which is nearly the same as Alternative A, 1,178,718 acres as VRM Class II, 596,046 acres more than Alternative A, 738,311 acres as VRM Class III, 122,819 acres more than Alternative A, and 1,455,234 acres as VRM Class IV 725,189 acres less than Alternative A. More acreage managed under VRM Class II would provide greater protections to known and unknown paleontological resources by minimizing surface disturbing activities, human presence, and occupancy which could lower the potential for direct damage or destruction, indirect impacts from erosional forces, and setting degradation.

Impacts on paleontological resources resulting from implementing lands and realty actions would be similar to those presented under Alternative A, except the extent of the impacts would be reduced. The number of acres designated as ROW exclusion areas would be increased to 286,289 acres, 140,420 fewer acres

compared with Alternative A (Table 2-10, Map 2-24), which could reduce the area in which ROW development activities are prohibited. This could increase potential impacts on paleontological resources from ROW development from surface disturbing activities.

Impacts to paleontological resources from recreation management would be similar to those described under Alternative A. SRMA management could reduce surface disturbance in some areas and protect paleontological resources from damage or exposure from excavation or erosion. However, increased use in the remaining SRMAs could lead to vegetation loss or erosion, which could expose unknown paleontological resources, but could put the resources at risk from vandalism, damage, or illegal collection.

Impacts to paleontological resources from OHV management would be similar to those described under Alternative A. The same number of acres would be managed as OHV open and closed areas (12,831 and 225,537 acres). Impacts from 3,367,576 acres managed as open to designated roads and trails would be the same as those described under Alternative A although all roads would be managed as ‘designated’ rather than for ‘existing’ roads and trails.

Impacts to paleontological resources from the management to protect congressionally designated and/or eligible trails, and NHTs would be similar to those described under Alternative A. Under Alternative D, additional protective measures proposed such as larger buffer zones and specific closures and restrictions would be applied to these areas to a greater degree when compared to Alternative A.

Impacts to paleontological resources from the management of WSAs would be very similar to those described under Alternative B. Slightly fewer protections for surface disturbance within these areas could increase the potential for direct or indirect damage or destruction to paleontological resources as compared to Alternative B.

Impacts to paleontological resources from the management of wild and scenic rivers would be the same as those described under Alternative B.

Impacts to paleontological resources from the management of ACECs and special management areas would be similar to those described under Alternative A. Under Alternative D, 246,634 acres would be managed as ACECs, 39,816 fewer acres compared to Alternative A. Approximately 312,980 acres would be special management areas, 267,030 fewer acres compared to Alternative A.

## **4.14 LANDS WITH WILDERNESS CHARACTERISTICS**

### **4.14.1 Assumptions**

The analysis is based on the assumption that lands identified as having wilderness characteristics contain wilderness values, including naturalness and outstanding opportunities for solitude or primitive recreation.

### **4.14.2 Alternative A**

Surface-disturbing activities associated with the development of mineral resources, including fluid, solid, locatable, and saleable minerals, within the nine areas determined to contain wilderness characteristics would degrade those characteristics. These development activities involve land clearing, grading, soil disturbance, the removal of vegetative cover, and the construction of roads, well pads and other support facilities. Such activities occurring on lands with wilderness characteristics would impact both the naturalness and opportunities for solitude and primitive recreation. Naturalness would be degraded or eliminated primarily from increases in human activity, modifications to the landscape, and visual intrusions caused by the construction of roads, well pads, development sites, and other facilities. Opportunities for solitude and primitive recreation would be reduced or eliminated by increases in noise and the presence of

people, vehicles, and equipment associated with exploration and development of mineral resources. Once mineral development activities are completed, opportunities for solitude and primitive recreation could return. However, productive wells would remain in place and would be substantially noticeable until the wells are decommissioned and disturbance is reclaimed, thereby eliminating naturalness for the life of the well. Restoration activities would reduce the loss of naturalness, especially on exploration wells that would be rehabilitated and revegetated over the short term.

Implementing restrictions on mineral leasing and development for the purpose of protecting sensitive natural and cultural resources would reduce the extent of the effects described above. Closing 17,792 acres to fluid mineral leasing (Table 2-4, Map 2-5), 11,298 acres to coal leasing, 11,862 acres to oil shale (Table 2-7, Map 2-9), pursuing the withdrawal of 19,456 acres from locatable mineral entry (Table 2-3, Map 2-1), managing 54,865 acres as unavailable for saleable mineral development (Table 2-8, Map 2-13), and managing 15,944 acres as NSO areas for fluid mineral leasing across the nine areas with wilderness characteristics would eliminate mineral development in these areas and thereby help to protect naturalness and opportunities for solitude and primitive recreation on lands with wilderness characteristics.

The lands and realty program would impact lands with wilderness characteristics by managing areas in which new ROWs are allowed, limited, or precluded. The development of ROWs causes surface-disturbing activities that disturb soils, remove vegetation, and result in the construction of roads, transmission lines, pipelines, and communication sites. Such activities occurring within lands with wilderness characteristics would impact both the naturalness and opportunities for solitude and primitive recreation. Naturalness would be degraded or eliminated primarily from increases in human activity, modifications to the landscape, and visual intrusions. Opportunities for solitude and primitive recreation would be reduced or eliminated by increases in noise and the presence of people, vehicles, and equipment associated with the development of ROWs. Once development activities are completed, opportunities for solitude and primitive recreation could return. However, roads would serve as transportation routes, thereby eliminating opportunities for solitude and primitive recreation indefinitely in the vicinity of roads. Over the short term, restoration activities would reduce the loss of naturalness resulting from the construction of buried pipelines and transmission lines. Actions designed to preclude or limit the development of ROWs for the purpose of protecting sensitive resources would reduce the extent of the effects described above. Managing 10,715 acres as ROW exclusion areas and 58,712 acres as ROW avoidance areas (Table 2-10, Map 2-21) across the nine areas with wilderness characteristics would either eliminate (within exclusion areas) or significantly limit (within avoidance areas) ROW development in these areas and thereby help to protect naturalness and opportunities for solitude and primitive recreation on lands with wilderness characteristics.

OHV use within lands with wilderness characteristics would temporarily eliminate opportunities for solitude and primitive recreation for the duration the OHV use occurs in the area. In addition, frequent travel on existing two-track roads would increase the visibility of the roads and thereby degrade the level of naturalness in the area. These impacts would be short-term and minimal in areas where OHV use occurs infrequently. However, designating 38,702 acres of the lands with wilderness characteristics as limited to designated roads and trails (Map 2-25) would help to reduce these impacts, as some of the roads in these areas would be closed through the comprehensive trails and travel management planning process.

The development of range improvements, as part of the livestock grazing program, would impact lands with wilderness characteristics by disturbing the surface and creating visual intrusions, which would degrade the naturalness of the area. The presence and congregation of livestock around range improvements would further impact naturalness, especially where such use results in noticeable removal of vegetation.

### **4.14.3 Alternative B**

Under Alternative B, nearly all of the resource uses that could potentially impact lands with wilderness characteristics would be prohibited in these areas, which would eliminate nearly all of the impacts described under Alternative A. All nine areas determined to contain wilderness characteristics would be managed as



closed to the leasing, exploration and/or development of fluid and solid minerals, unavailable for saleable mineral disposal, withdrawn from locatable mineral entry, and managed as ROW exclusion areas. In addition, motorized travel would be allowed only to access state and private land parcels. The impacts resulting from managing livestock grazing and developing range improvements would be the same as those described under Alternative A.

#### 4.14.4 Alternative C

Impacts on lands with wilderness characteristics resulting from the leasing and development of mineral resources would be similar to those presented under Alternative A, except the impacts would be increased because the nine areas with wilderness characteristics would not be managed to protect those characteristics. Implementing fewer restrictions on mineral development designed to protect sensitive natural and cultural resources would decrease the areas in which mineral development is limited or prohibited. Under this alternative, 0.2 acres would be closed to fluid mineral leasing (99.9% decrease compared with Alternative A) (Table 2-4, Map 2-7), 0.2 acres would be closed to coal leasing (99.9% decrease compared with Alternative A), 0.2 acres closed to oil shale (a 99.9% decrease compared with Alternative A) (Table 2-7, Map 2-11), 0.2 acres would be proposed for withdrawal from locatable mineral development (99.9% decrease compared with Alternative A) (Table 2-3, Map 2-3), 2,835 acres would be closed to saleable mineral development (95% decrease compared with Alternative A) (Table 2-8, Map 2-15) and 2,835 acres would be managed as NSO areas (82% decrease compared with Alternative A) across the nine areas with wilderness characteristics. This decrease in such restrictions could result in increased mineral development activity in these areas and thereby an increase in related surface disturbances, visual intrusions, noise, and the presence of people, vehicles and facilities, all of which would further degrade naturalness and reduce opportunities for solitude and primitive recreation compared with Alternative A.

Impacts on lands with wilderness characteristics resulting from managing the lands and realty program would be similar to those presented under Alternative A, except the impacts would be increased. Implementing fewer restrictions on the development of ROWs to protect natural and cultural resources would decrease the areas in which ROW development is limited or prohibited. Under this alternative, 0.2 acres would be managed as ROW exclusion areas (99.9% decrease compared with Alternative A) and 39,762 acres would be managed as ROW avoidance areas (32% decrease compared with Alternative A) across the nine areas with wilderness characteristics (Table 2-10, Map 2-23). This decrease in areas in which ROWs are excluded or avoided could increase the development of ROWs, which would increase related surface disturbances, visual intrusions, noise, and the presence of people, vehicles, and facilities. This, in turn, would further degrade naturalness and reduce opportunities for solitude and primitive recreation compared with Alternative A.

Impacts on lands with wilderness characteristics resulting from managing OHV use would be similar to those presented under Alternative A, except the impacts would be slightly reduced. The portions of the lands with wilderness characteristics that are managed as limited to existing roads and trails under Alternative A (35,483 acres) would be re-designated as limited to designated roads and trails. Because specific routes in these areas would be closed as part of the comprehensive trails and travel management planning process, the number of roads on which OHVs and other vehicles could travel would be reduced. This, in turn, would decrease the presence of vehicles and related impacts on opportunities for solitude and primitive recreation. However, because only 4% of the routes within the planning area would be closed through this process, the degree to which the impacts would be reduced is minimal.

Impacts resulting from managing livestock grazing and developing range improvements would be the same as those described under Alternative A.

#### 4.14.5 Alternative D

Impacts on lands with wilderness characteristics resulting from the leasing and development of saleable

minerals and coal resources would be similar to those presented under Alternative A, except the impacts would be increased. Under this alternative, across the nine areas with wilderness characteristics, 23,603 acres would be closed to saleable mineral development (57% decrease compared with Alternative A) (Table 2-8, Map 2-16) and 0.22 acres would be closed to the development of coal resources (99.9% decrease compared with Alternative A) (Table 2-7, Map 2-12). This decrease in such restrictions could result in increased mineral development activity in these areas and thereby an increase in related surface disturbances, visual intrusions, noise, and the presence of people, vehicles and facilities, which would degrade naturalness and opportunities for solitude compared with Alternative A.

Impacts on lands with wilderness characteristics resulting from the leasing and development of fluid minerals and oil shale resources would be similar to those presented under Alternative A, except the impacts would be decreased. Implementing greater restrictions on the development of fluid minerals and oil shale resources designed to protect sensitive natural and cultural resources would increase the areas in which mineral development is limited or prohibited. Under this alternative, across the nine areas with wilderness characteristics, 20,779 acres would be closed to fluid mineral leasing (17% increase compared with Alternative A) (Table 2-3, Map 2-8) and 20,783 acres would be closed to oil shale leasing (75% increase compared with Alternative A) (Table 2-7, Map 2-12). This increase in such restrictions could result in decreased mineral development activity in these areas and thereby a decrease in related surface disturbances, visual intrusions, noise, and the presence of people, vehicles and facilities, all of which would help to maintain naturalness and opportunities for solitude and primitive recreation compared with Alternative A.

Impacts on lands with wilderness characteristics resulting from managing the lands and realty program would be similar to those presented under Alternative A, except the impacts would be increased. Implementing fewer restrictions on the development of ROWs to protect natural and cultural resources would decrease the areas in which ROW development is prohibited. Under this alternative, across the nine areas with wilderness characteristics, 0.22 acres would be managed as ROW exclusion areas (99.9% decrease compared with Alternative A). This decrease in areas in which ROWs are excluded could increase the development of ROWs, which would increase related surface disturbances, visual intrusions, noise, and the presence of people, vehicles, and facilities, which would degrade naturalness and opportunities for solitude compared with Alternative A.

Impacts on lands with wilderness characteristics resulting from managing OHV use would be similar to those presented under Alternative A, except the impacts would be slightly reduced. The portions of the lands with wilderness characteristics that are managed as limited to existing roads and trails under Alternative A (35,483 acres) would be re-designated as limited to designated roads and trails. Because specific routes in these areas would be closed as part of the comprehensive trails and travel management planning process, the number of roads on which OHVs and other vehicles could travel would be reduced. This, in turn, would decrease the presence of vehicles and related impacts on opportunities for solitude and primitive recreation. However, because only 4% of the routes within the planning area would be closed through this process, the degree to which the impacts would be reduced is minimal.

Impacts resulting from managing livestock grazing and developing range improvements would be the same as those described under Alternative A.

## **4.15 VISUAL RESOURCES**

### **4.15.1 Assumptions**

This impact analysis is based on the following assumptions:

- VRM objectives would be achieved.

- Implementation will follow the VRM procedures in place as outlined in Manual 8400 and handbooks H-8410-1 and H-8431-1.
- Appropriate BMPs (Appendix A) will be applied; the analysis discloses the residual impacts that have the potential to occur after application of the BMPs.

### 4.15.2 Alternative A

The visual resource inventory (VRI) is the inventory tool used to arrive at VRM decisions, the VRI is the basis of the VRM actions. A VRI was conducted within the RSFO and published in February 2011 (BLM 2011).

Management for air quality would support clear scenic vistas and viewsheds for all VRM classes.

Management for soils, geologic, and water resources by applying restrictions to surface disturbance or development activities would support the visual characteristics of the landscape. Prohibiting surface disturbance and occupancy could prevent ground disturbance, reduce possible changes to scenic elements of the landscape, preserve scenic quality, and reduce changes in line, form, color, and texture of the visual environment.

Mineral development would result in soil and vegetation disturbance, construction of roads and pipelines, and the presence of permanent structures that would create noticeable visual contrast to the landscape. Oil and gas exploration and development includes the short-term placement of tall drilling rigs, which break the skyline and create intrusions to otherwise natural visual settings. Over the long term, roads and ROWs needed for drilling operations would remain the most visible, breaking the line and form of natural settings. Oil and gas development could be augmented by large numbers of lights, because drilling rigs operate both day and night. The ability to substantially shield the nighttime sky from the ambient light created by fluid mineral drilling operations is somewhat limited by operational safety requirements. Night lighting in the immediate area of gas field development, and potentially in large areas surrounding the gas field, could reduce the nighttime viewing experiences of individuals. Applying BMPs and other mitigation to areas of mineral development could restore lands to a more natural form over time. Use of COAs and other mitigation would help to reduce the contrast in the landscape and diminish the disruption of texture, color, and form of mining, leasing, and development of mineral resources. Table 4-7 displays the acres of lands closed to mineral leasing or sales and lands closed or with NSO stipulations for oil and gas leasing within each VRM Class. Lands within the closed and NSO areas would not be subject to surface disturbing activities from mineral development and could retain their scenic integrity regardless of VRM Class.

**Table 4-7. Mineral Development Restrictions by Visual Resource Management Classes**

	Alternative A	Alternative B	Alternative C	Alternative D
<b>Oil and Gas—Closed</b>				
Class I	225,227	225,711	225,711	225,703
Class II	283,313	1,731,595	71	120,619
Class III	22,604	331,045	0	62,176
Class IV	18,393	208,941	0	55,108
<b>Oil and Gas—NSO</b>				
Class I	75	0	8	0
Class II	74,835	225,556	16,842	122,858
Class III	145,993	260,084	6,764	30,741
Class IV	249,224	242,955	79,654	30,119

<b>Saleable Minerals—Closed</b>				
Class I	225,445	225,711	225,722	225,703
Class II	339,165	1,709,985	10,994	152,253
Class III	189,883	408,471	6,763	33,060
Class IV	227,759	248,295	70,414	34,633
<b>Locatable Minerals—Proposed for Withdrawal</b>				
Class I	222,706	223,137	223,139	223,129
Class II	337,235	1,537,603	3,588	104,900
Class III	122,864	109,029	0	12,203
Class IV	543,753	38,616	8,178	188

Where 556,558 acres are withdrawn from locatable mineral entry, and 540,021 acres closed to geothermal leasing, lands within these areas would not be subject to surface disturbance from mining, leasing, and development activities. These lands could retain their scenic integrity, have fewer changes to scenic elements of the landscape, and prevent changes in line, form, color, and texture of the visual environment.

Closing 540,021 acres to oil and gas development and applying NSO stipulations to 158,611 acres could prevent ground disturbance, reduce possible changes to scenic elements of the landscape, preserve scenic quality, and prevent changes in line, form, color, and texture of the visual environment. Applying CSU (721,132 acres) and timing limitation stipulations (1,840,967 acres) could reduce ground disturbance but allow some changes to scenic elements of the landscape, affect scenic quality, and could allow some changes in line, form, color, and texture of the visual environment. Geophysical exploration could introduce noticeable visual contrast to the landscape.

Closing 485,964 acres to coal leasing, 727,805 to oil shale leasing, 423,633 acres to trona, and 833,719 acres to saleable minerals would protect lands within these areas from surface disturbance from mining, leasing, and development activities. These lands could retain their scenic integrity, have fewer changes to scenic elements of the landscape, and prevent changes in line, form, color, and texture of the visual environment. Where surface mineral development occurs, mines and mineral borrow pits would remove the top-most layer of vegetation and soil across wide areas. These denuded areas would alter the scenery due to changes in form, color, and texture.

Wildland fire ecology and management, forest and woodland management, vegetation management for grasslands, shrubland and riparian areas, wildlife, and Special Status Species could have minor disruptions in the landscape where vegetation treatments, prescribed burns, or timber harvests were conducted. These areas could have some changes in line, form, color, and texture of the visual environment immediately after treatments, but the areas would restore into natural landscapes over time. Revegetation activities could help restore the areas more quickly and bring the landscape back to a more natural form. Management to prevent or reduce surface disturbing or disruptive activities would help protect scenic integrity.

Restrictions on surface disturbance, tall structures, or linear disturbances could prevent ground disturbance, prevent towers and other large visual intrusions, reduce possible changes to scenic elements of the landscape, preserve scenic quality, and prevent changes in line, form, color, and texture of the visual environment. Revegetation activities could help restore the areas more quickly and bring the landscape back to a more natural form. Management to prevent or reduce surface disturbing or disruptive activities would help protect scenic integrity.

Cultural, recreation, and special designation management would protect viewsheds by preventing surface disturbing activities surrounding scenic, natural, cultural, and historic sites. The management would retain

the scenic settings and preserve the visual resources within the protected areas and the surrounding landscapes.

Management of VRM Class I (225,717 acres) would preserve the existing character or the lands managed within these areas, and 582,672 acres of VRM Class II would help to retain the existing character of those lands; however, some surface disturbance could occur, but the natural setting must be preserved. Within the 615,492 acres of VRM Class III, surface disturbing activities would partially retain the existing character of the landscape, but moderate disruptions could occur. VRM Class IV (2,180,423 acres) allows major disruptions of the landscape and is where wind energy, ROWs, roads, drill rigs, and mines are acceptable disturbances on the landscape. Table 4-8 displays the VRM classes for Alternatives A, B, C and D.

**Table 4-8. Visual Resource Management Acres**

<b>VRM Classification</b>	<b>Alternative A (No Action Alternative)</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>I</b>	225,727	225,785	226,629	225,703
<b>II</b>	582,672	2,148,902	607,899	1,178,781
<b>III</b>	615,492	666,522	395,683	738,311
<b>IV</b>	2,180,423	563,754	2,374,706	1,455,234

Applying ROW exclusion (426,709 acres) and avoidance areas (736,138 acres) limiting ROWs and transmission projects to designated corridors in some areas would serve to consolidate utility ROWs and structures. This would reduce the extent of disturbed areas, which would reduce linear disturbances and provide more pristine landscapes.

The lands designated as open to OHV areas (12,831 acres) are within VRM Class II lands; however, because the area is in open sand dunes, the character of the landscape is not as vulnerable to vegetation loss and linear disturbances. Limiting OHV use to designated roads and trails on 968,959 acres, and existing roads and trails on 2,398,839 acres, would allow for continued existence of linear disturbances on the landscape, but would not allow new routes to be created. Linear disturbances would draw a casual viewer's eye from the natural landscape and disrupt the natural form, line, color, and texture of the surrounding landscape. Areas closed to OHV use (225,537 acres) would not allow vehicle use and the landscape would be free from the linear disruptions of roads. These acres correspond with VRM Class I areas, where the existing character of the landscape is to be preserved.

### **4.15.3 Alternative B**

Impacts to visual resources from the management of air quality, geophysical exploration, and Greater Sage-Grouse would be the same as those described under Alternative A.

Impacts to visual resources from the management of physical resources would be similar to those described under Alternative A. Additional protective management to prevent surface disturbance or development activities, along with mitigation and revegetation requirements would provide even greater protection to visual resources as compared to Alternative A. The management would prevent or reduce possible changes to scenic elements of the landscape, preserve scenic quality, and reduce changes in line, form, color, and texture of the visual environment.

Impacts to visual resources from locatable mineral development would be similar to those described under Alternative A. Under Alternative B, 1,993,908 acres would be pursued for withdrawal from locatable mineral entry, 1,437,350 more acres compared to Alternative A. Approximately 2,186,218 acres would be closed to geothermal leasing, 1,646,197 more acres when compared to Alternative A. These lands could

retain their scenic integrity, have fewer changes to scenic elements of the landscape, and prevent changes in line, form, color, and texture of the visual environment.

Impacts to visual resources from oil and gas development would be similar to those described under Alternative A. Alternative B would apply greater restrictions on development through closures and NSO stipulations which would retain their scenic integrity, have fewer changes to scenic elements of the landscape, and prevent changes in line, form, color, and texture of the visual environment (Table 4-7). Under Alternative B, 2,186,218 acres would be closed to fluid mineral leasing, 1,646,197 more acres than under Alternative A, and 813,354 acres would be managed with NSO stipulations, which is 654,743 more acres than under Alternative A. Impacts to visual resources from applying CSU and timing limitation stipulations would be similar to those described under Alternative A, but with 99,674 acres with CSU stipulations and 713,837 acres with timing limitation stipulations.

Impacts to visual resources from solid leasable and saleable minerals would be similar to those described under Alternative A. Under Alternative B, 3,735,546 acres would be closed to coal, 2,122,282 acres would be closed to oil shale, and 2,119,920 acres would be closed to trona leasing and development. The larger areas of closures would protect the visual resources to a greater degree than Alternative A by retaining the natural character and preventing disruption of the line, form, color, and texture of the landscape.

Impacts to visual resources from the management of biological resources would be similar to those described under Alternative A. Additional protective management to prevent surface disturbance or development activities, along with mitigation and revegetation requirements would provide even greater protection to visual resources as compared to Alternative A.

Impacts to visual resources from cultural, recreation, and special designation management would be similar to those described under Alternative A. Additional protective management to prevent surface disturbance or development activities, along with management to protect scenic resources would provide even greater protection to visual resources as compared to Alternative A.

Under Alternative B, the impacts from the management of visual resources would be the same as those described under Alternative A for VRM Class I (225,785 acres, 68 acres more than Alternative A), and VRM Class III (666,522 acres, 51,030 acres more than Alternative A, Table 4-8). Under Alternative B, 2,148,902 acres would be managed as VRM Class II, 1,566,230 more acres than Alternative A. Under Alternative B, 563,754 acres would be managed as VRM Class IV, 1,616,669 fewer acres as compared to Alternative A. Impacts to lands managed as VRM Class IV would be the same as those described under Alternative A, but fewer acres would be subjected to the level of surface disturbance allowed within the VRM Class IV classification.

Impacts to visual resources from ROW management would be the same as those described under Alternative A; however, under Alternative B, 2,480,876 acres would be managed as ROW exclusion areas. The management would retain the visual character and naturalness of these areas within 2,130,936 more acres as compared to Alternative A. Fewer acres would be managed as avoidance areas, 133,903 acres under Alternative B, 602,235 fewer acres than Alternative A.

Impacts to visual resources from OHV management would be the same as those described under Alternative A. Under Alternative B, there would be no category called “limited to existing roads and trails.” While the routes would be moved under the “limited to designated roads and trails” for a total of 3,367,576 acres impacts to visual resources would be similar to those described under both categories under Alternative A.

Under Alternative B, the route designations from the travel management plan would be applied. Within the area designated as limited to designated roads and trails, 2,352 miles of routes would be managed as open to vehicle use. About 67 miles of routes would be limited to non-motorized or non-mechanized use, 4,505 miles of routes would be closed to all use, and 10,006 miles of routes and linear disturbances would be

removed from the transportation network and would be allowed to return to natural conditions. These routes would receive lower use or no use at all. Reducing the number of routes could reduce linear disturbances, allowing for a more natural landscape and improved visual resources.

#### 4.15.4 Alternative C

Impacts to visual resources from the management of physical resources, with the exception of lands with wilderness characteristics, would be the same as those described under Alternative A. Impacts to visual resources from geophysical exploration, biological resources, cultural and recreation management would be the same as those described under Alternative A.

Under Alternative C, not managing lands with wilderness characteristics for their wilderness characteristics could allow for surface disturbance and would remove the VRM Class II management for these areas. This removal of protections could result in soil and vegetation disturbance, construction of roads and pipelines, and the presence of permanent structures that would create noticeable visual contrast to the landscape.

Impacts to visual resources from locatable mineral development would be similar to those described under Alternative A. Under Alternative C, 234,961 acres would be pursued for withdrawal from locatable mineral entry, 321,597 fewer acres compared to Alternative A. Visual resources could be affected by increased mining activity from surface disturbance, mining equipment, or increased vegetation loss near mining claims.

Impacts to visual resources from geothermal leasing would be the same those described under Alternative A. Approximately 225,782 acres of the planning area would be closed to geothermal leasing, 314,239 fewer acres compared to Alternative A.

Impacts to visual resources from oil and gas development would be similar to those described under Alternative A. Closing 225,782 acres to fluid mineral leasing would close 314,239 fewer acres than under Alternative A. Under Alternative C, 15,542 acres would be managed with NSO stipulations, which is 143,069 fewer acres than Alternative A. CSU stipulations would be applied to 215,890 acres, 505,242 fewer acres compared to Alternative A, and TLSs would be applied to 1,355,485 acres, 485,482 less acres compared to Alternative A.

Impacts to visual resources from solid leasable and saleable minerals would be similar to those described under Alternative A. Under Alternative C, 226,219 acres would be closed to coal leasing, 407,618 fewer acres compared to Alternative A, 225,865 acres would be closed to oil shale leasing, 501,840 fewer acres than Alternative A, 225,865 acres would be closed to trona leasing, 228,629 fewer acres than Alternative A, and 226,421 acres of lands would be closed to saleable mineral development, 721,459 fewer acres compared to Alternative A. Areas of lands available to mineral development could result in damage to the natural landscape and disruption of the line, form, color, and texture of the visual environment.

Management for VRM Class I would be 226,629 acres, 912 acres more than Alternative A; VRM Class II would be 607,899 acres, 25,227 acres more than Alternative A; VRM Class III would be 395,683 acres, 219,809 fewer acres than Alternative A; and VRM Class IV, 2,374,706 acres, 194,283 acres more than Alternative A. There would be slightly more acres protected by VRM Classes I and II, but nearly 195,000 more acres subjected to surface disturbing and disruptive activities allowed under VRM Class IV compared to Alternative A.

Impacts to visual resources from ROW management would be similar to those described under Alternative A. Under Alternative C, 225,784 acres would be managed as ROW exclusion areas, 200,925 fewer acres compared to Alternative A. Under Alternative C, 31,018 acres would be managed as ROW avoidance areas, 705,120 fewer acres compared to Alternative A.

Impacts to visual resources from OHV use would be the same as those described under Alternative B.

Under Alternative C, the route designations from the travel management plan would be applied. Within the area designated as limited to designated roads and trails, 16,256 miles of routes would be managed as open to vehicle use. About 93 miles of routes would be limited to non-motorized or non-mechanized use, 425 miles of routes would be closed to all use, and 165 miles of routes and linear disturbances would be removed from the transportation network and return to natural conditions. Impacts to visual resources would be similar to those described under Alternative B, however nearly 14,000 more miles of designated routes would be open to vehicle use in Alternative C and about 4,000 fewer miles would be closed compared to Alternative B.

#### **4.15.5 Alternative D**

Impacts to visual resources from air quality, and geophysical exploration would be the same as those described under Alternative A.

Impacts to visual resources from the management of physical resources would be similar to those described under Alternative A. Additional protective management to prevent surface disturbance or development activities, along with mitigation and revegetation requirements would provide even greater protection to visual resources compared to Alternative A.

Impacts to visual resources from locatable mineral development would be similar to those described under Alternative A. Under Alternative D, 482,272 acres would be pursued for withdrawal from locatable mineral entry, 1,651,483 fewer acres compared to Alternative A. These areas could allow less surface disturbance as compared to Alternative A, and visual resources could experience less degradation from vegetation loss, soil disturbance, and disruption of the line, form, color, and texture of the landscape. Approximately 768,989 acres would be closed to geothermal leasing, 228,968 more acres compared to Alternative A.

Impacts to visual resources from oil and gas development would be similar to those described under Alternative A. Alternative D would apply fewer restrictions on development through closures and NSO stipulations (Table 2-4). Under Alternative D, 768,989 acres would be closed to mineral leasing, 228,968 more acres than under Alternative A. Impacts to visual resources from applying NSO, CSU, and timing limitation stipulations would be similar to those described under Alternative A, but with 2,172 acres of NSO, 1,238,899 acres of CSU and 1,911,167 acres of TLS. The smaller areas of NSO (156,439 fewer acres than Alternative A), and larger areas of CSU (517,767 more acres than Alternative A), and timing limitation stipulations (70,200 more acres than Alternative A) could allow for more surface disturbing or disruptive activities compared to Alternative A.

Impacts to visual resources from solid leasable and saleable minerals would be similar to those described under Alternative A. Under Alternative D, 610,342 acres would be closed to coal leasing, 124,378 more acres than Alternative A, 1,557,520 acres would be closed to oil shale leasing, 829,715 more acres than Alternative A, and 389,552 acres would be closed to trona leasing, 34,081 fewer acres compared to Alternative A. Approximately 362,009 acres of lands would be closed to saleable mineral development, 471,710 fewer acres compared to Alternative A.

Impacts to visual resources from the management of biological resources would be similar to those described under Alternative A. Additional protective management to prevent surface disturbance or development activities, along with mitigation and revegetation requirements would provide even greater protection to visual resources as compared to Alternative A.

Impacts to visual resources from cultural, recreation, and special designation management would be similar to those described under Alternative A. Under Alternative A, 246,634 acres would be ACECs, 39,816 fewer acres than Alternative A, 312,980 acres would be management areas and other features, 267,030 fewer



acres than Alternative A, and 135,549 acres would be SRMAs, 162,561 fewer acres as compared to Alternative A. Additional protective management to prevent surface disturbance or development activities, along with management to protect scenic resources would provide even greater protection to visual resources as compared to Alternative A. The management would preserve the scenic settings and retain the visual resources within the protected areas and the surrounding landscapes.

Under Alternative D, the impacts from the management of visual resources would be the same as those described under Alternative A for VRM Class I (225,703 acres, 14 fewer acres than Alternative A). Impacts overall would be similar to Alternative A for VRM, although larger areas of lands would be managed as VRM Class II, 1,178,718 acres, 596,046 more acres than Alternative A. Under Alternative D, 738,311 acres would be managed as VRM Class III, 122,819 more acres than Alternative A, and 1,455,234 acres would be managed as VRM Class IV, 725,189 fewer acres as compared to Alternative A. Impacts to lands managed as VRM Class IV would be the same as those described under Alternative A, but fewer acres would be subjected to the level of surface disturbance allowed within the VRM Class IV classification.

Impacts to visual resources from ROW management would be the same as those described under Alternative A; however, under Alternative D, 286,289 acres would be managed as ROW exclusion areas. The management would retain the visual character and naturalness of these areas within 140,420 fewer acres as compared to Alternative A. More acres would be managed as avoidance areas, 1,388,618 acres under Alternative D, 652,480 more acres than Alternative A.

Impacts to visual resources from OHV management would be the same as those described under Alternative A. Under Alternative D, there would be no category called “limited to existing roads and trails.” While the routes would be moved under the “limited to designated roads and trails” for a total of 3,367,576 acres impacts to visual resources would be similar to those described under both categories under Alternative A.

Under Alternative D, the route designations from the travel management plan would be applied. Within the area designated as limited to designated roads and trails, 13,613 miles of routes would be managed as open to vehicle use. About 88 miles of routes would be limited to non-motorized or non-mechanized use, 440 miles of routes would be closed to all use, and 2,781 miles of routes and linear disturbances would be removed from the transportation network and would be allowed to return to natural conditions. Impacts to visual resources would be similar to those described under Alternative B; however, over 10,000 more miles of routes would be open for use and over 4,000 fewer miles would be closed under Alternative D.

## **4.16 LIVESTOCK GRAZING MANAGEMENT**

### **4.16.1 Assumptions**

The analysis is based on the following assumptions:

- Livestock grazing would be managed to meet the Wyoming Land Health Standards on BLM-administered lands (BLM 1997a).
- The type of grazing use would remain about the same.
- Range improvement projects would continue to be used to achieve rangeland management goals.
- Range improvements would include the following types of projects: spring/seep development and protection, reservoirs and pits, wells, new or modified fencing, vegetation treatments, and pipelines.
- Livestock grazing is not considered a surface-disturbing activity.
- Restrictions would be applied to the construction of range improvements for the protection of sage-grouse habitats.

- Impacts on livestock grazing activities are generally the result of activities that affect forage levels and of human disturbance/harassment of livestock within grazing allotments.

### 4.16.2 Alternative A

Management for air quality would ensure overall health of forage resources, ecosystems, and water for livestock. Measures to prevent windblown dust could protect vegetation by preventing erosion and soil loss. Indirectly, management for air quality could reduce airborne pollutants or particulate matter that could protect forage resources or water quality for livestock.

Any project designed to enhance soil and water health would enhance vegetation resources by reducing erosion, which would have the indirect effect of increasing forage production for livestock. However, effects on livestock grazing would result from the need to adjust or modify current livestock management to achieve the Wyoming Land Health Standards. Management actions that result in increased water availability and forage production could indirectly affect livestock resulting in improved livestock distribution and increased weight gain and conception rates. Establishing NSO stipulations within 500 feet of perennial water sources would help maintain and enhance riparian vegetation and water quality, which would provide forage and water sources for livestock. Controlling surface occupancy on limited reclamation potential soils would reduce vegetation removal and help to conserve livestock forage in these areas. Such restrictions would also limit construction of range improvements in these areas.

Surface disturbing activities associated with mineral development would involve land clearing and grading that would disturb soils, remove vegetation, and increase the potential for the introduction and proliferation of noxious weeds, thereby causing a loss of livestock forage and associated AUMs. Mineral development activities would also increase the potential for livestock harassment and livestock loss from vehicle collisions; however, the improvement of roads associated with mineral development could facilitate livestock management operations by improving access to remote locations within allotments. Mining of other leasable, saleable, and locatable minerals would result in surface areas being disturbed and fenced out during mining and reclamation activities, which would result in a small loss of forage. Reclamation of these lands usually returns the grazing lands to production levels found prior to development. The required NEPA analysis in this action would reduce impacts to livestock. Saleable mineral activity would not be expected to affect livestock grazing management because of the limited activity and limited area of vegetation removal.

Restrictions on mineral development and other surface disturbing activities would help prevent the removal of forage resources. Management actions that could restrict surface disturbing activities include continuing to manage oil and gas leasing with site-specific TLSs (1,840,967 acres), CSU stipulations (721,132 acres), and NSO stipulations (158,611 acres). Under this alternative, 540,021 acres would be closed areas to oil and gas leasing, 833,719 acres would be closed to mineral material sales, and 556,558 acres would be pursued for withdrawal from locatable mineral entry. Restricting surface disturbance would also reduce opportunities for noxious weed and invasive species establishment, which could help maintain the health and function of vegetation in both the short-term and long-term.

Both wildfire and prescribed fires would have short-term impacts on livestock grazing because of an initial loss of forage resources and displacement of animals. However, over the long term, fire has the potential to improve forage production capacity and convert shrub habitat to grasslands. This would benefit livestock by providing increased levels of preferred forage. The requirement to rest a burn area to allow new vegetation to establish could have a short-term impact on livestock operators, as the amount of available forage would be reduced for the localized area of the burn. The level of significance of this impact would depend on the extent of the burn area and season of use. Deferment of livestock use after a wildfire allows the establishment of new vegetation and would have a short-term effect on livestock operators through the temporary reduction in available AUMs and modification of grazing systems. Although these impacts are short-term, they could result in additional expenses and/or lost revenues from reduced availability of forage

on public lands. The severity of these impacts will vary from one situation to another depending upon the size of the burned area and alternative forage sources available in the local area.

Harvest of forests and woodlands could result in temporary displacement of livestock during harvest activity. In the long term, timber harvest could increase understory (grass) production, providing increased forage for livestock within harvest locations.

Vegetation management activities designed to enhance grassland vegetative conditions could benefit livestock by enhancing and increasing forage production. Vegetation treatments and manipulation could cause short-term effects to livestock grazing through vegetation removal, but long-term the management could enhance forage production.

Preventing and controlling the spread of invasive plant species would benefit livestock by reducing competition with native plants, consequently maintaining or improving forage production. The avoidance of development in wetlands and floodplains would maintain or improve healthy and diverse plant communities, supporting forage and water quality for livestock.

Activities associated with wildlife habitat management would benefit livestock grazing operations through habitat enhancement measures that consequently improve forage production. Although competition between big game species and livestock over forage resources could increase in these areas. Because of dietary preference, this competition is more pronounced with elk than with pronghorn or mule deer. Similar to livestock, elk are considered grazers that prefer grasses, whereas the preference for mule deer and pronghorn is to browse shrub species. Large concentrations of these big game animals occur within portions of the planning area (Map 3-3), which could require some livestock operators to alter grazing management practices to comply with the Wyoming Land Health Standards.

Special status plant species and riparian management would preclude grazing when exclosures are required to protect habitat. Management of Special Status Species and unique plant communities would potentially require changes in livestock management (e.g., season or duration of use) to improve the production and vigor of these species where fencing of populations would not be feasible. Sensitive wildlife habitat protection measures or use restrictions would influence the location, construction timing, and cost of range improvements.

In general, management actions associated with cultural resources affect relatively small (less than one acre) localized areas and would not have measurable effects on livestock forage. Even under the most intense management (i.e., excavation), the amount of acreage disturbed would be small. Cultural sites that are fenced would exclude grazing, causing a small loss of available forage; however, this would occur on few sites. Restrictions on surface disturbing activities near cultural resources would potentially result in modifications or relocation of range improvements, but not preclude them except in rare cases.

VRM classifications that restrict surface disturbing activities (VRM Class I [225,720 acres] in WSAs) or influence the size, design or location of surface disturbing activities (VRM Class II [582,670 acres] and Class III [615,490 acres]) would indirectly help to maintain forage production, reduce the potential for noxious and invasive weeds, and meet the Wyoming Land Health Standards. Consideration of visual quality in VRM Class II or Class III areas could influence the type, design, and/or location of proposed range improvements.

Short-term impacts from lands and realty management actions, such as the construction of power lines and pipelines, and other construction activities would temporarily reduce forage and displace livestock. Long-term impacts include loss of forage where roads and facilities are constructed. In areas adjacent to roads and facilities, increased dust on vegetation would reduce forage palatability. The continued expansion of weeds would impact livestock through reduced forage and increased livestock mortality from toxic plants. Long-term loss of forage would occur from road construction and development of wind farms and other

facilities. Reclamation of disturbed areas would replace the forage lost, primarily with grasses in the short term, which would benefit cattle more than sheep.

Surface disturbing activities associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and roads could impact livestock grazing. Land clearing and grading activities necessary for construction remove vegetation (i.e., result in loss of forage resources). Standards for reclamation of linear surface disturbances are adequate to mitigate any adverse impact related to short-term vegetation removal. Any vegetation removal, even short-term, increases the potential for the introduction and proliferation of noxious weeds.

Transportation and access management actions would serve to improve the transportation network, which would increase the distribution of people within the planning area. This would in turn increase the potential for incidental damage to range improvements and general disturbance of livestock. Increased road networks would allow for improved access to check, move, or provide supplements to livestock. Increased traffic on highways makes livestock trailing and crossing more difficult and raises the threat to public health and human safety for both travelers and wranglers and increases the need for crossing facilities.

Under Alternative A, 3,591,404 acres would be available for livestock grazing use and 970 acres would be managed as unavailable for grazing. Implementation of livestock grazing management actions could have both beneficial and adverse impacts on livestock operators. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would continue to be similar to historic levels and not result in any additional grazing pressure on available forage. Authorized grazing use would not exceed the recognized permitted active AUMs (318,647 AUMs). Adjustments in grazing operations to comply with the Wyoming Land Health Standards could improve the condition and production of forage, which would further increase flexibility for the grazing management program.

Requiring implementation of grazing management to improve rangeland conditions could increase operating costs. Higher-intensity, short-duration grazing management programs would increase the amount of herding and range improvement maintenance required by the livestock operator.

Prohibiting livestock salt blocks and other nutritional supplements within 500 feet of water sources, riparian areas, wetlands and other sensitive resources could require additional planning and effort but would distribute forage use and prevent forage loss, trampling of forage, introduction, or spread of invasive, non-native plant species. This management would reduce or prevent soil compaction, erosion, and the influx of nutrients into riparian areas, wetlands, or streambeds that could protect water quality and support riparian forage within these areas. Livestock water developments would provide additional watering sites, thereby improving livestock distribution and reducing competition with other grazers.

Recreational activities likely would not impact livestock grazing activities, other than from limited human disturbance. Recreational activities could result in gates left open or fences cut, which could increase fence maintenance and additional resources to locate and return livestock to their appropriate grazing areas. These impacts on livestock operations would likely increase over the life of the plan, because the popularity of outdoor recreational activities is increasing.

Motorized recreation opportunities under this alternative would continue to affect livestock grazing by encouraging use of the planning area, resulting in livestock displacement, harassment, or injury, mainly from the use of vehicles. Management of the Continental Divide National Scenic Trail, Continental Divide Snowmobile Trail, the Green River, and the Wind River Front SRMAs, as well as retaining the Killpecker Sand Dunes, and Oregon and Mormon Pioneer National Historic Trails SRMA (297,410 acres) would emphasize boating, camping, hiking, and sightseeing opportunities in this area, increasing the probability of impacts on livestock. Management of these recreation sites would continue to exclude forage from livestock use because these areas would be fenced. Because of the relatively small size of these sites, the impacts to livestock grazing would be minor.

Open OHV activity could affect livestock grazing by damaging vegetation resources and consequently reducing available forage. OHV use could cause animal displacement, increased dust on forage that reduces palatability, and possible injury or death to animals from vehicle-animal collisions. Designated OHV areas that are closed to livestock grazing would result in a small loss of forage. OHV use could lead to gates left open or cut fences could increase fence maintenance and additional resources to locate and return livestock to their appropriate grazing areas. OHV closures would total 225,537 acres that would preserve vegetation and forage in limited areas for livestock use.

Minimal effects on livestock grazing activities would be anticipated from management actions associated with SD/MAs. In general, the protections afforded to these areas (i.e., restrictions on surface disturbing activities) would help to maintain and improve vegetation conditions, thereby maintaining or improving forage for livestock. Within WSAs, the use of mechanical equipment is limited, which would increase the complexity of construction techniques for range improvements and limit the types of improvements. Wildlife Habitat Management Areas would be managed with an emphasis on wildlife habitat and range improvements would be evaluated on a case-by-case basis, which would potentially increase the complexity of construction of rangeland improvement projects.

Management actions designed to prevent accidental spills of hazardous materials could protect forage resources from accidental damage from chemical spills.

### **4.16.3 Alternative B**

Impacts resulting from management of the air quality, fire, cultural resources, recreation, vegetation, and hazardous materials management would be the same as the Alternative A.

Watershed management actions would be more restrictive under this alternative. Increasing the avoidance area around riparian areas and floodplains to 1,320 feet (¼ mile) for fire suppression chemicals and 2,640 feet (½ mile) for salt blocks and other nutritional supplements would provide more protection to forage resources from surface disturbing activities but would allow for less flexibility in constructing water developments and range improvements.

Managing lands with wilderness characteristics specifically to preserve those characteristics would prevent surface disturbance and protect forage resources in these areas, as management actions would include closing these lands to fluid minerals, mineral material sales/disposal, all solid mineral leasing, mineral location, and designating exclusion areas for all new ROWs. These lands would also be managed for VRM Class II, and the state parcels and inholdings within these areas would be pursued for acquisition. However, allowing motorized travel for access to state/private parcels within these areas could result in localized surface disturbance and resulting forage removal and degradation.

Under this alternative, a greater number of acres of land is closed to disturbance than have restrictions compared to Alternatives A. Management actions that restrict surface disturbing activities include continuing to manage livestock grazing areas with site-specific seasonal restrictions, implementing CSU stipulations (99,674 acres), closing areas to oil and gas leasing (2,186,218 acres), and implementing NSO stipulations (813,354 acres). Under this alternative, 2,581,741 acres would be closed to mineral material sales and 1,993,908 acres could be pursued for withdrawal from locatable mineral entry. Restrictions on mineral development and other surface disturbing activities would help prevent the removal of forage resources.

Reclamation of surface disturbances would help mitigate long-term forage loss related to vegetation removal. Effects from most mineral development would be temporary, as the vegetation conditions on most sites ultimately would be reclaimed. Forage resources could be reduced if development outpaces reclamation and replacement of forage.

Impacts from fire and fuels management would be similar to those under Alternative A, except that more acres of wildfire would be allowed to burn for resource benefit. This would result in additional areas requiring rest from livestock grazing to allow recovery of vegetation following a wildfire, which would reduce the flexibility of livestock operations in the short term.

Management actions associated with the fire management program would likely reduce the use of fire suppression, which would reduce the related effects on vegetation communities and the potential for high-intensity fires that lead to extensive forage loss compared to Alternative A.

Forest management actions would result in a mature forest and would reduce forage production and quality for livestock use. Lack of commercial timber harvest would reduce disturbance from roads and maintain vegetation for forage, although distribution of livestock and vehicle access to check, doctor, and move livestock could be reduced compared to Alternative A.

Vegetation would be managed to meet DPC objectives, which would require livestock operations to incur additional management complexity. Examples include adjustments in season or duration of use, rest from livestock use, additional herding, offsite water developments, and pasture fencing. In most cases, there would be improved forage production that would result in increased weight gains or other benefits to the livestock operation.

Effects from wildlife habitat management on livestock grazing would be similar to Alternative A. More restrictive actions to improve wildlife habitat could benefit livestock grazing. Animal damage control activities under this alternative could directly benefit livestock operations by removing predators known to have killed livestock.

The increase in VRM Class II acres (to 2,148,902 total acres) would affect construction activities from other resource programs, which would potentially result in a reduction in forage lost as compared with Alternative A.

Under Alternative B, 3,583,789 acres would be available for livestock grazing and 8,576 acres would be unavailable for grazing use. Livestock grazing management actions under this alternative generally would restrict operators by allowing for decreased flexibility in managing livestock. More restrictive measures for range improvements, water developments, and salt and mineral placement would limit protections to forage and surface water resources. Impacts from livestock management actions would be similar to those in Alternative A, except that livestock operations would incur additional management complexity to meet DPC objectives. Construction of range improvements would be considered for the purpose of improving rangeland diversity, condition, and sustainability. This could affect the location, type, and number of range improvements, which could decrease livestock distribution and rangeland use.

Impacts from lands and realty management would be similar to those identified in Alternative A, except that lands would not be considered for disposal. Thus, the loss of AUMs for livestock grazing from the possible disposal of lands would not occur.

The effects on livestock grazing resulting from the development of ROWs would be similar to those identified for Alternative A, except 2,480,876 acres would be excluded from ROW development (481% increase), which would decrease the extent of related forage removal, but could decrease opportunities for access to remote locations within allotments.

Impacts on livestock grazing from managing OHV use would be similar to those presented under Alternative A, except the area currently designated as “limited to existing roads and trails” (2,398,839 acres) would be changed to “limited to designated roads and trails” (3,367,576 acres) and all routes would be designated as open, closed or limited.

Impacts to livestock grazing from special designations/management areas would be similar to those described under Alternative A. Additional protective management for these areas could help reduce forage loss from development or surface disturbing activities.

Actions related to special management areas under this alternative could have a greater effect on livestock grazing. Management actions associated with expansion of existing ACECs and historic settings, and designation of new ACECs, WSAs, and research natural areas would increase the amount of area subject to surface disturbance restrictions and limitations and thus would increase protections to forage resources. However, such expansions and designations could limit construction of water developments and range improvements, potentially affecting livestock operations.

#### **4.16.4 Alternative C**

Impacts resulting from management of air quality, soils, forest and woodlands, wildlife, cultural resources, VRM, recreation, vegetation, and hazardous materials would be the same as Alternative A.

Watershed management actions would be less restrictive under this alternative. Reducing the avoidance area around riparian areas and floodplains to 250 feet would provide less protection to forage resources from surface disturbing activities but would allow for greater flexibility in constructing water developments and range improvements. In addition, the removal of riparian enclosures would increase available forage for livestock.

All lands identified as having wilderness characteristics would not be managed to protect those characteristics, which would allow for surface disturbing activities in the areas and potential loss of forage resources.

Impacts to livestock grazing would be similar to those described under Alternative A; however, Alternative C provides the greatest opportunity for mineral development and production. This could result in greater surface disturbance that could affect livestock grazing by removing available forage. Management actions that restrict surface disturbing activities include closing areas to oil and gas leasing (225,782 acres) and managing areas with NSO (15,542 acres) and CSU (215,890 acres) stipulations. In addition, 226,421 acres would be closed to mineral material sales and 234,961 acres would be pursued for withdrawal from locatable mineral entry.

Vegetation communities would be managed to prevent the spread of noxious weeds and achieve DPC objectives that emphasize wildlife habitat, livestock grazing, watershed, and biodiversity values which would support forage resources.

Impacts from wildland fire and fuels management would be the same as Alternative A, except for the increased emphasis on fire suppression and decreased use of natural fire. Suppression activities would result in smaller size of fires, which would reduce forage loss, damaged fences, changes in grazing management, and the need for temporary fencing (to allow for recovery of plants). This would reduce management costs and maintain the flexibility of livestock operations. Reduced use of natural fire in the long term could result in decreased forage production and/or availability for livestock use.

Under Alternative C, reducing total authorized use to highest level of billed use over the last 10 years could reduce the future availability for ranchers to use public lands for livestock grazing. Compared to Alternative A, reducing use to 160,387 AUMs would not allow an increase of actual use and could affect grazing operations by reducing lands available for grazing use. The management could affect livestock operators' ability to increase herd size and subsequent financial growth. However, livestock operators would be able to continue to run livestock on public land in a similar fashion to what they have been doing over the past 10 years. Less restrictive measures for range improvements, water developments, and salt and mineral

placement could create short-term benefits for livestock operators but could limit protections to forage and surface water resources. New fence construction would decrease management complexity and indirectly help increase pasture and forage productivity with improved distribution of livestock. This alternative would allow the largest amount of land available for grazing (3,592,374 acres), with no areas managed as unavailable for grazing use.

The effects on livestock grazing resulting from the development of ROWs would be similar to those identified for Alternative A. The difference is that 225,784 acres would be excluded from ROW development (47% decrease), thereby increasing the extent of potential forage removal, but also increasing opportunities for access to remote locations within allotments.

If Congress released the 13 existing WSAs from wilderness consideration, surface uses in the WSAs would be limited or prohibited similarly to the current situation and impacts on livestock grazing would not change.

Under this alternative, no areas would be designated as ACECs and special management areas would not be retained. Removing the restrictions would increase the amount of area subject to surface disturbance restrictions and limitations. Increased mineral development and a reduction in SD/MAs would increase the short-term displacement of livestock and decrease available forage.

#### **4.16.5 Alternative D**

Impacts on livestock grazing resulting from implementing management actions for air quality, water resources, vegetation, fish and wildlife, Special Status Species, cultural resources, paleontological resources, and recreation would be the same as those presented under Alternative A.

Impacts on livestock grazing from implementing soil management actions would be similar to those identified under Alternative A. Areas with limited reclamation potential soils would be designated avoidance areas for surface disturbing activities, which would reduce the extent of surface disturbing activities in these areas and thereby reduce the intensity and extent of forage removal and degradation.

Under Alternative D, lands with wilderness characteristics would be managed for multiple use, which could help to reduce development activities within these areas, but to a far lesser degree than under Alternative B. These areas would not be closed to mineral development as they would be under Alternative B, which would increase the potential occurrence of surface disturbing activities. Such activities could result in removal and damage to vegetation resources, which would reduce available forage for livestock.

Impacts on livestock grazing from managing fluid mineral leasing and development would be similar to those discussed under Alternative A, except stipulations that prohibit fluid mineral leasing or prohibit surface occupancy would be applied to a smaller area. Under Alternative D, 768,989 acres would be closed to fluid mineral leasing (42% increase compared with Alternative A) and 2,172 acres would be managed with NSO stipulations (99% decrease compared with Alternative A) (Table 2-4, Map 2-8). These stipulations would eliminate surface disturbance from fluid mineral development and thereby eliminate related impacts to forage resources in these areas; however, such impacts would occur across a smaller area compared with Alternative A. Similarly, areas pursued for withdrawal from locatable mineral development would be decreased to 482,272 acres (13% decrease compared with Alternative A), which would eliminate related impacts to forage resources across a smaller area compared with Alternative A.

Impacts on livestock grazing from saleable mineral development activities would be similar to those presented under Alternative A, except where mineral development is prohibited, which would be decreased to 362,009 acres (57% decrease compared with Alternative A) (Table 2-8, Map 2-16). This would increase the area in which vegetation resources could be impacted by saleable mineral development activities, which would increase the potential for vegetation removal and thereby decrease forage levels for livestock.

Impacts on livestock grazing from managing fire and fuels and forests and woodlands would be the same



as those presented under Alternative B.

Impacts on livestock grazing resulting from implementing VRM actions would be similar to those presented under Alternative A, except the number of acres designated as VRM Class II would be increased to 1,178,718 acres (102% increase compared with Alternative A) (Table 2-9, Map 2-20), which could lead to decreased degradation and removal of forage.

Under Alternative D, 3,589,859 acres would be available for livestock grazing, with 2,515 managed as unavailable for grazing use, about 1,545 fewer acres available for grazing compared to Alternative A. Impacts on livestock grazing resulting from implementing livestock grazing management actions would be similar to those presented under Alternative A, except additional restrictions on the placement of salt and mineral supplements could reduce the level of flexibility regarding livestock grazing management. This would restrict the ability for livestock operators to provide salt and mineral supplements to livestock in these areas of the planning area and thereby reduce overall management flexibility. NEPA analysis considering rangeland suitability prior to authorizing livestock conversions could affect AUM availability for operators depending on the type of livestock being converted.

Impacts on livestock resulting from implementing lands and realty actions would be similar to those presented under Alternative A, except the extent of the impacts would be increased. The number of acres designated as ROW exclusion areas would be decreased to 286,289 acres (33% decrease compared with Alternative A) (Table 2-10, Map 2-24), which would decrease the area in which ROW development activities are prohibited. This would eliminate impacts on forage resources from ROW development in these areas; however, such impacts would occur across a smaller area compared with Alternative A.

Impacts on livestock grazing from managing special designation areas would be similar to those presented under Alternative A, except they would occur over a smaller area and thereby offer fewer protections to important historic, cultural, wildlife, and scenic values in these areas. This, in turn, could increase surface disturbing activities and related impacts on forage resources. The acres designated as ACECs would be decreased to 246,634 acres (13.9% decrease compared with Alternative A). Management within a portion of the Little Mountain ACEC would require a grazing plan prior to approval of an annual grazing authorization. This management could lead to a delay when livestock use could occur once an operator identifies a desire to graze the within area (previously known as the Red Creek Portion of the Greater Red Creek ACEC, 55,880 acres).

## **4.17 RECREATION**

### **4.17.1 Assumptions**

This impact analysis is based on the following assumptions:

- The demand for most recreation activities will continue to increase (Wyoming State Office of Travel and Tourism 2006; Haas 2002; Cole 1996; Mueller et al. 2002).
- Most recreation use in the planning area is casual use.
- Most recreation use in the planning area is dispersed (i.e. undeveloped) recreation.
- Appropriate BMPs (Appendix A) will be applied; the analysis discloses the residual impacts that have the potential to occur after application of the BMPs.

### **4.17.2 Alternative A**

outdoor recreation experiences where scenery and viewsheds are part of the recreational experience.

Minimizing soil erosion could maintain recreation opportunities and the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive or unconfined recreation. However, actions taken to minimize soil erosion could also result in additional restrictions on OHV use, especially in areas with limited reclamation potential soils.

Management to protect the natural geologic values of Boars Tusk, Pilot Butte, and Emmons Cone would enhance the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive or unconfined recreation.

Management for water resources from the avoidance of development in wetlands and floodplains could maintain or enhance the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive recreation. However, the management could prevent some recreational access if stream crossings were prohibited. Limiting or closing water recharge areas to fluid minerals and coal development could reduce noise, traffic, and visual impacts of mineral development, which could affect recreation and the qualities of solitude, vistas, and naturalness.

Mineral resource development could reduce the quality of recreation experiences in some parts of the planning area where roads, trails, dispersed camping, and other types of recreation occur nearby. Wells and associated facilities, pipelines, increased road traffic, dust, and the visual impact of facilities in otherwise natural areas could all reduce the quality of recreation experiences and possibly displace recreationists to other areas. The noise of construction and operation of mineral facilities, including the presence of work crews, vehicles, and equipment, could affect recreation and the qualities of solitude and naturalness. Development may disperse populations of game species, which could reduce hunting success levels and the overall quality of hunting experiences. Wildlife viewing could also be reduced where areas of high development or disturbance occurs. Visual impacts of surface disturbance could reduce the naturalness of back country recreation and reduce opportunities for solitude.

Allowing development of locatable minerals and geothermal resources could reduce the quality of recreation experiences in some parts of the planning area where roads, trails, dispersed camping areas, and other types of recreation occur nearby. Where areas are pursued for withdrawal from locatable mineral entry (556,558 acres), noise, traffic, and visual impacts of mineral or other development would be reduced and the opportunity for solitude and primitive/unconfined recreation would be preserved.

Impacts to recreation would occur primarily on lands open to oil and gas development subject to standard terms and conditions and to a lesser degree on 721,132 acres managed with CSU stipulations and 1,840,967 acres with TLSs. Lands with TLSs could reduce the availability of some recreation activities, such as riding snowmobiles or OHVs, hunting, or access to recreation destinations could be temporarily prohibited. For casual use recreation, a reduction in development and traffic during these times and seasons would create more opportunities for solitude and pristine and undeveloped recreation.

Managing 158,611 acres with an NSO stipulation would reduce or prevent mineral development impacts to recreation, with the possible exception of noise, traffic, and fugitive dust coming from adjacent areas where horizontal drilling could be possible. Approximately 254 acres surrounding campgrounds would be managed with NSO stipulations. Within 540,021 acres closed to fluid mineral leasing, there would be no new development of oil and gas leases, and most impacts to recreation could be greatly reduced. Approximately 182 acres of lands surrounding campgrounds would be closed to oil and gas leasing. Recreation taking place in these areas would be subject to fewer impacts from development activities, increased quiet and solitude, and improved opportunities for hunting or viewing large game. This management would enhance the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive or unconfined recreation.

Geophysical exploration could reduce the quality of recreation experiences in some parts of the planning

area where roads, trails, dispersed camping areas, and other types of recreation occur nearby. The exploration activity may also cause populations of game species to relocate, which could reduce hunting success levels and the overall quality of hunting experiences, as well as wildlife viewing opportunities. Visual impacts of surface disturbance could reduce the naturalness of backcountry recreation and reduce opportunities for solitude.

Closing 485,964 acres to coal leasing, 727,805 acres to oil shale leasing, 423,633 acres to trona leasing, and 833,719 acres to saleable minerals would reduce or prevent mineral development impacts to recreation within these areas. Approximately 436 acres of lands surrounding campgrounds would be closed to saleable mineral development. Recreation taking place in these areas would experience increased quiet and solitude, and improved opportunities for hunting or viewing large game. This management would enhance the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive or unconfined recreation.

Wildland fire ecology and management often creates temporary closures during wildfire incidents, and prescribed burns may affect recreational uses of those areas involved. Management of vegetative resources through fire and prescribed burns could improve range conditions and wildlife habitat, which could benefit recreational activities, especially wildlife viewing and hunting.

Forest and woodland management within noncommercial forests would enhance the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive or unconfined recreation. These areas would be less disturbed and could provide greater populations of wildlife for viewing or hunting. In the timber harvest compartments, recreation could be affected by noise and vehicles when active harvests were occurring. Clearcutting or other harvest activity could reduce the quality of recreation experiences in some parts of the planning area where roads, trails, dispersed camping areas, and other types of recreation occur nearby. Clear cuts or active harvest areas may also temporarily reduce populations of game species, which could reduce hunting success levels and the overall quality of hunting experiences, as well as wildlife viewing opportunities. Visual impacts of harvest areas could reduce the naturalness of back country recreation and reduce opportunities for solitude. Allowing harvest of minor forest products would provide recreationists with fuel for campfires and other opportunities for wood collecting or Christmas tree harvest.

Vegetation treatments in grasslands and riparian areas would result in short- and long-term impacts on recreational experiences. Over the short-term, recreationists might be displaced from treated or denuded areas to other more visually desirable areas until revegetation occurs. Area closures resulting from prescribed burns would temporarily prohibit recreational use; however, over the long-term, vegetative treatments would result in improved vegetation cover and aesthetic qualities. Revegetation efforts would improve the visual quality of these areas over the long term, which would enhance recreational experiences. Management of vegetative resources through prescribed burns and other treatments could improve range conditions and wildlife habitat, which could benefit recreational activities, especially wildlife viewing and hunting.

Management to support wildlife, big game, raptors, fisheries, and Special Status Species could support or improve recreational opportunities such as hunting, wildlife viewing, horseback riding, and fishing within the planning area. Lands with seasonal use limitations for vehicles could reduce the availability of some recreation activities, such as riding snowmobiles or OHVs, hunting, or the ability to access recreation destinations. For casual use recreation, a reduction in development and traffic during these times and seasons would create more opportunities for solitude and pristine and undeveloped recreation. Management to prevent or reduce surface disturbing activities would reduce or prevent noise, traffic, and fugitive dust coming from mineral development or other construction. Recreation taking place in these areas would be subject to fewer impacts from development activities, increased quiet and solitude, and improved opportunities for hunting game species or viewing wildlife.

resources and educating the public about cultural resources. Management actions for cultural resources could preclude the development of recreational facilities and opportunities in extremely localized areas. Management actions involving interpretive programs, signage, markers, and other elements for historic trails, other historic sites, and important prehistoric sites would enhance recreational experiences, increase public awareness and stewardship, and reduce impacts on natural resources.

Research into Indian Gap indicates that the Gap and associated Indian Gap Trail are a historic resource related to Native American tribes. The Gap and Trail were used historically by tribes as a way to travel over the mountains and move between the Wind River Reservation and Rock Springs, Farson and Fort Duschesne, Utah. Because the Gap and Trail were not identified by tribes as Traditional Cultural Properties or Sacred Sites, no special management for the Indian Gap or the Indian Gap Trail was developed.

Development activities, including the construction of recreational sites, would be prohibited in areas designated as VRM Class I (225,717 acres), and could be allowed in areas designated as VRM Class II (582,672 acres) where adequate mitigation was possible. Although these designations would reduce recreational opportunities related to developed sites, they would enhance recreational values related to solitude and natural environments. Management of VRM Class III areas (615,492 acres) would not affect the type or amount of recreation use that would occur in these areas. Facilities to support recreation could be accommodated. Although management of VRM Class IV areas (2,180,423 acres) would allow major modifications to the landscape, which would not limit recreation facilities or activities in these areas, this type of management could diminish scenic quality to a degree that would degrade the recreation experience. These changes would create short- and long-term visual impacts that would directly reduce the quality of the recreational setting. Outdoor recreationists could avoid areas where the visual characteristics have been altered dramatically or appear unnatural. Typically, the area visually affected by surface-disturbing activities and associated features is considerably larger than the actual affected area. Under Alternative A, 242 acres of campgrounds are within VRM Class II and 126 acres are within Class IV. The campgrounds within VRM Class II could have unobstructed vistas and users would benefit from a sense of naturalness and pristine landscapes.

Pursuing access through acquisition, exchange, and disposal of lands would enhance recreation opportunities, experiences, and management when land tenure adjustments and access is acquired to accommodate or improve recreation access. Land tenure adjustments and access would facilitate greater access to recreation areas and reduce conflicts between private landowners and recreationists within the planning area. Use of easements could also improve and increase recreation access where easements were acquired to support recreation opportunities. Lands and realty actions that result in construction of structures visible on or above the surface (e.g., communication towers, renewable energy sites, and wind turbines) would degrade visual impacts to recreation opportunities and diminish user experience where solitude and a pristine setting are part of the expectation.

Applying ROW exclusion (426,709 acres) and avoidance areas (736,138 acres) limiting ROWs and transmission projects to designated corridors in some areas would serve to consolidate utility ROWs and structures. This would reduce the extent of disturbed areas, which would reduce visual impacts to recreation opportunities and enhance user experience where solitude and a pristine setting are part of the expectation. No campgrounds would be within ROW exclusion areas, but 103 acres of campgrounds would be within ROW avoidance areas, and 267 acres of campgrounds would be within areas open to ROWs. The open areas would be most vulnerable to visual disturbance and could have reduced scenic quality and naturalness.

In the JMH area, transportation management, such as closing and rehabilitating unused roads and trails could cause a limited decrease in trail-based recreation, but conflicts with non-motorized recreation would be reduced and natural resources would receive enhanced protection, as would opportunities for solitude and primitive or unconfined recreation. Allowing the use of over-the-snow vehicles could cause localized and short-term impacts from conflicts between motorized (over-the-snow) users and non-motorized users. Indirect impacts could also occur from degraded wildlife habitat and stress to big game species, reducing wildlife observation and hunting opportunities.

Management of backcountry byways would provide recreationists the ability to enjoy driving for pleasure, sightseeing by vehicles, and viewing wildlife and wild horses. Management actions involving interpretive signage, markers, and brochures would enhance recreational experiences, increase public awareness and stewardship, and reduce impacts on natural resources.

Management of livestock grazing and the use of livestock fences could serve as obstacles to certain recreational activities. Overall, grazing management could support the experience of recreation in the West.

Allowing SRPs and commercial competitive events could provide recreationists access to public lands and opportunities to experience special areas, have a unique recreation experience, or to recreate in larger groups. Recreation management to consider other natural resources, human health, and safety as well as recreation resources could maintain or enhance the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive or unconfined recreation. Prohibiting dispersed camping near water resources, vegetation buffers, applying buffer distances for camping within 200 feet of water, and avoiding 500 feet of riparian areas and floodplains for development of recreation site facilities would protect water quality, allowing safer sources of water for use by campers, wildlife, and fisheries. Recreation taking place in these areas would be subject to fewer impacts from development activities, increased quiet and solitude, and improved opportunities for hunting game species or viewing wildlife. However, the management could prevent some recreational access in areas where habitat or other resources are protected. Limiting or closing lands within ¼ mile of recreation sites to fluid minerals and other development could reduce noise, traffic, and visual impacts of mineral development, which could support recreation and the qualities of solitude, vistas, and naturalness. Limiting of cutting trees and firewood for camping to designated areas would provide recreationists with fuel for campfires within those areas. Management actions involving interpretive signage, markers, and brochures would enhance recreational experiences, increase public awareness and stewardship, and reduce impacts on natural resources. Management for wild horse herd viewing areas would provide unique recreation opportunities, allow for sightseeing by vehicle, opportunities for wild horse and wildlife viewing, and unobstructed vistas from ½-mile buffer distances surrounding wild horse viewing areas.

Managing the Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Red Creek, Pine Mountain, Little Mountain, and Cedar Canyon to assure their continuing value for recreational opportunities, designating the Continental Divide National Scenic Trail, Continental Divide Snowmobile Trail, the Green River, and the Wind River Front as SRMAs, and continuing to manage Killpecker Sand Dunes and the Oregon and Mormon Pioneer National Historic Trails as SRMAs would maintain or enhance the recreation experience for visitors. These areas could focus recreation activities and management of the areas to enhance their unique recreational values. The management would support recreation uses such as camping, hunting, fishing, horseback riding, and OHV use. Solitude and remoteness would be available but so would more diverse types of recreational opportunities and an increased amount of use. Table 4-9 shows the acres of SRMAs proposed in each alternative. Table 4-10 shows the acres of surface management from the different resource programs that could protect SRMA lands from surface disturbing activities or allow for development.

**Table 4-9. Acres of Special Recreation Management Areas by Alternative**

SRMA	Alternative A	Alternative B*	Alternative C	Alternative D
Continental Divide National Scenic Trail SRMA	60	0	60	60
Continental Divide Snowmobile Trail SRMA	90	0	90	0
Green River SRMA	700	0	700	0
Wind River Front SRMA	257,680		257,680	82,100

Killpecker Sand Dunes SRMA	39,290	0	39,290	12,832
Oregon and Mormon Pioneer National Historic Trails SRMA	290	0	290	0
Little Mountain SRMA	0	0	40,550	40,550
Red Creek Badlands SRMA	0	0	261,140	0
<b>Total Acres</b>	<b>298,110</b>	<b>0</b>	<b>592,800</b>	<b>135,549</b>

\*No SRMAs would be managed under Alternative B.

**Table 4-10. Overlap of Resource Management with Special Recreation Management Areas by Alternative**

	Alternative A	Alternative B*	Alternative C	Alternative D
<b>Oil and Gas</b>				
Closed	124,439	0	32,157	123,261
NSO	45,218	0	34,836	4,721
CSU	127,332	0	288,387	2,063
TLS	172,532	0	428,966	103,194
<b>Locatable Minerals</b>				
Proposed for Withdrawal	126,340	0	33,772	38,122
Open	170,767	0	292,051	93,036
<b>Saleable Minerals</b>				
Closed	121,391	0	38,266	47,403
Open	175,564	0	299,281	92,646
<b>OHV</b>				
Closed	23,908	0	23,908	0
Designated	255,055	0	301,215	127,218
Existing	5,509	0	0	0
Open	12,809	0	12,809	12,831
<b>ROW</b>				
Exclusion	43,541	0	24,109	3,668
Avoidance	240,443	0	257,356	136,376
Open	12,590	0	55,564	5
<b>VRM</b>				
Class I	24,206	0	24,130	0
Class II	101,682	0	121,565	118,262
Class III	6,094	0	18,265	12,153
Class IV	165,170	0	173,743	9,240

\*No SRMAs would be managed under Alternative B.

Managing the 14-Mile Recreation Area as closed to surface disturbing and development activities would

provide greater quiet, naturalness, and improved opportunities for hunting or viewing large game. This management could enhance the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive or unconfined recreation.

Managing the Green River, Sweetwater River, Big Sandy River, and the Bitter Creek segment between the towns of Rock Springs and Green River for recreation values could support activities such as fishing, rafting, camping, picnicking, or hiking.

Managing the remaining lands of the planning area as an ERMA would provide a wide range recreation experiences, but user conflicts could occur if uses were not specified.

Designating the Wind River Front SRMA (257,680 acres) would maintain or enhance the recreation experience for visitors and could focus recreation activities and management of the areas for their unique recreational values. Within the Eastern Unit, management to reduce surface disturbing and disruptive activities would provide greater quiet, naturalness, and improved opportunities for hunting or viewing large game. This management would enhance the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive or unconfined recreation. The recreation and visitor experience would be supported through campgrounds and other facilities and access would be available through motorized vehicles. OHV and snow machine recreation would be available on roads and trails only, preventing open off-road use. Some areas would provide solitude, vistas, and naturalness for bird watching, hunting and viewing wildlife; while others would provide more civilized experiences for four-wheeling and picnicking. The Western Unit would be open to mineral leasing; however, surface use may be limited through CSU stipulations or closures. Management of VRM Class III and IV could allow minor to major modifications to the landscape, which would not limit recreation facilities or activities in these areas. Outdoor recreationists could avoid areas where the visual characteristics have been altered dramatically or appear unnatural.

Although some OHV use is a recreational activity, impacts to OHV use is closely associated with impacts to transportation road networks. Therefore, impacts to OHV use are discussed in this section and in the Transportation and Access section (Section 4.18). OHV use would enhance recreational opportunities by facilitating dispersed use of recreational resources and access to recreational areas inaccessible to ordinary street vehicles. However, OHV use and its effects on air quality, noise levels, soils, vegetation, wildlife, and general aesthetics would diminish the recreational quality for other recreationists seeking solitude and natural settings for camping, hiking, and nonmotorized recreational activities.

Open OHV areas (12,809 acres), mostly in the Killpecker Sand Dunes, would provide the availability of off-road motorized recreation opportunities. Other recreation opportunities in these areas would be diminished because other recreational uses could conflict with the noise, dust, and perceived danger of motorized vehicles, such as hunting, hiking, biking, and backpacking. Surface disturbance, noise, and sights and sounds of other people would detract from the natural character of the area. OHV use in these areas could increase conflicts between users and displace some non-motorized users and degrade the primitive recreation experience in these areas.

Limiting OHV use to designated roads and trails on 968,959 acres, and existing roads and trails on 2,398,839 acres, would maintain opportunities for trail-based OHV recreation. This management would provide motorized recreation opportunities within middle country to urban recreation settings. The use of vehicles could diminish the quality of recreation for those seeking a more primitive or backcountry experience. Allowing vehicle use could provide access to less visited areas of the planning area or to campgrounds such as Sweetwater Bridge and Blucher Creek.

Areas closed to OHV use (225,537 acres) would limit vehicular recreation in these areas, but conflicts with non-motorized recreation would be reduced and natural resources would receive enhanced protection, as would opportunities for solitude and primitive or backcountry recreation. Recreation taking place in these areas would be subject to fewer impacts from development activities, increased quiet and solitude, and

improved opportunities for hunting game species or viewing wildlife.

Management of National Historic Trails, the Dry Sandy Swales trail segment, the Overland Trail, the Cherokee Trail, and the Point of Rocks to South Pass Road or other historic roads and trails with ¼-mile setbacks or other protective management could reduce noise, traffic, and visual impacts of mineral or other development. The management would support a range of recreation uses and the qualities of solitude, vistas, and naturalness.

Management of WSAs and wild and scenic river segments designated as scenic (½ mile), wild (5.8 miles) or recreational (3.4 miles) could reduce recreational opportunities related to developed sites, well-marked trails, motorized use, and modern facilities. For recreationists seeking primitive or backcountry experiences, the management would enhance recreational values related to solitude and undisturbed natural environments. The management would prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape.

Management for the Red Desert Watershed Management Area (340,930 acres), Salt Wells (aka Pine Mountain) Management Area (62,760 acres) including the Four J Basin Portion of the Salt Wells Management Area, Sugarloaf Basin Management Area (87,240 acres), West Sand Dunes Archaeological District (17,780 acres), Pinnacles Geographic Area (1,340 acres), Pinnacles Geologic Feature (600 acres), and Monument Valley Management Area (69,960 acres) would limit mineral development, limit ROWs and roads, and prevent other surface disturbing activities. The management would prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape. For recreationists seeking primitive or backcountry experiences, the management would enhance recreational values related to solitude and undisturbed natural environments. Areas with less surface disturbance or disruptive activities could provide more natural conditions to support recreational opportunities such as hunting, wildlife viewing, horseback riding, and fishing. OHV use in these areas could increase conflicts between users and displace some non-motorized users and degrade the primitive recreation experience in these areas. Where mineral leasing and surface disturbing activities were permitted, the quality of recreation experiences could be diminished where roads, trails, dispersed camping, and other types of recreation occur nearby. Visual impacts of surface disturbance reduce the naturalness of back country recreation and reduce opportunities for solitude.

Retaining the designation of the Cedar Canyon ACEC (2,540 acres) and allowing the lands to be open for consideration of mineral leasing with restrictions to protect cultural, wildlife, and watershed values could provide a range of recreational opportunities from back country to front country. The management would prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape.

Designating and managing the Greater Red Creek ACEC (131,600 acres) for watershed and wildlife values, allowing mineral leasing, limiting OHV travel to designated roads and trails, and minimal recreation development could provide a range of recreational opportunities. The management could reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape. Areas with less surface disturbance or disruptive activities could provide more natural conditions to support recreational opportunities such as hunting, wildlife viewing, horseback riding, and fishing. Allowing the Sage Creek portion of Greater Red Creek ACEC (9,600 acres) to be open for coal leasing with restrictions to protect wildlife values could reduce the quality of recreation experiences and possibly displace recreationists to other areas.

Managing the Currant Creek Portion of the Greater Red Creek ACEC (23,740 acres), Red Creek Portion of the Greater Red Creek ACEC (55,880 acres), the Greater Sand Dunes ACEC, including the Crookston Ranch and Boar's Tusk Portions (39,290 acres), Oregon Buttes ACEC (3,440 acres), Pine Spring ACEC (6,030 acres), Special Status Plant Species ACEC (1,200 acres), and White Mountain Petroglyphs ACEC (20 acres) as closed to mineral development, management as a ROW exclusion area, and VRM Class II



could provide a range of recreational opportunities from back country to front country. The management would prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape. Management actions involving interpretive programs, signage, markers, barriers, and other elements for cultural and other historic sites, and important prehistoric sites would enhance recreational experiences, increase public awareness and stewardship, and reduce impacts on natural resources.

Allowing the Eastern Portion of the Greater Sand Dunes ACEC and the South Pass Historic Landscape ACEC (53,940 acres), to be open for coal and mineral leasing, mineral development/sales, ROW avoidance areas, and travel on existing roads and trails with restrictions to protect wildlife values could provide a range of recreational opportunities from back country to front country. Management of the Eastern area (8,800 acres) would prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape.

Managing the Natural Corrals ACEC (1,110 acres) with an NSO stipulation, prohibiting surface disturbing activity, and closing surface coal mining would prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape. Management actions involving interpretive programs, signage, markers, and other elements for historic trails, other historic sites, and important prehistoric sites would enhance recreational experiences, increase public awareness and stewardship, and reduce impacts on natural resources.

Designating and managing the Steamboat Mountain ACEC (47,280 acres) for recreation, watershed, sensitive big game habitat, and wildlife values could provide a range of recreational opportunities from back country to front country. The management would prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape. Areas with less surface disturbance or disruptive activities could provide more natural conditions to support recreational opportunities such as hunting, wildlife viewing, horseback riding, and fishing. Allowing the lands to be open for consideration of mineral leasing with restrictions to protect wildlife values could prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape where restrictions were applied.

Reducing or minimizing risk to humans and the environment from hazardous materials and other hazards could prevent injury or harm to recreationists in areas where protective management was applied.

### **4.17.3 Alternative B**

Impacts to recreation resources from the management of air quality, geology, geophysical exploration, wildland fire, grassland and shrubland communities, riparian and wetland resources, lands and realty, backcountry byways, WSAs, wild and scenic rivers, and public safety would be the same as those described under Alternative A.

Impacts to recreation resources from the management of soil and water would be similar those described under Alternative A. Alternative B could reduce noise, traffic and visual impacts of mineral development which could affect recreation and the qualities of solitude, vistas, and naturalness.

Management of lands with wilderness characteristics would prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape. However, management for wilderness characteristics would prevent recreational opportunities related to developed sites, well-marked trails, motorized or mechanical use, and modern facilities. For recreationists seeking primitive or backcountry experiences, the management would enhance recreational values related to solitude and undisturbed natural environments. Areas with less surface disturbance or disruptive activities could provide more natural conditions to support recreational opportunities such as backpacking, hiking, wildlife viewing, horseback riding, and fishing.

Impacts to recreation resources from locatable mineral development would be similar to those described under Alternative A. Under Alternative B, 1,993,908 acres would be pursued for withdrawal from locatable mineral entry, 1,437,350 more acres compared to Alternative A.

Impacts to recreation resources from geothermal leasing would be the same as those described under Alternative A. Under Alternative B, 2,186,218 acres would be closed to geothermal leasing, 1,646,197 more acres than under Alternative A, supporting opportunities for solitude and primitive/unconfined recreation.

Impacts to recreation resources from mineral development would be similar to those described under Alternative A. Alternative B would apply greater restrictions on development through closures and NSO stipulations, which would prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape (Table 4-10).

Under Alternative B, 2,186,218 acres would be closed to oil and gas leasing, 1,646,197 more acres than under Alternative A, and 813,354 acres would be managed with NSO stipulations, which is 654,743 more acres than under Alternative A. Impacts to recreation would be similar to those described under Alternative A for lands closed to oil and gas leasing and with NSO stipulations, but the management would apply to more acres of land. Under Alternative B, 23,703 acres surrounding campgrounds would be closed to oil and gas leasing, 23,521 more acres than Alternative A, and 12,935 acres would be within lands with NSO stipulations, 12,681 more acres compared to Alternative A.

Impacts to recreation resources from applying CSU and timing limitation stipulations would be similar to those described under Alternative A, but within 99,674 acres of CSU stipulations and 713,837 acres of timing limitation stipulations. These smaller areas of CSU and timing limitation stipulations could allow for some surface disturbing or disruptive activities, but the overall management would have fewer impacts from development activities, more quiet and solitude, and improved opportunities for hunting or viewing large game.

Impacts to recreation resources from solid leasable and saleable minerals would be similar to those described under Alternative A. Under Alternative B, 3,735,546 acres would be closed to coal, 2,122,282 acres would be closed to oil shale, and 2,119,920 acres would be closed to trona leasing and development. The protections to lands closed to solid mineral development would be applied to 2,741,709 more acres of land closed to coal, 1,394,477 more acres of lands closed to oil shale, and 1,665,326 more acres closed to trona compared to Alternative A. Approximately 2,581,741 acres of lands would be closed to saleable mineral development, 1,748,022 more acres compared to Alternative A. Recreation taking place in these areas would have fewer impacts from development activities, more quiet and solitude, and improved opportunities for hunting or viewing large game. Approximately 29,545 acres of lands surrounding campgrounds would be closed to saleable mineral development. This management would enhance the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive/unconfined recreation.

Impacts to recreation resources from forest and woodland management would be similar to those described under Alternative A. Use of more natural processes and prohibiting clear cutting could prevent disruptions in the forest canopy, and would enhance the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive or unconfined recreation. Forest areas would be less disturbed and could provide habitat for larger numbers of wildlife for viewing or big game for hunting.

Impacts to recreation resources from the management of wildlife, big game, raptors, fisheries and Special Status Species would be similar to those described under Alternative A. Additional management to protect and improve wildlife habitat could support or improve recreational opportunities such as hunting, wildlife viewing, horseback riding, and fishing within the Planning Area.

Impacts to recreation resources from the management of cultural resources would be similar to those

described under Alternative A. Additional protective management for reducing the impacts of mineral development and surface disturbing or disruptive activities would reduce visual impacts to recreation opportunities and enhance user experience where solitude and a pristine setting are part of the expectation.

Impacts to recreation from the management of visual resources would be the same as those described under Alternative A for VRM Class I (225,785 acres, 68 acres more than Alternative A), and VRM Class III (666,522 acres, 51,030 acres more than Alternative A). Under Alternative B, 2,148,902 acres would be managed as VRM Class II, 1,566,230 more acres than Alternative A. The management for VRM Class II would retain the character of the landscape, but it could reduce recreational opportunities related to developed recreation sites, overall, it would enhance recreational values related to solitude and natural environments. Under Alternative B, 563,754 acres would be managed as VRM Class IV, 1,616,669 fewer acres as compared to Alternative A. Impacts to lands managed as VRM Class IV would be the same as those described under Alternative A, but fewer acres would be subjected to the level of surface disturbance allowed within the VRM Class IV classification.

Impacts to recreation from ROW management would be the same as those described under Alternative A; however, under Alternative B, 2,480,876 acres would be managed as ROW exclusion areas. The management would retain the visual character and naturalness of these areas within 2,130,936 more acres as compared to Alternative A. Fewer acres would be managed as avoidance areas, 133,903 acres under Alternative B, 602,235 fewer acres than Alternative A. This could reduce the extent of disturbed areas, which would reduce visual impacts to recreation opportunities and enhance user experience where solitude and a pristine setting are part of the expectation.

Under Alternative B, route designations from the travel management plan would be applied. Within the area designated as limited to designated roads and trails, 2,352 miles of routes would be managed as open to vehicle use. About 67 miles of routes would be limited to non-motorized or non-mechanized use, 4,505 miles of routes would be closed to all use, and 10,006 miles of routes and linear disturbances would be removed from the transportation network and allowed to return to natural conditions. These routes would receive lower use or no use at all. Reducing the number of routes could reduce the availability of motorized recreation but could provide solitude and naturalness to visitors seeking a pristine experience.

Impacts to recreation from livestock grazing management would be the same as those described under Alternative A. In addition, application of monitoring, greater protection of riparian areas and springs, and range improvements would be implemented to enhance wildlife, watershed, and riparian values. These management actions would improve the condition of these natural resources and consequently would enhance recreational values through improved water quality for water-based recreational activities and improved wildlife habitat for hunting, fishing, and wildlife observation.

Under Alternative B, management for recreation would have impacts similar to those described under Alternative A. Not retaining SRMAs may provide recreationists with a wide range of recreational opportunities, but user conflicts could occur if uses were not specified. Management within the two units of the Wind River Front SRMA (257,680 acres) would still apply, although the SRMA would not be designated. Impacts from the management would be the same as those described under Alternative A.

Impacts to recreation from OHV management would be the same as those described under Alternative A. Under Alternative B, there would be no category called “limited to existing roads and trails.” While the routes would be moved under the “limited to designated roads and trails” for a total of 3,373,520 acres (the sum of limited to designated and limited to existing acres in Alternative A) impacts to recreation would be similar to those described under both categories under Alternative A. Additional management to prohibit and limit OHV would limit vehicular recreation in some areas compared to Alternative A. Recreation taking place in these areas would have fewer impacts from development activities, more quiet and solitude, and improved opportunities for hunting game species or viewing wildlife.

the Overland Trail, the Cherokee Trail, and the Point of Rocks to South Pass Road would be the same as those described under Alternative A. In addition, greater restrictions on mineral development, surface disturbing activities, and construction of towers and other structures would reduce noise, traffic, and visual impacts of mineral or other development to a greater degree than under Alternative A.

Under Alternative B, the Red Desert Watershed Management Area would be divided into a management area (164,143 acres) and the remainder added to the Steamboat Mountain ACEC (176,881 acres). Impacts to recreation from the management of the areas would be similar to those described in Alternative A, but additional management could further reduce noise, traffic, and visual impacts of mineral or other development to a greater degree than under Alternative A.

The Greater Red Creek ACEC would be expanded from 131,600 acres in Alternative A to 468,170 acres, and the Monument Valley ACEC (69,960 acres), the Pinnacles ACEC (1,340 acres), and Big Sandy Openings ACEC (2,020 acres) would be designated in Alternative B. The management for the ACEC expansion and designations would prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape. If surface disturbing activities were permitted, the quality of recreation experiences could be diminished where roads, trails, dispersed camping, and other types of recreation occur nearby.

Impacts to recreation from retaining the designation of the Cedar Canyon ACEC (2,540 acres) would be similar to Alternative A, but additional management would allow for fewer surface disturbing or disruptive activities under Alternative B.

Impacts to recreation from retaining the designation of the Greater Sand Dunes ACEC (including the Crookston Ranch and Boar's Tusk Portions, 39,290 acres) and the Oregon Buttes ACEC would be the same as those described under Alternative A.

Impacts to recreation from the management of the Eastern Portion of the Greater Sand Dunes ACEC and the Natural Corrals ACEC (1,110 acres) would be similar to those described under Alternative A. Some additional protective measures to prevent or reduce surface disturbance could prevent or reduce noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape.

Impacts to recreation from the expansion and additional management of the Special Status Plant Species ACEC (3,610 acres), the Steamboat Mountain ACEC (439,330 acres), Pine Spring ACEC (6,480 acres) and White Mountain Petroglyphs ACEC (20 acres) would be similar to those described under Alternative A, but would apply over larger areas of land.

Designating and managing the South Wind River ACEC (374,710 acres) for watershed, sensitive big game habitat, wildlife, and other values could provide a range of recreational opportunities from back country to front country. The management would support recreational opportunities such as hunting, wildlife viewing, and fishing.

Management of National Historic Landmarks could enhance recreational experiences and provide benefits by protecting resources and educating the public about unique historic resources.

#### **4.17.4 Alternative C**

Impacts to recreation resources from the management of air quality, soils, geology, water, geophysical, wildland fire ecology, forest management, grassland and shrubland communities, riparian and wetland resources, wildlife, big game, raptors, fisheries, Special Status Species, cultural resources, lands and realty management, land disposals, land acquisitions, renewable energy, and public safety would be the same as those described under Alternative A.

Under Alternative C, not managing lands with wilderness characteristics for their wilderness characteristics could allow for motorized use of the lands, providing greater access to the lands for recreational activities. However, greater access could reduce the natural conditions of the untrammeled, undeveloped landscape. Although more developed recreation activities could be allowed, the areas would continue to provide natural conditions to support recreational opportunities such as backpacking, hiking, wildlife viewing, and fishing.

Impacts to recreation resources from locatable mineral development would be greater than those described under Alternative A. Under Alternative C, 234,961 acres would be proposed for withdrawal from mineral location, 321,597 fewer acres compared to Alternative A. Recreation could be affected by increased mining activity from surface disturbance, mining equipment, or increased vehicle use near mining claims.

Impacts to recreation resources from geothermal leasing would be the same those described under Alternative A. Approximately 526,980 acres of the planning area would be closed to geothermal leasing, 33,464 fewer acres compared to Alternative A.

Impacts to recreation resources from mineral development would be similar to those described under Alternative A. Closing 225,782 acres to fluid mineral leasing would close 314,239 fewer acres than under Alternative A. Under Alternative C, 15,542 acres would be managed with NSO stipulations, which is 143,069 fewer acres than Alternative A. There would be no campgrounds within closed or NSO areas, 132 acres of campgrounds would be within CSU stipulations, TLSs would be applied to 326 acres of campgrounds. CSU stipulations would be applied to 215,890 acres, 505,242 fewer acres compared to Alternative A, and TLSs would be applied to 1,355,485 acres, 485,482 less acres compared to Alternative A.

Impacts to recreation resources from solid leasable and saleable minerals would be similar to those described under Alternative A. Under Alternative C, 226,219 acres of lands would be closed to coal leasing, 407,625 fewer acres compared to Alternative A. 225,965 acres would be closed to oil shale leasing, 501,840 fewer acres than Alternative A, 225,965 acres would be closed to trona leasing, 228,629 fewer acres than Alternative A, and 226,421 acres of lands would be closed to saleable mineral development, 607,298 fewer acres compared to Alternative A. Development could reduce populations of game species, which could reduce hunting success levels and the overall quality of hunting experiences, as well as wildlife viewing opportunities. Approximately 436 acres surrounding campgrounds would be open to saleable mineral development.

Impacts to recreation from the management of visual resources would be very similar to those described under Alternative A. Management for VRM Class I would be 226,630 acres, 912 acres more than Alternative A; VRM Class II would be 607,899 acres, 25,229 acres more than Alternative A; VRM Class III would be 395,683 acres, 255,807 fewer acres than Alternative A; and VRM Class IV, 2,374,706 acres, 194,283 acres more than Alternative A. There would be slightly more acres protected by VRM Classes I and II, but nearly 195,000 more acres subjected to surface disturbing and disruptive activities allowed under VRM Class IV compared to Alternative A.

Impacts to recreation from ROW management would be similar to those described under Alternative A. Under Alternative C, 225,784 acres would be managed as ROW exclusion areas, 200,925 fewer acres compared to Alternative A. Under Alternative C, 31,018 acres would be managed as ROW avoidance areas, 705,120 fewer acres compared to Alternative A. Surface disturbing and disruptive activities could diminish the visual quality and experience of primitive or backcountry landscapes to a greater degree than under Alternative A.

Impacts to recreation from transportation management would be similar to those described under Alternative A. Under Alternative C, the route designations from the travel management plan would be applied. Within the area designated as limited to designated roads and trails, 16,256 miles of routes would

be managed as open to vehicle use. About 93 miles of routes would be limited to non-motorized or non-mechanized use, 425 miles of routes would be closed to all use, and 165 miles of routes and linear disturbances would be removed from the transportation network and return to natural conditions. Impacts to recreation would be similar to those described under Alternative B, however nearly 14,000 more miles of designated routes would be open to vehicle use in Alternative C and about 4,000 fewer miles would be closed compared to Alternative B. A larger number of routes available would provide more opportunities for motorized recreation, but the motorized use could diminish the visual quality and experience of primitive or backcountry landscapes.

Not retaining backcountry byways could remove some recreation opportunities associated with sightseeing, driving for pleasure, and viewing wild horses.

Impacts to recreation from livestock grazing would be similar to those described under Alternative A, however, allowing livestock grazing in and around campgrounds could reduce the presence of vegetation, cause physical damage to facilities, increase visible waste, and possibly cause recreationists to relocate if large numbers of livestock were present. Some people enjoy seeing livestock when visiting the West, and the presence or evidence of livestock could contribute to the enjoyment of their experience.

Management for recreation would have impacts similar to those described under Alternative A. Under Alternative C, emphasis of management for recreation would provide greater opportunities for recreational experiences compared to Alternative A. Managing the Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, Leucite Hills, Pine Mountain, and Cedar Canyon for their continuing value for recreational opportunities could give recreationists greater opportunities for motorized use, camping, developed recreation sites, or group activities.

Designating the Little Mountain Area as a SRMA and retaining the Green River and Wind River Front SRMAs for both motorized and non-motorized use would provide a range of recreational opportunities for those seeking a more natural back country experience, and those desiring a more developed or vehicle-oriented recreation experience. OHV use in these areas could increase conflicts between users and displace some non-motorized users and degrade the backcountry recreation experience in these areas.

Designating Red Creek Area as a SRMA and retaining the Continental Divide Snowmobile Trail SRMA would support a backcountry experience for recreationists. The management would prevent or reduce noise, OHV use, developed recreation sites, and support the natural character of the landscape. For recreationists seeking back country experiences, the management would enhance recreational values related to natural, unmodified environments. Areas with less development would provide more natural conditions to support recreational opportunities such as hunting, mountain biking, horseback riding, wildlife viewing, and fishing.

Retaining the Killpecker Sand Dunes SRMA designation for motorized recreationists to engage in OHV, motorbike, and other motorized hill climbing activities would provide motorized recreation enthusiasts open areas for riding and developed campgrounds, picnic areas, and other facilities for day use and overnight stays. The area would not have as much natural character as the outlying landscape, and the noise, dust, and exhaust may deter recreationists seeking more natural, undisturbed settings from the SRMA. The area could also have less natural character for recreationists in the 15,149 acre portion of the SRMA open to mineral material sales.

Retaining the Oregon and Mormon Pioneer National Historic Trails SRMA designation for historic tourism enhances recreational experiences and provides benefits by protecting historic resources. Impacts to recreation from managing the Green River, Sweetwater River, Big Sandy River, and the Bitter Creek segment between the towns of Rock Springs and Green River and the Wind River Front SRMA (257,680 acres) would be the same as Alternative A.

Impacts to recreation from managing OHV areas would be the same as those described under Alternative B.

Impacts to recreation from the management of National Historic Trails, the Dry Sandy Swales trail segment, the Overland Trail, the Cherokee Trail, and the Point of Rocks to South Pass Road or other historic roads and trails would be the same as those described under Alternative A.

If Congress does not designate WSAs as wilderness, and the areas were managed for multiple use, the opportunity for solitude and primitive or unconfined recreation would likely be affected by an increase in recreation opportunities that current management restricts, such as motorized recreation. An increase in recreation could also increase the potential for conflicts among users and displace some users thereby diminishing the recreation experience in these areas.

WSAs would be managed for multiple use and wild and scenic rivers, ACECs, and other management areas would not be retained under Alternative C. This management would result in fewer restrictions to surface disturbance or disruptive activities as compared to Alternative A. Where mineral leasing and surface disturbing activities were permitted, the quality of recreation experiences could be diminished where roads, trails, dispersed camping, and other types of recreation occur nearby. Wells and associated facilities, pipelines, increased road traffic, noise, dust, and the visual impact of facilities in otherwise natural areas could reduce the quality of recreation experiences and possibly displace recreationists to other areas. Visual impacts of surface disturbance reduce the naturalness of back country recreation and reduce opportunities for solitude.

Impacts to recreation from the management of National Historic Landmarks would be the same as those described under Alternative B.

#### **4.17.5 Alternative D**

Impacts to recreation resources from the management of air quality, geology, geophysical exploration, wildland fire ecology, forest and woodland management, grassland and shrubland communities and riparian and wetland resources, lands and realty, WSAs, wild and scenic rivers, and public safety would be the same as those described under Alternative A.

Impacts to recreation resources from the management of soil and water would be similar those described under Alternative A. Alternative D could reduce noise, traffic and visual impacts of mineral development which could affect recreation and the qualities of solitude, vistas, and naturalness. The management could result in some reduction of allowable motorized recreation activities; however, more restrictions to surface disturbance could support the quality of undeveloped, primitive recreation experiences.

Impacts to recreation from the management of lands with wilderness characteristics for multiple use or existing management could provide a range of recreational experiences in these areas. Management would allow multiple use in some areas, and other areas would continue other management, such as for ACECs. Where lands would be managed to conserve the landscape within ACECs or other protected areas, impacts would be the same as those described under Alternative B. Impacts to recreation from management for multiple use within lands with wilderness characteristics would be the same as those described under Alternative C.

Impacts to recreation resources from locatable mineral entry would be similar to those described under Alternative A. Under Alternative D, 482,272 acres would be pursued for withdrawal from locatable mineral entry, 74,286 fewer acres compared to Alternative A. Alternative D would pursue fewer acres of land from locatable mineral withdrawal, which could increase noise, traffic, and visual impacts of mineral or other development and support the natural character of the landscape.

Impacts to recreation resources from geothermal leasing would be similar to those described under Alternative A. Under Alternative D, 768,989 acres would be closed to geothermal leasing, 228,968 more acres compared to Alternative A.

Impacts to recreation resources from mineral development would be similar to those described under Alternative A. Alternative D would apply slightly fewer restrictions on development through closures, which would increase noise, traffic, and visual impacts of mineral or other development and detract from the natural character of the landscape.

Under Alternative D, 768,989 acres would be closed to fluid mineral leasing, 228,968 more acres than under Alternative A. Impacts to recreation would be similar to those described under Alternative A for lands closed to oil and gas leasing, but the management would apply to fewer acres of land. Impacts to recreation resources from applying NSO, CSU, and timing limitation stipulations would be similar to those described under Alternative A, but within 2,172 acres of NSO, 1,238,899 acres of CSU, and 1,911,167 acres of timing limitation stipulations. The smaller areas of closure and NSO with additional areas of CSU and TLS compared to Alternative A could allow for more surface disturbing or disruptive activities with increased impacts from development activities, less quiet and solitude, and degraded opportunities for hunting or viewing big game.

Impacts to recreation resources from solid leasable minerals would be greater than those described under Alternative A. Under Alternative D, 610,342 acres would be closed to coal leasing, 124,378 more acres than Alternative A, 1,557,520 acres would be closed to oil shale leasing, 829,715 more acres than Alternative A, and 389,552 acres would be closed to trona leasing, 34,081 fewer acres compared to Alternative A. Recreation could be affected by increased mining activity from surface disturbance, mining equipment, or increased vehicle use near mining claims. Development may also reduce populations of game species, which could reduce hunting success levels and the overall quality of hunting experiences, as well as wildlife viewing opportunities. This management would affect the quality of recreation experiences, especially for recreationists seeking the opportunity for solitude and primitive/unconfined recreation.

Under Alternative D, 362,009 acres of lands would be closed to saleable mineral development, 471,710 fewer acres compared to Alternative A. Where mining and surface disturbing activities were permitted, the quality of recreation experiences could be diminished where roads, trails, dispersed camping, and other types of recreation occur nearby.

Impacts to recreation resources from the management of wildlife, big game, raptors, fisheries and Special Status Species would be similar to those described under Alternative A. Additional management to protect and improve wildlife habitat could support or improve recreational opportunities such as hunting, wildlife viewing, horseback riding, and fishing within the Planning Area.

Impacts to recreation resources from the management of cultural resources would be similar to those described under Alternative A. Additional protective management for reducing the impacts of mineral development and surface disturbing or disruptive activities would reduce visual impacts to recreation opportunities and enhance user experience where solitude and a pristine setting are part of the expectation.

Impacts to recreation from the management of visual resources would be the same as those described under Alternative A for VRM Class I (225,733 acres, 14 acres less than Alternative A). Under Alternative D, 1,178,718 acres would be managed as VRM Class II, 596,046 more acres than Alternative A. The management for VRM Class II would retain the character of the landscape, but it could reduce recreational opportunities related to developed recreation sites, overall, it would enhance recreational values related to solitude and natural environments. Under Alternative D, 985,638 acres would be managed as VRM Class III, 370,146 more acres than Alternative A, and 1,455,234 acres would be managed as VRM Class IV, 725,189 fewer acres as compared to Alternative A. Impacts to lands managed as VRM Class III and IV would be the same as those described under Alternative A. Fewer acres managed as VRM Class IV could enhance the quality of solitude, primitive, or unconfined recreation.

Impacts to recreation from ROW management would be similar to those described under Alternative A. Under Alternative D, 286,289 acres would be managed as ROW exclusion areas, 140,420 fewer acres



compared to Alternative A. More acres would be managed as avoidance areas, 1,388,618 acres under Alternative D, 652,480 more acres than Alternative A. This could increase the extent of disturbed areas, which would increase visual impacts to recreation opportunities and degrade user experience where solitude and a pristine setting are part of the expectation.

Impacts to recreation from travel management would be similar to those described under Alternative A. Under Alternative D, the route designations from the travel management plan would be applied. Within the area designated as limited to designated roads and trails, 13,613 miles of routes would be managed as open to vehicle use. About 88 miles of routes would be limited to non-motorized or non-mechanized use, 440 miles of routes would be closed to all use, and 2,781 miles of routes and linear disturbances would be removed from the transportation network and allowed to return to natural conditions. These routes would receive lower use or no use at all. Compared to Alternative B, the increased number of routes would increase the availability of motorized recreation and access to a wider range of resources and recreation experiences in the planning area. Opportunities for more vehicle use could diminish solitude and naturalness for visitors seeking a pristine experience.

Impacts to recreation from back country byways management would be the same as those described under Alternative A. However, the Wild Horse Loop Tour would be renamed the Pilot Butte Loop Back Country byway.

Impacts to recreation from livestock grazing management would be the same as those described under Alternative A. In addition, application of monitoring, greater protection of riparian areas and springs, and range improvements would be implemented. These management actions would improve the condition of natural resources and consequently would enhance recreational values through improved water quality for water-based recreational activities and improved wildlife habitat for hunting and wildlife observation.

Under Alternative D, impacts to recreation from management of special designations would be greater than Alternative A. Managing the Little Mountain ACEC, South Pass Historic Landscape ACEC, Special Status Plant Species ACEC, Steamboat Mountain ACEC, Oregon Buttes ACEC, extended Pine Springs ACEC, western portion of the Greater Sand Dunes ACEC, Red Desert Management Area, Pine Mountain Management Area, Sugarloaf Basin Management Area, Killpecker Sand Dunes SRMA, Little Mountain SRMA, Continental Divide National Scenic Trail SRMA, and Wind River Front SRMA for recreational opportunities could provide recreationists opportunities for motorized use, camping, developed recreation sites, or group activities. Not retaining certain SRMAs, Management Areas and ACECs could increase user conflicts among recreationists or with other resource uses.

Impacts to recreation from SRMA management would increase as compared to Alternative A. Under Alternative D SRMA acreage would be reduced to 135,549 acres as compared to 298,110 acres under Alternative A, a 55% reduction. Not retaining the Continental Divide Snowmobile Trail SRMA (Community), Green River SRMA (Community) and Oregon and Mormon Pioneer National Historic Trails SRMA (Destination) could increase user conflicts and decrease opportunities for motorized use, camping, developed recreation sites, or group activities.

Impacts to recreation from managing the Green River, Sweetwater River, Big Sandy River, and the Bitter Creek segment between the towns of Rock Springs and Green River would be the same as Alternative A.

Impacts to recreation from OHV management would be the same as those described under Alternative A. Under Alternative D, there would be no category called “limited to existing roads and trails.” While the routes would be moved under the “limited to designated roads and trails” for a total of 3,373,520 acres impacts to recreation would be similar to those described under both categories under Alternative A. Additional management to prohibit and limit OHV use would limit vehicular recreation in some areas compared to Alternative A. Recreation taking place in these areas would have fewer impacts from development activities, more quiet and solitude, and improved opportunities for hunting game species or

viewing wildlife.

Impacts to recreation from the management of National Historic Trails, the Dry Sandy Swales trail segment, the Overland Trail, the Cherokee Trail, and the Point of Rocks to South Pass Road would be the same as those described under Alternative A. In addition, greater restrictions on mineral development, surface disturbing activities, and construction of towers and other structures would reduce noise, traffic, and visual impacts of mineral or other development to a greater degree than under Alternative A.

Impacts to recreation from Management Area designations would increase as compared to Alternative A. Under Alternative D, total Management Area acreage would be reduced to 312,980 acres as compared to 580,010 acres under Alternative A, a 46% reduction. Reducing the size of the Red Desert Management Area and not retaining the Monument Valley Management Area, Big Sandy Openings Management Area or West Sand Dunes Archeological District would decrease opportunities for motorized use, camping, developed recreation sites, or group activities. Impacts from the management of the Pine Mountain Management Area (62,760 acres) and Sugarloaf Basin Management Area (87,240 acres) would be the same as those described under Alternative A.

Impacts to recreation from the management of ACECs would be greater than Alternative A. The Little Mountain ACEC (108,010 acres), South Pass Historic Landscape ACEC (53,940 acres), Steamboat Mountain ACEC (47,280 acres), and Greater Sand Dunes ACEC (26,364) would be reduced in size as compared to Alternative A. The Oregon Buttes ACEC (3,440) and Pine Springs ACEC (6,480) would be retained with a minimal increase. The Cedar Canyon ACEC, Natural Corrals ACEC (630 acres), and Pinnacles ACEC would not be retained.

Impacts to recreation from management of the Special Status Plant Species ACEC (1,120 acres), Steamboat Mountain ACEC (47,280 acres) would be similar to those described under Alternative A.

Impacts to recreation from the management of National Historic Landmarks would be the same as those described under Alternative B.

## **4.18 FOREST AND WOODLANDS RESOURCES**

Multiple use of forest resources includes commercial harvesting; public collection; use of resources for home heating, decorations, hobbies, and crafts; and the enhancement of recreational and visual settings. Managing forest and woodland communities for health, composition, structure, and diversity supports multiple use opportunities. Healthy forest ecosystems help protect soil and watershed health and thereby enhance forest and woodland growth. Forests and woodlands also provide cover and forage for wildlife. Management of forest products harvests can be implemented to benefit habitats by improving health, vigor, and diversity of forests and woodlands through the removal of crowded, diseased, or single species stands of trees and shrubs. Revegetation requirements on harvested areas or areas denuded by natural causes promotes reforestation which supports soil and vegetation health and future growth of harvestable products. Management actions that promote healthy soils and vegetation, allow access and vehicular routes within forested areas, and allow surface and viewshed disturbances and/or structures and equipment that are inherent or required in harvesting and reforestation activities would support the utilization of forests. Actions that decrease the extent of forest and woodlands resources, or limit or preclude use of those resources, could reduce utilization and potential harvest volumes.

### **4.18.1 Assumptions**

- The maintenance, restoration, and enhancement of all forest and woodland communities in the planning area will be conducted in accordance with all applicable laws, regulations, and policy, including 43 CFR 5000 - Public Lands – Forest Management, the Wyoming Land Health Standards, the Healthy Forest Initiative, and Healthy Forest Restoration Act of 2003.

- Forest and vegetative products in the planning area primarily include saw wood, pulpwood, fuelwood, decorative wood, corral poles, fence posts, tipi poles, Christmas trees, conifer cones, naturally germinated seedlings ("wildlings"), boughs, berries, moss, and mushrooms.
- The planning area is divided into four timber compartments (commercial and woodland forest lands) for timber management: Wind River Front, Pine Mountain, Little Mountain, and Hickey Mountain-Table Mountain.
- The Wind River Front is a restricted forest management area where forest resources would be managed for commercial forest values, to improve the health, vigor, and diversity of forest stands, and still give full consideration to other resource values such as watershed, wildlife, minerals, recreation, and scenic values.
- Pine and Little Mountain areas would be managed to enhance other resources, and activities would be designed to benefit these other resource uses. Priority for timber harvesting would be given to mature, decadent, and diseased trees.
- Hickey Mountain-Table Mountain would be managed as described in the woodland prescriptions.
- Some of the prohibitions on surface disturbing activities in the planning area could impact timber harvests, but at a minimum limited timber harvesting would typically be allowed
- Impacts of management actions on salvage volume (i.e., timber produced from tree cutting for reasons other than timber harvest, such as mineral exploration and development, road/trail construction or maintenance, and recreational facility construction) are considered minor, and are therefore not evaluated and considered in this analysis
- Noncommercial forest lands (woodlands) would be managed to optimize cover and enhance habitat for wildlife, protect soil and watershed values, and complement recreation uses
- Noncommercial forest products are generally those that are collected and used by the local public for home heating (fuelwood), decorating and crafts (e.g., Christmas trees, boughs, cones, moss), and simple construction projects (e.g., fences, tipi poles). Limits are placed on the amounts of these products that individuals can collect for personal use. Harvesting of these products for these uses generally incurs no significant impacts on these resources or associated resources such as air, soils, water, wildlife, etc.
- Forest products permits are processed on a case-by-case basis, with stipulations added to protect other resources. The current management practices to allow for the access and removal of forest products is through the issue exclusive use (competitive timber sales) contracts, non-exclusive permits, free use permits, and non-permitted recreational collection permissions.

### 4.18.2 Alternative A

Impacts on forest and woodlands resources would be minimal or not be anticipated as a result of implementing management actions for riparian and wetlands resources and livestock grazing.

Management to meet, maintain, or improve air quality requirements and/or implement air quality regulations and BMPs could prevent or reduce some forest and woodland management activities. Regulations, restrictions, and BMPs to support air quality could be imposed on timber harvesting and/or reforestation activities in the planning area. The management could potentially restrict access to harvest sites and vehicular routes and prohibit or limit the surface disturbances and/or structures and equipment that are inherent or required in harvesting and reforestation activities. Harvest volumes could be reduced or precluded as a result of air quality management.

Management to maintain or improve soil health and protect special geological features could reduce or preclude some forestry management activities. Management actions that prohibit, limit, or attempt to mitigate surface disturbing activities to maintain soil health could potentially restrict access to harvest sites, vehicular routes, and could prohibit or limit the amount of surface disturbance and equipment used for harvesting and reforestation activities. Harvest volumes could be reduced or precluded by the management of soil resources. Management to support soil health would be beneficial to forest and woodland communities by providing the medium and nutrients that support plant establishment and growth.

Management to maintain, enhance, and protect watershed health would support the health and vitality of forests, but could reduce or preclude some forest management activities. Management actions that apply site specific activity and implementation plans and prohibit or limit surface disturbing activities to maintain watershed health could be imposed on timber harvesting and/or reforestation activities. The management could potentially restrict access to harvest sites, vehicular routes, and could prohibit or limit surface disturbing activities used in timber harvesting and reforestation. Harvest volumes could be reduced or precluded by these restrictions. Healthy watersheds and water resources would be beneficial to forest and woodland communities because they help provide and transport some of the critical nutrients that support plant establishment and growth.

Under this alternative, 540,021 acres in the planning area are closed to fluid mineral (oil, gas, and geothermal) exploration, leasing, and development; 556,558 acres are pursued for withdrawal from locatable mineral entry, 833,719 acres are closed to saleable mineral development, 485,964 acres are closed to coal leasing, and 727,805 acres are closed to oil shale leasing. Management actions to explore and develop locatable, fluid, solid, and saleable minerals would primarily impact forest and woodlands resources by competing for existing lands where sales or harvesting contracts and free use permits for forest products and mineral materials could occur. Mineral resource development could preclude or restrict the harvesting of timber or woodland products at those development sites if mining and harvesting activities were in conflict. However, roads developed for mineral development could be used to access additional forest and woodland areas. Additional access could increase the opportunities for public or commercial harvest in permitted areas.

Management of wildfires occurring in forested areas would be appropriately suppressed in accordance with resource values threatened, as determined on a case-by-case basis which could support forest health or could result in a loss of timber, depending on the outcome of the management decision. Wildfires occurring in or directly threatening a developed or active timber sale would receive priority suppression action which would protect valuable forest resources. Wildfires left to burn with no suppression activity could damage or destroy commercial and noncommercial forest and woodland products. Wildfire fuels reduction activities would be identified to reduce wildfire severity and occurrence on portions of the landscape where fire could cause undesirable changes in plant community composition and structure. The management could benefit forest and woodland communities by enhancing or improving the health of those resources through the removal of diseased trees, thinning of stands that are too dense to support good growth, and reducing the potential direct destruction of forest products by wildfires.

Managing for the health and composition of the forest and woodland components of the landscape supports multiple use of those resources, including the harvesting of forest products by the public. Management actions to improve vegetative health in forest and woodland communities could optimize growth, help protect soil and watershed health, and increase the quality of forest products. Timber harvest could improve health, vigor, and diversity of forests and woodlands by removing crowded, diseased, or single species stands of trees and shrubs. Forest fuel reduction actions could reduce wildfire potentials (wildfires would damage or destroy forest product resources and reduce available harvest volumes) and open areas to regeneration of forest products. Revegetation requirements on harvested areas or areas denuded by natural causes and application of slash disposal methods to promote reforestation would support future growth of

harvestable products. Managing forests and woodlands for commercial timber harvesting and to maximize the opportunities to provide forest and woodland products to the public could increase areas open to harvest, allow greater flexibility in harvest methods, and increase harvest volumes. The application of restrictions on logging cottonwood trees and methods used on slopes steeper than 45% could result in reduced harvest volumes.

Management actions to maintain, improve, enhance, and/or restore grassland and shrubland vegetation communities could support the health and vitality of some forest and woodlands resources, such as aspen and juniper. Management to prevent the introduction, establishment, and proliferation of noxious weeds, other invasive species (vertebrate, non-vertebrate, and plant), pests, and/or diseases could support the health and vitality of forest and woodlands ecosystems. Invasive and/or pest species could have enormous impacts on forest product economies. Insect and fungal infestations could single out individual tree species or decimate large tracts of forests. Dead trees would also increase fuel overloading which would increase wildfire hazard and potential damage and destruction of forest products.

Managing fish, wildlife, and Special Status Species by maintaining or improving high value habitats, reducing habitat loss or alteration, and applying appropriate distance and seasonal restrictions could provide some support for forest and woodland resources. Where high value habitats include forest and woodland habitat, these areas could be protected and the forest habitat would be managed for ecosystem value. However, the high value forest habitat could be removed from harvest or some timber harvest practices could be controlled or prohibited. The use of habitat management plans and land usage restrictions could potentially reduce forest product harvest volumes by closing areas or restricting harvest methods.

Management actions designed to protect the cultural and paleontological resources could indirectly protect forest and woodlands resources from surface disturbing activities, thereby protecting forests from damage or removal from development. However, forested areas near cultural or paleontological resources could be prevented from allowing harvest activities due to the protections of the other resources.

Management of the VRM classifications could reduce the ability to use certain harvest techniques or could entirely prevent the use of forest and woodlands products within specific VRM classifications. Commercial timber harvesting projects, particularly clear cutting, would likely be prohibited within lands managed as VRM Class I and II. Managing for VRM Class I and II could potentially restrict access to harvest sites and vehicular routes and prohibit or limit the surface disturbances that are inherent or required in harvesting and reforestation activities. Harvest volumes could be reduced or precluded by these restrictions.

Management related to the lands and realty would have different impacts on forest and woodland communities depending on whether the actions place more or fewer acres under protective land use management stipulations. Managing the planning area (including the JMH planning area) as open for consideration of authorizing renewable energy projects would primarily impact forest and woodlands resources by competing for existing lands where sales or harvesting contracts and free use permits for forest products could occur. Renewable energy development could preclude or restrict the harvesting of timber or woodland products at some development sites if the two activities were in conflict. The management to designate and manage ROWs and transportation corridors in the planning area could result in the loss of some forest resources where new ROWs or travel corridors would be developed. ROW developments such as powerlines and pipelines require a large-scale removal of trees and woodlands along a swath of land to accommodate those structures. Development of a ROW could increase harvest volumes in the short term during development; however, in the long term, the forest or woodlands resources could be permanently lost.

Recreation management actions could impact forest and woodland communities by implementing surface disturbance restrictions that could potentially reduce forest product harvest volumes by closing areas or restricting harvest methods. Management to allow cutting of trees and firewood collection in designated recreation sites could help support forest health in these areas. Wood removal could create openings for

new forest growth and could support continued forest products in the future. This alternative allows cross country OHV use within 12,831 acres, closes 225,537 acres to OHV use, limits OHV use to designated roads and trails on 968,959 acres, and limits OHV use to existing roads and trails on 2,398,869 acres (Map 2-25). OHV use could potentially enhance the ability to access areas for commercial and non-commercial harvesting of forest products. Human presence and vehicles within forested areas could also increase wildfire ignition sources which could be detrimental to forest and woodland communities and harvestable forest products.

Management for NHTs and NHT-related resources could prevent some commercial harvest activities due to protective management and reduced or prohibiting management for surface disturbing activities. Historic trails would be prohibited for use as industrial access roads or heavy truck haul roads, which could further reduce or prevent commercial timber harvest operations.

Management of WSAs and WSRs (Map 2-29) would restrict surface disturbing activities. Large scale timber operations would likely be unable to conduct harvests within these areas due to the restrictions on surface disturbance. However, the management would help preserve the natural setting and existing character of the forested landscape.

Management for designated ACECs (286,450 acres, Map 2-29) and other management areas would prevent or reduce development and protect viewsheds which could limit or prevent forest product harvest. The ability to conduct large scale timber harvests in these areas could be prevented; however, smaller harvest operations and public harvest or collection of forest products could be allowed.

### **4.18.3 Alternative B**

Impacts on forest and woodlands resources would be minimal or not be anticipated as a result of implementing management actions for riparian and wetlands resources, livestock grazing, and OHV use.

Impacts to forest and woodlands resources from the management of soil and geologic resources, grassland and shrubland resources, cultural and paleontological resources, lands and realty, renewable energy, and recreation would be the same as those discussed under Alternative A.

Impacts to forest and woodlands resources from the management of air resources would be the same as those discussed under Alternative A, except dust abatement measures would be more restrictive. The dust abatement measures would require commercial timber harvest operations to perform additional emission control activities and could restrict available vehicle routes, which could reduce the profitability of the harvest operation.

Impacts to forest and woodlands resources from the management of water resources would be similar to those discussed under Alternative A, except there would be greater surface disturbing protections and erosion control requirements under Alternative B. This management would increase restrictions on timber harvest activities, but could also improve overall forest health.

Managing lands identified as having wilderness characteristics specifically to preserve those characteristics would provide additional restrictions on forest product harvesting in the planning area. Management to limit surface disturbing activities, surface occupancy, and degradation of viewshed or setting impacts, and help preserve wilderness characteristics would also be beneficial to habitat quality in forest and woodland communities. Harvest volumes could be reduced or precluded by these restrictions.

Under Alternative B, 2,186,218 acres in the planning area would be closed to fluid mineral (oil, gas, and geothermal) exploration, leasing, and development (1,646,197 more acres than Alternative A); 1,993,908 acres would be pursued for withdrawal from locatable mineral entry (1,437,350 more acres than Alternative A); and 2,581,741 acres would be closed to saleable mineral development and/or disposals (1,748,022 more

acres than Alternative A) (Tables 2-3, 2-4, and 2-8 and Maps 2-1, 2-5, and 2-13). Under Alternative B, 3,735,546 acres would be closed to coal and 2,122,282 acres would be closed to oil shale leasing and development. The protections to lands closed to solid mineral development would be applied to 2,741,709 more acres of land closed to coal and 1,394,477 more acres of lands closed to oil shale compared to Alternative A. Compared to Alternative A, more acres would be closed to the exploration and development of fluid and saleable minerals; and fewer acres would be pursued for withdrawal from locatable mineral entry. This would primarily impact forest and woodlands resources by increasing competition for access to lands containing both mineable minerals and harvestable forest resources. Mineral resource development could preclude or restrict the harvesting of timber or woodland products at those development sites if harvesting activities were in conflict with mining activities.

Impacts to forest and woodlands resources from the management of wildland fire would be similar to Alternative A, except more emphasis would be placed on allowing wildfire to function as a natural management tool. This management could benefit forest and woodland communities by enhancing or improving the health of those resources through the removal of diseased trees, thinning of stands that are too dense to support good growth, initiating natural reforestation and reducing the potential direct destruction of forest products by a future wildfire. The management priorities and methods could impose additional closures or use restrictions on harvest sites and harvest methods and could result in a decrease in harvest volumes. Prohibiting pre-commercial thinning could also result in stagnation of growth, and longer stand rotation lengths. Relying on natural processes rather than utilization of logging or timbering to improve decadent stands would decrease timber harvest volumes. Allowing harvested/denuded areas to revegetate naturally could result in slower regeneration of forest stands or forest stands with a lower proportion of commercially important species. This, in turn, could result in decreased harvest volumes.

Impacts to forest and woodlands resources from the management of invasive species and pests would be similar to those described under Alternative A. Additionally, restricting the use of chemicals could result in fewer methods to control invasive species that could harm harvestable forest products. Not allowing broad application of chemicals over a community of vegetation to kill invasive species would reduce any harmful impacts to native species and supporting resources that are sensitive to those chemicals.

Impacts to forest and woodlands resources from the management of fish and wildlife resources and Special Status Species would be similar to Alternative A. The management could potentially restrict access to harvest sites by reducing vehicular routes, and could prohibit or limit the surface disturbance, structures, and equipment that are used in harvesting and reforestation activities. Harvest volumes could be reduced or precluded by these restrictions.

Impacts to forest and woodlands resources from VRM would be similar to Alternative A, except that larger areas of land would be managed as VRM Class II (1,566,230 acres more than Alternative A), and fewer acres of land would be managed as VRM Class IV (1,616,669 acres less than Alternative A). Management of larger acreages of land under VRM Class II could place greater limitations on forest product harvesting activities by controlling harvesting techniques, the size and shape of clear cuts and other forest management practices. Harvest volumes could be reduced or precluded by the management restrictions. Clear cuts could have the potential to impact VRM objectives in the planning area.

Impacts to forest and woodlands resources from the management of ROWs would be similar to Alternative A, except 2,480,876 acres would be designated as exclusion for ROWs (2,085,927 acres more than Alternative A) and 133,903 acres would be designated as ROW avoidance areas (602,235 acres fewer than Alternative A), which would reduce the extent of related impacts.

Impacts to forest and woodlands resources from the management to designate and manage travel in the planning area would be similar to Alternative A. Management that could be applied to byways and road developments could potentially restrict access to harvest sites, reduce vehicular routes, prohibit or limit surface disturbance and use of equipment for harvesting and reforestation activities. Harvest volumes could

be reduced or precluded by these restrictions.

Impacts to forest and woodlands resources from the management to protect congressionally designated and/or eligible trails, and NHTs are similar to Alternative A, except there are greater protective measures proposed such as larger buffer zones and specific closures and restrictions. Projects or activities with large impacts to the viewsheds, such as clear cuts, would require larger setbacks to protect trails from visual setting impacts. Large, heavy vehicles would be prohibited from driving on contributing segments of the NHTs. The greater restrictions on surface disturbing activities, vehicle travel, and stricter VRM classifications under this alternative could potentially restrict access to harvest sites, reduce vehicular routes, prohibit or limit surface disturbance and equipment used for harvesting and reforestation activities. Harvest volumes could be reduced or precluded by these restrictions.

Impacts to forest and woodlands resources from the management of WSAs and WSRs would be similar to those described under Alternative A, but there would be a greater emphasis on protecting wilderness setting and viewshed values, which could reduce the opportunities for timber harvest activities in these areas.

Impacts to forest and woodland resources from the management of ACECs would be similar to those described under Alternative A, except 1,605,660 acres (1,319,210 more acres than Alternative A) would be designated as ACECs. The management could provide additional protections to forest and woodland communities by reducing resource loss and maintaining or enhancing the health of those resources. Harvesting opportunities and volumes could be reduced, but resource health could be improved. The greater restrictions on surface disturbing activities, additional ACEC stipulations, and stricter VRM classifications under this alternative, could potentially restrict access to harvest sites prohibit or limit surface disturbance and equipment used in harvesting and reforestation activities. Harvest volumes could be reduced or precluded by these restrictions. Clear cuts could be prohibited or limited by more restrictive VRM classifications.

#### **4.18.4 Alternative C**

Impacts on forest and woodland resources would not be anticipated as a result of implementing management actions for riparian and wetlands resources, livestock grazing, and OHV travel.

Impacts to forest and woodlands resources from the management of air resources, soil and geologic resources, grassland and shrubland resources, lands and realty, and renewable energy would be the same as those presented under Alternative A.

Impacts to forest and woodland resources from the management water resources would be similar to Alternative A. The less restrictive management for surface disturbing activities under this alternative could potentially increase access to harvest sites and allow surface disturbances associated with harvesting and reforestation activities. Harvest volumes could therefore potentially increase in those areas.

The management measures proposed under Alternative B to protect lands with wilderness characteristics would not be implemented under this alternative. The impacts of not managing to protect wilderness characteristics would increase the available land and opportunities for forest product harvesting. Harvesting volumes could potentially increase in those areas where protective measures are not applied.

Under this alternative, 225,782 acres in the planning area would be closed to fluid mineral (oil, gas, and geothermal) exploration, leasing, and development (314,239 fewer acres than under Alternative A); 234,961 acres would be pursued for withdrawal from locatable mineral entry (321,597 fewer than Alternative A); 226,421 acres would be closed to saleable mineral development and/or disposals (607,298 fewer acres than Alternative A); 226,219 acres would be closed to coal leasing (407,618 fewer than Alternative A); and 225,965 acres would be closed to oil shale leasing (501,840 fewer acres than Alternative A) (Maps 2-5, 2-2, and 2-14). Compared to Alternative A, fewer acres would be unavailable for the



exploration and/or development of locatable, fluid, solid, and saleable minerals. This could impact forest and woodlands resources by increasing competition for access to lands containing both mineable mineral and harvestable forest resources. Mineral resource development could preclude or restrict the harvesting of timber or woodland products at those development sites if harvesting activities were in conflict with mining activities.

Impacts to forest and woodlands resources from the management of wildland fire would be similar to Alternative A, except that full wildfire suppression would be used on all unplanned ignitions to limit the total number of acres burned. Suppressing wildfire could reduce the potential direct damage or destruction to existing forest products.

Compared to Alternative A, forest and woodlands management emphasis would be on actions that maintain and enhance forest and woodland health across the landscape to provide forest and woodland products to the public. This could open areas to harvests, allow greater flexibility in harvest methods and timber treatments, and thereby potentially increase harvest volumes. Allowing clear-cuts could increase timber harvest volumes in the short term; over the long term, allowing clear-cuts could be a less sustainable forestry management practice, resulting in decreased harvest volumes. Pre-commercial thinning could prevent stagnation of growth, resulting in shortened stand rotation lengths and increased timber harvest volumes. Logging or timbering would be used (over wildfire and other natural processes) to revitalize decadent stands, improve stand density, and increase canopy cover. After timber sales, vegetative treatment, or fire, forests and woodlands would be replanted as soon as possible, which would support future forest product production.

Impacts to forest and woodlands resources from the management of invasive species and pests would be similar to Alternative A. Control of noxious weeds and other invasive plant species could be achieved through chemical, mechanical, and biological methods. Allowing chemical treatments would result in more methods to control invasive species that can harm harvestable forest products. Allowing broad application of chemicals over a community of vegetation to kill invasive species could result in some harmful impacts to native species and supporting resources that could be sensitive to those chemicals.

Impacts to forest and woodland resources from the management of fish and wildlife resources and Special Status Species would be similar to Alternative A, except that smaller surface disturbing and/or surface use distance buffer zones would be applied around developments and operations. The management under Alternative C could open areas to harvests, allow greater flexibility in harvest methods and timber treatments, and thereby potentially increase harvest volumes.

Impacts to forest and woodlands resources from the management of cultural and paleontological resources are similar to those described under Alternative A, except that smaller surface disturbing/view shed buffer zone distances and less restrictive land use stipulations would be applied around known cultural and paleontological sites. Fewer land use prohibitions, restrictions, and smaller sized buffer zones under this alternative, could open areas to harvests, allow greater flexibility in harvest methods and timber treatments, and thereby potentially increase harvest volumes.

Impacts to forest and woodland resources from VRM would be similar to those described under Alternative A, except that approximately 226,629 acres would be classified as VRM Class I (912 more than Alternative A), 607,899 acres VRM Class II (25,227 more than Alternative A), 395,683 acres VRM Class III (219,809 fewer than Alternative A), and 2,374,706 acres as VRM Class IV (194,283 more than Alternative A).

The actions to designate and manage ROWs and transportation corridors in the planning area would be the same as those described under Alternative A. Under Alternative C, 225,784 acres would be designated as exclusion for ROWs (200,925 fewer than Alternative A) and 31,018 acres would be designated as ROW avoidance areas (705,120 fewer than Alternative A).

Impacts to forest and woodlands resources from the management to designate and manage travel in the planning area would be similar to Alternative A. The management for not retaining existing backcountry byways or designating new ones under this alternative could potentially improve access to harvest sites, increase vehicular routes, and allow surface disturbance inherent in harvesting and reforestation activities. Harvest volumes could increase under these management actions.

Impacts to forest and woodlands resources from the management of recreation would be similar to Alternative A. Overall, fewer restrictions under this alternative, could potentially improve access to harvest sites, increase vehicular routes, and allow surface disturbance associated with harvesting and reforestation activities.

Impacts to forest and woodlands resources from the management to protect congressionally designated and/or eligible trails, and NHTs would be similar to Alternative A. The less restrictive management could potentially improve access to harvest sites and allow surface disturbance and equipment used harvesting and reforestation activities. Harvest volumes could be increased under those conditions.

Impacts to forest and woodlands resources from the management of WSAs and WSRs would be similar to Alternative A, but there would be a greater emphasis on managing designated areas for multiple use and no WSR management would be applied. The management under Alternative C could increase vehicular access to forested areas, and allow for additional surface disturbance, which could provide increased opportunities for timber harvest in these areas.

Under this Alternative, no ACECs would be retained. Removing all the ACEC-specific land use, VRM, and surface disturbing restrictions under this alternative could potentially improve access to harvest sites and allow for increased harvesting and reforestation activities. The application of surface use restrictions and seasonal limitations in sensitive wildlife habitats could limit some forest product harvesting.

#### **4.18.5 Alternative D**

Impacts on forest and woodland resources would not be anticipated as a result of implementing management actions for riparian and wetlands resources, livestock grazing, and OHV travel.

Impacts to forest and woodlands resources from the management of air resources, soil and geologic resources, wildland fire, grassland and shrubland resources, travel and transportation, cultural and paleontological, lands and realty, and renewable energy would be the same as those presented under Alternative A.

Under Alternative D, lands would be managed for a variety of uses or with other existing management, such as ACECs. In these areas, use and harvest of forest and woodland resources could increase depending on management of these areas. Access to forest and woodland resources could increase, making harvest activities possible in these areas.

Under Alternative D, 768,989 acres in the planning area would be closed to fluid mineral (oil, gas, and geothermal) exploration, leasing, and development (228,968 more acres than Alternative A); 362,009 acres would be closed to saleable mineral development and/or disposals (471,710 fewer acres than Alternative A); 610,342 acres would be closed to coal leasing, 124,378 more acres than Alternative A, and 1,557,520 would be closed to oil shale leasing, 829,715 more acres than Alternative A. Compared to Alternative A, fewer acres would be closed to fluid and solid minerals and saleable minerals. This would primarily impact forest and woodlands resources where competition for access to lands containing both mineable minerals and harvestable forest resources occurs. Mineral resource development could preclude or restrict the harvesting of timber or woodland products at those development sites if harvesting activities were in conflict with mining activities.

Under Alternative D, impacts from forest and woodland resources would be similar to those described under Alternative A. There would be no timber compartments under Alternative D. This could open areas to harvests, allow greater flexibility in harvest methods and timber treatments, and thereby potentially increase harvest volumes. Allowing cottonwood tree harvest on a case-by case basis could potentially increase limited harvest of cottonwood.

Impacts to forest and woodlands resources from the management of fish and wildlife resources and Special Status Species would be similar to those described Alternative A, except that additional surface use restrictions would be applied. The management could potentially restrict access to harvest sites by reducing vehicular routes, and could prohibit or limit the surface disturbance, and equipment that are used in harvesting and reforestation activities. Harvest volumes could be reduced or precluded by these restrictions.

Impacts to forest and woodland resources from VRM would be similar to Alternative A, except that larger areas of land would be managed as VRM Class II (596,046 acres more than Alternative A) and VRM Class III (122,819 acres more than Alternative A), and fewer acres of land would be managed as VRM Class IV (725,189 acres less than Alternative A). Management of larger acreages of land under VRM Class II and III would place greater limitations to forest product harvesting activities, by potentially prohibiting or limiting surface and viewshed disturbance associated with timber harvesting and reforestation activities. Harvest volumes could be reduced or precluded by the management restrictions. Clear cuts could have the potential to impact VRM objectives in the planning area. Requirements for visual simulation and VRM classification analyses prior to commercial timbering projects could incur additional delays and costs.

Impacts to forest and woodlands resources from ROWs and transportation corridors in the planning area would be similar to Alternative A. Under Alternative D, 286,289 acres would be designated as exclusion areas for ROWs (140,420 acres less than Alternative A) and 1,388,618 acres would be designated as ROW avoidance areas (652,480 more than Alternative A). Some ROW developments such as powerlines and pipelines require a large-scale removal of trees and woodlands along a swath of land to accommodate those structures. Larger exclusion areas under this alternative could increase the need for forest clearings to accommodate ROWs. Harvest volumes could be reduced or prohibited by greater restrictions.

Impacts to forest and woodlands resources from National Historic and Scenic Trails and National Historic and Scenic Trails-related resources, WSAs, WSRs, special management areas, and ACEC management would be the same as those described under Alternative A.

## **4.19 LANDS AND REALTY**

The lands and realty program is a support program rather than an environmental component, as the program responds to requests for authorizations, permits, leases, and land tenure adjustments from other programs or outside entities. The discussion of the impacts on the lands and realty program for each alternative will be limited to the potential effects on opportunities for ROW authorizations and land tenure adjustments. Specifically, the analysis will determine whether the implementation of management actions for other resource programs influence or modify the location, size, or design of a given proposal or, in some cases, preclude a lands and realty action from being approved. Such impacts would primarily occur from the implementation of management actions designed to protect natural resources and limit impacts to these resources from surface disturbing activities. Therefore, the type and degree of limitations and restrictions placed on lands and realty actions will depend on the locations of sensitive and/or high-value resources. Land use restrictions that result in the relocation or redesign of proposed ROWs would increase lands and realty management efforts, and related costs. This effect would be further increased if relocation resulted in longer linear ROW routes and/or placement of ROWs in areas that are difficult to develop. If avoidance of sensitive resources was not possible, other mitigation measures would be required, such as application of height and color specifications. These impacts would be exacerbated by the anticipated increase in requests for ROW authorizations, which would increase the intensity, complexity and costs of managing the lands and realty program.

Management prescriptions that result in a reduction or elimination of proposed land exchanges or sales would affect the ability of the BLM to acquire or dispose of desired land parcels and thereby limit the consolidation of public land and acquisition of important resources. Management actions that petition to segregate and pursue a withdrawal of land from the public land laws would preclude future disposal actions in these areas and consequently limit the potential for consolidating public land and removing from federal jurisdiction land parcels that are scattered and/or difficult to manage.

### 4.19.1 Assumptions

The analysis is based on the following assumptions:

- ROWs for energy-related facilities (e.g. roads, pipelines) are anticipated to increase.
- The installation of power lines, telephone lines, fiber-optic cable, and communication sites is anticipated to increase.
- Existing withdrawals would continue and would be reviewed to determine the need for continuation, modification, revocation or termination.
- The effects of designation and development of transportation and utility ROW corridors would be mitigated on a case-by-case basis. ROW holders may maintain their access at their discretion consistent within the terms of their grant.
- The BLM would continue to process land tenure adjustments that are in the interest of the public and facilitate resource management objectives.
- The BLM will use voluntary approaches to increase access to public lands through acquisition land tenure adjustments and other means at their discretion.

Impacts on lands and realty from management actions associated with required surveys, existing WSAs, and access easements would be the same under all alternatives. Requiring surveys for special status plant species, cultural resources, or paleontological resources before any ground disturbance occurred could, in some cases, result in the relocation of lands and realty facilities, which would potentially increase project costs and result in project delays. The 13 existing WSAs would be managed as VRM Class I areas (227,960 acres), which could prohibit the location of new ROWs and impose greater design and siting requirements, and associated costs on amended or renewed ROWs at existing sites.

Lands and realty would be impacted as a result of implementing management actions for ROWs, minerals, recreation, cultural, special designations and management areas, visual resources, and habitat management.

### 4.19.2 Alternative A

Requiring that utility structures be placed near facilities and limiting the designation of the new corridors throughout the planning area would serve to consolidate utility ROWs and structures. This would place additional requirements on ROW applicants and would increase management efforts and costs related to proposals submitted by ROW applicants. This impact would be further increased if these restrictions result in relocation (re-siting) or redesign of ROW facilities, especially if it resulted in longer linear routes and/or placement of ROWs in areas that are difficult to develop.

Land use authorizations would benefit the overall management of public lands by making them available throughout the planning area for ROWs, permits, and leases, except in areas designated as exclusion or avoidance areas, as defined below.

Managing 426,709 acres (12% of the planning area) as ROW exclusion areas would preclude ROW

development within these areas. This would result in the re-siting of proposed ROW facilities outside of these exclusion areas or preclude development of some ROW facilities that could not be effectively located in other areas. Re-siting of ROW facilities could also occur within 736,138 acres (20% of the planning area) managed as ROW avoidance in these areas. If avoidance of these areas were not possible, other mitigation measures could be required, such as applications of height, width, or length, that serve to redesign ROWs to mitigate impacts. Land-use restrictions that result in the re-siting or redesign of proposed ROWs would increase management efforts and costs related to proposals submitted by ROW applicants, which are administered by the lands and realty program. This impact would be further increased if re-siting resulted in longer linear routes and/or placement of ROWs in areas that are difficult to develop. Exclusive of the 426,709 acres within the planning area that are managed as ROW exclusion areas, the remaining areas could be available for ROW development (including powerlines, pipelines, wind and solar projects, and communication sites), which could accommodate desired placement of facilities, accommodate access and efficient energy supply (by allowing pipelines, transmission lines, and wind and solar projects), and minimize additional costs. Co-locating ROWs could ease the process for construction and maintenance, but existence of ROW corridors could limit options on design or more preferable locations.

Land tenure/landownership adjustments would benefit the overall management of public lands through disposal of isolated parcels and acquisition of parcels that serve to consolidate surface ownership. The ability to sell, exchange or purchase land would allow for the disposal of lands that are difficult to manage and the acquisition of desired land parcels, which would consolidate management and reduce fragmented surface ownership, thereby improving the overall manageability of public lands within the planning area. Examples of this would include private/state lands along upper stream reaches of the Big Sandy River, state inholdings in WSAs, and other lands with important resource values. Certain lands would not be considered for disposal unless exchanged with lands of equal or greater value, including functional resource value or monetary value. This would include lands with aquatic resources and wetland/riparian habitat. Avoiding land exchanges of this type would be beneficial to the resource.

The minerals program would have a large impact on lands and realty. Impacts would include but not be limited to ROWs required for road systems and transportation systems for fluid, saleable, locatable, and solid leasable minerals. In addition, areas that are closed to mineral leasing, have NSO stipulations, or are otherwise identified as unsuitable for surface disturbance or occupancy would mostly be managed as ROW avoidance or exclusion areas. Existing leases and minerals activity and facilities could preclude the ability to sell or exchange public land parcels. The duration of the impact would be directly related to the level of potential mineral production on these parcels. The number of ROWs associated with mineral development is directly related to the mineral potential in that area. In areas with high oil and gas potential, for example, there would be a greater number of ROWs because more production facilities would be required to extract that resource.

Allowing oil and gas leasing and development in the planning area, except the 540,021 acres that are currently unavailable for leasing, would increase the number of ROW applications associated with oil and gas development that are processed through the lands and realty program. The number of ROW applications and extent of related development would be commensurate with the level of oil and gas development. Managing 540,021 acres as unavailable for oil and gas leasing, 158,611 acres as NSO areas, and 721,132 acres as CSU areas would reduce the amount of development and therefore the number of ROW applications.

Similar to oil and gas development, allowing exploration and development of solid leasable minerals, locatable minerals, and mineral materials would increase the access needs associated with such development. Access needs and the extent of related development would be commensurate with the level of anticipated mineral development. Under this alternative, 485,964 acres would be closed to coal leasing, 727,805 acres would be closed to oil shale leasing, 556,558 acres would be pursued for withdrawal from locatable mineral entry, and 833,719 acres would be closed to mineral material sales and permits, which would reduce the demand for access needs associated with mineral development and thereby decrease the degree of impact.

Recreation-related demands on public lands could increase the need for land exchanges to consolidate public land ownership. In addition, the presence of recreational sites would preclude the location of certain ROWs, thereby impacting the lands and realty program. Overall, there would be minimal impacts on lands and realty from recreation management.

Transportation planning and access needs would impact lands and realty management by increasing the number of ROWs issued per year to provide reasonable access to state and privately held lands.

Managing the field office to meet VRM objectives could affect the location, route, height, and color of proposed ROWs and associated facilities. Additional effort would be required to design projects to meet the objectives of the specific VRM class designation of an area in which a ROW is proposed. Because ROWs would generally be compatible with VRM Class IV objectives, this classification would allow increased opportunities for ROW authorizations. This is also true for VRM Class III objectives; however, some additional project planning may be necessary within VRM Class III areas to ensure that the landscape is partially retained. Any ROWs proposed in VRM Class II areas would be subject to intensive mitigation and, in some cases, could be precluded.

Implementing protective measures for cultural and paleontological resources could require avoidance and other mitigation measures for ROWs proposed near these resources. These measures could result in the relocation or redesign of proposed ROWs. Because known cultural and paleontological resources occur throughout the field office, and because it is likely that additional cultural and paleontological resources will be discovered in the future, impacts could be substantial and occur in varying degrees throughout the planning area.

Management of fish and wildlife habitat and Special Status Species would impact uses administered by the lands and realty program through the implementation of mitigation measures designed to protect species and wildlife habitat. Implementing species-specific conservation measures for BLM-Sensitive plant and animal species and prohibiting actions that affect threatened or endangered species could result in the relocation of proposed ROWs to avoid these habitat areas.

Potential impacts from all special designations and management areas, whether existing or proposed, would usually be minimal and would vary by the management prescriptions associated with each designated SD/MA. Intensive management of SD/MAs would potentially affect the lands and realty program by altering ROW locations. WSAs would cause the greatest restriction on lands and realty management actions, while the other SD/MAs would place fewer restrictions on such actions.

### **4.19.3 Alternative B**

Impacts on lands and realty from management of cultural and paleontological resources, recreation, and travel and transportation would be the same as Alternative A.

Impacts on lands and realty resulting from implementing restrictions on ROWs would be similar to those presented under Alternative A, except impacts would be more extensive due to a large increase in areas managed as ROW exclusion areas.

Under this alternative, land use authorizations would benefit the overall management of public lands by making them available throughout the planning area for ROWs, permits, and leases, except in areas designated as exclusion or avoidance areas, as defined below. The impacts on land use authorizations would be more restricting than Alternative A, in that pipeline trenches would not be allowed to stay open longer than 10 days during the construction phase and would require mitigation measures for impacts to livestock, wildlife, and public safety. This would decrease both the amount of time allotted for construction as well as the time of year construction of ROWs would be available to occur. By imposing these types of restrictions, ROWs would only be implemented for a small duration and at certain times of the year for less

impact to livestock and wildlife. These restrictions would result in the relocation or redesign of proposed ROWs and would increase management efforts and costs related to proposals submitted by ROW applicants, which are administered by the lands and realty program.

Under this alternative, areas managed as exclusion areas for ROWs would increase to 68% of the planning area (2,480,876 acres) and areas managed as avoidance areas for ROWs would decrease to 4% of the planning area (133,903 acres). This would increase the acres in which ROWs are precluded, which would potentially increase the number of ROW facilities precluded from development.

Impacts on lands and realty management resulting from processing land tenure/landownership adjustments would be similar to Alternative A, including that aquatic, wetland, and riparian habitat would not be suitable for disposal. This might reduce the ability to dispose of or acquire (through exchange) land parcels in an effort to reduce fragmented surface ownership and improve the manageability of public lands. Exceptions would be considered in cases of where land exchanges would allow for more contiguous federal ownership patterns. In addition, acquiring lands could result in further consolidation and improved manageability of public lands.

Impacts on lands and realty management resulting from oil and gas exploration and development within the planning area would be similar to those identified in Alternative A, except the projected level of ROW applications would decrease. Fewer areas would be available for leasing and development of oil and gas facilities because 2,186,218 acres would be unavailable to oil and gas leasing, 813,354 acres would be managed as NSO areas, and 99,674 acres would be managed as CSU areas. As a result, fewer acres are available for oil and gas development, which represents a 23% decrease compared to Alternative A.

Impacts on lands and realty management resulting from development of solid leasable minerals, locatable minerals, and mineral materials would be similar to those identified in Alternative A, except the level of development would likely decrease as more areas would be closed to such development. Because the number of ROW applications/authorizations and extent of related development would be commensurate with the level of anticipated mineral development, a decrease in ROW applications and authorizations would be realized. Under this alternative, 3,735,546 acres would be closed to coal development, 2,122,282 acres would be closed to oil shale leasing, 1,993,908 acres would be pursued for withdrawal from locatable mineral entry, and 2,581,741 acres would be closed to mineral material sales and permits.

Impacts from VRM would be similar to those under Alternative A, except VRM classifications would affect the location of new ROWs and facilities. ROW projects would be designed to meet the objectives of the VRM class established for the project area. Most ROWs and facilities would be compatible with VRM Class III (666,522 acres) and VRM Class IV (563,754 acres). In VRM Class II (2,148,902 acres) areas, ROW actions would be limited and would require mitigation to ensure that the project or surface disturbance did not attract the attention of the casual observer.

Similar to Alternative A, mitigation measures to protect wildlife resources, threatened and endangered species, and sensitive species' habitats would impact the potential disposal of lands. Seasonal closures would result in short-term impacts on lands and realty actions in sensitive areas such as the big game crucial winter range. Year-round restrictions and no surface-disturbing activities in areas such as sensitive aquatic and critical habitats would restrict the location of ROWs and land disposal actions over the long term.

Impacts to lands and realty from the management of SD/MAs would be similar to Alternative A, except ACECs would be managed as ROW avoidance or exclusion areas. These restrictions may result in the re-siting or redesign of proposed ROWs and would increase lands and realty management efforts and related costs.

#### **4.19.4 Alternative C**

Impacts on lands and realty from cultural and paleontological resources would be the same as those  
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described under Alternative A.

Impacts on lands and realty resulting from implementing restrictions on ROWs would be similar to those presented under Alternative A, except impacts would be less extensive due to a large increase in areas managed as ROW avoidance areas.

Similar to Alternative A, land use authorizations would benefit the overall management of public lands by making them available throughout the planning area for ROWs, permits, and leases, except in areas designated as exclusion or avoidance areas, as defined below. The impacts on land use authorizations would be less restrictive than Alternative A; and similar to Alternative A, mitigation measures would be necessary for impacts to livestock, wildlife, and public safety due to the restriction to only allow pipeline trenches to be opened no longer than 10 days during the construction phase. This restriction would decrease both the amount of time allotted for construction as well as the time of year construction of ROWs would be available to occur. By imposing these types of restrictions, ROWs would only be implemented for a small duration and at certain times of the year for less impact to livestock and wildlife. These restrictions would result in the relocation or redesign of proposed ROWs and would increase management efforts and costs related to proposals submitted by ROW applicants, which are administered by the lands and realty program.

Under this alternative, areas managed as exclusion areas for ROWs would decrease to 6% of the planning area (225,784 acres) and areas managed as avoidance areas for ROWs would decrease to less than 1% of the planning area (31,018 acres), as compared with Alternative A. This would increase the potential areas for ROW designations and the requests for ROW authorizations, increasing the intensity, complexity, and costs of managing the lands and realty program.

Impacts on lands and realty management resulting from processing land tenure/landownership adjustments would be similar to Alternative A, except that aquatic, wetland, and riparian habitat would be suitable for disposal under this alternative. This may enhance the ability to dispose of or acquire (through exchange) land parcels in an effort to reduce fragmented surface ownership and improve the manageability of public lands.

Impacts on lands and realty management resulting from oil and gas exploration and development within the planning area would be similar to those identified in Alternative A, except more areas would be available for leasing and development of oil and gas facilities. Under this alternative 225,782 acres would be unavailable to oil and gas leasing, 15,542 acres would be managed as NSO areas, and 215,890 acres would be managed as CSU areas. As a result, more acres are available for oil and gas development.

Impacts on lands and realty management resulting from development of solid leasable minerals, locatable minerals, and mineral materials would be similar to those identified in Alternative A, except the level of development would likely increase as areas closed to such development would be less under this alternative. Because the number of ROW applications/authorizations and extent of related development would be commensurate with the level of anticipated mineral development, an increase in ROW applications and authorizations would be realized. Under this alternative, 226,219 acres would be closed to coal leasing and development, 225,965 acres would be closed to oil shale leasing, 234,961 acres would be proposed for withdrawal from locatable mineral entry, and 226,421 acres would be closed to mineral material sales and permits. These impacts would be exacerbated by the anticipated increase in requests for ROW authorizations, which would increase the intensity, complexity, and costs of managing the lands and realty program.

Impacts on lands and realty from recreation management and transportation planning and access would be similar to those described under Alternative A, except that surface disturbing activities would be allowed



within ¼ mile of developed recreation sites decreasing the intensity, complexity and costs of managing lands and realty program actions in these areas.

Impacts from VRM would be similar to those under Alternative A, except VRM classifications would affect the location of new ROWs and facilities. ROW projects would be designed to meet the objectives of the VRM class established for the project area. Most ROWs and facilities would be compatible with VRM Class III (395,680 acres) and VRM Class IV (2,374,710 acres). In VRM Class II (607,900 acres) areas, ROW actions would be limited and would require mitigation to ensure that the project or surface disturbance did not attract the attention of the casual observer. Compliance with VRM classifications in project areas would be less restrictive than Alternative A and increase the requests for ROW authorizations, impacting the intensity and costs to the lands and realty program.

Similar to Alternative A, mitigation measures to protect wildlife resources, threatened and endangered species, and sensitive species' habitats would impact the potential disposal of lands. Seasonal closures would result in short-term impacts on lands and realty actions in sensitive areas such as the big game crucial winter range. Year-round restrictions and no surface-disturbing activities in areas such as sensitive aquatic and critical habitats would restrict the location of ROWs and land disposal actions over the long term.

Impacts to lands and realty from the management of SD/MAs would be similar to Alternative A, except under this alternative, there would be no ACECs managed as ROW avoidance nor exclusion areas. Management of SD/MAs would therefore be less restrictive and would allow for an increase in requests for ROW authorizations, increasing the intensity, complexity, and costs of managing the lands and realty program.

#### **4.19.5 Alternative D**

Impacts on lands and realty from management of cultural and paleontological resources would be the same as Alternative A.

Impacts on lands and realty management from implementing actions for the lands and realty program would be similar to those presented under Alternative A, except decreases in ROW exclusion areas would enhance the ability to develop ROWs. Under Alternative D, 286,289 acres would be designated as ROW exclusion areas (Table 2-10, Map 2-24), which represents a 33% decrease compared with Alternative A. More acres would be managed under ROW avoidance areas, 1,388,618 acres, compared to 736,138 acres under Alternative A. This would decrease the relocation of proposed ROW facilities and/or need to preclude ROW facilities. This, in turn, would increase management efforts and costs related to proposals submitted by ROW applicants, which are administered by the lands and realty program but may be offset with the increased avoidance.

Impacts on lands and realty management resulting from oil and gas exploration and development within the planning area would be similar to those identified in Alternative A, except the projected level of ROW applications would increase. More areas would be available for leasing and development of oil and gas facilities because 768,989 acres would be unavailable to oil and gas leasing (42% increase compared with Alternative A) (Table 2-4, Map 2-8). As a result, more acres are available for oil and gas development, which would commensurately increase the demand for ROW development.

Impacts on lands and realty management resulting from the development of solid leasable minerals would be similar to those identified in Alternative A, except the level of development would likely increase as fewer areas would be closed to such development. Because the number of ROW applications/authorizations and extent of related development would be commensurate with the level of anticipated mineral development, an increase in ROW applications and authorizations would be realized. Under this alternative, 610,342 acres would be closed to coal leasing (26% increase compared to Alternative A) and 1,557,520 acres would be closed to oil shale leasing (114% increase compared to Alternative A) (Table 2-7, Map 2-12).

Impacts on lands and realty management resulting from the development of locatable and saleable minerals would be similar to those identified in Alternative A, except the level of ROW development would likely increase as more areas would be available to saleable mineral development. Because the number of ROW applications/authorizations and extent of related development would be commensurate with the level of anticipated mineral development, an increase in ROW applications and authorizations would be realized. Under this alternative, 362,009 acres would be closed to saleable mineral development (57% decrease compared to Alternative A) (Table 2-8, Map 2-16).

Impacts on lands and realty from recreation management and transportation planning and access would be similar to those described under Alternative A, except that the Wind River Front SRMA would change from ROW exclusion to avoidance to accommodate recreation facilities and access.

Impacts from VRM would be similar to those under Alternative A, except changes in VRM classifications would affect the location of new ROWs and facilities. ROW projects would be designed to meet the objectives of the VRM class established for the project area. Most ROWs and facilities would be compatible with VRM Class III (738,311 acres) and VRM Class IV (1,455,234,455,234 acres) objectives. In VRM Class II (1,178,718 acres) areas, ROW actions would be limited and would require mitigation to ensure that the project or surface disturbance did not attract the attention of the casual observer.

Similar to Alternative A, mitigation measures to protect wildlife resources, threatened and endangered species, and sensitive species' habitats would impact the potential disposal of lands. Seasonal closures would result in short-term impacts on lands and realty actions in sensitive areas such as big game crucial winter range. Year-round restrictions and no surface-disturbing activities in areas such as sensitive aquatic and critical habitats would restrict the location of ROWs and land disposal actions over the long term.

Impacts on lands and realty management from SD/MAs would be similar to Alternative A, except they would apply over a larger area, as the number of acres designated as ACECs would decrease. Because these areas are managed as ROW exclusion and avoidance areas, the reduction of ACEC designations would decrease the relocation or redesign of proposed ROWs and thereby decrease lands and realty management efforts and related costs. The acres designated as ACECs would decrease to 246,634 acres (13.9% decrease compared with Alternative A) (Table 2-12, Map 2-32).

## 4.20 RENEWABLE ENERGY

Impacts on renewable energy development would not be anticipated as a result of implementing management actions for locatable, geophysical, solid mineral leasing, and saleable mineral exploration and development, forests and woodlands, riparian and wetland resources, livestock grazing, and OHV travel.

### 4.20.1 Assumptions

- It is BLMs policy to encourage development of renewable energy in acceptable areas (as stated in the National Energy Policy of 2001 and the Energy Policy Act of 2005). The BLM Land Use Planning Handbook (H-1601-1) requires that land use planning efforts address existing and potential development areas for renewable energy projects
- Energy transport corridors on BLM public lands are the preferred locations where transmission lines and pipelines may be sited and built in the future, while mitigating potential harmful effects to the environment. Once a "corridor" is designated, lines or facilities within the corridor are sited by processing of a ROW application. The demand for energy-related ROWs will likely increase, as national energy demands grow.
- There is potential for commercially viable wind energy in the planning area based on good wind resources and approved ROWs for development. It is anticipated there will be an increased interest

and market for wind energy development in Wyoming and on public lands.

- Areas with annual average wind speeds around 6.5 meters per second and greater at 80 meters height are generally considered to have a resource suitable for wind development.
- Meteorological site testing is used to determine whether a site's wind energy potential meets the criteria for full field development. These meteorological tower (MET) sites or MET tower ROWs are granted for an initial period of three years to allow for a temporary wind tower to be erected on the site. If the data gathered at "MET sites" indicates that the wind resource is sufficient, a full-field development proposal may be submitted to BLM for analysis.
- The demand for solar energy related ROWs within the planning area is present, although the area does not exist in a "BLM solar energy zone."
- Currently there are no applications for geothermal or biomass energy development projects being processed by the BLM for the planning area. Resources adequate for sustained commercial production, transportation distances to geothermal and biofuel energy generation plants and/or markets and consumers are key factors in determining feasibility.
- The BLM Wyoming State Office recognizes a need to conduct additional studies focused on the resources, issues, processes, and protocols regarding wind and transmission planning and development.

#### 4.20.2 Alternative A

Management actions for locatable, geophysical, solid mineral leasing, and saleable mineral exploration and development would not impact renewable energy development.

Management actions to meet, maintain, or improve air quality requirements and/or implement air quality BMPs include applying restrictions on surface disturbing activities. Management actions that apply BMPs and prohibit or limit surface disturbing activities to maintain air quality, could impose the same restrictions to renewable energy development sites. These restrictions could potentially impact access to development sites, vehicular routes, the placement of facilities, structures, and transmission lines, and the site preparation and construction activities associated with renewable energy development.

Management actions to maintain or improve soil health and protect special geological features would include BMPs to minimize surface disturbances that can cause runoff that amplifies soil erosion, flooding, and sediment yield and adversely impact soil/rock stability. Areas where the soils are highly erodible or difficult to reclaim could also be designated as avoidance areas for surface disturbing activities. Erosion control and/or rehabilitation plans might also be required. Management actions that apply BMPs and prohibit or limit surface disturbing activities to maintain soil stability, could impose the same restrictions to renewable energy development sites in the planning area. These restrictions could potentially impact access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and the site preparation and construction activities associated with renewable energy development.

Management actions to maintain, enhance, and protect watershed health would include preparing site specific activity and implementation plans to reduce erosion and sediment yield, and promote ground cover vegetation. Avoidance areas for surface disturbing activities would also be placed in certain sensitive areas. Surface disturbances can cause erosion, sediment, and vegetation damages which could adversely impact water quality. Activity and implementation plans designed for water quality enhancement could be imposed on renewable energy development sites in the planning area. These restrictions could potentially impact access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and the site preparation and construction activities associated with renewable energy development.

Public lands closed to oil and gas leasing include lands within the Red Creek ACEC, portions of the Wind River Front, and the WSAs in the JMH area. Geothermal resource exploration, development, and leasing activities would be allowed in areas that are open to oil and gas leasing consideration; and are subject to application of mitigation requirements for surface disturbing activities and other stipulations in the same manner as they are applied to oil and gas exploration and development activities. Under this alternative, approximately 4,773 oil, gas, and CBNG wells would be developed within the planning area. Approximately 158,611 acres in the planning area would be managed with NSO stipulations for fluid mineral leasing. Applying CSU stipulations on 721,132 acres under this alternative, would restrict fluid mineral leasing opportunities and reduce the number of wells that are developed within the CSU areas. Applying TLS (1,840,967 acres) to fluid mineral leasing reduces surface disturbance/occupancy durations (Table 2-4, Map 2-5).

Mineral management actions that restrict fluid mineral developments (including geothermal energy) are those that prohibit or limit exploration, leasing, access to development sites, and the placement and construction of facilities or structures associated with the development. Areas with closure or exclusion designations are most restrictive; followed by those with NSO and CSU stipulations. Areas closed to fluid mineral development include sensitive resource areas such as WSAs, WSRs, NHTs, ACECs, etc. NEPA reviews, COAs attached to an APD, bond requirements, stipulations to protect sensitive resources, and mitigation requirements for surface disturbing activities could delay, restrict, and/or preclude geothermal exploration and development. Impacts could include relocating sites and additional development costs.

Management response actions to wildfires include implementing appropriate immediate control and/or suppression actions in cases where there is a direct threat or strong potential to threaten structural property in the planning area. Wildfires could damage or destroy developed renewable energy site facilities, structures, and transmission/pipe lines. Suppression actions would provide protections against these impacts.

Management actions to maintain, improve, enhance, and/or restore grassland and shrubland vegetation communities would include preparing site specific activity and implementation plans to establish or manipulate vegetation communities so that they support soil stability and reduce erosion potentials. Renewable energy development requires surface disturbances associated with vehicle access to the site and site clearing/preparation activities; as well as the construction of facilities, structures, and transmission lines (including pipelines) necessary for the generation, collection, and transport of the energy. These surface disturbances could include vegetation damage or removal to prepare a site for development. Activity and implementation plans designed for grassland and shrubland communities could be imposed on renewable energy development sites in the planning area. These restrictions could potentially impact access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and the site preparation and construction activities associated with renewable energy development.

Management actions to prevent the introduction and establishment of noxious weeds, other invasive species (vertebrate, non-vertebrate, and plant), pests, and/or diseases include implementing BMPs that help prevent the inadvertent movement of these from an area that contains them, to one that does not. Vehicles and equipment utilized in surface disturbing activities, construction project supplies, or transfers of local watershed water are typical conduits for this relocation. These BMPs could be imposed on renewable energy development sites in the planning area. These restrictions could potentially require added stipulations for the cleaning of vehicles and equipment prior to accessing development sites to prevent pest introductions.

The development and implementation of Habitat Management Plans (HMPs) guide BLM in managing environmental impacts to fish, wildlife, and their habitats, from other permitted activities. These plans are especially important for areas that will be subject to high disturbance and development, in order to mitigate wildlife and habitat losses. Actions in HMPs can include transportation and noise plans, and road and vegetation reclamations. Seasonal and/or distance limitations for wildlife habitat could be applied as necessary to protect sensitive wildlife areas from development and/or disruptive activities during sensitive time periods in animals' life cycles, such as nesting, birthing, and wintering. Maintaining connectivity

between important seasonal ranges and life stage habitats is also considered, including migration corridors. In accordance with the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act of 1940 current and historic raptor habitats within the planning area must be maintained and protected. Active (a nest that has been occupied within the past three years) and historic raptor nesting sites would be protected and managed for continued nesting activities. Raptor nest surveys would be conducted within a 1-mile radius, or linear distance of proposed surface uses or activities, if such activities are proposed to be conducted during raptor nesting seasons, usually between February 1 and July 31. Permanent or high-profile structures (e.g., power lines, wind turbines, or other structures that may negatively impact raptors) would be prohibited within a specified distance of occupied raptor nests, determined on a case-by-case basis. One of the biggest environmental concerns associated with wind energy development is avian and bat mortality through collision with rotating turbine blades. There is also concern over whether the turbine's generation of electrical and magnetic fields, and acoustical noise have detrimental impacts to wildlife.

Renewable energy development requires surface disturbances associated with vehicle access to the site and site clearing/preparation activities; as well as the construction of facilities, structures, and transmission lines (including pipelines) necessary for the generation, collection, and transport of the energy. HMPs and land usage restrictions could be imposed on renewable energy development sites in the planning area. These restrictions could potentially impact access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development. There is also a potential for operational limitations. Structural design changes and incorporation of additional protective measures (e.g. wildlife collision avoidance enhancements) could potentially be required on future renewable energy projects to minimize impacts to wildlife; as new information about those impacts becomes known and is better understood.

Management actions to protect high priority and Special Status Species while providing for multiple use of resources includes developing and implement habitat management plans, activity plans, mitigation measures, or land use restrictions. Management requirements may include prohibiting or limiting motorized vehicle use, surface uses, or any other surface disturbing or disruptive activity that may cause adverse effects to the special species or its habitat. Special status plant populations would be closed to activities that would have those impacts.

In the JMH planning area, surveys or searches would be conducted in potential habitat for federally listed, proposed, candidate, and sensitive species before any surface is disturbed. At any time, such a species is found, all disruptive activities would be halted until protective measures developed with the USFWS are implemented. Measures would also be taken in this area to avoid, reduce, or apply anti-perch devices to structures that could be utilized as hunting perches for avian predators within ¼ mile of prairie dog colonies or mountain plover nesting aggregation areas. Areas where Wyoming BLM sensitive plant species are known to exist and/or have potential habitat would be ROW avoidance areas (Map 2-21).

Renewable energy development requires surface disturbances associated with vehicle access to the site and site clearing/preparation activities; as well as the construction of facilities, structures, and transmission lines (including pipelines) necessary for the generation, collection, and transport of the energy. HMPs, activity plans, mitigation measures, and land usage restrictions could be imposed on renewable energy development sites in the planning area. These restrictions could potentially impact access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and the site preparation and construction activities associated with renewable energy development.

Management actions designed to protect the cultural and paleontological resources on BLM-administered lands within the planning area focus largely on human activities that cause surface disturbances which have the potential to impact soil stability, amplify erosion, inflict direct damage or destruction, and cause indirect loss of scientific information. Surface disturbing activities and occupancy can also cause degradation of the setting/context in which the cultural or paleontological resource exists. To reduce these potential impacts, an appropriate level of analysis of all surface disturbing activities would be conducted to determine the

potential effect of the activity on known cultural and paleontological resources; as well as activities occurring in areas having a reasonable chance for the occurrence of scientifically significant artifacts or fossils. Individual or combined management actions related to the conservation, protection, stabilization, data collection, interpretation, mitigation, restoration, and maintenance of those sites would be developed and implemented to address conflicts. Sites eligible for or listed on the NRHP would be managed for their local, regional, and national significance, under the guidelines of the NHPA and the Archaeological Resources Protection Act of 1979. These sites would be managed to ensure against adverse effects through proper mitigation, if disturbance and destruction is not avoidable. Management prescriptions for sites that are not eligible for the NRHP would be determined on a case-by-case basis according to values involved. The preparation of site/project specific activity or development plans for five significant rock art sites in the planning area: Tolar, White Mountain, Cedar Canyon, Sugarloaf, and La Barge petroglyph sites (as well as for significant rock art sites identified in the future) would include protections against adverse effects to those sites. Surface disturbing activities would be prohibited within ½ mile of these sites and visual intrusions within the view shed of the rock art panels would not be allowed. In the JMH planning area, the Tri-Territory Marker (10 acres) would have additional exclusions for ROWs. LaCiede Stage Station and Dug Springs Stage Station on the Overland Trail would also be closed to surface disturbing activities. Playa Lake areas with high cultural site density would be managed as historic districts. Management prescriptions for surface disturbing activities in Playa Lake areas would be developed on a case-by-case basis. North and South Table Mountains (the Bozovich Site complex) would also be closed to surface disturbing activities to preserve cultural values within standard Section 106, State Protocol, and/or 110 NHPA compliance. The Eden-Farson, Finley, Krmpotich, and Morgan archaeological sites and all known human burial sites would be closed to surface disturbing activities that could adversely affect them.

Renewable energy development requires surface disturbances associated with vehicle access to the site and site clearing/preparation activities; as well as the construction of facilities, structures, and transmission lines (including pipelines) necessary for the generation, collection, and transport of the energy. Wind turbine structures could be especially intrusive in certain view sheds that contribute to cultural, historical, or paleontological setting. Cultural and paleontological resource management actions would be imposed on renewable energy development sites in the planning area. These restrictions could potentially impact access to development sites, vehicular routes, the placement of facilities, structures, transmission/pipe lines, and the site preparation and construction activities associated with renewable energy development.

Management actions to minimize impacts to areas of tribal importance (sacred, spiritual, respected, and/or traditional cultural settings, properties or resources) within the planning area would focus on maintaining existing and establishing new working relationships with Native American tribes for the purposes of advancing the protection of cultural resources through consultations, identification of sites, and the minimization of disturbance to those sites (including the view sheds). Limiting the placement of structures that visually intrude on these sites can help to preserve and protect settings. These actions could potentially impact renewable energy developments by restricting the placement of roads, facilities or structures.

The planning area will be managed under VRM classifications to protect the quality of scenic values and, where appropriate, to preserve and protect certain public land in its natural condition. Under these classifications, the extent of change to the characteristic landscape ranges from “very low” of VRM Class I to the “high” of Class IV. Under this Alternative, approximately 225,717 acres would be classified as VRM Class I, 582,672 acres as VRM Class II, 615,492 acres as VRM Class III, and 2,180,423 acres as VRM Class IV (Table 2-9, Map 2-17). VRM Class I is reserved for special management areas and includes all of the WSAs throughout the planning area. VRM Class II areas include the Wind River Front, portions of the Little Mountain area, the Pine Mountain area, land along the Green River, land visible from the historic trail traces in the South Pass Historic Landscape, and those areas adjacent to the WSAs. VRM Classes III and IV comprise the majority of the planning area. VRM Class I and II areas are more sensitive to visual intrusion and are therefore granted higher standards of protection. All surface disturbing actions, regardless of the VRM class, are required to be mitigated to reduce visual impacts. Facilities (either in place or new), including linear ROWs, must be screened, painted, or designed to blend with the surrounding

landscape, in a manner that most closely meets the minimum degree of contrast acceptable for the VRM classes. Renewable energy developments, particularly wind and solar energy, have high potentials to impact current VRM objectives in the planning area by creating large, often moving, objects across otherwise flat or rolling landscape. Managing for VRM would place greater restrictions on the availability and access of development sites and the site clearing/preparation/construction activities (roads, facilities, structures, and transmission/pipe lines) necessary for the generation, collection, and transport of the energy.

The land resource management actions related to the real estate transactions of acquisition, disposal, and/or pursuing withdrawal would have different impacts on renewable energy developments depending on whether the actions place more or fewer acres under protective land use management stipulations. Approximately 300 acres of easements would be pursued where practical, to provide access to public lands for recreational, wildlife, range, cultural, mineral, special management area, and other resource management needs. Public lands would be made available throughout the planning area for ROWs, permits, and leases (except as closed or restricted in designated exclusion and avoidance areas). Approximately 426,709 acres would be designated as exclusion areas for ROWs and 736,138 acres would be designated as ROW avoidance areas (Table 2-10, Map 2-21). In the JMH area, pipelines and buried power lines generally would be required to be located adjacent to roads to reduce new surface disturbances. Approximately 28,000 acres are proposed for acquisition in the planning area. The preferred method for acquisition and disposal of lands would be through exchange rather than purchase. Withdrawals and classifications of lands would also be processed to protect important resource values. Revocation of withdrawals require a review for any other resources requiring protection, thereby extending protections tonewly discovered ones.

Renewable energy development requires the ability to utilize specific land sites that have adequate wind, sunshine, biomass, or geothermal resources to support energy generation. Land use and/or visual impact restrictions also must not prohibit or restrict the surface disturbances associated with vehicle access to the site, site clearing/preparation activities, or the construction of facilities, structures, and transmission lines (including pipelines) necessary for the generation, collection, and transport of the energy. Land and realty management actions that could reduce available sites for renewable energy developments include ROW exclusion and avoidance areas, and lands identified for disposal that are not exchanged. Management actions that facilitate renewable energy developments are easements and the availability of ROW corridors where new developments can be sited.

Managing the planning area (including the JMH planning area) as open for consideration of authorizing renewable energy projects promotes exploration, discovery, feasibility assessments, and thereby increases the potential for developing viable generation and transmission sites. These actions also drive advancements in alternative energy scientific knowledge and technologies that enhance future developments. Some land use, surface disturbance, sensitive resource protection stipulations, and ROW siting and mitigation requirements could place additional limitations on renewable energy developments, restrict developments, or increase project costs. Commercial wind power generation in the United States is a relatively recent and emerging energy source and technologies have been rapidly developing since the first pilot projects. Seven wind energy generation site testing and monitoring ROW grants are currently active within the planning area, covering approximately 51,450 acres of public lands. Four commercial wind energy development applications have been processed in the planning area, which include over 53,000 acres of public lands. The projects range in size from 79 to 240 turbines, and peak generating capacity is expected to range from 197 to 360 MW per project. Favorable wind resources and approved ROW development within the planning area; as well as any success at existing sites could result in an increased interest in commercial wind energy development and marketing. In recognition of this interest, the BLM Wyoming State Office has identified a need to conduct additional studies focusing on the resources, issues, processes, and protocols regarding wind and transmission planning and development on Wyoming public lands. These studies will generally benefit future developments. Geothermal resources in the planning area are open to leasing consideration in areas that are open to oil and gas leasing consideration. Areas closed to oil and gas leasing are also closed to geothermal leasing. Exploration and development of geothermal resources are also subject to application of mitigation requirements for surface disturbing activities and other stipulations in the same manner as they are applied to oil and gas exploration and development activities. These management actions for

geothermal resources can therefore facilitate development in some cases and restrict it in others.

The actions to designate and manage ROWs and transportation corridors in the planning area focus on determining sites that meet utility and transportation needs with the least impact or conflict with other resource objectives and human health and safety. Avoidance areas, exclusion areas, co-location areas, timing restrictions and mitigation measures are management actions applied to ROW developments to meet these objectives. Preferred energy transport corridors have been identified and site-specific plans have been/are developed to provide access to achieve multiple-use goals while providing maximum protection for crucial habitats and sensitive resources. Areas designated as utility windows, easement or ROW concentration areas, and existing communication sites would be preferred locations for future ROW grants. Linear ROWs would be considered as part of transportation planning and included as part of travel management plans. Natural topographic barriers, terrain, line-of-sight distance, vegetation structure and cover, habitat needs, activity types, and impacts to sensitive resources are factors in determining the need to establish ROW avoidance areas and timeframes. Exceptions to avoidance areas and timing limitations could be provided on a case-by-case basis provided appropriate mitigation could be implemented.

The granting of ROWs is crucial to supporting national energy plans that include developing renewable energy. For wind energy development in the planning area, ROWs are needed for the placement of temporary (limited to three years) MET towers and instrumentation facilities to monitor and gather wind resource information. This data informs the decision on whether the wind resources could support commercial wind power generation. A ROW for a larger testing and monitoring site could then be granted for a renewable three-year period to further confirm wind potentials. The granting of a commercial development ROW specifies the authorized project size (number of turbines), acreage for siting them, and term of occupancy (usually 30 years). The availability of suitable ROWs facilitates renewable energy development and ROW management actions could restrict them.

Travel and trail planning and management actions would be developed to provide for access to the planning area to achieve multiple-use goals, while providing maximum protection for crucial habitats and sensitive resources. These actions could facilitate renewable energy development by supporting roads necessary to access development sites. Use restrictions, seasonal limitations, and mitigation requirements could be applied to road and trail routes to provide additional protections to adjacent habitats. Unused roads and trails and those causing resource damage could be closed or rehabilitated. These actions could restrict renewable energy development.

Recreation management actions in the planning area focuses on ensuring the continued availability of outdoor recreational opportunities sought by the public, while protecting other resources and/or minimizing conflicts with other types of resource uses. The remainder of the planning area would be managed as an ERMA. SRMAs generally have restrictions on surface disturbing activities and distance stipulations for structures or facilities to minimize impacts to visual settings or view sheds. Surface disturbing activities are prohibited within ¼ mile of recreation sites unless such activities are determined to be compatible with or are done for meeting recreation objectives for the area. Generally, activities like those associated with mineral development, roads, pipelines, powerlines, etc. would be designed to avoid recreation areas. The management actions to support recreation in the planning area would place greater restrictions on the availability and access of renewable energy development sites and the site clearing/preparation/construction activities (roads, facilities, structures, and transmission/pipe lines) necessary for the generation, collection, and transport of the energy. The blade movement in wind turbines could pose a risk to human safety if recreational pursuits involved airborne activities where contact could be made to those structures (e.g. hang gliding, parachuting).

Management actions to preserve and protect historical remains and historical settings/context of congressionally designated NHTs and NHT-related resources (e.g. camps, graves, inscription sites, stations, natural landmarks) primarily applies restrictions on surface disturbing activities (e.g., prohibiting blading), implementation of effective mitigation measures (e.g., allowing pipeline or power line crossings of a trail only on non-contributing segments), designation of management corridors (e.g., setbacks) to protect trail



or site boundaries, and restrictions on the placement of structures that visually intrude on the NHT or cultural resources and degrade the setting. Historical trails could also not be used as industrial access roads or heavy truck haul roads. These restrictions could directly impact the placement of renewable energy development facilities, structures, and transmission/pipe lines, allowance of surface disturbing activities associated with construction, and vehicle access to development sites.

Management of WSAs and Wild and Scenic Rivers in the planning area (Map 2-29) focuses on prohibiting development. These lands would be an exclusion area for ROWs. Human access and travel methods (e.g., motorized versus non-motorized) would be regulated and distributed to protect the natural resources. These areas would also be managed as VRM Class I and II areas and/or with scenic classifications to help preserve the natural setting and existing character of the landscape. These restrictions would prohibit renewable energy development in WSAs and WSRs.

Management actions for designated ACECs (286,450 acres; Map 2-29; Table 2-12) utilize individualized special management prescriptions and measures that focus on preserving the area's unique and significant natural resources through the prevention of irreparable damage to them. The prescribed actions generally emphasize maintaining or improving habitat and the view sheds that enhance the existing character of the landscape and prohibiting or limiting developments. ACEC habitat prescriptions to manage land development, occupancy, and view sheds would limit renewable energy developments. The placement of renewable energy development facilities, structures, and transmission/pipe lines; allowance of surface disturbing activities associated with construction; and vehicle access to development sites would be impacted adversely by those restrictions.

Other management areas (580,010 acres; Map 2-29; Table 2-12) would be managed to maintain or enhance the specific resource values and characteristics for which they were designated as special management areas. They are also managed to ensure developments and activities conform to the concepts of open space through VRM Class II and III objectives. Viewsheds are also enhanced and protected in these areas by lower VRM classifications and occupancy restrictions. Land development, occupancy, and viewshed restrictions would limit renewable energy developments. The placement of renewable energy development facilities or structures, allowance of surface disturbing activities associated with construction, and vehicle access to development sites would be adversely impacted by special management area restrictions.

### **4.20.3 Alternative B**

Under this alternative, impacts on renewable energy resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for riparian and wetland resources, livestock grazing, and OHV travel, locatable minerals, solid leasable minerals, and saleable minerals.

Impacts to renewable energy development from the management of wildland fire, grassland and shrubland resources, invasive species and pests would be the same as Alternative A.

Impacts to renewable energy resources from the management of air resources would be the same as those discussed under Alternative A, except dust abatement measures would be more restrictive. They would be required for all BLM authorized activities, and BMPs would have to be applied in coordination with local and state agencies to control dust on roads. These dust abatement measures would require renewable energy development sites to perform additional control activities and could restrict available vehicle routes.

Impacts to renewable energy resources from the management of soil and geologic resources would be similar to those discussed under Alternative A, except surface disturbing activities where soils are highly erodible or that are difficult to reclaim would be prohibited. Those areas would also be managed as NSO for fluid minerals (e.g., oil and gas leasing/development). Exploration and development of geothermal resources are subject to application of mitigation requirements for surface disturbing activities and NSO designations in the same manner as they are applied to oil and gas exploration and development activities.

Actions to prohibit or limit surface disturbing activities to maintain soil stability, could impose the same restrictions to renewable energy development sites in the planning area. These restrictions could potentially impact access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and the site preparation and construction activities associated with renewable energy development.

Impacts to renewable energy resources from the management of water resources would be similar to those discussed under Alternative A, except that greater surface disturbing protections are provided by the requirement for site-specific activity and implementation plans. This alternative also expands the boundaries in the JMH planning area for prohibited surface disturbing activities, avoidance of linear crossings, required management as NSO for fluid minerals (e.g., oil and gas leasing/development) and applying a CSU for fluid minerals stipulation on the area's aquifer recharge areas. An NSO for fluid minerals stipulation for the Town of Superior recharge area is also provided by this alternative. Activity and implementation plans designed for water quality enhancement could be imposed on renewable energy development sites in the planning area. These restrictions could potentially impact access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and the site preparation and construction activities associated with renewable energy development.

Managing all lands identified as having wilderness characteristics specifically to preserve those characteristics would provide additional restrictions on renewable energy development in the planning area. Management actions to limit surface disturbing activities, surface occupancy, and degradation of view shed or setting impacts, help preserve wilderness characteristics (e.g., habitat quality) and help maintain the designation of lands with wilderness characteristics. Under Alternative B, closing lands identified with wilderness characteristics to fluid minerals (e.g., oil and gas) development, and management as an exclusion area for all new ROWs, would further restrict surface occupancy and surface disturbing activities. These areas would also be managed consistent with VRM Class II objectives. Wind and solar energy developments have high potentials to impact VRM objectives in the planning area due to the size and extent of the structures associated with them. Geothermal resource exploration, development, and leasing activities are not allowed in areas that are closed to oil and gas leasing consideration; and are also subject to application of mitigation requirements for surface disturbing activities and other stipulations in the same manner as they are applied to oil and gas exploration and development activities. Management actions to preserve and protect lands with wilderness characteristics could potentially impact access to renewable energy development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and the site preparation and construction activities associated with renewable energy development.

Impacts to renewable energy development from the management of fluid mineral (oil and gas) leasing and development would be similar to those described under Alternative A; however, closing 2,186,218 acres (1,646,197 more acres than under Alternative A) to fluid mineral leasing would greatly reduce the availability of potential development sites. Geothermal resource exploration, development, and leasing activities are not allowed in areas that are closed to oil and gas leasing consideration; and are also subject to application of restrictions on surface disturbing activities, NSOs, and other stipulations in the same manner as they are applied to oil and gas exploration and development activities. Under Alternative B, 813,354 acres would be managed with NSO stipulations, which is 654,743 more acres than under Alternative A. Applying CSU stipulations (within 99,674 acres, which is 621,458 less than Alternative A) and TLSs (within 713,837 acres, which is 1,127,130 less than Alternative A) with no exceptions, could influence the placement of facilities and, as a result, increase the cost of developing geothermal resources. More NSOs applied under this alternative, would place greater limitations on surface occupancy and further restrict geothermal development that quantify and visually define these management areas). The requirement to use BMPs in the exploration, development, production, and abandonment of oil and gas resources, and mitigation requirements for surface disturbing activities also could place additional restrictions on geothermal energy developments. Development restrictions for WSA, ACECs, Special Designation Areas, and other resource program restrictions for sites within this analysis area would prohibit or restrict geothermal energy developments.

Impacts to renewable energy development from the management of forest and woodlands resources is the same as Alternative A, except that slash resulting from timber harvesting would be made available for biomass. Woody biomass is a potential fuel for bioenergy developments. Resources adequate for sustained commercial production, transportation distances to biofuel energy generation plants and/or markets and consumers are key factors in determining feasibility for biomass utilization. There are not currently any applications for biomass energy development projects being processed by the BLM for the planning area but making biomass available from this forest management action supports the consideration of this type of alternative energy development.

Impacts to renewable energy development from the management of fish and wildlife resources and Special Status Species is similar to Alternative A, except this alternative applies more surface use prohibitions or restrictions, seasonal and distance limitations, and rehabilitation standards on fluid mineral (oil, gas, and geothermal), renewable energy, and ROW developments in its management actions. Surface use restrictions would be utilized to accomplish no-net-loss of sensitive terrestrial and aquatic wildlife habitats (e.g. crucial winter range, parturition areas, migration corridor, and Special Status Species nesting and brood rearing habitat). The land use, time and distance, and travel prohibitions and restrictions under this alternative could potentially limit access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development. There is also a potential for operational restrictions. Structural design changes and incorporation of additional protective measures (e.g. wildlife collision avoidance enhancements) require additional costs. Future renewable energy projects could require additional impact minimization measures as impacts become known and better understood. Prohibiting renewable energy projects in big game crucial winter range and parturition habitat, raptor concentration areas, currently mapped unique habitats, or new areas identified as part of site-specific investigations would preclude renewable energy development.

Impacts to renewable energy development from the management of cultural and paleontological resources is similar to Alternative A, except this Alternative applies more protective measures. The land use prohibitions and restrictions and larger sized buffer zones under this alternative, could potentially limit access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development. Wind turbine structures could be especially intrusive in certain view sheds that contribute to cultural, historical, or paleontological setting.

Impacts to renewable energy development from the management of areas of tribal importance (sacred, spiritual, respected, and/or traditional cultural settings, properties, or resources) would be similar to Alternative A, except in the JMH planning area, the zone of disturbance protection is more specific than Alternative A because the mitigation stipulations are triggered when an activity is proposed within three miles of a site (rather than as within the “vicinity” of a site). Mitigation requirements can result in additional efforts, delays, and costs to renewable energy development projects.

VRM impacts would be similar to Alternative A, except that the VRM acreage offering the most protected status to scenic value quality and preservation of public land in its natural condition is greater under this alternative. Approximately 225,785 acres would be classified as VRM Class I (68 more acres than Alternative A), 2,148,902 acres VRM Class II (1,566,230 more acres than Alternative A), 666,522 acres VRM Class III (51,030 more acres than Alternative A) and 563,754 acres as VRM Class IV (1,616,669 fewer acres than Alternative A). More acreage managed under the lower VRM classifications, potential prohibitions on surface disturbing activities associated with wind energy development, and larger VRM buffer distances along the Continental Divide National Scenic Trail would place greater limitations to renewable energy development projects, by restricting the availability and access of development sites and the site clearing/preparation/construction activities (roads, facilities, structures, and transmission/pipe lines) necessary for the generation, collection, and transport of the energy. Wind and solar energy developments also have high potentials to impact VRM objectives in the planning area due to visual intrusions inherent in the size and extent of the structures associated with those types of developments. Requirements for visual simulation and VRM classification analyses prior to site developments could incur additional delays and

costs to proposed renewable energy developments.

Applying greater restrictions (e.g., more ROW exclusion areas, restricting NHT utility crossings) and utilization of BMPs (e.g., locating pipelines, power lines and other utilities adjacent to or co-located within existing ROWs) as part of lands and realty management would place additional restrictions on renewable energy developments. This Alternative provides for maximum protection of crucial habitats and sensitive resources in ROWs, corridors, and transportation management actions. The greater restrictions, prohibitions, and protection stipulations under this Alternative, could potentially limit access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development.

The management actions for renewable energy development under this alternative are similar to Alternative A, except ROW exclusion areas would be greater (2,480,876 acres excluded, which is 2,054,167 more acres than Alternative A); and additional measures and BMPs could be identified and required to protect resources and resource uses. The greater restrictions, prohibitions, and protection stipulations under this Alternative, could potentially limit access to development sites, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development. ROW exclusion areas would preclude renewable energy development. Additional development and operations costs could result from added BMPs/measures.

The actions to designate and manage travel in the planning area would be similar to Alternative A, except additional backcountry byways would be considered. The land use and VRM restrictions and mitigation requirements that could be applied to byway road developments could impact the placement of facilities, structures, and transmission/pipe lines associated with renewable energy developments. These actions could restrict renewable energy development.

The actions to manage recreation would be similar to Alternative A, except the Continental Divide National Scenic Trail, Continental Divide Snowmobile Trail, the Green River, Killpecker Sand Dunes, Oregon and Mormon Pioneer National Historic Trails, and the Wind River Front SRMAs would not be retained and a greater zone of restriction against surface disturbing activities and visual intrusions would be implemented. The greater restrictions on surface disturbing activities, and stricter VRM classifications, under this Alternative, could potentially limit access to development sites, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development. Not retaining the SRMAs and releasing lands from an emphasis on recreation resource development could potentially facilitate renewable energy development in those areas.

Management actions to protect congressionally designated and/or eligible trails, and NHTs are similar to Alternative A, except there are greater protective measures proposed such as larger buffer zones ("setbacks") and specific closures and restrictions. The greater restrictions on surface disturbing activities, and stricter VRM classifications, under this Alternative, could potentially limit access to development sites, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development.

Management of WSAs and WSR public lands would have actions similar to Alternative A, but there would be a greater emphasis on protecting wilderness setting and view shed values. The greater restrictions, prohibitions, and protection stipulations under this Alternative, could potentially limit access to development sites, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development. ROW exclusion areas would preclude renewable energy development. Prohibitions and limitations on motorized and non-motorized travel would also place greater impacts on renewable energy developments.

Impacts to renewable energy resources from the management of ACECs would be similar to those described in Alternative A, except 1,605,660 acres (1,319,210 more than Alternative A) would be designated as

ACECs. This alternative emphasizes managing important habitats for no-net-loss of habitat, retaining habitat health and function by applying surface use restrictions, and addressing human access and activities that could degrade or destroy resources. Additional stipulations to individual ACECs (e.g., eliminating ROW windows, excluding ROWs, limiting road development, closing areas to mineral development, etc.) would provide greater restrictions on surface disturbances and occupancy. The greater restrictions on surface disturbing activities, additional ACEC stipulations, and stricter VRM classifications under this Alternative, could potentially limit access to development sites, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development.

#### 4.20.4 Alternative C

Under this alternative, impacts on renewable energy resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for riparian and wetland resources, livestock grazing, and OHV travel, locatable minerals, solid leasable minerals, and saleable minerals.

Impacts to renewable energy resources from the management of air resources, forests and woodlands, wildland fire, grassland and shrubland resources, invasive species and pests would be the same as those presented under Alternative A.

Soil and geologic resource management actions under this alternative would be the same as Alternative A, except that areas where soils are difficult to reclaim would be managed as avoidance areas for surface disturbing activities with no exceptions and with a CSU stipulation for fluid minerals (oil and gas) leasing. Exploration and development of geothermal resources are subject to application of mitigation requirements for surface disturbing activities and CSU designations in the same manner as they are applied to oil and gas exploration and development activities. These restrictions could limit renewable energy development at these limited reclamation potential soil sites.

Water resource management actions would be similar to Alternative A, except where surface disturbing activities (including linear crossings) in or near the 100-year floodplains, wetlands, riparian areas, and gorges would each be considered on a case-by-case basis (rather than be protected by a full closure stipulation). Relaxing full closure stipulations facilitates the allowance of some surface disturbing activities. Compared to Alternative B, considering closed loop drilling systems in areas of shallow unconfined aquifers would also potentially increase allowances for some surface disturbing and occupancy activities. The less restrictive stipulation on surface disturbing activities under this alternative, could improve renewable energy development potentials.

There are no actions proposed under Alternative A for managing lands with wilderness characteristics. The management measures proposed under Alternative B would not be implemented under this Alternative. The impacts of not managing to protect wilderness characteristics would provide more opportunities for allowable surface disturbances and occupancy activities, which could benefit potential renewable energy developments.

Management of leasable oil and gas minerals includes geothermal fluids. Impacts to renewable energy development from the management of fluid mineral leasing and development would be similar to those described under Alternative A; however only closing 225,782 acres (314,239 fewer acres than under Alternative A) to fluid mineral leasing would increase the availability of potential renewable energy development sites. Under this alternative, 15,542 acres would be managed with NSO stipulations (143,069 fewer acres than under Alternative A) and 215,890 acres with CSU stipulations (505,242 fewer than Alternative A) which reduces these surface disturbance/occupancy limitations to development activities. Greater TLSs (1,355,485 acres, 485,482 less than Alternative A), could adversely impact renewable energy site development and operational schedules (Table 2-4, Map 2-7). Mineral management actions that restrict fluid mineral developments (including geothermal energy developments) are those that prohibit or limit

exploration, leasing, access to development sites, and the placement and construction of facilities or structures associated with the development. Under this Alternative, benefits could come from reducing the number of acres closed to development and/or managed under NSO and CSU stipulations.

Impacts to renewable energy development from the management of fish and wildlife resources and Special Status Species is similar to Alternative A, except that smaller surface disturbing and/or surface use distance buffer zones would be applied around developments and operations. Those actions and allowing renewable energy projects in big game crucial winter range and parturition habitat, raptor concentration areas, and unique habitats under this Alternative could facilitate renewable energy developments in the planning area. Additionally, no limits on surface disturbing activities in potential habitat areas of special status plant species could also improve opportunities for renewable energy development in the planning area.

Impacts to renewable energy development from the management of cultural and paleontological resources is similar to Alternative A, except that smaller surface disturbing/view shed buffer zone distances and less restrictive land use stipulations would be applied around known cultural and paleontological sites. The view shed to be protected surrounding significant rock art sites at Cedar Canyon, LaBarge Bluffs, Sugarloaf, Tolar, and White Mountain would be reduced to a ¼ mile distance, (which is less than the ½ mile under Alternative A). Compared to Alternative A, significant rock art sites would also be an avoidance area rather than an exclusion area for new ROWs. The Blue Point, Blue Forest, Adobe Town Rim and Cedar Canyon areas of high cultural site density would be managed on an individual site level (rather than as historic districts under Alternative A); and closed to surface disturbing activities that could adversely affect the cultural resources unless they could be mitigated. Those sites would also be managed as NSO for fluid minerals, and the Tri-Territory Marker site (10 acres) would be managed as closed to fluid mineral leasing, which apply greater restrictions on development activities than Alternative A.

Renewable energy development requires the ability to utilize specific land sites that have adequate wind, sunshine, biomass, or geothermal resources to support energy generation. Land use and visual impact restrictions also must not prohibit or restrict the surface disturbances and occupancy requirements associated with vehicle access to the site, site clearing/preparation activities, or the construction of facilities, structures, and transmission lines (including pipelines) necessary for the generation, collection, and transport of the energy. Wind turbine structures could be especially intrusive in certain view sheds that contribute to cultural, historical, or paleontological setting. Management actions under this Alternative that facilitate renewable energy developments are smaller buffer zones, and avoidance areas rather than exclusion areas for ROWs. Closing areas to surface disturbing activities and fluid mineral leasing (gas, oil, and geothermal), and managing sites as NSO for fluid minerals and avoidance of ROWs would provide greater restrictions to renewable energy development in those areas.

Impacts to renewable energy development from the management of areas of tribal importance (sacred, spiritual, respected, and/or traditional cultural settings, properties, or resources) would be similar to Alternative A; except that in the JMH planning area, the zone of disturbance protection is more specific than Alternative A because the mitigation stipulations are triggered when an activity is proposed within ¼ mile of a site (rather than as within the “vicinity” of a site). Renewable energy development requires surface disturbances associated with vehicle access to the site and site clearing/preparation activities; as well as the construction of facilities, structures, and transmission lines (including pipelines) necessary for the generation, collection, and transport of the energy. Mitigation requirements can result in additional efforts, delays, and costs to renewable energy development projects.

VRM impacts would be similar to Alternative A, except that the VRM acreage offering the most protected status to scenic value quality and preservation of public land in its natural condition is greater under this alternative. Approximately 226,629 acres would be classified as VRM Class I (912 more acres than Alternative A), 607,899 acres VRM Class II (25,227 more acres than Alternative A), 395,683 acres VRM Class III (219,809 fewer acres than Alternative A), and 2,374,706 acres as VRM Class IV (194,283 more than Alternative A). Management actions under this alternative that have the potential to limit renewable energy development in the planning area have more acres designated as low VRM classifications (VRM

Class III and IV) and fewer acres under higher VRM classifications (VRM Class I and II). Fewer restrictions on surface disturbing activities; no required visual simulation or additional needs to determine VRM classifications in certain areas; and smaller VRM buffer distances along the Continental Divide National Scenic Trail reduce potential limitations to renewable energy development projects in the planning area.

This alternative provides for minimum protection of crucial habitats and sensitive resources in ROWs, corridors, and transportation management actions. Additionally, BLM-administered public lands within the planning area would be available for agricultural entry under Desert Land Entry (43 CFR 2520). Renewable energy development requires the ability to utilize specific land sites that have adequate wind, sunshine, biomass, or geothermal resources to support energy generation. Fewer restrictions, prohibitions, and protection stipulations under this Alternative, could potentially facilitate access to development sites, vehicular routes, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development. Opening the planning area to agricultural entry could increase competition for available lands for renewable energy development.

The management actions for renewable energy development under this Alternative are similar to Alternative A, except ROW exclusion and avoidance areas would be fewer (1,580 acres excluded and 1,734,873 acres avoided; 179,520 and 318,441 fewer acres than Alternative A, respectively). Same as Alternative B, additional measures and BMPs could be identified and required to protect resources and resource uses. Fewer ROW exclusion and avoidance areas under this alternative, could potentially improve access to development sites, where the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development could occur. ROW exclusion and avoidance areas could preclude renewable energy development. Additional development and operations costs could result from added BMPs/measures.

The actions to designate and manage ROWs and transportation corridors in the planning area would be similar to Alternative A, except designated energy corridors would be retained; new corridors could be designated; and there would be no preferred location of ROWs within existing ROW areas and corridors. In total, 1,580 acres would be designated as exclusion for ROWs (179,520 fewer acres than Alternative A) and 1,734,873 acres would be designated as ROW avoidance areas (318,441 fewer than Alternative A). Fewer ROW exclusion and avoidance areas under this alternative, could potentially improve access to development sites, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development. Retaining and/or designating new corridors and reducing restrictions on the placement of ROWs supports the development of transmission/pipe lines associated with renewable energy development. ROW exclusion areas would preclude renewable energy development.

The actions to designate and manage travel in the planning area would be similar to Alternative A, except five backcountry byways would not be retained and additional travel routes that meet the criteria for designation as backcountry byways would not be considered. The land use and VRM restrictions and mitigation requirements that could be applied to byway road developments could impact the placement of facilities, structures, and transmission/pipe lines associated with renewable energy developments. The actions of not retaining existing backcountry byways or designating new ones under this alternative could potentially improve access to development sites where the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development could occur.

The actions to manage recreation would be similar to Alternative A, except fewer designated recreation areas would be retained, smaller restriction zones for surface disturbing activities would be implemented, and ROW development could occur in the 14 Mile Recreation Area. Overall, the fewer restrictions under this alternative, could potentially improve access to development sites where the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development could occur. The addition of VRM Class II management objectives to the western unit of the Wind River Front SRMA could add restrictions to renewable energy development

projects by limiting surface disturbance activities and structures that impact view sheds and settings. A CSU for fluid minerals on the Continental Divide Snowmobile Trail would also place limitations on potential geothermal development sites.

Management actions to protect congressionally designated and/or eligible trails, and NHTs are similar to Alternative A, except that mineral leasing (with standard lease stipulations) and new ROWs could potentially be allowed along (not directly on) the intact road or trail segments of the Overland and Cherokee Trails, Point of Rocks to South Pass Road, and other Expansion Era roads and trails. The fewer restrictions on surface use and surface disturbing activities, and smaller visual impact zones under this alternative, could potentially improve access to development sites where the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development could occur. Same as Alternative B, contributing segments of NHTs would not be available for use as industrial access roads (e.g., fluid mineral drilling access roads, or as haul roads for heavy truck traffic); and the view shed in checkerboard areas of land ownership (federal and non-federal) would be managed to preserve the existing character of the landscape to the extent possible. These actions would impose some limitations on renewable energy developments.

Management of WSAs and WSR public lands would have actions similar to Alternative A, but there would be a greater emphasis on managing designated areas for multiple use. Under this alternative, the Sweetwater River designation would not be retained, so no WSR management actions would be developed or applied. No management actions on this resource could potentially improve access to development sites where the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development could occur.

Under this alternative, no ACECs would be retained (as compared to them all being retained under Alternative A).

Removing all the ACEC-specific land use, VRM, and surface disturbing restrictions under this alternative could potentially improve access to development sites where the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development could occur. Actions that could place some restrictions on renewable energy developments could be through the application of surface use restrictions and seasonal limitations in sensitive wildlife habitats (e.g. crucial winter range, parturition areas, migration corridor, and Special Status Species nesting and brood rearing habitat).

#### **4.20.5 Alternative D**

Under this alternative, impacts on renewable energy resources would not be anticipated or would result in negligible impacts as a result of implementing management actions for locatable minerals, solid leasable minerals, saleable minerals, livestock grazing, and OHV travel.

Impacts on renewable energy development from managing water resources, wildland fire, forest and woodland resources, vegetation, fish and wildlife, Special Status Species, cultural and paleontological resources, travel and transportation resources, and recreation would be the same as Alternative A.

Impacts on renewable energy resources from implementing soil management actions would be similar to those identified under Alternative A. Areas with limited reclamation potential soils (those with limited reclamation potential as per the NRCS soil rating) would be designated avoidance areas for surface disturbing activities, which would restrict activities related to renewable energy development and maintenance. In addition, under this alternative, an operator must submit an approved mitigation plan before a proposed project on limited reclamation potential soils will be approved. Avoiding areas with limited reclamation potential soils and requiring mitigation plans could preclude renewable energy development in some areas, require that some projects be redesigned and reduced in size, and result in reduced development



across the planning area.

Under Alternative D, lands with wilderness characteristics would be managed for multiple use or with existing management, such as ACECs. Similar to Alternative B, the management could reduce renewable energy development activities, but to a far lesser degree than under Alternative B. Renewable energy development activities could occur within these areas, but could preclude some development projects, result in project relocation, or cause projects to be scaled back to help protect wilderness characteristics.

Impacts on renewable energy development from the management of fluid mineral leasing and development would be similar to those described under Alternative A, except additional restrictions on fluid mineral leasing could result in reduced development of geothermal resources. Geothermal resource development activities are subject to the same restrictions applied to fluid mineral leasing and development. Under Alternative D, 768,989 acres would be closed to oil and gas leasing (228,968 more acres than under Alternative A), which would increase the availability of geothermal development activities and could result in more energy production from geothermal resources compared with Alternative A.

Impacts on renewable energy development from managing visual resources would be similar to those presented under Alternative A, except more restrictive VRM classifications would be applied to a larger area, which would restrict the ability to develop renewable energy resources. Approximately 1,178,718 acres would be classified as VRM Class II (596,046 more acres than under Alternative A) and 1,455,234 acres would be classified as VRM Class IV (725,189 fewer acres than under Alternative A). Managing development on the landscape to be consistent with increased VRM Class II areas and decreased VRM Class IV areas could result in decreased development or require that renewable energy projects be redesigned to maintain consistency with VRM class objectives, which could lead to additional project costs and delays. This would be especially true for wind and solar energy developments, as these projects have high potential to impact visual resources due to the visual intrusions associated with the structures used for such energy production.

Impacts to renewable energy development from implementing actions for lands and realty management would be similar to those presented under Alternative A, except a significant increase in ROW exclusion areas would prohibit renewable energy development across a larger area. Approximately 286,289 acres would be managed as ROW exclusion areas (140,420 fewer acres than under Alternative A) As a result, renewable energy development would be precluded within the exclusion areas, which would likely reduce overall renewable energy development across the planning area. ROW avoidance areas could potentially limit access to development sites, the placement of facilities, structures, and transmission/pipe lines, and site preparation and construction activities associated with renewable energy development.

Impacts on renewable energy development from managing special designation areas would be similar to those presented under Alternative A, except they would occur over a larger area and thereby further restrict the ability to develop renewable energy sources. Surface disturbance restrictions and ROW exclusion and avoidance areas designed to protect important historic, cultural, wildlife, and scenic values across additional and expanded ACECs would preclude or restrict the placement of facilities associated with renewable energy. The acres designated as ACECs would decrease to 246,634 acres, which represents a 13.9% decrease compared with Alternative A.

## 4.21 SPECIAL DESIGNATIONS

Special designations are identified and managed to protect the important historic, cultural, wilderness, wildlife, vegetation, soil, or watershed values for which these areas were designated. Therefore, potential impacts on special designations within the planning area are analyzed throughout Chapter 4 under the sections that address impacts on these resource values. For analyses on these values, refer to those appropriate sections in this chapter and Appendix C. The analysis below in this section only addresses changes to the boundaries of special designations, as those would have a direct impact on the ability to protect

the resource values for which these areas were designated.

National Scenic and Historic Trails special designations are also identified in the analysis below, in this section and throughout Chapter 4 alternatives.

### 4.21.1 Assumptions

The analysis is based on the assumption that existing management prescriptions would provide the necessary protections for which the special designations were designated.

### 4.21.2 Alternative A

Maintaining the designation of 10 ACECs, totaling 286,450 acres (Table 2-12, Map 2-29), will ensure special management attention is generated to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources and other natural systems or processes within the ACECs. Other uses that do not impair the relevant and important values for which an ACEC was established will occur in these areas. The designation ensures the recognition that significant values exist and will be accommodated when managing multiple uses within the ACECs, through the application of terms and conditions designed specifically to protect the values in these areas.

Maintaining the designation of six management areas, totaling 580,010 acres, would continue the application of special management to protect the sensitive resources for which these areas were established.

Maintaining the designation of 13 WSAs, totaling 227,960 acres, would serve to preserve wilderness characteristics by implementing the management policy of BLM Manual 6330 *Management of Wilderness Study Areas*, so as not to impair the suitability of such areas for designation by Congress as wilderness. Resource uses that could impair the WSA's wilderness characteristics would not be allowed to occur.

Maintaining the designation of 9.7 miles of rivers as Wild (5.8 miles), Scenic (0.5 miles), and Recreation (3.4 miles) would provide for the protection of the outstanding remarkable values (e.g., scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values) these free-flowing rivers and immediate environments possess.

### 4.21.3 Alternative B

The potential impacts to special designations would be the same as those presented under Alternative A, except they would occur over a larger area for ACECs and management areas and thereby offer greater protections to important historic, cultural, wildlife, and scenic values in these areas. The acres designated as ACECs would increase greatly to 1,605,660 acres (460% increase) and extend to 16 ACECs compared with Alternative A (Table 2-12, Map 2-30). The areas designated as management areas would decrease to 183,938 acres (68% increase), compared with Alternative A. This is because many of the existing management areas would be designated as ACECs under this alternative, which would increase the level of protection to important historic, cultural, wildlife, and scenic values in these areas. The potential impact to WSAs and WSRs would be the same as those presented under Alternative A.

### 4.21.4 Alternative C

The potential impacts to WSAs would be the same as those presented under Alternative A. The impacts on all other special designations discussed under Alternative A above would not occur, as the designations for ACECs, management areas, and WSRs would be eliminated under Alternative C.

### 4.21.5 Alternative D

The potential impacts to special designations would be the same as those presented under Alternative A, except they would occur over a smaller area for ACECs and other management areas (Table 2-12, Map 2-32) and thereby offer fewer protections to important historic, cultural, wildlife, and scenic values in these areas. The acres designated as ACECs would decrease to 246,634 acres, which represents a 13.9% decrease compared with Alternative A. The areas designated as management areas would decrease to 312,980 acres (46% decrease compared with Alternative A). The potential impacts to WSAs and WSRs would be the same as those presented under Alternative A.

## 4.22 SOCIOECONOMICS

This analysis mainly addresses impacts in the socioeconomic study area. As explained in the Socioeconomic Baseline Report (BLM 2013), this is the area most strongly linked economically and socially to BLM-administered lands and resources in the RSFO. The study area consists of all of Fremont, Lincoln, Sublette, Sweetwater, and Uinta counties. Where appropriate, the analysis identifies impacts that would occur beyond the boundaries of the socioeconomic study area.

Note that in economic and social analyses, the term “impact” refers to a change in the social or economic environment and does not imply whether these changes are positive or negative outcomes. The “direction” of the impact should be clear from the context but may also vary depending on the perspective of the reader. For instance, generation of jobs and income within the study area is considered by most people who live in the area to be a positive effect. Social impacts may be judged differently by different stakeholders. For instance, stakeholders who tend to view natural resource development as essential to their communities may view rapid oil and gas development as aligned with their personal and community interests, while others who tend to favor conservation may feel it is contrary to their or their community’s interests.

Some socioeconomic impacts are addressed quantitatively below. Many impacts, including both economic and social impacts, can only be addressed qualitatively given the available data and information.

### 4.22.1 Assumptions

The analyses in this section are based on the following assumptions:

- Market-based economic relationships, such as purchases between industries and relationships between value added, economic output, labor income, and employment, will remain similar to current relationships throughout the planning period.
- BLM-administered land will continue to provide ecosystem services, and people will continue to derive market and nonmarket values from these ecosystem services.
- Housing supply and costs and community infrastructure and services may be constraints on population growth in some locations within the planning area.
- The pace and timing of mineral development activities is dependent on a variety of factors outside the management decisions of BLM. These include national and international energy demand and prices, production factors within the planning area, and business strategies of operators. The RFD (BLM RFD 2016) projects expected rates of oil and gas well drilling, and future production volumes. Future coal and trona production have been projected based on historical production and BLM staff knowledge of operator practices and plans. Actual economic impacts could vary if future development or production varies from these projections, or if commodity prices change.
- Royalty revenues derived from activities on BLM-administered land would continue to be distributed among communities within the socioeconomic study area, the state, and the Federal Government at the same or similar distribution shares as currently.

- Demand for use of BLM-administered land for livestock grazing will continue through the study period at similar rates as currently, with supply of forage for this purpose subject to provisions of the management alternatives.
- Demand for use of BLM-administered land for recreational activities, including OHV use, throughout the planning area will remain steady or increase through the study period, with supply of land for this purpose subject to provisions of the management alternatives.

Additional assumptions for the analysis are discussed in the next section and in Appendix N, Technical Report: Social and Economic Impact Analysis Methodology.

## 4.22.2 Methods of Analysis

### Market Values Economic Impact Analysis

The socioeconomic analysis relies on quantitative and qualitative discussions to convey potential impacts of management actions under each alternative.

#### Quantitative Economic Impact Analysis

A quantitative economic analysis approach was used when possible given adequate available information and resources. In this EIS, adequate data was available for five resource uses: livestock grazing, oil and gas development and production, coal production, trona (soda ash) production, and recreation. The coal and trona ash analyses were conducted separately, based on available data for each industry, but the results were combined for presentation in this EIS in order to protect potentially proprietary data given the small number of operators in each industry. The economic analysis examines changes in economic activity and is not a cost-benefit analysis. Please reference the 2013 RSFO Socioeconomic Baseline Report for a comprehensive analysis of additional socioeconomic impacts associated with the management area that are not otherwise discussed in this section.

The basic strategy used was to first identify how management actions under the alternatives may affect resource use levels, and then to monetize the direct impacts associated with these changes. For instance, direct impacts include expenditures made by oil and gas companies to drill a well and to complete the well for production. Direct impacts also include the value of the oil and gas that is produced and sold. Direct impacts were estimated based on anticipated levels of resource use (e.g. number of wells drilled, number of recreation visits) for each alternative.

Next, direct impacts were run through a customized input-output model to estimate the total amount of economic activity that would be generated as the direct impact ripples through the regional economy. Total impacts include the indirect economic activity stimulated by directly affected industries purchasing goods and services that are necessary inputs to production, and as labor income generated from production is spent by the households that receive the income.

The total effects were estimated in this EIS through use of the IMPLAN (Impact analysis for PLANning) model.<sup>1</sup> The IMPLAN model was originally developed by the Forest Service and is commonly used by the BLM and many other government and private sector organizations to estimate the total economic impacts of various activities, actions, and policies. The model tracks inter-industry and consumer spending in a local or regional economy, allowing estimation of “indirect” and “induced” economic impacts in the local economy that result from the original economic activity or a change in economic activity. Indirect impacts result from local inter-industry purchases caused by the direct impact. Induced impacts result from re-spending of labor income (i.e., local purchases by households of employees and proprietors of the affected industries). The re-spending represented by indirect and induced impacts is often referred to as the “multiplier effect.”

<sup>1</sup> An additional analysis using the REMI model was also conducted. See the “REMI Model Analysis” section below for further information.

Outputs of the IMPLAN model include employment, labor income, and gross regional economic output. It is important to note that IMPLAN, based on some of its data sources, does not distinguish between full-time and part-time jobs. Sectors with higher labor earnings per job are likely to reflect a high proportion of full-time jobs, while sectors with low labor earnings per job often reflect a significant number of part-time jobs.

The IMPLAN model uses data specific to the local economy wherever possible, but also uses some data based on national-level economic relationships. Therefore, the model benefits from “calibration” of some of its data to better reflect the local economy. For this study, IMPLAN was calibrated based on work the University of Wyoming has done with the model in Wyoming over many years, and with data specific to this study. The specific IMPLAN impact analysis methodology and assumptions for each resource use are described in general in subsections below, and in greater detail in Appendix N, Technical Report: Social and Economic Impact Analysis Methodology.

In addition to estimating employment, labor income, and gross regional economic output with the IMPLAN model, the quantitative economic impact analysis also estimated – using tax and royalty rates – the following public revenues that accrue to various governments:

- Mineral severance taxes on oil, gas, coal, and trona collected by the State of Wyoming. The state redistributes some severance tax revenue to local governments.
- Ad valorem taxes on oil, gas, coal, and trona, collected by the counties based on state assessments of the value of mineral production.

Selected tables in this chapter report the federal share and the state share of federal mineral royalties separately and report the mineral severance taxes and ad valorem taxes. Gross revenues are reported; subsequent distributions of the revenues were not estimated.

#### Outputs from Bureau of Land Management-Administered Land

To develop the direct economic impacts of resource uses on BLM-administered land, the BLM first estimated the annual level of resource use under each alternative. These use levels, or outputs, are readily quantifiable values such as AUMs of forage use, number of oil and gas wells drilled, tons of coal produced, number of recreation visits, etc. Table 4-11 summarizes the estimated outputs by alternative. For livestock grazing, oil and gas development, coal and soda ash production, and recreation, the BLM assumed that the level of use would be the same across every year of the study period, 2016–2031. This assumption was based on the available data. For oil and gas production, use levels and economic impact would increase in every year of the study period as additional wells come into production; the value in Table 4-11 is only for the first year of the study period, 2016. The following sections describe the basis for the annual estimates at a high level, and Appendix N, Technical Report: Social and Economic Impact Analysis Methodology, provides further detail.

**Table 4-11. Annual Activity / Outputs from Bureau of Land Management-Administered Land by Alternative**

	Alt. A	Alt. B	Alt. C	Alt. D
Livestock Grazing (AUMs – Billed Use) <sup>1</sup>	147,631	147,631	147,631	147,631
Livestock Grazing (AUMs – Total Authorized Use) <sup>1,4</sup>	303,238	297,066	160,387	303,238
Conventional Oil and Gas Wells Drilled <sup>1</sup>	232.4	61.5	238.8	230.2

CBNG Wells Drilled <sup>1</sup>	6.2	3.0	7.2	6.7
Crude Oil (bbls – 2016) <sup>2</sup>	2,047,125	542,141	2,104,317	2,026,774
Natural Gas (mcf – 2016) <sup>2</sup>	82,824,048	21,947,512	85,144,702	82,005,381
Coal and Soda Ash (short tons) <sup>1,3</sup>	4,107,267	4,107,267	4,107,267	4,107,267
Recreation (visits – Low Visitation) <sup>1</sup>	426,439	426,439	426,439	426,439
Recreation (visits – High Visitation) <sup>1</sup>	847,318	847,318	847,318	847,318

<sup>1</sup> Based on the available data, the analysis assumes a constant annual activity level.

<sup>2</sup> Initial value; this would increase each year from 2016 due to increasing number of wells in production.

<sup>3</sup> Values combined to protect confidentiality of data from individual operators.

<sup>4</sup> The total number of permitted active AUMs per the Green River RMP is 318,647; however, this includes AUMs outside of the RSFO.

### Methods for Livestock Grazing

The value of grazing in a specific area can be estimated based on the grazing use of the area in AUMs, and the value of an AUM. The direct value of production per AUM was estimated based on regional livestock production value data and ratios in the livestock economics literature. The figures for the value per AUM for cattle or sheep grazing were multiplied by the estimates of grazing use (number of AUMs) by livestock type under each alternative. The result was the total economic value of livestock production, which was used as the direct impact input to the IMPLAN model.

The estimates of grazing use were based on: a) the 10-year average (2006–2015) of billed AUMs, and b) total authorized AUMs of forage use for cattle, sheep, and other livestock for the RSFO. Billed forage use is the closest available proxy for actual forage use. Because billed use may exceed actual grazing use, the economic analyses may overstate the actual economic impacts of grazing to some degree. Estimates were also prepared for total authorized forage use in order to indicate the maximum possible economic impact of grazing on BLM-administered land; however, billed use was considerably below authorized use for every year of the 2006-2015 period. The sections below that focus on each alternative use the analysis based on historical billed AUMs. The section that summarizes the quantitative economic impact analysis results also provides the results for total authorized AUMs.

Total authorized AUMs are the same for Alternatives A and D. Total authorized AUMs are 6,202 less under Alternative B due to provisions of that management alternative (prohibition on grazing in certain allotments). Under Alternative C, total authorized AUMs are limited to the highest level of billed use over the last 10 years (2009 – 2018). That figure is 160,387 AUMs, which is 142,881 less than the authorized AUMs under Alternatives A and D.

The billed use estimates did not vary between the alternatives. While forage utilization and billed use could vary somewhat under these alternatives (e.g., due to differences in treatment of voluntary relinquishment of permits or grazing preference), the differences between the alternatives could not be quantified for billed use. Also, while total authorized AUMs decrease in Alternatives B and C, total authorized AUMs are still greater than or equal to historical total billed use in the RSFO; therefore, the BLM believes that billed use would not be affected by the reduction in authorized AUMs under Alternatives B and C.

In all cases, the AUMs used in the economic impact analysis were adjusted to limit the results to economic activity that accrues within the five-county socioeconomic study area. For each allotment, RSFO rangeland management staff familiar with the allotments and permittees identified probable locations of operator purchases for livestock supplies, services, and labor. This analysis estimated that 77.1% of the economic impact associated with RSFO AUMs accrues within the five-county socioeconomic study area. The remainder accrues outside the five counties, primarily in Idaho and Utah, and these impacts are not included in the results tables below.

The reader should note that the economic impact figures below only represent livestock grazing on BLM-administered land. They do not represent the total impact of livestock grazing on all land, public and private, in the RSFO.

#### **Methods for Oil and Gas Development and Production**

The analysis for oil and gas economic impacts was divided into two phases of oil and gas economic activity:

- Development (drilling and completion)
- Production.

This analysis focuses only on *new* oil and gas wells that would be drilled into federal mineral estate within the RSFO because the management decisions under consideration in the RMP would not apply to valid and existing mineral rights. The economic impact figures for the new oil and gas wells are a subset of the economic impacts of all oil and gas wells (*new and existing*) on federal mineral estate in the field office, which in turn are a subset of the economic impacts of all oil and gas wells on all federal *and non-federal* mineral estate in the field office and planning unit (i.e., including wells on privately and state-owned mineral estate). Put another way, the impact estimates do *not* include the economic impacts of any existing wells on federal mineral estate, nor of any wells (new and existing) on non-federal mineral estate.<sup>2</sup>

The analyses for development utilized the estimated well numbers from the RFD scenario. The RFD scenario estimated total wells drilled across the planning period. As shown by recent history, drilling activity can vary substantially from year to year. Therefore, the total estimated wells from the RFD were allocated equally to each year of the study period for the purposes of conducting the economic impact analysis. The success (completion) rate for new wells was assumed to be 85% for conventional wells and 95% for CBNG wells, based on recent experience as observed by the RSFO petroleum staff. Estimates of per well drilling and completion costs were based on data from industry and information from RSFO and High Desert District staff. The percentages of total well costs that are spent within the socioeconomic study area were based on data from industry, the U.S. Energy Information Administration, and previous BLM analyses in Wyoming. The combination of wells drilled, completion rates, costs, and percent local expenditures determined the direct impacts used in the IMPLAN model.

The analyses for production utilized the oil and gas production volumes by year from the RFD scenario. Production volumes were multiplied by projected annual oil and gas prices in the Dakotas/Rocky Mountain Region between 2016 and 2031, as reported by the U.S. Energy Information Administration and expressed in 2014 dollars. These estimated revenues were then entered into the IMPLAN model to estimate the total economic impacts from production.

Ad valorem and severance tax revenues estimates were developed from per unit tax revenue rates from the Wyoming Department of Revenue's 2015 Annual Report. These estimated rates were applied to the forecasted market sales values, with the assumption that the Wyoming tax structure will remain constant over the analysis period. Estimates for Federal Mineral Royalties, both the Wyoming and federal shares, were based on the current Federal Government royalty rate of 12.5% royalty rate (Wyoming receives nearly half of this, or 6.0%). Royalties do not include bonus bids (a one-time additional revenue source for some leases). Royalties also do not include annual rental fees paid on federal mineral leases before they begin yielding production, which are a very small revenue stream.

#### **Methods for Coal and Trona (Soda Ash) Production**

For each of these industries, there is only one phase of economic activity – the production phase. There is no development phase equivalent to the drilling and completion activities in the oil and gas industry.

The economic analysis for each industry involved two major steps:

- Estimating the amounts of production on BLM-administered coal and trona in the planning area under each management alternative.
- Estimating the economic impacts based on the value of production.

Average production from BLM-administered coal within the RSFO from 2007–2015 was used as the estimate of future production. This period showed variations in production from year to year. Variations are also likely in the future, so the average value was used. In the RSFO, coal is produced from both surface and underground sources. These sources have different cost structures and tax and royalty rates. Future production from each source was based on the average surface to underground production ratio for 2013–

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<sup>2</sup> A nuance here is that the figures for oil and gas production do include estimated production from the wells the RFD estimated would be placed into service from 2013-2015. In the RFD production estimates for each year from 2016 to 2031, it was not possible to separate out the production from the 2013-2015 wells from the total production.

2015, applied to the estimate of future production described above. The estimated production volumes were then multiplied by the price of coal, resulting in an estimate of the total annual sales value for coal production. The estimated future price was based on U.S. Energy Information Administration 2016–2031 reference case projections for western Wyoming minemouth prices, using the average of the price projections for all those years, which was \$40.24 per short ton, expressed in 2014 dollars. The coal sales values were then entered into the IMPLAN model, Sector 22, Coal Mining, to estimate the total economic impact from coal production.

In the case of trona, there are two steps in production that are both encompassed in the analysis. First, trona is mined. Second, the vast majority of the trona ore is processed into soda ash, which is then sold and shipped to other industries. Some additional trona derivative products are also created and sold. These include purge liquor, sulfide, sodium bi-carbonate, and sodium sesquicarbonate. A small amount of trona ore is also sold separately. The value of these products is not included in the economic impact analysis. Together, they represent from 7.4% to 7.9% of the total sales value of all (federal, state, and private) trona-derived products from Sweetwater County according to data from the Office of Natural Resources Revenue.

Average soda ash production from BLM-administered trona from 2007–2014 was used as the estimate of future production. This period showed variations in production from year to year. Variations are also likely in the future, so the average value was used. The estimated soda ash production volume was then multiplied by the price of soda ash, resulting in an estimate of the total annual sales value for soda ash production. The 2014 Sweetwater County price of \$133.91 per ton from the Wyoming Department of Revenue was used as the estimated future price. This assumes that soda ash prices will remain, on average, constant through the duration of the study period. The soda ash revenue was entered into the IMPLAN model to estimate the total economic impact of soda ash production. The total economic impact of trona mining was estimated separately by entering trona mining revenue into a separate sector of the IMPLAN model, after removing the linkage between the soda ash and trona sectors to avoid double-counting the impacts from trona revenue.

Public revenues for coal and trona were estimated by multiplying the sales value by the current federal mineral royalty rates (portion retained by the Federal Government, and portion returned to the state) and current ad valorem and severance tax rates. Royalties do not include bonus bids and rents. The ad valorem and severance tax analysis was adjusted by the Wyoming Department of Revenue assessed to gross ratios.

The economic impacts of coal production are reported together with the impacts of trona production. Adding these results together was necessary in order to avoid potential disclosure of proprietary information due to the small number of operators in each industry.

#### Methods for Recreation



The direct economic effects of recreation on public lands administered by the RSFO can be estimated by multiplying annual recreational visitation as reported by BLM’s Recreation Management Information System (RMIS), by average visitors’ expenditure profiles. Table 4-12 shows the total visits in the RSFO in recent years.

**Table 4-12. Total Recreation Visits to the Rock Springs Field Office, 2011–2015**

Fiscal Year	Visits
2011	429,861
2012	426,439
2013	452,916
2014	518,082
2015	847,318
Five-Year Average	534,923
Low Year Visits	426,439
High Year Visits	847,318

Source: Recreation Management Information System data

While visitation in the RSFO has increased in recent years, it is unknown if this trend will continue. Therefore, the BLM conducted two economic analyses, for high and low visitation scenarios. The low scenario assumes that visitation over the 2016–2031 study period would average out as the low year visits number (426,439) and the high visitation scenario assumes that visitation would average out to the high year visits number (847,318).

While the alternatives differ in terms of recreation management actions, there is no basis for reliably estimating how the management actions will affect recreation visitation numbers. For instance, in Alternative C, a new open play area would be added. There is no basis for confidently predicting the amount of visitation the new play area would draw. Therefore, the total low and high scenario visitation numbers for Alternative C are the same as for Alternative A; however, it is likely there would be some additional visitation and economic contributions under Alternative C.

Due to the lack of recreation expenditure data for the RSFO, data from the National Visitor Use Monitoring (NVUM) program of the U.S. Forest Service (USFS) was used to provide proxy values for expenditures by recreationists in the RSFO. The NVUM program provides a robust data source that is widely used for recreation economic impact analysis for areas besides USFS-managed lands. This is done by identifying national forest units that are reasonably analogous to another recreation management area and applying the recreational expenditure data from NVUM to other area-specific recreation use data or estimates.

The USFS unit deemed most analogous to the RSFO in terms of recreation use was the Ashley National Forest. However, while the BLM used some of the NVUM data for the Ashley National Forest, the NVUM recreation “trip type” data for the national forest was replaced by analogous estimates for the RSFO developed by a RSFO recreation specialist. This is because the RSFO tends to get more non-local visitation than the Ashley National Forest. This is because the Flaming Gorge Reservoir, located on the National Forest and not part of the RSFO, sees significant local use, while the “brand” of recreation on the RSFO is more remote, which attracts a higher proportion of non-local visitors.

Expenditure values, also referred to as visitor spending profiles, from the NVUM for the Ashley National Forest were applied to the visitation data for the RSFO using a detailed procedure described in Appendix N, Technical Report: Social and Economic Impact Analysis Methodology. The estimated total direct expenditures were used in the IMPLAN model to estimate the indirect, induced, and total economic effects

of recreation. The BLM acknowledges that certain recreation activities on BLM-administered land may generate visitor expenditure patterns that differ from the NVUM expenditure values. However, the BLM believes that in total—averaged across the many different recreation activities that take place in the RSFO—the per visit expenditure values from the NVUM are reasonably close to the per visit expenditures that occur in the socioeconomic study area due to recreation on BLM-administered land in the RSFO. Appendix N, Technical Report: Social and Economic Impact Analysis Methodology, discusses the use of NVUM data further, including its applicability for OHV recreation in particular.

The recreation economic analysis presents two views of the economic effects of recreation: economic impact and economic contribution. These views are in addition to the low and high visitation scenarios.

Economic impact measures only the effects of “new” income in the study area; in the case of recreation, economic impact is based on all spending of non-local residents on local recreation, and the spending by local residents that would be lost to other regions if the local BLM recreational opportunity did not exist (some spending by local residents would continue, using local substitute recreation opportunities). Economic contribution includes the effects of all expenditures made by local residents (roughly, individuals who live within the socioeconomic study area), as well as the role of spending from recreators from outside the study area. In other words, economic contribution is based on all spending of local residents on local recreation and all spending of non-local residents on local recreation. Economic impact is the measure used in the analyses above of oil and gas development and production, coal production, trona (soda ash) production, and livestock grazing. Local residents buy only a very small proportion of the total output of those industries, so a measure of economic contribution would be only slightly greater than the measure of economic impact. In the case of recreation, however, local residents make considerable recreation-related expenditures (gas, food, and so on while on local trips), so it is fair to include those expenditures in an analysis of the economic role of recreation. Put another way, expenditures by local and non-local recreationists alike help keep local businesses going.

#### **Base Year Dollars and Discounting**

All dollar figures throughout the economic analysis are in constant 2014 dollars. This is the base year used in the IMPLAN model.

Some of the results tables below summarize the economic impacts across the entire study period, 2016–2031. This period reflects the analysis period of the RFD scenario, which extended to 2031.

In the summary tables for the entire study period, economic impacts in future years were *discounted* to adjust for the “time value of money.” This is an economic concept that refers to the value of a given amount of money being less in the future. Most people, presented with a choice, would rather have a dollar now than a dollar 10 years from now, or even one year from now because the dollar can be put to productive use now. When monetary values of an action vary over time, economists adjust for the time value of money by applying an annual discount rate to the amounts in future years. This is different than adjusting for inflation, which is a loss in money’s value in the future due to a rise over time in prices for products and services across the economy. The result of adjusting for the time value of money is known as the “present value.” Providing present values for 2016–2031 for all the economic impact analyses allows for comparison – based on a reasonably lengthy period – of the relative economic impacts of each resource use and alternative. The BLM used discount rates of 3% and 7% to present different economic perspectives on the discount rate as recommended by the Office of Management and Budget. In simple terms, the lower rate reflects how consumers make consumption decisions, and the higher rate reflects how industry makes capital allocation decisions (OMB 1992, OMB 2003, OMB 2011).

#### **REMI Model Analysis**

The direct, indirect, induced, and total economic effects of the management alternatives were estimated in this study through use of the IMPLAN model as described above. An additional analysis using the same

primary impact data and a different model – the REMI model developed by REMI, Inc. – was conducted by the State of Wyoming Economic Analysis Division in collaboration with the BLM and the Cooperating Agencies. Appendix O, REMI Model Application and Discussion, provides a detailed discussion of the REMI modeling process and a comparison of the results from the two models. Appendix O concludes that the differences in results between the IMPLAN and REMI models are not so great that they would lead to different management decisions (selection of a different preferred alternative) if REMI were used for the quantitative economic analysis instead of IMPLAN. The results of the two models do not tell decisively different economic stories about the nature of the local economy or the alternatives. For NEPA purposes, all conclusions regarding the quantified economic effects of the alternatives are based on the IMPLAN model analysis, as presented in this section of Chapter 4.

### Qualitative Economic Impact Analysis

When direct impacts cannot be readily quantified, often the economic impacts can still be described qualitatively. In such cases, the analytical approach used in this EIS was to describe the type of impact in a base scenario (Alternative A, the No Action Alternative) and then assess the relative changes (qualitative indications of increases or decreases in economic values) that would be likely under other alternatives.

Some management decisions may result in increased costs to operators (the firms or individuals who undertake the activities) or to project proponents. The economic impacts of decisions that increase costs for operators and/or project proponents are many and can be complex. Several results can occur, sometimes simultaneously:

- *Reduced economic activity:* Cost increases may cut into profitability and drive delays to, reductions in, or cessation of operations or projects. In general, it is rare for cost increases to directly preclude projects or result in operators going out of business, as project proponents and operators will seek other approaches, such as reconfiguring or moving projects or operations. However, projects or operations may be scaled back, or if they are moved a great distance, the local economy may experience a loss.
- *Increased economic activity:* Where operations or projects are not delayed or reduced substantially, or terminated, increased costs may also generate additional economic activity in the form of income and jobs in the economic sectors receiving the increased expenditures. For instance, if restrictions under an alternative result in a new power line having to take a longer route, additional expenditures for materials, equipment, and labor would be made. These increased expenditures would support some amount of additional income and employment. However, increased costs may also represent opportunity costs; that is, the project proponent or society may have benefited more if the additional funds were used in another way.
- *The net effect:* In many cases it is not possible to identify which effect – increased or decreased economic activity – will predominate, without considerably more information.

In the analysis below, where management actions would potentially increase costs to operators or project proponents, these increased costs are pointed out and discussed qualitatively.

### Nonmarket Value Impact Analysis

The term nonmarket values refers to the benefits individuals attribute to experiences of the environment or uses of natural and cultural resources that do not involve market transactions and therefore lack prices. Because these values are not priced, they are difficult to estimate. Also, they are not directly comparable to estimates of income derived from market transactions such as commodity sales or purchases by recreationists. For example, a “consumer surplus” estimate of nonmarket value reflects the difference between total willingness to pay and transactions in market, while commodity and expenditure value estimates, like those generated by the IMPLAN model and presented in Section 4.23.3 and the alternative-specific annual impact and net present value tables, only reflect transactions in markets. Nonetheless, BLM

guidance calls for the BLM to make effort to identify and assess impacts to nonmarket values in the planning process (BLM Instruction Memorandum No. 2013-131, Guidance on Estimating Nonmarket Environmental Values, May 31, 2013). The Socioeconomic Baseline Report provides background information on nonmarket values, including discussion of different types of nonmarket values.

For this RMP/EIS, the BLM estimates nonmarket values associated with recreation using a “benefits transfer” methodology described in the Impacts of Alternative A section below. Because of uncertainties inherent in quantification of nonmarket values, the analysis is conducted for low and high recreation visitation scenarios. Potential differences between the alternatives in the nonmarket values associated with recreation are described qualitatively. Additional types of nonmarket values, and how they may vary between alternatives, are described qualitatively.

### **Social Impact Analysis**

Some social impacts, especially those impacts related to certain demographic characteristics (such as population and age distribution), housing, and community services, are driven in large part by changes in economic activity. Other social impacts may arise with or without effects to economic activity including, for example, impacts on quality of life, recreation and amenity values, and traditional land uses and associated cultural values. Social impacts may be marginal or substantial, depending on the degree to which new and revised management actions alter the local social conditions.

Methods exist to quantify some social impacts; however, in this analysis social impacts are described qualitatively. This is because social impacts of BLM management decisions are typically not amenable to quantitative analysis. For instance, it is difficult to reliably translate potential for future resource development into population change estimates without having plans for their development. In other cases, the impacts are to values and attitudes and cannot readily be quantified. Social impacts also may vary considerably depending on the nature of the alternatives and of the communities involved. For a planning effort that covers as large a geographic area as this effort, analysis of social impacts must necessarily use a broad brush.

A key aspect of the social impacts analysis approach is to address impacts based on the varying points of view of key types of stakeholders. The Socioeconomic Baseline Report identifies several broad categories of stakeholders to BLM management decisions in the RSFO. These categories reflect different linkages people have to public lands. They also reflect distinct sets of attitudes, beliefs, values, opinions, and perceptions about public resources and the effects of various management policies and actions. Categorization of stakeholders is not meant to imply that all individuals and social groups fit neatly into a single category; many specific individuals or organizations may have multiple interests and would see themselves reflected in more than one stakeholder category. The point of categorization is to allow differentiation of social impacts based on broad differences in points of view. The social impacts analyses below assess the alternatives against the different points of view in the broad stakeholder categories.

### **Environmental Justice Impact Analysis**

Definitions and methods for analysis of potential environmental justice (EJ) issues are described in the Socioeconomic Baseline Report. In short, the socioeconomic study area was screened in the Socioeconomic Baseline Report to identify communities with minority and low-income populations that qualify as potential EJ populations based on guidance for EJ analysis from the CEQ. These communities and their potential EJ populations, and assessment of the likelihood of impacts to these populations, are presented in Section 4.23.8 below.

## **4.22.3 Summary of the Quantitative Economic Impact Analysis Results**

### **IMPLAN Model Results**

Appendix N presents multiple tables that allow for easy comparison of the quantitative economic impact results across the alternatives. The economic indicators presented in this section are:

- Total economic output
- Total labor earnings
- Total employment.

Certain estimated public revenues are presented in the sections below that address each alternative in detail.

Readers should keep in mind that the figures from the IMPLAN model and the revenue analysis *only* represent certain quantifiable economic effects of each alternative. Additional, non-modeled economic and social effects would occur under each alternative. These are addressed qualitatively in the sections focused on each alternative.

In the tables in Appendix N, annual estimates are for the first year of the study period, 2016. For livestock grazing, oil and gas development, coal and soda ash production, and recreation, the BLM assumed that the 2016 level of use would also be the average level of use across every year of the study period, 2016–2031. This assumption was based on the available data. For oil and gas production, use levels and economic impact would increase in every year of the study period as additional wells come into production based on the RFD scenario. The net present value estimates in each table in Appendix N encompass the cumulative economic and fiscal impacts of each alternative across the entire study period, based on a discount rate of 3.0% or 7.0%. The net present value estimates take into account both the increasing level of oil and gas production in each year of the study period and the time value of money. Net present value is not an applicable concept for employment. The time value of money does not apply to future jobs versus present jobs. Therefore, the employment figures in the annual impact tables in Appendix N do not account for the projected growth in oil and gas production, and associated jobs, in each year of the study period. Instead, the net present value tables in Appendix N that address each alternative in detail account for this growth in jobs by showing the average jobs in oil and gas production across the study period.

The BLM evaluated several analysis scenarios for grazing and recreation impacts. The first table in Appendix N for each economic indicator presents the analysis scenario for grazing economic impacts for estimated billed use of AUMs and recreation economic impacts for a high visitation scenario. A second table for each indicator presents results for each of the following additional scenarios:

- Grazing economic impact for full use of all authorized AUMS
- Recreation economic impact for a low visitation scenario
- Recreation economic contribution for a low visitation scenario
- Recreation economic contribution for a high visitation scenario.

The following general observations pertain to Tables N.7 through N.12 in Appendix N:

- The estimates for livestock grazing impacts do not vary across the alternatives when billed use is evaluated but do vary when total authorized use is evaluated. This is because, first, Alternative B reduces total authorized AUMs in some allotments, although by a small percentage of total AUMs across the entire RSFO. Second, Alternative C limits total authorized AUMs to the highest level of billed use over the last 10 years (2009 – 2018), which was 160,387 AUMs, considerably less than the 303,238 AUMs under Alternatives A and D. The total authorized AUMs under Alternatives B and C would still be greater than or equal to historical total billed use in the RSFO; therefore, the BLM believes that billed use would not be affected by the reduction in authorized AUMs under Alternatives B and C. The estimates for total authorized use are identical for Alternatives A and D

because differences in management actions affecting livestock grazing under these two alternatives cannot be reliably quantified.

- The oil and gas development and production impact estimates vary across the alternatives according to differences in the RFD for each alternative.
- Although acres open or closed to coal and soda ash differ across alternatives, these acreage differences are not anticipated to have a measurable effect on future production amounts. This is based upon field office specialists' knowledge about coal and soda ash production in the area and their interactions with the companies.
- The recreation impact estimates for all alternatives are identical because differences in visitation based on management actions affecting recreation cannot be reliably quantified.

Table N.7 presents total economic output by BLM program by alternative. Important observations on these results include the following:

- The quantified economic output in the RSFO across all programs totals \$1.734 billion annually in 2016 in Alternative A, \$0.827 billion in Alternative B, \$1.769 billion in Alternative C, and \$1.723 billion in Alternative D.
- The impacts of oil and gas development and production, as well as coal and soda ash production, are considerably greater than the impacts of livestock grazing and recreation. For instance, total economic output from oil and gas development under Alternatives A, C, and D is over 50 times greater than that from livestock grazing and 19 to 20 times greater than that from recreation. Under Alternative B, the differences are about 14 and six times greater. However, these comparisons do not mean that economic activity attributable to livestock grazing and recreation on BLM-administered land is not valuable to the five-county socioeconomic study area economy, especially for the businesses and individuals who directly profit from that economic activity.
- Economic output from oil and gas production is less than output from oil and gas development on an annual basis in 2016, but is considerably greater on a net present value basis across the entire study period, due to increasing production over time as more and more wells come into production each year.
- Total economic output from oil and gas development and production under Alternative C would be slightly higher than under Alternatives A and D. Output from these programs under Alternative B would be considerably lower – approximately 73% to 74% lower under Alternative B than Alternatives A, C, and D.

Table N.8 presents the total economic output results for additional livestock grazing and recreation analysis scenarios. These scenarios compare as follows to those presented in Table N.7:

- Total economic output from livestock grazing if all authorized AUMs were actually used (which has not occurred in recent history) would be almost twice as much as the output based on recent average billed use, except for Alternative C.
- Output from livestock grazing for use of all authorized AUMs under Alternative B would be slightly lower (just over 2% lower) than under Alternatives A and D.
- Output from livestock grazing for use of all authorized AUMs under Alternative C would be considerably lower (by almost half) than under Alternatives A, B, and D.
- The output from recreation under all alternatives in a low visitation scenario would be about half that of the output from a high visitation scenario, when viewed from either the economic impact or economic contribution perspective.

- From an economic contribution perspective, output from recreation is about 18% higher than output viewed from an economic impact perspective, for either the low or high visitation scenario. Economic contribution includes the effects of spending by recreationists who reside within the study area.

Readers should understand that economic output is a very gross level indicator of economic activity. Output is the value of all product and service purchases by intermediate and final consumers. Not all of the components of output actually accrue to the local economy. Much may leak out of the local study area<sup>3</sup> and move to the region where a product is produced (e.g., pipes and other material used in an oil or gas well) or to companies and individuals outside the study area (e.g., returns on capital that accrue to oil company corporate headquarters, stockholders, and lenders). As an example, the IMPLAN model shows that of the direct economic output for RSFO oil and gas production, only about 18% accrues in the socioeconomic study area: about 4% as local employee compensation, and about 14% as purchases of local goods and services that are inputs to production.

Earnings and employment are better indicators of the effects of BLM-administered land on the local (study area) economy. IMPLAN's estimates of earnings and employment are for the socioeconomic study area only. Direct jobs, and associated earnings, are for work taking place in the study area. The model adjusts for leakages out of the study area as some local businesses and workers buy products and services from outside the study area.<sup>4</sup> Thus, the total (direct, indirect, and induced) earnings and employment reported by IMPLAN all occur within the study area.

To summarize, while all economic output reported by IMPLAN is attributable to uses of BLM-administered land within the study area, only a portion of that economic activity actually accrues to the local economy (the study area). Earnings and employment reported by IMPLAN are attributable uses of BLM-administered land within the study area and occur within the study area.

Table N.9 presents total labor earnings by BLM program by alternative. Following are key observations regarding these results:

- Total labor earnings attributable to BLM-administered land in the RSFO total \$379 million annually in 2016 in Alternative A, \$168 million in Alternative B, \$388 million in Alternative C, and \$377 million in Alternative D.
- Oil and gas development provides, by far, the largest amount of total labor earnings on both an annual and net present value basis in Alternatives A, C, and D, but under Alternative B provides somewhat less earnings than coal and soda ash production.
- The net present value of total labor earnings from oil and gas production under all alternatives is considerably less than the net present value of oil and gas development. This result differs from that for total economic output from oil and gas production as shown in the total economic output table (Table N.7), in which the net present value of total economic output is greater for oil and gas

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<sup>3</sup> The socioeconomic study area, consisting of following five counties: Fremont, Lincoln, Sublette, Sweetwater, and Uinta.

<sup>4</sup> IMPLAN assumes all direct earnings accrue within the study area. Therefore, temporary oil and gas workers are a special case. Much of their earnings from work in the study area accrues to their permanent location. Therefore, the induced impacts from respending of their earnings in the study area are manually adjusted, based on data from the Wyoming Wage Records Database maintained by the Wyoming Department of Workforce Services, to reflect the removal of that income from the local economy.

production than for oil and gas development. The difference is because a smaller portion of oil and gas production earnings occur within the study area compared to oil and gas development earnings.

- As with total economic output, earnings would be considerably less for oil and gas development and production under Alternative B than Alternatives A, C, and D.

Table N.10 presents the total labor earnings results for additional livestock grazing and recreation analysis scenarios. The same observations made for output also apply for earnings for these scenarios. Specifically:

- Total labor earnings from livestock grazing if all authorized AUMs were actually used (which has not occurred in recent history) would be almost twice as much as earnings based on recent average billed use, except for Alternative C.
- Total labor earnings from livestock grazing for use of all authorized AUMs under Alternative B would be slightly lower (just over 2% lower) than under Alternatives A and D, and under Alternative C would be considerably lower (by almost half) than under Alternatives A, B, and D.
- The total labor earnings from recreation under all alternatives in a low visitation scenario would be about half that of the earnings from a high visitation scenario, when viewed from either the economic impact or economic contribution perspective.
- From an economic contribution perspective, total labor earnings from recreation are about 18% higher than total labor earnings viewed from an economic impact perspective, for either the low or high visitation scenario.

Table N.11 presents total employment by BLM program by alternative. IMPLAN's employment estimates include part-time, full-time, and overtime work, all expressed as annual average employment. Most of the observations made for earnings also apply for employment, except that net present value is not an applicable concept for employment. The key observations are as follows:

- Annual total employment attributable to BLM-administered land in the RSFO totals 5,435 jobs annually in 2016 in Alternative A, 2,515 jobs in Alternative B, 5,549 jobs in Alternative C, and 5,399 jobs in Alternative D.
- Oil and gas development provides, by far, the largest number of jobs in 2016 in Alternatives A, C, and D, but under Alternative B provides somewhat less jobs than coal and soda ash production.
- Total employment would be considerably less for oil and gas development and production under Alternative B than Alternatives A, C, and D.

Table N.12 presents the employment results for additional livestock grazing and recreation analysis scenarios. The same observations made for output also apply for employment for these scenarios. Specifically:

- Employment from livestock grazing if all authorized AUMs were actually used (which has not occurred in recent history) would be about twice as much as employment based on recent average billed use under Alternatives A, B, and D, but only slightly higher under Alternative C.
- Employment from livestock grazing for use of all authorized AUMs under Alternative B would be slightly lower (about 2% lower) than under Alternatives A, C, and D, and under Alternative C would be considerably lower (by almost half) than under Alternatives A, B, and D.
- The employment from recreation under all alternatives in a low visitation scenario would be about half that of the employment from a high visitation scenario, when viewed from either the economic impact or economic contribution perspective.



- From an economic contribution perspective, employment from recreation is 15% to 19% higher than employment viewed from an economic impact perspective, depending on the alternative and visitation scenario (high or low).

## 4.22.4 Impacts of Alternative A

### Quantified Economic Impacts

Table N.13 in Appendix N summarizes the annual economic and fiscal impacts of Alternative A by program (resource use) and in total. These estimates are based on the first year of the study period, 2016. For livestock grazing, oil and gas development, coal and soda ash production, and recreation, the BLM assumed that the 2016 level of use would also be the average level of use across every year of the study period, 2016–2031. This assumption was based on the available data. For oil and gas production, use levels and economic impact would increase in every year of the study period as additional wells come into production. The increasing production levels were based on the RFD scenario. Table N.14 presents the cumulative economic and fiscal impacts of Alternative A across the entire study period, based on a discount rate of 3%. Table N.15 presents the cumulative impacts of Alternative A based on a discount rate of 7%. These two tables take into account both the increasing level of oil and gas production in each year of the study period and the time value of money. In the case of employment, which is not subject to discounting for the time value of money, the growth in jobs in oil and gas production across the study period is reflected in the figure for average jobs per year in the net present value tables. These three tables in Appendix N all address the livestock grazing analysis scenario based on historical billed AUMs, and the recreation analysis scenario based the high visitation scenario and using the economic impact (versus economic contribution) perspective.<sup>5</sup> For other scenarios for grazing and recreation, see the earlier section 4.23.3 Summary of the Quantitative Economic Impact Analysis Results.

Key high-level observations regarding the quantified economic impacts for Alternative A include:

- Total economic output attributable to BLM-administered land in the RSFO across all programs totals \$1.734 billion annually in 2016 in Alternative A. Earnings total \$379 million annually. Employment totals 5,435 jobs annually.
- Ad valorem taxes, severance taxes, and federal mineral royalties are important revenue sources from oil and gas development and production and from coal and soda ash production. They generate substantial revenues for federal, state, and local governments. Annually, each ranges (across all these resources) from approximately \$28 million (severance taxes) to approximately \$43 million (federal mineral royalties earned by the Federal Government). Ad valorem taxes are collected by the counties.<sup>6</sup> Severance taxes and federal mineral royalties do not accrue directly to local governments in the socioeconomic study area, but some of those revenues may be redistributed to

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<sup>5</sup> The rationales for these selections are as follows. For grazing, historical billed AUMs are the closest approximation possible for actual historical use, and future use is unlikely to differ dramatically, on average, from historical use. For recreation, the lower visitation scenario would probably under-represent future use given that some growth in recreation use over the study period is likely based on population and outdoor recreation trends, and economic impact is the most analogous analysis with the other resource uses.

<sup>6</sup> It is important to note that ad valorem taxes from BLM-administered land make up a large portion of the total ad valorem taxes obtained by the counties. For instance, for Sweetwater County for 2016, the taxable value subject to ad valorem taxes that was attributable to federal land (mainly BLM-administered land) amounted to 58.8% of the total taxable value for oil and gas. The corresponding figures for coal and trona were 55.2% and 60.8%, respectively (Sweetwater County 2016). Taxable value is not the same as actual ad valorem tax receipts, but these data points are highly indicative of the relative contributions of federal and other lands to ad valorem tax receipts.

local governments by the state. As discussed in the Socioeconomic Baseline Report, the state redistributes only a small portion of total severance taxes and federal mineral royalties directly to the local communities where the revenues are generated.

- The impacts of oil and gas development and production, as well as coal and soda ash production, are considerably greater than the impacts of livestock grazing and recreation. For instance, total economic output from oil and gas development under Alternative A is about 53 times greater than that from livestock grazing and 19 times greater than that from recreation. However, these comparisons do not mean that economic activity attributable to livestock grazing and recreation on BLM-administered land is not valuable to the five-county socioeconomic study area economy, especially for the businesses and individuals who directly profit from that economic activity.
- Total economic output from oil and gas production is less than total economic output from oil and gas development on an annual basis in 2016 but is considerably greater on a net present value basis across the entire study period, due to increasing production over time as more and more wells come into production each year.
- The net present value of earnings from oil and gas production is considerably less than the net present value of oil and gas development. This result differs from that for output from oil and gas production noted in the previous bullet. The difference is because a smaller portion of oil and gas production earnings occur within the study area compared to oil and gas development earnings.
- The economic impacts of coal production are reported together with the impacts of trona production. Adding these results together was necessary in order to avoid potential disclosure of proprietary information due to the small number of operators in each industry.

### Other Market-Based Economic Impacts

The quantitative economic impact analyses described above incorporate or encompass management actions under Alternative A (and the other alternatives) that have clearly quantifiable implications for certain resources uses. Examples include but are not limited to actions affecting the number of authorized AUMs, and actions affecting the number of wells that industry would drill on BLM-administered land. For instance, actions prohibiting drilling in certain areas are accounted for in the RFD and thereby in the quantitative economic analysis. Economic impacts from Alternative A that are *not* already encompassed in the previous section on quantified impacts are described qualitatively below, at a high level.

Alternative A would allow for a full range of resource uses, at use levels based on current policies. Thus, Alternative A would allow for continuation of current levels of economic activity and economic impact attributable to use of BLM-administered land. In some cases, Alternative A would allow for increased levels of use. For instance, additional resource use and development, such as wind energy development based on current or future market conditions, would be possible in many cases.<sup>7</sup>

Under Alternative A, most of the planning area would be open to consideration of geophysical exploration activities. Such activities generate modest economic activity (expenditures associated with exploration) and may result in eventual resource development and associated economic activity.

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<sup>7</sup> Wind energy development and production were not included in the quantitative economic analysis because there was insufficient information available to reliably quantify the level of development that would occur on BLM-administered land during the planning period.

Alternative A would designate or retain designation for a number of ACECs and other management areas. Many uses would be restricted or prohibited in such areas, which could reduce economic activity that would otherwise occur.

Alternative A would allow for a wide range of management practices, subject to some restrictions. Examples of allowed practices include clear-cuts; prescribed fire; use of mechanical, chemical, and biological methods to achieve desirable vegetation communities; application of pesticides and herbicides in a manner compatible with fish, wildlife, and associated habitat health; and other practices. Allowing a wide range of practices allows the BLM and operators, as applicable, to select cost-effective resource management and utilization methods.

Alternative A would continue to prohibit or curtail some activities under certain circumstances. When prohibited or curtailed, economic activity may be foregone, or BLM or operators may incur additional expenses from moving activities to different locations (e.g., through use of directional or horizontal drilling) or changing or modifying activities and practices. Increased expenses for project proponents could affect levels of economic activity. That is, increased expenses could increase or decrease economic activity; see the Qualitative Economic Impact Analysis subsection of Section 4.23.2 above. Increased expenses could result from the following type of actions, as well as other actions under Alternative A:

- NSO requirements where maximum protection of resources is necessary. Examples include, but are not limited to, needs to protect special status plants, or to protect rock art and other cultural resource values.
- Implementation of exclusion areas, for example for surface disturbing activities around certain cultural resource sites, and for ROWs for certain classified wild and scenic river segments and ACECs.

Application of setback distances for various activities – for example:

- Project components, such as permanent and high profile structures – i.e., buildings, storage tanks, powerlines, roads, well pads, etc. – would be prohibited within an appropriate distance (usually less than ½ mile) of occupied raptor nests, as determined on a case-by-case basis depending upon the species involved, natural topographic barriers, line-of-sight distances, etc.
- Surface disturbing activities would generally be prohibited within ¼ mile of recreation sites but would be allowed if compatible.
- The area within ¼ mile or the visual horizon (whichever is less) of any National Historic Trail contributing trail segment would be an avoidance area for surface disturbing activities.
- CSU requirements, such as limitations on the amount and type of surface disturbance, would be applied in certain cases; e.g., in water recharge areas for local water supplies, or for special status plant species potential habitat areas in the JMH planning area.

Seasonal or other timing restrictions – for example:

- Timing limitations (seasonal restrictions) would be applied when activities occur during crucial periods or would adversely affect crucial or sensitive resources. Such resources include, but are not limited to, soils during wet muddy periods, crucial wildlife seasonal use areas, and raptor nesting areas.
- Restrictions on surface disturbing activities during spawning would be applied as necessary to protect game fish and special status fish populations.

Various activity planning and management requirements in Alternative A would result in the BLM and operators incurring expenses to develop and implement those plans, or in some cases to avoid activities and locations instead of developing plans and managing accordingly. For example, areas where soils are highly erodible or difficult to reclaim would have to be avoided, or erosion control plans and rehabilitation plans developed and implemented.

Mitigation of impacts associated with mineral exploration, oil and gas drilling, renewable energy development, recreation site development, and other activities would be required under Alternative A in order to protect air and water resources, fish and wildlife, Special Status Species, sage grouse habitat, cultural resources, paleontological resources, visual resources, etc. Mitigation could create additional expenses for project proponents and operators.

Under Alternative A, withdrawals and classifications would be processed to protect important resource values. Such actions could in some cases result in reduced economic activity by precluding other uses. On the other hand, some withdrawals, such as for public water reserves, would protect resources that are critical to local and regional economies. Withdrawals that no longer serve the purpose for which they were established would be revoked. This could allow for additional economic activity from new uses.

Alternative A would allow for disposal of certain public lands. In some cases, this would allow for increased economic activity through development or alternative uses of those parcels. It would also allow for generation of property tax revenues from parcels that pass into private ownership, but such cases would also result in some downward adjustment of Payments in Lieu of Taxes (PILT) to local government.

Alternative A also allows for acquisition of lands to facilitate resource management objectives. This would reduce property taxes but also increase PILT payments, commensurate with the amount of land or interests in land acquired.

Alternative A allows for ROWs and corridors. These can facilitate economic development activity within and beyond the planning area. Alternative A would maintain 426,709 acres in ROW exclusion area status; this is a relatively small portion of the planning area.

A number of management actions in this alternative would generate economic activity due to the resulting expenditures made in the local and state economies by the BLM or by operators, although the level of economic activity from many of these actions would be small relative to the activity generated by resource uses. Relevant types of potential projects suggested under the management actions include:

- Water flow, sediment control, and watershed stabilization projects in partnership with local, state, and federal programs.
- Reclamation of areas of surface disturbance, including existing roads and trails that may be closed.
- Silvicultural treatments to improve timber or improve wildlife habitat.
- Prescribed burns and other vegetation treatments to manipulate vegetation communities, including for fuel reduction.
- Revegetation of harvested forest areas.
- Livestock and wild horse water developments.

### **Impacts on Nonmarket Values**

As discussed in the Socioeconomic Baseline Report, nonmarket values are the benefits individuals attribute to experiences of the environment or uses of natural and cultural resources that do not involve market transactions and therefore lack prices. Examples include the benefits received from recreational resource

uses like wildlife viewing, hiking in a wilderness, or hunting. Other examples include non-use values like the psychological benefits some people derive from the existence of some environmental condition that may never be directly experienced: an unspoiled Grand Canyon or the continued presence of an endangered species. Also, various evidence suggests that natural amenities such as scenery, access to recreation, and the presence of protected areas have indirect but positive economic outcomes for communities possessing such amenities, depending on a variety of factors (The Wilderness Society 2007; Headwaters Economics 2011).

Nonmarket values also include ecosystem services (Ruhl et al. 2007), which are the benefits that people receive from appropriate structure and function of ecosystems and are often categorized as provisioning (such as food and water), regulating (such as climate, disease regulation, fire regime), cultural (such as setting, spiritual), and supporting (such as soil formation) (MEA 2003). The concept of ecosystem services intends to bring explicit awareness and recognition of the various ways that humans benefit from and depend on the natural world. Understandably then, the BLM-administered biophysical resources within the RSFO are important and contribute to human well-being directly and indirectly. The RSFO sustains ecosystems on which plant and animal habitat depends. For example, soil formation, nutrient cycling, production of oxygen, water quantity/quality, and evapotranspiration are factors that influence and shape characteristics of the ecosystems found within the RSFO. These processes support the diversity and abundance of plants and animals provided by planning area habitats and ecosystems. In turn, processes such as reforestation, natural succession, genetic variability, migration, and species interaction are shaped by ecosystem characteristics and through RSFO management actions. Accordingly, ecosystem services have been discussed throughout the other resource, resource use, and special designation sections, even if those sections did not use the language of ‘ecosystem services.’

While these various types of values lack clear market prices, they are important to consider because they help tell the entire economic story. BLM guidance calls for the BLM to make efforts to identify and assess impacts to nonmarket values in the planning process (BLM 2013). Economists have developed various ways to estimate nonmarket values in monetary terms. Many of these methods involve primary research regarding people’s preferences; for instance, to determine “stated” preferences and associated values through survey, or to determine “revealed” preferences by analyzing market values that are associated with certain nonmarket values. Such research is costly. However, in many cases a technique called benefits transfer can be applied at low cost. This involves identifying applicable quantified values from primary studies conducted for other purposes and other locations and applying those values to the current location and purpose. Obviously, it is important to identify values from the literature that are appropriately representative of the current situation.

With respect to recreation use values, economists employ a concept called consumer surplus, which is the maximum dollar amount above any actual payments made that a consumer would be willing to pay to enjoy a good or service. For instance, hikers pay a market price for gasoline used to reach a trail, but typically pay nothing to use the trail. Any amount that a recreationist would be willing to pay to use this otherwise free resource represents the nonmarket consumer surplus value of that resource to that consumer. There are many techniques for measuring this nonmarket use value. One common way is to collect data on variations in what recreationists do pay (gasoline, hotels, restaurants, entry fees, guides or outfitters, etc.); economists then use quantitative techniques to impute the additional willingness to pay that constitutes consumer surplus. Economists have quantified consumer surplus values in many studies for many recreation activities and many locations. Table 4-13 summarizes average consumer surplus values from hundreds of primary studies conducted in the western United States.

**Table 4-13. Average Consumer Surplus Values and Additional Statistics, Western U.S., Per Person Per Day (2016\$)**

Activity	N	Mean	Standard Error
Backpacking	3	\$34.28	13.4
Camping	59	\$23.73	3.2
Hiking	81	\$73.98	9.2
Big Game Hunting	184	\$87.39	5.1
Small Game Hunting	34	\$79.89	16.3
Waterfowl Hunting	33	\$67.99	11.3
Freshwater Fishing	363	\$88.20	4.2
Nonmotorized Boating	47	\$122.23	18.8
Motorized Boating	21	\$53.68	21.2
Mountain Biking	15	\$197.88	39.6
OHV	12	\$52.74	7.3
Picnicking	9	\$21.98	2.1
Rock and Ice Climbing	16	\$55.02	4.6
Sightseeing	16	\$52.46	10.6
Swimming	8	\$31.63	7.9
Wildlife Viewing	126	\$78.62	6.4
General Recreation	98	\$36.68	4.4
Other Recreation*	68	\$41.70	7.5
<b>Total</b>	<b>1264</b>	<b>\$77.48</b>	<b>2.3</b>

N: Number of studies measuring specific recreation activity.

Mean: Average (arithmetic mean) consumer surplus for that activity.

Standard Error: Standard error of the mean, with larger values relative to the mean indicating larger response variability.

\*Other recreation is defined as activities with few primary studies, including cross-country skiing, downhill skiing, snowmobiling, snowboarding, shellfishing, jet skiing, scuba diving, snorkeling, water skiing, windsurfing, family gathering, horseback riding, jogging/running, walking, nature study, photography, gathering, forest products, visiting nature centers, visiting arboretums, visiting historic sites, visiting prehistoric sites, and visiting aquariums.

Source: Rosenberger (2016), Table 1. Activities not applicable to BLM-administered land are not included in this table (e.g., saltwater fishing).

The average consumer surplus values in Table 4-13 provide a way to estimate, at a very high level using the benefits transfer methodology, the consumer surplus value associated with recreation on BLM-administered land in the RSFO. This involves multiplying the visitor day counts for specific activities from BLM RMIS data by the average consumer surplus values for the applicable activities in Table 4-13. For this RMP/EIS, the BLM applied this approach using RMIS data from 2011–2015, specifically, for the years with the lowest and highest total visitor day counts (2011 and 2015, respectively).<sup>8</sup> These two scenarios

<sup>8</sup> The recreation expenditure-based analysis using IMPLAN described in Section 4.23.2 requires data on “visits” (the entry of any person for any time period onto BLM-administered land for recreation; includes both partial day and multi-day entry)

establish a range in consumer surplus value relevant to Alternative A.<sup>9</sup> Table 4-13 provides the estimated values.

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*while the benefits transfer consumer surplus analysis described here requires data on “visitor days” (equivalent to 12 hours on BLM-administered land). This is why the low year in this analysis (2011) differs from the low year (2012) in the expenditure-based analysis.*

<sup>9</sup> *Actual consumer surplus values may also vary because there is a range of uncertainty around each of the mean values in Table 4-13. In addition, if additional resources were available, detailed analysis might determine that values from specific studies in the literature that Table 4-13 summarizes are more specifically suited to benefits transfer to the RSFO than the mean values in Table 4-13.*

**Table 4-14. Estimated Rock Springs Field Office Recreation Annual Consumer Surplus Values (2016\$)**

<b>BLM RMIS Visitor Activity Grouping</b>	<b>Basis of Value from Table 4-13</b>	<b>Mean Consumer Surplus Value/Visitor Day</b>	<b>Low Visitor Days from RMIS (2011)</b>	<b>High Visitor Days from RMIS (2015)</b>	<b>Total Value: Low</b>	<b>Total Value: High</b>
Boating/Non-Motorized	Nonmotorized Boating	\$122.23	-	65	\$0	\$7,945
Camping and Picnicking	Average of Camping, Backpacking, and Picnicking	\$26.66	95,070	258,527	\$2,534,883	\$6,893,192
Driving for Pleasure	Sightseeing	\$52.46	15,984	50,520	\$838,521	\$2,650,279
Fishing	Freshwater Fishing	\$88.20	6,517	21,898	\$574,799	\$1,931,404
Hunting	Average of Big Game Hunting, Small Game Hunting, and Waterfowl Hunting	\$78.42	32,055	93,166	\$2,513,860	\$7,306,388
Interpretation, Education and Nature Study	Wildlife Viewing	\$78.62	16,965	22,544	\$1,333,788	\$1,772,409
Non-Motorized Travel	General Recreation	\$36.68	2,505	5,980	\$91,883	\$219,346
OHV Travel	OHV	\$52.74	45,511	56,957	\$2,400,250	\$3,003,912
Snowmobile and Other Motorized Travel	Other Recreation	\$41.70	202	204	\$8,423	\$8,507
Specialized Non-Motor Sports, Events and Activities	Other Recreation	\$41.70	2,608	8,740	\$108,754	\$364,458
Winter/Non-Motorized Activities	Other Recreation	\$41.70	708	2,082	\$29,524	\$86,819
<b>TOTALS</b>			<b>218,125</b>	<b>520,683</b>	<b>\$10,434,686</b>	<b>\$24,244,660</b>

Sources: BLM RSFO RMIS data, Report 20. Consumer surplus values from Rosenberger (2016) as reported in Table 4-13 above.



As shown by Table 4-14, the low and high estimates of the nonmarket value associated with recreation in the RSFO, based on historical visitation data, range from \$10.4 million to \$24.2 million annually.<sup>10</sup> Under Alternative A, this range of consumer surplus value is likely to continue, subject to annual variations in visitation. The BLM does not anticipate major changes, up or down, in visitation under Alternative A. However, it is possible that average willingness to pay values and thus the consumer surplus experienced by each recreationist could decline over the long-term under Alternative A. This would happen if the quality of recreational experiences in the RSFO declines due to conflicts between resource uses, recreational overuse or underdevelopment in certain areas, or other impacts to recreational experiences that would not be adequately addressed by status quo management under Alternative A.

Public lands managed for livestock grazing provide both market values (e.g., forage for livestock) and non-market values. Many ranchers themselves value the ranching lifestyle in excess of the income generated by the ranching operations. This is evident in some ranch sales transaction data which suggests some ranch properties have sold for more than the market value of the public land forage (Bartlett et al. 2002; Taylor 2006). One of the primary reasons ranchers indicate they own land is for the “tradition, values and culture” rather than primarily for profit (Tanaka et al. 2005). Other factors include amenity values (e.g., scenic views, presence of wildlife species, and onsite fishing or hunting opportunities) that may be provided by the ranch (Torell et al. 2005). Many ranchers work elsewhere part-time and rely on the ranch for only 20% of their income (Hanus 2011), relying instead on outside jobs or other savings to support their ranching lifestyle. Land appreciation has also provided increased value and therefore served as an economic resource for ranchers (Tanaka et al. 2005; Torell et al. 2005). As several of these authors note, changes in public land grazing that reduce the profitability of grazing may not directly translate to withdrawal from ranching, due to the fact that economic factors are not necessarily the primary motivation for ranching.

In addition to its role in supporting lifestyle values for ranchers, livestock grazing on BLM-administered land supports the publicly and privately held open space that is a key component of the landscape of the west. Some studies have found non-market values of ranching associated with use values to residents (Magnan et al. 2005) and tourists in the form of open space and western ranch scenery (Ellingson et al. 2006). However, some others see non-market opportunity costs associated with livestock grazing that may, depending on management methods and other variables, reduce native plant species and forage for wildlife (Todres et al. 2003). The potential exists for other residents or visitors to prefer lifestyles or have lifestyle needs that are not consistent with grazing or ranching lifestyles or landscapes.

Wild horses provide nonmarket values that are important to some stakeholders. These values are partially captured in the “Interpretation, Education and Nature Study” category in the table above, as some people enjoy watching and studying wild horses. These values are also captured to some extent in the “Driving for Pleasure” category, due to use of the Pilot Butte Loop Back Country Byway, a BLM-designated driving route on local roads near Rock Springs. There are also non-use values associated with wild horses. Many people enjoy knowing that wild horses exist even though they may rarely or never see them in the wild.

With respect to other non-use values, the BLM did not estimate these values for this RMP/EIS. While evidence of non-use values is clear in the economics literature (see the Socioeconomic Baseline Report for a few examples), estimating non-use values for specific resources is subject to many challenging methodological considerations. The BLM acknowledges that non-use values are real and can be substantial (BLM 2013). One non-use value in the RSFO derives from the existence of large areas of undeveloped

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<sup>10</sup> It is important to note that consumer surplus estimates are not directly comparable to estimates of income derived from commodity uses or market expenditures of recreationists (BLM 2013). Consumer surplus reflects the difference between total willingness to pay and transactions in market. Commodity and expenditure values estimates, like those generated by the IMPLAN model and presented in Section 4.23.3 and the alternative-specific annual impact and net present value tables, only reflect transactions in markets. Nonetheless, these consumer surplus value estimates show that the nonmarket values associated with recreation on BLM-administered land are substantial.

open space that to some people represent the essence of southwestern Wyoming, providing non-use value to these people even when not living in or visiting the area. Under Alternative A, reductions in open space through resource development that occur under status quo management policies not designed for high levels of resource development may reduce the non-use values associated with these open spaces.

The BLM also did not estimate ecosystem service values for this RMP/EIS. Making such estimates involves a number of methodological concerns and is subject to considerable uncertainty when attempted without sufficient resources. However, there are clearly ecosystem service values associated with BLM-administered land in the RSFO. For instance, the sections of the EIS that are focused on resources (e.g., water, wildlife, vegetation, wetlands, visual resources) reveal important nonmarket values of those resources, including structural and functional resource and ecosystem values that benefit people, even though those sections do not use the language of nonmarket values used by economists. For example, maintenance of healthy riparian zones helps protect water quality. This is an ecosystem service value because some waterways on BLM-administered land contribute to downstream water supplies and recharge of groundwater supplies. Alternative A could negatively impact ecosystem service values in the long-term if status quo management is unable to prevent degradation of ecosystem conditions or specific resource conditions. In the case of riparian zones, existing management may inadequately protect these zones from adverse impacts of resource development and certain livestock grazing practices.

## Social Impacts

In general, social impacts of BLM management actions are of two primary types:

- Social impacts driven by changes in economic activity – For instance, such impacts may occur when changes in employment due to management decisions lead to changes in population, age distribution, housing, schools, community services, crime, community cohesion, etc.
- Other social impacts arising with or without effects to economic activity – These include impacts on intangible aspects of quality of life, attitudes and beliefs, traditional land uses and associated cultural values, and so on.

Regarding social changes driven by economic impacts, major economic changes are underway in Wyoming and in the planning area specifically due to two resource development trends that affect BLM-administered lands and are affected by BLM management decisions. These trends are large-scale development of oil and gas resources and large-scale development of wind energy resources.

With respect to development of oil and gas resources, in some locations in the western U.S., including in Wyoming, the rapid pace and large scale of development has driven important social changes due to the influx of people to these areas who find employment in the oil and gas industry and ancillary service industries. For instance, the Final EIS for the Proposed RMP of the Pinedale Field Office, prepared in August 2008, documented how a “boom and bust” cycle with challenging social impacts often accompanies large-scale oil and gas development in the West. The “boom” portion of the cycle is typified by in-migration and pressure on a range of economic and social factors in a community as demands outstrip the capacities of the local economy, public services and social systems. The “bust” phase is characterized by decreased economic activity, out-migration of residential and nonresidential employees, and unemployment. The Pinedale EIS illustrated the types of boom cycle impacts that could occur in the RSFO under conditions described below. (BLM 2008)

The Pinedale EIS observed that a variety of changes were underway in the Pinedale Field Office – within Sublette County in particular – that were attributed to rapid population growth (temporary and permanent residents) brought on by the oil and gas boom in the county in the 2000s (BLM 2008). According to the EIS and studies published around the time of the EIS, these changes included:

- Pressure on local wages experienced by non-energy sector businesses due to high wages in the energy sector
- Local general price inflation
- Increased capital and maintenance needs for community infrastructure such as roads, bridges, water facilities and sewer facilities
- Large annual increases in average house prices
- Increased crime rates
- Rising demand for teachers, medical facilities, and other public services
- Impacts to community cohesiveness as newcomers brought value systems and mores that differed from those endemic to the region (BLM 2008, ERG 2008).

The annual rates of oil and gas drilling in Sublette County that led to social impacts in the county are shown in Table 4-15.

**Table 4-15. Historical Annual Wells Drilled, Sublette County, 2000–2008**

Year	Conventional Oil Wells Spud	Conventional Gas Wells Spud	Total Conventional Oil and Gas Wells Spud	CBNG Wells Spud
2000	33	90	123	2
2001	12	175	187	5
2002	26	127	153	0
2003	18	194	212	0
2004	5	233	238	0
2005	1	308	309	0
2006	4	526	530	0
2007	1	608	609	0
2008	2	703	705	0

Source: Wyoming Oil and Gas Conservation Commission (2017).

Data represents counts of distinct well spuds, based on 1st instance of spud reported, does not include deepen or re-entries, includes horizontal and or directional wells.

Sublette County is not co-extensive with the Pinedale Field Office. The numbers above include portions of the county that are located within the RSFO. Also, additional well development occurred during this period in portions of Lincoln County and Sweetwater County (not reflected in the table above) that are in greater proximity to Sublette County communities such as Big Piney, Marbleton, Boulder, and Pinedale than they are to all but a few of the population centers in Lincoln and Sweetwater counties. In short, Sublette County bore the brunt of the social impacts of the rapid development in the 2000s of the Jonah Field, the Pinedale Anticline, and fields in the greater Big Piney-La Barge area. However, Rock Springs and other communities in the RSFO planning area or in the broader socioeconomic study area for this planning effort supported the development of the fields mentioned above, as well as other fields in the region. Some of these other communities outside Sublette County experienced social impacts associated with the rapid growth and large scale of oil and gas development in southwestern Wyoming.

The history and well numbers above provide useful context for considering the potential for social impacts from the level of development anticipated in the RSFO. Under Alternative A, the RFD projects that a total of 5,735 conventional oil and gas wells, and 199 CBNG wells, would be drilled in the RSFO from 2012 to 2031. Of these, large proportions would be drilled on BLM-administered federal minerals: 81% of the conventional wells and 63% of the CBNG wells.

The projected total level of development (BLM and non-BLM managed wells) in the RSFO would average 287 conventional oil and gas wells per year and 10 CBNG wells per year. This is greater than the annual average for well development in Sublette County in the early 2000s (183 per year from 2000 to 2004) but less than the annual average of well development in Sublette County in the mid-2000s (538 per year from 2005 to 2008).

Based on this simple comparison, it would appear that the level of oil and gas development activity projected for the RSFO under Alternative A does not approach the level of development activity that caused social impacts in Sublette County in the mid-2000s. However, projected average rates of development are unlikely to reflect what will actually happen from year to year. For instance, actual rates of drilling in the RSFO from 2012 to 2016 did not reach the average level of drilling projected by the RFD, probably due to the effects of the Great Recession and the decline in gas prices in recent years.<sup>11</sup> Oil and gas development is cyclical. The early years of the planning period for the RSFO RMP/EIS have very likely been a low point in the cycle. Well development is very likely to pick up again in the future. When it does, it could easily exceed the RFD's projected average rate of 287 wells drilled per year. If so, the rate of oil and gas development in the RSFO under Alternative A could approach the rates that caused social impacts in Sublette County in the 1980s.

The potential for social impacts from large-scale oil and gas development in the RSFO would be affected by the following considerations, and probably others as well:

- Some of the pressures from oil and gas development in the RSFO would occur outside the RSFO planning area. As noted above, some development is occurring in portions of the RSFO that are closer to communities outside the RSFO. However, these communities in Sublette and Lincoln counties are all within the socioeconomic study area for this RMP/EIS. Impacts in those communities merit consideration.
- Much of the pressure on social services and other community assets and characteristics would occur in Rock Springs, which is a center for oil and gas development and production support for southwestern Wyoming. Rock Springs is a much larger community than Big Piney, Pinedale, or other communities in Sublette County, and may have more capacity to absorb demands on its infrastructure, public services, and social systems than the small communities of Sublette County did in the 1980s.
- Rock Springs, because it has been a center for oil and gas development and other mineral development for much of the 20<sup>th</sup> and early 21<sup>st</sup> centuries, has been through boom and bust cycles before. Given this history, the community may be better able to adjust to future ups and downs in

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<sup>11</sup> This assessment requires caveats. It is based on the numbers for Sweetwater County only, which is the closest approximation of the RSFO planning area available in the online data of the Wyoming Oil and Gas Conservation Commission. Total conventional oil and gas wells drilled in Sweetwater County averaged 88 per year from 2012 to 2016, with a high of 169 in 2012 and a low of 24 in 2016 (Wyoming Oil and Gas Conservation Commission 2017). These numbers may include some Sweetwater County wells outside the RSFO, and do not include wells drilled inside the RSFO within Lincoln and Sublette counties (prominent oil and gas development areas) or inside the RSFO within Fremont and Uinta counties. Nonetheless, it is indicative that the Sweetwater County numbers are considerably below the RFD's projected annual average of 287 wells drilled in the RSFO under Alternative A.

oil and gas activity.

In short, there is potential for oil and gas development under Alternative A to cause social impacts due to substantial economic activity and associated pressures on the local economy, public services, and social systems. This potential may be mitigated by various factors.

With respect to wind energy development, large wind farm projects can result in significant short-term increases in employment, which can produce similar stresses on community resources and social cohesiveness to those stresses seen with large-scale oil and gas development. Whether these impacts would occur would depend on the levels of wind energy development, the locations of such developments relative to communities, and the capacity of communities to absorb the demands on infrastructure and social systems. If such impacts occur, they would occur in areas around a relatively small number of large wind farm projects. The locations and probability of occurrence of these projects cannot be reliably determined at this time.

Regarding other social impacts that may arise with or without effects to economic activity, the five high-level stakeholder categories identified and described in the Attitudes and Beliefs section of the Socioeconomic Baseline Report are used below to assess key social impacts of the alternatives. Stakeholders have distinct sets of attitudes, beliefs, values, opinions, and perceptions about public lands and the effects of various management policies and actions. These views reflect different cultural and economic linkages people have to public lands. By looking at the alternatives from different points of view, one can identify potential social and cultural impacts on each stakeholder group. The categorization of stakeholders is not meant to imply that all individuals and social groups fit neatly into a single category; many specific individuals or organizations may have multiple interests and would see themselves reflected in more than one stakeholder category. The point of the categories used here is to allow differentiation of social impacts based on broad differences in sociocultural linkages to public lands and associated points of view.

Mineral Development and Production Stakeholders would generally find Alternative A favorable to their interests and values, and to maintenance of the mineral development economy and culture. This alternative has the second highest level of projected oil and gas development of all the alternatives. In addition, it carries forward policies that these stakeholders are very familiar with and have largely incorporated into their business expenses.

Renewable Energy Stakeholders would generally find this alternative favorable to their interests. A number of wind energy projects have advanced under current BLM policies, indicating that the industry sees potential for wind energy development under those policies. This would likely continue, when market conditions are favorable.

Livestock Grazing Stakeholders would generally find this alternative favorable to their interests. It carries forward policies that these stakeholders are very familiar with. While the livestock industry in the region faces many challenges – droughts, fluctuating cattle prices, competition for labor – under current BLM policies most operators have successfully maintained their use of BLM-administered land as an essential part of their business models.

Habitat and Resource Conservation Stakeholders would find this alternative unsatisfactory. These stakeholders believe protecting species and ecosystems is a fundamental social value and is not sufficiently accomplished by the current policies carried forward by this alternative. They would view this alternative as leading to the long-term demise of Special Status Species populations, key habitats, and cultural resources.

Recreation Stakeholders would generally find this alternative favorable, largely because it carries forward policies that some of these stakeholders are very familiar with. Commercial recreation operators who use BLM SRPs have largely incorporated these policies into their costs of business. Recreation stakeholders who value resource conservation may not favor this alternative because it does less to protect key habitats and ecosystem values than some other alternatives.

## 4.22.5 Impacts of Alternative B

### Quantified Economic Impacts

Table N.16 in Appendix N summarizes the annual economic and fiscal impacts of Alternative B by program (resource use) and in total. These estimates are based on the first year of the study period, 2016. For livestock grazing, oil and gas development, coal and soda ash production, and recreation, the BLM assumed that the 2016 level of use would also be the average level of use across every year of the study period, 2016–2031. This assumption was based on the available data. For oil and gas production, use levels and economic impact would increase in every year of the study period as additional wells come into production. The increasing production levels were based on the RFD scenario. Table N.17 presents the cumulative economic and fiscal impacts of Alternative B across the entire study period, based on a discount rate of 3%. Table N.18 presents the cumulative impacts of Alternative B based on a discount rate of 7%. These two tables take into account both the increasing level of oil and gas production in each year of the study period and the time value of money. In the case of employment, which is not subject to discounting for the time value of money, the growth in jobs in oil and gas production across the study period is reflected in the figure for average jobs per year in the net present value tables. These three tables in Appendix N all address the livestock grazing analysis scenario based on historical billed AUMs, and the recreation analysis scenario based the high visitation scenario and using the economic impact (versus economic contribution) perspective.<sup>12</sup> For other scenarios for grazing and recreation, see the earlier section 4.23.3 Summary of the Quantitative Economic Impact Analysis Results.

Key high-level observations regarding the quantified economic impacts for Alternative B compared to Alternative A include:

- Total economic output attributable to BLM-administered land in the RSFO across all programs totals \$827 million annually in 2016 in Alternative B. Earnings total \$168 million annually. Employment totals 2,515 jobs annually. These values are approximately 56%, 52%, and 56% lower, respectively, than the comparable values for Alternative A.
- Total quantified public revenues in 2016 range from approximately 52% to 55% lower under Alternative B than Alternative A. The state redistributes a small portion of total severance taxes and federal mineral royalties directly to the local communities where the revenues are generated.
- When considered on a net present value basis, the percentage reductions are up to 5% greater for the economic indicators and up to 10% greater for the public revenue indicators compared to the 2016 percentage reductions noted above.
- The quantified impacts of livestock grazing, coal and soda ash production, and recreation are the same under Alternative B as Alternative A.

<sup>12</sup> The rationales for these selections are as follows. For grazing, historical billed AUMs are the closest approximation possible for actual historical use, and future use is unlikely to differ dramatically, on average, from historical use. For recreation, the lower visitation scenario would probably under-represent future use given that some growth in recreation use over the study period is likely based on population and outdoor recreation trends, and economic impact is the most analogous analysis with the other resource uses.

- All quantified economic and public revenue indicators for oil and gas development and production are approximately 74% lower under Alternative B than Alternative A. This is due to the substantially lower number of wells drilled under Alternative B and corresponding reductions in oil and gas production as projected by the RFD scenario.

It is possible that overall oil and gas development may not be as affected by BLM's actions under Alternative B as the large reduction in BLM-managed well counts would seem to indicate. Depending on oil/gas field configurations, well-drilling technology, and availability of non-federal mineral estate, in some areas oil and gas development may simply shift from federal mineral estate to non-federal mineral estate. Determining the degree of such shifts in activity requires considerably more information on the plans of and options available to oil and gas developers than is available for this planning level EIS. However, it should be noted that the RFD does not project a substantial difference in non-BLM managed wells between Alternatives A and B.

### **Other Market-Based Economic Impacts**

Alternative B would emphasize conservation of resource values through constraints on resource uses and through approaches to resource management that emphasize natural processes. Given this overall emphasis, Alternative B would result in reduced economic activity relative to Alternative A, as quantified above and as discussed below. It would also result in greater costs to the BLM and to operators. As noted earlier, increased costs may negatively impact operators and could reduce the economic activity supported by resource uses. However, individuals that appreciate the conservation emphasis of Alternative B may develop local economic activity around the conservation of the natural processes.

Alternative B would restrict certain management practices, which could increase costs. For instance, while Alternative A would allow clear cuts, Alternative B would prohibit them. Chemical treatments for vegetation management are specifically allowed under Alternative A, but not included as an option under Alternative B. Pre-commercial thinning would be prohibited under Alternative B except for fuels treatment.

Alternative B, besides cutting back substantially on oil and gas development activity through a wide range of prohibitions and restrictions, would cut back on other resource uses as well. For instance, the acreage restricted from saleable mineral disposals under Alternative B would be nearly three times greater than under Alternative A (2,581,741 acres vs. 833,719 acres). ROW exclusion areas under Alternative B would total 2,480,876 acres compared to 426,709 acres under Alternative A. These changes in part reflect an increased number of ACECs (with accompanying restrictions) under Alternative B, and much larger acreages for some of the ACECs common to both alternatives. ACECs under Alternative B total 1,605,660 acres, compared to 286,450 acres under Alternative A.

Alternative B would restrict access to resources in certain situations, potentially reducing economic activity. For instance, logging operations would be limited to slopes up to 25% under Alternative B, compared to 45% under Alternative A. In addition, while erosion control plans and rehabilitation plans would be prepared and implemented under Alternative A when areas where soils are highly erodible or difficult to reclaim cannot be avoided, in Alternative B surface-disturbing activities would be prohibited in such areas.

Setback distance requirements would be greater under Alternative B than Alternative A. These requirements could reduce certain activities and/or increase operational expenses. For instance:

- Surface disturbing activities and new permanent facilities (e.g., storage tanks, structure pits, etc.) would be prohibited not just within 100-year floodplains, wetlands, riparian areas, and perennial streams (as in Alternative A), but also within 1,320 feet (¼ mile) of such features.
- Herbicide and pesticide loading, maintenance, and refueling areas would be prohibited within ¼

mile of water sources, floodplains, riparian areas, and special status plant locations, compared to a 500-foot limitation in Alternative A.

- Surface disturbing activities would generally be prohibited within three miles of recreation sites, versus ¼ mile under Alternative A.
- Various restrictions would apply within a trail management corridor of five miles on either side of National Historic Trails, compared to a ¼ mile distance under Alternative A.

Many of the management restrictions that would occur under Alternative A as necessary or on a case-by-case basis would be applied on a broader basis under Alternative B. Exceptions, rather than application, would be decided on a case-by-case basis. For example, seasonal restrictions as necessary for surface disturbing activities to protect game fish and special status fish populations during spawning under Alternative A would be replaced in Alternative B by TLSs on surface disturbing activities within ¼ mile of riparian areas, with exceptions granted on a case-by-case basis.

The BLM and operators would incur additional expenses in Alternative B due to various activity planning requirements, including but not limited to the following:

- Alternative B would require best available modeling to quantify the amount of sediment, salinity, and associated nutrients that would be transported to water bodies from all surface disturbing activities.
- Site-specific activity and implementation plans (to reduce erosion and sediment yield, promote ground cover, and enhance water quality) would be required in all cases in Alternative B, but only where needed in Alternative A.

A number of livestock grazing management actions under Alternative B could reduce the number of AUMs available for grazing, increase expenses, or alter management practices of operators. Examples include:

- If monitoring shows that the Wyoming Land Health Standards are not met and livestock grazing is shown to be among the contributing factors, Alternative B would implement a 20% reduction annually from the 10-year average of actual billed AUMs for each permit/lease up to three consecutive years (60%) in active AUMs until standards are met.
- Livestock and wild horse forage allocations would be adjusted as needed to meet site potential to support wildlife habitat requirements.
- Livestock grazing would be prohibited in wetland and riparian areas that are not meeting PFC.
- Multiple restrictions on placement of salt and mineral supplements (such as low moisture block supplements) would occur under Alternative B.

Alternative B de-emphasizes recreation, particularly developed recreation, relative to Alternative A. For instance, no SRMAs would be retained in Alternative B. Areas for OHV rallies, cross-country races, and other organized events would not be provided. Certain areas that would have recreation project plans developed under Alternative A would not have such plans under Alternative B. Certain areas that would be managed for recreation values under Alternative A would be managed for other values under Alternative B.

As in Alternative A, various management actions under Alternative B would generate economic activity due to the resulting expenditures made in the local and state economies by the BLM or by operators, although the level of economic activity from many of these actions would be small relative to the activity generated by resource uses.



## Impacts on Nonmarket Values

Nonmarket values associated with recreation may accrue differently across different types of recreationists. Consumer surplus values for activities associated with developed recreation could decrease because this alternative de-emphasizes such activities. For instance, SRMAs would not be retained in Alternative B. Consumer surplus values for OHV uses would decrease because areas for OHV rallies, cross-country races, and other organized events would not be provided, and areas could be immediately closed where OHVs are causing or will cause considerable adverse effects upon a wide range of resources, until the adverse effects are eliminated and measures implemented to prevent recurrence. Increases in consumer surplus may occur for some recreationists who would benefit from the increased protections in this alternative for the open spaces they value, because the lowest levels of resource development would occur in this alternative.

Nonmarket values associated with livestock grazing would differ from those Alternative A or the other alternatives. Potential reductions in AUMs associated with certain provisions of Alternative B and other actions that may affect operators' management practices could impact some grazing operations. To the extent that some ranchers cannot adjust their operations to make up for the losses of the forage on BLM-administered land, the nonmarket values associated with some of the ranches in the planning area, including provision of nonmarket lifestyle values to ranchers and open space amenity values to other residents and tourists, could be negatively impacted. However, as noted in the Alternative A nonmarket value discussion, the literature shows that changes in ranch profitability due to public land grazing policies may not directly translate to withdrawal from ranching. Another difference between Alternative A and the other alternatives is that adverse nonmarket value impacts some other people experience from livestock grazing due, for example, to reductions in native plant species and forage for wildlife, would decrease due to Alternative B's changes to the level of and practices in livestock grazing on BLM-administered land.

Use and non-use nonmarket values associated with wild horses would be greatest under Alternative B. This alternative would have the highest number and acres of wild horse HMAs, support the highest AML (1,040 to 1,796 wild horses) and allocate the largest number of AUMs (21,552) to wild horses. Water developments supporting wild horses would be provided. Provisions for public education and enjoyment of wild horses would be greater than under other alternatives.

This alternative would also provide the greatest support to other non-use values. For instance, such values related to open space would be maintained through lower levels of extractive resource development, substantially higher acreage of ROW exclusion areas, and other actions.

Many nonmarket values associated with ecosystem services would be greater under this alternative than Alternative A and would be highest among the alternatives. This alternative's greater focus on habitat conservation and lower levels of resource development would be more likely to support higher levels of ecological and other natural functions that provide various ecosystem services. For example, under Alternative B, livestock grazing would be prohibited in wetland and riparian areas that are not meeting PFC. All riparian areas should, within five years, have activity or other management plans in various states of implementation that would allow riparian areas to achieve PFC and be managed for late successional stage vegetation or potential natural community (PNC). This schedule and the PNC objective are more protective of riparian zone health than the schedule and objectives of the other alternatives. Therefore, benefits to ecosystem services associated with healthy riparian zones would be greatest under this alternative. Many other provisions of Alternative B would protect or enhance ecosystem service nonmarket values. For instance, prohibition of clear cuts, limitation of logging operations to slopes up to 25% (compared to 45% under Alternative A), and requirements for a site-specific activity and implementation plan in all cases would reduce erosion and sediment yield, promote ground cover, and enhance water quality, thereby providing greater ecosystem service values associated with water supplies.

## Social Impacts

Based on the analysis presented at the beginning of the Social Impacts subsection for Section 4.23.4, Impacts of Alternative A, social impacts driven by economic changes, such as stresses on community resources and community cohesiveness from high rates of resource development, would be reduced in Alternative B relative to Alternative A due to this alternative's much lower levels of oil and gas development. These impacts would be lowest in this alternative compared to any other alternative.

However, it is also possible that the low levels of oil and gas development under Alternative B could have negative community impacts. Many communities and residents in the planning area have experienced high rates of this development in the recent past, may expect such rates again in the future, and may have made plans or investments that depend on resumption of high rates of development. To the extent this is true for some of the communities and residents, the reduced rates of development under Alternative B could reduce their ability to achieve desired levels of community development and individual economic well-being.

Mineral Development and Production Stakeholders would see this alternative as much less favorable to their interests and values than Alternative A, and as the least favorable of all the alternatives. Based on the lower level of oil and gas development projected in this alternative, and additional operational and other restrictions, these stakeholders would see this alternative as providing the smallest economic contributions at the national, state, and local levels, and for their own businesses. They would also see it as providing the least support to long-standing mining customs and culture in the planning area. These stakeholders would also believe that this alternative fails to take adequate advantage of the planning area's mineral resources to reduce reliance on foreign energy sources.

Renewable Energy Stakeholders would view this alternative much less favorably than Alternative A. In particular, the very high acreage of this alternative that is in ROW exclusion areas (2,480,876 acres versus 426,709 acres under Alternative A) would make siting of wind energy projects and development of power transmission lines from areas with wind development difficult.

Livestock Grazing Stakeholders would find this alternative less favorable than Alternative A. Certain provisions of Alternative B could reduce the number of AUMs authorized for livestock grazing and be perceived as increasing their operating costs and requiring them to alter their management practices. These stakeholders would see this alternative as harmful to their abilities to maintain their livelihoods and the customs and culture of ranching, and they also would be concerned that this alternative would impact the long-term viability of maintaining livestock grazing as an important part of the traditions and economies of local communities.

Habitat and Resource Conservation Stakeholders would see this alternative as more favorable to their interests and values than Alternative A, and as the most favorable of all the alternatives. This alternative has the lowest levels of projected oil and gas development. It generally also would reduce other types of development, for instance, by substantially restricting ROWs. Developed recreation would be de-emphasized, with no SRMAs retained, and OHV routes would be substantially reduced. These stakeholders would find these reductions in development, additional operational constraints on commodity resource uses, and constraints on OHV use and new recreation developments to be consistent with their interests. In addition, these stakeholders would find resource protection designations (e.g., the area in ACECs would be expanded considerably compared to Alternative A) supportive of their values. Additional management actions would be consistent with these stakeholders' values, including prohibitions on clear-cuts, exclusive use of native plants to establish DPC objectives, and management of lands with wilderness characteristics and WSAs for wilderness values even if not designated as wilderness by Congress.

Recreation Stakeholders would have mixed views regarding Alternative B. Many recreational activities would be able to take place under this alternative as they would under Alternative A. However, OHV recreation would be constrained compared to Alternative A, through reductions in OHV routes and other actions. OHV recreationists would find this alternative the least consistent with their interests. In addition, recreationists who prefer developed recreation facilities would have the lowest preference for this alternative, as it would not retain any SRMAs and would have other reductions in recreation development. However, some recreationists would favor the increased protections in this alternative for the open spaces they value, because the lowest levels of resource development would occur in this alternative. Recreationists who prefer quiet recreation experiences would also favor the reduction in areas and routes where OHV uses would take place.

## 4.22.6 Impacts of Alternative C

### Quantified Economic Impacts

Table N.19 in Appendix N summarizes the annual economic and fiscal impacts of Alternative C by program (resource use) and in total. These estimates are based on the first year of the study period, 2016. For livestock grazing, oil and gas development, coal and soda ash production, and recreation, the BLM assumed that the 2016 level of use would also be the average level of use across every year of the study period, 2016–2031. This assumption was based on the available data. For oil and gas production, use levels and economic impact would increase in every year of the study period as additional wells come into production. The increasing production levels were based on the RFD scenario. Table N.20 presents the cumulative economic and fiscal impacts of Alternative C across the entire study period, based on a discount rate of 3%. Table N.21 presents the cumulative impacts of Alternative C based on a discount rate of 7%. These two tables take into account both the increasing level of oil and gas production in each year of the study period and the time value of money. In the case of employment, which is not subject to discounting for the time value of money, the growth in jobs in oil and gas production across the study period is reflected in the figure for average jobs per year in the net present value tables. These three tables in Appendix N all address the livestock grazing analysis scenario based on historical billed AUMs, and the recreation analysis scenario based the high visitation scenario and using the economic impact (versus economic contribution) perspective.<sup>13</sup> For other scenarios for grazing and recreation, see the earlier section 4.23.3 Summary of the Quantitative Economic Impact Analysis Results.

Key high-level observations regarding the quantified economic impacts for Alternative C compared to Alternative A include:

- Total economic output attributable to BLM-administered land in the RSFO across all programs totals \$1.769 billion annually in 2016 in Alternative C. Earnings total \$388 million annually. Employment totals 5,549 jobs annually. These values are 2.0% to 2.2% greater than the comparable values for Alternative A.
- Total quantified public revenues in 2016 are 2.0% to 2.1% greater under Alternative C than Alternative A. The state redistributes a small portion of total severance taxes and federal mineral royalties directly to the local communities where the revenues are generated.
- When considered on a net present value basis, the percentage increases for all economic and public

<sup>13</sup> The rationales for these selections are as follows. For grazing, historical billed AUMs are the closest approximation possible for actual historical use, and future use is unlikely to differ dramatically, on average, from historical use. For recreation, the lower visitation scenario would probably under-represent future use given that some growth in recreation use over the study period is likely based on population and outdoor recreation trends, and economic impact is the most analogous analysis with the other resource uses.

revenue indicators are similar to the 2016 percentage increases noted above.

- The quantified economic impacts of livestock grazing, coal and soda ash production, and recreation are the same under Alternative C as Alternative A.

All quantified economic and public revenue indicators for oil and gas development and production are higher under Alternative C than Alternative A by slightly less than 3%. This is due to the slightly greater number of wells drilled under Alternative C and corresponding increases in oil and gas production as projected by the RFD scenario.

### **Other Market-Based Economic Impacts**

Alternative C emphasizes resource uses (e.g., energy and mineral development and other commodity uses). Relative to the other alternatives, Alternative C proposes the least restrictive management actions for energy and commodity development and the least protective management actions for physical, biological, and cultural resources while maintaining protections required by laws and regulations. Given this overall emphasis, Alternative C would in most cases result in increased economic activity relative to Alternative A, as quantified above and as discussed below.

In contrast to all other alternatives, Alternative C would have no ACECs and no other management areas for purposes other than recreation (see below). It would have the same acreage in WSAs as all other alternatives.

Various activities (e.g., new permanent facilities) that would be prohibited in certain areas (e.g. 100-year floodplains) in Alternative A and larger areas under Alternative B would be considered on a case-by-case basis in Alternative C. Or they would be subject to certain restrictions (e.g. seasonal restrictions on surface disturbing and/or disruptive activities in big game crucial winter range) rather than prohibitions.

Alternative C's management practice limitations are generally much less restrictive than those of Alternative B; in most cases they are similar to or even more permissive than under Alternative A. Examples include:

- Allowing logging operations on slopes up to 45%;
- Allowing a full range of woodland management practices, including pre-commercial thinning;
- Not applying any TLSs to surface disturbing activities to protect fishery critical life stages;
- Avoiding known locations of special status plant species for surface disturbing activities, rather than prohibiting such activities in such locations;
- Treating actions to reduce raptor perches as discretionary rather than required for new structures in Special Status Species habitat.

In addition, some activities that are the subject of restrictions in Alternative A and/or Alternative B would not be addressed or restricted in Alternative C, such as the placement of herbicide and pesticide loading, maintenance, and refueling areas relative to water sources, floodplains, riparian areas, and special status plant locations.

Considerably fewer acres would be closed to mineral material sales and disposal under Alternative C than Alternative A (226,421 vs. 833,719 acres). This could allow for increased commercial and local government uses, supporting local economic development.

Setback distances under Alternative C would be similar to or more permissive than those under Alternative A, and much less than under Alternative B. For instance, surface-disturbing activities under Alternative C would be allowed within the same ¼ mile distance of recreation sites as in Alternative A, compared to three miles under Alternative B.

Under Alternative C, site-specific activity and implementation plans (to reduce erosion and sediment yield, promote ground cover, and enhance water quality) may be prepared, but would not be required. In addition, there would be no requirement, as in Alternatives A and B, for hydrogeologic investigations where there is a reasonable expectation that surface water features are connected with geologic formations that are being dewatered.

Alternative C would generally have reduced mitigation requirements (and therefore costs) relative to Alternatives A and B.

Alternative C would limit total authorized AUMs to the highest level of billed use over the last 10 years (2009 – 2018). That figure is 160,387 AUMs, which is 142,881 less than the authorized AUMs under Alternative A. However, average historical billed use has been less than 160,387 AUMs, and the alternative allows use up to the highest use since 2009; therefore, the BLM believes that billed use would not be affected by the reduction in authorized AUMs under Alternative C.

Other management actions under Alternative C would generally treat livestock grazing similarly to or more favorably than Alternative A, and much more favorably than Alternative B. For instance, allotment stocking rates would be established to maximize utilization of forage in areas preferred by livestock. Alternative C would give priority to livestock forage needs when allocating vegetative resources regardless of site potential.

Alternative C generally manages recreation similarly to Alternative A but would favor developed recreation through designation of two additional SRMAs (Little Mountain and Red Creek Badlands). The SRMA acreage under Alternative C would total 592,800 acres, compared to 298,110 acres under Alternative A. Other resource uses would receive some preference over recreation under Alternative C. For instance, portions of the Wind River Front SRMA would be made available to mineral leasing. This could negatively impact recreational use of this area and its associated economic contributions. Similarly, oil and gas development would alter the visual experience and impact the historical experience value sought by users of the Oregon Trail and Overland Trail. These users would be likely to seek these experiences in other areas outside the RSFO.

Lands and realty actions—rights of way and corridors, land use authorizations, withdrawals, and land tenure adjustments—under Alternative C would generally be at least as favorable to economic development as under Alternative A. For instance, 225,784 acres would be identified as ROW exclusion areas under Alternative C, compared to 426,709 acres under Alternative A.

As in Alternative A, various management actions under Alternative C would generate economic activity due to the resulting expenditures made in the local and state economies by the BLM or by operators, although the level of economic activity from many of these actions would be small relative to the activity generated by resource uses.

### **Impacts on Nonmarket Values**

Nonmarket values associated with recreation would be similar to Alternative A under this alternative, with some potential for decreases in recreation consumer surplus values. In general, the recreation policies of the two alternatives are similar. However, Alternative C generally favors resource development values over recreation values. Some conflicts between these uses and values could occur, which could impact the quality

of recreational experiences and thereby reduce the consumer surplus values for some recreationists. However, consumer surplus for some OHV users could increase, as Alternative C would include an additional open play area that is not part of Alternative A or other alternatives.

In this alternative, the nonmarket values associated with livestock grazing would be similar to Alternative A. With one major exception, most of this alternative's grazing provisions are similar to those of Alternative A, and some appear to be more favorable. The exception is the limitation of total authorized AUMs under Alternative C to the highest level of billed use over the last 10 years (2009 – 2018). The resulting figure of 160,387 AUMs is considerably less than the 231,484 AUMs authorized under Alternatives A and D. However, average historical billed use has been less than 160,387 AUMs, and the alternative allows use up to the highest use since 2009; therefore, the BLM believes that billed use would not be affected by the reduction in authorized AUMs under Alternative C. Therefore, on an overall basis, continuation of livestock grazing operations, and their attendant nonmarket values such as ranching lifestyle and culture values and open space preservation, would be expected. At the same time, adverse nonmarket value impacts from livestock grazing's effects on native/non-native plant dynamics and availability of forage for wildlife would continue.

Use and non-use nonmarket values associated with wild horses would be lowest under Alternative C. This alternative would eliminate all wild horse herds from the analysis area. There would be no public opportunity to view wild horses under this alternative.

Alternative C would result in the lowest levels of other non-use values. It would allow the highest levels of extractive resource development and have the least restrictive policies on locations of such development. As a result, large areas of undeveloped open space that to some people represent the essence of southwestern Wyoming would be reduced, resulting in lower non-use values for people who enjoy the existence of such areas.

Ecosystem service nonmarket values would be less under this alternative than Alternative A and would be less than under the other alternatives. This alternative's greater emphasis on resource development likely would result in impacts to ecological and other natural functions that provide various ecosystem services. For example, provisions under other alternatives that are protective of riparian zones and reduce upland erosion levels would be weaker or would not exist under Alternative C, resulting in lower levels of ecosystem services values associated with water supplies.

## **Social Impacts**

Based on the analysis presented at the beginning of the Social Impacts subsection for Section 4.23.4, Impacts of Alternative A, social impacts driven by economic changes, such as stresses on community resources and community cohesiveness from high rates of resource development, would be highest under Alternative C. This alternative has the highest projected levels of oil and gas development and production. These levels are only marginally (i.e., under 3%) greater than projected levels under Alternative A, but Alternative C has many provisions that would facilitate achievement of high levels of development activity.

Mineral Development and Production Stakeholders would find this alternative to be most favorable to their interests and values, and to maintenance of the mineral development economy and culture. This alternative has the highest level of projected oil and gas development of all the alternatives. In addition, it carries forward policies that these stakeholders are very familiar with and have largely incorporated into their costs of business. This alternative also has actions that would additionally facilitate resource development relative to Alternative A.

Renewable Energy Stakeholders would generally find this alternative to be most favorable to their interests. It carries forward policies that these stakeholders are very familiar with and have largely incorporated into

their costs of business, and it would relax certain policies that could constrain renewable energy development. For instance, these stakeholders would favor the considerable reduction in ROW exclusion areas under this alternative.

Livestock Grazing Stakeholders would generally find this alternative to be most favorable to their interests. Alternative C would generally treat livestock grazing similarly to or more favorably than Alternative A, and much more favorably than Alternative B. Some management actions under Alternative C could allow for increased forage utilization.

Habitat and Resource Conservation Stakeholders would find this alternative unsatisfactory and the least favorable to their interests and values of all the alternatives. They would believe that long-term degradation of natural and cultural resources would result from the high levels of oil and gas development allowed under this alternative and from a range of management actions that ease operational constraints on oil and gas development. Additional actions that facilitate many types of development or remove resource protections relative to Alternative A and the other alternatives, such as removal of most ROW exclusion areas and all ACEC designations, would be seen by these stakeholders as antithetical to maintenance of natural and cultural resource values.

Recreation Stakeholders would have mixed views on this alternative (as they would with Alternative B, but for different reasons). Many recreational activities would be able to take place under this alternative, much as they would under Alternative A. However, recreationists who prefer quiet recreation experiences and appreciate undeveloped areas and landscapes would have the lowest preference for this alternative, because it would allow more development of oil, gas, and other resources than other alternatives, and because it would place fewer constraints on OHV use than most alternatives, particularly compared to Alternative B. Recreationists who prefer developed recreation facilities would find Alternative C favorable as it has the highest acreage in SRMAs and facilitates recreation development. Recreationists who enjoy OHV use would find this alternative most preferable because it largely maintains access to OHV routes and would establish an additional OHV open play area.

## 4.22.7 Impacts of Alternative D

### Quantified Economic Impacts

Table N.22 in Appendix N summarizes the annual economic and fiscal impacts of Alternative D by program (resource use) and in total. These estimates are based on the first year of the study period, 2016. For livestock grazing, oil and gas development, coal and soda ash production, and recreation, the BLM assumed that the 2016 level of use would also be the average level of use across every year of the study period, 2016–2031. This assumption was based on the available data. For oil and gas production, use levels and economic impact would increase in every year of the study period as additional wells come into production. The increasing production levels were based on the RFD scenario. Table N.23 presents the cumulative economic and fiscal impacts of Alternative D across the entire study period, based on a discount rate of 3%. Table N.24 presents the cumulative impacts of Alternative D based on a discount rate of 7%. These two tables take into account both the increasing level of oil and gas production in each year of the study period and the time value of money. In the case of employment, which is not subject to discounting for the time value of money, the growth in jobs in oil and gas production across the study period is reflected in the figure for average jobs per year in the net present value tables. These three tables in Appendix N all address the livestock grazing analysis scenario based on historical billed AUMs, and the recreation analysis scenario based the high visitation scenario and using the economic impact (versus economic contribution)

perspective.<sup>14</sup> For other scenarios for grazing and recreation, see the earlier section, Summary of the Quantitative Economic Impact Analysis Results

Key high-level observations regarding the quantified economic impacts for Alternative D compared to Alternative A include:

- Total economic output attributable to BLM-administered land in the RSFO across all programs totals \$1.723 billion annually in 2016 in Alternative D. Earnings total \$377 million annually. Employment totals 5,398 jobs annually. These values are about 0.7% less than the comparable values for Alternative A.
- Total quantified public revenues in 2016 are 0.7% less in Alternative D than in Alternative A. The state redistributes a small portion of total severance taxes and federal mineral royalties directly to the local communities where the revenues are generated.
- When considered on a net present value basis, the percentage reductions for all economic and public revenue indicators are similar to the 2016 percentage reductions noted above.
- The quantified impacts of livestock grazing, coal and soda ash production, and recreation are the same under Alternative D as Alternative A.

All quantified economic and public revenue indicators for oil and gas development and production are lower in Alternative D than Alternative A by 1.0%. This is due to the slightly lower number of wells drilled under Alternative D and corresponding reductions in oil and gas production as projected by the RFD scenario.

### Other Market-Based Economic Impacts

Alternative D provides a variety of opportunities to use and develop resources within the planning area while promoting environmental conservation. In general, this means that Alternative D's quantified economic effects are similar to or very slightly reduced relative to Alternative A (as shown above), and its additional economic effects generally are similar to Alternative A, with some aspects similar to Alternative B or C (as discussed below).

Alternative D would allow for a full range of current resource uses, and in some cases increased levels of use commensurate with current or future market conditions (e.g., renewable energy development). It does so while also protecting natural resource values in certain areas. For instance, Alternative D includes 246,634 acres of ACECs that would be managed for conservation, compared to 286,450 under Alternative A. In comparison to Alternative A, Alternative D adds an ACEC (Little Mountain ACEC, 108,010 acres) and does not include seven ACECs. Alternative D would have less land in other management areas than Alternative A (312,980 acres versus 580,010 acres); most notably the Red Desert Watershed Management Area would be reduced in size by about half and renamed the Red Desert Management Area.

Alternative D allows for a wide range of management practices, similar to Alternative A, but in some cases using a broader set of practices. This allows for cost effective management. For instance:

- It would allow use of all available treatment methods and natural processes to manage forest and

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<sup>14</sup> The rationales for these selections are as follows. For grazing, historical billed AUMs are the closest approximation possible for actual historical use, and future use is unlikely to differ dramatically, on average, from historical use. For recreation, the lower visitation scenario would probably under-represent future use given that some growth in recreation use over the study period is likely based on population and outdoor recreation trends, and economic impact is the most analogous analysis with the other resource uses.



woodland health.

- It would use best available methods to revitalize decadent forest stands—managing stand density and canopy cover according to silvicultural best practices and individual stand objectives.
- With respect to meeting vegetation management objectives, it would use naturally occurring wildfires, prescribed fire, chemical treatments, biological treatments, mechanical methods, and livestock grazing. This is as in Alternative C and is a broader set of practices than the preferred method of prescribed fire under Alternative A.
- It would use the techniques and BMPs of Integrated Pest Management (a comprehensive approach) to control and prevent the introduction, establishment, and spread of noxious weeds and other invasive species.

Alternative D's setback requirements would generally be greater than those under Alternative A, and similar to but in some cases less than distances under Alternative B. This would provide increase protection of natural values over Alternative A while not including some of the very large setbacks—with potential associated reductions in economic activity—of Alternative B.

Seasonal restrictions (and therefore associated costs) under Alternative D would be similar to or greater than under Alternative A, but generally less than under Alternative B.

Considerably fewer acres would be closed to mineral material sales and disposal under Alternative D than Alternative A (362,009 vs. 833,719 acres). This could allow for increased commercial and local government uses, supporting local economic development.

Activity and implementation plans would have to be prepared (and their costs incurred) in various situations, typically case-by-case, under Alternative D. This is a somewhat reduced requirement compared to Alternative A.

Alternative D would have various mitigation requirements, as do Alternatives A and B. Some of the specifics differ, but the overall effects in terms of mitigation would be similar across Alternatives A, B, and D, but greater than under Alternative C.

The economic effects of Alternative D (but not necessarily the exact management actions) with respect to livestock grazing would be similar to Alternative A. There could be some adjustments to livestock grazing use when land health evaluations, monitoring data or other acceptable scientific analysis demonstrate that changes in grazing management are needed and appropriate.

The economic effects of Alternative D with respect to recreation would be similar to Alternative A, although not all management actions would be the same. Alternative D would have less acreage in SRMAs (135,549 acres) than Alternative A (298,110 acres). It would also have fewer SRMAs: three compared to six under Alternative A.

Alternative D would have largely similar economic effects as Alternative A with respect to rights of way and corridors. It would have less acreage in ROW exclusion area status than Alternative A (286,289 acres versus 426,709 acres) but greater acreage in ROW avoidance areas (1,388,618 acres versus 736,138 acres).

Alternative D would be effectively the same as Alternative A regarding land use authorizations, withdrawals, and land tenure adjustments. Under Alternative D, the BLM would be able to take lands and realty actions to facilitate economic development in a similar way as Alternative A.

As in Alternative A, various management actions under Alternative D would generate economic activity due to the resulting expenditures made in the local and state economies by the BLM or by operators, although the level of economic activity from many of these actions would be small relative to the activity generated by resource uses.

### Impacts on Nonmarket Values

Nonmarket values associated with recreation would be similar to those in Alternative A. Consumer surplus values for non-motorized recreationists may increase relative to Alternative A, due to Alternative D's greater protection of the ecological resources that are valued by many of these recreationists. Consumer surplus values may decrease for some motorized recreationists due to somewhat greater controls on OHV use under Alternative D.

The nonmarket values associated with livestock grazing in this alternative would be similar to Alternative A. In general, the provisions of the two alternatives that affect grazing are similar, at least at the level of overall support to the viability of ranching operations and maintenance of the lifestyle and landscape amenity values associated with ranching. Similarly, adverse nonmarket value impacts from livestock grazing's effects on native/non-native plant dynamics and availability of forage for wildlife would continue.

Use and non-use nonmarket values associated with wild horses would be lower under Alternative D compared to Alternatives A and B, but greater than under Alternative C. This alternative would reduce the number of wild horse HMAs to three and reduce the overall number of wild horses (the AML) compared to Alternatives A and B.

Alternative D would provide variable levels of other non-use values compared to Alternative A and Alternative C, and lower levels than Alternative B. It includes 246,634 acres of ACECs that would be managed for conservation, compared to 286,450 acres under Alternative A, no acres under Alternative C, and 1,605,660 acres under Alternative B. Its setback distance requirements would generally be greater than those under Alternative A, and similar to but in some cases less than setback distances under Alternative B. It would also protect resources by placing more total acres (2,363,716) in ROW exclusion or avoidance areas than Alternative A (2,282,260) or Alternative C (1,923,088). These and other provisions of Alternative D would help sustain non-use values for people who enjoy the existence of large areas of open space in southwestern Wyoming.

Ecosystem service nonmarket values under Alternative D generally would be similar to Alternative A and in some cases, may be greater. Alternative D, like Alternative A, allows for many resource development opportunities, but provides greater protection for conservation and ecological values generally, and sensitive resources in particular. For instance, Alternative D's setback requirements and seasonal restrictions are typically at least as protective – for instance, of ecosystem service values associated with healthy riparian zones role in supporting human water supplies – as those of Alternative A, and in some cases, are more protective. Alternative A would have somewhat greater acreages than Alternative D in ROW exclusion areas, in ACECs, in areas closed to oil and gas leasing, and in areas managed with NSO or CSU stipulations for oil and gas development. These provisions would tend to protect natural conditions that support water quality and other ecosystem service values.

### Social Impacts

Based on the analysis presented at the beginning of the Social Impacts subsection for Section 4.23.4, Impacts of Alternative A, social impacts driven by economic changes, such as stresses on community resources and community cohesiveness from high rates of resource development, would be similar to Alternative A. The overall level of oil and gas development under Alternative D is only marginally (i.e., about 1% for conventional oil and gas wells) less than under Alternative A. In some localized areas, social

impacts might be reduced in Alternative D compared to Alternative A due to provisions of Alternative D that provide greater protection of other resource values on BLM-administered land. Such protections may mitigate some of the social impacts of high levels of oil and gas development and production.

Mineral Development and Production Stakeholders generally would find this alternative conducive to their interests and values. They would find Alternative D less favorable than Alternative C in terms of operational constraints on development. However, Alternative D would be similar to Alternatives A and C in terms of the overall expected level of oil and gas development (marginally fewer wells would be drilled under Alternative D). This group would see Alternative D as providing many economic opportunities from mineral development that support their livelihoods and the economies of local communities, the state, and nation, and would see this alternative as allowing for continuation of the mineral development traditions and customs of many Wyoming residents and communities.

Renewable Energy Stakeholders would view this alternative as similar for their interests to Alternative A, less favorable than Alternative C, and considerably more favorable than Alternative B. A key factor in this perspective would be that Alternative D would have less acreage in ROW exclusion areas but more acreage in ROW avoidance areas than Alternative A, more acres in both types of areas than Alternative C, and much less acreage in ROW exclusion areas than Alternative B.

Livestock Grazing Stakeholders would view this alternative similarly to Alternative A, though perhaps somewhat less favorably. In terms of the quantitative economic impact estimates, this alternative generates the same amount of economic activity as Alternative A. In qualitative terms, Alternative D's provisions are similar in overall effect on livestock operators to those of Alternative A, but there could be some adjustments to livestock grazing use based on the results of Land Health Evaluations. This group would see Alternative D as somewhat less favorable than Alternative C, and more favorable than Alternative B, to their operations and to continuation of the livestock grazing customs and culture of the planning area.

Habitat and Resource Conservation Stakeholders would find this alternative more favorable than Alternative A or C, but less favorable than Alternative B. This view would be based in part on the somewhat lower level of oil and gas development in Alternative D compared to Alternative A or C. In addition, the greater levels of specific, often area-focused, oil and gas development and operational constraints of Alternative D compared to Alternatives A and C would be seen by this group as more protective of natural and cultural resource values. They would be disappointed that Alternative D has fewer acres in ROW exclusion areas and ACECs than Alternative A. These stakeholders would find this alternative less favorable to their interests and values than Alternative B due to Alternative B's greater levels of area-specific and general resource protections.

Recreation Stakeholders overall would view Alternative D similarly to Alternative A; the recreation policies and levels of resource development are similar. However, views would vary by the type of recreationist. Those who prefer developed recreation opportunities would prefer Alternative A because Alternative D would have less acreage in SRMAs (135,549 vs. 298,110 acres). Recreationists interested in OHV riding opportunities would find Alternative D less preferable to Alternative A because it constrains where OHV users can ride. OHV riders would find Alternative D less preferable than Alternative C and much more preferable than Alternative B. Recreationists who favor quiet recreation and undeveloped open spaces would prefer Alternative D over Alternatives A and C due to Alternative D's greater controls on resource development and OHV use. However, they would prefer Alternative B over Alternative D because Alternative B provides much greater controls on both resource development and OHV use.

### 4.22.8 Environmental Justice Impacts

The Socioeconomic Baseline Report presents the methodology for screening the socioeconomic study area for potential EJ populations, and the results. Once potential EJ populations are identified, EJ impact analysis consists of determining if the subject populations would experience disproportionately high and adverse environmental or human health effects under one or more of the management alternatives. Environmental health effects may include cultural, economic, or social impacts when those impacts are interrelated to impacts on the natural or physical environment. EJ impacts would not vary across alternatives.

The following places in the socioeconomic study area were flagged as areas of potential concern from an EJ perspective, for the populations noted. Asterisks and bold italicized font indicate places that are located within or immediately adjacent to the RSFO. Places without this notation are within the socioeconomic study area but further from the RSFO boundary.

#### Fremont County

- Arapahoe census-designated place (CDP) for Native American minority population and population in poverty (all ages, related children under 18, families).
- Atlantic City CDP for population in poverty (all ages, 65 and older, families).
- Boulder Flats CDP for population in poverty (all ages, related children under 18).
- Crowheart CDP for Native American minority population and population in poverty (all ages, related children under 18, families).
- Ethete CDP for Native American minority population and population in poverty (all ages, related children under 18, 65 and older, families).
- Fort Washakie CDP for Native American minority population and population in poverty (65 and older).
- Hudson Town for population in poverty (families).
- Johnstown CDP for Native American minority population.
- Shoshoni Town for population in poverty (all ages, related children under 18).
- In addition, the Wind River Indian Reservation is flagged because of its status as an Indian reservation.
- The county as a whole has a Native American minority population that exceeds the threshold value as defined above. However, the place-specific data, including the presence of the Indian Reservation, likely provide the relevant analytical focus for the Rock Springs RMP.

#### Lincoln County

- Afton Town for population in poverty (related children under 18).
- Alpine Northeast CDP for population in poverty (all ages).
- Auburn CDP for population in poverty (all ages, related children under 18, families).
- Bedford CDP for population in poverty (65 and older).

- *La Barge Town*\* for population in poverty (related children under 18).
- Thayne Town for population in poverty (65 and older).
- Turnerville CDP for population in poverty (all ages, 65 and older).

### **Sublette County**

- Big Piney Town for population in poverty (related children under 18).
- Daniel CDP for population in poverty (all ages).

### **Sweetwater County**

- Bairoil Town for Hispanic minority population.
- *Clearview Acres CDP*\* for Hispanic minority population.
- *James Town CDP*\* for population in poverty (65 and older).
- Little America CDP for minority population (Some Other Race, and Hispanic).
- *Purple Sage CDP*\* for minority population (Some Other Race, and Hispanic) and population in poverty (all ages, related children under 18, families).
- Wamsutter Town for Hispanic minority population.
- *Washam CDP*\* for population in poverty (all ages, 65 and older, families).

### **Uinta County**

- No places flagged for minority populations or populations in poverty.

This planning-level effort does not approve or commit to any specific projects and therefore does not analyze the environmental, economic, or social impacts of unknown future projects. Without specific implementation-level (project-level) information, it is impossible to fully analyze the potential for EJ impacts. Further EJ analysis will be conducted during implementation for project-specific NEPA analyses. During implantation of a specific project or response to a project application, that process will consider reasonable mitigation measures within our authority, as well as other resource protection measures already in place that may benefit EJ communities. However, the following comments address the general potential for EJ impacts to occur.

For Fremont County, none of the alternatives would create disproportionately high and adverse environmental or human health effects on the identified communities or the county's population of Native Americans. Only a small portion of the RSFO is located within Fremont County, in a very sparsely populated portion of the county, and the communities identified above as having potential EJ populations are all located at a considerable distance from the RSFO. Thus, it is unlikely that direct environmental or human health effects (if any) of management actions in the RSFO would have disproportionate impacts on the identified populations. Further, the economic effects of management actions in the RSFO would be attenuated in Fremont County since most of the support for economic activity on BLM-administered lands in the northeastern portion of the RSFO comes from Sweetwater County, not Fremont County. For instance, this is shown by employment statistics of the U.S. Bureau of Labor Statistics. In 2010, a total of 3,123 people in Sweetwater County were employed in oil and gas industry sectors, while only 683 people were employed in these sectors in Fremont County.<sup>15</sup> It is likely that only a small portion of Fremont County workers serve the RSFO, and only a portion of those workers are Native Americans or lives in one of the

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<sup>15</sup> The following sectors under the North American Industry Classification System (NAICS) were included: 211 - Oil and Gas Extraction, 213111 - Drilling Oil and Gas Wells, and 213112 - Support Activities for Oil and Gas Operations

identified communities. Most importantly, it is unlikely that any adverse impacts would fall disproportionately on the EJ populations within this workforce.

In Lincoln County, all the identified communities, with one exception, are located at considerable distance from the boundaries of the RSFO and thus would be unlikely to disproportionately experience any adverse impacts of RSFO management actions. The exception to this locational pattern is La Barge, which is located on the edge of the northwest corner of the RSFO, and in close proximity to an area within the RSFO (and outside the RSFO) that is experiencing very high levels of gas development. The only population in La Barge that met the EJ screening criteria is population of related children under the age of 18 that are in poverty. It is possible that gas development could have adverse health impacts on the EJ population of La Barge. However, in all alternatives any adverse impacts would affect all and any foregone benefits would either accrue to or be foregone for all populations, not just the potential EJ population identified in La Barge. There would be no disproportionality of impacts. Therefore, the impacts would not be considered EJ impacts.

In Sublette County, the community of Daniel is located at considerable distance from the RSFO and would be unlikely to experience any disproportionate adverse impacts from RSFO management actions. The community of Big Piney is within 10-15 miles of the RSFO boundary, in proximity to a portion of the RSFO that is experiencing very high levels of gas development. As with La Barge, the EJ population is related children under the age of 18 that are in poverty. A similar logic with respect to adverse health impacts would apply to Big Piney.

For Sweetwater County, the communities of Wamsutter and Bairoil are located at considerable distance from the boundaries of the RSFO and thus would be unlikely to disproportionately experience any adverse impacts. The community of Little America is also at some distance from the RSFO boundary. Four identified communities in Sweetwater County are located within the boundaries of the RSFO. The communities of Clearview Acres, James Town, and Purple Sage are located in the central portion of Sweetwater County between Rock Springs and Green River. They are not in proximity to any areas that would be expected to see high levels of resource development. The community of Washam is located in the southwest section of the county, not far from Flaming Gorge Reservoir. It is also not in proximity to any high resource development areas. Thus, based on the low likelihood of oil and gas resource development, the potential EJ populations in these four communities would be unlikely to disproportionately experience any adverse environmental (including economic) or human health impacts from RSFO management actions. However, future impacts to these EJ populations based on unforeseen future resource development or other actions (e.g., land authorizations, development of other minerals) cannot be ruled out in this planning-level EIS. The potential for impacts would need to be assessed at the implementation level.

Environmental justice guidance also directs the BLM to consider potential impacts on Tribes. The BLM has continued to consult and coordinate with Tribes to identify whether any Native American cultural values, religious beliefs, or traditional practices could be affected. The BLM has considered all input from persons or groups regardless of age, income status, race, or other social or economic characteristics. The outreach and public involvement activities taken by the RSFO for this planning effort are discussed in Chapter 5.

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## **CHAPTER 5—CONSULTATION AND COORDINATION**

Public involvement, consultation, and coordination have been at the heart of the planning process leading to this draft Environmental Impact Statement (EIS) and Resource Management Plan (RMP) revision. This was accomplished through public meetings, informal meetings, individual contacts, news releases, planning bulletins, a planning website, and Federal Register notices.

This chapter describes the public involvement process as well as other key consultation and coordination activities undertaken for the preparation of draft EIS and RMP revision. Table 5-1 displays a list of public involvement and cooperating agency meetings.

**Table 5-1. Public Involvement, Coordination, and Consultation Events**

<b>Date</b>	<b>Location</b>	<b>Type</b>
February 23, 2011	Rock Springs, Wyoming	Cooperating agency training and workshop
February 28, 2011	Lander, Wyoming	Public scoping meeting
March 1, 2011	Rock Springs, Wyoming	Public scoping meeting
March 2, 2011	Farson, Wyoming	Public scoping meeting
March 3, 2011	Lyman, Wyoming	Public scoping meeting
September 14-16, 2011	Rock Springs, Wyoming	Cooperating agency meeting/Goals and Objectives workshop
November 2-4, 2011	Rock Springs, Wyoming	Cooperating agency meeting/Alternative development
January 9, 2012	Rock Springs, Wyoming	Public socioeconomic strategies workshop
January 9-13, 2012	Rock Springs, Wyoming	Cooperating agency meeting/Alternative development
February 21-23, 2012	Rock Springs, Wyoming	Cooperating agency meeting/Alternative development
March 20-23, 2012	Rock Springs, Wyoming	Cooperating agency meeting/Alternative development
April 16-19, 2012	Rock Springs, Wyoming	Cooperating agency meeting/Alternative development
November 13, 2012	Rock Springs, Wyoming	CTTMP public outreach meeting
November 14, 2012	Lyman, Wyoming	CTTMP public outreach meeting
November 15, 2012	Farson, Wyoming	CTTMP public outreach meeting
December 19-21, 2012	Rock Springs, Wyoming	Cooperating agency meeting/Alternative development
September 11, 2013	Rock Springs, Wyoming	Consent decree public outreach meeting
September 12, 2013	Rawlins, Wyoming	Consent decree public outreach meeting
August 24, 2016	Rock Springs, Wyoming	Public information meeting
October 18-20, 2016	Rock Springs, Wyoming	Cooperating agency meeting/Alternative development

Date	Location	Type
November 8-10, 2016	Rock Springs, Wyoming	Cooperating agency meeting/Alternative development
April 19, 2017	Rock Springs, Wyoming	Cooperating agency meeting/Preliminary preferred alternative review
March 28, 2018	Rock Springs, Wyoming	Cooperating agency meeting/Review of comments on preliminary draft RMP/EIS
May 23, 2019	Rock Springs, Wyoming	Cooperating agency meeting/Review of comments on preliminary draft RMP/EIS
July 14, 2020	Virtual	Cooperating agency meeting/Alternative review

## 5.1 CONSULTATION AND COORDINATION

This section documents the consultation and coordination efforts undertaken by the Bureau of Land Management (BLM) while developing the draft RMP revision and EIS.

Coordination with other agencies and consistency with other plans were accomplished through frequent communications, meetings, and cooperative efforts between the BLM interdisciplinary team and involved federal, state, and local agencies and organizations. Coordination and consistency for the draft EIS were accomplished primarily through the assistance of cooperating agencies formally involved in the project (Section 5.1.1).

The U.S. Fish and Wildlife Service (USFWS) has been involved in the development of the alternatives as a cooperating agency and has been contacted for Endangered Species Act Section 7 consultation.

Coordination with the U.S. Environmental Protection Agency (EPA) has occurred throughout the RMP amendment process by phone and through various meetings.

The Wyoming State Historic Preservation Office (SHPO) is participating as a cooperating agency and has provided input throughout the RMP amendment process.

### 5.1.1 Cooperating Agencies

The BLM Rock Springs Field Office (RSFO) extended cooperating agency status to government entities and agencies throughout the five-county planning area. The following is a list of the cooperating agencies that have actively attended the cooperators meetings leading to the development of the draft RMP and EIS.

- City of Rock Springs
- Coalition of Local Governments
- Fremont County
- The Governor's Office
- Lincoln County
- Lincoln County Conservation District
- Sublette County Commissioners
- Sublette County Conservation District
- Sweetwater County



- Sweetwater County Conservation District
- Uinta County
- Uinta County Conservation District
- U.S. Bureau of Reclamation
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- U.S. Department of Agriculture: Animal and Plant Health Inspection Service
- U.S. National Park Service
- Wyoming County Commissioners Association
- Wyoming Department of Agriculture
- Wyoming Department of Environmental Quality
- Wyoming Game and Fish Department
- Wyoming Geological Survey
- Wyoming Office of State Lands and Investments
- Wyoming Pipeline Authority
- Wyoming SHPO.

The cooperating agencies were formally invited to participate in developing the alternatives and to provide data and other information relative to their disciplines. The BLM held meetings with the cooperating agencies on February 23, 2011 and November 13, 2012 concerning the approach to the planning process. The cooperating agencies were invited to work with the BLM interdisciplinary team in developing the alternatives during the weeks of September 14-16 and November 2-4, 2011, and January 9-13, February 21-23, March 20-23, April 19-21, and December 19-21, 2012. They were invited again to develop and finalize Alternative D on October 18-20 and November 8-10, 2016, April 19, 2017, and May 23, 2019 (Table 5-1).

### 5.1.2 Coordination and Consistency

Frequent communications and cooperative efforts between the BLM and federal, state, and local agencies allowed for coordination with these agencies and consistency with other agency, local, and state government plans. The Wyoming Governor's Clearinghouse received copies of this draft EIS for review to ensure consistency with ongoing state plans. The interdisciplinary team reviewed county land use plans to ensure consistency. Meetings were held with the respective county planners and commissioners to promote greater understanding of goals, objectives, and resources of the counties and the BLM. Table 5-2 summarizes coordination actions undertaken by various federal, state, and local agencies for the RMP development process.

**Table 5-2. Key Coordination Actions**

Agency	Coordination/Responsibility
<b>FEDERAL AGENCIES</b>	
Bureau of Reclamation (BOR)	Coordinates mineral leasing and other activities that affect lands administered by the BOR.
USFWS	Reviews actions affecting threatened or endangered species of fish, wildlife, or plants. Performs Section 7 consultation, coordination, and review. Coordination on the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.
U.S. Geological Survey (USGS)	Reviews RMP/EIS amendments for consistency with USGS planning.

Agency	Coordination/Responsibility
Office of Natural Resources Revenue (ONRR)	Reviews RMP/EIS amendments for consistency with ONRR planning.
Animal and Plant Health Inspection Service—Wildlife Services	Coordinates annual management plan for animal damage control activities on public lands.
U.S. Environmental Protection Agency	Coordinates with the Forest Service and the Department of Environmental Quality (DEQ) on monitoring and collecting air quality data. Reviews air quality monitoring data. Files Federal Register notices.
U.S. Forest Service	Coordinates mineral leasing and other activities that affect lands administered by the Forest Service. Reviews the EIS/RMP for consistency with Forest Service planning. Proposed actions would also be discussed with the Wyoming State Forestry Division and other agencies involved in wildland fire management. Coordinates and cooperates with EPA and DEQ on monitoring and collection of air quality data.
<b>STATE AGENCIES</b>	
State of Wyoming	Participates in the environmental analysis and documentation process by providing information concerning environmental issues for which the State of Wyoming has jurisdiction by law or special expertise. Provides information from state records on matters that include RMP/LRMP EIS project impacts on air quality and Class 1 airsheds, fish and wildlife, domestic livestock grazing, watershed and water quality, social and economic impacts, minerals, and State of Wyoming permitting requirements.
Wyoming Department of Environmental Quality	Coordinates and cooperates on water quality, development of monitoring for visibility standards and guidelines, and collecting air quality data.
Wyoming Department of Transportation	Coordinates and cooperates on transportation planning and highway access.
Wyoming Game and Fish Department	Coordinates and cooperates on vegetation manipulation projects, wildlife habitat management, and Special Status Species.
Wyoming SHPO	Consults on compliance with Section 106 of the National Historic Preservation Act in accordance with the National Programmatic Agreement, as implemented in the Wyoming Protocol to that agreement.
State Engineer's Office	Coordinates and cooperates on water rights and permitting.
<b>COUNTY AGENCIES</b>	
Fremont County	Participates in the environmental analysis and documentation process by providing information concerning environmental issues for which the county has jurisdiction by law or special expertise.
Lincoln County	
Sublette County	
Sweetwater County	
Uinta County	
<b>COUNTY CONSERVATION DISTRICTS</b>	
Lincoln County Conservation District	Assists with the conservation of Wyoming's soil and water resources, promotes the control of soil erosion, promotes and

Agency	Coordination/Responsibility
Sublette County Conservation District	protects the quality of Wyoming's waters, reduces siltation of stream channels and reservoirs, promotes wise use of Wyoming's water and all other natural resources, preserves and enhances wildlife habitat, protects the tax base, and promotes the health, safety, and general welfare of the citizens of this state through a responsible conservation ethic.
Sweetwater County Conservation District	
Uinta County Conservation District	

### 5.1.3 Native American Interests

The federal government's broad relationship with each and every Native American Tribe is embodied in the U.S. Constitution, treaties, court decisions, federal statutes, and executive orders. It is based in Tribal sovereignty and the trust responsibility that the federal government (and its agencies) have with Native American Tribes. This relationship is deeply rooted in history dating back to the earliest contact between colonial and tribal governments. As other colonial powers did, the United States acknowledges federally recognized Native American Tribes as sovereign nations; thus, their interaction takes place on a "government-to-government" basis. Sovereignty means federally recognized tribes are distinct and independent political communities within the U.S. borders as recognized by the U.S. Constitution and Supreme Court cases. Tribes retain the various aspects of sovereignty unless expressly lost through treaty or statute.

At the start of the RMP revision process, the Tribes listed in the distribution list (in Section 5.3) were invited to consult on the planning effort within the Government-to-Government framework. Two of the tribes, the Eastern Shoshone Tribe and the Ute Tribe of Uintah and Ouray Reservation, expressed interest in conducting field visits and meetings if tribal issues were identified throughout the process; however, no specific areas of concern were identified. Additionally, the Joint Business Council for the Eastern Shoshone and Northern Arapaho Tribes did express their support for the Jack Morrow Hills Coordinated Activity Plan (2006 RMP Amendment) and the effectiveness of BLM's implementation of that plan. Throughout the planning process, the BLM invited tribes to field visits to review specific sites that are known to be of tribal importance; however, no specific field visits were requested or conducted.

In addition to Government-to Government consultation efforts, the tribes have been kept informed of progress and relevant information by including them whenever such information was sent to the cooperators. This included meeting schedules, data and other information, and availability of the DEIS asking for comments.

The RMP revision does not list specific sites that are important to the tribes. Locations of Sacred sites, Traditional Cultural Properties and other sites of tribal significance have been withheld from the document to protect their integrity and help preserve the sites.

## 5.2 PUBLIC PARTICIPATION

Public participation in the EIS process includes a variety of efforts to identify and address public concerns and needs. The public involvement process assists the agencies in the following:

- Broadening the information base for decision making
- Informing the public about the RMP/EIS and the potential impacts associated with various management decisions
- Ensuring that public needs and viewpoints are understood by the agencies.

## 5.2.1 Scoping Period

The public is provided a scoping period to identify potential issues and concerns associated with the RMP and EIS. Information obtained by the BLM during public scoping is integrated with issues identified by the agencies to form the scope of the EIS.

A Notice of Intent (NOI) was published in the Federal Register on February 1, 2011 to formally announce that the BLM RSFO was revising the existing Green River RMP and preparing an associated EIS. The notice invited the affected and interested agencies, organizations, and members of the general public to participate in determining significant issues to be addressed in the planning alternatives and analyzed in the EIS amendments. A public news release was published on October 29, 2012 which announced the start of the public outreach period for the CTTMP. A second public news release on August 16, 2013 announced the start of the public outreach period for the management contained in the consent decree from the litigation of the BLM by the Rock Springs Grazing Association resolved through settlement discussions in the spring of 2013 (Consent Decree and Joint Stipulation for Dismissal [Consent Decree] in Rock Springs Grazing Association v. Salazar, No. 11- CV-00263-NDF).

### Scoping Notice

The official 60-day scoping period began when the NOI was published in the Federal Register. The notice invited the public to participate in the scoping process and requested comments on issues and planning criteria related to RMP amendments. The scoping period ran from February 1, 2011 through April 4, 2011. The Scoping Notice also included information on the Field Office, the reasons for the plan revision, and how to participate in the scoping process.

### Scoping Meetings

The initial public scoping meetings for the Rock Springs RMP revision were held in Lander, Rock Springs, Lyman, and Farson, Wyoming, on February 28, and March 1, 2, and 3, 2011 respectively. During the four scoping meetings, 85 people registered their attendance. The public meetings for the CTTMP were held in Rock Springs, Lyman, and Farson, Wyoming on November 13, 14, and 15, 2012, respectively. During the three public meetings, 44 people registered their attendance. The public meetings for the consent decree for wild horses were held in Rock Springs and Rawlins, Wyoming on September 11 and 12, 2013, respectively. A total of 19 people attended those meetings. The meetings were structured in an open house format, with various information tables representing issues such as mineral and energy development, fish and wildlife habitat, recreation, wild horses, travel routes, and other resource areas. Public comments were collected during the scoping meetings and throughout the scoping period through mail, e-mail, and the project website.

Comments were categorized by topic area for analysis purposes. Fluid minerals and fish and wildlife were the two categories that received the most comments during the initial scoping period. Comments focused on travel routes and wild horses were received during the respective comment periods.

Although fewer in number, comments were also received dealing with special status species, livestock grazing, climate change, lands and realty, and socioeconomics. The full public scoping and public outreach reports for the Rock Springs RMP Revision, CTTMP, and Consent Decree for Wild Horses can be viewed at the following ePlanning URL: <https://eplanning.blm.gov/eplanning-ui/project/13853/510>

## 5.2.2 Mailing List

The mailing list for public scoping was developed from the existing Rock Springs mailing list and updated throughout the planning process. Scoping meeting participants were given the option of being added to the mailing list. In addition, individuals were able to request to be placed on the list by contacting BLM staff

via email or letter. The Rock Springs RMP Revision website mailing list has been used as the basis for the distribution of the draft EIS for the Rock Springs RMP.

### 5.2.3 Newsletters

A newsletter was developed to inform the public about the Rock Springs RMP planning process. The February 2011 newsletter provided basic background information on the project, including the purpose and need for revising the RMP and issues that the project may address. The newsletter also extended an invitation to the public to get involved in the process and advertised the RMP project website.

### 5.2.4 Website

The Rock Springs RMP Revision project website can be found at <https://eplanning.blm.gov/eplanning-ui/project/13853/510>.

The site serves as a virtual repository for documents related to RMP development, including announcements, bulletins, and draft and final documents. These documents are maintained in PDF to ensure their availability to the widest range of users.

The website also provided the opportunity for the general public to submit their comments for consideration as part of the scoping process and request to be added to the project mailing list to receive periodic newsletters and announcements.

### 5.2.5 Future Public Participation

Public participation efforts will be ongoing throughout the remainder of this EIS process. One substantial part of this effort will be the opportunity for members of the public to comment on the content of this draft EIS during the specified comment period. The final EIS will respond to all substantive oral and written comments received during the comment period. After the BLM issues the final EIS, public protest during a 30-day period will also occur before the record of decision is issued.

## 5.3 DISTRIBUTION LIST

### Tribal Governments

- Eastern Shoshone Tribal Council
- Arapaho Tribal Business Council
- Northern Cheyenne Tribal Council
- The Ute Tribe of the Uintah and Ouray Reservation
- Shoshone-Bannock Tribes.

### Bureau of Indian Affairs Offices

- Bureau of Indian Affairs—Billings Area Office
- Bureau of Indian Affairs—Wind River Agency.

### Local Governments (counties, cities, towns)

- City of Casper
- City of Cheyenne
- City of Green River
- City of Laramie
- City of Rawlins

- City of Rock Springs
- Carbon County, Wyoming
- Converse County, Wyoming
- Converse County Conservation District
- Crook County, Wyoming
- Crook County Natural Resource District
- Laramie County, Wyoming
- Laramie Rivers Conservation District
- Lincoln Conservation District
- Lincoln County, Wyoming
- Lingle-Fort Laramie Conservation District
- Little Snake River Conservation District
- Medicine Bow Conservation District
- Natrona County, Wyoming
- Natrona County Conservation District
- Niobrara County, Wyoming
- Platte County, Wyoming
- Saratoga-Encampment-Rawlins Conservation District
- South Goshen Conservation District
- Sublette County, Wyoming
- Sublette County Conservation District
- Sweetwater County, Wyoming
- Sweetwater County Conservation District
- Uinta County, Wyoming
- Uinta County Conservation District
- Weston County Natural Resource Conservation District.

### **Wyoming State Agencies**

- Office of the Governor
- Wyoming Department of Environmental Quality
- Wyoming Department of Agriculture
- Wyoming Department of State Parks and Cultural Resources
- Wyoming Department of Transportation
- Wyoming Office of Information, Planning, and Coordination
- Wyoming Business Council, Economic and Community Development
- Wyoming Game and Fish Department
- Wyoming State Geologic Survey
- Wyoming Office of State Lands and Investments
- Wyoming State Engineer's Office
- Wyoming State Museum
- Wyoming State Historic Preservation Office.

### **Wyoming State Boards/Commissions**

- Land Quality Advisory Board
- Wyoming Livestock Board
- State Mining Council
- Wyoming Business Council
- Natural Gas Pipeline Authority
- Trails Council
- Wyoming Oil and Gas Conservation Commission
- Air Quality Advisory Board

- Groundwater Advisory Committee
- Wyoming Outfitters and Guides Association
- Board of Wildlife Commissioners.

### **Congressional Delegations (House and Senate)**

- Senator Mike Enzi
- Senator John Barrasso
- Congresswoman Liz Cheney

### **Department of Interior (non-Bureau of Land Management) Offices**

- National Park Service
- USFWS
- Bureau of Indian Affairs
- Office of Surface Mining
- Minerals Management Service
- U.S. Geological Survey
- BOR
- Office of Environmental Policy and Compliance.

### **Non-Department of Interior Federal Agencies**

- EPA Headquarters
- EPA Region 8
- Department of Transportation
- Federal Energy Regulatory Commission
- Department of Agriculture
  - U.S. Forest Service
  - Animal and Plant Health Inspection Service
- Army Corps of Engineers
- Natural Resources Conservation Service
- Department of Energy.

### **Regional Associations**

- Wyoming Association of Municipalities
- Wyoming Association of County Officials.

## **5.4 LIST OF PREPARERS**

This section (Table 5-3) lists the people primarily responsible for preparing this EIS and presents their qualifications. Booz Allen Hamilton, a contractor selected to prepare the EIS as directed by the BLM, has certified that it does not have any financial or other interest in the outcome of decisions to be made pursuant to this EIS. In addition to the specific responsibilities listed, many BLM employees also contributed substantial time consulting with other agency personnel in preparing this EIS.

**Table 5-3. List of Preparers and Contributors**

<b>Name</b>	<b>Education</b>	<b>Project Role</b>
Kimberlee Foster	BS, Biochemistry	Rock Springs Field Office Manager
Carlos Coontz	MS, Applied Geography	Project Manager
Spencer Allred	BS, Rangeland Management	Livestock Grazing

Travis Bargsten	BS, Range and Forest Management	Planning and Environmental Specialist
Jay D'Ewart	BS, Rangeland Management and Wildlife Resources	Wild Horses
Dennis Doncaster	BA, Physical Science MS, Natural Resources	Water Quality—Surface and Groundwater
Jennifer Fleuret	MS, Forest Engineering and Hydrology	Planning and Environmental Coordinator
T.J. Franklin	MS, Natural Resources BA, Environmental Geography	Natural Resource Specialist
Jim Glennon	BS, Biology MS, Botany	Vegetation, Threatened and Endangered Plants
Holly Goggin	MS, Geology	Solid Minerals
Lauren Hazzard	BA, Environmental Studies	Recreation, Visual Resource Management, Travel Management
John Henderson	MS, Fisheries and Wildlife Biology	Fisheries
Morgan Hill	MS, Geology BS, Geology	Physical Scientist
Melissa Hovey	MS, Environmental Engineering	Air Quality
Crystal Hoyt	BLM Lands school	Lands and Realty
Frank Keeler	BS, Natural Resource Management	District Fire Management Officer
Michael Ladouceur	BS, Geology	Minerals and Lands
Gavin Lovell	BS, Range/Wildlife	Assistant Field Office Manager, Resources
Jessica Montag	MS, Recreation Resource Management Ph.D., Wildlife Biology	Social and Economics
Joanna Nara-Kloepper	BS, Mining Engineering	Assistant Field Office Manager, Minerals and Lands
Anthony Ray	BS, Environmental Science	Natural Resource Specialist
Gene Smith	BA, Anthropology	Paleontology
Mark Snyder	BS, Wildlife Resources	Wildlife and Fisheries, Special Status Species, Biological Assessment
Scott Stadler	BA and MA, Anthropology	Cultural Resources



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## LITERATURE CITED

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- Adcock, T. W. 2010. Annual Report of the State Inspector of Mines of Wyoming, Years Ending December 31 of 2010, 2009, 2008, 2007, 2006. Cheyenne, WY.
- Ambre Energy. 2012. Millennium Bulk Terminal, and The Morrow Pacific Project. Accessed on March 2012 at <http://ambreenergy.com/projects/millennium>.
- Apple, L. 2002. Raptor nest monitoring in the Rawlins Field Office, 2001, Department of Interior (DOI), Bureau of Land Management (BLM), Rawlins, Wyoming. AWEA (American Wind Energy Association). 2005. Wind Project Data Base: Wyoming Wind Energy Development. Accessed on December 8, 2005 at [www.awea.org/projects/wyoming.html](http://www.awea.org/projects/wyoming.html).
- Associated Press. 2009. "Soda ash industry fights recession and Chinese rivals," in Billings Gazette, Sunday, July 26, 2009. Accessed on January 6, 2012 at <http://billingsgazette.com/news/stateand-regional/wyoming/soda-ash-industry-fights-recess>.
- Bautz, M. 2012. Personal communication via email and phone conversation, Wyoming Department of Environmental Quality. January.
- Beauvais, G., and D. Dark-Smiley. 2005. Species Assessment for Idaho Pocket Gopher (*Thomomys idahoensis*) in Wyoming. Wyoming Natural Diversity Database, Univ. of Wyoming, Laramie, Wyoming. Retrieved from <http://unadmnweb.uwyo.edu/WYNDD/>.
- Behnke, R. J. 1979. Monograph of the native trouts of the genus *Salmo* of western North America. United States Department of Agriculture (USDA) Forest Service, Rocky Mountain Region, Denver, Colorado.
- Behnke, R. J. 1992. Native trout of western North America. American Fisheries Society Monograph 6.
- Behnke, R. J. 2002. Trout and salmon of North America. Free Press, New York.
- Behnke, R. J., and D. E. Benson. 1980. Endangered and threatened fishes of the Upper Colorado River Basin. Ext. Serv. Bull. 503A. Colorado State University, Fort Collins, CO.
- Behnke, R. J., and D. E. Benson. 1983. "Endangered and threatened fishes of the Upper Colorado River Basin." Washington, DC, USA. U.S. Fish and Wildlife Service (USFWS).
- Behnke, R. J., and M. Zarn. 1976. Biology and management of threatened and endangered western trouts. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. General Technical Report RM-28.
- Bennett, J. R. and D. A. Keinath. 2001. Distribution and status of the yellow-billed cuckoo (*Coccyzus americanus*) in Wyoming. Wolf Creek Charitable Foundation, Sheridan, Wyoming.
- Binns, N. A. 1977. Present status of indigenous populations of cutthroat trout, *Salmo clarki*, in southwest Wyoming. Wyoming Game and Fish Department, Cheyenne. Fisheries Technical Bulletin 2.
- BLM, 1986. Visual Resource Inventory. BLM Handbook H-8410-1.

- BLM, 1988. Areas of Critical Environmental Concern. BLM Manual 1613.
- BLM. 1997. Record of Decision and Green River Resource Management Plan. BLM/WY/PL-97/027+1610. BLM Wyoming State Office, Rock Springs District Office, October 1997.
- BLM. 2000. Instruction Memorandum No. 2000-096, Use of Visual Resource Management Class I Designation in Wilderness Study Areas. U.S. DOI, BLM, Washington, D.C.
- BLM. 2001. Manual 6840 – Special Status Species. Washington, DC: BLM.
- BLM. 2001. National Management Strategy for Motorized Off Highway Vehicle Use on Public Lands.
- BLM. 2005. Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States. June 2005.
- BLM. 2006. Recreation Permit Administration Handbook, Handbook H-2930-1.
- BLM. 2006. Record of Decision and Jack Morrow Hills Coordinated Activity Plan/Green River Resource Management Plan Amendment. BLM Wyoming State Office, Rock Springs Field Office, July 2006.
- BLM. 2008. Proposed Resource Management Plan and Final Environmental Impact Statement for Public Lands Administered by the Bureau of Land Management Pinedale Field Office, Pinedale, Wyoming. Retrieved from [https://www.blm.gov/wy/st/en/programs/Planning/rmps/pinedale/feis\\_prmp.html](https://www.blm.gov/wy/st/en/programs/Planning/rmps/pinedale/feis_prmp.html).
- BLM. 2008. The BLM's Priorities for Recreation and Visitor Services. BLM Workplan Fiscal Years 2003 to 2007.
- BLM. 2009. Approved Resource Management Plan Amendment/Record of Decision for Designation of Energy Corridors on Bureau of Land Management Administered lands in the 11 Western States. Retrieved from <https://corridoreis.anl.gov/documents/>.
- BLM. 2011. BLM Manual 8320, Planning for Recreation and Visitor Services, Release 8-81. Accessed on March 29, 2011.
- BLM. 2011. Wind Energy Development Programmatic EIS Information Center. Accessed on May 18, 2011 at <http://windeis.anl.gov/>.
- BLM. 2012. High Desert Wind Energy Projects. Accessed on August 30, 2012 at <http://www.blm.gov/wy/st/en/programs/energy/renewable/wind/highdesert.html>.
- BLM. 2012a. Analysis of Management Situation, Chapter 2.2, Resource Uses, Current Conditions and Characterization. Rock Springs Field Office, Rock Springs, Wyo. February.
- BLM. 2012b. BLM Manual 6250, National Scenic and Historic Trail Administration (Public). Accessed on July 13, 2012.
- BLM. 2012c. BLM Manual 6280, Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation (Public). Accessed on September 14, 2012.

- BLM. 2013. Instruction Memorandum No. 2013-131, Guidance on Estimating Nonmarket Environmental Values. Accessed on September 12, 2013 at [https://www.blm.gov/wo/st/en/info/regulations/Instruction\\_Memos\\_and\\_Bulletins/national\\_instruction/2013/IM\\_2013-131\\_Ch1.print.html](https://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2013/IM_2013-131_Ch1.print.html).
- BLM. 2013. Socioeconomic Baseline Report for the Rock Springs Field Office Resource Management Plan and Associated Environmental Impact Statement. Wyoming High Desert District, Rock Springs Field Office. July 2013.
- BLM. 2021. Record of Decision for the Wyoming Pipeline Corridor Initiative. Retrieved from <https://eplanning.blm.gov/eplanning-ui/admin/project/1502028/510>.
- BLM. Undated a. Active Mining Claim Information for RSFO. Land and Mineral Legacy Rehost 2000 System – LR2000, Mining Claim Geographic Index Report, Active Claims, Geo State: WY; BLM Resource Area: Rock Springs Field Office, 17 pages, report run 12/30/2011 at 2:48 PM.
- BLM. Undated b. Mining Notices for RSFO. Land and Mineral Legacy Rehost 2000 System – LR2000, Case Recordation, Serial Register Page, Case Type 380910: Surface Management, Rock Springs Field Office, 8 pages, report run 12/30/2011 at 2:53PM.
- BLM. Undated c. Mineral Material Sites/Free Use Permits/Negotiated Sales/Common Use Areas for RSFO. Land and Mineral Legacy Rehost 2000 System – LR2000, Case Recordation, Case Information – Customer/Land, Case No Action District Sort, pages 14-24, report run 02/13/2012 at 12:17PM.
- BLM. Undated d1. Case-specific reports for active mineral material authorizations. Land and Mineral Legacy Rehost 2000 System – LR2000, Case recordation, Serial register Page, Case Disposition, Authorized, Case Type 362113: FUP – Gov’t Subdiv, Serial No. WYW-147661, 2 pages, report run 02/13/2012 at 12:40 PM.
- BLM. Undated d2. Case-specific reports for active mineral material authorizations. Land and Mineral Legacy Rehost 2000 System – LR2000, Case recordation, Serial register Page, Case Disposition, Case Type 362113: FUP – Gov’t Subdiv, Authorized, Serial No. WYW-153739, 2 pages, report run 02/13/2012 at 12:42 PM.
- BLM. Undated d3. Case-specific reports for active mineral material authorizations. Land and Mineral Legacy Rehost 2000 System – LR2000, Case recordation, Serial register Page, Case Disposition, Case Type 362113: FUP – Gov’t Subdiv, Authorized, Serial No. WYW-162409, 1 page, report run 02/13/2012 at 12:42 PM.
- BLM. Undated d4. Case-specific reports for active mineral material authorizations. Land and Mineral Legacy Rehost 2000 System – LR2000, Case recordation, Serial register Page, Case Disposition, Case Type 362113: FUP – Gov’t Subdiv, Authorized, Serial No. WYW-163760, 1 page, report run 02/13/2012 at 12:43 PM.
- BLM. Undated d5. Case-specific reports for active mineral material authorizations. Land and Mineral Legacy Rehost 2000 System – LR2000, Case recordation, Serial register Page, Case Disposition, Authorized, Case Type 362113: FUP – Gov’t Subdiv, Serial No. WYW-163761, 1 page, report run 02/13/2012 at 12:44 PM.
- BLM. Undated d6. Case-specific reports for active mineral material authorizations. Land and Mineral Legacy Rehost 2000 System – LR2000, Case recordation, Serial register Page, Case Disposition, Mineral Potential Report Chapter 7–References Rock Springs RMP 7-3 Authorized, Case Type 362113: FUP – Gov’t Subdiv, Serial No. WYW-167646, 1 page, report run 02/13/2012 at 12:45 PM.

- BLM. Undated d7. Case-specific reports for active mineral material authorizations. Land and Mineral Legacy Rehost 2000 System – LR2000, Case recordation, Serial register Page, Case Disposition, Authorized, Case Type 361113: Mineral Material Negotiated, Serial No. WYW-171305, 1 page, report run 02/13/2012 at 12:46 PM.
- BLM. Undated d8. Case-specific reports for active mineral material authorizations. Land and Mineral Legacy Rehost 2000 System – LR2000, Case recordation, Serial register Page, Case Disposition, Authorized, Case Type 361113: Mineral Material Negotiated, Serial No. WYW-167394, 1 page, report run 02/13/2012 at 12:47 PM.
- BLM. Undated d9. Case-specific reports for active mineral material authorizations. Land and Mineral Legacy Rehost 2000 System – LR2000, Case recordation, Serial register Page, Case Disposition, Authorized, Case Type 360513: Common Use Area, Serial No. WYW-137483, 3 pages, report run 02/13/2012 at 12:48 PM.
- BLM. Undated d10. Case-specific reports for active mineral material authorizations. Land and Mineral Legacy Rehost 2000 System – LR2000, Case recordation, Serial register Page, Case Disposition, Authorized, Case Type 360513: Common Use Area, Serial No. WYW-136612, 13 pages, report run 02/13/2012 at 03:48 PM.
- Canadian Wildlife Federation. 2008. Hinterland Who's Who Bird Fact Sheet: Burrowing Owl. Retrieved from <http://www.hww.ca/hww2.asp?id=32>. Canadian Wildlife Service.
- Cerovski, A. O., M. Grenier, B. Oakleaf, L. Van Fleet, and S. Patla. 2004. Atlas of Birds, Mammals, Amphibians, and Reptiles in Wyoming. Wyoming Game and Fish Department Nongame Program, Lander. 206pp.
- Clark, T. W., R. S. Hoffman, and C. F. Nadler. 1971. "*Cynomys leucurus*." Mammalian Species, 7:1-4.
- Climate Change 2007 – Impacts, Adaptation and Vulnerability Contribution of Working Group II to the Fourth Assessment Report of the IPCC (978 0521 88010-7 Hardback; 978 0521 70597-4 Paperback).
- Colorado Parks and Wildlife. 2016. Species Profiles: Mammals. Townsend's Big-eared Bat. Accessed May 23, 2016 at <http://cpw.state.co.us/learn/Pages/SpeciesProfiles.aspx>.
- Colorado River Cutthroat Trout Coordination Team. 2006. Conservation strategy for Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*) in the States of Colorado, Utah, and Wyoming. Colorado Division of Wildlife, Fort Collins. 24p.
- Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28:1–19.
- Cope, E. D. 1872. Notices of New Vertebrata from the Upper Waters of Bitter Creek, Wyoming Territory. Procedures of the American Philosophical Society for 1871, XII, 483-486.
- Cope, E. D. and H. C. Yarrow. 1875. Report upon the collections of fishes Meade in portions of Nevada, Utah, California, Colorado, New Mexico, and Arizona during the years 1871-1874. Chapter 6, Pages 645-703 in United States Army Engineers Department Report, in charge of George M. Wheeler. Geography and Geology of the Explorations and Surveys West of the 100<sup>th</sup> meridian 5:1-1021.
- Crews, C. 2005. Great Basin Spadefoot documented in Bureau of Land Management Kemmerer Field Office Planning Area. Contact Report.

- Curtis, J. and K. Grimes. 2004. Wyoming Climate Atlas. Retrieved from <http://www.wrds.uwyo.edu/sco/climateatlas/toc.html>.
- Dauwalter, D. C., H. M. Neville, J. E. Williams. 2009. A Landscape-based Protocol to Identify Management Opportunities for Aquatic Habitats and Native Fishes on Public Lands, Phase I: Green River Basin, Wyoming; Cooperative Agreement PAA-08-0008.
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, P. A. Rabie, and B. R. Euliss. 2003. Effects of management practices on grassland birds: Burrowing Owl. Northern Prairie Wildlife Research Center, Jamestown, North Dakota. Retrieved from <http://www.npwrc.usgs.gov/resource/literatr/grasbird/buow/buow.htm>.
- deVos, Jr. J. C., M. R. Conover, and N. E. Headrick. 2003. Mule Deer Conservation: Issues and Management Strategies. Berryman Institute Press, Utah State University, Logan.
- Dorn, R. D. 1970. Moose and cattle food habits in southwest Montana. *Journal of Wildlife Management* 34:559–564.
- Dorn, R. D. 1990. Report on the status of *Arabis pusilla*, a candidate Threatened species. Prepared for the United States Fish and Wildlife Service by Mountain West Environmental Services.
- Dorn, R. D. 1992. Vascular Plants of Wyoming. Cheyenne, Wyoming: Mountain West Publishing.
- Driver B.L., Douglas Robert W. Douglass, Loomis John B., 2000. Outdoor Recreation and Wilderness in America: Benefits and History. *Outdoor Recreation in American Life*. February. Volume 21.
- Dyni, J. R. 1996. Sodium Carbonate Resources of the Green River Formation. United States Geological Survey (USGS) Open File Report 96-729. Denver, CO. Retrieved from <http://pubs.usgs.gov/of/1996/ofr-96-0729/ofr-96-0729.pdf>.
- Dyni, J. R. 2005. Geology and Resources of Some World Oil-Shale Deposits. USGS Scientific Investigations Report 2005-5295, 49 pg. Retrieved from [http://pubs.usgs.gov/sir/2005/5294/pdf/sir5294\\_508.pdf](http://pubs.usgs.gov/sir/2005/5294/pdf/sir5294_508.pdf).
- Ecosystem Research Group (ERG). 2008. Sublette County Socioeconomic Impact Study: Phase I Final Report. Prepared for the Sublette County Commissioners.
- Environmental Protection Agency (EPA). 2014. Air Emissions Inventory: 2014 National Emissions Inventory (NEI) Database. Accessed on July 19, 2018 at <https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data>.
- EPA. 2016. The NAAWS - Ozone and Ozone Standards: The Basics. Accessed on June 27, 2016 at <https://www.epa.gov/sites/production/files/2016-04/documents/20151001basicsfs.pdf>.
- EPA. 2016. NAAQS Table. Retrieved from <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.
- EPA. 2016. Hazardous Air Pollutants. Retrieved from <https://www.epa.gov/haps>.
- EPA. 2016. What Climate Change Means for Wyoming. EPA 430-F-16-052, August 2016. Accessed on July 16, 2018 at <https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-wy.pdf>.
- EPA. 2016. Climate Change Indicators: U.S. and Global Temperature. Accessed on July 13, 2018 at

- <https://www.epa.gov/climate-indicators/climate-change-indicators-us-and-global-temperature>.
- EPA. 2017. Outdoor Air Quality Data: Monitor Values Report – SO<sub>2</sub>. Accessed on May 1, 2018 at <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>.
- EPA. 2018. Air Data: Air Quality Data Collected at Outdoor Monitors Across the U.S. (AQ Table 3-1) Accessed on July 20, 2018 at <https://www.epa.gov/outdoor-air-quality-data>.
- EPA. 2018. AirData Air Quality Monitors Website. Accessed on May 2, 2018 at <https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=5f239fd3e72f424f98ef3d5def547eb5&extent=-146.2334,13.1913,-46.3896,56.5319>.
- EPA. 2018. CASTNet Centennial (CST169). Sulfur and Nitrogen deposition data. Accessed on July 12, 2018 at [https://www3.epa.gov/castnet/site\\_pages/CNT169.html](https://www3.epa.gov/castnet/site_pages/CNT169.html).
- EPA. 2018. CASTNet Pinedale (PND165). Sulfur and Nitrogen deposition data. Accessed July on 12, 2018 at [https://www3.epa.gov/castnet/site\\_pages/PND165.html](https://www3.epa.gov/castnet/site_pages/PND165.html).
- EPA. 2018. EPA’s Facility Level Information on Greenhouse Gases Tool (FLIGHT), Accessed on July 18, 2018 at <https://ghgdata.epa.gov/ghgp/main.do>.
- EPA. 2018a. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016. Retrieved from [https://www.epa.gov/sites/production/files/2018-01/documents/2018\\_executive\\_summary.pdf](https://www.epa.gov/sites/production/files/2018-01/documents/2018_executive_summary.pdf).
- EPA. 2018b. Overview of Greenhouse Gases, Methane Emissions. Washington D.C: EPA. Retrieved from <https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane>.
- EPA. 2018c. Overview of Greenhouse Gases, Nitrous Oxide Emissions. Washington D.C: EPA. Retrieved from <https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane>.
- EPA. 2018d. Global Greenhouse Gas Emissions Data. Accessed on July 18, 2018 at <https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data>.
- EPA. 2018e. Greenhouse Gas Emissions: Understanding Global Warming Potentials. Accessed on July 19, 2018 at <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>.
- Federal Register. 2001. Endangered and Threatened Wildlife and Plants; 12-Month Finding for Petition to List the Yellow-billed Cuckoo (*Coccyzus americanus*) in the Western Continental United States. Washington, D.C.: U.S. Fish and Wildlife Service. Vol 66, No. 143.
- Fertig, W. 2001. State Species Abstract, *Penstemon haydenii*, *Blowout Penstemon*. Wyoming Natural Diversity Database. Laramie, WY: University of Wyoming.
- Fertig, W. and G. Beauvais. 1999. Wyoming Plant and Animal Species of Special Concern. Unpublished report, Wyoming Natural Diversity Database, Laramie, Wyoming.
- Franzmann, A. W. and C. C. Schwartz. 2007. Ecology and Management of the North American Moose, 2nd edition. Smithsonian Institution Press, Washington, D. C.
- GPO. 2012. 40 Code of Federal Regulations 1508.7 – Cumulative Impacts. Retrieved from <https://www.gpo.gov/fdsys/pkg/CFR-2012-title40-vol34/pdf/CFR-2012-title40-vol34-sec1508-7.pdf>.
- Hansen, W. R. 1969. “The Geologic Story of the Uinta Mountains,” USGS Survey Bulletin 1291, 144p.

- Hausel, D. Undated. Gold Districts of Wyoming. The Geological Survey of Wyoming, Report of Investigations No. 23. Cheyenne, WY.
- Headwaters Economics. 2011. Summary: The Economic Importance of National Monuments to Local Communities; and web page “The Economic Importance of National Monuments to Local Communities.” Accessed on September 2011 at <http://headwaterseconomics.org/land/reports/national-monuments/>.
- Heidel, B. 2007. Surveys of *Spiranthes diluvialis* (Ute ladies'-tresses) in eastern Wyoming 2005–2006. Prepared for the BLM and Thunder Basin National Grasslands. Wyoming Natural Diversity Database, Laramie, Wyoming.
- Heidel, B., J. Handley, and W. Fertig. 2002. Wyoming Natural Diversity Database. Species Description for *Elymus simplex var leuxurians*.
- Hirsch, C. L., S. E. Albeke, and T. P. Nesler. 2006. Range-wide status of Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*): 2005. Colorado River cutthroat trout Conservation Team Report. Colorado Division of Wildlife, Fort Collins, Colorado.
- Horne, J. S., E. O. Garton, S. M. Krone, and J. S. Lewis. 2007. Analyzing animal movements using Brownian Bridges. *Ecology* 88:2354-2363.
- Houston, D. B. 1968. *The Shiras moose in Jackson Hole, Wyoming*. Grand Teton Natural History Association.
- Intergovernmental Panel on Climate Change (IPCC). 2013. Working Group I: The Scientific Basis. Retrieved from <http://www.climatechange2013.org/>.
- IPCC. 2014. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp. Retrieved from [https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR\\_AR5\\_FINAL\\_full.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf).
- Johnsgard, P. A. 1990. Hawks, Eagles, and Falcons of North America. Smithsonian Institution Press, Washington and London. 403pp.
- Johnson, A. S. and S. H. Anderson. 2008. Forest Service Conservation Assessment for the Western Burrowing Owl in the Black Hills National Forest, South Dakota and Wyoming. Wyoming Cooperative Fish and Wildlife Research Unit, University of Wyoming, Laramie, Wyoming. Retrieved from [http://www.fs.fed.us/r2/blackhills/projects/planning/assessments/burrowing\\_owl.pdf](http://www.fs.fed.us/r2/blackhills/projects/planning/assessments/burrowing_owl.pdf).
- Johnson, R. C., T. J. Mercier, R. T. Ryder, M. E. Brownfield, J. G. Self. 2011. Chapter 1: Oil Shale Resources of the Eocene Green River Formation, Greater Green River Basin, Wyoming Colorado, and Utah, in Assessment of In-Place Oil Shale Resources of the Eocene Green River Formation, Greater Green River Basin, Wyoming, Colorado, and Utah. U.S. Geological Survey Digital Data Series DDS-69-DD, Chapter 1. 63 p. Accessed on March 2012 at [http://pubs.usgs.gov/dds/dds-069/dds-069-dd/REPORTS/69\\_DD\\_CH\\_1.pdf](http://pubs.usgs.gov/dds/dds-069/dds-069-dd/REPORTS/69_DD_CH_1.pdf).
- Jordan, D. S. and B. W. Evermann. 1896. The fishes of North and Middle America. U.S. National Museum Bulletin. 47 part 1.



- Prepared for U.S. DOI BLM, Wyoming State Office, Cheyenne, Wyoming.
- Keinath, D. A. and J. Bennett. 2000. Distribution and Status of the Boreal Toad (*Bufo boreas boreas*) in Wyoming. 22pp. Prepared for the USFWS, Wyoming Field Office, Cheyenne, Wyoming.
- Keinath, D. A., B. Heidel, and G. P. Beauvais. 2003. Wyoming Plant and Animal Species of Concern. Prepared by the Wyoming Natural Diversity Database. University of Wyoming. Laramie, Wyoming.
- Keinath, D.A. and M. McGee. 2004. Species Assessment for Pygmy Rabbit (*Brachylagus idahoensis*) in Wyoming. Wyoming Natural Database, University of Wyoming, Laramie, Wyoming. 84pp. Retrieved from <http://unadmnweb.uwyo.edu/WYNDD/>.
- Kirkemo, H. 1991. Prospecting for Gold in the United States. USGS Information Services, Publication 1991-287-748. Denver.
- Kirsch, P. H. 1889. Notes on a collection of fishes obtained in the Gila River at Fort Thomas, Arizona, by Lieutenant W. L. Carpenter, U.S. Army. Procedures of the U.S. National Museum, 11.
- Laster, S. 2002. Personal Communication (email) with SWCA, Nicole Korbe, on June 13, 2002.
- Law, B. E., R. C. Johnson, and C. W. Spencer. 1989. Structural and Stratigraphic Framework of the Pinedale Anticline, Wyoming, and the Multiwell Experiment Site, Colorado. USGS, Reston, Virginia, p. B1-B11.
- Lenarz, M. S., M. E. Nelson, M. W. Schrage, A. J. Edwards. 2008. Temperature mediated moose survival in northeastern Minnesota. *Journal of Wildlife Management*. 73(4): 503-510.
- Love, J. D. and A. C. Christiansen. 1985. Geologic Map of Wyoming. Geologic Survey of Wyoming, USGS, scale 1:500,000.
- Lowham, H.W, L. L. Delong, K. R. Collier, and E. A. Zimmerman. 1982. USGS/WRI 81-62 Hydrology of Salt Wells Creek – A plains stream in Southwestern Wyoming U.S. Geological Survey and BLM April 1982
- Marriott, H.J. 1986. A report on the status of *Arabis pusilla*, a Candidate Threatened species. Prepared for the U.S. Fish and Wildlife Service by the Wyoming Natural Diversity Database, Laramie, WY.
- Martin, C. D. 1973. Selected aspects of burrowing owl ecology and behavior. *Condor*, 75:446-456.
- Martinez, A. M. 1988. Identification and status of Colorado River cutthroat trout in Colorado. *American Fisheries Society Symposium* 4:81-89.
- Memorandum of Understanding, Animal and Plant Health Inspection Service (APHIS) and BLM, Document #03-8100-0870-MU, February 27, 2003.
- Meteorological Solutions Inc. 2018. Summary of Meteorological and Air Quality Data at the Wyoming Department of Environmental Quality Moxa Arch Monitoring Site January 1 through December 31, 2017. Prepared for Wyoming Department of Environmental Quality – Air Quality Division. Accessed on April 30, 2018 at <http://www.wyvisnet.com/Data/Reports.aspx>.
- Miller, J. D. 1978. Observations on the diets of *Rana pretiosa*, *Rana pipiens*, and *Bufo boreas* from western Montana. *Northwest Sci*. 52:243-249.

- Minckley, W. L., D. A. Hendrickson, and C. E. Bond. 1986. "Geography of western North American freshwater fishes: description and relationships to intracontinental tectonism." *The zoogeography of North American freshwater fishes*.
- National Park Service (NPS). 2008. National Park Service Public Use Statistics Office. Retrieved from <http://www.nature.nps.gov/stats/state.cfm?st=wy>.
- NPS. 2018. Critical Loads for Resource Protection. Accessed on July 12, 2018 at <https://www.nps.gov/subjects/air/critical-loads.htm>.
- NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Accessed on January 19, 2011 at <http://www.natureserve.org/explorer>.
- Nielson, M., H. Sawyer, and T. McDonald. 2012. BBMM: Brownian bridge movement model for estimating the movement path of an animal using discrete location data. R Foundation for Statistical Computing, Vienna, Austria.
- Page, L. M., and B. M. Burr. 1991. "A field guide to freshwater fishes: North America north of Mexico." New York, NY: Houghton Mifflin Co.
- Patterson, R. L. 1952. *The sage-grouse in Wyoming*. Sage Books, Inc., Denver, Colorado.
- Pellant, M., P. Shaver, D. Pyke, and J. Herrick. 2005. Interpreting Indicators of Rangeland Health, Version 4. Technical Reference 1734-6. Retrieved from [http://ftp-fc.sc.egov.usda.gov/GLTI/technical/publications/IIRH\\_v4\\_8-15-05.pdf](http://ftp-fc.sc.egov.usda.gov/GLTI/technical/publications/IIRH_v4_8-15-05.pdf). U.S. DOI BLM, Denver, CO.
- Pergams, O. R. W., C. Zaradi, A. Patricia. 2006. Is love of nature in the US becoming love of electronic media? 16-year downtrend in national park visits explained by watching movies, playing video games, internet use, and oil prices. *Journal of Environmental Management* 80 (2006) 387–393.
- Peterson, J. A. 1988. Overview: Carbonate Reservoir Facies, Wyoming and Parts of Montana, in Goolsby, Steven M. and Longman, Mark W. (eds.), *Occurrence and Petrophysical Properties of Carbonate Reservoirs in the Rocky Mountain Region*, pp. 75-96. The Rocky Mountain Association of Geologists, Denver, Colorado.
- Porter, D. K., M. A. Strong, J. B. Giezentanner, and R. A. Ryder. 1975. Nest ecology, productivity, and growth of the loggerhead shrike on the shortgrass prairie. *Southwest Nat.* 19:429-436.
- Roggenbuck, J. W., A. E. Watson. 1994. *The Recreation Roundtable, 1994. Wilderness Recreation Use: The Current Situation*. Forest Service Rocky Mountain Research Institute.
- Root, F. K., G. B. Glass, D. W. Lane. 1973. "Sweetwater County," in *Wyoming Geologic Map Atlas and Summary of Economic Mineral Resources. County Resource Series No. 2*. The Geological Survey of Wyoming. Cheyenne.
- Rosenberger, R. S. 2016. *Recreation Use Values Database – Summary*. Corvallis, OR: Oregon State University, College of Forestry. Accessed on February 21, 2017 at <http://recvaluation.forestry.oregonstate.edu/>.
- Rosgen D. L., and H. L. Silvey. 1996. *Applied River Hydrology Library of Congress Cat. No. 96-60962* Self Published Rosgen and Silvey.
- Ruhl, J. B., et al. 2007. *The Law and Policy of Ecosystem Services*. Washington, DC, Island Press.

- Sawyer, H. 2014a. Seasonal distribution and habitat use patterns of mule deer in the Red Desert and Jack Morrow Hills Planning Area Final Report. Western Ecosystems Technology, Inc. Cheyenne, Wyoming.
- Sawyer, H. 2014b. Mule Deer Migration Supplement, Pinedale Anticline Project Office Report. Western Ecosystems Technology, Inc. Cheyenne, Wyoming.
- Sawyer, H. and M. J. Kauffman. 2011. Stopover ecology of a migratory ungulate. *Journal of Animal Ecology* 80:1078-1087.
- Sawyer, H., M. J. Kauffman, R. M. Nielson, and J. S. Horne. 2009a. Identifying and prioritizing ungulate migration routes for landscape-level conservation. *Ecological Applications* 19:2016-2025.
- Sigler, J. W. and W. F. Sigler. 1994. Fishes of the Great Basin and Colorado Plateau: Past and present forms. In Harper, K.T.;St. Clair, L.L.;Thornes, K.H.;Hess, W.M. (Ed.). *Natural history of the Colorado Plateau and Great Basin*. Niwot: University of Colorado Press.
- Simon, J. R. 1935. A survey of the waters of the Wyoming National Forest. U.S. Department of Commerce, Bureau of Fisheries, Washington, D.C.
- Smith, H. and D. Keinath. 2004. Species Assessment for Mountain Plover (*Charadrius montanus*). Wyoming Natural Diversity Database, University of Wyoming, Laramie, WY.
- Smith, M. and B. Younkin. 2010a. Wyoming Range Mule Deer Habitat Assessment: Deer Hills, Calpet and Little Colorado Desert Study Area. Teton Science School. Jackson, WY.
- Smith, M. and B. Younkin. 2010b. Sublette Moose Habitat Assessment: Upper Green River to LaBarge Creek Study Areas.
- Snoke, A. W., J. Steidtmann, S. Roberts. 1993. Geology of Wyoming, Memoir No. 5. The Geological Survey of Wyoming. Gary B. Glass, State Geologist.
- Sonoran Institute, Theodore Roosevelt Conservation Partnership. 2006. Backcountry Bounty: Hunters, Anglers and Prosperity in the American West. United States Department of the Interior BLM, 2003.
- Sullivan, R. 1980. A Stratigraphic Evaluation of the Eocene Rocks of Southwestern Wyoming. The Geologic Survey of Wyoming, Report of Investigation No. 20.
- Sweetwater County. 2016. BLM Contribution to SWCO Assessed Valuation Trona Coal Oil and Gas Final. Spreadsheet based on data from the Wyoming Department of Revenue and the Sweetwater County Assessor's Office, revised October 5, 2016. Provided to the BLM by Mark Kot, Sweetwater County.
- University of Wyoming, Water Resources Data System and Wyoming State Climate Office. 2015. Rock Springs AP, Wyoming – Annual Wind Rose (2006-2015 Average). Accessed on April 27, 2018 at [http://www.wrds.uwyo.edu/wind/Rock\\_Springs/Rock\\_Springs-Annual.html](http://www.wrds.uwyo.edu/wind/Rock_Springs/Rock_Springs-Annual.html).
- USDA NRCS. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Agriculture Handbook No. 296. Website: <http://soils.usda.gov/survey/geography/mlra/index.html>. Natural Resource Conservation Service USDA, Washington DC.

- USDA NRCS. 2015. M\_180\_NFSAM—National Food Security Act Manual, Fifth Ed. Retrieved from <https://directives.sc.egov.usda.gov/rollupviewer.aspx?hid=29340>.
- USFWS. 1987. Endangered and Threatened Animals and Plants; Final Rule to Determine *Penstemon haydenii* (Blowout Penstemon) to be an Endangered Species. Federal Register, 52, 32926-32929.
- USFWS. 1995. Ute-ladies' tresses (*Spiranthes diluvialis*) Recovery Plan. U.S. Fish and Wildlife Service, Denver, Colorado. 46 pp.
- USFWS. 2002. Endangered and Threatened Wildlife and Plants; Threatened Status and Special Regulation for the Mountain Plover. Federal Register 67(234):72396-72407.
- USFWS. 2007. Endangered and Threatened Wildlife and Plants; Removing the Bald Eagle in the Lower 48 States from the List of Endangered and Threatened Wildlife; Final Rule; Draft Post-delisting and Monitoring Plan for the Bald Eagle (*Haliaeetus leucocephalus*) and Proposed Information Collection; Notice. Federal Register 72(130):37345-37372.
- USFWS. 2011. Wyoming Pocket Gopher. Accessed on April 12, 2011 at <http://www.fws.gov/mountain-prairie/species/mammals/wypocketgopher/wypocketgopher.html>.
- USGS. 1978a. Coal Resource Occurrence and Coal Development Potential Maps of the Burley Draw Quadrangle, Sweetwater County, Wyoming. Open File Report 78-32.
- USGS. 1978b. Coal Resource Occurrence and Coal Development Potential Maps of the Cooper Ridge NE Quadrangle, Sweetwater County, Wyoming. Open File Report 78-33.
- USGS. 1978c. Coal Resource Occurrence and Coal Development Potential Maps of the Sand Butte Rim NW Quadrangle, Sweetwater County, Wyoming. Open File Report 78-34.
- USGS. 1978d. Coal Resource Occurrence and Coal Development Potential Maps of the Ericson-Kent Ranch Quadrangle, Sweetwater County, Wyoming. Open File Report 78-35.
- USGS. 1978e. Coal Resource Occurrence and Coal Development Potential Maps of the Titsworth Gap Quadrangle, Sweetwater County, Wyoming. Open File Report 78-36.
- USGS. 1978f. Coal Resource Occurrence and Coal Development Potential Maps of the Camel Rock Quadrangle, Sweetwater County, Wyoming. Open File Report 78-42.
- USGS. 1978g. Coal Resource Occurrence and Coal Development Potential Maps of the Creston Quadrangle, Carbon and Sweetwater Counties, Wyoming. Open File Report 78-622.
- USGS. 1978h. Coal Resource Occurrence and Coal Development Potential Maps of the Potter Mountain Quadrangle, Sweetwater County, Wyoming. Open File Report 78-650.
- USGS. 1978i. Coal Resource Occurrence and Coal Development Potential Maps of the Mud Springs Ranch Quadrangle, Sweetwater County, Wyoming. Open File Report 78-31.
- USGS. 1979a. Coal Resource Occurrence and Coal Development Potential Maps of the Reliance Quadrangle, Sweetwater County, Wyoming. Open File Report 79-1021.
- USGS. 1979b. Coal Resource Occurrence and Coal Development Potential Maps of the Black Buttes Quadrangle, Sweetwater County, Wyoming. Open File Report 79-1022.
- USGS. 1979c. Coal Resource Occurrence and Coal Development Potential Maps of the Bitter Creek NW

- Quadrangle, Sweetwater County, Wyoming. Open File Report 79-1023.
- USGS. 1979d. Coal Resource Occurrence and Coal Development Potential Maps of the NW¼ of the Boars Tusk 15-minute Quadrangle, Sweetwater County, Wyoming. Open File Report 79-1025.
- USGS. 1979e. Coal Resource Occurrence and Coal Development Potential Maps of the SW¼ of the Boars Tusk 15-minute Quadrangle, Sweetwater County, Wyoming. Open File Report 79-1028.
- USGS. 1979f. Coal Resource Occurrence and Coal Development Potential Maps of the Bitter Creek Quadrangle, Sweetwater County, Wyoming. Open File Report 79-1029.
- USGS. 1979g. Coal Resource Occurrence and Coal Development Potential Maps of the Bitter Creek NE Quadrangle, Sweetwater County, Wyoming. Open File Report 79-1030.
- USGS. 1979h. Coal Resource Occurrence and Coal Development Potential Maps of the Riner Quadrangle, Carbon and Sweetwater Counties, Wyoming. Open File Report 79-116.
- USGS. 1979i. Coal Resource Occurrence and Coal Development Potential Maps of the Creston Junction Quadrangle, Carbon and Sweetwater Counties, Wyoming. Open File Report 79-117.
- USGS. 1979j. Coal Resource Occurrence and Coal Development Potential Maps of the Rock Springs Quadrangle, Sweetwater County, Wyoming. Open File Report 79-124.
- USGS. 1979k. Coal Resource Occurrence and Coal Development Potential Maps of the NE Quarter of the Boars Tusk 15-minute Quadrangle, Sweetwater County, Wyoming. Open File Report 79-125.
- USGS. 1979l. Coal Resource Occurrence and Coal Development Potential Maps of the NE Quarter of the Boars Tusk 15-minute Quadrangle, Sweetwater County, Wyoming. Open File Report 79-126.
- USGS. 1979m. Coal Resource Occurrence and Coal Development Potential Maps of the NW Quarter of the Superior 15-minute Quadrangle, Sweetwater County, Wyoming. Open File Report 79-127.
- USGS. 1979n. Coal Resource Occurrence and Coal Development Potential Maps of the SW Quarter of the Superior 15-minute Quadrangle, Sweetwater County, Wyoming. Open File Report 79-128.
- USGS. 1979o. Coal Resource Occurrence and Coal Development Potential Maps of the SE Quarter of the Superior 15-minute Quadrangle, Sweetwater Counties, Wyoming. Open File Report 79-129.
- USGS. 1979p. Coal Resource Occurrence and Coal Development Potential Maps of the SW Quarter of the Twelvemile Well 15-minute Quadrangle, Sweetwater County, Wyoming. Open File Report 79-130.
- USGS. 1979q. Coal Resource Occurrence and Coal Development Potential Maps of the Points of Rocks Quadrangle, Sweetwater County, Wyoming. Open File Report 79-131.
- USGS. 1979r. Coal Resource Occurrence and Coal Development Potential Maps of the Points of Rocks SE Quadrangle, Sweetwater County, Wyoming. Open File Report 79-132.
- USGS. 1979s. Coal Resource Occurrence and Coal Development Potential Maps of the Clay Buttes SE Quadrangle, Sweetwater County, Wyoming. Open File Report 79-135.
- USGS. 1979t. Coal Resource Occurrence and Coal Development Potential Maps of the Earnest Butte Quadrangle, Sweetwater County, Wyoming. Open File Report 79-136.

- USGS. 1979u. Coal Resource Occurrence and Coal Development Potential Maps of the Maxon Ranch Quadrangle, Sweetwater County, Wyoming. Open File Report 79-137.
- USGS. 1979v. Coal Resource Occurrence and Coal Development Potential Maps of the Kappes Canyon Quadrangle, Sweetwater County, Wyoming. Open File Report 79-138.
- USGS. 1979w. Coal Resource Occurrence and Coal Development Potential Maps of the Pilot Butte Quadrangle, Sweetwater County, Wyoming. Open File Report 79-139.
- USGS. 1979x. Coal Resource Occurrence and Coal Development Potential Maps of the North Baxter Quadrangle, Sweetwater County, Wyoming. Open File Report 79-142.
- USGS. 1979y. Coal Resource Occurrence and Coal Development Potential Maps of the Thayer Junction Quadrangle, Sweetwater County, Wyoming. Open File Report 79-143.
- USGS. 1979z. Coal Resource Occurrence and Coal Development Potential Maps of the SE Quarter of the Firehole Basin 15-minute Quadrangle, Sweetwater County, Wyoming. Open File Report 79-144.
- USGS. 1979aa. Coal Resource Occurrence and Coal Development Potential Maps of the NE Quarter of the Firehole Basin 15-minute Quadrangle, Sweetwater County, Wyoming. Open File Report 79-145.
- USGS. 1979bb. Coal Resource Occurrence and Coal Development Potential Maps of the Kanda Quadrangle, Sweetwater County, Wyoming. Open File Report 79-146.
- USGS. 2011b. In-Place Oil Shale Resources Underlying Federal Lands in the Green River and Washakie Basins, Southwestern Wyoming. Fact Sheet 2011-3113. October. Accessed on February 2012 at <http://pubs.usgs.gov/fs/2011/3113/>.
- USGS. 2012c. Mineral Commodity Summaries 2012. 198 pages. Reston, VA. January.
- Utah Department of Natural Resources, Division of Wildlife Resources. 2006. Range-Wide Conservation Agreement and Strategy for Roundtail Chub (*Gila robusta*), Bluehead Sucker (*Catostomus discobolus*), and Flannelmouth Sucker (*Catostomus latipinnis*). Publication Number 06-18. Salt Lake City, UT.
- Western Regional Climate Center. 2009. 2008 LCD for Rock Springs, Wyoming. Accessed on April 27, 2018 at [https://wrcc.dri.edu/Climate/west\\_lcd\\_show.php?iyear=2008&ssstate=WY&stag=rocksprings&sloc=Rock+Springs](https://wrcc.dri.edu/Climate/west_lcd_show.php?iyear=2008&ssstate=WY&stag=rocksprings&sloc=Rock+Springs).
- Western Regional Climate Center. 2012. Rock Springs AP, Wyoming – Period of Record General Climate Summary – Temperature. Accessed on April 27, 2018 at <https://wrcc.dri.edu/cgi-bin/cliGCStT.pl?wy7845>.
- Western Regional Climate Center. 2016. Rock Springs AP, Wyoming (487845): Period of Record Monthly Climate Summary, Period of Record 01/01/1948 to 06/09/2016. Accessed on April 27, 2018 at <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?wy7845>.
- Wiig, S.V., W.D. Grundy and J.R. Dyni. 1995. Trona Resources in the Green River Basin, Southwest Wyoming in USGS Open File Report 95-476.
- The Wilderness Society. 2007. Natural Dividends: Wildland Protection and the Changing Economy of the American West.

- Landye. 1985. Endangered aquatic ecosystems in North American deserts with a list of vanishing fishes of the region. *Journal of the Arizona-Nevada Academy of Sciences* 20:1-62.
- Woods, M. 2011. U.S. Western Bituminous: Wood Mackenzie Research Service. Retrieved from <http://www.woodmackresearch.com>.
- Worley, D. E., C. K., Anderson, and K. R. Greer. 1972. Elaeophorosis in Moose from Montana. *Journal of Wildlife Diseases*, 8(3), pp.242-244.
- Wyoming Department of Environmental Quality (DEQ). 2008. 305b Report/303d List. Retrieved from <http://deq.state.wy.us/wqd/watershed/Downloads/305b/2008/2008%20Integrated%20Report.pdf>.
- Wyoming DEQ. 2010. 305b Report/303d List. Retrieved from <http://deq.state.wy.us/wqd/watershed/Downloads/305b/2010/WY2010IR.pdf>.
- Wyoming DEQ. 2015. Wyoming Ambient Air Monitoring Annual Network Plan 2015. Accessed on April 30, 2018 at [http://deq.wyoming.gov/media/attachments/Air%20Quality/Monitoring/Annual%20Network%20Plans/Annual-Network-Plan\\_2015-Final.pdf](http://deq.wyoming.gov/media/attachments/Air%20Quality/Monitoring/Annual%20Network%20Plans/Annual-Network-Plan_2015-Final.pdf).
- Wyoming DEQ. 2017. Department of Environmental Quality, Air Quality Division Permit Application Analysis A002635 (email hard copy).
- Wyoming DEQ. 2018. Ambient Standards. Accessed April 30, 2018 at <http://www.wyvisnet.com/AmbientStandards/Default.aspx>.
- Wyoming Game and Fish Department (WGFD). 2005. Wyoming Comprehensive Wildlife Conservation Strategy. Cheyenne, WY.
- WGFD and BLM. 1990. Umbrella Memorandum of Understanding between Wyoming Game and Fish Department and United States Department of the Interior, Bureau of Land Management (Wyoming) for Management of Fish and Wildlife Resources on the Public Lands. Cheyenne, WY.
- Wyoming Mining Association (WMA). Undated. Mine Quests: Lake Bottom Treasure. Cheyenne, WY. Accessed on January 2012 at <http://www.minequest.org/Pages/TRexploration.htm>.
- WMA. 2008. "Trona History" brochure. Cheyenne, WY. Accessed on January - February 2012 at [http://www.wma-minelife.com/Brochures/Trona\\_08.pdf](http://www.wma-minelife.com/Brochures/Trona_08.pdf).
- WMA. 2010. Trona: Historical Production and Employment Statistics. Accessed on January - March 2012 at <http://www.wma-minelife.com/trona/tronmine/tronmine.htm>.
- Wyoming Natural Diversity Database (WYNDD). 2002. Data compilation for M. Balistreri, completed May 24, 2002. Unpublished report, Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming.
- Wyoming Oil and Gas Conservation Commission. 2017. On Line Stats Book, Count Spuds by Selected Type and Year. Accessed on March 16, 2017 at [http://wogcc.state.wy.us/online\\_stats\\_bk/main\\_menu.cfm](http://wogcc.state.wy.us/online_stats_bk/main_menu.cfm).
- Wyoming State Board of Outfitters and Professional Guides. 2007. Board Annual Report. Retrieved from <http://outfitters.state.wy.us/pdf/Annual%20Report%202007.pdf>.

- Wyoming State Gem and Mineral Society. 2009. State Rock: Nephrite Jade / Wyoming Jade. Wyoming State Mineral and Gem Society. Accessed on February 26, 2012 at <http://www.wymineralandgemsociety.com/>.
- Wyoming State Geological Survey (WSGS). 2011d. Construction Aggregate. Accessed on February 2012 at <http://www.wsgs.uwyo.edu/AboutWSGS/aggregate.aspx>.
- WSGS. 2011e. Trona. Accessed on January 26, 2012 at <http://www.wsgs.uwyo.edu/AboutWSGS/trona.aspx>.
- Wyoming Travel Industry. 2007. Wyoming Travel Industry 2006 Impact Report.
- Young, M. K., tech. ed. 1995. Conservation assessment for inland cutthroat trout. General Technical Report RM-256. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Forest and Range Experiment Station. 61pp.
- Zimpfer, N. L., W. E. Rhodes, E. D. Silverman, G. S. Zimmerman, and M. D. Koneff. 2009. Trends in Duck Breeding Populations, 1955-2009. Administrative report for the USFWS, Division of Migratory Bird Management. Laurel, MD.

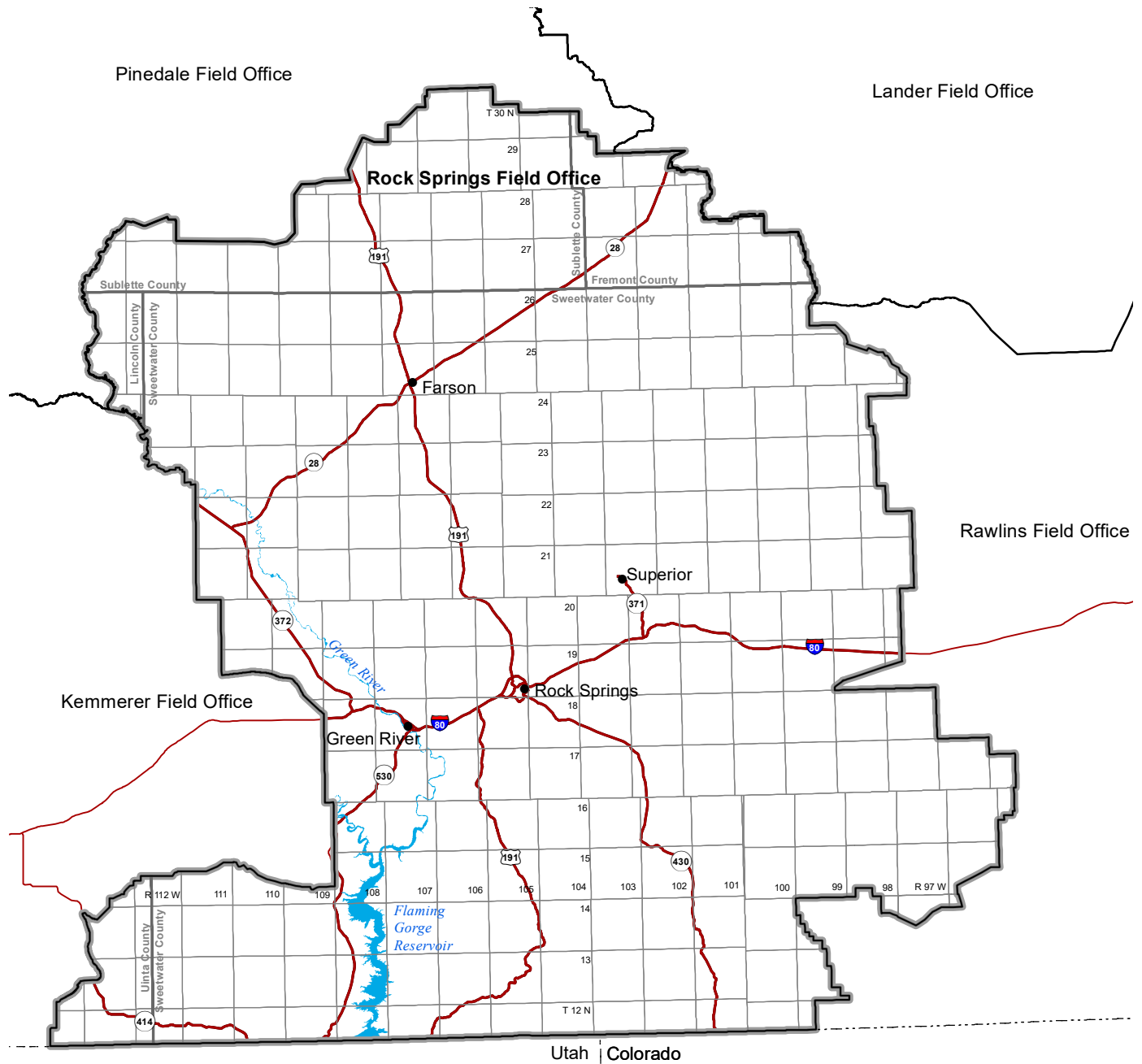








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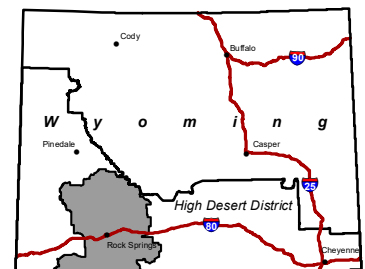
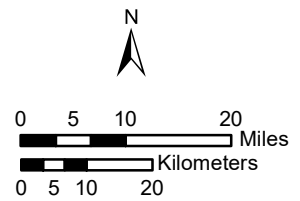
**ROCK SPRINGS MAPS FOR CHAPTERS 1, 2, AND 3**

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# Map 1-1: Rock Springs RMP Planning Area



-  RMP Planning Area
-  Field Office Boundary
-  County Boundaries
-  Public Land Survey
-  System Township boundaries
-  State Boundaries

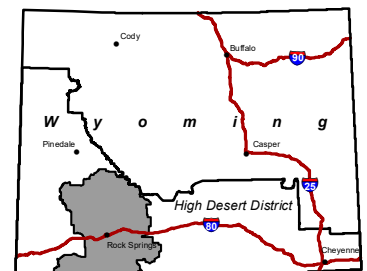
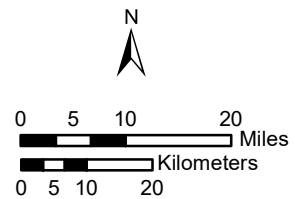


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# Map 1-2: Surface Management

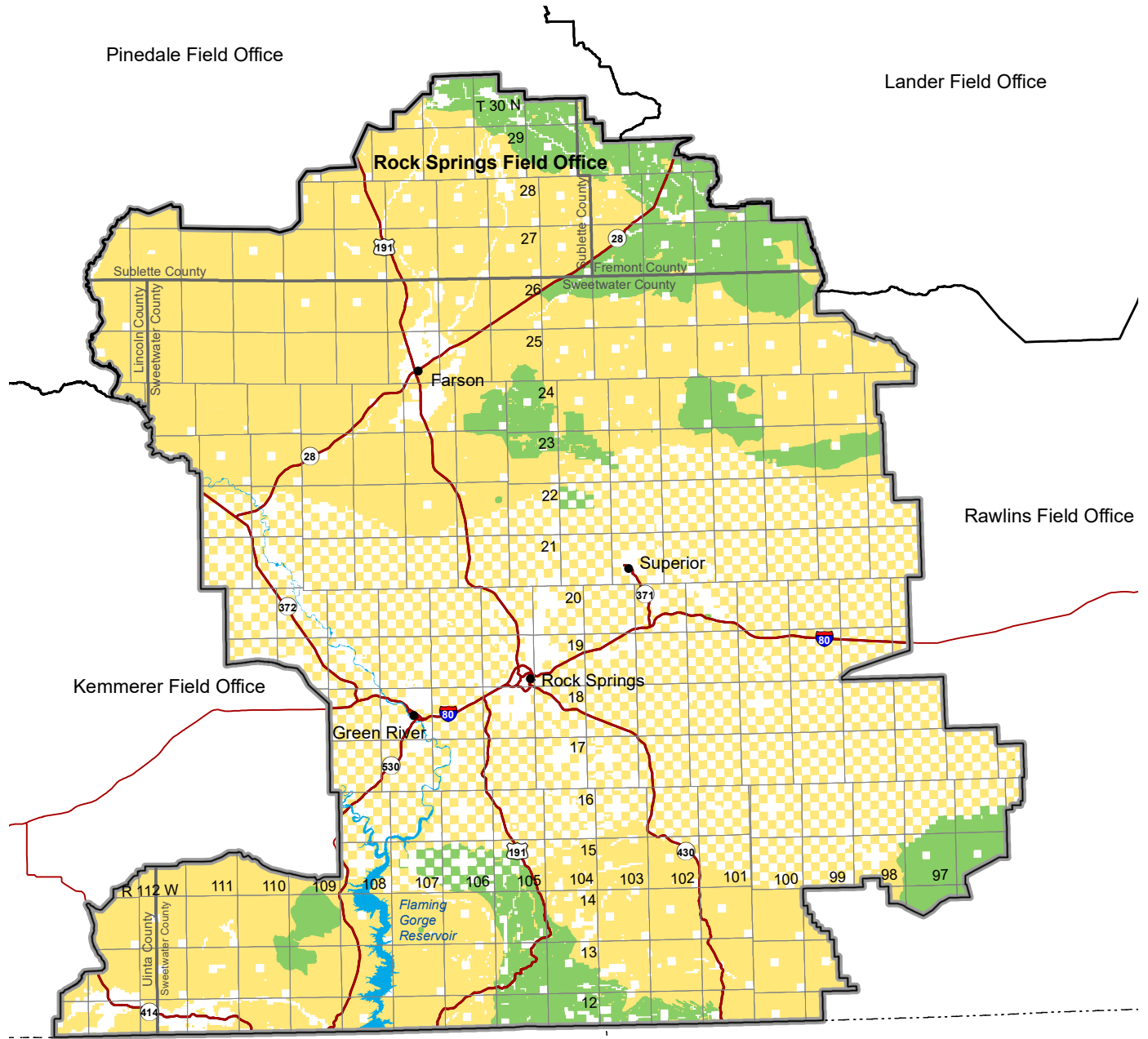


- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- Bureau of Land Management
- Bureau of Reclamation
- Fish & Wildlife
- Forest Service
- Private
- State
- Water



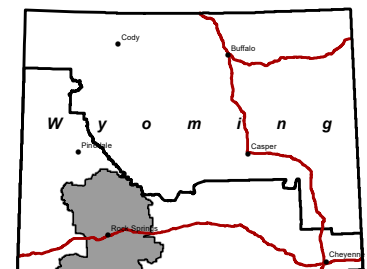
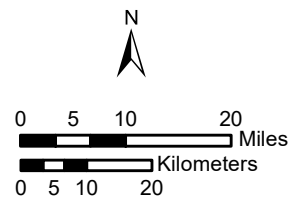
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# Map 2-1: Proposed Withdrawal from Mineral Entry Alternative A



- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- BLM Administrative

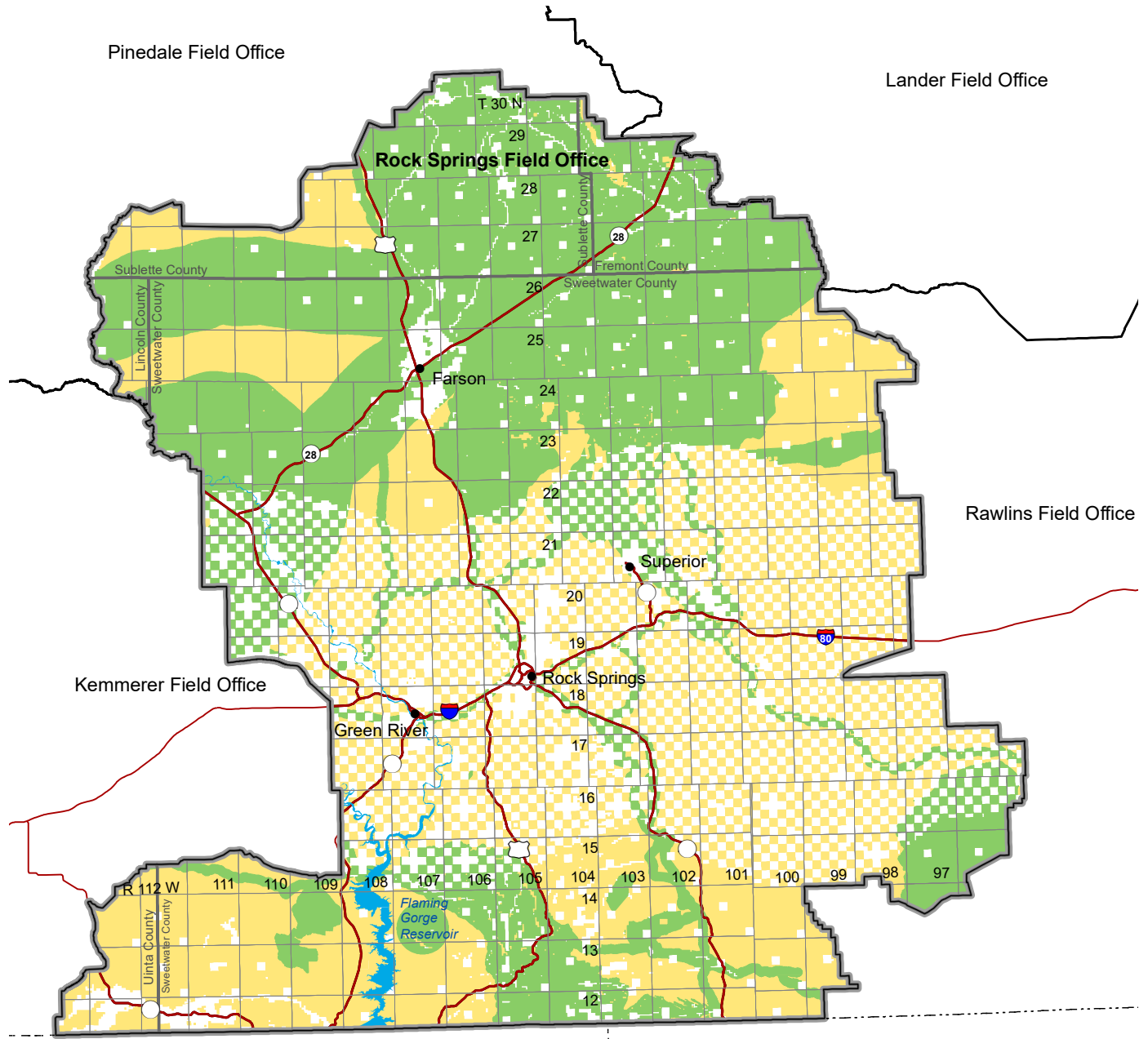
Proposed for Withdrawal from Mineral Entry



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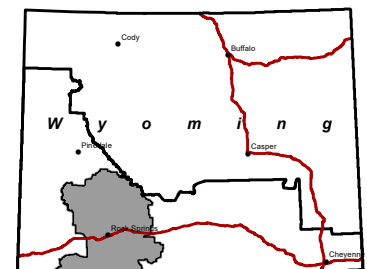
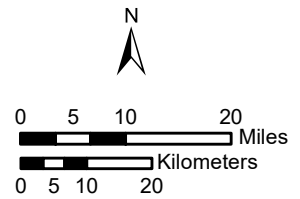
\* Mineral classification withdrawals for coal, phosphate, and oil shale are recommended to be revoked (Map 3-17)

## Map 2-2: Proposed Withdrawal from Mineral Entry Alternative B



- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey System  
Township boundaries
- State Boundaries
- BLM Administrative

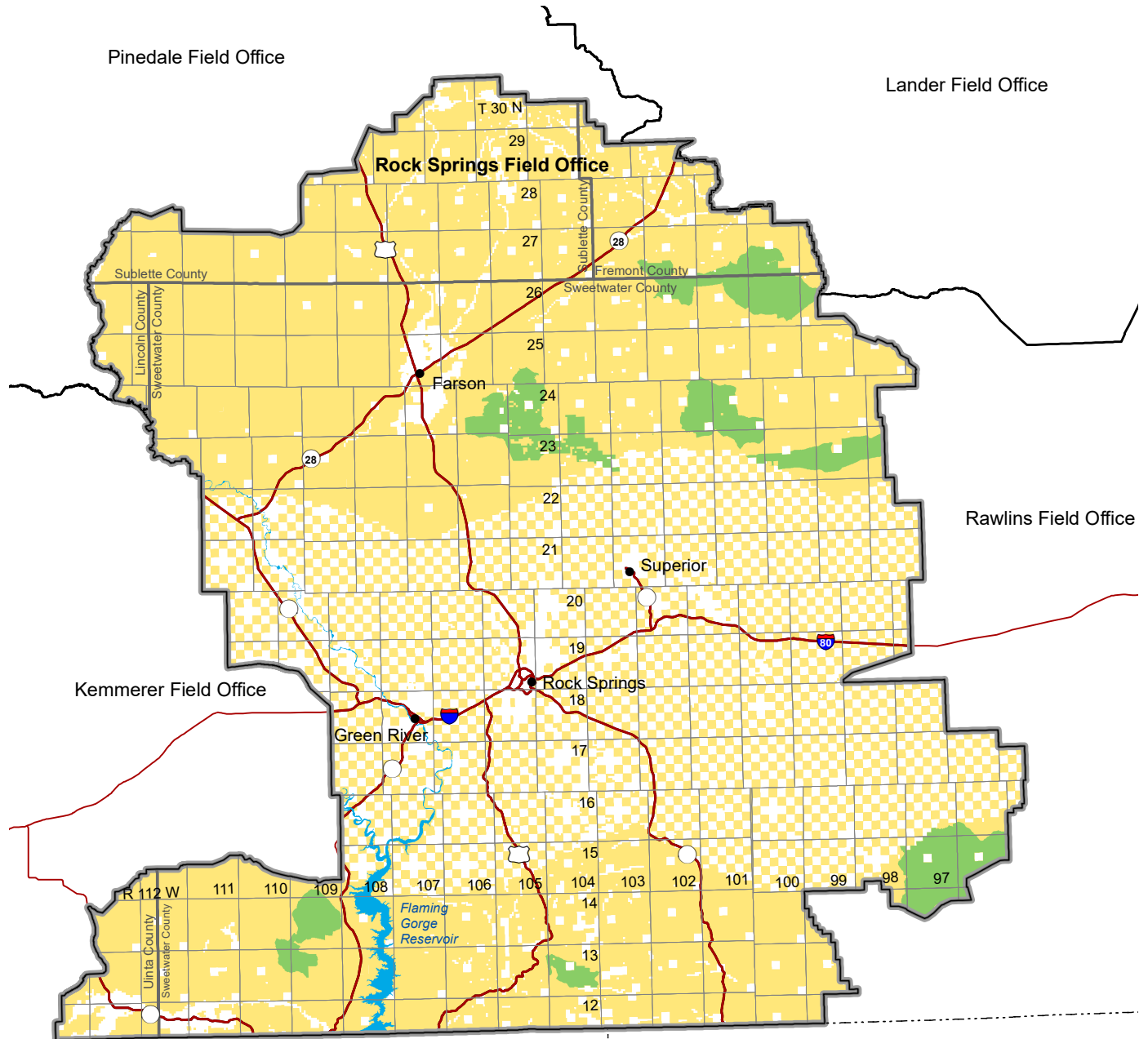
Proposed for Withdrawal from Mineral Entry



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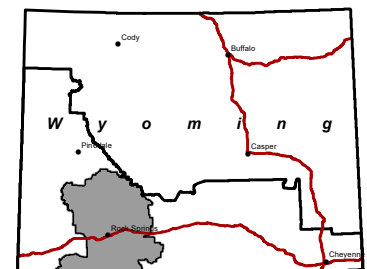
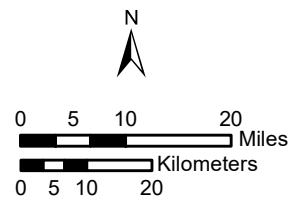
\* Mineral classification withdrawals for coal, phosphate, and oil shale are recommended to be revoked (Map 3-17)

## Map 2-3: Proposed Withdrawal from Mineral Entry Alternative C



- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey System  
Township boundaries
- State Boundaries
- BLM Administrative

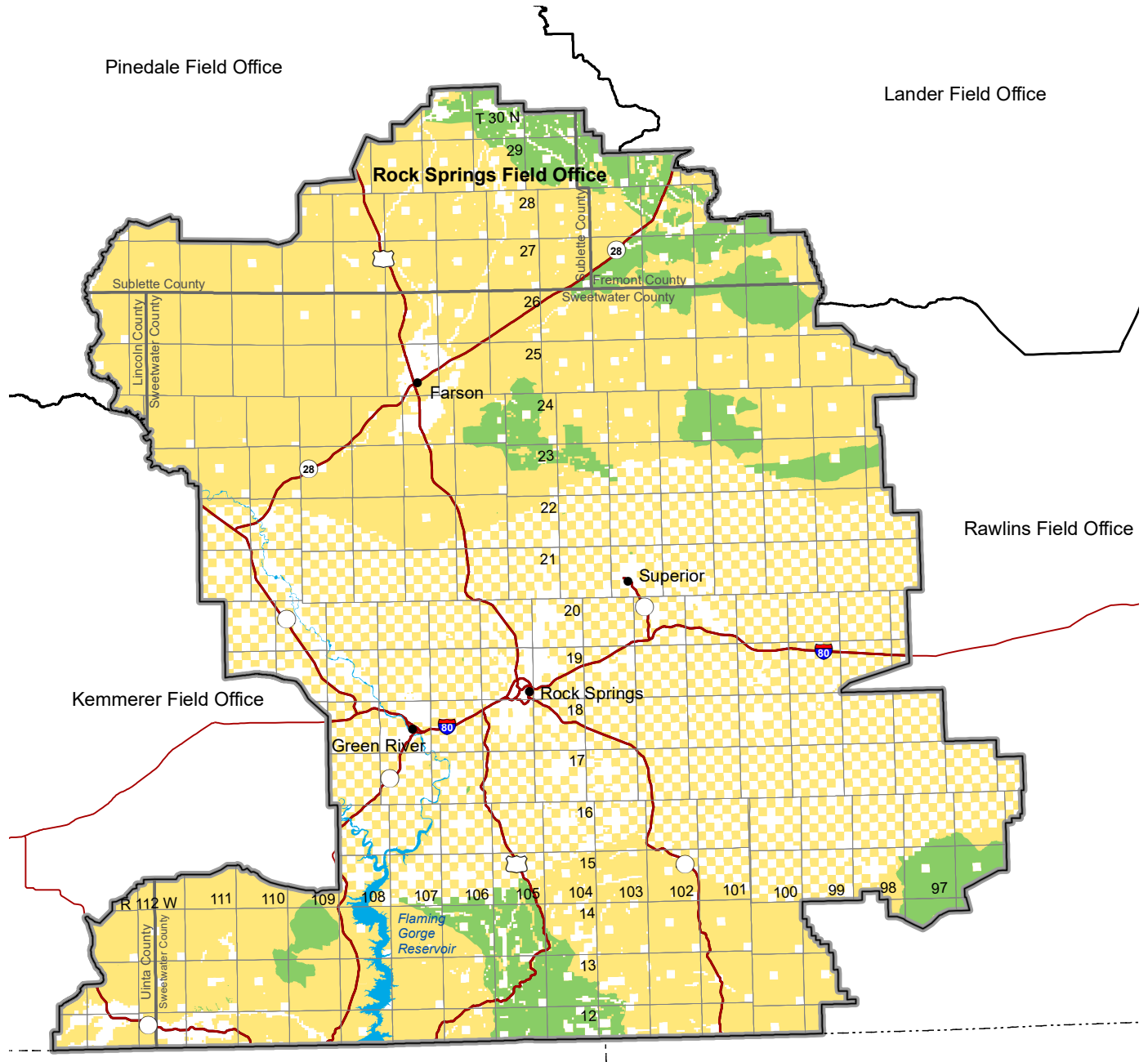
Proposed for Withdrawal from Mineral Entry



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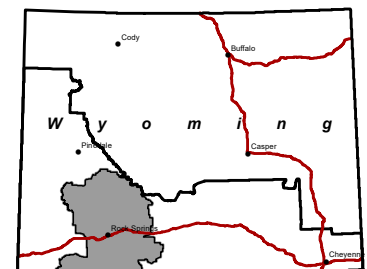
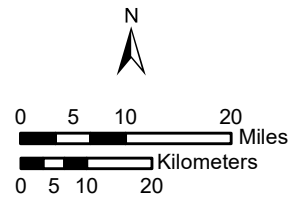
\* Mineral classification withdrawals for coal, phosphate, and oil shale are recommended to be revoked (Map 3-17)

## Map 2-4: Proposed Withdrawal from Mineral Entry Alternative D



- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey System  
Township boundaries
- State Boundaries
- BLM Administrative

Proposed for Withdrawal from Mineral Entry

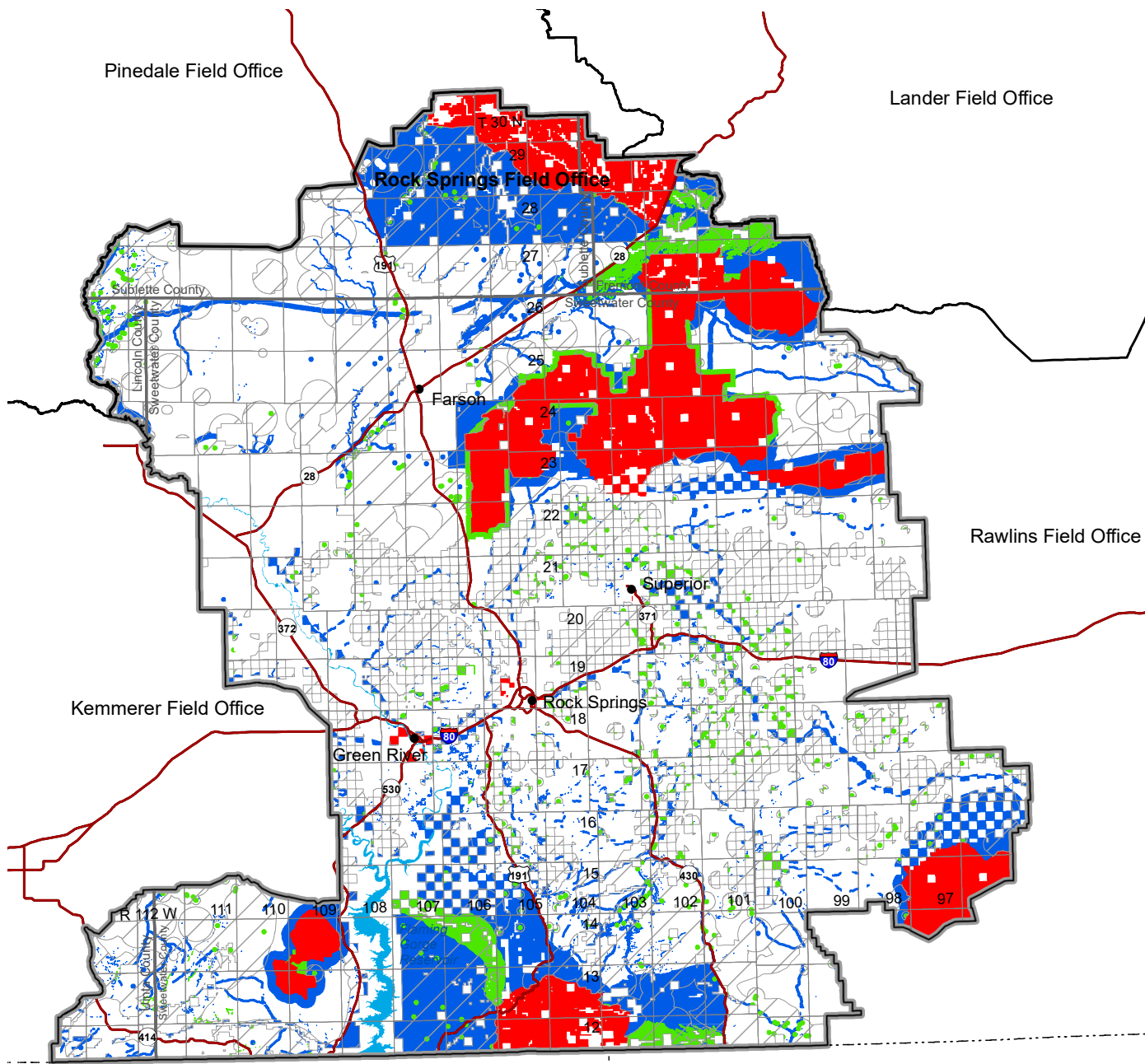


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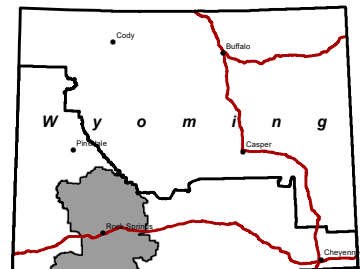
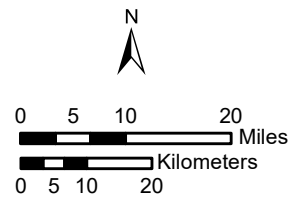
\* Mineral classification withdrawals for coal, phosphate, and oil shale are recommended to be revoked (Map 3-17)



# Map 2-5: Fluid Mineral Leasing - Alternative A



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- Unavailable for Leasing
- No Surface Occupancy (NSO)
- Controlled Surface Use (CSU)
- Seasonal Limitations

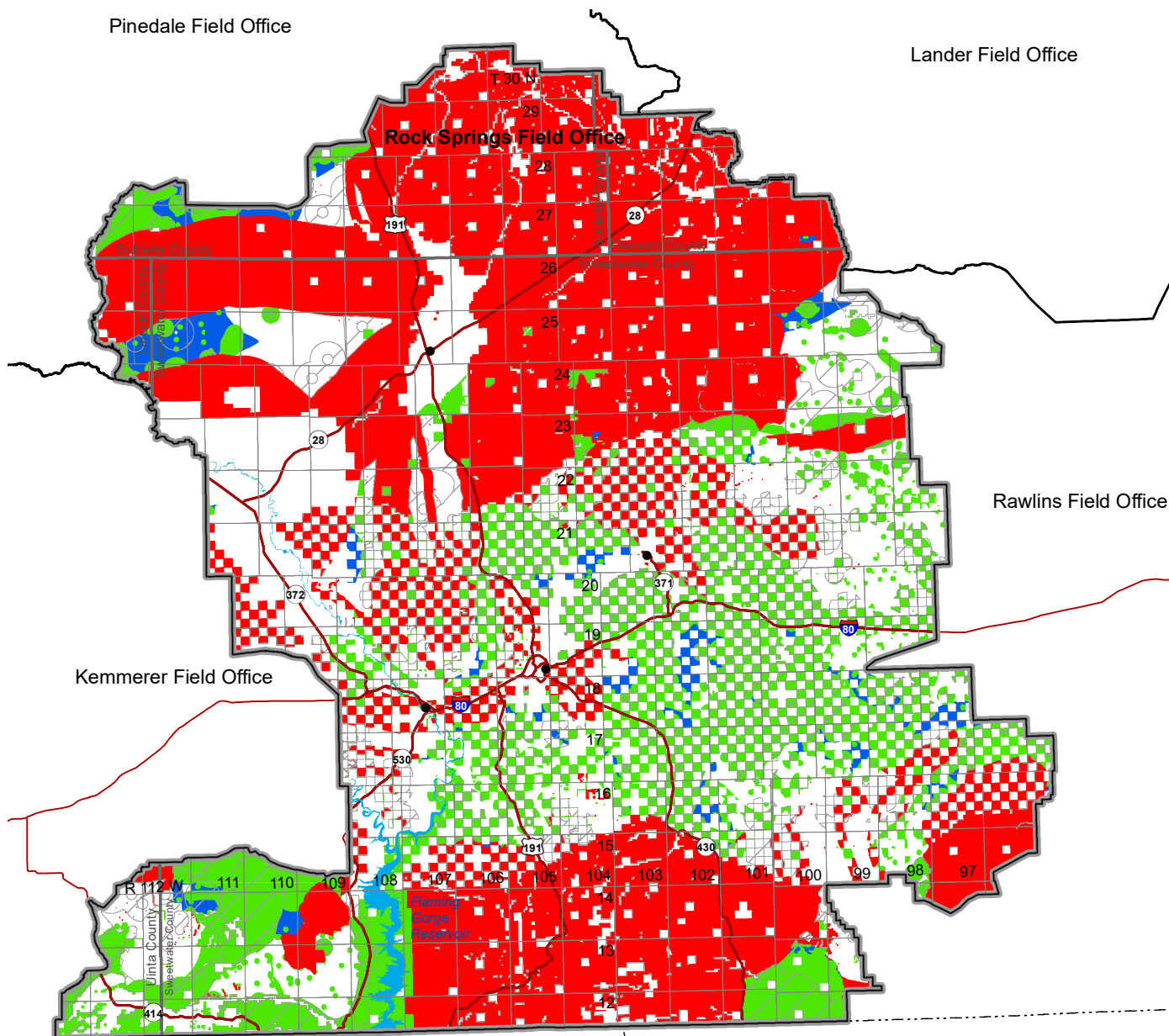


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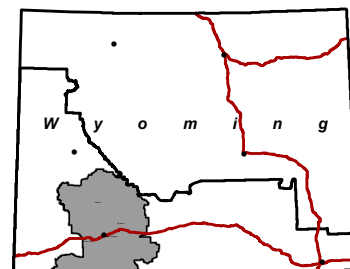
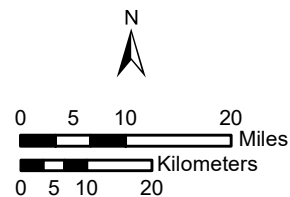
Map does not contain or depict BLM Sage-Grouse Land Use Plans

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# Map 2-6: Fluid Mineral Leasing - Alternative B



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- Unavailable for Leasing
- No Surface Occupancy (NSO)
- Controlled Surface Use (CSU)
- Seasonal Limitations

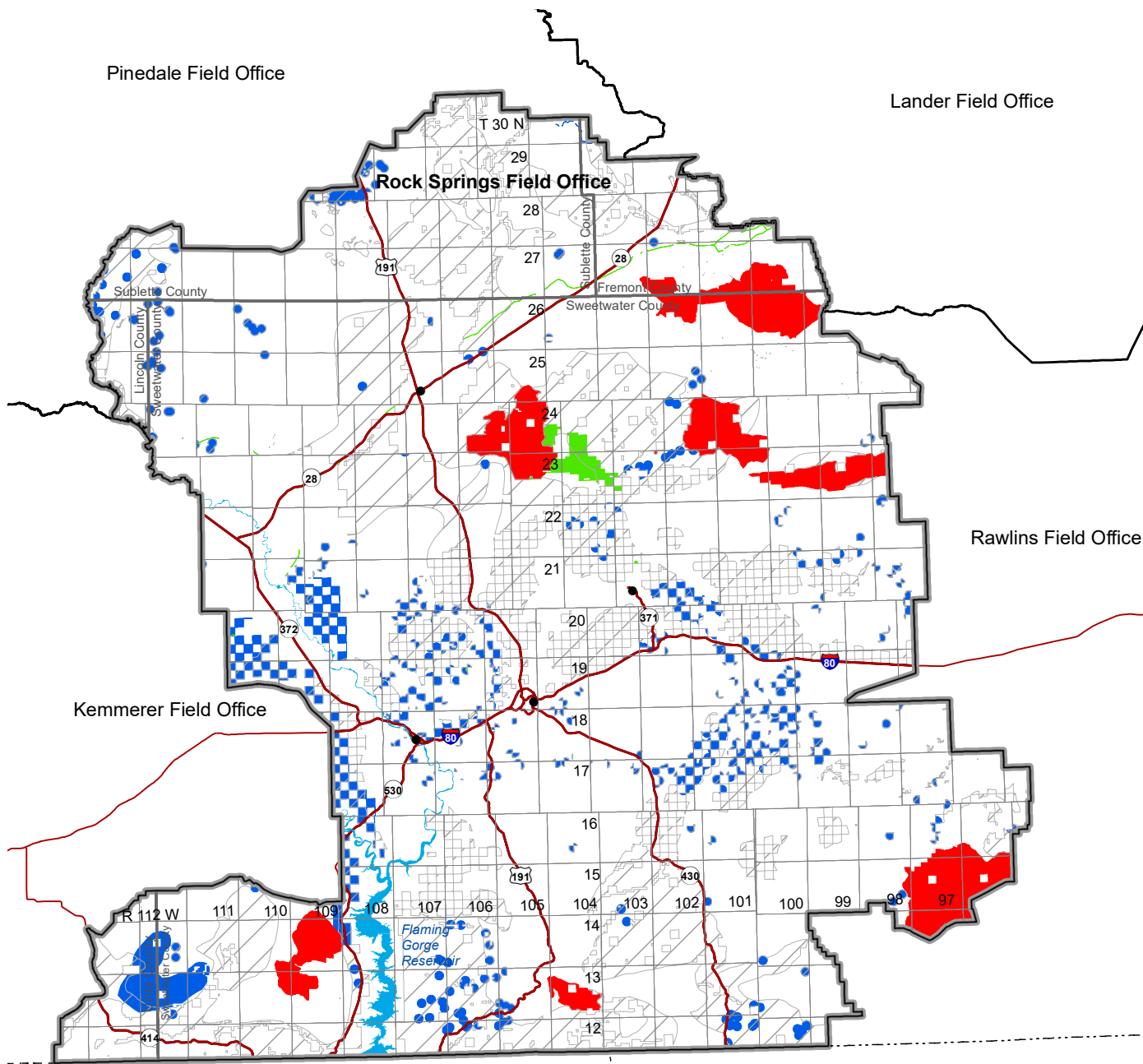


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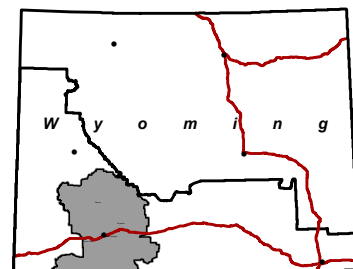
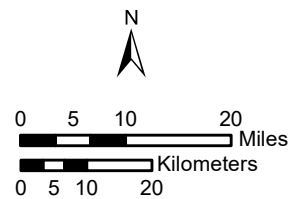
Map does not contain or depict BLM Sage-Grouse Land Use Plans

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# Map 2-7: Fluid Mineral Leasing - Alternative C



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- Unavailable to Leasing
- No Surface Occupancy (NSO)
- Controlled Surface Use (CSU)
- Seasonal Limitations

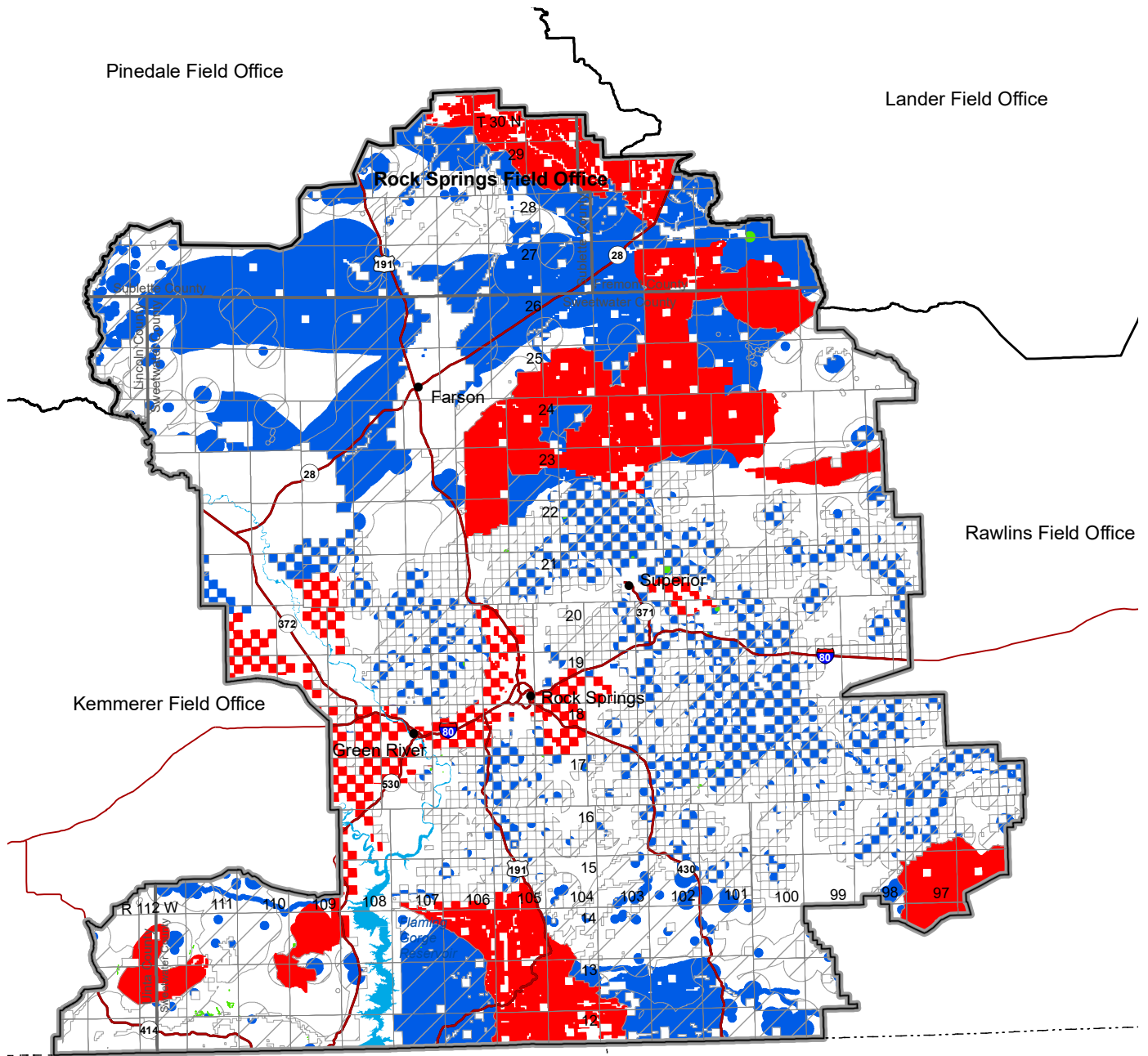


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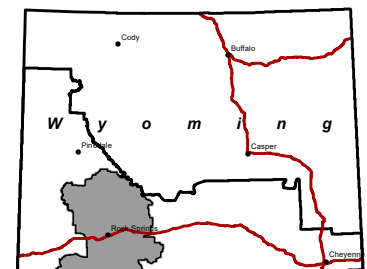
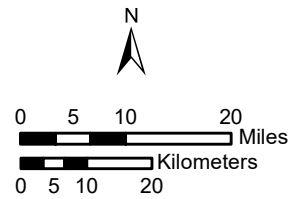
Map does not contain or depict BLM Sage-Grouse Land Use Plans

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# Map 2-8: Fluid Mineral Leasing - Alternative D



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- Unavailable to Leasing
- No Surface Occupancy (NSO)
- Controlled Surface Use (CSU)
- Seasonal Limitations



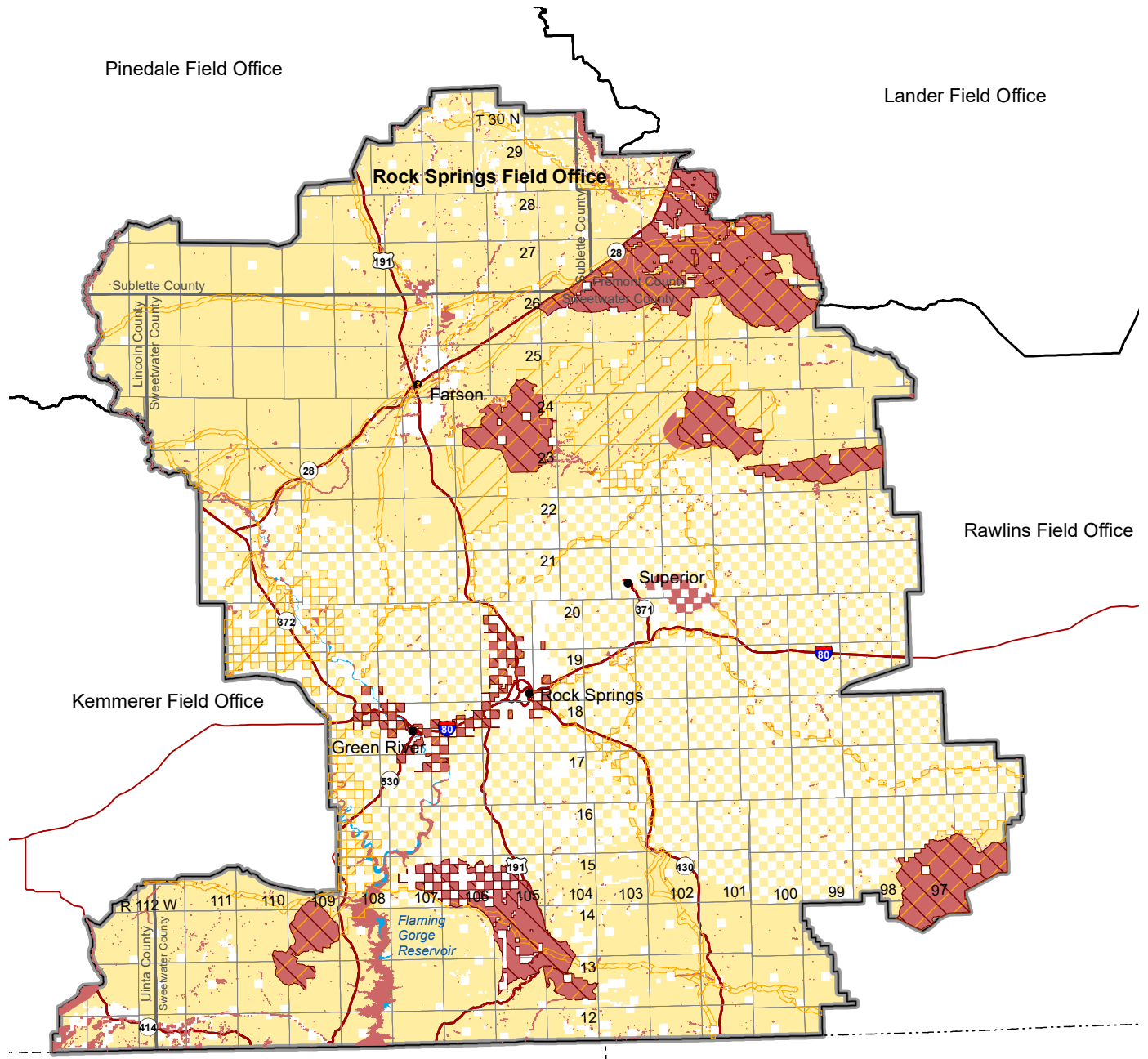
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Map does not contain or depict BLM Sage-Grouse Land Use Plans

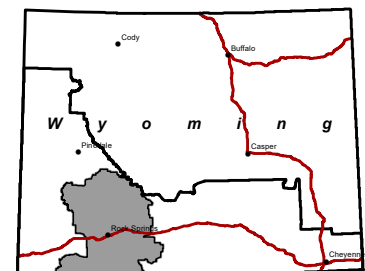
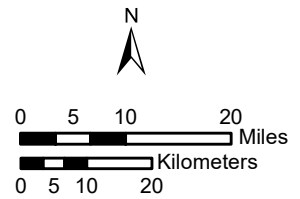
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# Map 2-9: Solid Leasable Minerals - Alternative A

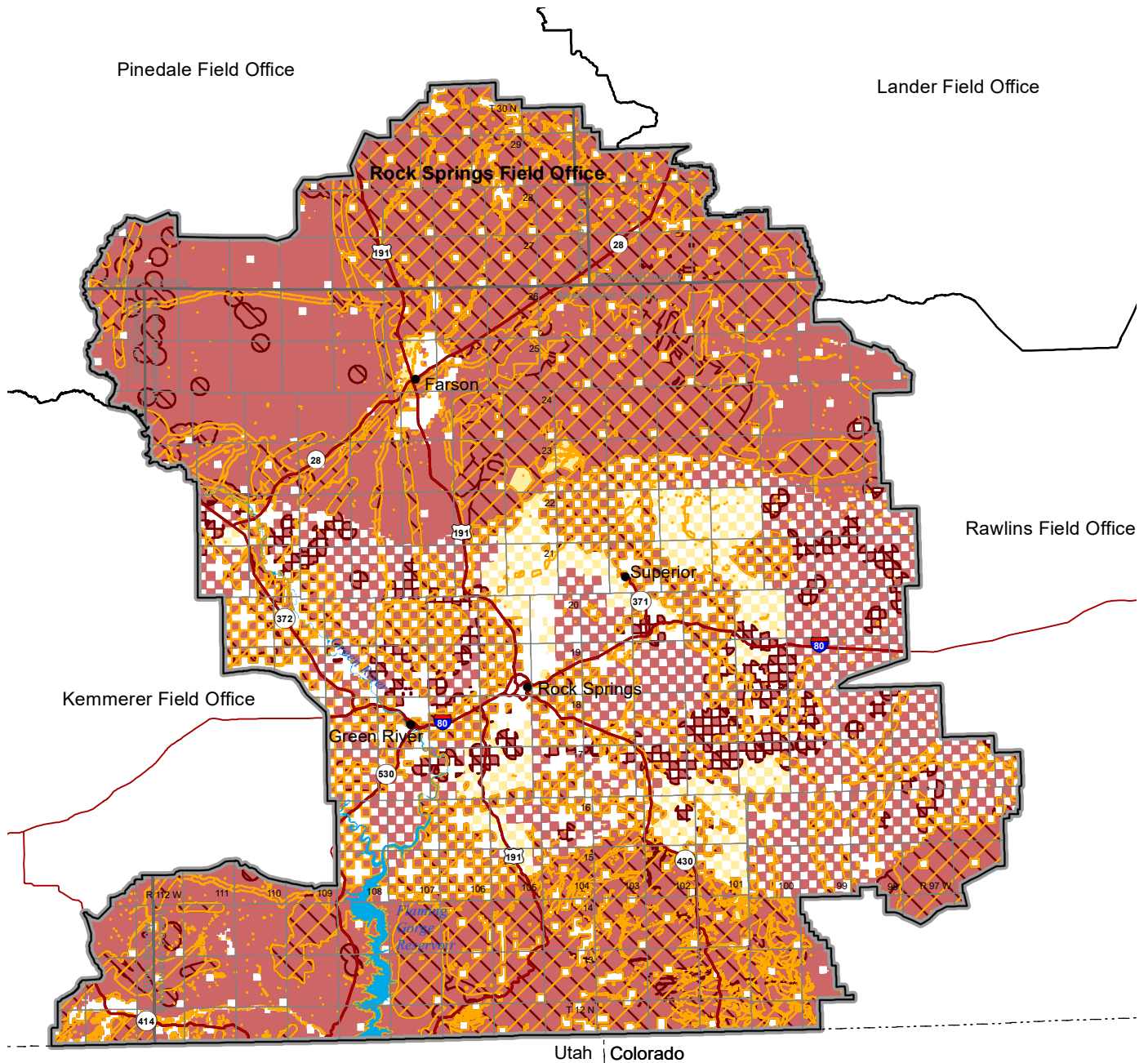


- |   |                     |
|---|---------------------|
| Field Office Boundary                         | Closed to Coal      |
| County Boundaries                             | Closed to Oil Shale |
| Public Land Survey System Township boundaries | Closed to Trona     |
| State Boundaries                              |                     |
| BLM Administrative Lands                      |                     |

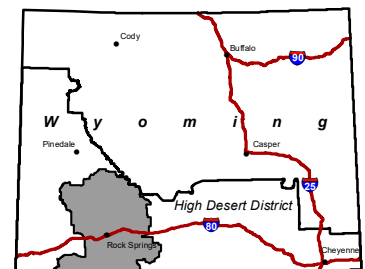
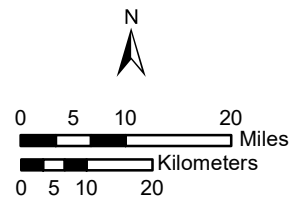


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# Map 2-10: Solid Leasable Minerals - Alternative B

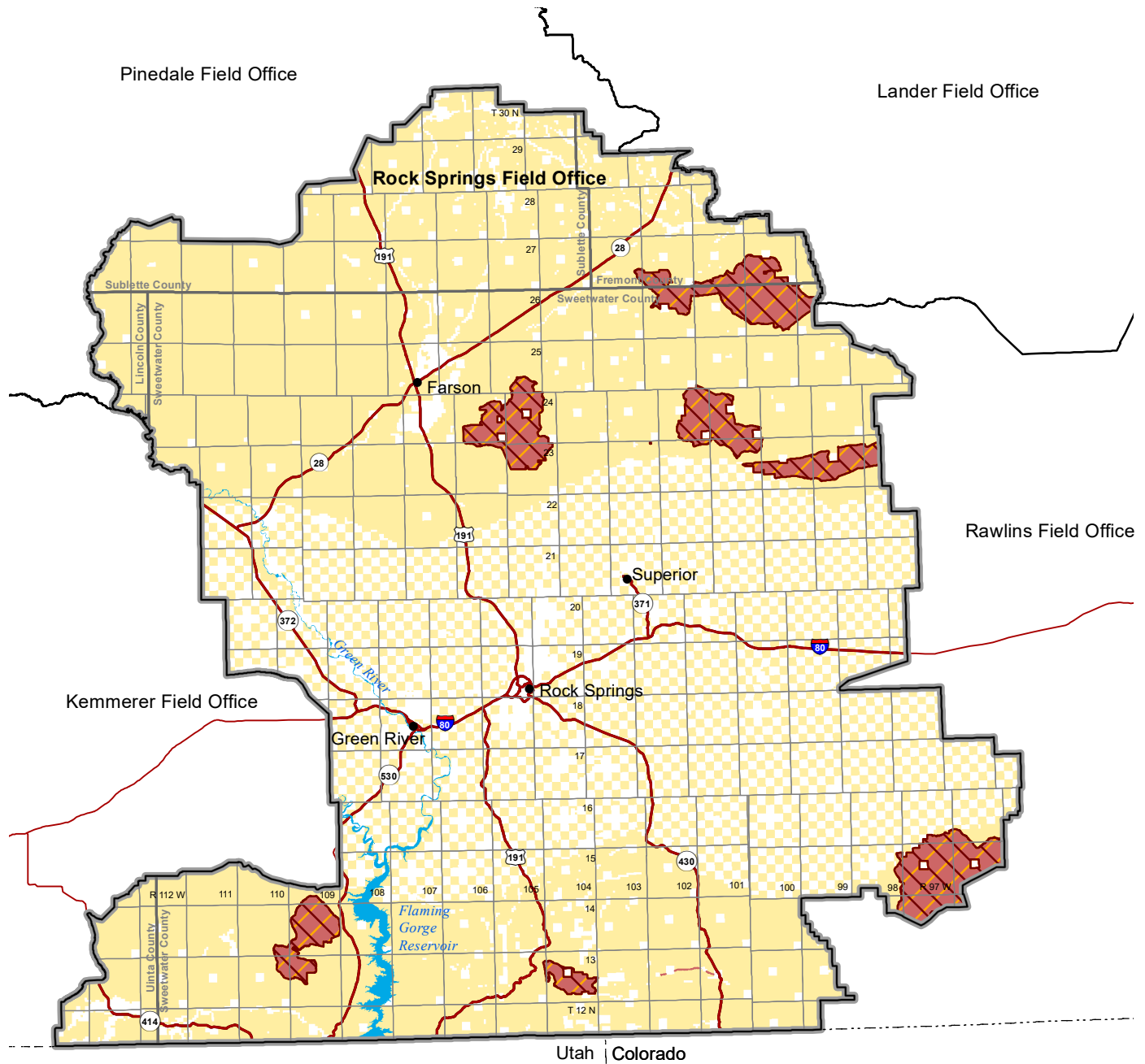


- |                            |                     |
|----------------------------|---------------------|
| RMP Planning Area          | Closed to Coal      |
| Field Office Boundary      | Closed to Oil Shale |
| County Boundaries          | Closed to Trona     |
| Public Land Survey         |                     |
| System Township boundaries |                     |
| State Boundaries           |                     |
| BLM Administrative Lands   |                     |

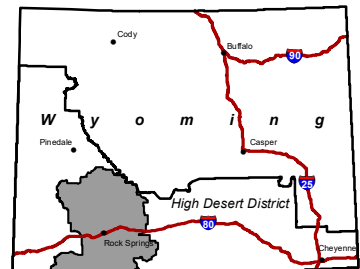
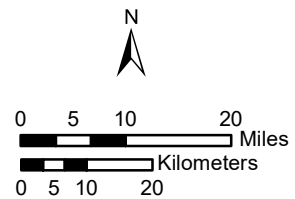


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# Map 2-11: Solid Leasable Minerals - Alternative C



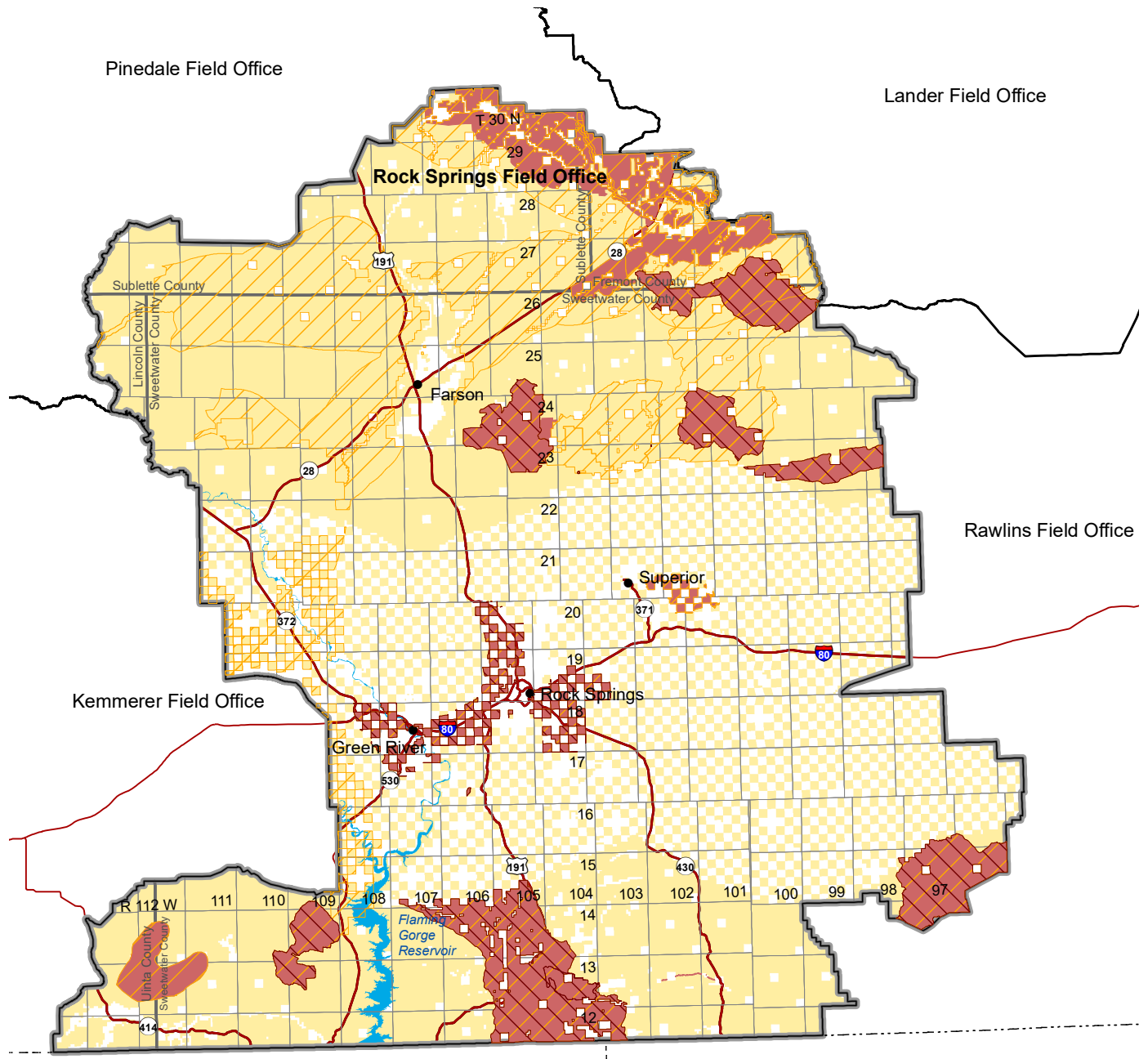
- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- BLM Administrative Lands
- Closed to Coal
- Closed to Oil Shale
- Closed to Trona













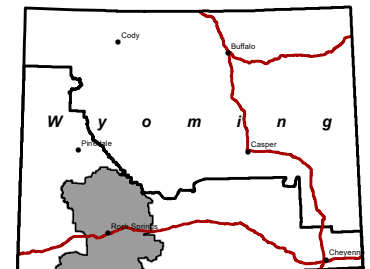
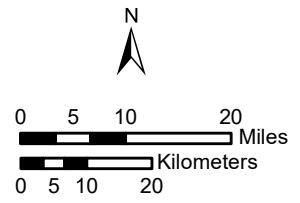
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# Map 2-12: Solid Leasable Minerals - Alternative D



-  RMP Planning Area
-  Field Office Boundary
-  County Boundaries
-  Public Land Survey
-  System Township boundaries
-  State Boundaries
-  BLM Administrative Lands
-  Closed to Coal
-  Closed to Oil Shale
-  Closed to Trona

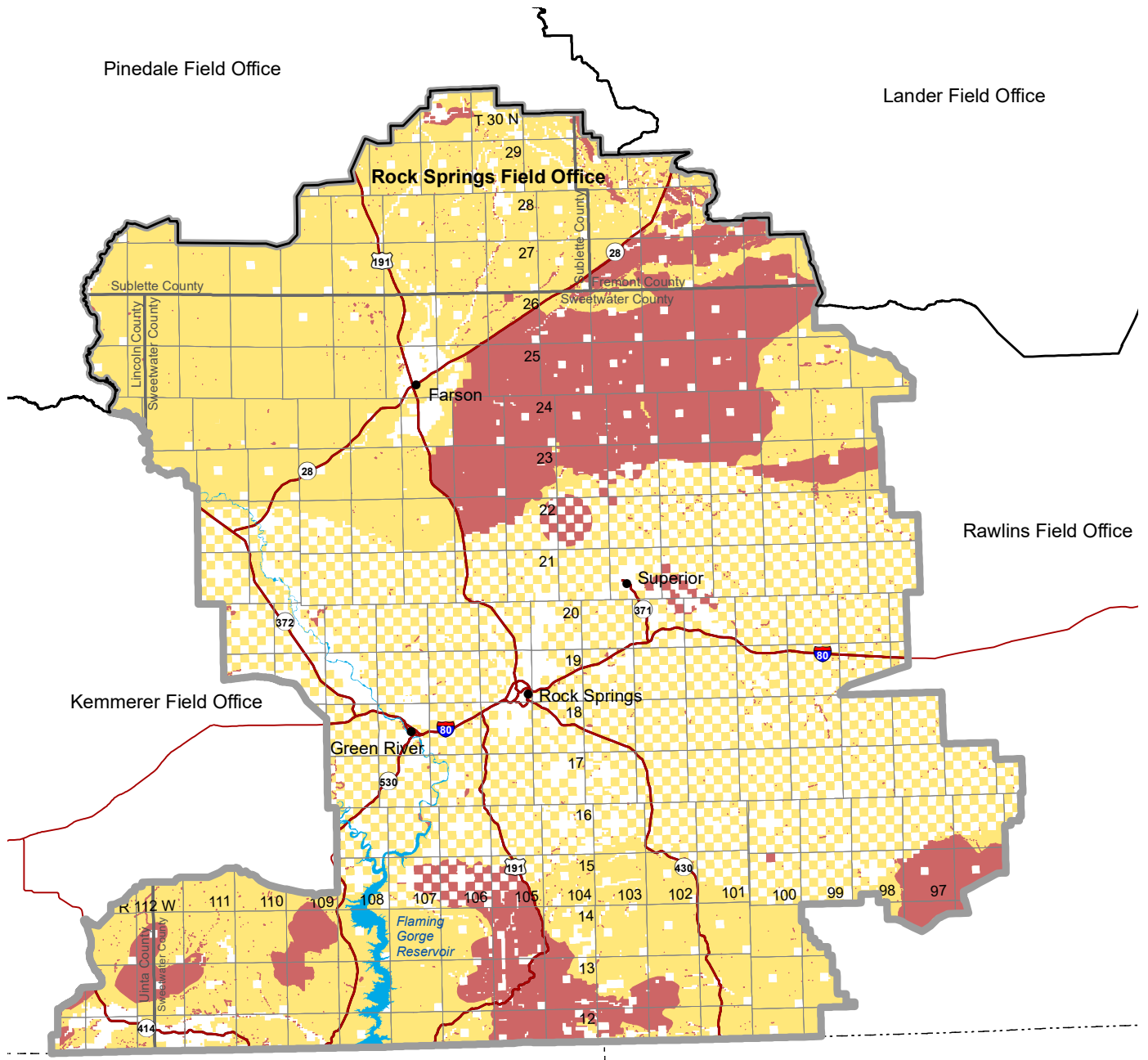









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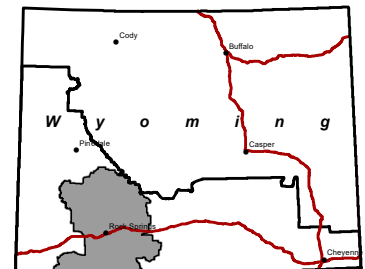
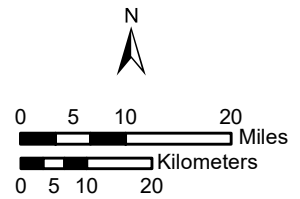
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# Map 2-13: Salable Minerals - Alternative A



-  RMP Planning
-  Closed to Mineral Materials
-  Field Office Boundary
-  County Boundaries
-  Public Land Survey System Township boundaries
-  State Boundaries
-  BLM Administrative

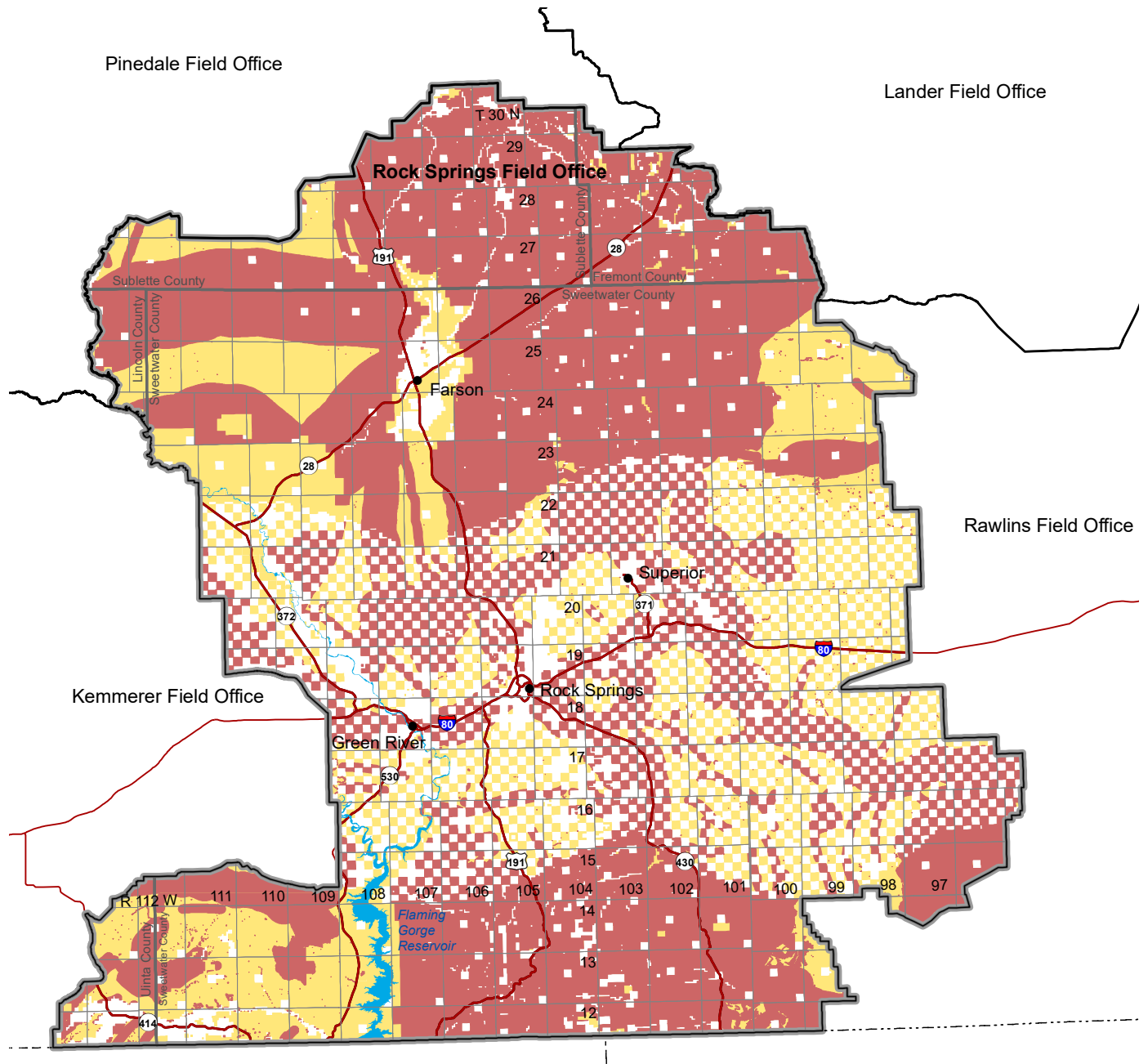


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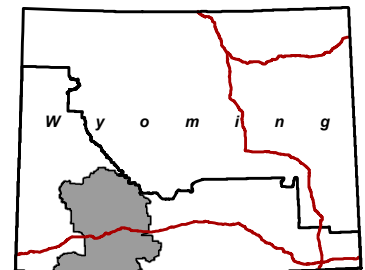
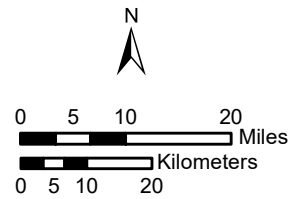
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# Map 2-14: Salable Minerals - Alternative B



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- BLM Administrative Lands

Closed to Mineral Materials

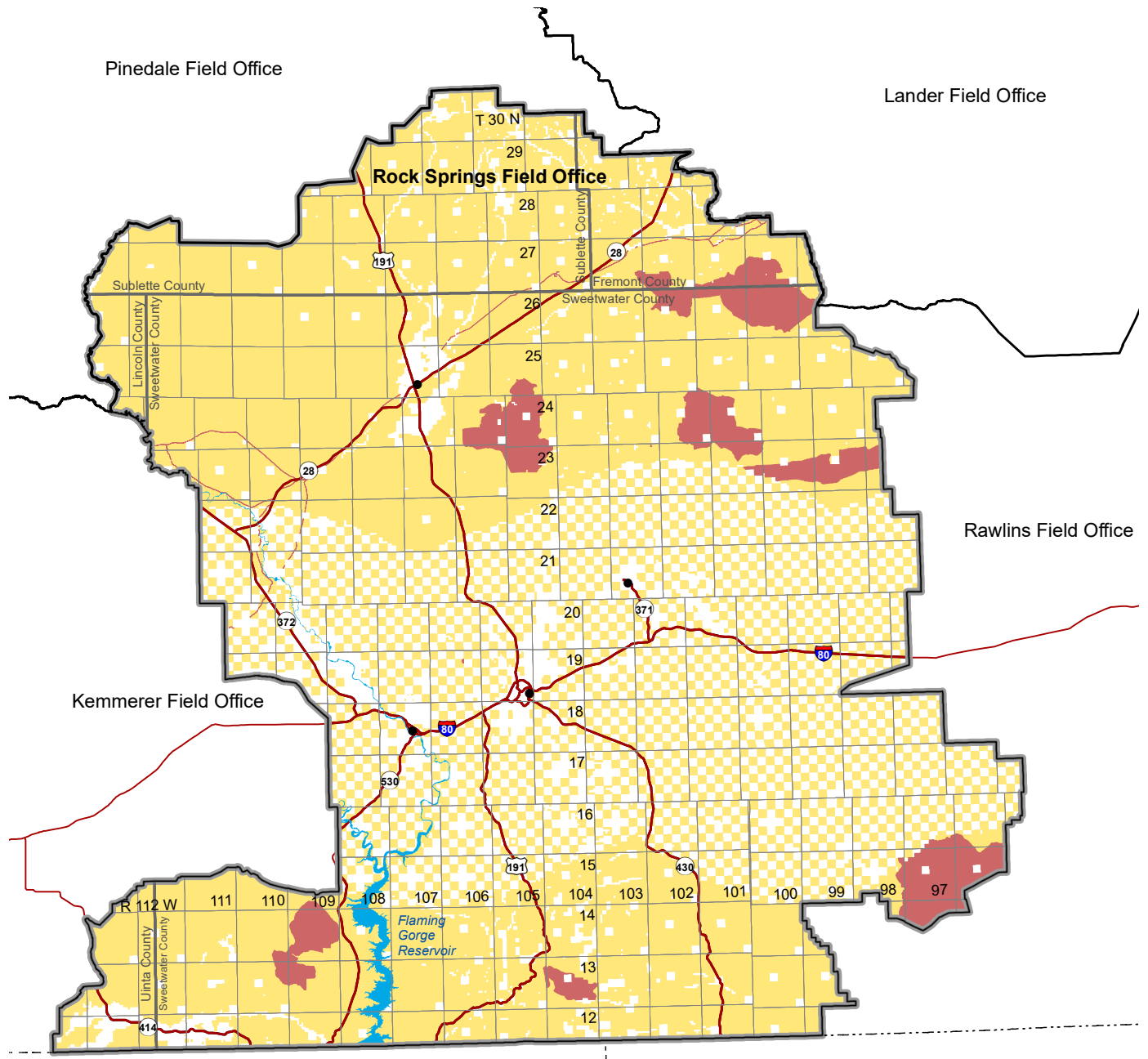


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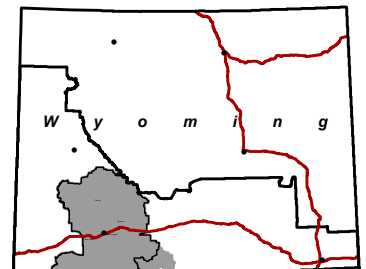
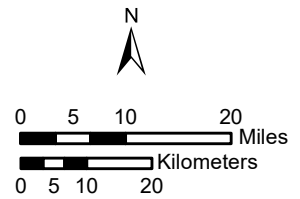
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# Map 2-15: Salable Minerals - Alternative C



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- BLM Administrative
- Closed to Mineral Materials

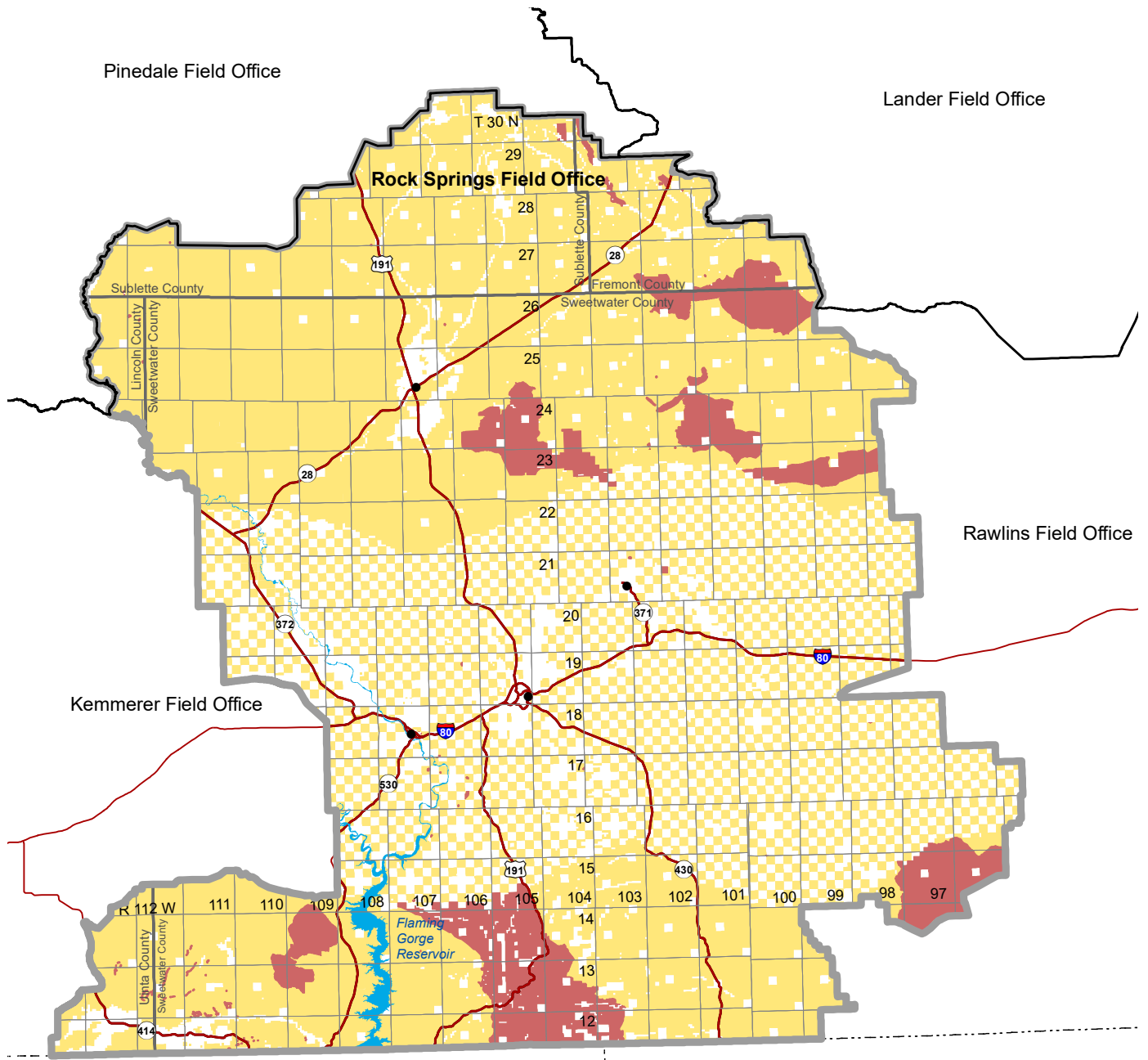









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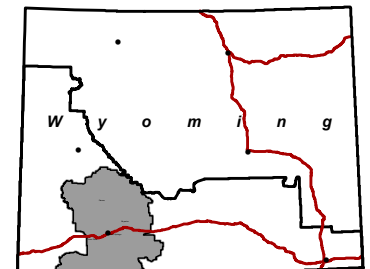
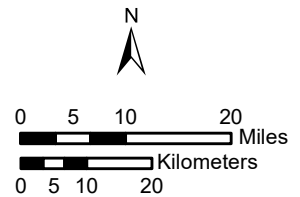
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# Map 2-16: Salable Minerals - Alternative D



-  RMP Planning Area
-  Field Office Boundary
-  County Boundaries
-  Public Land Survey System Township boundaries
-  State Boundaries
-  BLM Administrative Lands
-  Closed to Mineral Materials

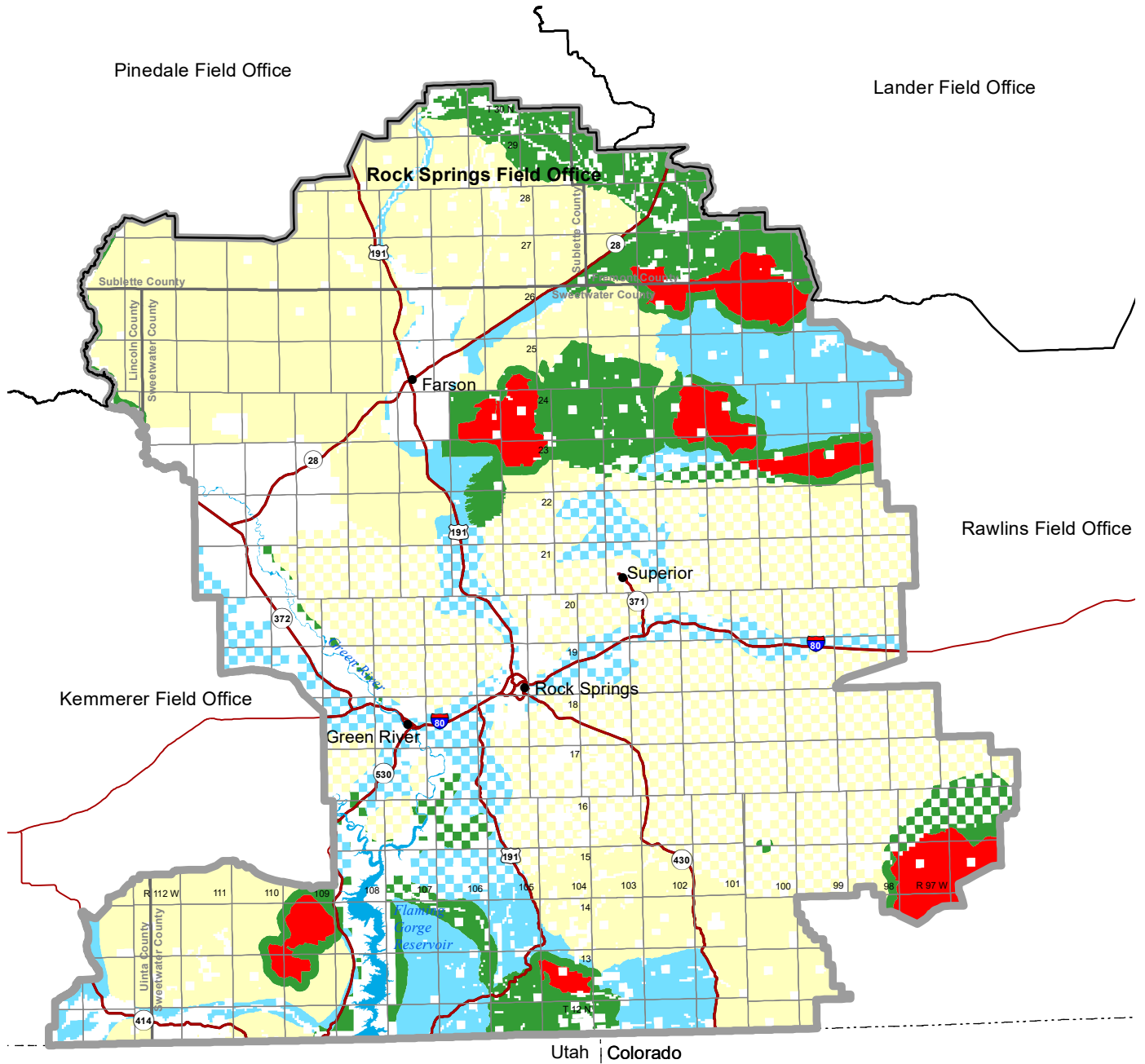


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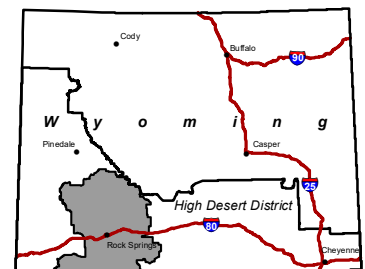
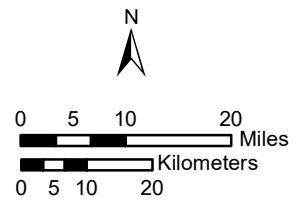
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# Map 2-17: Visual Resource Management - Alternative A

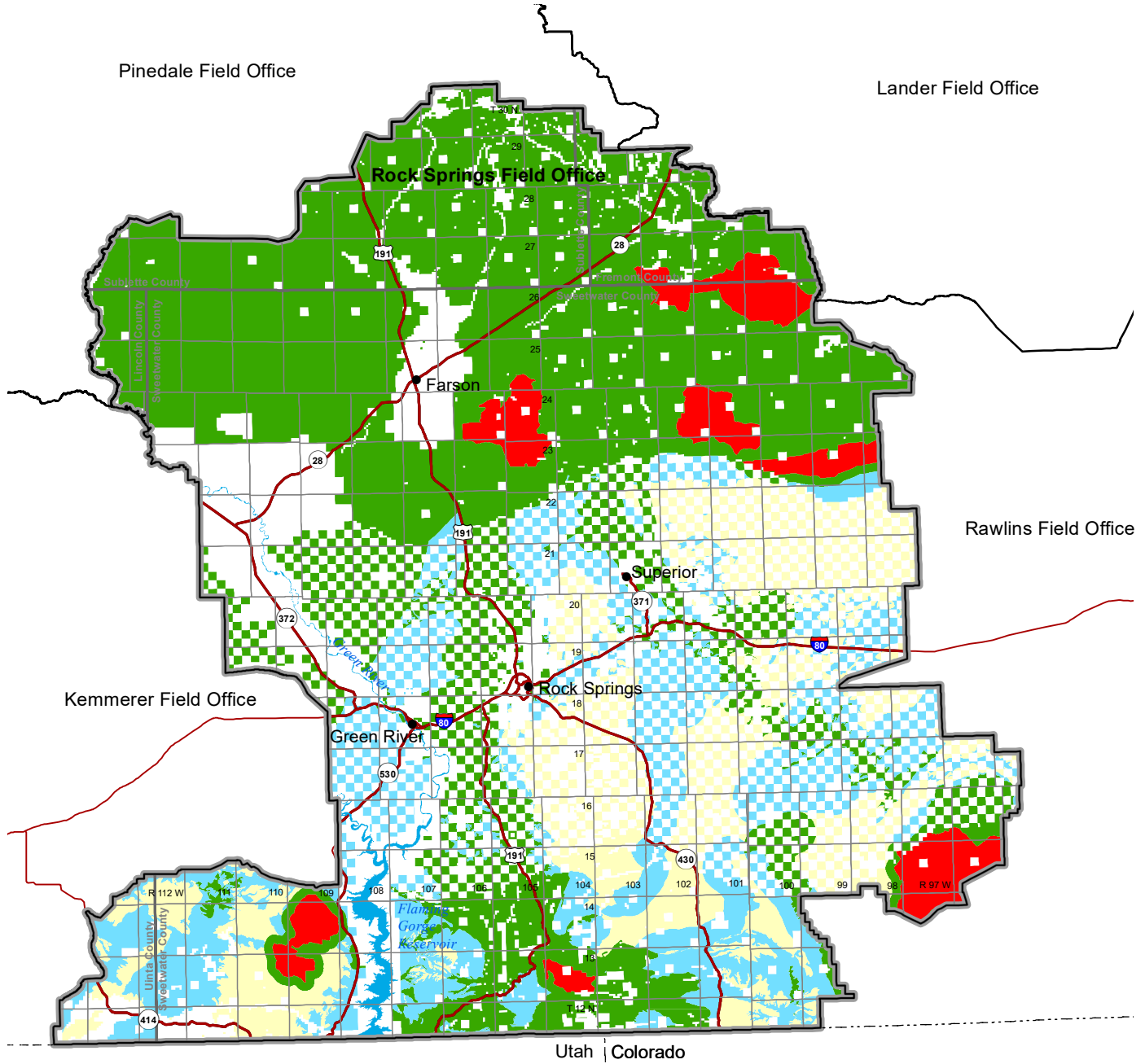


- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- VRM Class I
- VRM Class II
- VRM Class III
- VRM Class IV

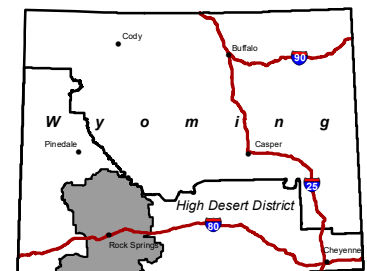
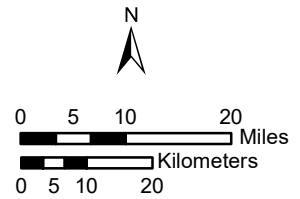


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# Map 2-18: Visual Resource Management - Alternative B

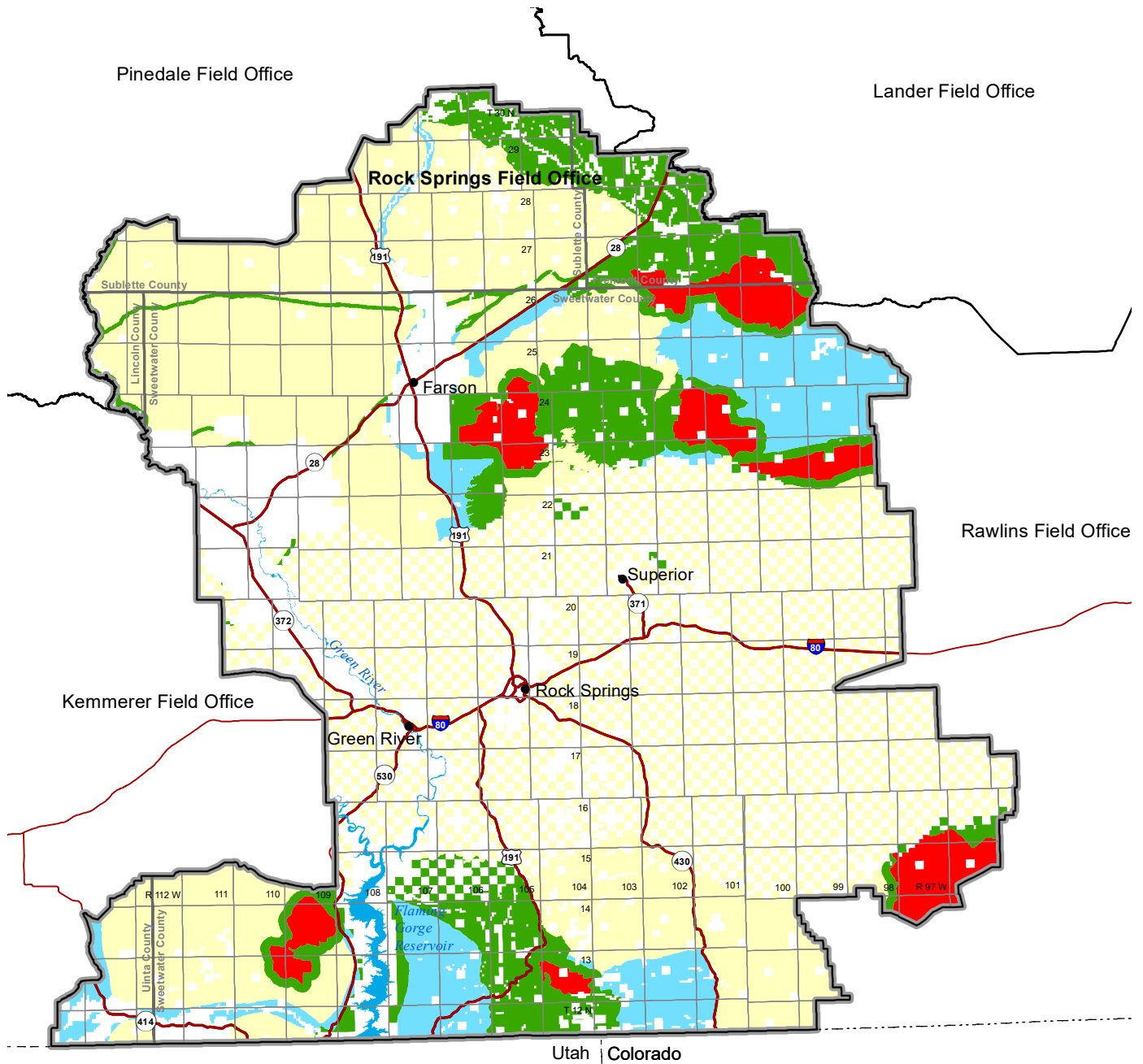


- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- VRM Class I
- VRM Class II
- VRM Class III
- VRM Class IV

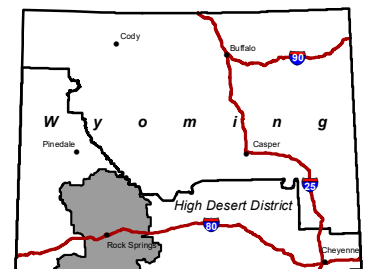
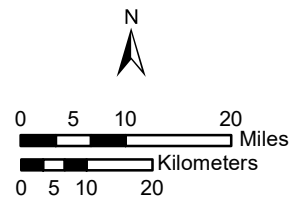


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# Map 2-19: Visual Resource Management - Alternative C

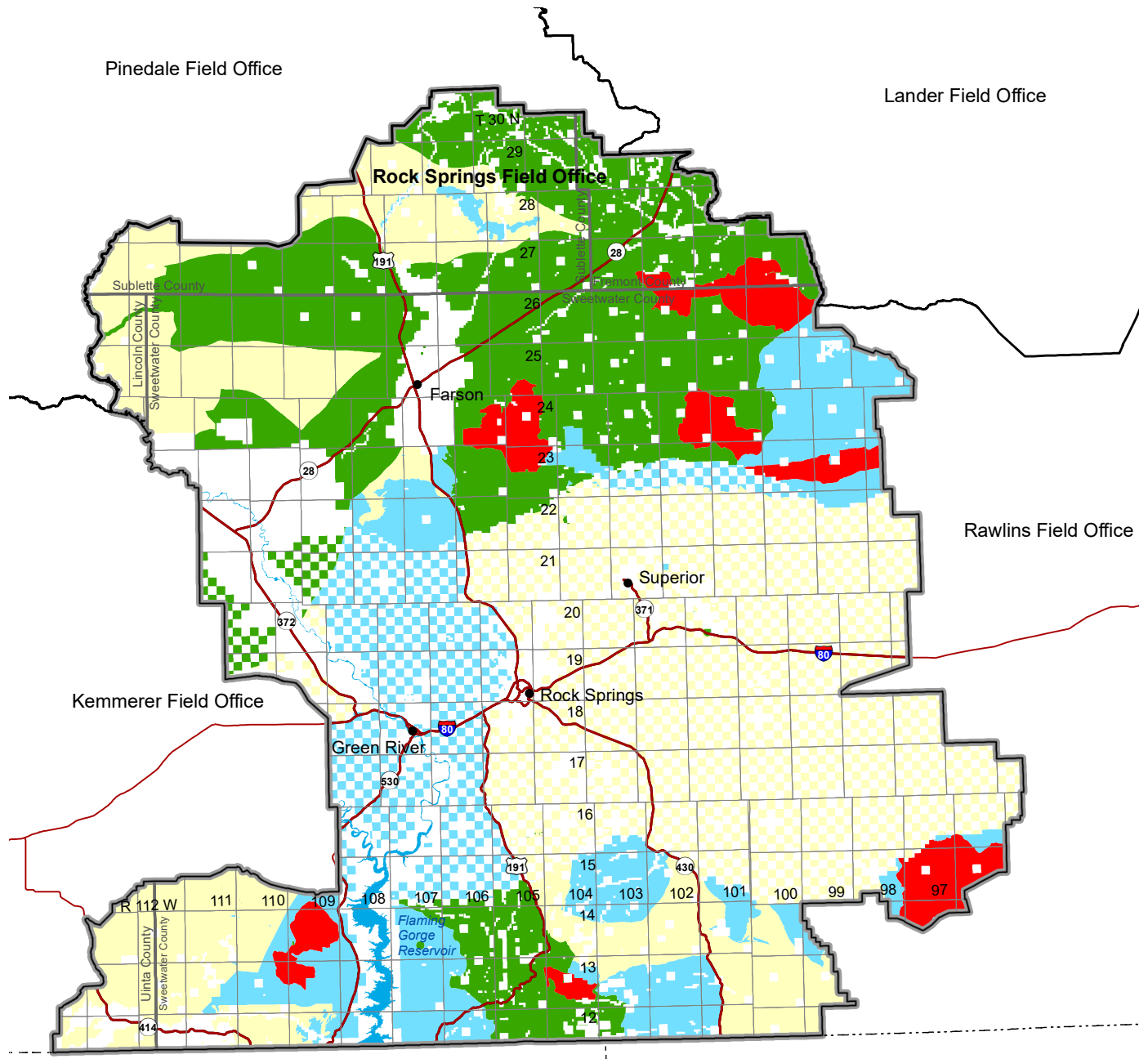


- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- VRM Class I
- VRM Class II
- VRM Class III
- VRM Class IV

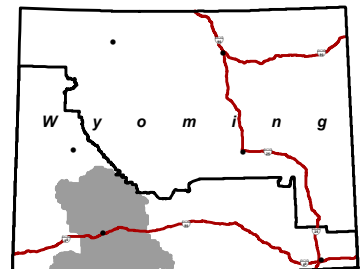
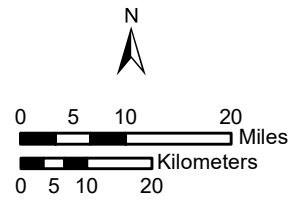


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# Map 2-20: Visual Resource Management - Alternative D



- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- VRM Class I
- VRM Class II
- VRM Class III
- VRM Class IV

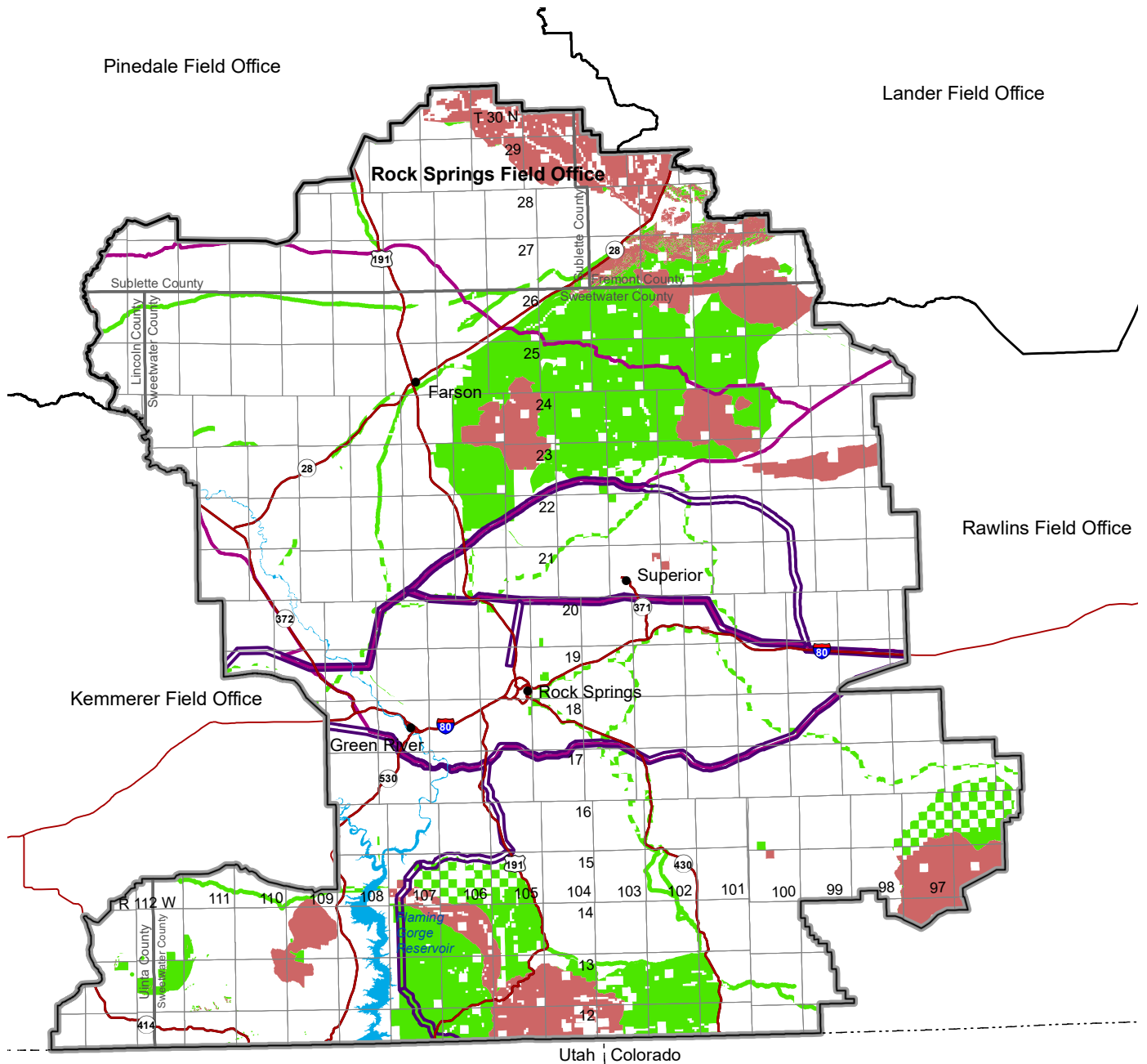


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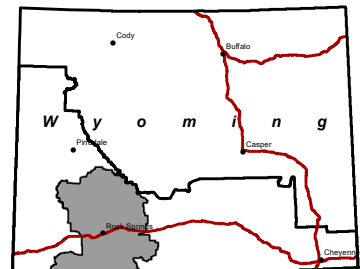
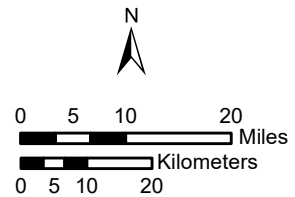
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# Map 2-21: Rights-of-Way - Alternative A



- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- Energy Corridor
- R\DW Exclusion
- R\DW Avoidance
- Preferred Energy Corridors (WWEC EIS 2008)

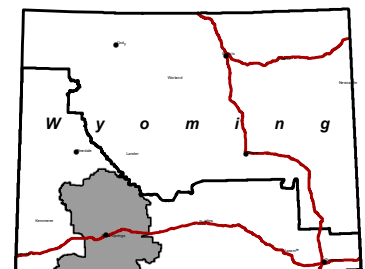
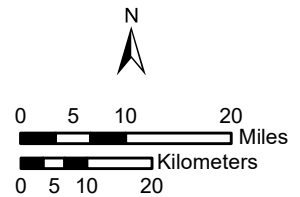
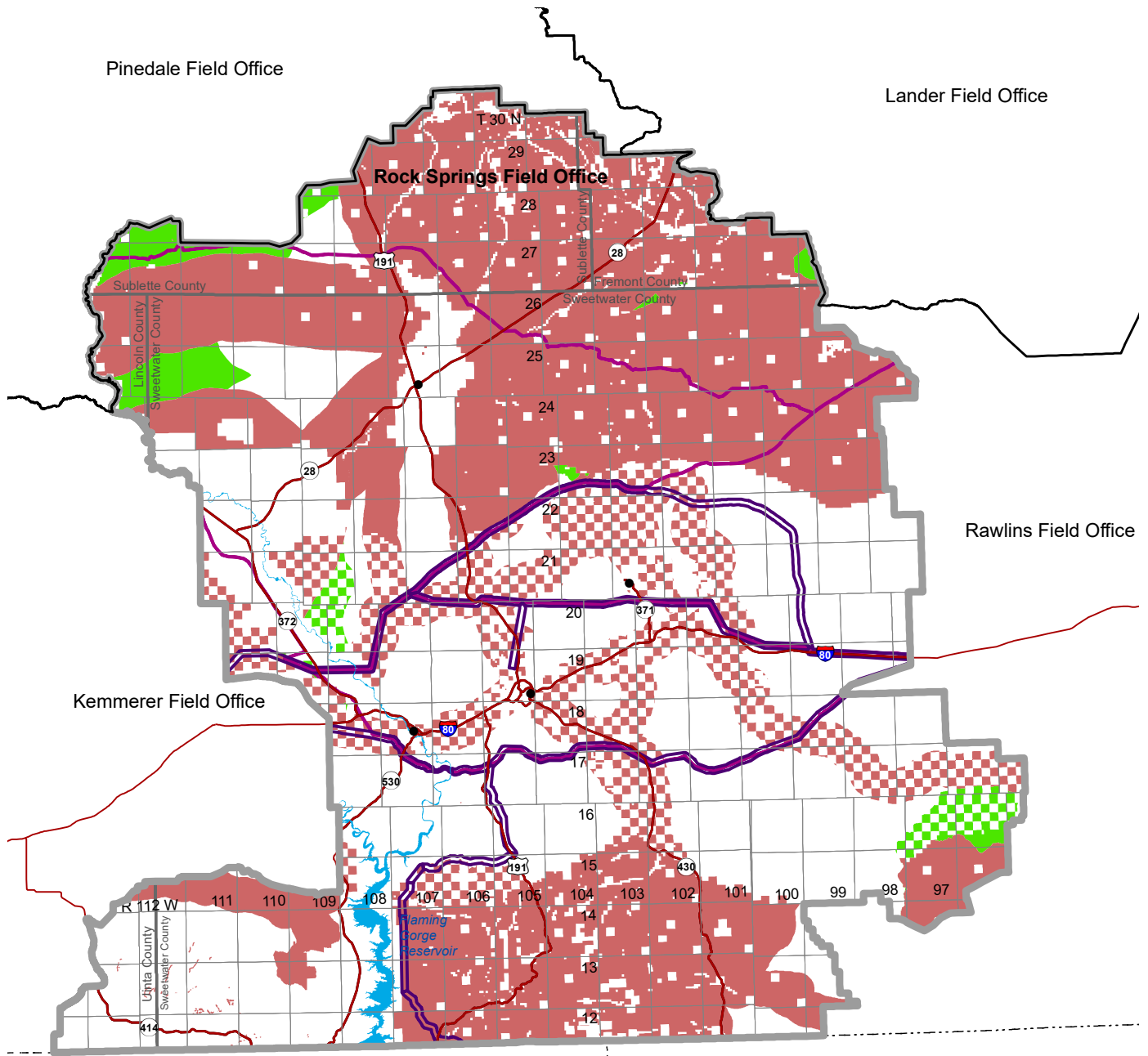


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# Map 2-22: Rights-of-Way - Alternative B

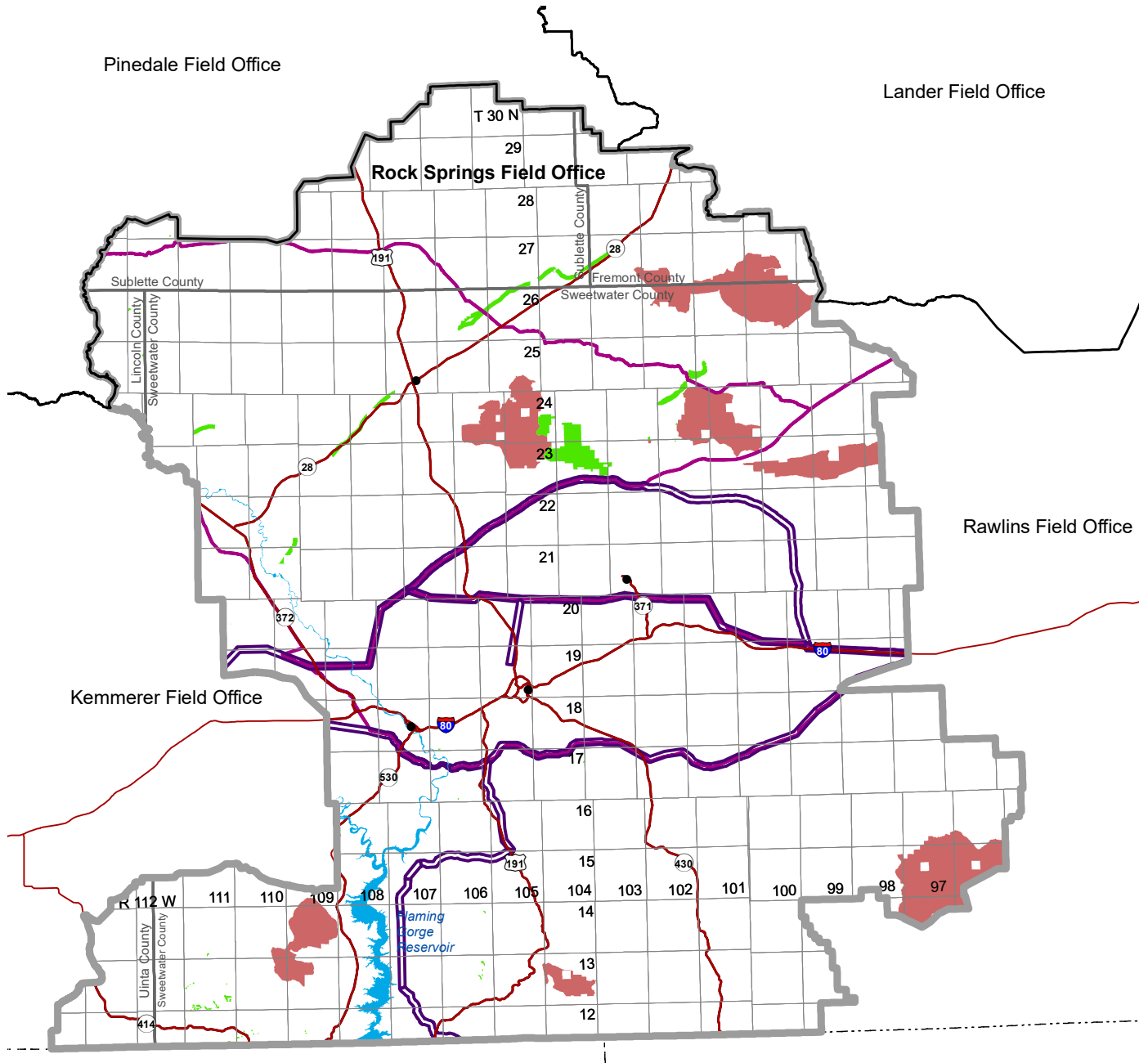


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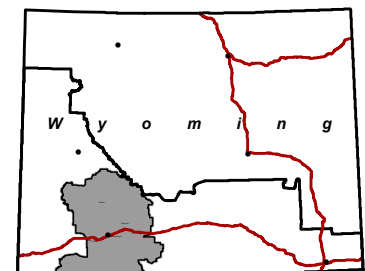
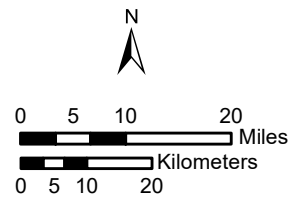
Map does not contain or depict BLM Sage-Grouse Land Use Plans

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# Map 2-23: Rights-of-Way - Alternative C



- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- Energy Corridor
- ROW Exclusion
- ROW Avoidance
- Preferred Energy Corridors (WWEC EIS 2008)

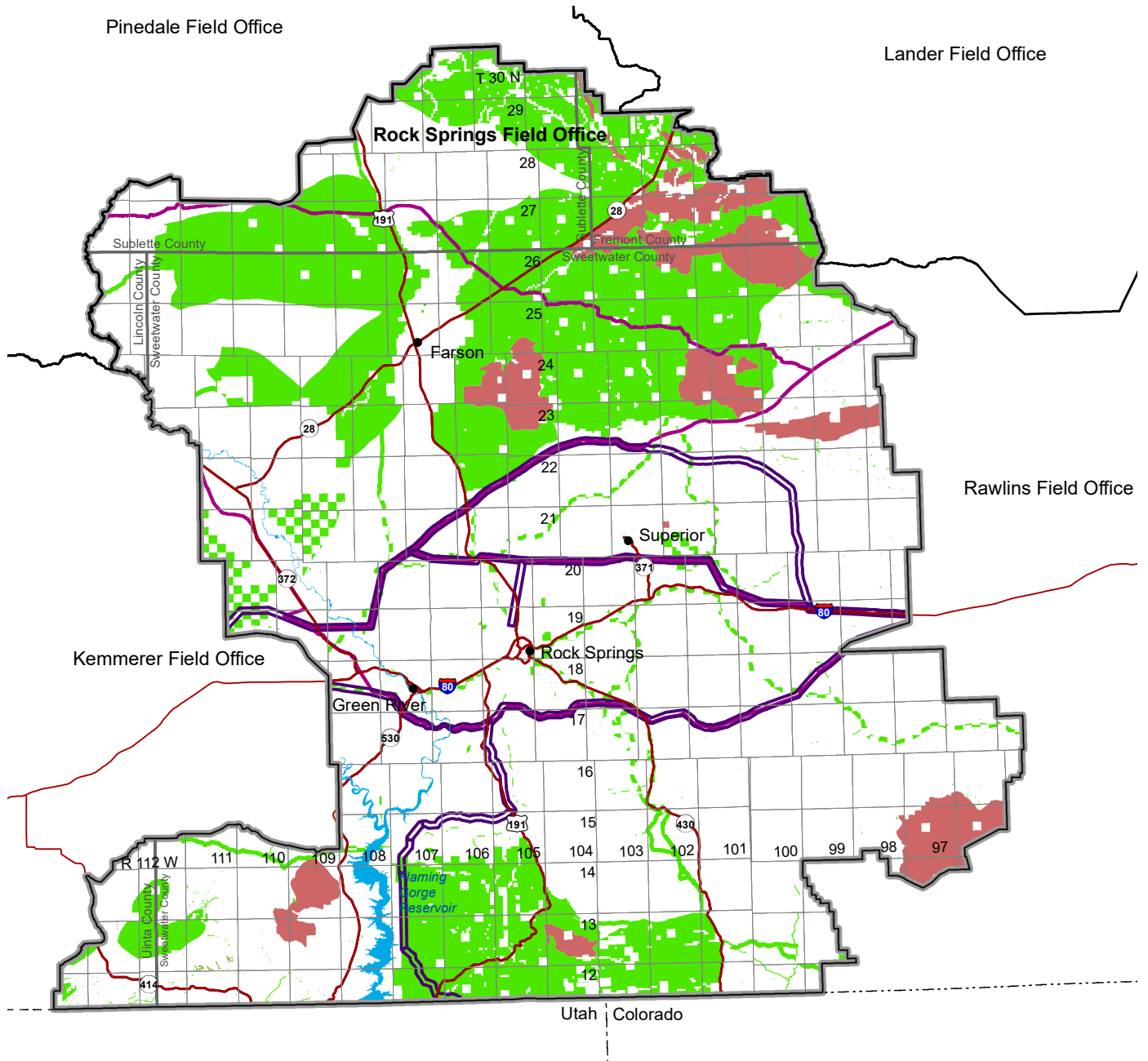


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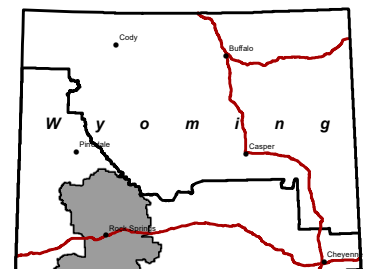
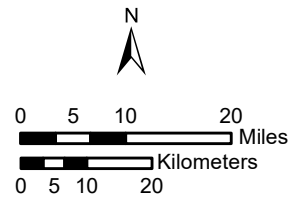
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# Map 2-24: Rights-of-Way - Alternative D



- |                            |  |
|----------------------------|--|
| RMP Planning               | ROW Exclusion                              |
| Field Office Boundary      | ROW Avoidance                              |
| County Boundaries          | Preferred Energy Corridors (WVEC EIS 2008) |
| Public Land Survey         | Corridors (WVEC EIS 2008)                  |
| System Township boundaries |  |
| State Boundaries           |  |
| Energy Corridor            |  |

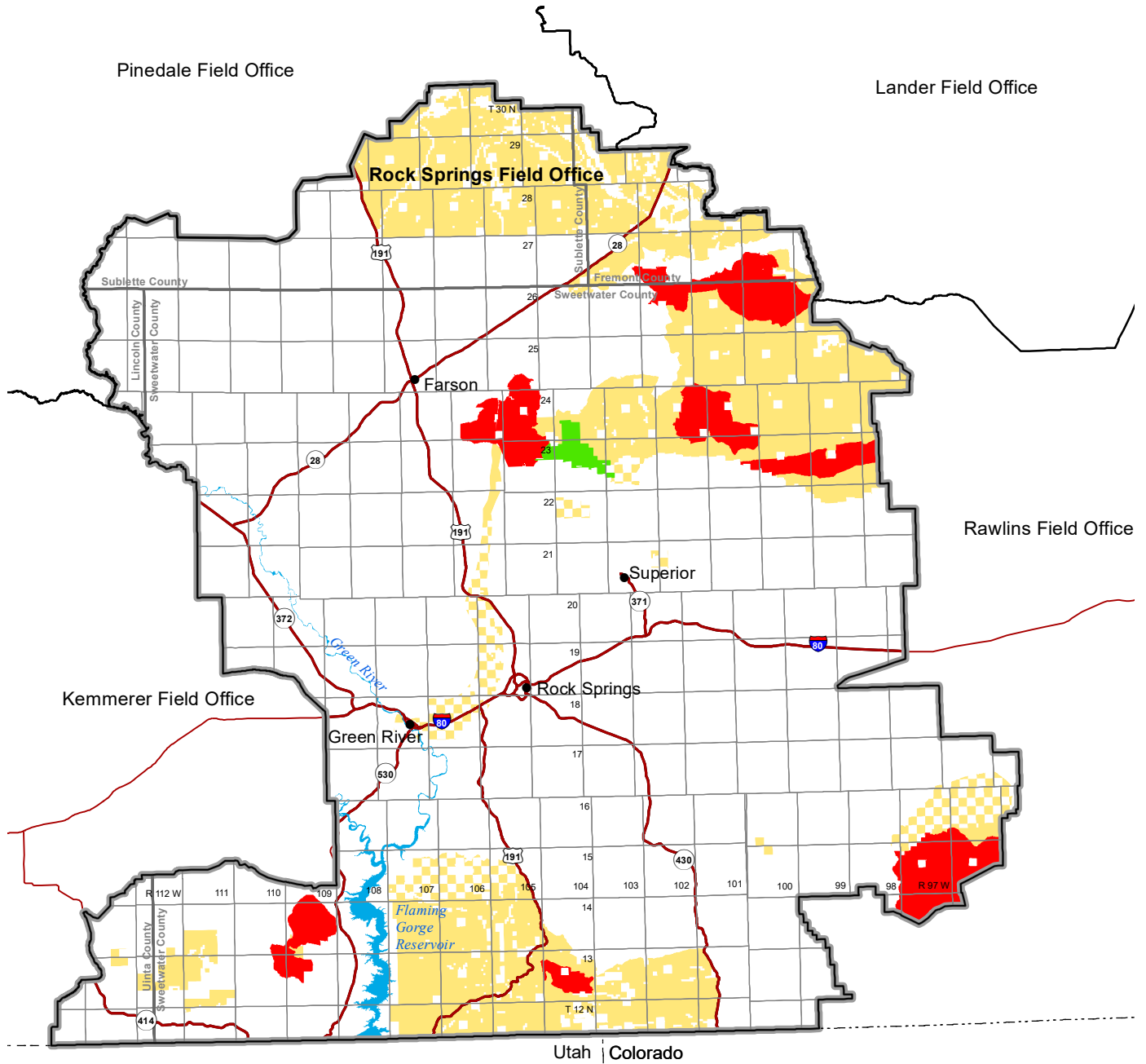


UTM NAD83 Zone 12N

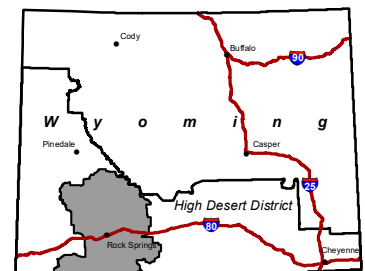
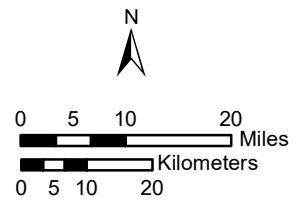
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# Map 2-25: Off-Highway Vehicles Alternative A

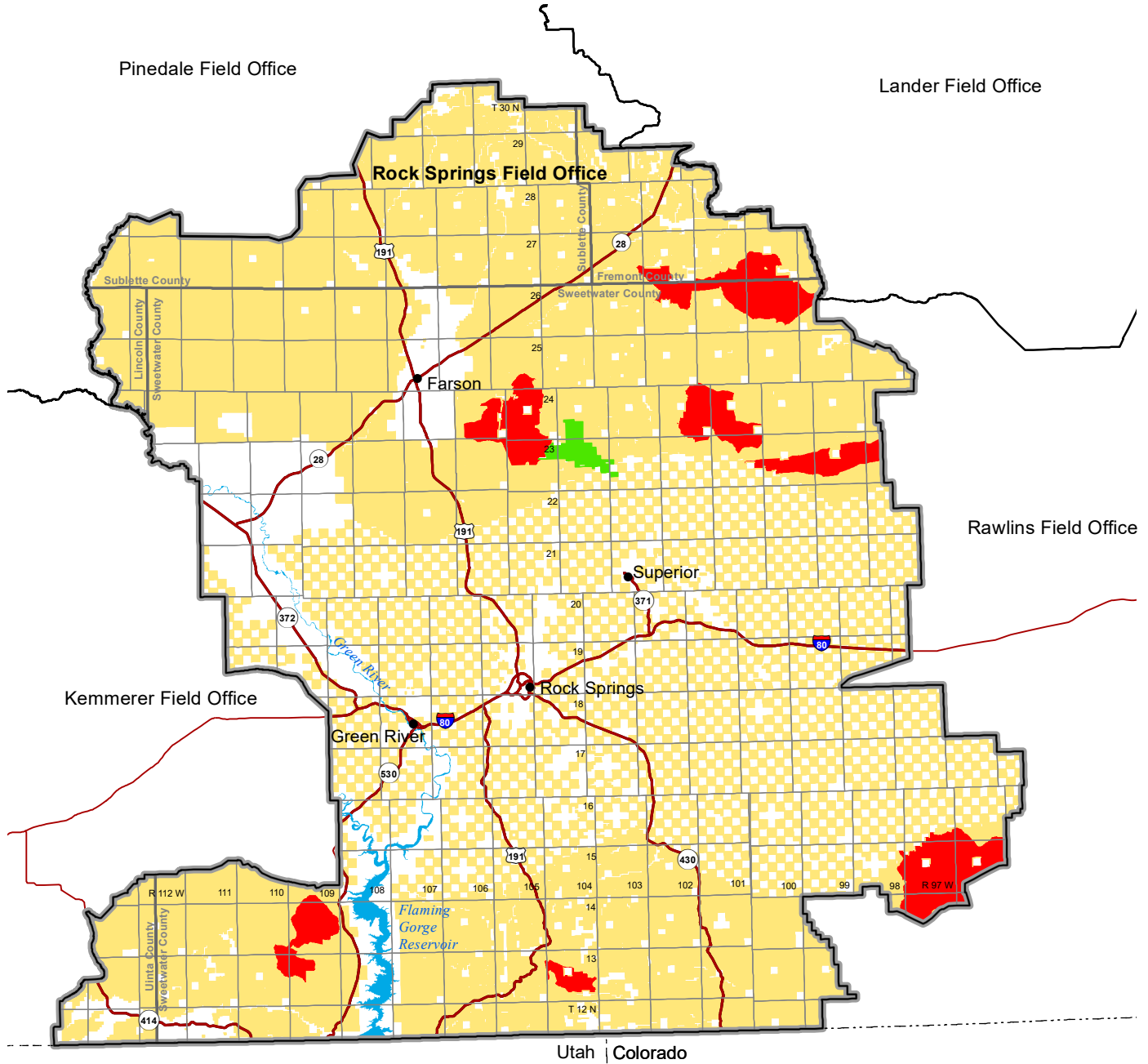


- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- Closed to OHV Use
- Limited to Designated Roads and Trails
- Open for OHV Use
- Limited to Existing Roads and Trails

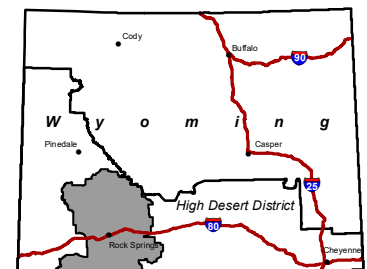
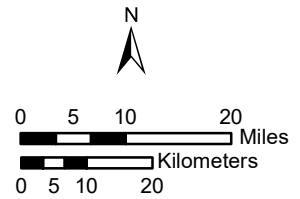


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# Map 2-26: Off-Highway Vehicles Alternative B

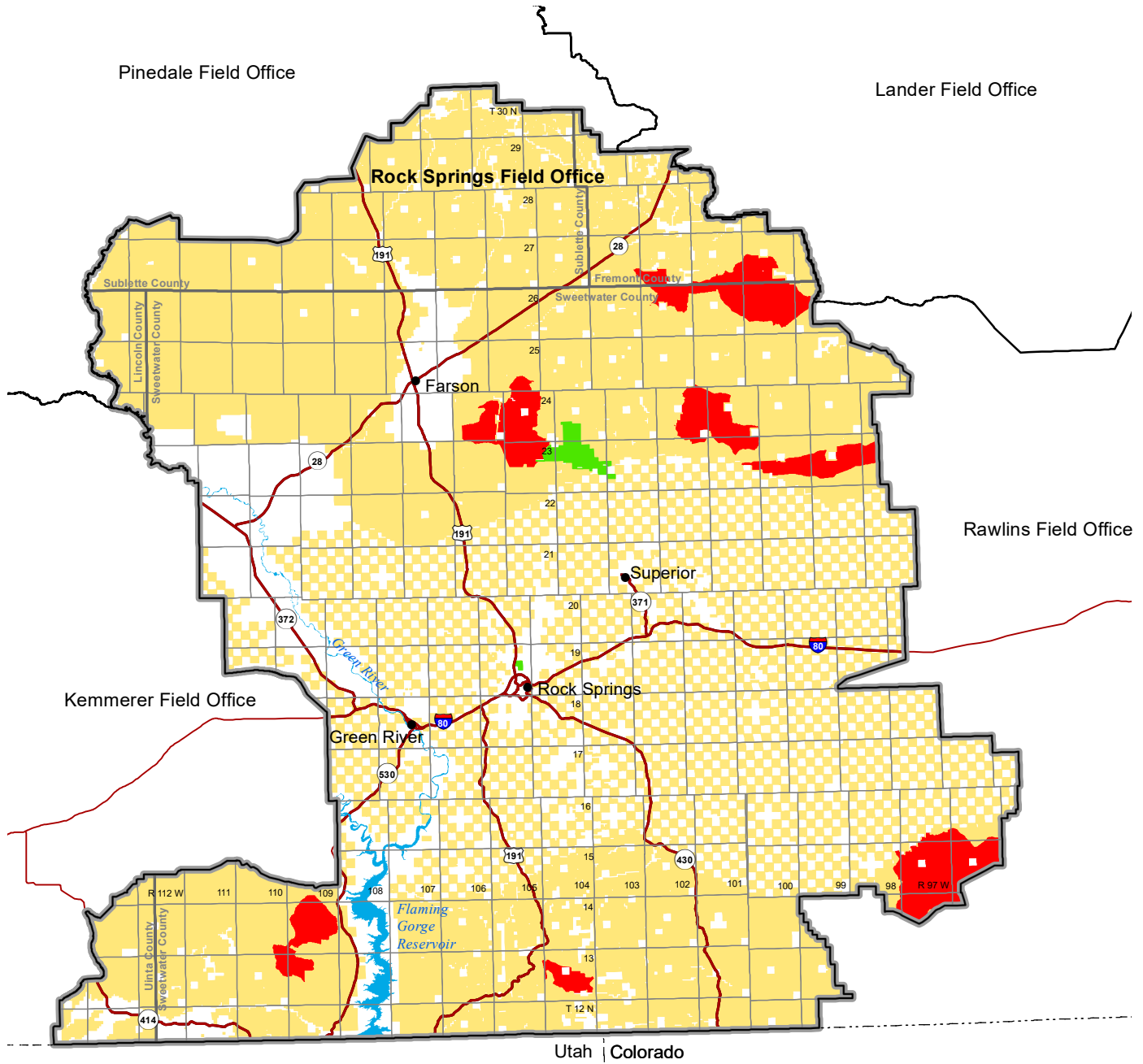


- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- Closed to OHV Use
- Limited to Designated Roads and Trails
- Open for OHV Use



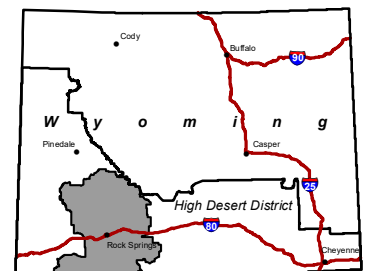
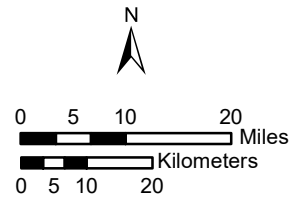
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# Map 2-27: Off-Highway Vehicles Alternative C



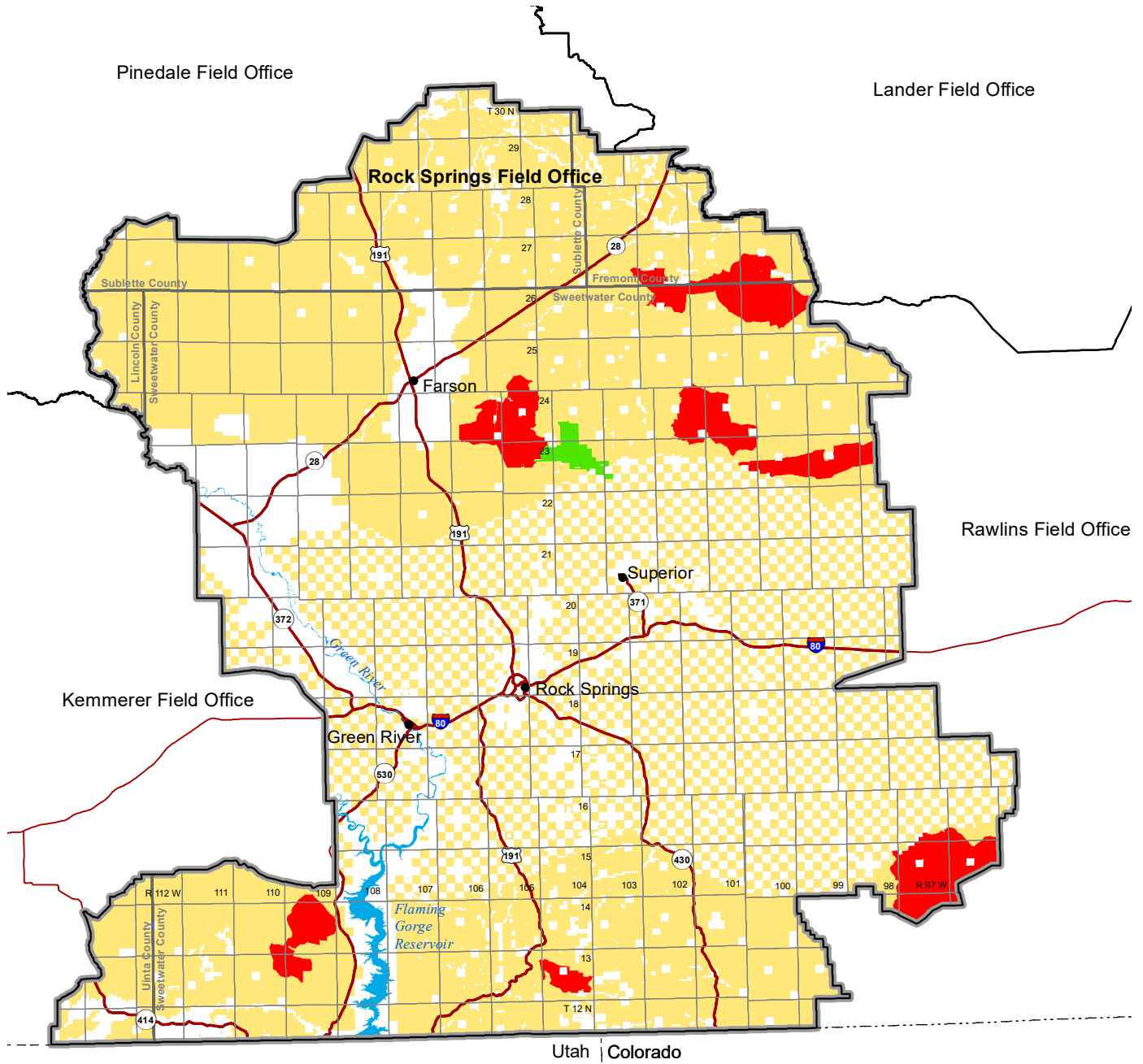
- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries



- Closed to OHV Use
- Limited to Designated Roads and Trails
- Open for OHV Use

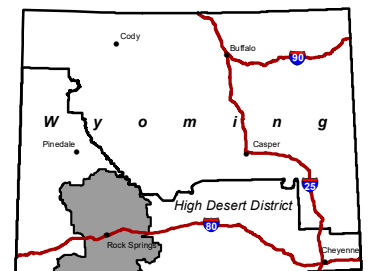
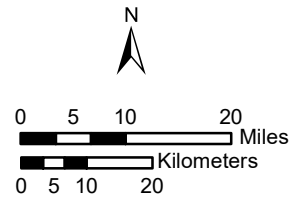


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# Map 2-28: Off-Highway Vehicles Alternative D



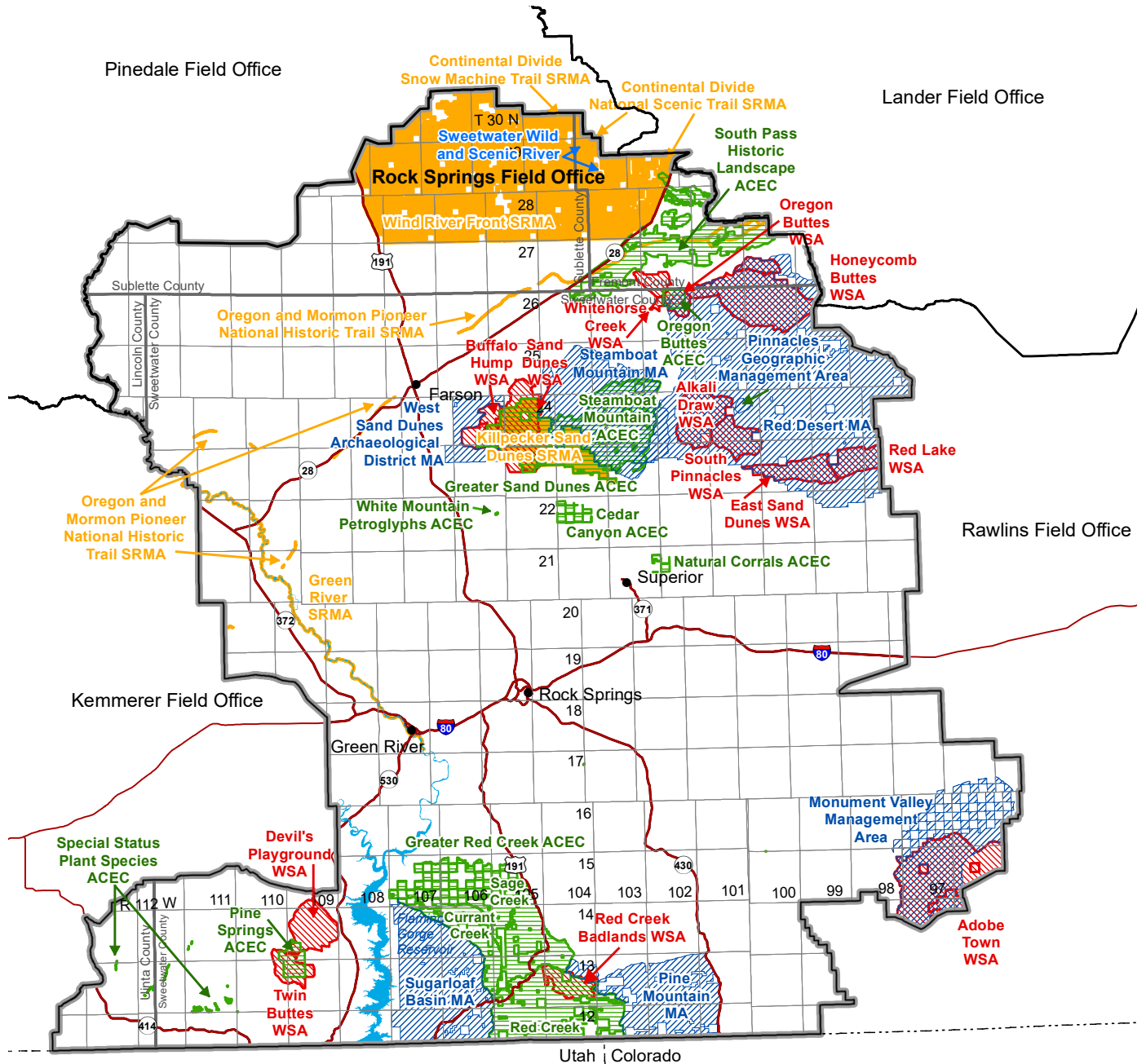
-  RMP Planning Area
-  Field Office Boundary
-  County Boundaries
-  Public Land Survey
-  System Township boundaries
-  State Boundaries
-  Closed to OHV Use
-  Limited to Designated Roads and Trails
-  Open for OHV Use



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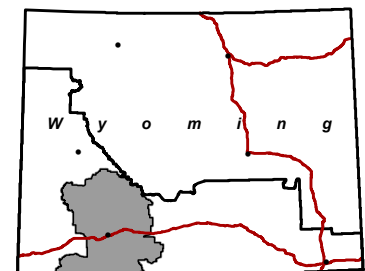
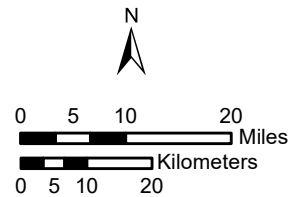


# Map 2-29: Special Designations and Management Areas - Alternative A



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- Areas of Critical Environmental Concern (ACEC)
- Other Management Areas (OMA)

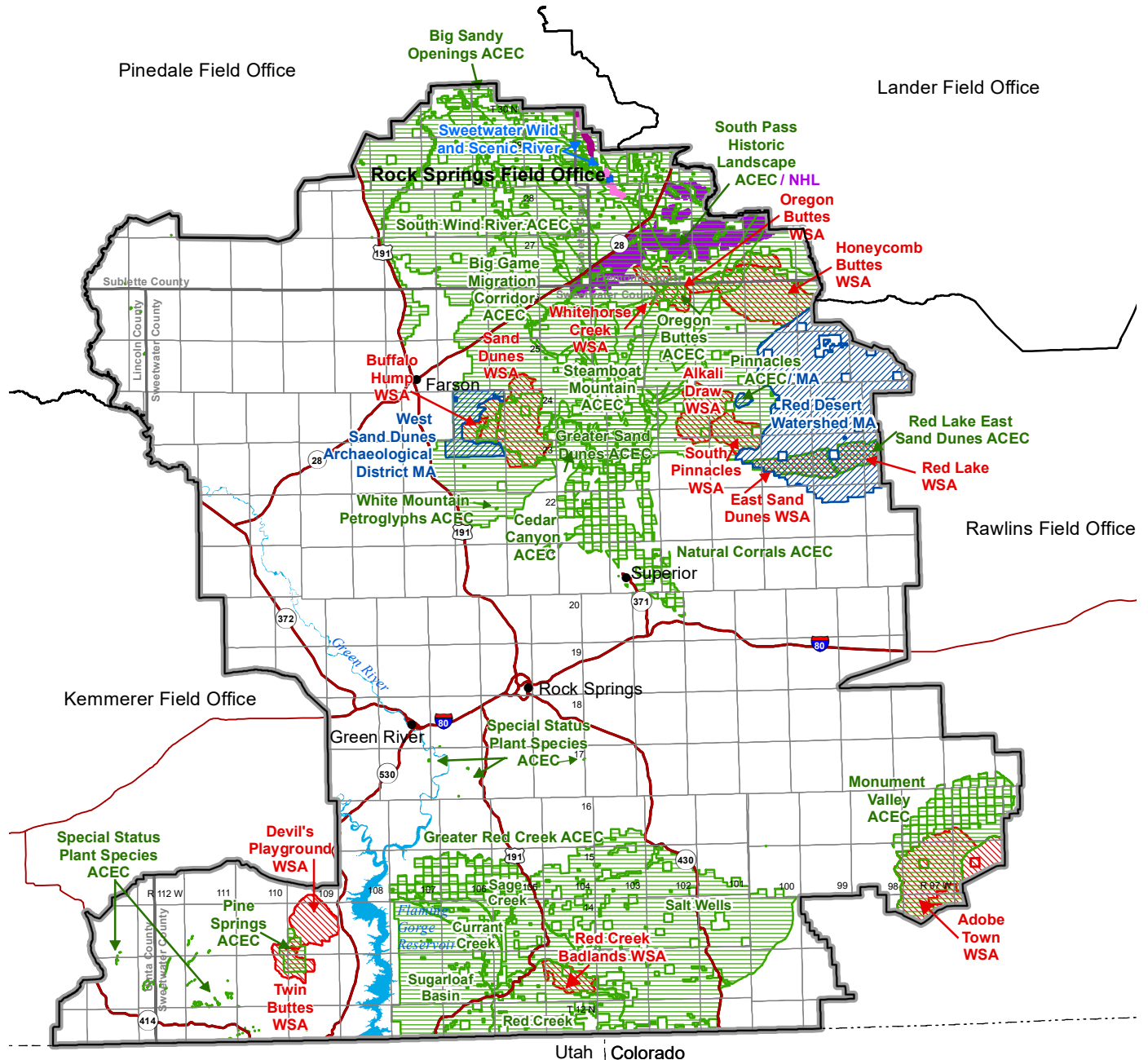
- Special Recreation Management Areas (SRMA)
- Wilderness Study Areas
- River Segments Suitable for Wild & Scenic River Designation
- Recreational
- Scenic
- Wild



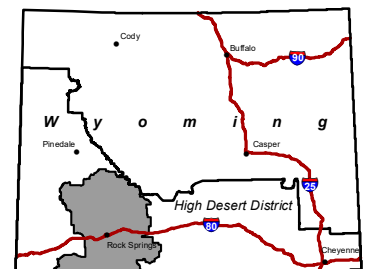
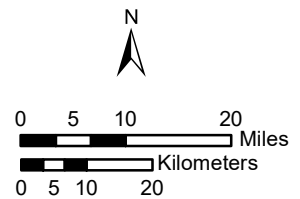
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# Map 2-30: Special Designations and Management Areas - Alternative B

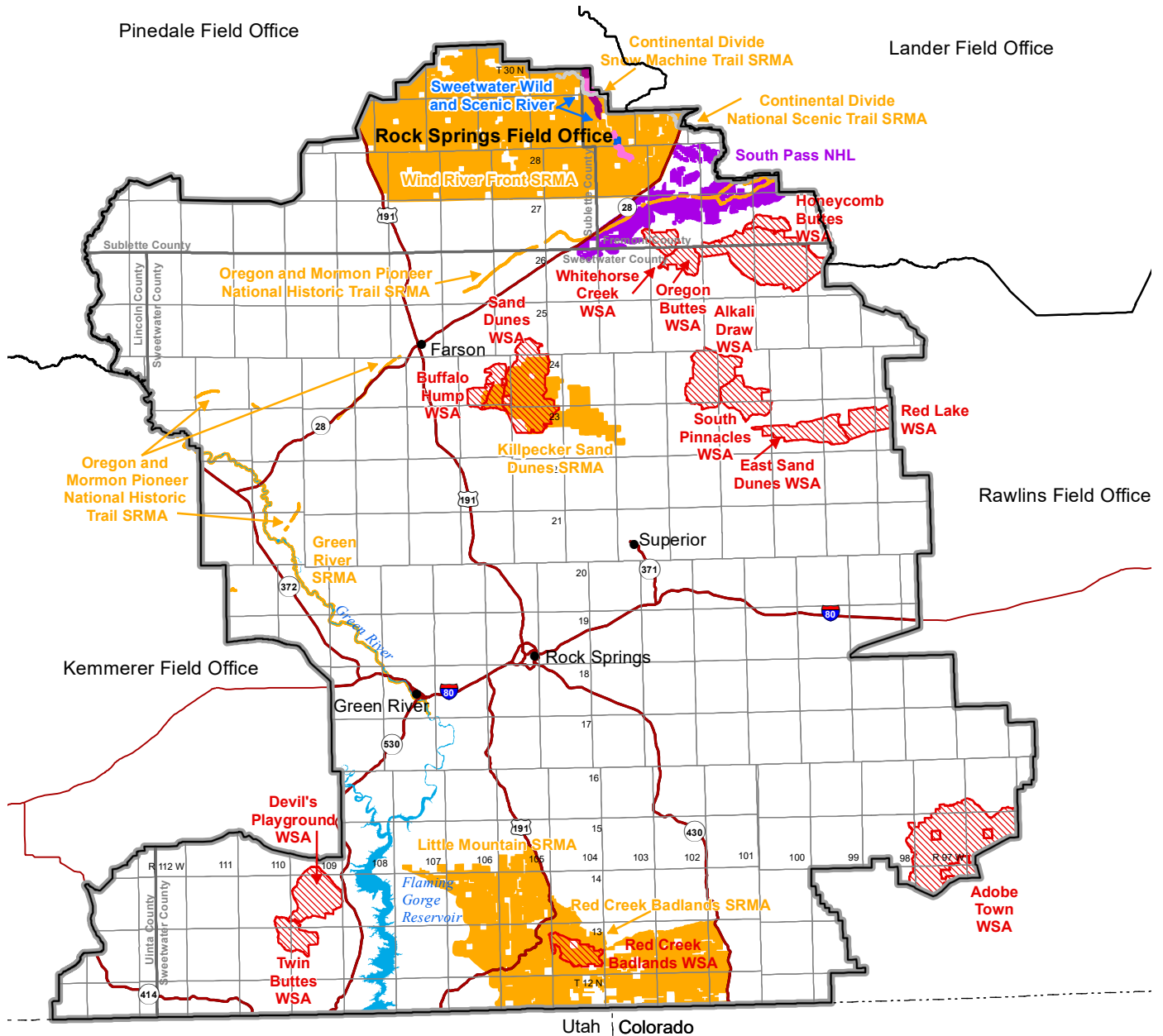


- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- Areas of Critical Environmental Concern (ACEC)
- Other Management Areas (OMA)
- National Historic Landmarks (NHL)
- Wilderness Study Areas (WSA)
- River Segments Suitable for Wild & Scenic River Designation
- Recreational
- Scenic
- Wild



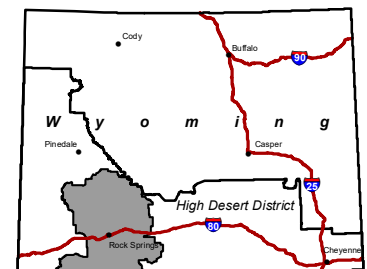
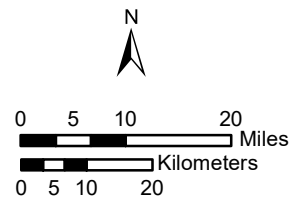
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# Map 2-31: Special Designations and Management Areas - Alternative C



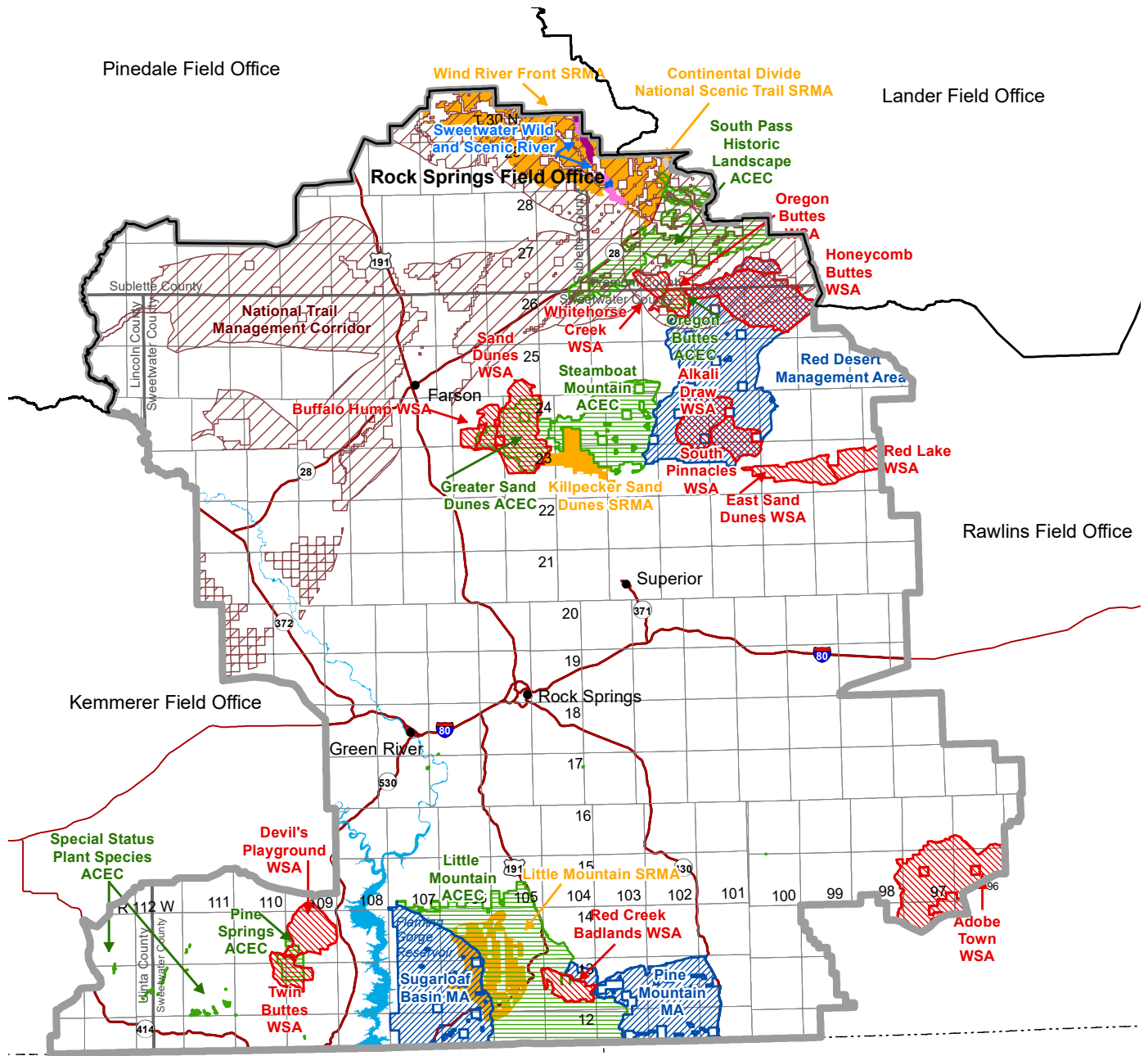
- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- National Historic Landmarks (NHL)

- Special Recreation Management Areas (SRMA)
- Wilderness Study Areas (WSA)
- River Segments Suitable for Wild & Scenic River Designation**
- Recreational
- Scenic
- Wild

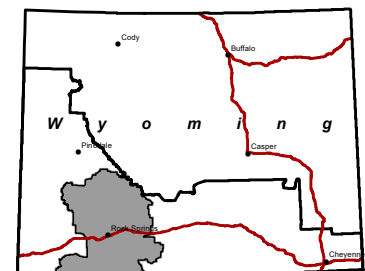
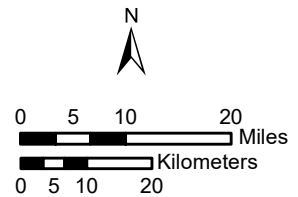


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# Map 2-32: Special Designations and Management Areas - Alternative D



- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- Areas of Critical Environmental Concern (ACEC)
- Other Management Areas (OMA)
- National Trail Management Corridor
- Special Recreation Management Areas (SRMA)
- Wilderness Study Areas
- River Segments Suitable for Wild & Scenic River Designation
- Recreational
- Scenic
- Wild

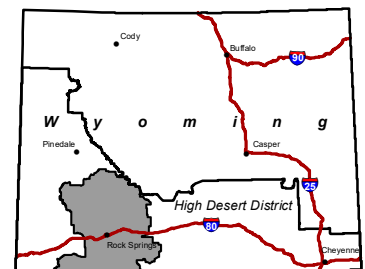
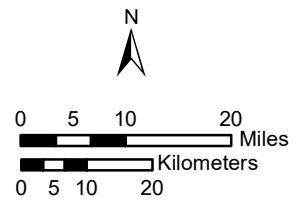


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# Map 3-1 Water Resources

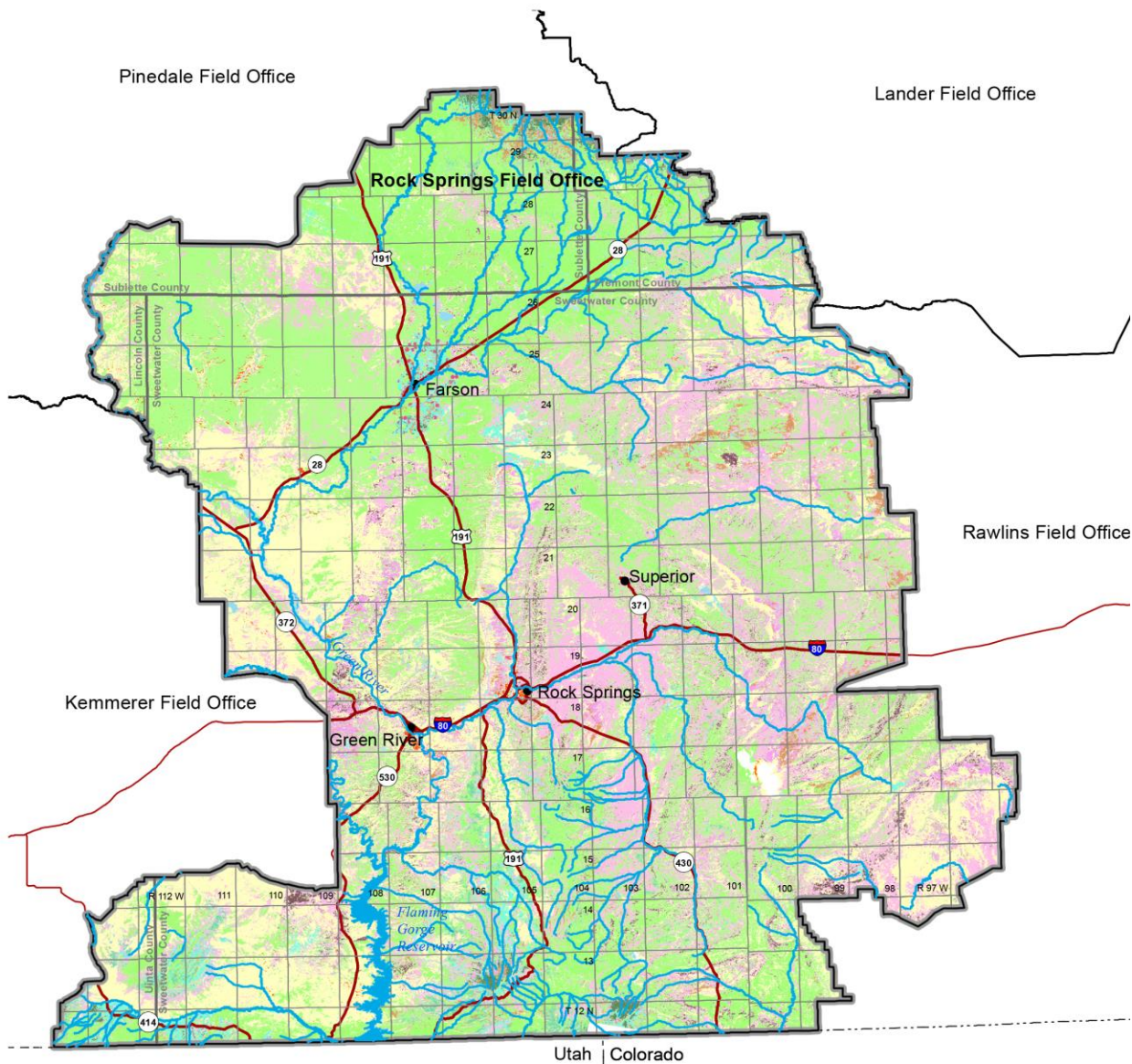


- |   |   |
|---|---|
| RMP Planning Area                             | Rivers/Streams                            |
| Field Office Boundary                         | Wetlands                                  |
| County Boundaries                             | Hydrologic Unit Code 8 Watershed Boundary |
| Public Land Survey System Township boundaries | Hydrologic Unit Code 6 Watershed Boundary |
| State Boundaries                              | Aquifer Recharge Areas                    |
|   | Lakes                                     |

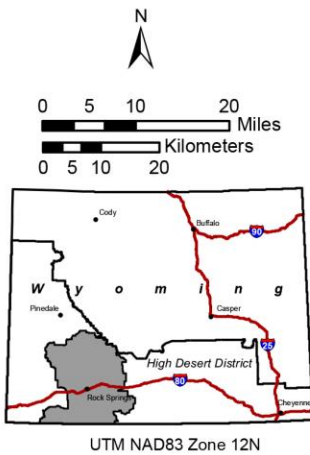


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### Map 3-2: Vegetation Resources

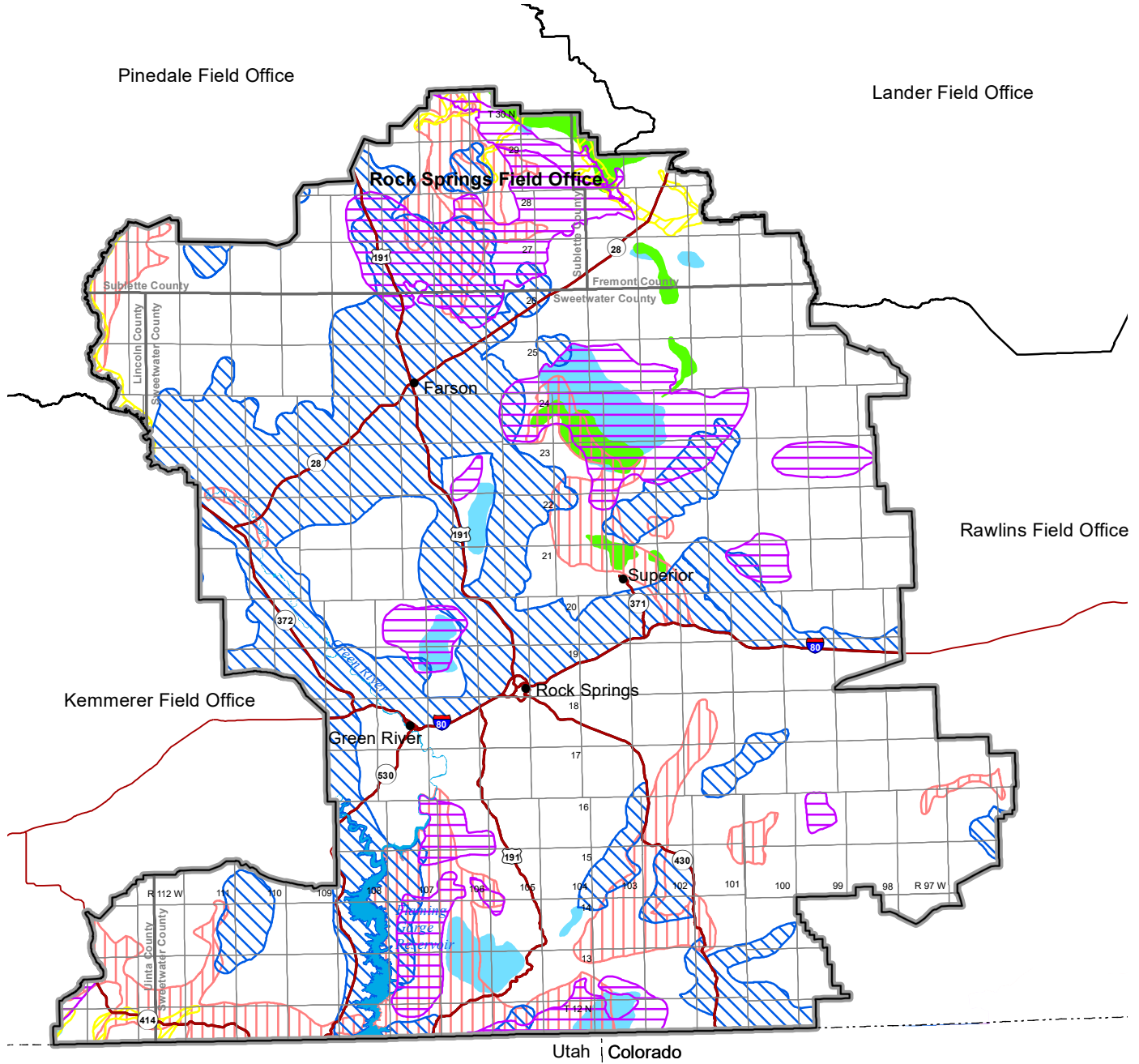


- |   |                         |
|---|-------------------------|
| RMP Planning Area                             | Cushion Plant Community |
| Field Office Boundary                         | Grassland               |
| County Boundaries                             | Juniper                 |
| Public Land Survey System Township boundaries | Mixed Shrub             |
| State Boundaries                              | Riparian Vegetation     |
| Agriculture                                   | Sagebrush               |
| Annual Forb                                   | Saltbush                |
| Aspen/Conifer                                 | Urban                   |
| Barren  | Water                   |

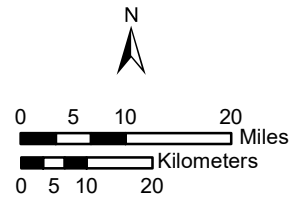


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### Map 3-3: Big Game Crucial Winter Range and Parturition Areas



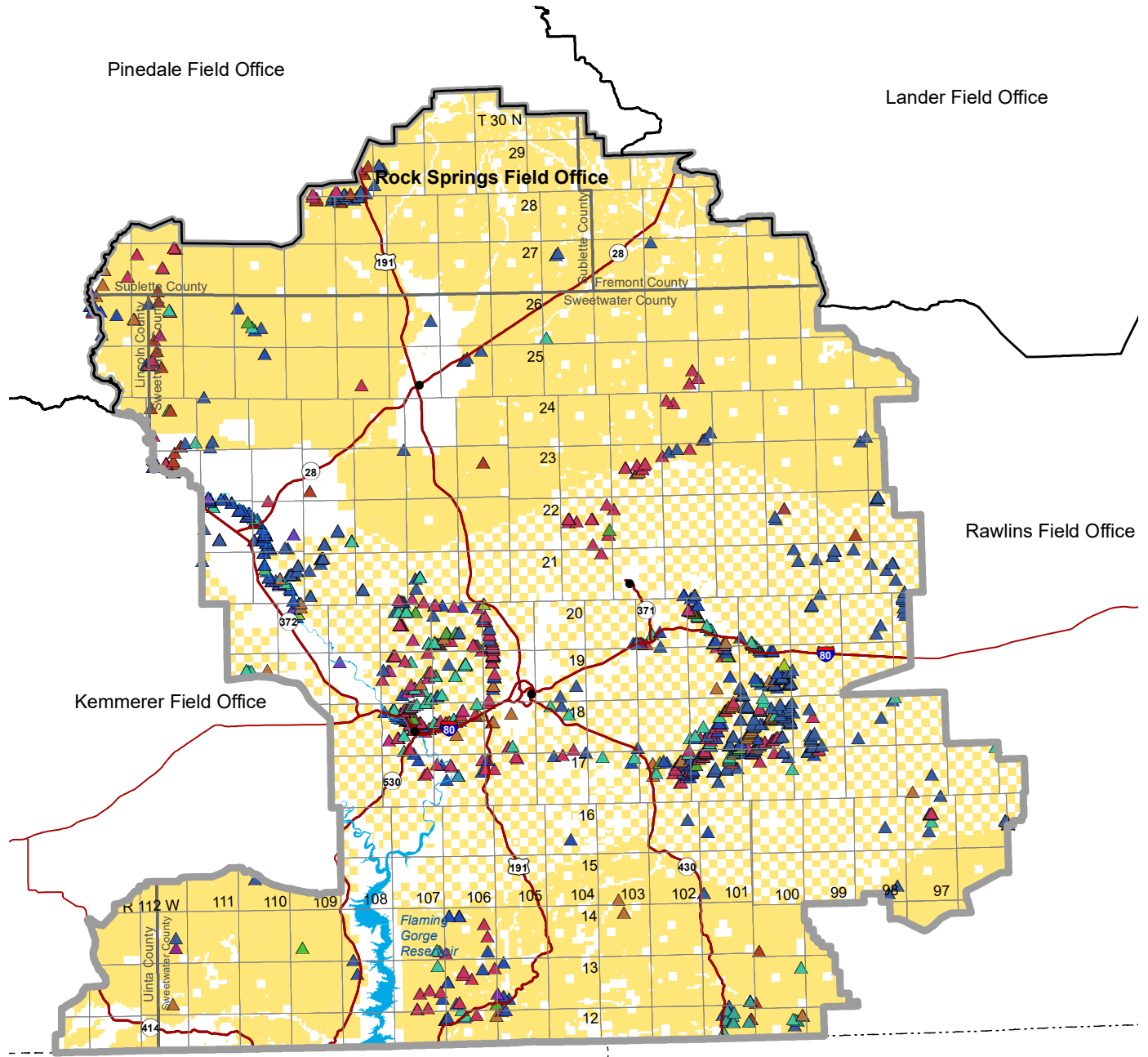
- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- Pronghorn Crucial Winter/Yearlong
- Elk Crucial Winter/Yearlong
- Mule Deer Crucial Winter/Yearlong
- Moose Crucial Winter/Yearlong
- Elk Parturition Areas
- Mule Deer Parturition Areas



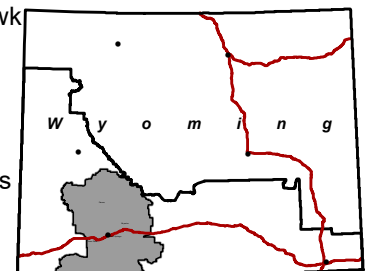
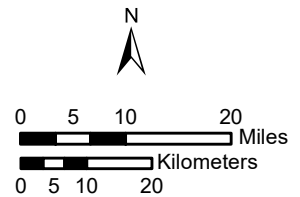
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### Map 3-4: Raptor Nest Sites



- |   |                              |                      |
|---|------------------------------|----------------------|
| RMP Planning Area                             | <b>Occupied Raptor Nests</b> | Northern Harrier     |
| Field Office Boundary                         | American Kestrel             | Osprey               |
| County Boundaries                             | Bald Eagle                   | Prairie Falcon       |
| Public Land Survey System Township boundaries | Burrowing Owl                | Red-Tailed Hawk      |
| State Boundaries                              | Canada Goose                 | Sharp-Shinned Hawk   |
|   | Common Raven                 | Short-Eared Owl      |
|   | Cooper's Hawk                | Swainson's Hawk      |
|   | Ferruginous Hawk             | Turkey Vulture       |
|   | Golden Eagle                 | Unidentified Raptors |
|   | Great Horned Owl             | Unknown              |
|   | Merlin                       |                      |



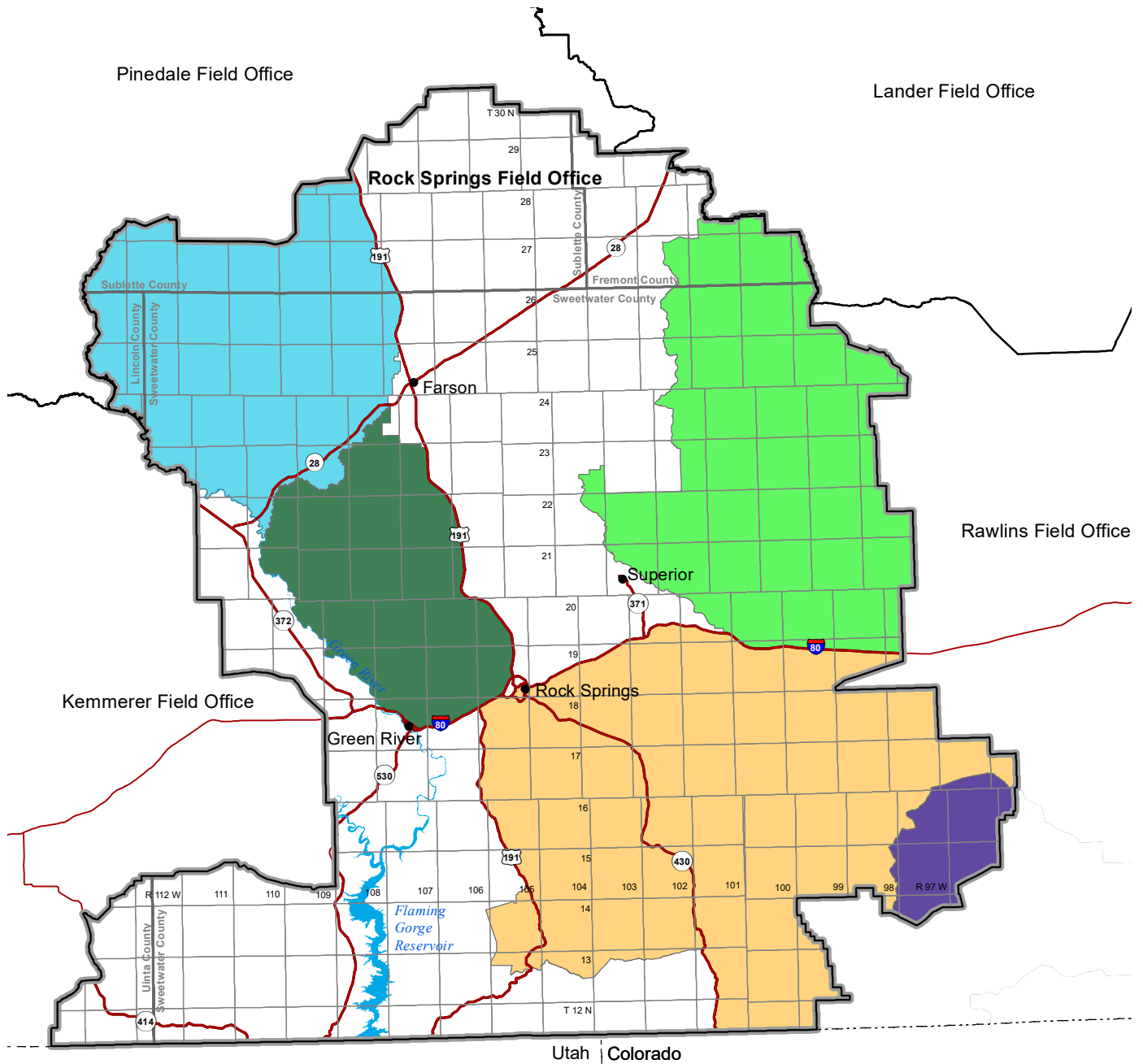
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Map does not contain or depict BLM Sage-Grouse Land Use Plans

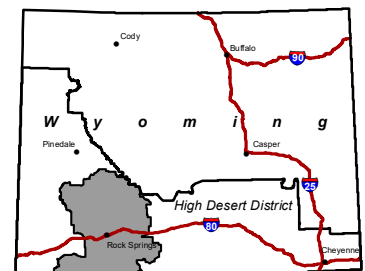
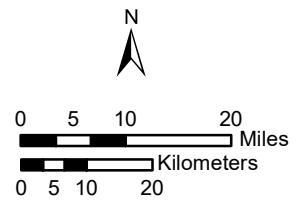
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# Map 3-5: Wild Horse Herd Management Areas

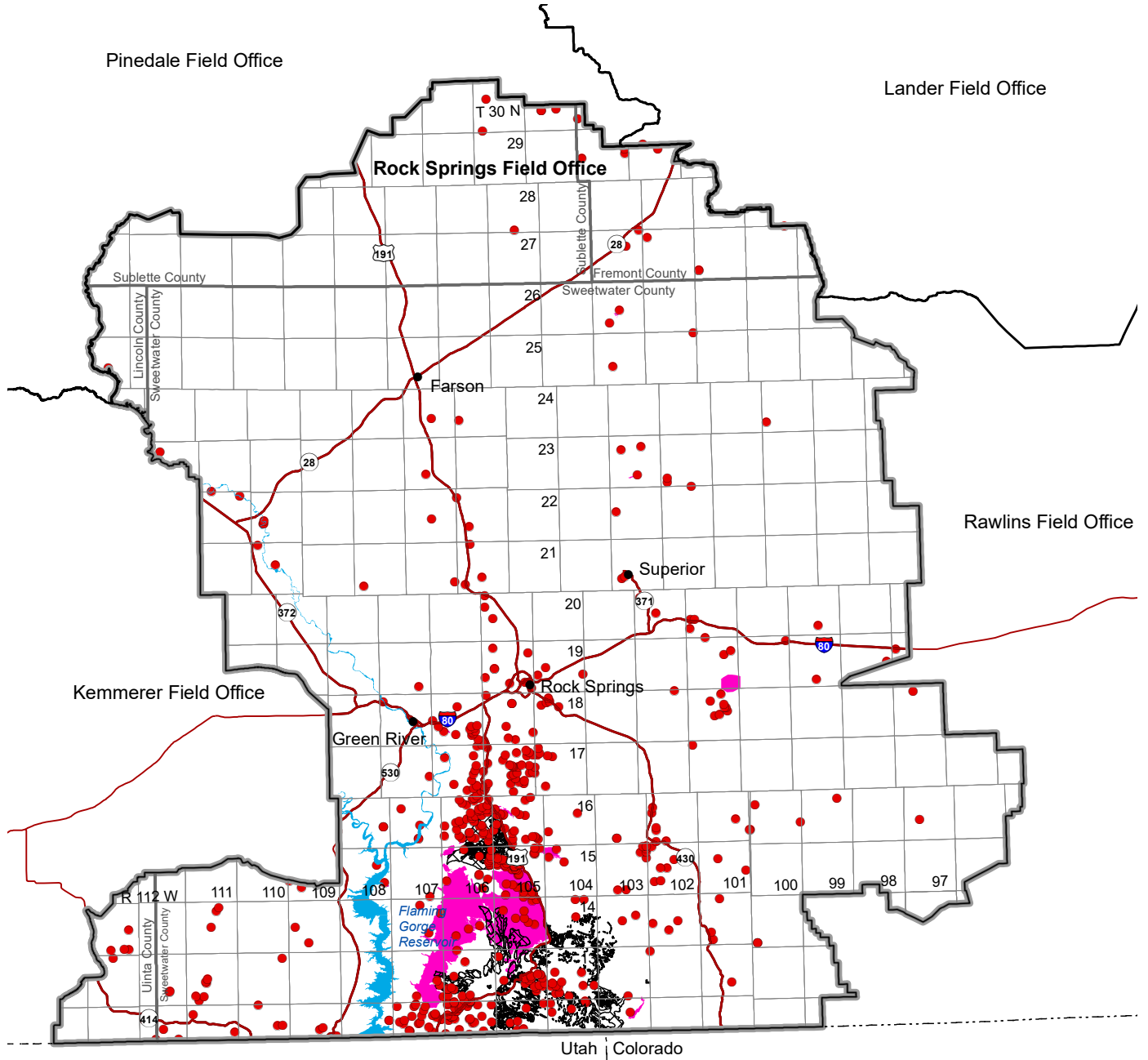


- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- Adobe Town
- Divide Basin
- Little Colorado
- Salt Wells Creek
- White Mountain



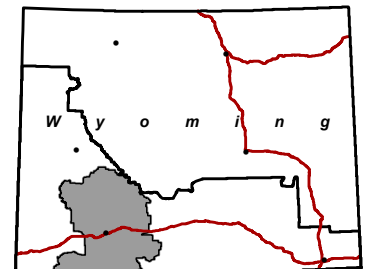
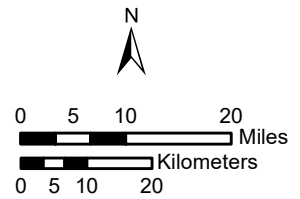
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### Map 3-6: Wildland Fire and Prescribed Fire



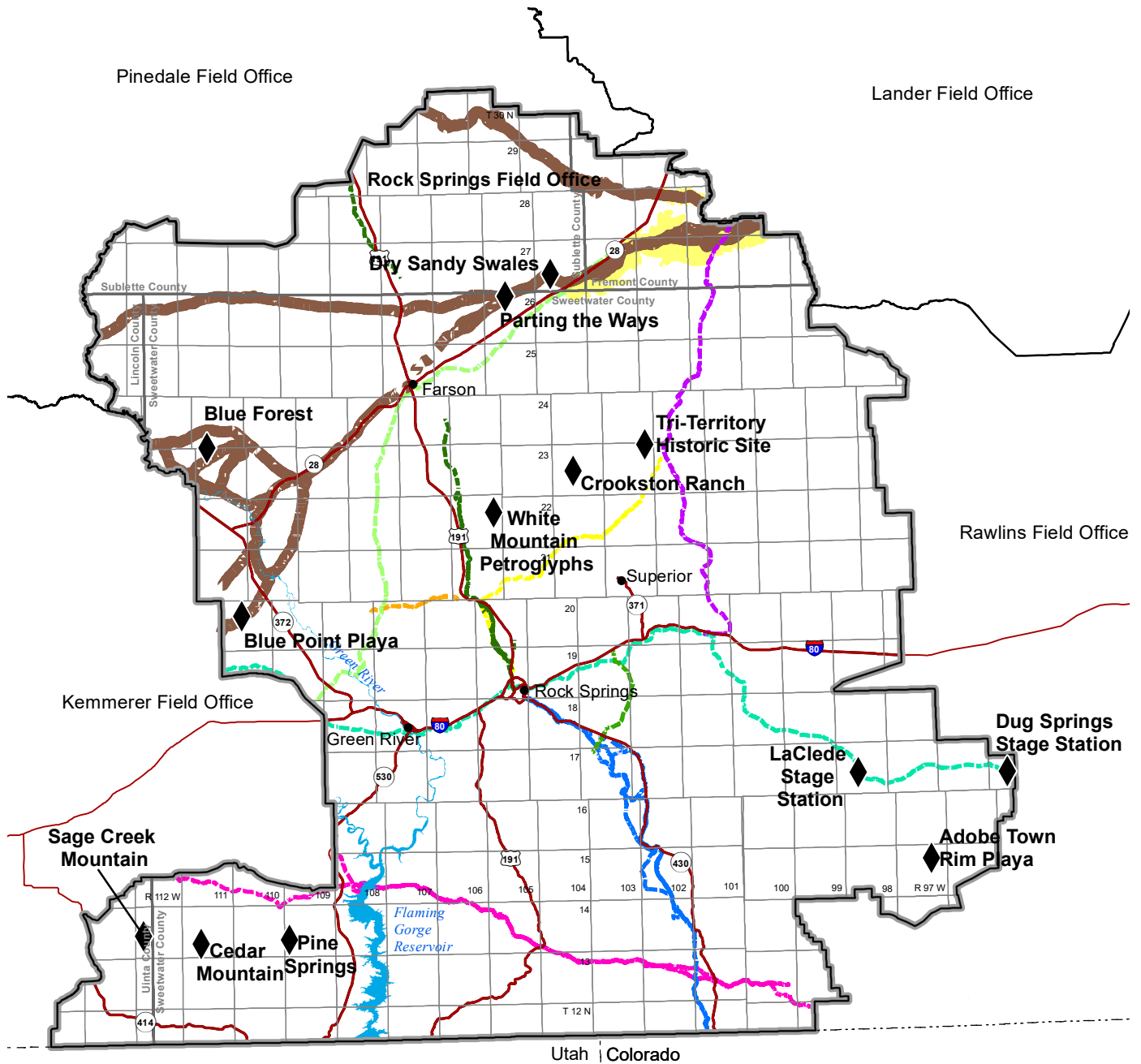
- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries

- Unplanned Ignitions 1998 - 2007
- Prescribed Fire
- Historic Large Wildfires 1998 - 2007

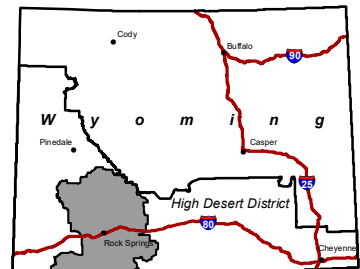
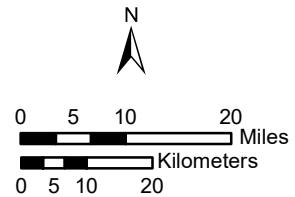


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# Map 3-7: Cultural Resources



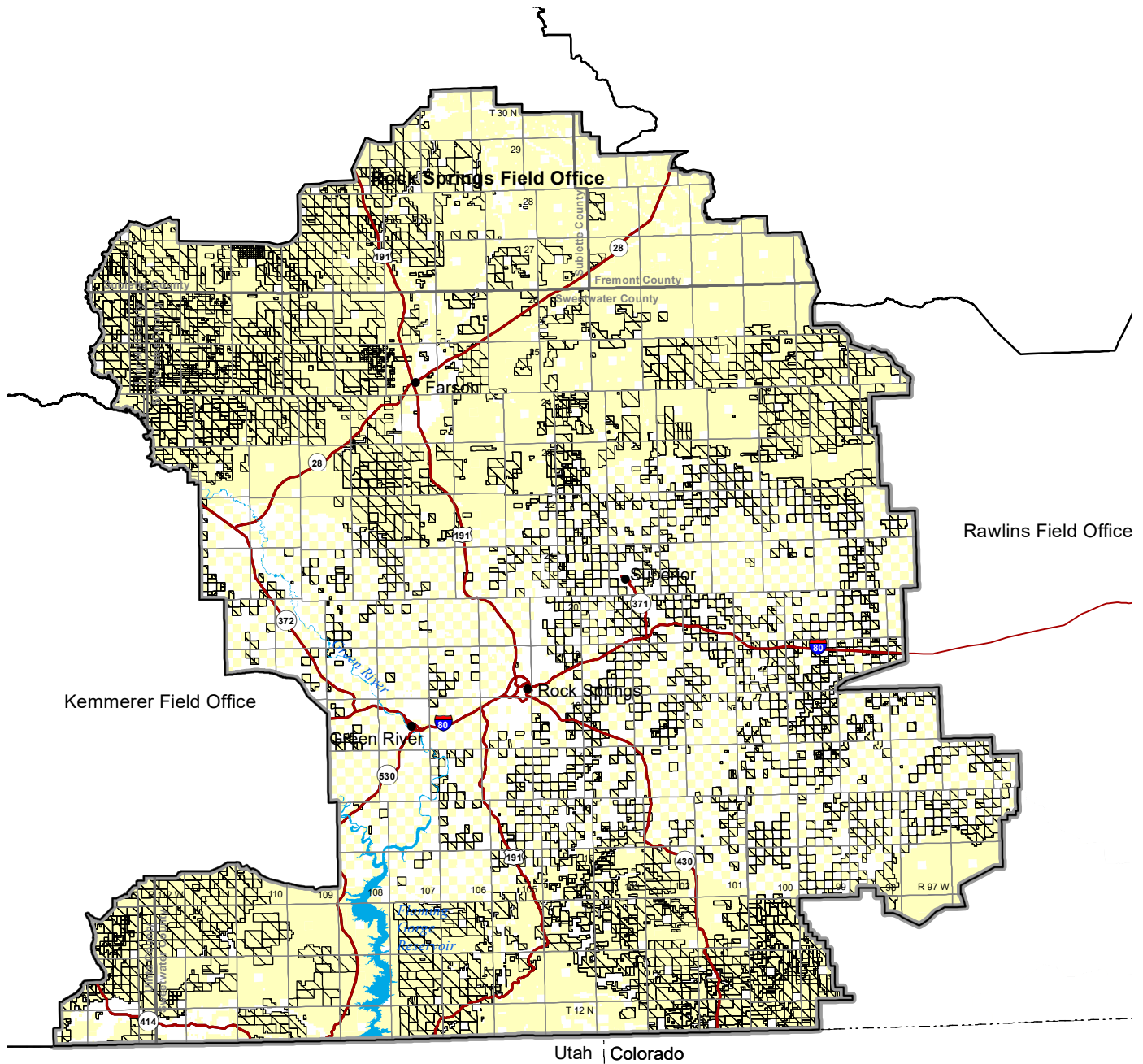
- |   |                                   |
|---|-----------------------------------|
| RMP Planning Area                             | National Historic Trails          |
| Field Office Boundary                         | 1849 Evans Cherokee Trail         |
| County Boundaries                             | 1850 Cherokee Trail               |
| Public Land Survey System Township boundaries | Green River To South Pass Trail   |
| State Boundaries                              | New Fork Wagon Road               |
| South Pass Historic Landscape                 | Overland Trail                    |
| White Mountain Petroglyphs                    | Point Of Rocks To South Pass Road |
| Cultural Sites (Selected)                     | Rock Springs To Brown's Park Road |
|   | Rock Springs To Lander Trail      |
|   | Salt Wells Freight Road           |










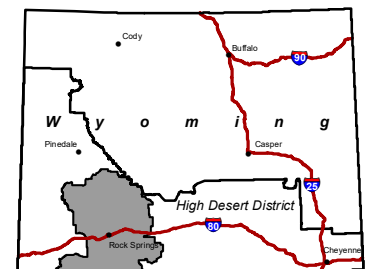
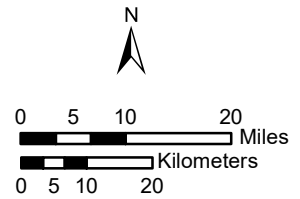
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# Map 3-8: Federal Oil and Gas Leases

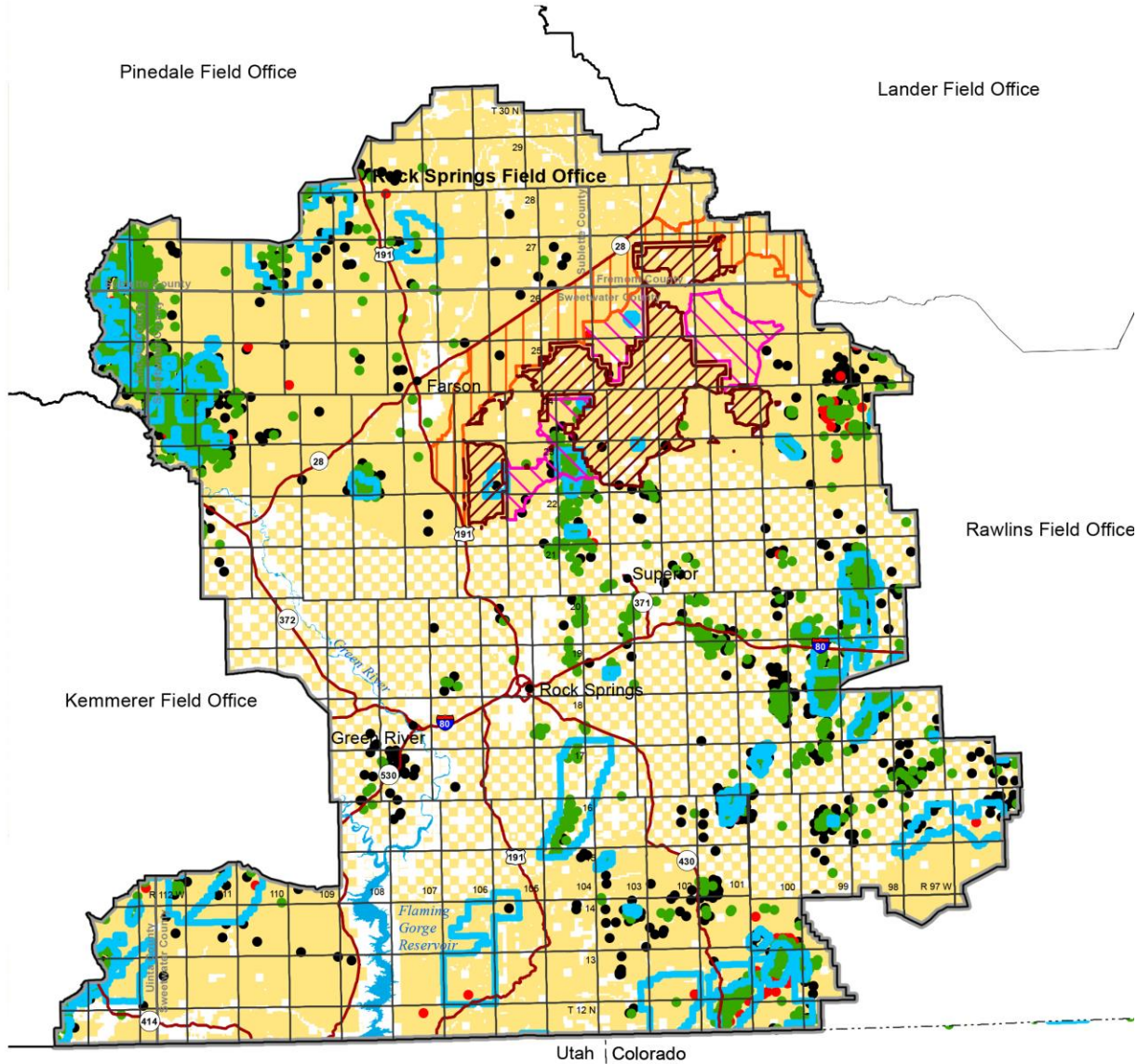


-  RMP Planning Area
-  Field Office Boundary
-  County Boundaries
-  Public Land Survey System Township boundaries
-  State Boundaries
-  Federal Fluid Mineral Estate
-  Oil and Gas Leases



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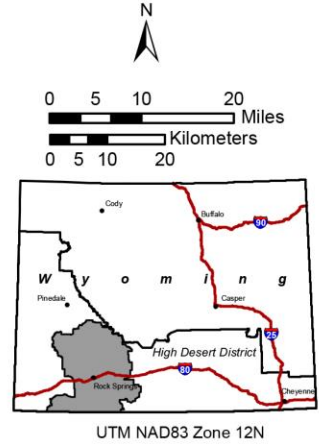
### Map 3-9: Oil and Gas Well Locations and Units



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- Jack Morrow Hills - Area 1
- Jack Morrow Hills - Area 2
- Jack Morrow Hills - Area 3

- Oil and Gas Units
- Oil and Gas Well Status**
- Active Wells
- Active Permits
- Plugged/Abandoned

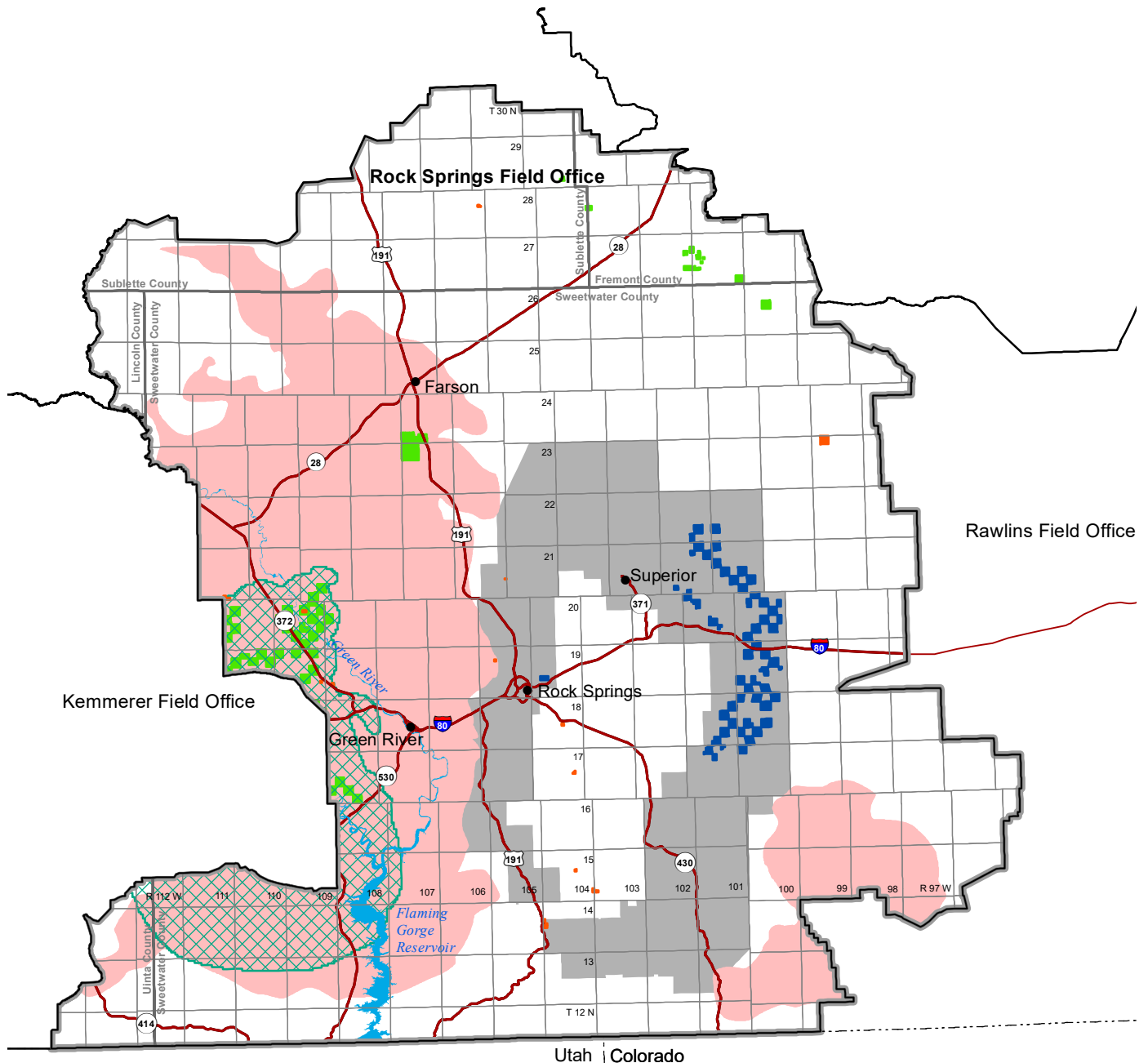
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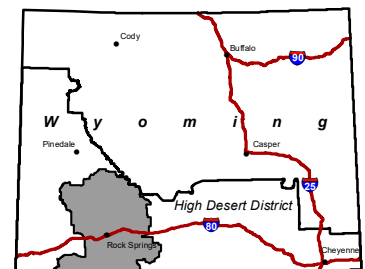
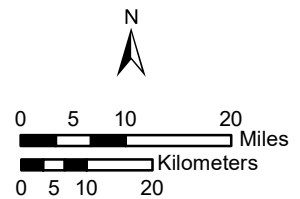
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# Map 3-10: Leasable Solid Minerals



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries
- Mineral Material Disposals
- Non Energy Mineral Leases
- Coal Leases
- Known Sodium Lease Area
- Oil Shale Potential
- Coal Development Potential



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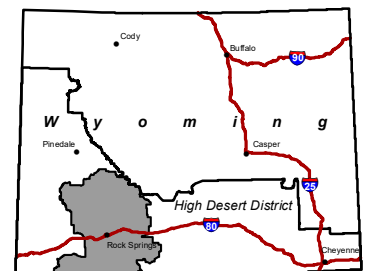
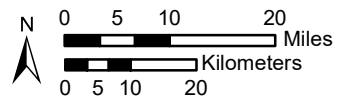
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# Map 3-11: Livestock Grazing Allotments



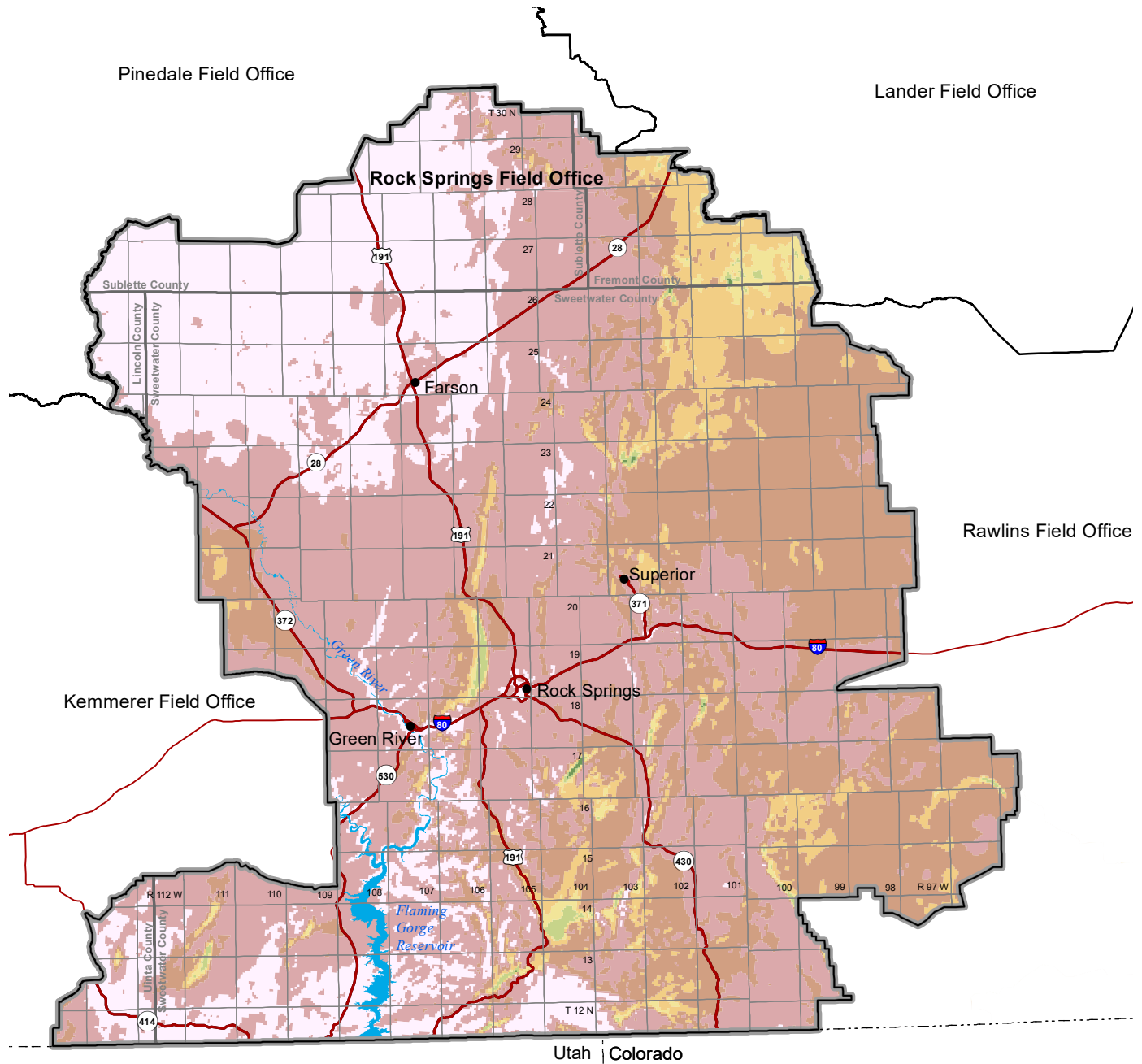
- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries

ing Allotments



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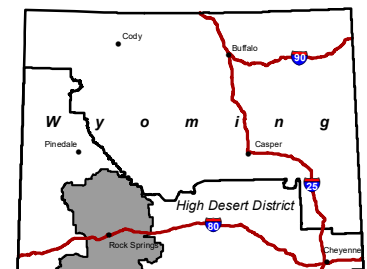
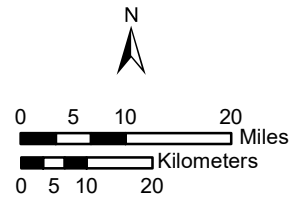
# Map 3-12: Wind Energy



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries

### Wind Power Potential

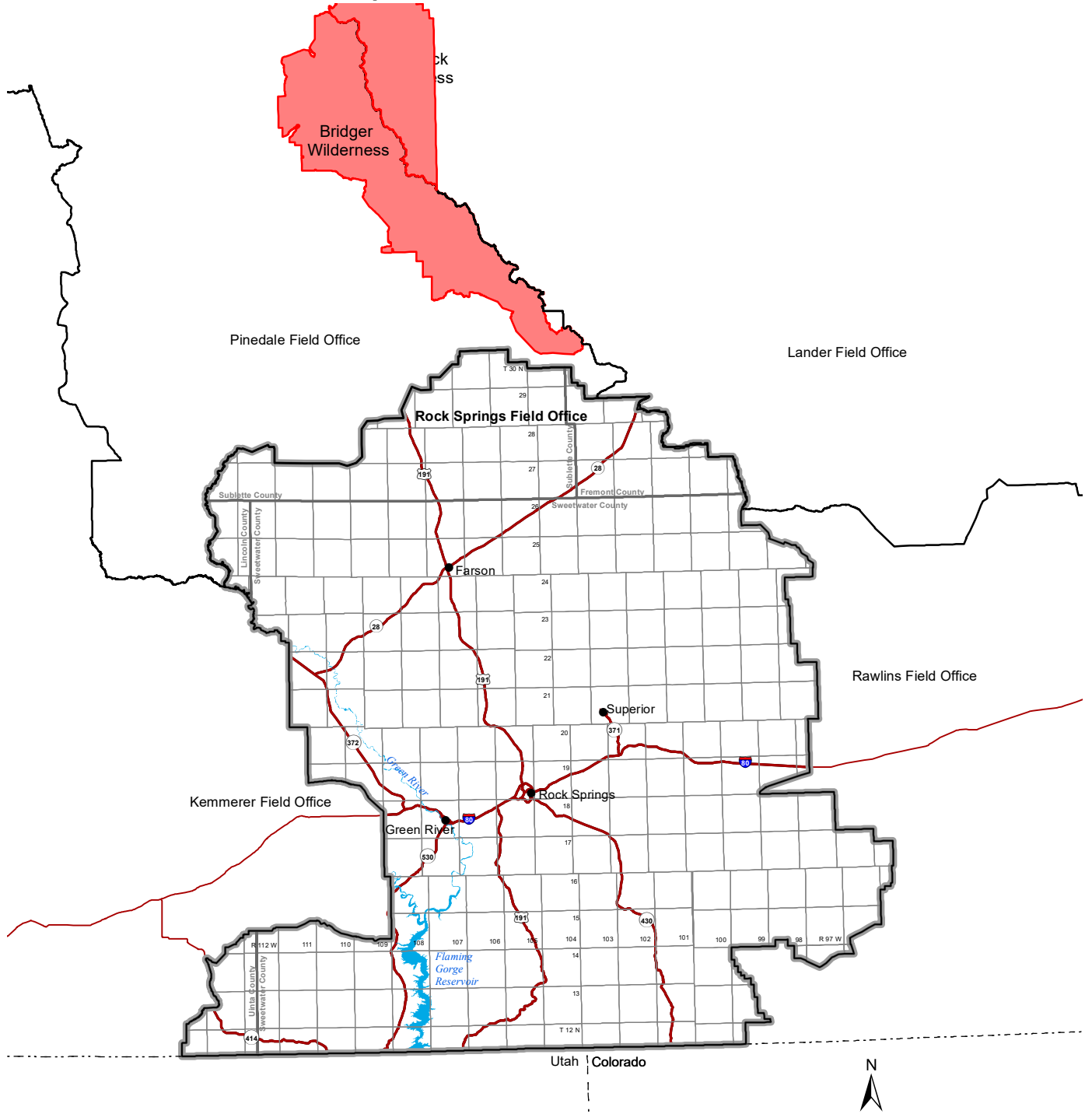
- Poor
- Marginal
- Fair
- Good
- Excellent
- Outstanding
- Superb



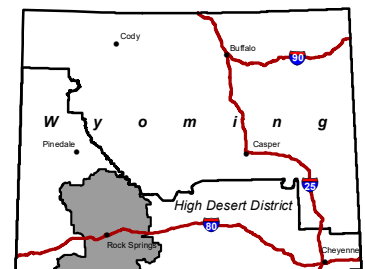
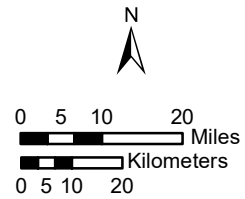
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### Map 3-13: Federal Class 1 Airsheds

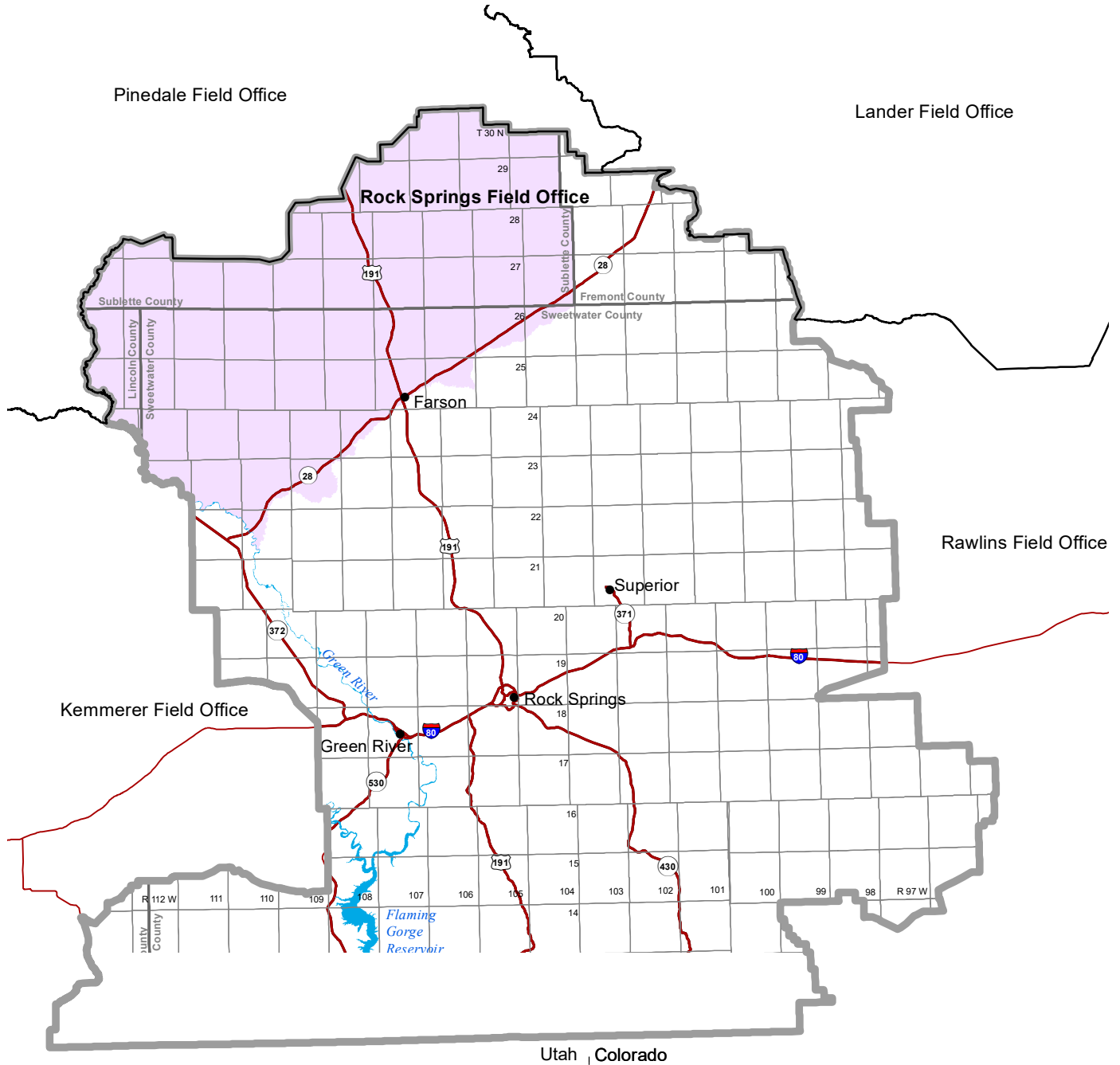


- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- Federal Class I



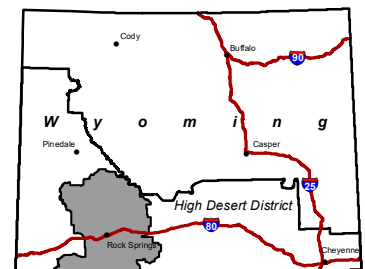
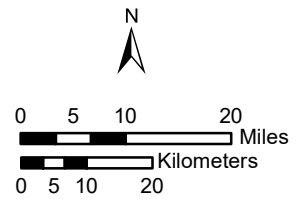
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# Map 3-14: Upper Green River Basin (UGRB) Ozone Nonattainment Area



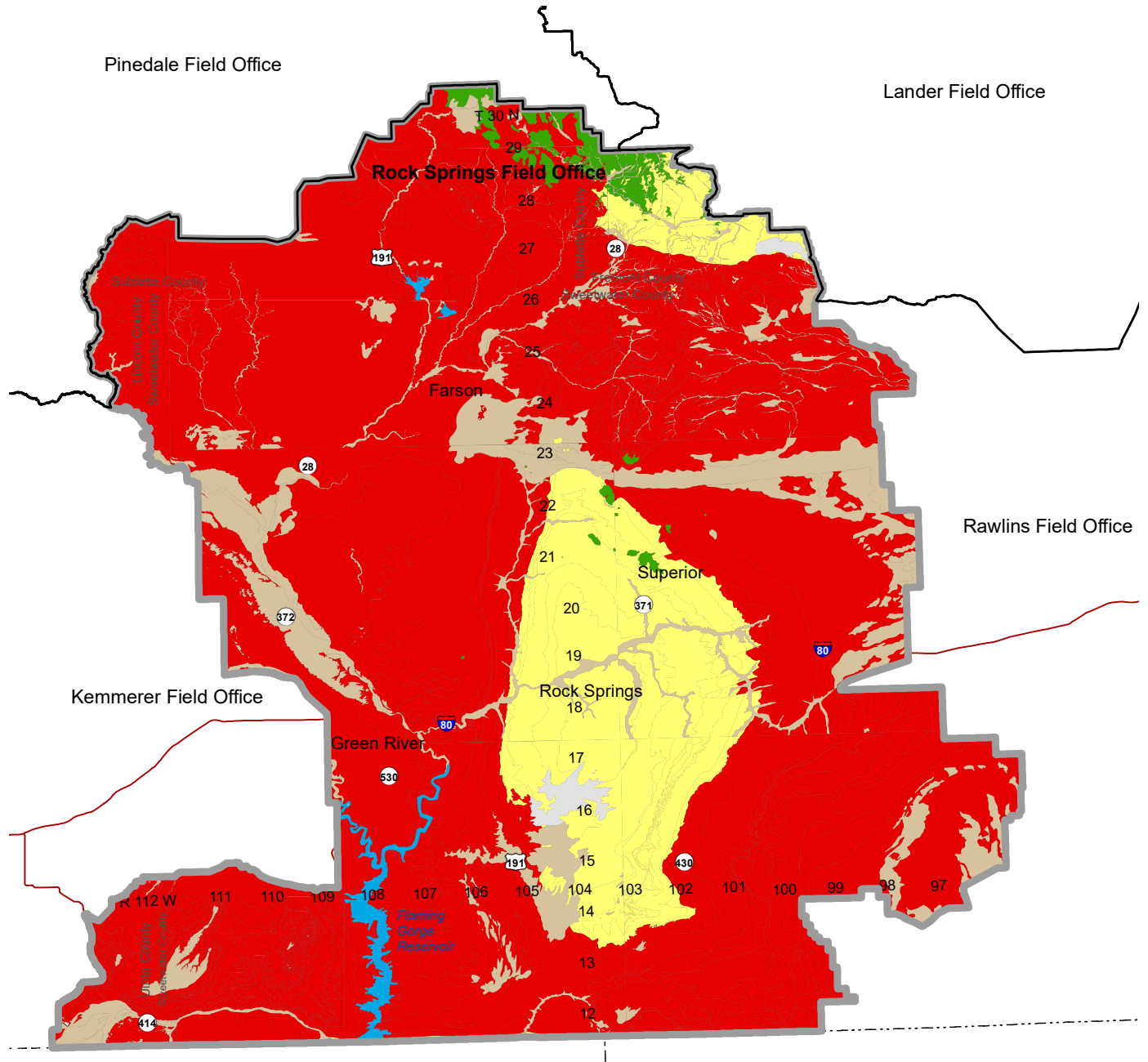
- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey
- System Township boundaries
- State Boundaries

Upper Green River Basin (UGRB) Nonattainment Area



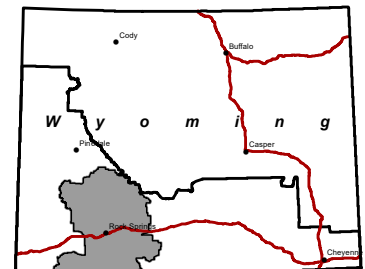
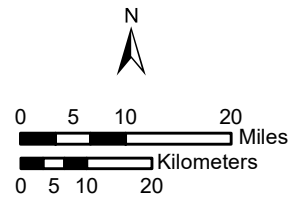
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# Map 3-15: Potential Fossil Yield Classification



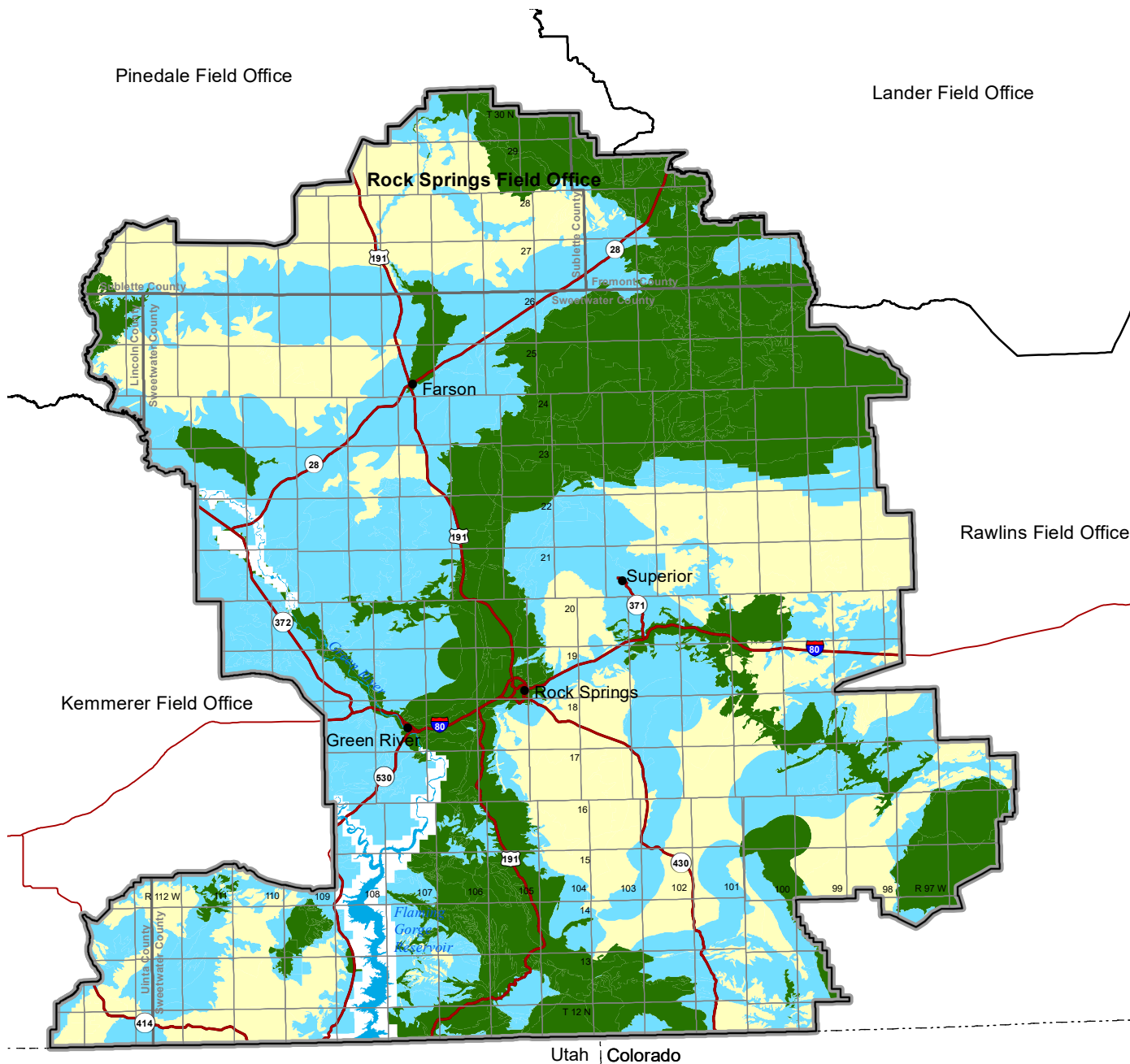
- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries

- Class 1: Very low chance of fossils
- Class 2: Low chance of fossils
- Class 3: Moderate chance of fossils
- Class 4/5: High to very high chance of fossils
- Water

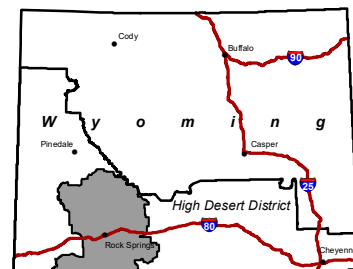
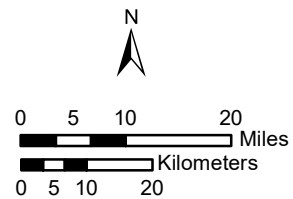


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# Map 3-16: Visual Resource Inventory (VRI)

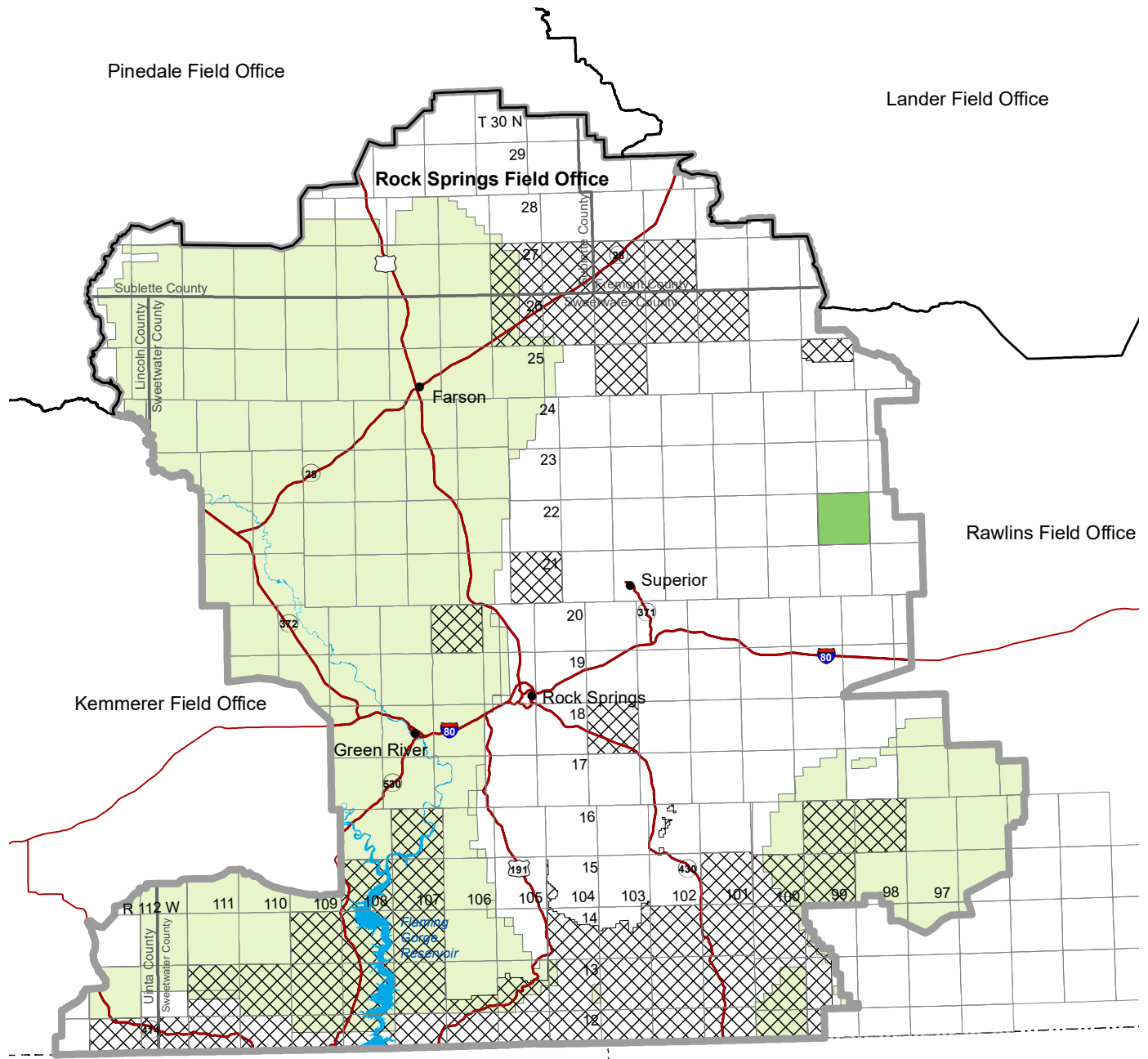


- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries
- VRI Class II
- VRI Class III
- VRI Class IV



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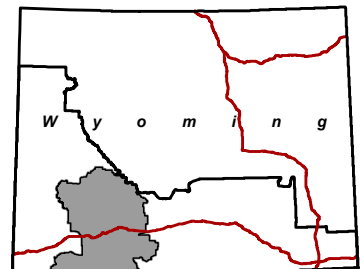
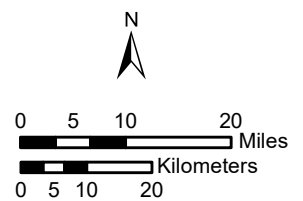
### Map 3-17: Withdrawn from Mineral Entry



- RMP Planning Area
- Field Office Boundary
- County Boundaries

- Public Land Survey System Township boundaries
- State Boundaries

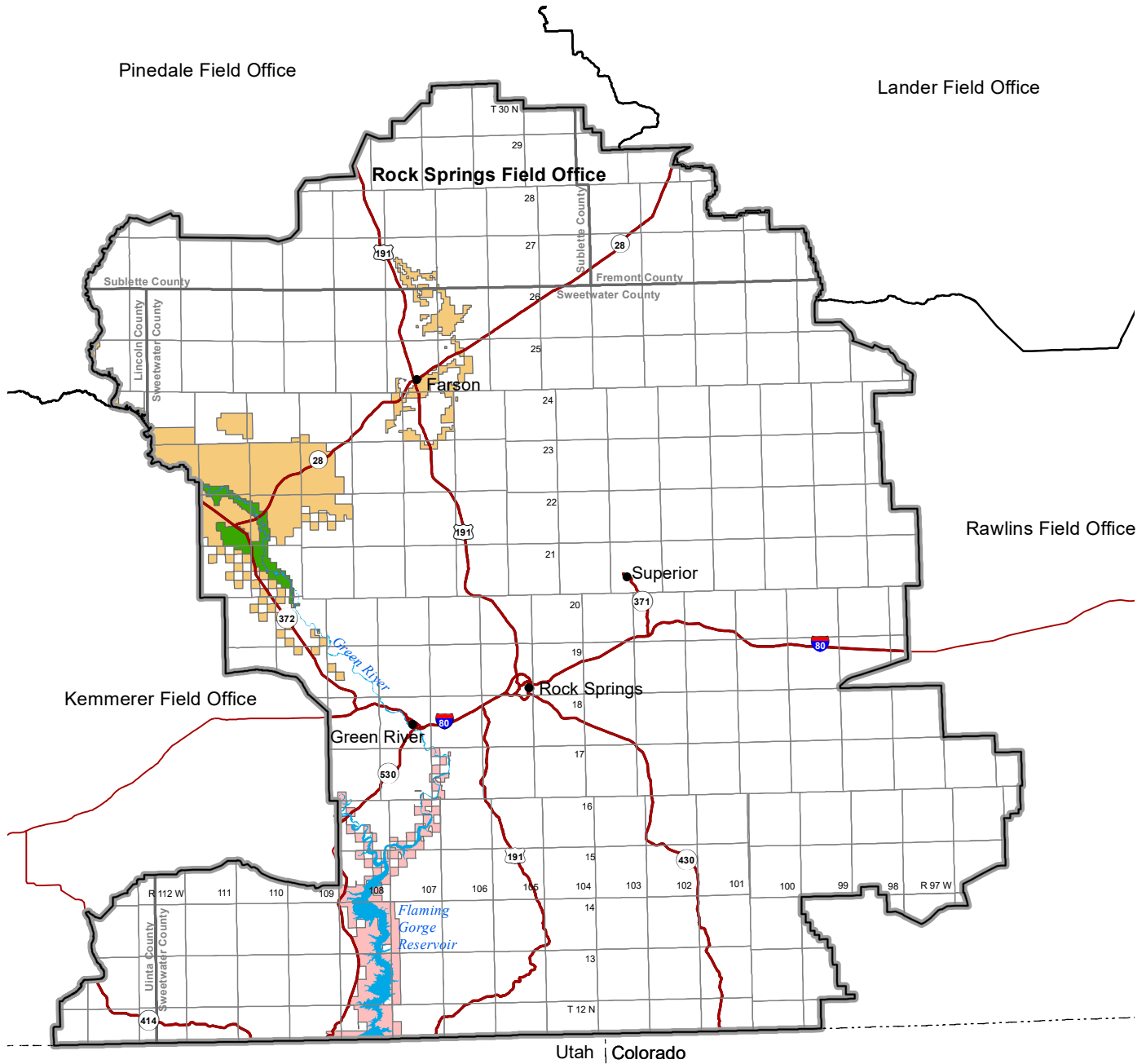
- Withdrawn**
- Coal Withdrawal
  - Phosphate Withdrawal
  - Oil Shale Withdrawal



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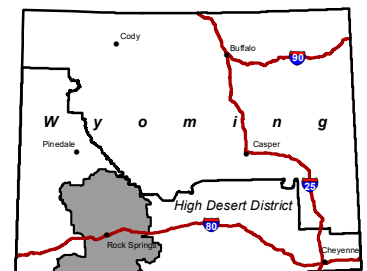
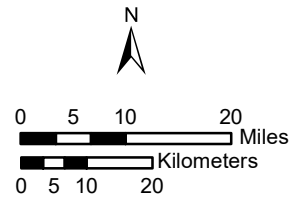
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# Map 3-18: Withdrawn from Mineral Entry: Other Agency Administered Surface Rights



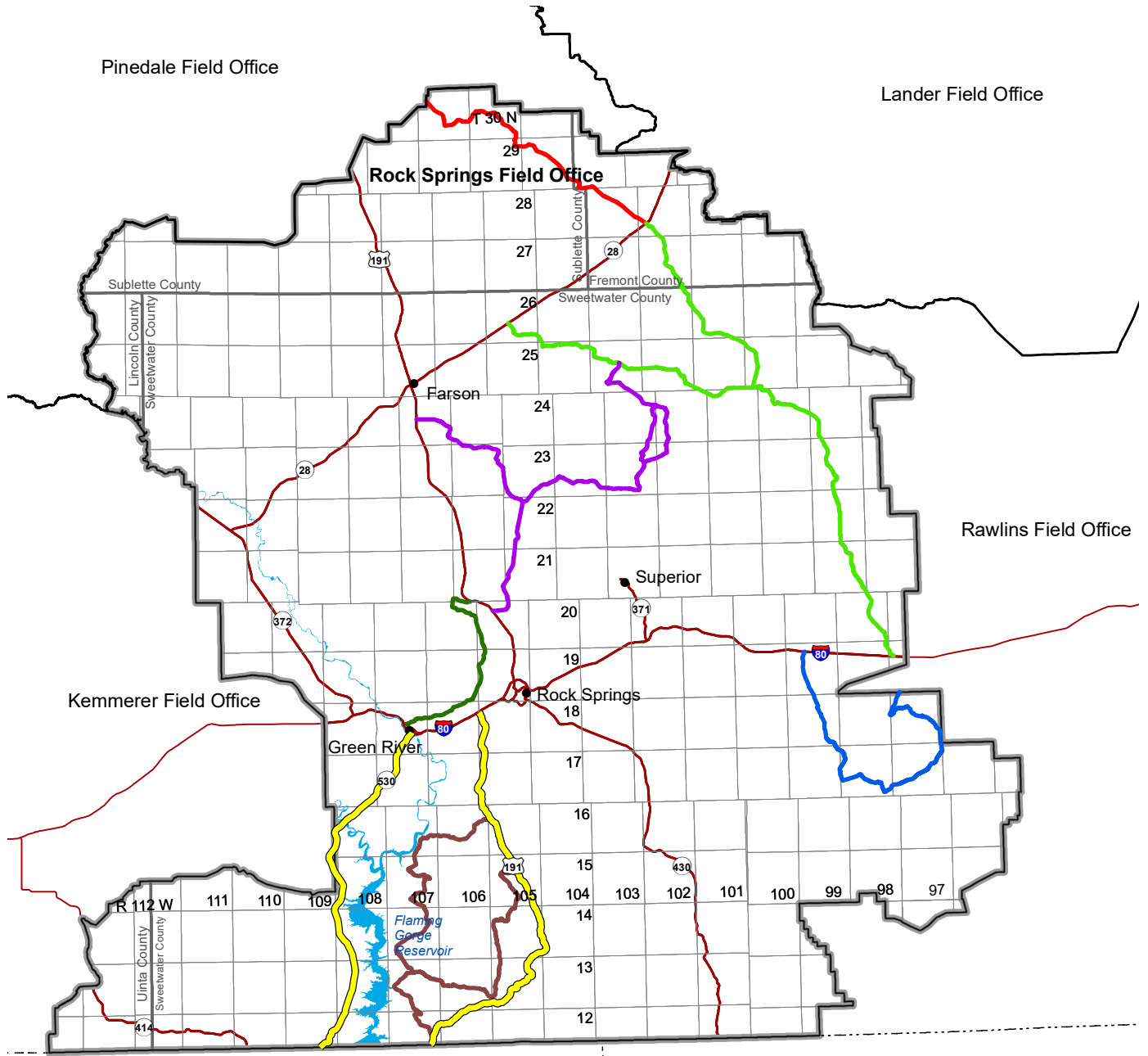
- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries

- Withdrawn from Mineral Entry**
- Bureau of Reclamation Administered Land
  - US Fish and Wildlife Service Administered Land
  - National Forest Service Administered Land



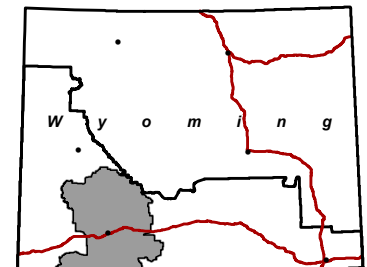
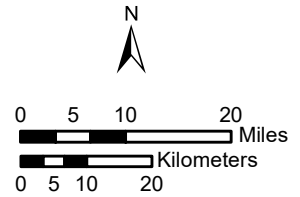
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# Map 3-19: All-American Road and Backcountry Byways



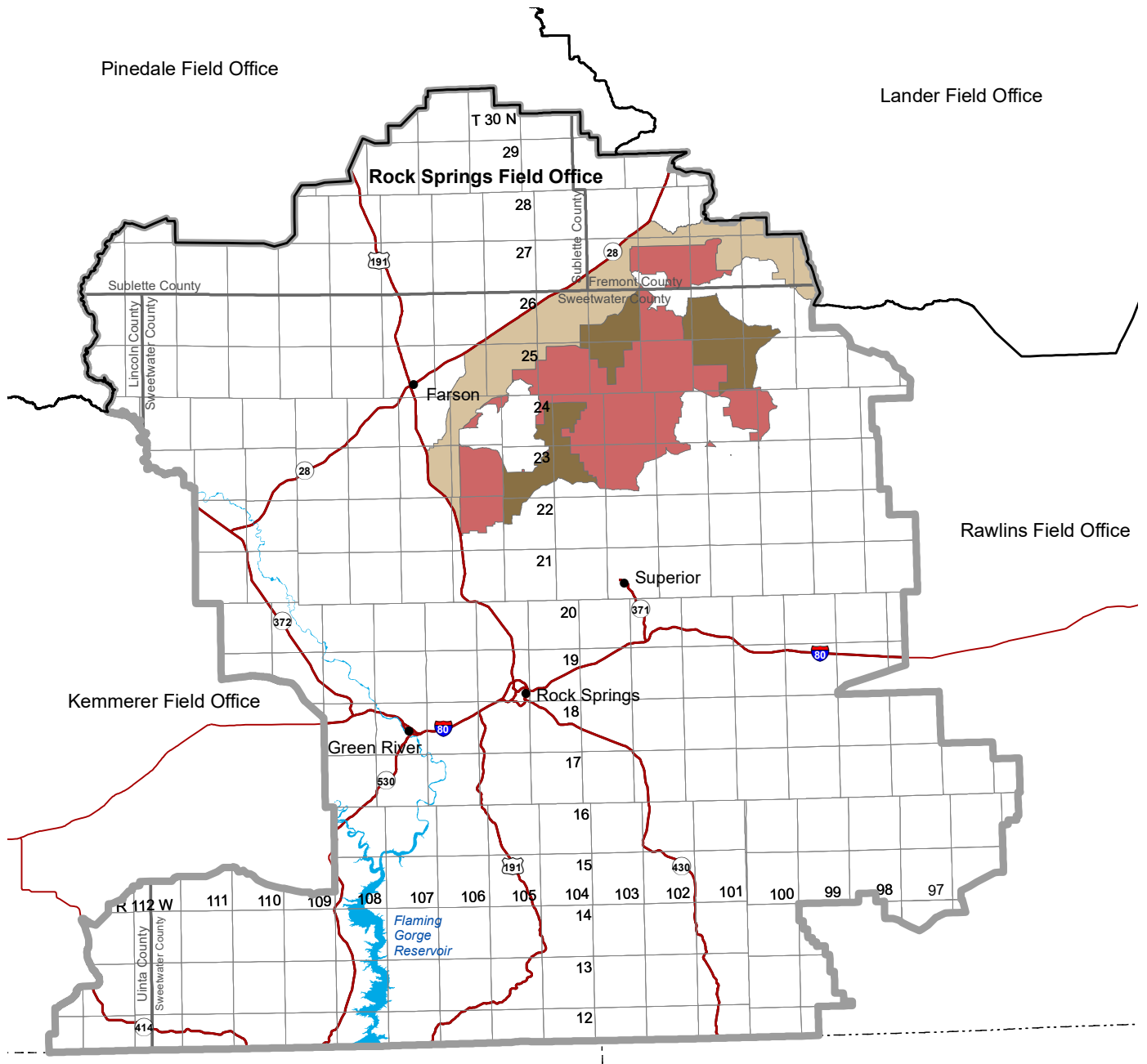
- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries

- Name
- Flaming Gorge All-American Road
  - Firehole Little Mountain Loop
  - Fort LaCleve Loop
  - Lander Road
  - Red Desert
  - Tri-Territory Loop
  - Wild Horse Scenic Loop Byway



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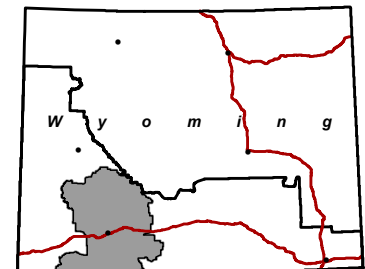
# Map 3-20: Jack Morrow Hills



- RMP Planning Area
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries

### Jack Morrow Hills

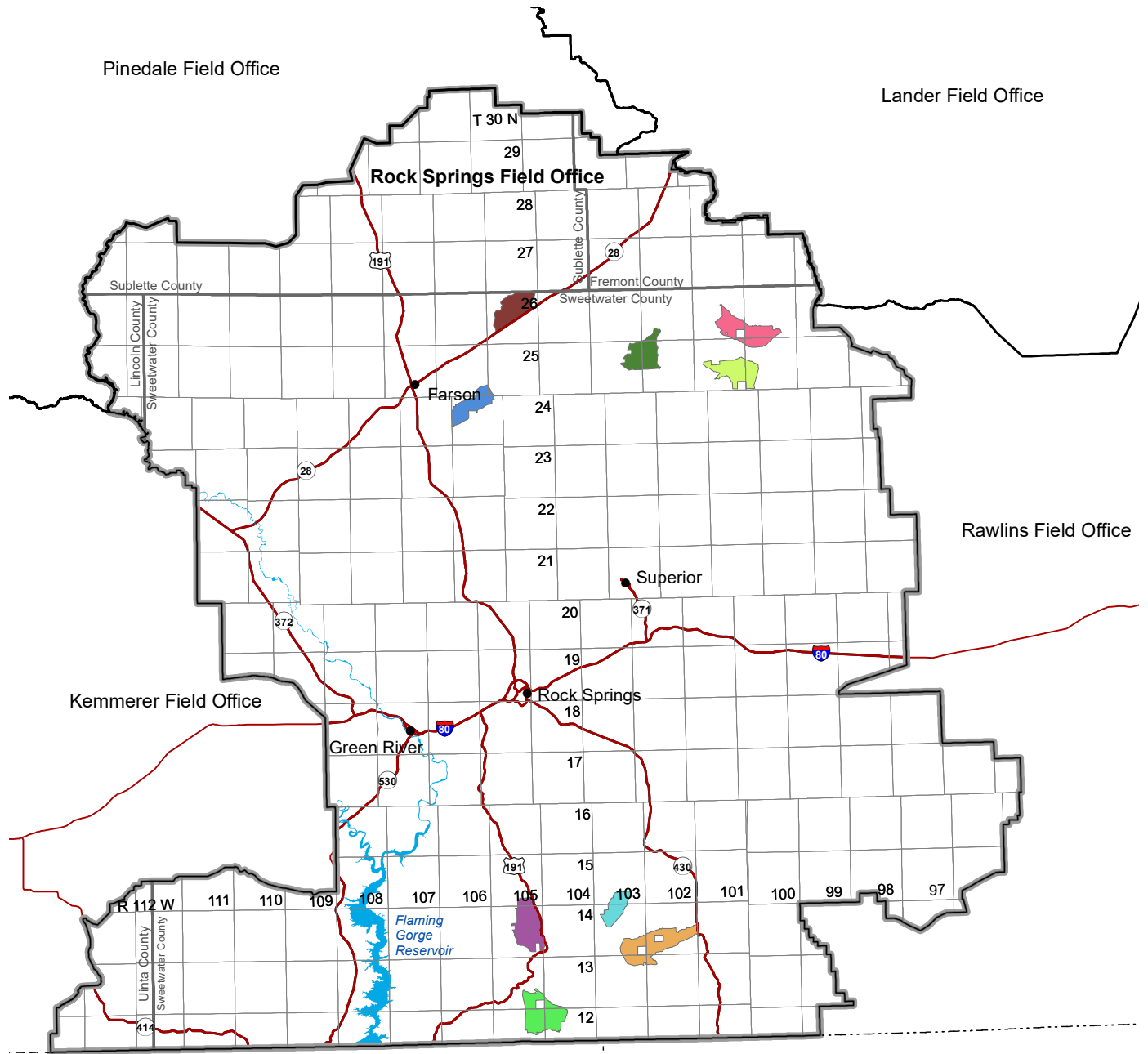
- Area 1
- Area 2
- Area 3



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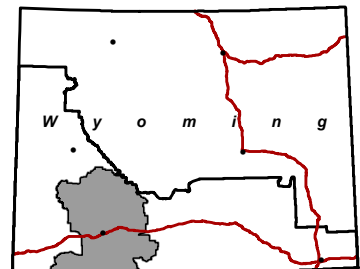
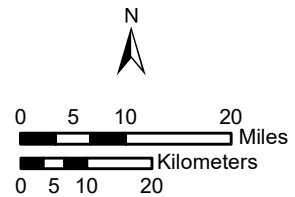
# Map 3-21: Lands with Wilderness Characteristics



- RMP Planning
- Field Office Boundary
- County Boundaries
- Public Land Survey System Township boundaries
- State Boundaries

Meets LWC (Inventory Units)

- WY040-2011-014
- WY040-2011-021
- WY040-2011-027
- WY040-2011-030
- WY040-2011-059
- WY040-2011-062
- WY040-2011-069
- WY040-2011-074
- WY040-2011-088



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