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

November 2023

Gunnison Sage-Grouse Resource Management Plan Amendment – Draft Environmental Impact Statement

Volume 1: Chapters 1–4

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BLM/CO/PL-23/0002

Cover Photos:

Main photo (Gunnison Basin, sagebrush landscape): Rachel Miller, BLM Gunnison Field Office
Gunnison Sage-Grouse (Crawford, strutting male): Neil Losin
Gunnison Sage-Grouse (Gunnison Basin, female): Andrew Arell
Gunnison Sage-Grouse (Crawford, strutting male): Neil Losin
Gunnison Sage-Grouse feather artwork: Brian Maxfield

GUNNISON SAGE-GROUSE RESOURCE MANAGEMENT PLAN AMENDMENT AND DRAFT ENVIRONMENTAL IMPACT STATEMENT

Volume 1 – Chapters 1–4

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

November 2023

United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Colorado State Office
Denver Federal Center, Building 40
Lakewood, Colorado 80225
www.blm.gov/colorado

In Reply Refer To:
1610 (CO930)

Dear Reader:

The completed draft Resource Management Plan Amendment (RMPA) and Environmental Impact Statement (EIS) for the Gunnison Sage-Grouse (*Centrocercus minimus*) is available for your review and comment. The Bureau of Land Management (BLM) prepared this draft RMPA/EIS in coordination with 30 cooperating agencies. The planning area for the draft RMPA/EIS consists of approximately 25.5 million acres of federal, state, city, county, tribal, and private lands in Colorado and Utah (including 7.5 million acres of BLM-administered surface lands), along with an estimated 18 million acres of BLM-administered federal mineral estate, including approximately 6.3 million acres of split-state federal minerals.

This draft plan includes management alternatives for the decision area that may modify or amend decisions in the existing BLM Colorado and Utah Resource Management Plans, as follows:

Colorado:

- Canyons of the Ancients National Monument RMP (2010)
- Dominguez-Escalante National Conservation Area RMP (2017)
- Grand Junction Field Office RMP (2015)
- Gunnison Gorge National Conservation Area RMP (2004)
- Gunnison Resource Area RMP (1993)
- McInnis Canyons National Conservation Area RMP (2004)
- San Luis Resource Area RMP (1991)
- Tres Rios Field Office RMP (2015)
- Uncompahgre Field Office RMP (2020)

Utah:

- Moab Field Office RMP (2008)
- Monticello Field Office RMP (2008)

In January 2013, the U.S. Fish and Wildlife Service (USFWS) published two proposed rules in the Federal Register pertaining to the Gunnison sage-grouse, indicating that a listing of threatened was warranted under the Endangered Species Act (ESA) and proposing to designate critical habitat for the species.

The Gunnison sage-grouse is a ground-dwelling bird species with a current range limited to eight widely scattered and geographically isolated populations—the Gunnison Basin, San Miguel Basin, Piñon Mesa, Crawford, Cerro Summit-Cimarron-Sims Mesa, Poncha Pass, and Dove Creek populations in southwestern Colorado and the Monticello Population in southeastern Utah—occupying approximately 10% of its recognized historical range that once spanned the Four Corners

region across Colorado, Utah, Arizona, and New Mexico. The BLM manages approximately 40 percent of GUSG habitat across twelve Colorado and Utah counties, including approximately 60 percent of occupied habitat for the largest of the populations—the Gunnison Basin population—found within the Gunnison Field Office in Gunnison and Saguache counties, Colorado.

The BLM encourages the public to provide information and comments regarding the analysis presented in the draft RMPA/EIS. We are particularly interested in comments concerning the adequacy of the alternatives and impact analysis.

The BLM will accept comments for 90 calendar days following the Environmental Protection Agency's publication of its Notice of Availability in the *Federal Register*. The BLM can best use your comments and resource information submissions if it receives them within the review period. Documents pertinent to this proposal may be examined online at *https://eplanning.blm.gov/eplanning-ui/project/2019031/510*.

You may submit comments electronically on the project website at *https://eplanning.blm.gov/eplanning-ui/project/2019031/510* or you can mail, or hand deliver comments to BLM Southwest District Office, ATTN: GUSG RMPA, 2465 South Townsend Ave., Montrose, CO 81401. To facilitate analysis of comments and information submitted, the BLM strongly encourages you to submit comments in an electronic format.

Your review and comment on the content of this document are critical to the success of this planning effort. If you wish to submit comments, the BLM requests that you make them as specific as possible. Comments will be more helpful if you include suggested changes, sources, or methods and reference a section or page number. The BLM will consider comments containing only opinions or preferences and will include them as part of the decision-making process; however, the BLM will not respond formally to those comments.

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware 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 and to respond to questions will be announced by local media and the project website at least 15 days in advance.

Thank you for your continued interest in the EIS. The BLM appreciates the information and suggestions you contribute to the planning process. For additional information or clarification of this document or planning process, please contact Gina Phillips, Project Lead at 970-240-5381 or Leah Waldner, Sage-Grouse Coordinator at 970-712-3184 or email at *BLM_CO_GUSG_RMPA@blm.gov*.

Sincerely,

Digitally signed by DOUGLAS VILSACK
Date: 2023.10.25 08:57:02 -06'00'

Doug Vilsack
State Director

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The United States (US) Department of the Interior (DOI), Bureau of Land Management (BLM) prepared this Draft Resource Management Plan (RMP) Amendment and Draft Environmental Impact Statement (EIS) for the BLM Colorado State Office and BLM Utah State Office. The Approved RMP Amendment will amend up to nine land use plans in southwestern Colorado and two in southeastern Utah to promote the recovery of Gunnison sage-grouse (GUSG) (*Centrocercus minimus*) and maintain and enhance occupied and unoccupied habitat for the species. The RMP Amendment will be consistent with the agency's multiple use and sustained yield mission and the GUSG recovery efforts with the BLM's Federal, State, local, and Tribal partners.

The GUSG is a ground-dwelling bird species whose range is distributed across southwestern Colorado and southeastern Utah. Currently, the GUSG occupies approximately 10 percent of its recognized historical range, which once included Arizona and New Mexico in addition to Colorado and Utah (USFWS 2020a). In November 2014, the U.S. Fish and Wildlife Service (USFWS) made a final decision designating GUSG as a threatened species under the Endangered Species Act (ESA). Consequently, the BLM took action by initiating the Gunnison Sage-Grouse Rangewide RMP Amendment process. In August 2016, the BLM released a Draft RMP Amendment/EIS. However, the BLM temporarily suspended this planning effort in April 2018 when the USFWS announced its intention to develop a recovery plan for the species.

In 2020, the USFWS released the Final Recovery Plan for the Gunnison Sage-Grouse (*Centrocercus minimus*) and the associated Recovery Implementation Strategy for Gunnison Sage-Grouse (*Centrocercus minimus*), which defined recovery criteria in addition to site-specific, prioritized recovery actions and activities for the eight populations rangewide. The eight GUSG populations include Cerro Summit-Cimarron-Sims Mesa, Crawford, Dove Creek, Gunnison Basin, Monticello, Piñon Mesa, Poncha Pass, and San Miguel Basin. In relation to the USFWS Final Recovery Plan for Gunnison Sage-Grouse, this planning effort used **occupied habitat**, areas where breeding takes place or is known to have taken place, as well as **unoccupied habitat**, areas that were formerly occupied but still contain some of the biological and physical features necessary to support GUSG to assist with delineating the planning and decision area boundaries.

The planning area for this RMP Amendment/EIS is the geographic boundary of the BLM administrative units within which the BLM will make decisions during this planning effort. The planning area consists of lands administered by the BLM, other Federal agencies, Tribal governments, the State of Colorado, the State of Utah, and local governments, as well as lands under private ownership totaling approximately 25,564,710 acres. The decision area, a subset of the planning area, is subject to decisions made for this RMP Amendment. The lands within the

decision area are: (1) BLM-administered surface lands and/or Federal mineral estate, and (2) located within occupied or unoccupied habitat or Adjacent Non-habitat within 4 miles, or within linkage-connectivity areas that may facilitate movement of GUSG between populations or habitat areas. The decision area consists of approximately 2,156,150 acres of BLM surface lands and an additional 2,852,390 acres of Federal subsurface mineral estate. Additional information on the planning area and decision area can be found in Section 1.3.

ES.2 PURPOSE AND NEED FOR THE RESOURCE MANAGEMENT PLAN AMENDMENT

The BLM's purpose for this RMP Amendment/EIS is to promote the recovery of the threatened GUSG and maintain and enhance the occupied and unoccupied habitat upon which the species depends, while balancing multiple uses and sustained yield. This is in response to both the ESA Section 7(a)(1) requirements as well as the need to address the rangewide downward population trend of the species.

ES.3 PUBLIC INVOLVEMENT

In accordance with 40 Code of Federal Regulations (CFR) Section 1506.6, Federal agencies must make a concerted effort to involve the public in the National Environmental Policy Act (NEPA) process. Federal Land Policy and Management Act (FLPMA) Section 202 directs the Secretary of the Interior to establish procedures for public involvement outlined in the BLM Land Use Planning Handbook (H-1601-1) during land use planning actions.

The BLM initiated the public scoping period for this planning effort on July 6, 2022, with the publication of a Notice of Intent in the Federal Register (87 Federal Register 40262-40266, July 6, 2022), and public scoping ran through August 22, 2022. The BLM hosted four public scoping meetings aimed at soliciting input and further defining the scope of issues to be addressed in the RMP Amendment as well as assist in formulating a reasonable range of alternatives.

Additional public participation opportunities will be available throughout the planning process, including the 90-day comment period following the publication of this Draft RMP Amendment/EIS. Following the release of the Proposed RMP Amendment/Final EIS, a 30-day protest period will occur, as well as consistency reviews by the governors of Colorado and Utah.

ES.4 ISSUES

A planning issue refers to a significant contention or disagreement concerning the management of resources or activities on BLM-administered lands, which can be resolved through various approaches. During scoping, the public, agencies, and the BLM identified issues to be addressed

in this RMP Amendment/EIS. The Scoping Summary Report outlines the issues identified and considered in the development of alternatives brought forward for analysis. The scope of the issues included GUSG habitat, vegetation, livestock grazing management, mineral development, renewable energy, wildland fire ecology and management, administrative designations, recreation, lands and realty, air resources, soil resources, lands with wilderness characteristics, and social and economic conditions. Table ES.1 identifies the planning issue statements for the program areas analyzed in this RMP Amendment/EIS.

Table ES.1. Planning Issue Statements

Program Area	Issue Statement
Special Status Species	Issue 1: How would management actions under each alternative affect occupied and unoccupied GUSG habitat?
	Issue 2: How would management actions under each alternative affect linkage-connectivity areas and Adjacent Non-habitat?
	Issue 3: How would management actions related to lek buffers and seasonal timing limitations under each alternative affect GUSG seasonal habitats and their life cycle?
	Issue 4: How would management actions under each alternative affect Gunnison sage-grouse predator populations?
	Issue 5: How would management actions under each alternative affect other special status species?
	Issue 6: How would climate change affect the resiliency and adaptation of GUSG populations?
Fish and Wildlife	Issue 1: How would management actions under each alternative affect big game species and their habitats?
	Issue 2: How would climate change affect the resiliency and adaptation of wildlife species?
Air Resources and Climate	Issue 1: How would management actions under each alternative affect criteria pollutants compared to the original future projected concentration levels?
	Issue 2: What would be the potential differences/reductions in BLM's expected contribution to future greenhouse gas emissions levels associated with management activities and allocations for allowable uses when compared to the original projected cumulative greenhouse gas emissions levels?
Soil Resources	Issue 1: How would the management actions and allowable uses under each alternative affect soil stability and productivity?
	Issue 2: How would management actions and allowable uses under each alternative impact climate-driven drought, aridification, and related effects on soil stability and productivity?
Vegetation, including Riparian Areas and Wetlands	Issue 1: How would the management actions and allowable uses under each alternative affect upland and riparian plant communities?
	Issue 2: How would the management actions and allowable uses under each alternative affect the resiliency and adaptation of sagebrush, riparian areas, and wetlands in response to climate change and drought?
Noxious Weeds and Invasive Species	Issue 1: How would management actions and allocations under each alternative affect the potential for invasive plant introduction and spread?
	Issue 2: How would climate change affect the introduction and spread of invasive plant species?

Program Area	Issue Statement
Lands with Wilderness Characteristics	Issue 1: How would management actions under each alternative affect lands managed as lands with wilderness characteristics and inventories that overlap habitat management areas?
Wildfire Ecology and Management	Issue 1: How would vegetation management and treatments under each alternative affect wildland ecology and management?
	Issue 2: How would climate change affect wildland fire ecology and management?
Livestock Grazing Management	Issue 1: How would management actions under each alternative affect the acres available for livestock grazing and the associated acres of BLM-administered lands and AUMs of forage allocated for livestock grazing?
	Issue 2: How would the management actions and allowable uses in the alternatives affect livestock grazing during drought in consideration of climate change?
	Issue 3: How would the management actions and allowable uses, particularly seasonal limitations, affect livestock grazing operation?
Recreation	Issue 1: How would management actions under each alternative affect the types and levels of BLM-provided recreation opportunities?
	Issue 2: How would seasonal timing limitations and designations of ACECs impact recreational opportunities?
Travel and Transportation Management	Issue 1: How would the proposed transportation related allocations (motorized) and management actions (non-motorized) under each alternative affect the ability for public land users to access BLM managed lands?
Minerals	Issue 1: How would closures, stipulations, and limits on disturbance density affect opportunities for exploration and development of leasable fluid minerals?
	Issue 2: How would closures, stipulations, and limits on disturbance density affect opportunities for exploration and development of leasable solid minerals?
	Issue 3: How would proposed withdrawals from mineral entry and surface use limitations affect opportunities for exploration and development of locatable minerals?
	Issue 4: How would closures to mineral material disposal, surface use limitations, and limits on disturbance density affect opportunities for exploration and development of salable minerals?
Lands and Realty, including Renewable Energy	Issue 1: How would the management actions under each alternative affect land tenure adjustments that include occupied and unoccupied habitats?
	Issue 2: How would ROW exclusion and avoidance areas under each alternative affect the lands and realty program?
Areas of Critical Environmental Concern (ACECs)	Issue 1: How would the proposed management actions affect the relevant and important values identified for existing and proposed ACECs?
Social and Economic Conditions	Issue 1: How would management actions under each alternative affect local economic and social conditions (specifically, resource decisions related to livestock grazing, recreation, and minerals)?
	Issue 2: How would management actions under each alternative result in disproportionate adverse impacts on environmental justice populations?

ES.5 ALTERNATIVES

The primary objective of developing alternatives is to identify resource uses and protections that effectively address planning issues. The development of alternatives was guided by the BLM's identified purpose and need, while remaining responsive to the identified issues, in

alignment with the planning criteria, and compliant with Federal laws, regulations, policies, and standards, including the multiple-use mandates specified by FLPMA.

Throughout the planning process, the BLM has examined a broad spectrum of alternatives. These alternatives have been carefully derived from scoping, interagency coordination, and in-depth internal discussions. The Draft EIS provides an evaluation of both the No Action Alternative and four action alternatives (B, C, D, and E). The alternatives developed provide strategies to address management trade-offs related to the planning components, aligning with the purpose and need. The following alternatives were developed and considered planning components, goals, and objectives:

- Alternative A (No Action Alternative): Alternative A would continue current BLM management direction in the 11 administrative units in the planning area.
- Alternative B: Alternative B would prioritize removing identified threats within occupied and unoccupied habitat and reducing impacts within the decision area, which includes the 4-mile buffer around habitat, and potential linkage-connectivity areas, to the maximum extent allowable. Sub-alternative B1 excludes livestock grazing in GUSG habitat. All ACECs that meet relevance and importance (R&I) criteria would be designated.
- Alternative C: Alternative C would achieve the purpose and need of the RMP Amendment by minimizing, avoiding, or compensating for impacts from resource uses and activities in occupied and unoccupied habitat. No new ACECs would be designated under this alternative.
- Alternative D (Preferred Alternative): Alternative D would achieve the purpose and need of the RMP Amendment by applying a balanced approach for (1) allocating resource uses and conserving resource values while sustaining and enhancing ecological integrity across the planning area, and (2) designating a specific subset of nominated ACECs. Conservation measures focus on occupied and unoccupied habitat that includes the 1-mile buffer around habitat and could extend to linkage-connectivity areas.
- Alternative E (Gunnison Basin): Alternative E considers adopting applicable management direction from the interagency Candidate Conservation Agreement for the Gunnison Sage-Grouse, Gunnison Basin Population (CCA). Alternative E expands management direction for resources and resource uses in the Gunnison Basin not addressed in the CCA and applies management to unoccupied habitat, including 1-mile and 4-mile buffers, for some resources.

Chapter 2 provides a detailed description of the alternatives.

ES.6 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The purpose of the environmental consequences analysis in this RMP Amendment/EIS is to determine and disclose the potential for significant impacts of the Federal action on the human environment. Council on Environmental Quality regulations for implementing NEPA state that the "human environment" is interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment (40 CFR, Part 1508.1(m)). The "Federal action" is the BLM's selection of an RMP Amendment on which future land use actions will be based for the BLM in Colorado and Utah.

To best provide a comprehensive understanding of the existing characteristics of the planning area and the environmental consequences associated with each of the alternatives, this EIS uses a systematic organization, wherein each resource use is organized by applicable planning issues. For each planning issue, analytical methods and assumptions are identified, the affected environment is described, and the environmental consequences are analyzed in detail. Within each resource area, additional analysis is provided on unavoidable adverse effects, relationship of short-term uses and long-term productivity, and irreversible and irretrievable commitment of resources.

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CHAPTER 1. INTRODUCTION

1.1. INTRODUCTION

The U.S. Department of the Interior (DOI) Bureau of Land Management (BLM) has prepared this Draft Resource Management Plan (RMP) Amendment/Draft Environmental Impact Statement (EIS) to analyze whether to amend up to nine land use plans in southwestern Colorado and two in southeastern Utah to promote the recovery of the federally listed Gunnison sage-grouse (GUSG) (*Centrocercus minimus*) and maintain and enhance occupied and unoccupied habitat for the species, consistent with the agency's multiple use and sustained yield mission and the GUSG recovery efforts with Federal, State, local, and Tribal partners.

The Federal Land Policy and Management Act of 1976 (FLPMA) directs the BLM to develop and periodically revise or amend its RMPs, which guide the management of BLM-administered public lands. The planning process is guided by BLM planning regulations codified in 43 Code of Federal Regulations (CFR) 1600 and Council on Environmental Quality (CEQ) regulations codified in 40 CFR 1500. BLM RMPs identify the allowable and restricted uses of public land resources; set forth overall goals and objectives to manage, protect, and provide for the appropriate use of resources; and establish systems for monitoring and evaluating the health of resources and effectiveness of management practices over time.

Plan amendments (as defined in 43 CFR 1610.5-5) change one or more of the terms, conditions, or decisions of an approved RMP. Decisions could include those related to desired outcomes, measures to achieve desired outcomes, or land tenure decisions. Plan amendments are most often prompted by the need to—

- Consider a proposal or action that does not conform to the plan;
- Implement new or revised policy that changes land use plan decisions, such as an approved conservation agreement between the BLM and the U.S. Fish and Wildlife Service (USFWS) or finalization of a listing decision or recovery implementation strategy by the USFWS;
- Respond to new, intensified, or changed uses on public lands; or
- Consider significant new information from resource assessments, monitoring, or scientific studies that change land use plan decisions.

In October 2020, the USFWS released the Final Recovery Plan for Gunnison Sage-Grouse (USFWS 2020a) and an associated Recovery Implementation Strategy for Gunnison Sage-Grouse (*Centrocercus minimus*) (USFWS 2020b). In Criterion 2 and Priority 1 Action Number 3 of the Final Recovery Plan (USFWS 2020a) as well as Priority 1 Action 3.01 in the Recovery Implementation Strategy (USFWS 2020b), the USFWS identified conservation measures in land use plans as the principal regulatory mechanism for protecting GUSG on BLM-administered

lands. Based on this assessment, the BLM identified a need to evaluate whether existing RMPs for BLM administrative units containing GUSG habitat provide adequate conservation measures for GUSG survival and recovery or whether the existing RMPs require amendment. Amended conservation measures could include restrictions on resource uses and programs that negatively affect GUSG, as well as measures to reduce impacts from authorized programs and uses.

The USFWS Final Recovery Plan for Gunnison Sage-Grouse (*Centrocercus minimus*) (USFWS 2020a) defines **occupied habitat** as areas where breeding takes place or is known to have taken place and **unoccupied habitat** as formerly occupied areas that still contain some of the appropriate biological and physical features for the GUSG. Figure 1.1 shows GUSG occupied and unoccupied habitat.

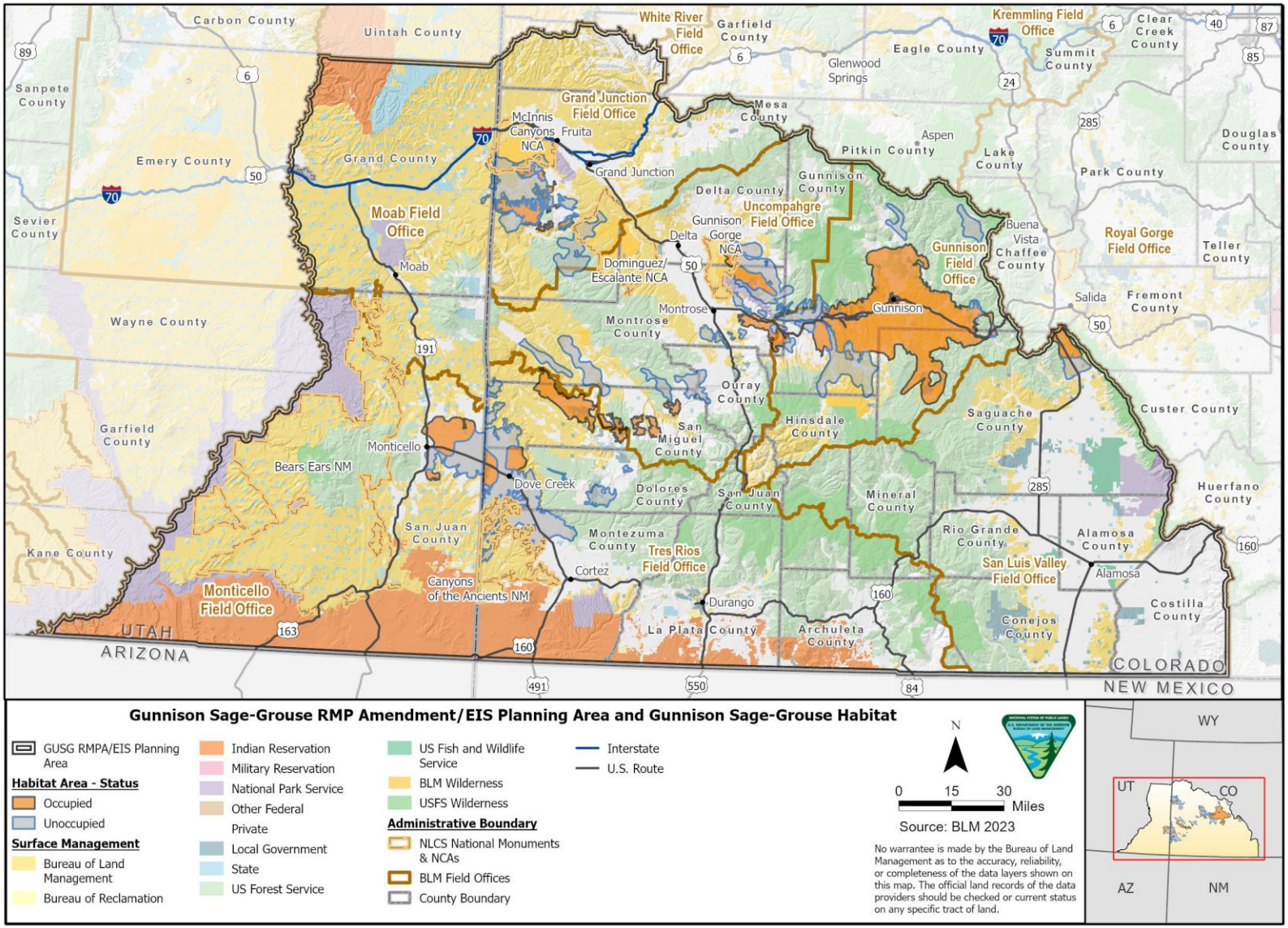
The BLM has evaluated the 11 applicable RMPs and developed a reasonable range of draft alternative management strategies to promote GUSG recovery and maintain and enhance GUSG habitat. This RMP Amendment/EIS was prepared in compliance with BLM Land Use Planning Handbook H-1601-1; BLM planning regulations at 43 CFR 1601-1610; National Environmental Policy Act (NEPA) Handbook H-1790-1; CEQ regulations at 40 CFR 1500–1508, as amended; and DOI Implementation of NEPA regulations at 43 CFR 46 requiring analysis of the effects of proposed management alternatives through the development of an EIS (see Appendix V). In addition, the RMP Amendment/EIS is consistent with the Endangered Species Act (ESA), with special attention to Section 7(a)(1).

This chapter provides background information; states the purpose and need for the action; describes the planning area, decision area, and BLM planning process; discusses consistency with other related plans; and identifies issues and resource topics considered but not further analyzed.

1.1.1. Background

The GUSG is a ground-dwelling bird species with a current range limited to eight widely scattered and geographically isolated populations—the Gunnison Basin, San Miguel Basin, Piñon Mesa, Crawford, Cerro Summit-Cimarron-Sims Mesa, Poncha Pass, and Dove Creek populations in southwestern Colorado and the Monticello population in southeastern Utah—occupying approximately 10 percent of its recognized historical range that once spanned the Four Corners region across Colorado, Utah, Arizona, and New Mexico (USFWS 2020a). The BLM manages approximately 40 percent of GUSG habitat across 12 Colorado and Utah counties, including approximately 67 percent of habitat for the Gunnison Basin Population, the largest of the populations, which is found within the Gunnison Field Office in Gunnison and Saguache Counties, Colorado.

Figure 1.1. Gunnison Sage-Grouse Occupied and Unoccupied Habitat in the Planning Area



In summer 2013, BLM Colorado signed an interagency Candidate Conservation Agreement (CCA) for GUSG on federally managed lands in the Gunnison Basin, which identified conservation strategies, management actions, implementation guidelines, and minimization measures to benefit GUSG habitat. The CCA was a collaborative effort, and other signatories to the CCA included the USFWS, National Park Service (NPS), U.S. Forest Service (USFS), Natural Resources Conservation Service, Colorado Parks and Wildlife (CPW), and Saguache and Gunnison Counties. In November 2014, the USFWS issued its final determination that the GUSG warranted protection as a threatened species under the ESA. In August 2016, the BLM initiated the Gunnison Sage-Grouse Rangewide RMP Amendment process and released a Draft RMP Amendment/EIS. The BLM paused that planning effort following an April 2018 announcement that the USFWS intended to complete a recovery plan for the species. In October 2020, the USFWS released the Final Recovery Plan for Gunnison Sage-Grouse (USFWS 2020a) and an associated Recovery Implementation Strategy for Gunnison Sage-Grouse (*Centrocercus minimus*) (USFWS 2020b).

With the publication of a Federal Register (FR) Notice of Intent (NOI) (87 FR 40262) on July 6, 2022, the BLM canceled the 2016–2018 RMP Amendment effort and initiated this new RMP Amendment process. The planning criteria for this project can be found in the NOI, available on the BLM ePlanning project website at https://eplanning.blm.gov/eplanning-ui/project/2019031/510.

1.2. PURPOSE OF AND NEED FOR ACTION

CEQ regulations (40 CFR 1502.13) direct that an EIS "…briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." The purpose and need for the RMP Amendment are described below.

1.2.1. Purpose

The BLM's purpose consists of the following:

- Promote the recovery of the threatened GUSG and maintain and enhance BLM-administered occupied/unoccupied habitat upon which the species depends, while continuing to manage the land wherever possible for multiple use and sustained yield.
- Ensure management actions on BLM-administered lands support conservation goals for GUSG and their habitat.
- Ensure that BLM management aligns with current science and data; relevant Federal, State, and local decisions supporting recovery; the DOI Climate Action Plan (DOI 2021); and the USFWS Final Recovery Plan for Gunnison Sage-Grouse (USFWS 2020a) and Recovery Implementation Strategy for Gunnison Sage-Grouse (*Centrocercus minimus*) (USFWS 2020b).

- Provide consistent guidance for addressing threats to GUSG populations and their habitat.

1.2.2. Need

This BLM action is necessary to accomplish the following:

- Address the rangewide downward population trend of GUSG since 2014 and address issues related to land management that may affect occupied/unoccupied habitat.
- Respond to the ESA Section 7(a)(1) requirement that the BLM use its authority to further the purposes of the ESA by implementing management actions for the conservation of federally listed species and the ecosystems upon which they depend.
- Respond to changing ecological and climate conditions affecting BLM-administered lands, including drought, habitat loss and fragmentation, reduced riparian areas, and more frequent wildland fires.

1.3. PLANNING AREA AND DECISION AREA

1.3.1. Planning Area

The **planning area** for this RMP Amendment/EIS is the geographic boundary of the BLM administrative units within which the BLM will make decisions during this planning effort. The planning area consists of lands administered by the BLM, other Federal agencies, Tribal governments, the State of Colorado, the State of Utah, and local governments, as well as lands under private ownership (Figure 1.1). The planning area totals approximately 25,564,710 acres and spans portions of nineteen Colorado counties: Alamosa, Archuleta, Conejos, Costilla, Delta, Dolores, Garfield, Gunnison, Hinsdale, La Plata, Mesa, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, and San Miguel; and two Utah counties: Grand and San Juan. Table 1.1 identifies the acres of surface land management in the planning area. Table 1.2 identifies the acres of Federal subsurface minerals in the planning area. Figure 1.2 shows the GUSG populations in Colorado and Utah. Table 1.3 identifies the acres of surface land management in occupied and unoccupied habitat by GUSG population area.

Table 1.1. Acres of Surface Land Management in the Planning Area

Surface Land Management	Colorado	Utah	Total
BLM	3,916,190	3,660,360	7,576,550
Bureau of Reclamation (BOR)	22,860	0	22,860
Department of Defense (DOD)	130	2,550	2,670
Indian Reservation	770,910	1,483,140	2,254,050
NPS	284,440	668,630	953,060
Other Federal[1]	1,760	40	1,810
Private	5,854,430	519,600	6,374,030
State	85,780	625,010	710,790
Local Government	292,690	0	292,690
USFS	6,755,030	508,480	7,263,510
USFWS	112,680	0	112,680
Total	**18,096,910**	**7,467,800**	**25,564,710**

Source: BLM 2023
[1] Other Federal within the Planning Area includes surface management agency categories of other Federal lands and Department of Energy.

Table 1.2. Acres of Federal Subsurface Minerals in the Planning Area

Mineral Estate and Surface Management	Colorado	Utah	Total
BLM surface estate and BLM mineral estate	3,916,200	3,650,040	7,566,240
BLM mineral estate with Other Federal surface	7,947,810	2,624,330	10,572,150
BLM mineral estate with Non-BLM surface estate (Split Estate)	6,232,910	150,040	6,382,950
Total Federal Mineral Estate	**18,096,920**	**6,424,420**	**24,521,340**

Source: BLM 2023

Figure 1.2. Gunnison Sage-Grouse Populations in Colorado and Utah

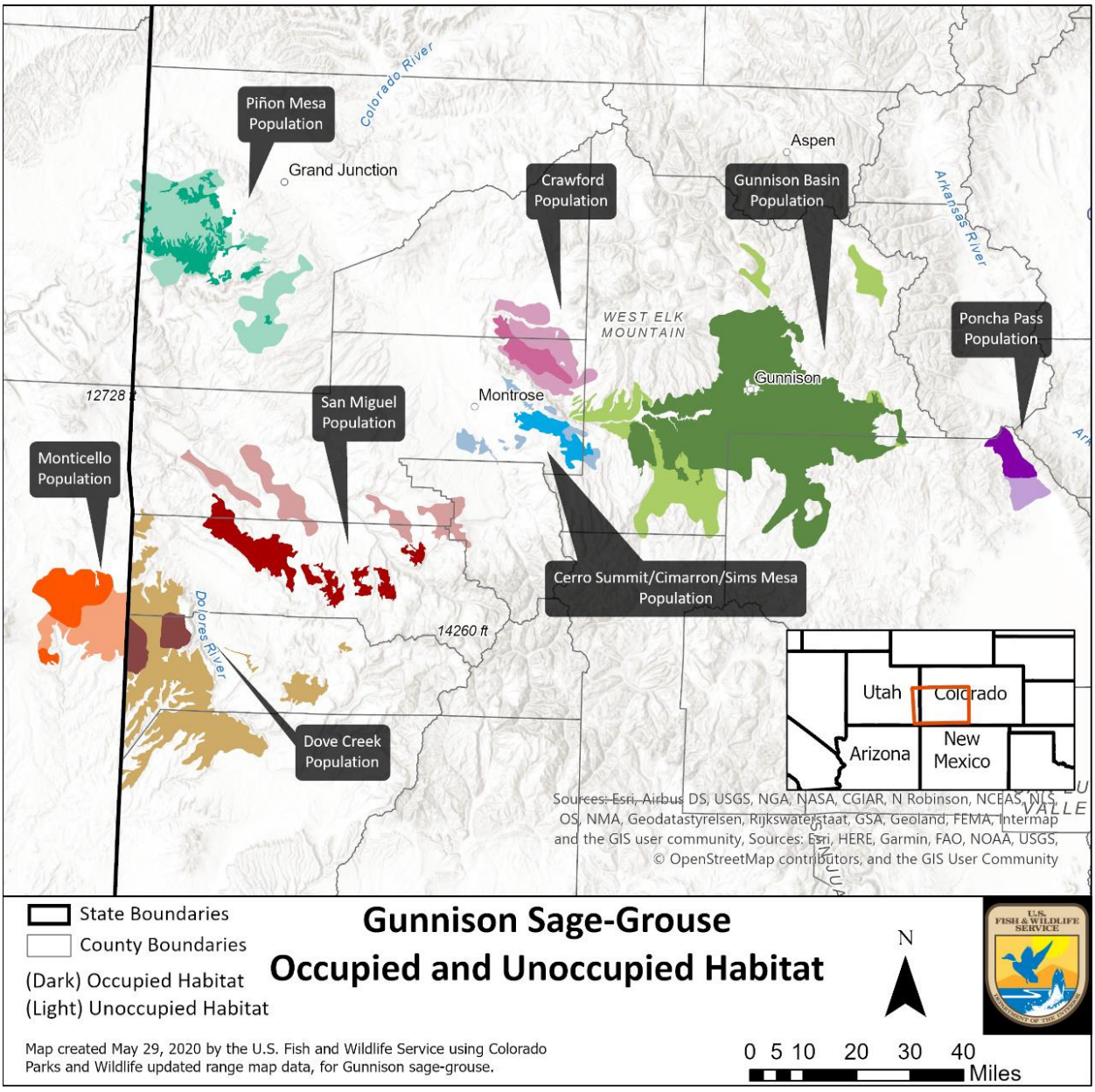


Table 1.3. Surface Land Management in the Planning Area in Occupied and Unoccupied Habitat by Gunnison Sage-Grouse Population Area

GUSG Population Area	BLM		BOR		NPS		Other Federal Lands[1]		Private		State		Local Government[2]		USFS		Total
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Cerro Summit-Cimarron-Sims Mesa	**9,100**	**15%**	**960**	**2%**	**610**	**1%**	**0**	**0%**	**47,680**	**76%**	**0**	**0%**	**4,360**	**7%**	**0**	**0%**	**62,710**
Occupied	1,790	6%	10	<1%	460	1%	0	0%	25,550	80%	0	0%	4,060	13%	0	0%	31,870
Unoccupied	7,320	24%	950	3%	150	1%	0	0%	22,120	72%	0	0%	300	1%	0	0%	30,840
Crawford	**32,310**	**28%**	**110**	**<1%**	**12,320**	**11%**	**0**	**0%**	**68,020**	**59%**	**0**	**0%**	**380**	**<1%**	**2,190**	**2%**	**115,330**
Occupied	22,160	63%	0	0%	4,400	13%	0	0%	8,450	24%	0	0%	0	0%	2,190	3%	35,010
Unoccupied	10,150	13%	110	<1%	7,920	10%	0	0%	59,570	74%	0	0%	380	<1%	0	0%	80,310
Dove Creek	**53,480**	**17%**	**0**	**0%**	**40**	**<1%**	**0**	**0%**	**250,320**	**78%**	**650**	**<1%**	**7,890**	**2%**	**9,980**	**3%**	**322,360**
Occupied	5,250	13%	0	0%	0	0%	0	0%	34,280	82%	0	0%	2,360	6%	9,980	4%	41,880
Unoccupied	48,230	17%	0	0%	40	<1%	0	10%	216,040	77%	650	<1%	5,530	2%	0	3%	280,480
Gunnison Basin	**367,300**	**48%**	**0**	**0%**	**21,840**	**3%**	**0**	**0%**	**234,820**	**30%**	**970**	**<1%**	**22,570**	**3%**	**124,400**	**16%**	**771,890**
Occupied	304,860	51%	0	0%	13,840	2%	0	0%	171,490	29%	970	<1%	22,550	2%	86,100	14%	599,810
Unoccupied	62,440	36%	0	0%	8,000	5%	0	0%	63,320	37%	0	0%	20	<1%	38,290	23%	172,080
Monticello	**4,880**	**3%**	**0**	**0%**	**0**	**0**	**0**	**0%**	**140,180**	**96%**	**920**	**<1%**	**0**	**0%**	**0**	**0%**	**145,980**
Occupied	3,240	5%	0	0%	0	0	0	0%	66,500	94%	920	1%	0	0%	0	0%	70,660
Unoccupied	1,640	2%	0	0%	0	0	0	0%	73,690	98%	0	0%	0	0%	0	0%	75,320
Piñon Mesa	**117,160**	**44%**	**0**	**0%**	**0**	**0**	**20**	**<1%**	**106,060**	**40%**	**0**	**0%**	**0**	**0%**	**43,720**	**16%**	**266,970**
Occupied	19,630	29%	0	0%	0	0	0	0%	46,030	68%	0	0%	0	0%	2,160	3%	67,820
Unoccupied	97,530	49%	0	0%	0	0	20	<1%	60,020	30%	0	0%	0	0%	47,570	21%	199,140
Poncha Pass	**24,820**	**51%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**16,250**	**34%**	**0**	**0%**	**2,080**	**4%**	**5,170**	**11%**	**48,330**
Occupied	13,160	48%	0	0%	0	0	0	0%	8,010	29%	0	0%	1,120	4%	4,990	18%	27,280
Unoccupied	11,660	55%	0	0%	0	0%	0	0%	8,240	39%	0	0%	960	5%	180	1%	21,040
San Miguel Basin	**58,570**	**29%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**116,660**	**57%**	**3,020**	**1%**	**12,290**	**6%**	**14,440**	**7%**	**204,980**
Occupied	35,940	35%	0	0%	0	0%	0	0%	49,030	48%	2,700	3%	12,280	12%	1,420	1%	101,370
Unoccupied	22,630	22%	0	0%	0	0%	0	0%	67,630	65%	320	<1%	10	<1%	13,020	13%	103,610
Total Acres	**667,630**	**34%**	**1,070**	**<1%**	**34,810**	**2%**	**20**	**<1%**	**979,980**	**51%**	**5,550**	**<1%**	**49,560**	**3%**	**199,910**	**10%**	**1,938,540**
Total Occupied	406,030	42%	10	0	18,700	2%	0	0	409,340	42%	4,590	<1%	42,370	4%	94,670	10%	975,720
Total Unoccupied	261,600	27%	1,050	<1%	16,120	2%	20	<1%	570,637	59%	960	<1%	7,190	1%	105,230	11%	962,820

Source: BLM 2023

[1] Other Federal within the GUSG population areas consists of surface management agency category of other Federal lands.

[2] Includes State, county, and city park and outdoor recreation areas.

1.3.2. Decision Area

The **decision area** is a subset of the planning area subject to decisions made for this RMP Amendment based on the following:

- Contains Federal mineral estate and/or BLM-administered surface lands; and
- Is located within occupied or unoccupied habitat or Adjacent Non-habitat within 4 miles or 1 mile or within Linkage-Connectivity Management Areas (LCMA) that may facilitate movement of GUSG between populations or habitat areas.

The decision area consists of approximately 2,156,150 acres of BLM surface lands (1,926,100 acres in Colorado and 230,050 acres in Utah) and 2,852,390 acres of Federal subsurface mineral estate (2,563,220 acres in Colorado and 289,170 acres in Utah) (Figure 1.3). After dissolving the overlap of BLM surface lands and Federal subsurface mineral estate, the decision area totals 2,852,390 acres, approximately 11 percent of the planning area. The BLM manages all Federal mineral estate within the decision area. Inclusion of Adjacent Non-habitat within 4 miles or 1 mile of GUSG habitat (see Map A.1 and Map A.2 in Appendix A, *Maps*) is based on recommendations received through public scoping, information in the Rangewide Conservation Plan (RCP) (Gunnison Sage-Grouse Rangewide Steering Committee 2005) and consideration of linkage-connectivity areas. Linkage-connectivity areas were modeled using Circuitscape (Anatharaman et al. 2020) (see Map A.3 in Appendix A, *Maps,* and Appendix O, *Linkage-Connectivity Methodology*). In the decision area, approaches for resource allocations and management actions vary by action alternatives and as applied to the GUSG habitat management areas (HMAs) (see Table 2.2 in Chapter 2). The following are the identified HMAs for this planning effort:

- Occupied habitat
- Unoccupied habitat
- Adjacent Non-habitat within 4 miles or 1 mile (areas within a 4- or 1-mile buffer around Occupied Habitat Management Areas (OHMAs) and Unoccupied Habitat Management Areas (UHMAs) that are considered non-habitat because they do not contribute to the annual life-cycle of Gunnison sage-grouse)
- LCMAs (non-habitat areas)

Table 1.4 identifies the surface land management by GUSG population area within the decision area, which would only include those surface acres—including those with sub-surface Federal mineral estate—that are subject to decisions for this RMP Amendment. Acres of surface land management in the decision area by non-habitat areas (i.e., linkage-connectivity, 4-mile buffer, and 1-mile buffer) are provided in Table 1.5. Table 1.6 identifies Federal subsurface minerals by GUSG population area within the decision area. Acres of Federal subsurface minerals in the

decision area by non-habitat areas (i.e., linkage-connectivity, 4-mile buffer, and 1-mile buffer) are provided in Table 1.7.

The decision area includes approximately 660,000 acres of split estate which are Federal minerals that lie beneath surface land owned by a non-Federal entity, such as a State trust, local government, or private owner. It does not include National Forest System land and other Federal land where the BLM does not make planning decisions. The BLM typically adopts the leasing requirements determined by other Federal surface-managing agencies when leasing the mineral estate (while within the planning area, those lands are outside the decision area). Within the planning area in cases where another Federal agency is making the leasing or planning decisions, such lands are not included in the decision area.

Figure 1.3. Gunnison Sage-Grouse RMP Amendment/EIS Decision Area

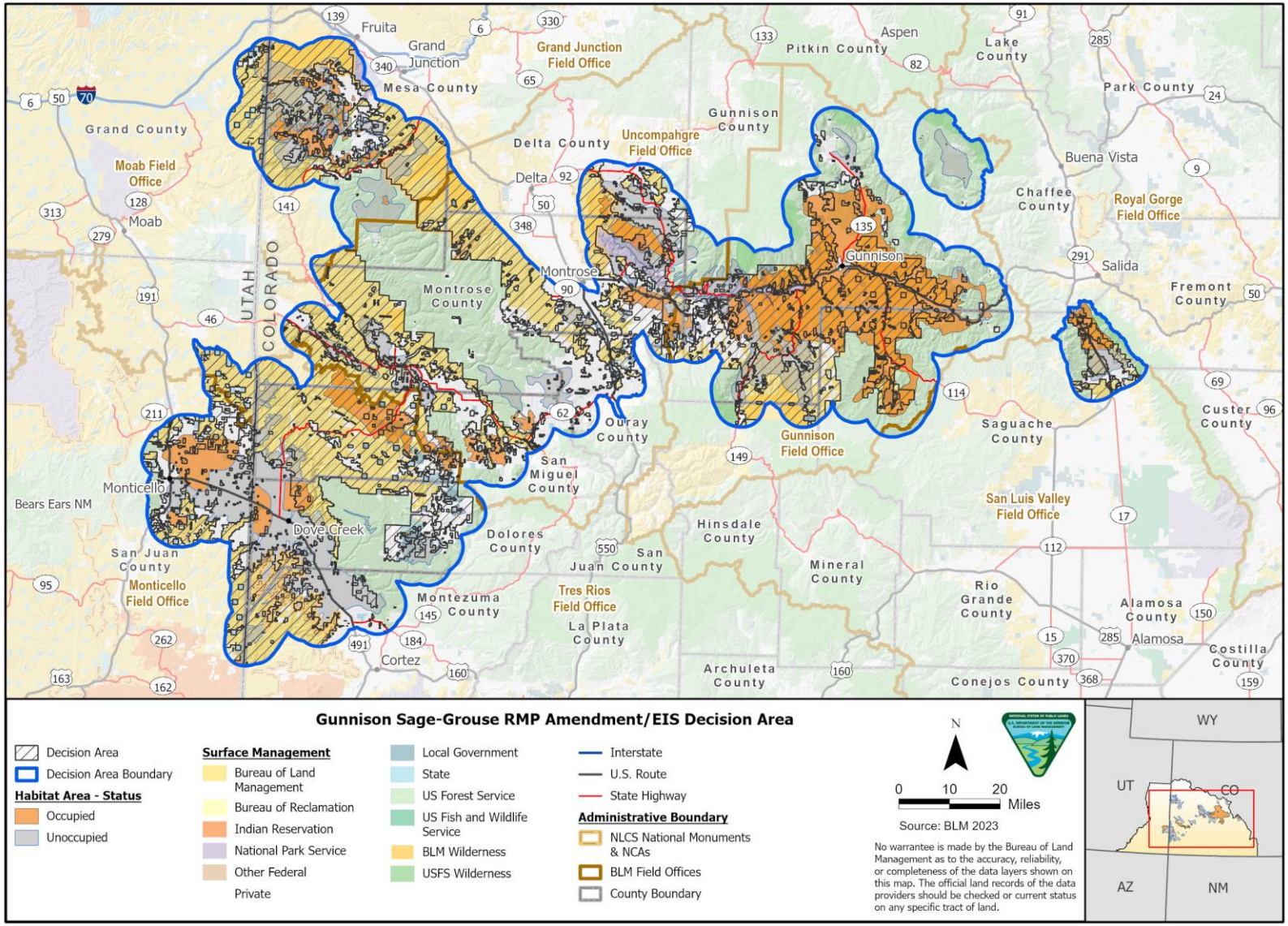


Table 1.4. Surface Land Management in the Decision Area by Gunnison Sage-Grouse Population Area

GUSG Population Area	BLM		BOR		NPS		Other Federal Lands[1]		Private		State		Local Government[2]		USFS		Total
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Cerro Summit-Cimarron-Sims Mesa																	
Occupied	1,790	12%	10	<1%	380	2%	0	0%	12,490	81%	0	0%	660	4%	0	0%	15,330
Unoccupied	7,320	48%	950	6%	0	0%	0	0%	7,070	46%	0	0%	70	0%	0	0%	15,400
Crawford																	
Occupied	22,160	81%	0	0%	0	0%	0	0%	5,230	19%	0	0%	0	0%	0	0%	27,400
Unoccupied	10,150	42%	110	<1%	990	4%	0	0%	12,680	52%	0	0%	380	2%	0	0%	24,300
Dove Creek																	
Occupied	5,250	38%	0	0%	0	0%	0	0%	8,170	60%	0	0%	230	2%	0	0%	13,640
Unoccupied	47,850	48%	0	0%	0	0%	0	0%	48,720	49%	0	0%	2,960	3%	0	0%	99,530
Gunnison Basin																	
Occupied	291,980	78%	0	0%	10,420	3%	0	0%	63,110	17%	560	<1%	6,520	2%	0	0%	372,590
Unoccupied	62,280	63%	0	0%	6,520	7%	0	0%	29,650	30%	0	0%	0	0	0	0%	98,460
Monticello																	
Occupied	3,040	25%	0	0%	0	0%	0	0%	8,950	75%	0	0%	0	0%	0	0%	11,990
Unoccupied	1,630	20%	0	0%	0	0%	0	0%	6,630	80%	0	0%	0	0%	0	0%	8,260
Piñon Mesa																	
Occupied	18,750	52%	0	0%	0	0%	0	0%	17,100	48%	0	0%	0	0%	0	0%	35,840
Unoccupied	95,990	81%	0	0%	0	0%	20	<1%	21,890	19%	0	0%	0	0%	0	0%	117,910
Poncha Pass																	
Occupied	12,580	84%	0	0%	0	0%	0	0%	2,460	16%	0	0%	0	0%	0	0%	15,040
Unoccupied	11,660	98%	0	0%	0	0%	0	0%	240	2%	0	0%	0	0%	0	0%	11,900
San Miguel Basin																	
Occupied	35,940	55%	0	0%	0	0%	0	0%	20,680	32%	1,310	2%	7,000	11%	0	0%	64,920
Unoccupied	21,740	79%	0	0%	0	0%	0	0%	5,930	21%	0	0%	0	0%	0	0%	27,680
Total Acres	**650,120**	**68%**	**1,070**	**<1%**	**18,310**	**2%**	**20**	**<1%**	**271,000**	**28**	**1,860**	**0%**	**17,820**	**2%**	**0**	**0%**	**960,200**
Total Occupied	391,490	70%	10	0%	10,800	2%	10	0%	138,180	25%	1,860	0%	14,410	3%	0	0%	556,760
Total Unoccupied	258,630	64%	1,050	0%	7,510	2%	20	0%	132,810	33%	0	0%	3,410	1%	0	0%	403,440

Source: BLM 2023

[1] Other Federal consists of surface management agency category of other Federal lands.

[2] Includes State, county, city park and outdoor recreation areas.

Table 1.5. Acres of Surface Land Management in the Decision Area by Non-Habitat Areas

Non-Habitat Area	BLM		BOR		Indian Reservation		NPS		Other Federal Lands[1]		Private		State		Local Government[2]		Total
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Linkage-Connectivity	214,250	75%	30	<1%	0	0%	60	<1%	80	<1%	59,890	21%	6,210	2%	3,520	1%	280,040
Adjacent Non-Habitat (4-mile buffer)	1,124,310	77%	1,210	<1%	1,170	<1%	16,480	1%	840	<1%	289,590	20%	10,250	1%	15,550	1%	1,459,390
Adjacent Non-Habitat (1-mile buffer)	367,430	72%	930	<1%	0	0%	13,820	3%	140	<1%	121,340	24%	920	<1%	8,580	2%	513,160
Total[3]	**1,149,650**	**77%**	**1,210**	**<1%**	**1,170**	**<1%**	**16,480**	**1%**	**840**	**<1%**	**294,300**	**20%**	**10,750**	**1%**	**15,550**	**1%**	**1,489,950**

Source: BLM 2023

[1] Other Federal Lands consists of surface management agency category "other Federal lands."

[2] Includes State, county, and city park and outdoor recreation areas.

[3] Linkage-connectivity and Adjacent Non-habitat buffers have overlap. The acreages in the Total row have been dissolved to remove this overlap.

Table 1.6. Acres of Federal Subsurface Minerals in the Decision Area by Gunnison Sage-Grouse Population Area

GUSG Population Area	All Minerals	Coal Only	Oil and Gas Only	Other[1]	Total
Cerro Summit-Cimarron-Sims Mesa					
Occupied	12,030	3,130	170	0	15,330
Unoccupied	15,060	0	210	140	15,400
Crawford					
Occupied	27,400	0	0	0	27,400
Unoccupied	24,130	0	130	40	24,300
Dove Creek					
Occupied	6,530	0	6,120	990	13,640
Unoccupied	62,360	0	34,980	2,190	99,530
Gunnison Basin					
Occupied	369,570	570	640	1,800	372,590
Unoccupied	97,570	0	70	820	98,460
Monticello					
Occupied	3,730	0	4,110	4,150	11,990
Unoccupied	2,660	270	3,780	1,560	8,260
Piñon Mesa					
Occupied	35,700	0	140	0	35,840
Unoccupied	117,250	0	300	350	117,910
Poncha Pass					
Occupied	15,040	0	0	0	15,040
Unoccupied	11,900	0	0	0	11,900
San Miguel Basin					
Occupied	63,340	0	1,220	360	64,920
Unoccupied	27,400	0	0	280	27,680
Total Acreage	**891,660**	**3,970**	**51,880**	**12,680**	**960,200**
Occupied	533,330	3,700	12,410	7,310	556,760
Unoccupied	358,330	270	39,470	5,370	403,440

Source: BLM 2023

[1] "Other" mineral types consist of mixtures of multiple mineral types including coal, oil and gas, other, phosphate, potash/potassium, and sodium.

Table 1.7. Acres of Federal Subsurface Minerals in the Decision Area by Non-Habitat Areas

Non-Habitat Area	All Minerals		Coal Only		Oil and Gas Only		Other[1]		Total
	Acres	%	Acres	%	Acres	%	Acres	%	Acres
Linkage-Connectivity	278,500	98%	60	<1%	3,700	1%	1,780	1%	284,050
Adjacent Non-Habitat (4-mile buffer)	1,387,960	95%	19,200	1%	33,560	2%	18,720	1%	1,459,440
Adjacent Non-Habitat (1-mile buffer)	485,150	95%	4,340	1%	17,320	3%	6,370	1%	513,180
Total[2]	**1,418,300**	**95%**	**19,200**	**1%**	**33,760**	**2%**	**18,730**	**1%**	**1,489,990**

Source: BLM 2023

[1] "Other" mineral types consist of mixtures of multiple mineral types including coal, oil and gas, other, phosphate, potash/potassium, and sodium.

[2] Areas of overlap (e.g., linkage-connectivity with Adjacent Non-habitat) have been removed from the Total acreage.

The decision area contains all or portions of the following BLM Colorado and Utah RMPs for field offices, national monuments, and national conservation areas (NCAs) potentially affected by the decisions made in this RMP Amendment/EIS, of which the acreages of GUSG habitat and non-habitat for each RMP in the decision area are listed in Table 1.8:

BLM Colorado (year approved)

- Canyons of the Ancients National Monument RMP (2010)
- Dominguez-Escalante NCA RMP (2017)
- Grand Junction Field Office RMP (2015)
- Gunnison Gorge NCA RMP (2004)
- Gunnison Resource Area RMP (1993)
- McInnis Canyons NCA managed under the Colorado Canyons NCA RMP (2004)
- San Luis Resource Area RMP (1991)
- Tres Rios Field Office RMP (2015)
- Uncompahgre Field Office RMP (2020)

BLM Utah (year approved)

- Moab Field Office RMP (2008)
- Monticello Field Office RMP (2008)

Table 1.8. Acres of Gunnison Sage-Grouse Habitat by Affected RMP in the Decision Area

Affected RMP	Occupied Habitat	Unoccupied Habitat	Linkage-Connectivity	Adjacent Non-Habitat (1-mile buffer)	Adjacent Non-Habitat (4-mile buffer)	Total[1]
Colorado						
Canyons of the Ancients National Monument	0	17,690	0	50,750	94,690	112,370
Dominguez-Escalante NCA	0	17,690	16,310	15,300	57,960	75,650
Grand Junction Field Office	34,140	76,720	58,630	38,340	100,630	211,480
Gunnison Field Office[2]	373,580	100,910	1,720	77,740	186,770	661,260
Gunnison Gorge NCA	5,680	1,300	3,860	10,260	43,640	50,620
McInnis Canyons NCA[3]	1,700	19,170	32,240	15,100	51,980	72,860
San Luis Valley Field Office	15,040	11,900	2,440	6,230	23,320	50,260
Tres Rios Field Office	68,020	82,100	75,650	124,880	322,910	473,020
Uncompahgre Field Office	46,600	63,380	57,950	123,790	361,150	471,140
Colorado Total	**544,770**	**389,800**	**245,870**	**459,410**	**1,239,290**	**2,173,850**
Utah						
Moab Field Office	0	4,340	31,580	19,210	85,150	89,490
Monticello Field Office	11,990	8,270	5,290	31,560	131,180	151,430
Utah Total	**11,990**	**13,650**	**39,790**	**53,760**	**220,100**	**245,730**
Grand Total	**556,760**	**403,440**	**285,660**	**513,160**	**1,459,390**	**2,419,590**

Source: BLM 2023

[1] Areas of overlap (e.g., linkage-connectivity with Adjacent Non-habitat) have been removed from the Total acreage.

[2] Acreage includes BLM-administered livestock grazing allotments on approximately 9,580 acres on NPS-administered Curecanti National Recreation Area lands.

[3] McInnis Canyons NCA overlaps both Colorado and Utah. McInnis Canyons NCA includes 4,810 acres in Utah.

1.4. CONSISTENCY WITH LOCAL LAND USE PLANS

The BLM's FLPMA resource management planning regulations (43 CFR 1610.3-2) require that BLM RMPs be consistent with officially approved or adopted resource-related plans of other Federal, State, local, and Tribal governments, to the extent that those plans are consistent with Federal laws and regulations applicable to public lands. In the event of inconsistency or potential inconsistency, the BLM follows the procedures set forth in the regulations (43 CFR 1610.3-2) to address any potential inconsistency. The BLM worked with cooperating agencies to identify any inconsistencies. The BLM did not identify any inconsistencies with land use plans with Alternative D (preferred alternative). However, Alternative B1, a sub-alternative that addresses livestock grazing management and is analyzed in response to public scoping comments, would be inconsistent with State and local RMPs in Utah and Colorado.

1.5. RESOURCE TOPICS CONSIDERED

1.5.1. Resource Topics Considered and Analyzed

The following resource topics identified during public scoping are being carried forward for further analysis in this RMP Amendment/EIS.

- Special status species
- Fish and wildlife
- Air resources
- Soil resources
- Vegetation, including riparian areas and wetlands
- Noxious weeds and invasive species
- Lands with wilderness characteristics
- Wildland fire ecology and management
- Livestock grazing management
- Recreation
- Travel and transportation
- Minerals
- Lands and realty
- ACECs
- Social and economic conditions

1.5.2. Resource Topics Considered but Not Further Analyzed

The following resource topics were not identified as resource topics of concern during scoping therefore are not being carried forward for further analysis in the RMP Amendment/EIS. Additional rationale are provided below.

1.5.2.1. Wilderness Designation

Four of the GUSG populations—Crawford, Gunnison Basin, Dove Creek, and Piñon Mesa—either intersect or abut wilderness areas or wilderness study areas (WSAs). Management for

the conservation of the GUSG in designated wilderness areas or WSAs is not expected to result in measurable impacts or degrade existing wilderness character. WSA designation is not expected to afford additional protection to GUSG. Through this planning effort, BLM will not consider any management actions or allocations that would prevent the agency from managing WSAs, or other lands managed to protect wilderness characteristics, in a manner that would preserve and protect wilderness characteristics or preclude Congress from designating wilderness areas in the future.

1.5.2.2. Water Quality

The management of water quality was not identified as a key issue driving alternatives for this RMP Amendment/EIS. Additionally, consideration and assessment of water quality did not identify impacts occurring due to any of the alternatives. Therefore, water quality was not analyzed in detail.

1.5.2.3. Wild Horse and Burro Management

The Spring Creek Herd Management Area and Naturita Ridge Herd Area overlap the decision area, but only the Naturita Ridge Herd Area overlaps portions of occupied and unoccupied GUSG habitat. There is no concern over resource use with the Naturita Ridge Herd Area. This area is managed to maintain an ecological balance of resources and uses and is not managed for wild horses. The Naturita Ridge Herd Area contains no horses (BLM 2020). Furthermore, no proposed management actions regarding GUSG habitat are anticipated to affect wild horse and burro herd management; therefore, this topic was not carried forward for detailed analysis in this EIS.

1.5.2.4. Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) (54 United States Code [USC] 30618) stipulates that Federal agencies must take into account the effect of their undertakings on historic properties (i.e., cultural resources eligible for, or listed in, the National Register of Historic Places).

The BLM has determined that the current planning effort has no potential to affect historic properties; as such, the RMP Amendment/EIS does not further analyze cultural resources. Future actions proposed in relation to this RMP Amendment/EIS would be analyzed under the appropriate level of NEPA and in accordance with Section 106. Cultural resources were not identified as resources of concern for this planning effort during scoping for the RMP Amendment/EIS (refer to Chapter 4, *Consultation and Coordination*).

1.5.2.5. Native American Concerns

Native Americans concerns for the planning area may involve several resource areas, including water quality, wildlife, soil resources, special status species, cultural resources, land use and access, air quality, and the application of indigenous knowledge.

Native American concerns were not identified during scoping for the RMP Amendment/EIS (refer to Chapter 4, *Consultation and Coordination*); however, the BLM maintains its obligations to Native American Tribes under several authorities, including FLPMA, NEPA, Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, the American Indian Religious Freedom Act, and Executive Order 13007 (Indian Sacred Sites). Future actions proposed in relation to this RMP Amendment/EIS will be analyzed in accordance with the authorities cited above; additionally, the BLM will engage in government-to-government consultation for any of its future actions, or as requested by Tribes.

1.5.2.6. Paleontological Resources

The BLM has determined that the current planning effort has no potential to affect paleontological resources; as such, the RMP Amendment/EIS does not further analyze paleontological resources. Although the types of actions presented in this RMP Amendment/EIS are unlikely to affect significant paleontological resources, potential affects would be considered on an action-by-action basis.

1.5.2.7. Visual Resources

The management of visual resources was not identified as a key issue during scoping for this RMP Amendment/EIS. The RMPs for the respective offices include Visual Resource Management classes and land use prescriptions that provide for management of visual resources. No significant changes to visual resources are anticipated as a result of efforts to conserve and restore GUSG.

Actions to protect the GUSG and conserve or improve their habitat, such as requiring no surface disturbance or limiting surface disturbance, would have a beneficial effect on scenic resources. In accordance with BLM Manual 8431, project-level contrast ratings would be required where GUSG conservation measures such as habitat improvements have the potential to affect visual resources.

1.5.2.8. Oil Shale and Tar Sands

The BLM completed the Approved Land Use Plan Amendments/Record of Decision (ROD) for Allocation of Oil Shale and Tar Sands Resources on Lands Administered by the BLM in Colorado, Utah, and Wyoming Final EIS in 2013. The Oil Shale/Tar Sands EIS analyzed the most geologically prospective oil shale areas in Colorado, Utah, and Wyoming. The ROD amended

three RMPs in Colorado and four in Utah, only two of which—the Grand Junction RMP and the Monticello RMP—overlap with the planning area. No Federal oil shale or tar sands resources were made available for application for leasing in the planning area. In 2015, the BLM revised the Grand Junction RMP and incorporated the oil shale decisions outlined in the Oil Shale/Tar Sands EIS into the RMP revision. Therefore, no current planning document makes any land within the planning area available for oil shale or tar sands leasing.

1.5.2.9. Coal

Within the decision area, there are no active coal leases and the public has expressed no interest in coal leasing. Coal was not identified as a key issue during scoping for this RMP Amendment/EIS. If interest in coal leasing within the decision area was expressed, the corresponding RMP would have to be amended, and the field office would apply the applicable mining unsuitability criteria (43 CFR 3461) prior to the issuance of any coal leases. If a coal lease is granted, it would be subject to specific conditions specified in the RMP and unsuitability assessment, which may include restrictions on certain mining techniques. Prior to coal extraction, the field office would need to approve the mining permit application package, incorporating stipulations derived from the RMP.

1.5.2.10. Hazardous Materials

The management of hazardous materials was not identified as a key issue driving the development of alternatives for this RMP Amendment/EIS. The alternatives would not result in the production of any hazardous waste as a result of efforts to conserve and restore GUSG habitat. If implementation of management actions from the RMP Amendment results or may result in impacts on hazardous materials, then those would be analyzed and disclosed at the site-specific project level.

1.5.2.11. Administrative Designations

The RMP Amendment is intended to maintain and enhance GUSG habitat by, among other things, limiting or prohibiting certain surface disturbances. Therefore, it is unlikely that any management actions considered as part of the RMP Amendment would have a negative effect on the administrative designations listed below.

National Heritage Areas

During scoping, BLM received suggestions to consider the Sangre de Cristo National Heritage Area, which is managed by the NPS. Although the Sangre de Cristo National Heritage Area is outside the decision area, it is within the planning area. No significant changes are anticipated as a result of management actions and alternatives. There are no other national heritage areas within the planning area. It is unlikely the plan amendments would have any effect on the

national heritage area, as it is outside of the decision area. However, beneficial effects on the national heritage area could accrue from the conservation of GUSG habitat. If the implementation of the plan amendments results or may result in impacts on national heritage areas, existing legal statutes, policies, and administrative procedures can be used to stop, limit, or mitigate any adverse impacts on these areas.

National Historic Landmarks

Public scoping concerns identified possible impacts to National Historic Landmarks. There are 11 National Historic Landmarks within the planning area, only one of which is within the decision area: the Lowry Ruin National Historic Landmark. It is unlikely that any management actions and alternatives from this effort would have an effect on National Historic Landmarks. Actions to protect the GUSG and conserve or improve their habitat, such as requiring no surface disturbance or limiting surface disturbance, could have a beneficial effect on National Historic Landmarks. If the implementation of the plan amendments results or may result in impacts on National Historic Landmarks, existing legal statutes, policies, and administrative procedures can be used to stop, limit, or mitigate any adverse impacts on National Historic Landmarks.

National and State Scenic and Historic Byways

Public scoping comments expressed concerns for potential impacts on National and State Scenic and Historic Byways. Several National and State Scenic and Historic Byways exist within the planning area. The West Elk Loop Scenic Byway crosses three population areas: Crawford, Cerro Summit-Cimarron-Sims Mesa, and Gunnison Basin. The San Juan Skyway touches the outer southwest edge of the San Miguel Basin population, while the Unaweep/Tabeguache Scenic Byway brushes the edges of two sub-units on the east side of the Piñon Mesa population. The Silver Thread Scenic Byway also intersects GUSG habitat; however, all of the above routes are on paved State highways. Conservation of the GUSG is not expected to alter the experience of America's or Colorado's/Utah's designated byways, and designation of additional byways is beyond the scope of this planning effort; therefore, byways are not analyzed in detail in this planning effort.

National Historic Trails

National Historic Trails (NHTs) closely follow historic trails or routes of travel of national significance. Branches of the Old Spanish NHT occur throughout the planning area in both Colorado and Utah. The Old Spanish NHT was an important pack trail (and a later emigration route) connecting Santa Fe and Los Angeles from 1829 to 1848. Because the trail consisted of a multitude of general corridors on which the pack strings were driven, evidence of the actual routes that define the trail is generally rare. Management actions for the conservation of GUSG habitat are not expected to have impacts on the values of the Old Spanish NHT; however, if

the implementation of the plan amendments results or may result in impacts on NHTs, existing legal statutes, policies, and administrative procedures can be used to stop, limit, or mitigate any adverse impacts.

National Scenic Trails

National Scenic Trails (NSTs) are only authorized and designated through an Act of Congress. NSTs provide maximum outdoor recreation potential and for the conservation and enjoyment of the various qualities—scenic, historical, natural, and cultural—of the areas through which they pass. In the Gunnison Basin, the BLM manages approximately 1 mile of the Continental Divide NST within the planning area. On BLM lands, the Continental Divide NST is on the extreme southern edge of GUSG habitat, and management actions taken for the conservation of the GUSG are not expected to result in impacts on its values.

Wild and Scenic Rivers

While no stream segments in the planning area have been designated as Wild and Scenic Rivers (WSRs), the Gunnison, Grand Junction, San Luis Valley, Tres Rios, and Uncompahgre Field Offices contain stream segments partially intersecting the planning area that have been identified as eligible or suitable for WSR designation. The RMPs for the respective offices include land use prescriptions that provide for interim protective management of river-related values. All of the alternatives under consideration in this planning effort contain land use restrictions that would be as restrictive or more restrictive than land use prescriptions currently in effect for the stream segments. Because of the additional protections provided for Outstandingly Remarkable Values (ORVs) along eligible and suitable stream segments under any of the alternatives and the small amount of intersection between the planning area and eligible and suitable stream segments, WSR issues are not analyzed in detail in this planning effort.

No management actions or alternatives are under consideration that would affect the free-flowing nature of the eligible or suitable WSR segments, alter the shoreline development of the segments, or affect the ORVs of segments. The BLM will not consider any management actions or allocations through this planning effort that would prevent the agency from managing eligible and suitable WSRs in a manner that would protect ORVs and ensure a decision on suitability could be made for eligible rivers, and in the case of suitable rivers, until Congress designates the segment or releases it for other uses.

CHAPTER 2. ALTERNATIVES

2.1. INTRODUCTION

The BLM developed alternatives to analyze management approaches for the GUSG. This chapter describes the process used to develop a reasonable range of alternatives, then presents the goals, objectives, management actions, allowable uses, and administrative designations for each alternative. Alternatives carried forward for detailed analysis must meet the purpose and need for the RMP Amendment and address the USFWS-identified threats to the GUSG. The BLM considered alternatives that it determined did not warrant detailed analysis (see Section 2.1.2.1). Finally, this chapter compares the effects of the alternatives and describes plan evaluation, monitoring, and adaptive management.

2.1.1. Components of Alternatives

The alternatives consist of goals, objectives, management actions, allowable uses, and administrative designations.

> ***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.

Goals and objectives can 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 goals and objectives.

> ***Management actions*** are measures that guide day-to-day and future activities. Allowable uses delineate uses that are permitted, restricted, or prohibited, and they 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.
>
> ***Administrative designations*** communicate BLM's intent to prioritize specific resource values or uses when making future management decisions in an area. Administrative designations are limited to those that BLM may establish through the land use planning process.

2.1.2. Development of a Reasonable Range of Alternatives

NEPA (40 CFR 1502.2(e)) and BLM land use planning regulations (43 CFR 1610.4-5) require the BLM to develop a reasonable range of alternatives during the RMP planning process. Public and internal scoping identified issues that present opportunities for alternative courses of action. The purpose and need and planning criteria provide sideboards for determining reasonableness. The basic goal of alternative 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,
- Meet the purpose and need for the RMP Amendment, and
- Are feasible.

The development of alternatives provides the 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 BLM State Directors a reasonable range of alternatives from which to make an informed decision. Decisions resulting from this RMP Amendment would apply to Federal surface lands and Federal subsurface mineral estate administered by the BLM in the decision area (see Section 1.3, *Planning Area and Decision Area*).

During the alternatives development process, the planning team complied with NEPA and CEQ regulations to implement procedural provisions of NEPA (40 CFR 1500–1508), including seeking public input. The BLM considered public comments received during the scoping process to identify major issues deserving of detailed study to develop alternatives. The BLM also met with cooperating agencies and considered their comments and recommendations while developing a reasonable range of alternatives.

In order to meet the planning criteria and respond to scoping issues and USFWS-identified threats, the alternatives include management options that could amend decisions in field office, NCA, and national monument RMPs across the planning area. The focus of the alternatives is to promote the recovery of GUSG and the conservation of its habitat. The RMP Amendment only modifies existing RMP decisions that affect GUSG conservation.

The alternatives outlined in this Draft RMP Amendment/EIS were designed to incorporate:

- The USFWS Final Recovery Plan for Gunnison Sage-Grouse (*Centrocercus minimus*) (USFWS 2020a) and associated Recovery Implementation Strategy for Gunnison Sage-Grouse (USFWS 2020b), including goals and objectives to conserve and enhance GUSG habitat.
- Applicable elements from related plans as listed in Chapter 1, Section 1.5.
- Comments received during the public scoping process to ensure that all issues and concerns were addressed, as appropriate, when developing the alternatives. The BLM

identified the issues to be addressed in the RMP Amendment/EIS based on broad concerns or controversies related to conditions, trends, needs, and existing and potential land use allocations, authorizations, and use of resources within the planning area.

- The BLM's Interdisciplinary Team (IDT) of resource specialists and cooperating agencies coordinated on the appropriate range of alternatives. As the alternatives were developed, the IDT and cooperating agencies were provided opportunities to review and comment, and their input was incorporated into the range of alternatives.

Ensuring the BLM fully considered threats to GUSG, as identified by the USFWS, was a key component of the alternatives development process. In developing management actions, the BLM began by evaluating threats and resource conditions in the USFWS Species Status Assessment (SSA) report (USFWS 2019), determining if the threat was identified during the scoping process, and then addressing the issue or threat within the applicable resource program. Table 2.1 summarizes the results of this process. Information on the specific management actions the BLM developed appears in Section 2.2.2, Detailed Alternatives.

Table 2.1. Applicable BLM Programs to Address Issues and USFWS Threats

USFWS Threat[1]	Scoping Issue	Applicable BLM Program Area for Addressing Threat
Habitat decline due to residential development and conversion to agriculture	No similar issue was identified.	No program specifically addresses habitat decline from residential development or conversion to agriculture. Habitat decline from other disturbances is addressed under the "Small population size and structure" threat below.
Effects of global climate change	Climate change	No program specifically addresses climate change; effects of climate change on resources will be analyzed.
Invasive plants	Invasive species	Vegetation, Livestock Grazing Management, Recreation, and best management practices and required design features for multiple programs
Pinyon-juniper encroachment	Vegetation management	Special Status Species and Vegetation
Improper grazing practices	Livestock grazing	Livestock Grazing Management
Disease	No similar issue was identified.	Best management practices and required design features for multiple programs.
Predation	Predation control	Special Status Species
Small population size and structure	Fish and Wildlife	Special Status Species, Recreation, Livestock Grazing Management, Lands and Realty Management, Mineral Split Estate, Fluid Minerals, Solid Minerals, Vegetation, Wildland Fire Ecology and Management, Wildlife, and Areas of Critical Environmental Concern
Drought	Drought management	Livestock Grazing Management and Vegetation
Recreation	Recreation and travel management	Recreation and Travel and Transportation Management

USFWS Threat[1]	Scoping Issue	Applicable BLM Program Area for Addressing Threat
No similar threat was identified	Special Management Areas	Areas of Critical Environmental Concern
No similar threat was identified	Lands with Wilderness Characteristics	Lands with Wilderness Characteristics

[1]As identified in the Final Recovery Plan for Gunnison Sage-Grouse (*Centrocercus minimus*) (USFWS 2020a).

2.1.2.1 Alternatives Considered but Not Analyzed in Detail

CEQ requires Federal agencies to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14(a)). This section describes the alternatives considered but not analyzed in detail and explains why they were dismissed from detailed analysis. Reasons for not carrying alternatives forward include: (1) they would not fulfill requirements of FLPMA or other existing laws or regulations; (2) they would not meet the purpose and need; (3) they were already a requirement of an existing plan, policy, or administrative function; or (4) they would be substantially similar to an alternative already analyzed in detail.

Protect Wilderness Characteristics Pursuant to BLM Manual 6320.06

Public comments received during scoping requested the BLM consider management specifically for the protection of wilderness characteristics. However, including management restrictions specifically to protect these characteristics is beyond the scope of this planning effort—the purpose and need for this RMP Amendment is limited to making land use planning decisions specific to the conservation of GUSG habitat. Instead, the BLM is evaluating allowable uses and management actions that could be applied consistently across all GUSG habitat under BLM jurisdiction. The BLM conducts wilderness characteristic inventories at agency discretion following BLM policy, and assesses impacts to wilderness characteristics during site-specific evaluation of projects such as vegetation treatments, that have the potential to result in impacts on this resource. At that time, alternatives will be considered to avoid or minimize the impacts on wilderness characteristics where possible, while still meeting the purpose and need for the project.

Alternative Similar to the Sage-Grouse Recovery Alternative for the Greater Sage-Grouse Bi-State Forest Plan Amendment for the Humboldt-Toiyabe National Forest

Public comments received during scoping requested the BLM consider an alternative that mirrored the approach taken in the Greater Sage-Grouse Bi-State Distinct Population Segment Forest Plan Amendment for the Humboldt-Toiyabe National Forest. The referenced plan describes desired conditions, objectives, standards, and guidelines to conserve, enhance, or restore sagebrush and associated habitats to provide for the long-term viability of the bi-state greater sage-grouse on National Forest System lands in the Carson Ranger District, in Nevada,

the Bridgeport Ranger District in California, and the Carson City and Battle Mountain BLM Districts in Nevada. The BLM reviewed the plan amendment for applicable actions that could be applied to this RMP Amendment. Where applicable, various actions from the Bi-State Plan Amendment, in whole or in part, were incorporated into the alternatives for this RMP Amendment. These actions include, but are not limited to, a surface disturbance cap within each population area, requiring pipeline compressors to be sited outside of habitat, prohibiting fence installation within 1.2 miles of leks, avoiding road placement in habitat, limiting noise at leks from anthropogenic disturbances to 10 decibels over ambient levels, and closing habitat to solid mineral leasing and mineral material development. Because this RMP Amendment encompasses a much broader geographic scope (approximately 2 million acres versus 0.5 million acres), the range of resource conditions and uses is also somewhat varied, and because it already incorporates many elements of the Bi-State Plan Amendment into the range of alternatives, the BLM determined that the Bi-State Plan Amendment did not warrant detailed analysis as a distinct alternative.

Alternative Consistent with Alternative D from the 2016 GUSG Rangewide Draft RMP Amendment/EIS

Public comments received during scoping requested the BLM include Alternative D from the 2016 GUSG Rangewide Draft RMP Amendment/EIS as an alternative in this RMP Amendment/EIS. The BLM reviewed Alternative D from the 2016 GUSG Rangewide Draft RMP Amendment/EIS (herein 2016 Alternative D) for applicability to this current planning effort with consideration for new science and data that has emerged since 2016, including the USFWS Final Recovery Plan for Gunnison Sage-Grouse (*Centrocercus minimus*) (USFWS 2020a) and associated Recovery Implementation Strategy for Gunnison Sage-Grouse (USFWS 2020b). In order to fully address the threats identified in the Final Recovery Plan and associated Recovery Implementation Strategy and align with current science, the BLM determined that management actions and allowable uses would need to be updated as part of the current planning effort. However, components of the 2016 Alternative D have been incorporated, where appropriate, into the range of alternatives.

2.2. ALTERNATIVES

2.2.1. Summary of Alternatives

This section summarizes the No Action – Current Management (Alternative A) and action alternatives (Alternatives B through E), the Areas of Critical Environmental Concern (ACEC) nominations, and the management common to all alternatives. The summary descriptions provide a general overview of each alternative, focused on the management emphasis associated with each alternative. Following the management common to all alternatives, Table 2.2 identifies a summary of the acres of how GUSG HMAs and non-habitat management areas

in the decision area would vary by alternative (see Special Status Species [SSS] Management Actions 3.1 and 3.2 for more details in Table 2.4 of the habitat management areas). A **management area** is a tool for describing portions of a planning area where multiple resources are desired to be managed for a comprehensive goal. Appendix C, *Special Status Species Supporting Information*, includes a table (Table C.1) that identifies the acreages of the habitat types by population for each alternative. In Table 2.3 the acreages in the action alternatives (Alternatives B through E) represent the acreages that BLM decisions would apply to specific to that alternative. Table 2.3 identifies the acreage that would be allocated or restricted for each resource or resource use, based on a number of factors including management actions and allowable uses. Table 2.3 also identifies acres designated as ACECs for each of the alternatives and as applied in this amendment. Table 2.3 can be useful in helping the reader understand the differences between the alternatives; however, there are limitations to the table. To understand the complete differences between the alternatives the reader should see the detailed description of the alternatives included in Table 2.4 through Table 2.32. For the No Action Alternative (Alternative A) the detailed management actions for all existing RMPs are included in Appendix B, *Detailed Alternative A, No Action Alternative*; Table 2.4 through Table 2.32 show a summary of the No Action Alternative. For this planning amendment effort, no change is proposed to existing RMP decisions that provide more protective measures for other resources beyond those specific to GUSG. For example, if there is an existing right-of-way (ROW) exclusion area to protect cultural resources, the existing decision developed during the localized planning process of the applicable RMP will prevail, if more protective. However, management actions specific to GUSG, including any that may be less or more restrictive, could be amended through this planning process. In addition, all management decisions recognize valid existing rights and are only applicable to BLM-administered surface lands and mineral estate.

2.2.1.1 Alternative A (No Action – Current Management)

Alternative A (No Action – Current Management) would continue current BLM management direction in the 11 RMP administrative units in the planning area. Allowable uses and restrictions would remain unchanged. Under this alternative, management and levels of protection for GUSG habitat are highly variable across administrative units. Several of the existing RMPs, especially those recently completed (as recent as 2020), provide management direction that meet the existing purpose and need of this amendment, while others completed in the early 1990s do not provide adequate protection for GUSG consistent with the latest measures and recently completed USFWS recovery plan. The BLM would continue to initiate informal or formal consultation with the USFWS, through biological assessments and biological opinions, for individual authorizations that may directly or indirectly affect the GUSG or their habitat. The details for Alternative A are included in Appendix B, *Detailed Alternative A, No Action Alternative.* Alternative A is described in brief summary statements that are included in the alternatives tables below (Table 2.4 through Table 2.32).

2.2.1.2 Alternative B

Alternative B would prioritize removing identified threats within occupied and unoccupied habitat and reducing impacts within a 4-mile buffer around habitat, and potential linkage-connectivity areas, to the maximum extent. Because this alternative focuses on eliminating threats over the greatest geographic range compared to the other alternatives, it is the most restrictive when it comes to other uses. For example, this alternative would make livestock grazing unavailable for this life of this plan, within some or all occupied and unoccupied habitat (depending on which sub-alternative is applied). The BLM would also designate all nominated ACECs that meet relevance and importance criteria; this includes an ACEC encompassing all GUSG occupied and unoccupied habitat, which overlaps all other nominated ACECs. Alternative B contains two sub-alternatives for livestock grazing management actions in response to recommendations made in public scoping comments.

2.2.1.3 Alternative C

Alternative C would achieve the purpose and need of the RMP Amendment by minimizing, avoiding, and compensating for impacts from resource uses and activities in occupied and unoccupied habitat. This alternative does not include creation of buffer zones around all occupied and unoccupied habitat and does not designate linkage-connectivity areas between populations. Instead, this alternative focuses on management within occupied and unoccupied habitat. Under this alternative, resource uses and other actions would be allowed if their impacts to GUSG could be avoided, minimized, or mitigated through compensatory mitigation. BLM would not designate any new ACECs for GUSG management under Alternative C, only carry forward currently designated GUSG ACECs.

2.2.1.4 Alternative D (Preferred Alternative)

Alternative D (Preferred Alternative) would achieve the purpose and need of the RMP Amendment by (1) strategically allocating resource uses and conserving resource values while sustaining and enhancing ecological integrity across the decision area, and (2) designating a specific subset of nominated ACECs where focused management and conservation actions can be strategically implemented. Under this alternative, conservation measures focus on occupied and unoccupied habitat and includes a 1-mile buffer around habitat and could extend to linkage-connectivity areas, based on the latest science, input from BLM specialists, and cooperating agencies, as appropriate. The BLM's identification of issues and management approaches for energy development, livestock grazing, recreation, and other program areas was informed by public scoping comments, guidance outlined in the USFWS Final Recovery Plan for Gunnison Sage-Grouse (*Centrocercus minimus*) (USFWS 2020a) and associated Recovery Implementation Strategy for Gunnison Sage-Grouse (USFWS 2020b), as well as related management direction from the BLM Greater Sage-Grouse RMP Amendment. Alternative D aims to ensure

consistency in management actions across the 11 RMP administrative units and implementation consistent with the USFWS Recovery Plan.

The BLM NEPA handbook (H-1790-1) and BLM Land Use Planning Handbook (H-1610-1) require the BLM to identify a preferred alternative in the Draft RMP Amendment/EIS. The preferred alternative represents those goals, objectives, and actions the BLM anticipates would be most effective at resolving planning issues and balancing resource uses. While collaboration is critical in developing and evaluating alternatives, the final designation of a preferred alternative remains the exclusive responsibility of the BLM. Alternative D represents the BLM's preferred alternative.

2.2.1.5 Alternative E

Alternative E considers adopting applicable management direction from the interagency CCA for the Gunnison Sage-Grouse, Gunnison Basin Population . Some of the goals of the CCA were to: (1) engage key stakeholders in the Gunnison Basin community in a collaborative planning and review process to support GUSG conservation, (2) prioritize conservation measures across occupied habitat, and (3) account for cumulative impacts of habitat fragmentation. Alternative E allows the BLM to compare elements of the CCA for the Gunnison Basin population to the other rangewide alternatives (B, C, D). This alternative would allow for different management actions to be applied within the Gunnison Basin, in cases where the management actions may need to be different than those applied in the satellite populations. The management actions analyzed in Alternative E would only apply to the Gunnison Basin for comparison purposes. In addition to applicable management from the CCA, with valuable input from cooperating agencies, Alternative E expands management direction for resources and resource uses in the Gunnison Basin not addressed in the CCA and applies management to unoccupied habitat, including 1-mile and 4-mile buffers, for some resources.

2.2.1.6 Area of Critical Environmental Concern Proposals

Areas of Critical Environmental Concern are areas within the 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. BLM regulations for implementing the ACEC provisions of FLPMA are found in 43 CFR 1610.7-2(a)(b) and as defined in BLM Manual 1613, Areas of Critical Environmental Concern (BLM 1988). ACECs differ from other administrative designations, such as WSAs, in that designation by itself does not automatically prohibit or restrict other uses in the area.

Of the 23 designated ACECs in the decision area (see Map A.79 [Appendix A], Currently Designated Areas of Critical Environmental Concern), only two are currently managed to protect Gunnison sage-grouse relevant and important values. In this planning effort, BLM is

considering the following currently designated ACECs, within GUSG habitat, to determine whether existing management prescriptions are adequate or necessary to protect the resources, values, or systems for which they were originally designated: the Gunnison Sage-Grouse ACEC/IBA in the Gunnison Gorge NCA and the Rough Canyon ACEC in the Grand Junction Field Office. One other existing, currently designated ACEC, the West Antelope Creek ACEC in the Gunnison Field Office, is within GUSG habitat and is currently managed with protections for GUSG resources, although the area was designated to protect big game habitat. Also, the BLM is evaluating the relevant management of the South Beaver Creek ACEC in the Gunnison Field Office, within GUSG habitat. The South Beaver Creek ACEC was designated to enhance and protect existing populations and habitat of Skiff Milkvetch (*Astragalus microcymbus*), a BLM sensitive plant species. However, over the years since designation, the expansion of cheatgrass has been an increasing threat to the South Beaver Creek ACEC, GUSG, skiff milkvetch, and the surrounding area.

Three areas that were previously **nominated** during the 2016 Gunnison Sage-Grouse Rangewide Draft RMP Amendment/EIS process and that met relevance and importance criteria are considered in this amendment: All Gunnison Sage-Grouse Habitat, Dry Creek Basin, and Northdale. The BLM is considering new proposed areas nominated internally by the BLM interdisciplinary team as well as during scoping by the public. ACEC nominations were evaluated to determine whether the relevance and importance of each ACEC are present and therefore require special management attention. To be designated as an ACEC, an area must require special management attention to protect the relevant and important values supporting designation. Appendix D, *Areas of Critical Environmental Concern Report*, provides detailed information on the ACEC analysis process and the relevance and importance criteria. The range of alternatives varies among the ACECs that are considered for designation and considers differing special management attention to protect the relevant and important values and size of the area, as described in Section 2.2.2, *Detailed Alternatives*.

2.2.1.7 Management Common to All Alternatives

The following management actions are common to all alternatives:

- Conserve, enhance, and restore the sagebrush ecosystem upon which GUSG populations depend in cooperation with other conservation partners.
- Comply with State and Federal laws, regulations, policies, and standards, including FLPMA's multiple-use mandate.
- Implement actions originating from laws, regulations, permits and policies that conform with day-to-day management, monitoring, and administrative functions not specifically addressed.
- Preserve valid existing rights, which include any leases, claims, or other use authorizations established before a new or modified authorization, change in land

designation, or new or modified regulation is approved. Existing fluid mineral leases are managed through the stipulations attached to the existing lease and, where supported by site-specific analysis, conditions of approval to an approved permit.

- Collaborate with adjacent landowners, Federal and State agencies, local governments, Tribal governments, communities, other agencies, and other individuals and organizations, as needed to monitor and implement decisions to achieve desired resource conditions.
- Provide protection for human safety and property from wildfire.

2.2.1.8 Comparative Summary of Alternatives

Table 2.2 identifies the acreages of the GUSG HMAs by alternative. Table 2.3 summarizes the resource use allocations and administrative designations in occupied and unoccupied HMAs and LCMAs, where applicable.

Table 2.2. Summary Comparison of Alternatives by GUSG Habitat Management Areas (BLM Surface and Federal Mineral Estate Acres)

Habitat Management Area	Alternative A (No Action)[1]	Alternative B	Alternative C	Alternative D	Alternative E (Gunnison Basin)
OHMA	470,830	556,760	556,760	556,760	372,590
UHMA	286,210	403,440	403,440	403,440	98,460
LCMA	0	285,660	0	285,660	0
Adjacent Non-habitat (1-mile buffer)	0	N/A	0	513,170	73,030
Adjacent Non-habitat (4-mile buffer)	0	1,459,390	0	N/A	175,390

N/A = not applicable
[1]OHMA and UHMA are strictly tied to USFWS critical habitat designation acreage.

Table 2.3. Summary of Resource Use Allocations and Administrative Designations in Occupied and Unoccupied Habitat by Alternative

Resource Use	Alternative A (No Action)[1]		Alternative B		Alternative C		Alternative D		Alternative E (Gunnison Basin)	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Livestock Grazing Management[2]										
Available for Livestock Grazing – OHMA	381,440	95%	B1: 0 B2: 0	B1: 0% B2: 0%	402,230	100%	402,230	100%	N/A	N/A
Available for Livestock Grazing – UHMA	245,960	93%	B1: 0 B2: 265,300	B1: 0% B2: 100%	265,300	100%	265,300	100%	N/A	N/A
Unavailable for Livestock Grazing – OHMA	3,490	1%	B1: 402,230 B2: 402,230	B1: 100% B2: 100%[3]	0	0%	0	0%	N/A	N/A
Unavailable for Livestock Grazing – UHMA	3,560	1%	B1: 265,300 B2: 0	B1: 100% B2: 0%	0	0%	0	0%	N/A	N/A
Recreation										
SRMAs – OHMA	17,670	5%	17,670	5%	17,670	5%	30,360	8%	15,720	4%
SRMAs – UHMA	59,270	23%	59,270	23%	76,590	30%	59,270	23%	6,730	3%
ERMAs – OHMA	307,810	79%	0	0%	307,810	79%	295,130	75%	276,260	71%
ERMAs – UHMA	95,060	37%	77,570	10%	95,060	5%	95,060	37%	55,510	22%
BCAs – OHMA	0	0%	0	0%	17,210	4%	0	0%	0	0%
BCAs – UHMA	0	0%	0	0%	0	0%	0	0%	0	0%
Travel and Transportation										
Open – OHMA	0	0%	0	0%	0	0%	0	0%	N/A	N/A
Open – UHMA	0	0%	0	0%	0	0%	0	0%	N/A	N/A
Limited – OHMA	385,970	99%	0	0%	386,660	99%	386,660	99%	N/A	N/A
Limited – UHMA	221,060	85%	0	0%	222,350	86%	222,350	86%	N/A	N/A
Closed to Motorized and Mechanized Travel – OHMA	4,820	1%	391,490	100%	4,820	1%	4,820	1%	N/A	N/A

Resource Use	Alternative A (No Action)[1]		Alternative B		Alternative C		Alternative D		Alternative E (Gunnison Basin)	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Closed to Motorized and Mechanized Travel – UHMA	36,160	14%	1,420	1%	36,280	14%	36,280	14%	1,420	1%
Closed to Motorized and Mechanized Travel – Adjacent Non-habitat (1-mile buffer)	0	0%	0	0%	0[4]	0%	73,600	20%	0	0%
Closed to Motorized and Mechanized Travel – Adjacent Non-habitat (4-mile buffer)	0	0%	4,300	0%	0[5]	0%	0[5]	0%	0	0%
Fluid Mineral Leasing										
Open with Standard Stipulations – OHMA	0[6]	0%	0	0%	0	0%	0	0%	0	0%
Open with Standard Stipulations – UHMA	0[6]	0%	0	0%	0	0%	0	0%	0	0%
CSU/TL – OHMA	28,930	5%	0	0%	0	0%	0	0%	7,570	1%
CSU/TL – UHMA	112,410	28%	0	0%	403,440	100%	0	0%	390	0%
NSO – OHMA	100,590	18%	0	0%	556,760	100%	90,350	16%	10,350	2%
NSO – UHMA	34,620	9%	0	0%	0	0%	128,760	32%	4,530	1%
NSO – Adjacent Non-habitat Areas	217,380	15%	4,830	<1%	0	0%	0	0%	0	0%
Closed – OHMA	31,410	6%	556,760	100%	0	0%	466,410	84%	0	0%
Closed – UHMA	105,380	26%	403,440	100%	0	0%	274,680	68%	0	0%
Locatable Mineral Withdrawal										
Open to Mineral Entry – OHMA	506,120	91%	0	0%	0	0%	423,450	76%	319,000	57%
Open to Mineral Entry – UHMA	321,470	80%	0	0%	321,470	80%	319,940	79%	85,570	21%
Existing Withdrawals – OHMA	50,630	9%	50,630	9%	50,630	9%	50,630	9%	27,260	5%

Resource Use	Alternative A (No Action)[1]		Alternative B		Alternative C		Alternative D		Alternative E (Gunnison Basin)	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Existing Withdrawals – UHMA	81,970	20%	81,970	20%	81,970	20%	81,970	20%	12,740	3%
Recommended Withdrawals – OHMA	0	0%	506,120	91%	506,120	91%	82,670	15%	26,330	5%
Recommended Withdrawals – UHMA	0	0%	321,470	80%	0	0%	1,530	<1%	150	<1%
Salable Minerals – Mineral Material Disposal										
Open – OHMA	186,640	34%	0	0%	0	0%	0	0%	0	0%
Open – UHMA	60,380	15%	0	0%	0	0%	341,050	85%	97,880	24%
Open – Decision Area outside OHMA	0	0%	0	0%	1,728,430	75%	0	0%	0	0%
Closed – OHMA	10,057	2%	556,760	100%	556,760	100%	556,760	100%	372,590	67%
Closed – UHMA	62,540	16%	403,440	100%	0	0%	62,390	15%	570	0%
Closed – Adjacent Non-habitat (4-mile buffer)	0	0%	1,459,390	100%	0	0%	0	0%	0	0%
Closed – Linkage Connectivity Area	0	0%	285,660	100%	0	0%	0	0%	0	0%
Non-energy Solid Leasable Minerals										
Open – OHMA	82,650	15%	0	0%	0	0%	0	0%	0	0%
Open – UHMA	98,730	24%	0	0%	297,540	74%	297,540	74%	98,460	24%
Open – Decision Area outside OHMA	1,111,070	48%	0	0%	1,771,770	77%	1,771,770	77%	98,460	4%
Open – Decision Area outside OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile buffer)	263,900	66%	310,280	77%	0	0%	0	0%	0	0%
Closed – OHMA	24,260	4%	556,760	100%	556,760	100%	556,760	100%	372,590	67%
Closed – UHMA	105,910	26%	403,440	100%	105,910	26%	105,910	26%	0	0%

Resource Use	Alternative A (No Action)[1]		Alternative B		Alternative C		Alternative D		Alternative E (Gunnison Basin)	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Closed – Adjacent Non-habitat (4-mile buffer)	323,860	22%	1,459,390	100%	0	0%	0	0%	0	0%
Lands and Realty – ROW										
ROW Avoidance – OHMA	28,970	7%	0	0%	391,490	100%	304,350	78%	291,980	75%
ROW Avoidance – UHMA	73,320	28%	0	0%	0	0%	257,150	99%	0	0%
ROW Avoidance – Linkage Connectivity Areas	0	0%	214,250	100%	0	0%	0	0%	0	0%
ROW Exclusion – OHMA	4,090	1%	391,490	100%	0	0%	87,140	22%	0	0%
ROW Exclusion – UHMA	44,870	17%	258,630	100%	0	0%	1,480	1%	0	0%
Lands and Realty – Disposal										
Available for Disposal - OHMA	13,090	3%	0	0%	13,090	3%	0	0%	240	<1%
Available for Disposal - UHMA	14,110	5%	0	0%	14,110	5%	0	0%	450	<1%
Renewable Energy – Wind and Solar Energy										
Wind Avoidance – OHMA	19,540	5%	0	0%	0	0%	0	0%	0	0%
Wind Avoidance – UHMA	62,610	24%	0	0%	258,630	100%	0	0%	62,280	24%
Wind Exclusion – OHMA	6,340	2%	391,490	100%	391,490	100%	391,490	100%	291,980	75%
Wind Exclusion – UHMA	35,170	14%	258,630	100%	0	0%	258,630	100%	0	0%

Resource Use	Alternative A (No Action)[1]		Alternative B		Alternative C		Alternative D		Alternative E (Gunnison Basin)	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Wind Exclusion – Linkage Connectivity Areas	0	0%	214,250	100%	0	0%	0	0%	0	0%
Wind Exclusion – Adjacent Non-habitat (4-mile buffer)	0	0%	1,124,310	100%	0	0%	0	0%	0	0%
Solar Avoidance – OHMA	0	0%	0	0%	0	0%	0	0%	0	0%
Solar Avoidance – UHMA	0	0%	0	0%	258,630	100%	0	0%	62,280	24%
Solar Exclusion – OHMA	390,270	100%	391,490	100%	391,490	100%	391,490	100%	291,980	75%
Solar Exclusion – UHMA	255,910	99%	258,630	100%	0	0%	258,630	100%	0	0%
Solar Exclusion – Linkage Connectivity Areas	0	0%	214,250	100%	0	0%	0	0%	0	0%
Solar Exclusion – Adjacent Non-habitat (4-mile buffer)	0	0%	1,124,310	100%	0	0%	0	0%	0	0%
Areas of Critical Environmental Concern (where GUSG is a relevant and important value for designation)[7]										
Gunnison Sage-Grouse ACEC/IBA – OHMA	21,440	5%	21,440	5%	21,440	5%	21,440	5%	0	0%
Gunnison Sage-Grouse ACEC/IBA – UHMA	180	0%	180	0%	180	0%	180	0%	0	0%
All Gunnison Sage-Grouse Habitat – OHMA	0	0%	391,490	100%	0	0%	0	0%	0	0%
All Gunnison Sage-Grouse Habitat – UHMA	0	0%	258,630	100%	0	0%	0	0%	0	0%

Resource Use	Alternative A (No Action)[1]		Alternative B		Alternative C		Alternative D		Alternative E (Gunnison Basin)	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Gunnison Sage-Grouse Satellite Population Habitat – OHMA	0	0%	99,500	25%	0	0%	0	0%	0	0%
Gunnison Sage-Grouse Satellite Population Habitat – UHMA	0	0%	196,350	76%	0	0%	0	0%	0	0%
Dry Creek Basin – OHMA	0	0%	34,660	9%	0	0%	10,870	3%	0	0%
Dry Creek Basin – UHMA	0	0%	0	0%	0	0%	0	0%	0	0%
South Parlin – OHMA	0	0%	25,910	7%	0	0%	0	0%	0	0%
South Parlin – UHMA	0	0%	0	0%	0	0%	0	0%	0	0%
Chance Gulch – OHMA	0	0%	22,660	6%	0	0%	13,150	3%	0	0%
Chance Gulch – UHMA	0	0%	0	0%	0	0%	0	0%	0	0%
North Parlin – OHMA	0	0%	17,900	5%	0	0%	0	0%	0	0%
North Parlin – UHMA	0	0%	0	0%	0	0%	0	0%	0	0%
Kezar Basin – OHMA	0	0%	16,270	4%	0	0%	0	0%	0	0%
Kezar Basin – UHMA	0	0%	0	0%	0	0%	0	0%	0	0%
Sugar Creek – OHMA	0	0%	17,210	4%	0	0%	17,210	4%	0	0%
Sugar Creek – UHMA	0	0%	0	0%	0	0%	0	0%	0	0%
Sapinero Mesa – OHMA	0	0%	16,020	4%	0	0%	15,960	4%	0	0%
Sapinero Mesa – UHMA	0	0%	670	0%	0	0%	1,280	0%	0	0%
Ohio Creek – OHMA	0	0%	8,970	2%	0	0%	0	0%	0	0%
Ohio Creek – UHMA	0	0%	0	0%	0	0%	0	0%	0	0%
Waunita – OHMA	0	0%	8,360	2%	0	0%	0	0%	0	0%
Waunita – UHMA	0	0%	0	0	0	0%	0	0%	0	0%
Northdale – OHMA	0	0%	5,230	1%	0	0%	0	0%	0	0%

Resource Use	Alternative A (No Action)[1]		Alternative B		Alternative C		Alternative D		Alternative E (Gunnison Basin)	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Northdale – UHMA	0	0%	0	0%	0	0%	0	0%	0	0%
Rough Canyon – OHMA	0	0%	0	0%	0	0%	0	0%	0	0%
Rough Canyon – UHMA	0	0%	0	0%	0	0%	0	0%	0	0%
West Antelope Creek – OHMA	23,360	6%	23,360	6%	23,360	6%	23,360	6%	23,360	6%
West Antelope Creek – UHMA	150	0%	150	0%	150	0%	150	0%	150	0%
South Beaver Creek– OHMA	4,520	1%	4,520	1%	4,520	1%	4,520	1%	4,520	1%
South Beaver Creek– UHMA	0	0%	0	0%	0	0%	0	0%	0	0%

[1]OHMA and UHMA are strictly tied to USFWS critical habitat designation acreage.
[2]Acreage includes BLM-administered livestock grazing allotments on approximately 9,580 acres on NPS-administered Curecanti National Recreation Area. Acres unavailable to livestock grazing would be for the life of the RMP Amendment.
[3]Seasonal closure; OHMA unavailable for livestock grazing March 1 to July 15.
[4] The 1-mile buffer does not apply to Alternative C, therefore 0 acres listed under Alternative C; however, areas already managed as closed in this buffer area would be carried forward and include the same acreage as under Alternative D.
[5] The 4-mile buffer does not apply to Alternatives C and D, therefore 0 acres are listed under these alternatives; however, areas already managed as closed in this buffer area would be carried forward.
[6] Fluid mineral data is not available for the Gunnison Basin; fluid mineral leasing in the Gunnison Basin would default to Open with standard stipulations.
[7]Acreage for ACECs only includes BLM-administered surface land.
OHMA = occupied habitat management area; UHMA = unoccupied habitat management area; SRMA = special recreation management area; ERMA = extensive recreation management area; BCA = backcountry conservation area; ROW = right-of-way; NSO = no surface occupancy; CSU = controlled surface use; TL = timing limitation; IBA = important bird area

2.2.2. Detailed Alternatives

This section presents the detailed alternatives tables for each resource and resource use with the goals, objectives, management actions, allowable uses, and administrative designations for each alternative. In the tables, Alternative A provides a general summary of actions for all current plans; see Appendix B, Detailed No Action Alternative, Alternative A for specific actions. This section is organized by program area, beginning with the special status species program, which identifies specific goals, objectives, and management actions for GUSG and its habitat. Below are the resources and resource uses included in the detailed alternatives tables.

2.2.2.1 Special Status Species

Table 2.4. Comparison of Alternatives: Special Status Species

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
1	***SSS GOAL*** *Conservation and Recovery*	N/A	Promote recovery and resiliency of GUSG populations by conserving, enhancing, or restoring the sagebrush ecosystems which populations depend on, in collaboration with other conservation partners.			
2	***SSS OBJECTIVE 1*** *Coordination*	Several plans require coordination with various working groups and other agencies for GUSG conservation.	Conserve existing habitats by collaborating with State and local governments and private landowners to improve public awareness, incentives, and resources for conservation (*RIS p. 6*). Participate in local GUSG conservation efforts and working groups to implement landscape-scale habitat conservation, support consistent management to benefit GUSG, and to gather and use local research and monitoring to inform and promote the conservation and recovery of GUSG (*UT GRSG*).	Same as Alternative B.	Same as Alternative B.	Engage key stakeholders in the Gunnison Basin community in a collaborative planning and review process to support sage-grouse conservation. Building on the trajectory of collaborative, bottom-up grouse management by the Strategic Committee and larger Gunnison Basin community, the CCA process was designed such that public partners worked alongside Authorized Officers to build the key components and conservation measures.
3	***SSS OBJECTIVE 2*** *GUSG Populations*	All plans generally highlight an objective to manage, maintain, enhance, restore, and/or protect GUSG habitat, sagebrush habitat, and/or sensitive species populations and their habitats. Not all plans outline a specific objective for GUSG. Some plans have Standard Operating Procedures and Best Management Practices (BMPs).	Maintain, and increase where possible, the abundance, distribution, and viability of GUSG populations and habitats (*RCP p. 5*).	Maintain and increase GUSG populations within Occupied habitat management areas.	Same as Alternative B.	Same as Alternative B.
4	***SSS OBJECTIVE 3*** *Habitat Management Areas (Occupied, Unoccupied, Linkage-Connectivity, Adjacent Non-habitat)*	Generally, all plans include objectives specific to management of special status species and habitat. Five management plans designate special habitat management areas.	Identify objectives for Occupied and Unoccupied Habitat Management Areas (HMAs) within all eight GUSG populations. Identify objectives for Linkage-Connectivity Management Areas. **Occupied (OHMA):** Conserve and sustain connected sagebrush areas. Maintain and improve habitat quality, quantity, and connectivity by restoring sagebrush ecosystems (*FWS RP*). **Unoccupied (UHMA):** Improve habitat quality and quantity by restoring sagebrush ecosystems (*FWS RP*). **Linkage-Connectivity (LCMA):** Identify and prioritize areas for habitat enhancement and connectivity. In adjacent opportunity areas or areas that offer potential connectivity within and between populations; maintain, improve, and restore GUSG habitat, or associated vegetation	Identify objectives for Occupied and Unoccupied Habitat Management Areas (HMAs) within all eight GUSG populations. **Occupied (OHMA):** Conserve and sustain connected sagebrush areas. Maintain and improve habitat quality, quantity, and connectivity by restoring sagebrush ecosystems (*FWS RP*). **Unoccupied (UHMA):** Minimize threats and impacts to GUSG (e.g., disturbance, development, predators, infrastructure, etc.) within suitable and potential habitat. **Linkage-Connectivity (LCMA):** No similar action. **Adjacent Non-habitat:** No similar action.	*Same as Alternative B, except the language for Adjacent Non-habitat has changed.* Identify objectives for Occupied and Unoccupied Habitat Management Areas (HMAs) within all eight GUSG populations. Identify objectives for Linkage-Connectivity Management Areas. **Occupied (OHMA):** Conserve and sustain connected sagebrush areas. Maintain and improve habitat quality, quantity, and connectivity by restoring sagebrush ecosystems (*FWS RP*). [Same as Alternative B] **Unoccupied (UHMA):** Improve habitat quality and quantity by restoring sagebrush ecosystems (*FWS RP*). [Same as Alternative B] **Linkage-Connectivity (LCMA):** Identify and prioritize areas for habitat enhancement and connectivity. In adjacent	*Same as Alternative D, except objectives for Tier 1 and Tier 2 within OHMA have been identified.* Manage OHMA as Tier 1 and Tier 2 Habitat. Tier 1: Apply conservation measures and implementation framework to reduce existing net fragmentation and increase Tier 1 habitat. Tier 2: Apply conservation measures and implementation framework to avoid additional net fragmentation. **Occupied (OHMA):** Conserve and sustain connected sagebrush areas. Maintain and improve habitat quality, quantity, and connectivity by restoring sagebrush ecosystems (*FWS RP*). [Same as Alternative B]

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			types, to support GUSG populations and to maintain or enhance connectivity. **Adjacent Non-habitat (4-mile buffer on OHMA/UHMA):** Minimize threats and impacts to GUSG (e.g., disturbance, development, predators, infrastructure, etc.) within suitable, potential, or associated habitat types within 4 miles of adjacent OHMA and UHMA.		opportunity areas or areas that offer potential connectivity within and between populations; maintain, improve, and restore GUSG habitat, or associated vegetation types, to support GUSG movement or enhance connectivity. [Same as Alternative B] **Adjacent Non-habitat (1-mile buffer on OHMA/UHMA):** Minimize effects of discrete activities which may impact GUSG populations and their habitats for projects proposed within 1-mile of adjacent OHMA and UHMA. Minimize effects (direct and indirect) from discrete anthropogenic disturbances in areas that may impact GUSG populations or their habitat.	**Unoccupied (UHMA):** Improve habitat quality and quantity by restoring sagebrush ecosystems (*FWS RP*). [Same as Alternative B] **Linkage-Connectivity (LCMA):** Identify and prioritize areas for habitat enhancement and connectivity. In adjacent opportunity areas or areas that offer potential connectivity within and between populations; maintain, improve, and restore GUSG habitat, or associated vegetation types, to support GUSG movement or enhance connectivity. [Same as Alternative B] **Adjacent Non-habitat (1-mile buffer on OHMA/UHMA):** Minimize effects of discrete activities which may impact GUSG populations and their habitats for projects proposed within 1-mile of adjacent OHMA and UHMA. Minimize effects (direct and indirect) from discrete anthropogenic disturbances in areas that may impact GUSG populations or their habitat.
5	***SSS Management Action 3.1*** *Habitat Management Areas* *(Occupied, Unoccupied, Linkage-Connectivity, Adjacent Non-habitat)*	Several plans have habitat designations such as leks, lek areas, brood rearing-habitat, important winter habitat, occupied habitat, suitable habitat, etc. Definitions of these designations are variable across different land use plans.	Identify OHMA, UHMA, LCMA, and Adjacent Non-habitat as follows: No habitat exception criteria for OHMA or UHMA (see SSS Management Action 3.2). **OHMA:** Areas of suitable continuous habitat, which do not have effective barriers to GUSG movement from known use areas, where breeding takes place or is known to have taken place previously (*RCP p. 54, FWS RP*). **UHMA:** Areas outside of occupied habitat that were likely formerly occupied by GUSG and may still contain some of the appropriate biological and physical characteristics for GUSG habitat recovery (*FWS RP*). While some areas of unoccupied habitat may need practical restoration and/or treatments to provide the desired habitat characteristics for GUSG, there are some unoccupied habitat inclusion areas that currently have the potential to support GUSG, but these habitats are not contiguous with occupied habitat or current occupancy of GUSG is unknown. Other areas within unoccupied habitat may not	*Same as Alternative B, except no LCMA and no Adjacent Non-habitat areas are identified.* Identify OHMA and UHMA as follows: Allow habitat exception criteria in OHMA and UHMA (see SSS Management Action 3.2). **OHMA:** Areas of suitable continuous habitat, which do not have effective barriers to GUSG movement from known use areas, where breeding takes place or is known to have taken place previously (*RCP p. 54, FWS RP*). **UHMA:** Areas outside of occupied habitat that were likely formerly occupied by GUSG and may still contain some of the appropriate biological and physical characteristics for GUSG habitat recovery (*FWS RP*). While some areas of unoccupied habitat may need practical restoration and/or treatments to provide the desired habitat characteristics for GUSG, there are some unoccupied habitat inclusion areas that currently have the potential to support GUSG, but these habitats are not	*Same as Alternative B, except the Adjacent Non-habitat Area buffer has been reduced to 1-mile.* Identify OHMA, UHMA, LCMA, and Adjacent Non-habitat as follows: Allow habitat exception criteria in OHMA, UHMA, and LCMA (see SSS Management Action 3.2). **OHMA:** Areas of suitable continuous habitat, which do not have effective barriers to GUSG movement from known use areas, where breeding takes place or is known to have taken place previously (*RCP p. 54, FWS RP*). **UHMA:** Areas outside of occupied habitat that were likely formerly occupied by GUSG and may still contain some of the appropriate biological and physical characteristics for GUSG habitat recovery (*FWS RP*). While some areas of unoccupied habitat may need practical restoration and/or treatments to provide the desired habitat characteristics for GUSG, there are some unoccupied habitat inclusion areas that currently have the potential to support	*Same as Alternative D, except within OHMA Tier 1 and Tier 2 habitat areas have been identified.* Within OHMA, identify Tier 1 and Tier 2 habitat as follows: **Tier 1:** Roughly 60% of occupied sage-grouse habitat within the Gunnison Basin that is generally characterized by two or more overlapping seasonal habitats. **Tier 2:** Roughly 40% of occupied sage-grouse habitat within the Gunnison Basin that is generally more fragmented, and/or has only one seasonal habitat as compared to Tier 1, across the area. **OHMA:** Areas of suitable continuous habitat, which do not have effective barriers to GUSG movement from known use areas, where breeding takes place or is known to have taken place previously (*RCP p. 54, FWS RP*). **UHMA:** Areas outside of occupied habitat that were likely formerly occupied by GUSG and may still contain some of the appropriate biological and physical characteristics for GUSG habitat

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			support GUSG and restoration may not be practical (*adapted from RCP p. 54)*. **LCMA:** Areas that have been identified as potential broad regions of connectivity that may facilitate the movement of GUSG between populations or habitat areas. Areas offer a heterogeneous landscape, within the historical range of GUSG, composed of isolated patches of landcover types that may be used by sage-grouse for movement. Potential habitat within LCMA is composed of a mosaic of contrasting landforms, landcover types, and land uses (*adapted from RCP p.163 and UT GRSG*). **Adjacent Non-habitat: Areas within a 4-mile buffer** around OHMA and UHMA that are considered non-habitat because they do not contribute to the annual life-cycle of GUSG.	contiguous with occupied habitat or current occupancy of GUSG is unknown. Other areas within unoccupied habitat may not support GUSG and restoration may not be practical will be managed as Adjacent Non-habitat (*adapted from RCP p. 54)*.	GUSG, but these habitats are not contiguous with occupied habitat or current occupancy of GUSG is unknown. Other areas within unoccupied habitat may not support GUSG and restoration may not be practical (*adapted from RCP p. 54)*. **LCMA:** Areas that have been identified as potential broad regions of connectivity that may facilitate the movement of GUSG between populations or habitat areas. Areas offer a heterogeneous landscape, within the historical range of GUSG, composed of isolated patches of landcover types that may be used by sage-grouse for movement. Potential habitat within LCMA is composed of a mosaic of contrasting landforms, landcover types, and land uses (*adapted from RCP p.163 and UT GRSG*). **Adjacent Non-habitat: Areas within a 1-mile buffer** around OHMA and UHMA that are considered non-habitat because they do not contribute to the annual life-cycle of GUSG.	recovery (*FWS RP*). While some areas of unoccupied habitat may need practical restoration and/or treatments to provide the desired habitat characteristics for GUSG, there are some unoccupied habitat inclusion areas that currently have the potential to support GUSG, but these habitats are not contiguous with occupied habitat or current occupancy of GUSG is unknown. Other areas within unoccupied habitat may not support GUSG and restoration may not be practical (*adapted from RCP p. 54)*. **LCMA:** Areas that have been identified as potential broad regions of connectivity that may facilitate the movement of GUSG between populations or habitat areas. Areas offer a heterogeneous landscape, within the historical range of GUSG, composed of isolated patches of landcover types that may be used by sage-grouse for movement. Potential habitat within LCMA is composed of a mosaic of contrasting landforms, landcover types, and land uses (*adapted from RCP p.163 and UT GRSG*). **Adjacent Non-habitat: Areas within a 1-mile buffer** around OHMA and UHMA that are considered non-habitat because they do not contribute to the annual life-cycle of GUSG.
6	***SSS Management Action 3.2*** *Habitat Exception Criteria* *(Occupied, Unoccupied, Linkage-Connectivity, Adjacent Non-habitat)*	All plans: no similar action.	No similar action.	The habitat management boundaries are not intended to represent a survey-grade boundary and are not expected to be used exclusively for habitat determinations at a project or site-level scale. In accordance with the adaptive management framework and existing law, regulation and policy, inventories will continue to be conducted to provide information on GUSG habitat and distribution (FLPMA, 43 USC 1701 Sec. 201 (a), BLM Manual 6840.04 D 3; BLM-M-6840.04 E 2). Prior to considering proposed actions within OHMA or UHMA, a field investigation should be conducted by a qualified biologist and the interdisciplinary team, in collaboration with Federal and State biologists. If in the review of a proposed action, there are discrepancies between the mapped habitat management	Same as Alternative C.	OHMA: Rely on Habitat Prioritization Tool (HPT). OHMA boundary is defined by CPW and updated every 5 years, minimum. UHMA: Same as Alternative C.

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
				areas and the site-specific conditions, then these aspects will be disclosed, with supporting data (e.g., vegetation monitoring, State and transition models, ecological site descriptions, etc.) and analyzed through a NEPA process. A final determination, based on the site-specific analysis, on whether the specific management or proposed action would be applied within the identified management area would be issued. The objectives and management decisions would apply within the respective OHMA and UHMA polygons to existing sagebrush areas and areas with the ecological potential to have sagebrush as one of the vegetative components. In the mapped OHMA and UHMA there may be areas that lack the principle habitat components necessary for GUSG, including but not limited to rock outcrops, alkaline flats, pinyon-juniper ecological sites, and Douglas-fir and associated conifer forest. These are areas that may not have existing sagebrush or ecological potential to contain sagebrush, however indirect and direct impacts to GUSG populations or their habitat still need to be considered when planning and authorizing projects within OHMA and UHMA. These areas of non-habitat may be identified during a site-specific project review by agency biologists, in coordination with the appropriate State and Federal agency biologist. Because of the importance of occupied and unoccupied habitat to conserve, enhance, and restore GUSG populations, the objectives and management decisions will apply to all the areas within the respective OHMA and UHMA polygons, including areas of non-habitat unless **all of the** following criteria are met. Exception criteria will be based on the following items, all criteria must be met for an exception to be permitted: • The non-habitat does not have the potential to provide important linkage-connectivity: (1) within or between populations, (2) between seasonal		

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
				habitats (e.g., habitat indicators and guidelines), or (3) within or between existing or potential habitat; • Access through GUSG habitat (as verified through site-specific field checks) only occurs on existing routes, and no new roads or upgrades to roads that would change vehicle use, vehicle type, or traffic volume. • All direct and indirect impacts to adjacent seasonal habitats or individuals occupying the habitat would not occur due to project design and required design features (RDFs) (e.g., minimize noise, preclude tall structures, require perch deterrents, etc.), as demonstrated in the project's NEPA document. • Coordination with the appropriate Federal and State agencies has occurred (i.e., USFWS and State Wildlife Agency). Any exception granted based on the above criteria would only apply to the site-specific project-level authorization. Proposed projects in the same area would need to undergo individual analysis to confirm the criteria are met prior to subsequent authorizations. Excepting a site-specific project from conformance with GUSG management in an area of non-habitat would not change the boundaries of OHMA or UHMA or alleviate the BLM from its consultation obligations with the USFWS. Exceptions may only be granted by the Authorized Officer. If there is not concurrence between the coordinating State and/or Federal agencies, then the decision will be at the discretion of the BLM State Director.		
7	***SSS Management Action 3.3*** Adjacent Non-habitat	All plans: no similar action.	Minimize impacts to GUSG populations and their habitats for projects proposed within Adjacent Non-habitat (4-mile buffer of OHMA and UHMA). Incorporate the Habitat Assessment Framework (HAF) mid- and fine-scale assessments (Appendix F, Habitat Monitoring and Reporting) into the analysis and decision-making process.	No similar action.	During implementation, analyze effects of discrete activities which may impact GUSG populations and their habitats for projects proposed within Adjacent Non-habitat (1-mile buffer of OHMA and UHMA). Incorporate the HAF mid- and fine-scale assessments into the analysis and decision-making process. Minimize effects (direct	Same as Alternative D.

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			Minimize effects (direct and indirect) from discrete anthropogenic disturbances in areas that may impact GUSG populations or their habitat. If site-specific analysis shows a potential to adversely affect GUSG populations or their habitat (direct or indirect), consider other alternatives for authorization and/or apply minimization measures and RDFs.		and indirect) from discrete anthropogenic disturbances in areas that may impact GUSG populations or their habitat. If site-specific analysis shows a potential to adversely affect GUSG populations or their habitat (direct or indirect), consider other viable alternatives for authorization and/or apply minimization measures and RDFs.	
8	***SSS OBJECTIVE 4*** Landscape Habitat Objective (HAF mid- and fine scale)	Several plans have habitat objectives at the landscape scale. No plans have landscape level objectives at the HAF mid- and fine scale.	Manage OHMA and UHMA to provide suitable habitat for GUSG (where ecological site potential allows), by managing for connected mosaics of sagebrush shrublands that provide for seasonal habitats, dispersal, and migration, while limiting anthropogenic disturbances. This objective will be accomplished through the combination of RMP land use allocations and management actions, proactive habitat treatments, and application of mitigation (avoiding, minimizing, and compensating) to internal and external project proposals.	Manage OHMA to provide connected sagebrush shrublands that provide for seasonal habitats, dispersal, and migration while limiting anthropogenic disturbances.	Same as Alternative B.	In OHMA manage Tier 1 habitat to reduce net fragmentation. In Tier 2 habitat avoid additional net fragmentation. In UHMA, same as Alternative B.
9	***SSS Management Action 4.1*** (HAF mid- and fine scale)	All plans**:** no similar action.	In OHMA and UHMA, assess the suitability of GUSG habitat at HAF mid- and fine-scales based on the methods in the Sage-Grouse Habitat Assessment Framework (Stiver et al. 2015, BLM TR 6710-1, as revised), BLM Implementation Guidelines, and the Habitat Indicators and Guidelines Table (Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*).	*Same as B, except only applies to OHMA.* In OHMA assess the suitability of GUSG habitat at HAF mid- and fine-scales based on the methods in the Sage-Grouse Habitat Assessment Framework (Stiver et al. 2015, BLM TR 6710-1, as revised), BLM Implementation Guidelines, and the Habitat Indicators and Guidelines Table (Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*).	Same as Alternative B.	In OHMA use the RCP Habitat Guidelines data collection protocol. In UHMA, same as Alternative B.
10	***SSS Management Action 4.2*** *Density Cap*	All plans: no similar action.	No similar action.	Manage OHMA and UHMA, by population so the density of energy and mining facilities do not exceed an average of 1 facility per 640 acres in the management area. Energy and mining facilities include: • Oil and gas wells and development facilities • Wind towers • Solar fields • Geothermal • Mining (active locatable, leasable, and salable developments) In OHMA and UHMA where the density cap is exceeded from any source, no	No similar action.	No similar action.

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
				further energy or mining facilities will be permitted by the BLM (excluding valid existing rights) and no new leasing within OHMA and UHMA until enough facilities have been removed to maintain the area under this threshold (subject to valid existing rights).		
11	***SSS Management Action 4.3*** *Surface Disturbance Cap*	All plans: no similar action.	Apply minimization criteria (SSS Management Action 12) to minimize anthropogenic surface-disturbing activities within OHMA and UHMA. Co-locate, consolidate, and cluster localized disturbances as much as possible to maintain and conserve in-tact, connected sagebrush habitat areas. Manage OHMA and UHMA, by population, so that discrete anthropogenic disturbances, regardless of ownership, (whether temporary or permanent) cover less than 1% of OHMA and UHMA independently (i.e., 1% cap for each HMA by population) (see Appendix N, *Methodology for Calculating Disturbance Caps*). Application of the disturbance cap would only apply to BLM-administered lands. Anthropogenic features included in the numerator of the disturbance cap calculation include the following specific activities associated with habitat degradation: • Oil and gas well pads and development facilities • Wind towers • Solar fields • Geothermal development facilities • Mining (active locatable, nonenergy leasable, and salable developments) • Roads • Primitive roads • Railroads • Power lines • Communication towers • Other vertical structures and developed rights-of-way with habitat degradation • Coal bed methane ponds	*Same as Alternative B, except the disturbance cap is 3%, only applies to OHMA and primitive roads, landfills, and subdivisions are not included within the disturbance calculation. In addition, the language for removing a disturbance from the calculation is different.* Apply minimization criteria (SSS Management Action 12) to minimize anthropogenic surface-disturbing activities within OHMA. Co-locate, consolidate, and cluster localized disturbances as much as possible to maintain and conserve in-tact, connected sagebrush habitat areas. Manage OHMA, by population, so that discrete anthropogenic disturbances, regardless of ownership, (whether temporary or permanent) cover less than 3% of OHMA (i.e., 3% cap for OHMA by population) (see Appendix N, *Methodology for Calculating Disturbance Caps*). Application of the disturbance cap would only apply to BLM-administered lands. Anthropogenic features included in the numerator of the disturbance cap calculation include the following specific activities associated with habitat degradation: • Oil and gas well pads and development facilities • Wind towers • Solar fields • Geothermal development facilities • Mining (active locatable, nonenergy leasable, and salable developments) • Roads • Railroads • Power lines • Communication towers	*Same as Alternative B, except the disturbance cap is 2% for OHMA and 3% for UHMA, and primitive roads, landfills, and subdivisions are not included within the disturbance calculation. In addition, the language for removing a disturbance from the calculation is different.* Apply minimization criteria (SSS Management Action 12) to minimize anthropogenic surface-disturbing activities within OHMA and UHMA. Co-locate, consolidate, and cluster localized disturbances as much as possible to maintain and conserve in-tact, connected sagebrush habitat areas. Manage OHMA and UHMA, by population, so that discrete anthropogenic disturbances, regardless of ownership, (whether temporary or permanent) cover less than 2% of OHMA and 3% of UHMA independently (i.e., cap for each HMA by population) (see Appendix N, *Methodology for Calculating Disturbance Caps*). Application of the disturbance cap would only apply to BLM-administered lands. Anthropogenic features included in the numerator of the disturbance cap calculation include the following specific activities associated with habitat degradation: • Oil and gas well pads and development facilities • Wind towers • Solar fields • Geothermal development facilities • Mining (active locatable, nonenergy leasable, and salable developments) • Roads • Railroads • Power lines	In OHMA, apply CCA Section 4.2 Standard/General Minimization Measures and Section 4.4 Miscellaneous Infrastructure applies. For UHMA, same as Alternative D.

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			• Meteorological towers (e.g., wind energy testing) • Nuclear energy facilities • Airport facilities and infrastructure • Military range facilities and infrastructure • Hydroelectric plants • Recreation area facilities and infrastructure larger than 0.25 acres • Landfills • Subdivisions (areas with development of ≥ 3 housing points) The following would be excluded from the disturbance cap calculation: • Existing developed agriculture. • Areas in OHMA/UHMA that have burned, unless the proposed disturbance is within the burned area. Existing anthropogenic disturbances within the burned area would still count toward the disturbance cap. • Developed private lands that are no longer used by GUSG (e.g., towns, reservoirs) would be excluded. In OHMA and UHMA where the 1% disturbance threshold is exceeded from any source, no further anthropogenic disturbances will be permitted by the BLM and no new leasing within OHMA and UHMA until enough habitat has been restored to maintain the area under this threshold (subject to applicable laws and regulations, such as the Mining Law of 1872 [as amended], and valid existing rights). An area with disturbance is not excluded from the disturbance cap until it has been restored to provide GUSG habitat. The objective of successful restoration is to provide for the needs of GUSG, as evidenced by one of the following: • The vegetation provides suitable habitat conditions for GUSG per Objective SSS-3, or • Monitoring indicates the area is regularly used by GUSG to sustain one or more	• Other vertical structures and developed rights-of-way with habitat degradation • Coal bed methane ponds • Meteorological towers (e.g., wind energy testing) • Nuclear energy facilities • Airport facilities and infrastructure • Military range facilities and infrastructure • Hydroelectric plants • Recreation area facilities and infrastructure larger than 0.25 acres The following would be excluded from the disturbance cap calculation: • Existing developed agriculture. • Areas in OHMA that have burned, unless the proposed disturbance is within the burned area. Existing anthropogenic disturbances within the burned area would still count toward the disturbance cap. • Developed private lands that are no longer used by GUSG (e.g., towns, reservoirs) would be excluded. In OHMA where the 3% disturbance threshold is exceeded from any source, no further anthropogenic disturbances will be permitted by the BLM and no new leasing within OHMA until enough habitat has been restored to maintain the area under this threshold (subject to applicable laws and regulations, such as the Mining Law of 1872 [as amended], and valid existing rights). For an area to no longer be considered disturbed under the cap, disturbances need to be restored/reclaimed, where technically and legally feasible (e.g., valid existing rights, split estate lands). The objective of long-term restoration/reclamation is to make areas with disturbance useable by GUSG. For long-term restoration of OHMA with discrete surface disturbances to be considered successful, establishment of desired forbs and sagebrush would be	• Communication towers • Other vertical structures and developed rights-of-way with habitat degradation • Coal bed methane ponds • Meteorological towers (e.g., wind energy testing) • Nuclear energy facilities • Airport facilities and infrastructure • Military range facilities and infrastructure • Hydroelectric plants • Recreation area facilities and infrastructure larger than 0.25 acres The following would be excluded from the disturbance cap calculation: • Existing developed agriculture. • Areas in OHMA/UHMA that have burned, unless the proposed disturbance is within the burned area. Existing anthropogenic disturbances within the burned area would still count toward the disturbance cap. • Developed private lands that are no longer used by GUSG (e.g., towns, reservoirs) would be excluded. In OHMA and UHMA where the 2% and 3% disturbance cap threshold, respectively, is already exceeded from any source, no further anthropogenic disturbances will be permitted by the BLM and no new leasing within OHMA and UHMA until enough habitat has been restored to maintain the area under this threshold (subject to applicable laws and regulations, such as the Mining Law of 1872 [as amended], and valid existing rights). For an area to no longer be considered disturbed under the cap, disturbances need to be restored/reclaimed, where technically and legally feasible (e.g., valid existing rights, split estate lands). The objective of long-term restoration/reclamation is to make areas with disturbance useable by GUSG. For long-term restoration of OHMA or	

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			seasonal habitat requirements (nesting, brood-rearing, winter). Final restoration success and approval for abandonment for disturbances will be subject to an interdisciplinary review of available monitoring data and final monitoring reports. When considering implementation-level actions, the 1% disturbance calculation would include all discrete anthropogenic disturbances within OHMA and UHMA, independently, of a GUSG population area. The disturbance calculation, restoration objectives, and monitoring requirements would be identified during the site-specific project planning/NEPA phase. **Select citations include: Walker, B., 2022; Knick et al. 2013, Kirol et. Al., 2020; GRSG NTT Report, 2011.*	present and GUSG habitat guidelines would be expected to progress toward meeting habitat suitability. When considering implementation-level actions, the disturbance calculation would include all discrete anthropogenic disturbances within OHMA of a GUSG population area. The disturbance calculation, restoration objectives, and monitoring requirements would be identified during the site-specific project planning/NEPA phase. **Select citations include: Walker, B., 2022; Knick et al. 2013, Kirol et. Al., 2020; GRSG NTT Report, 2011.*	UHMA with discrete surface disturbances to be considered successful, establishment of desired forbs and sagebrush would be present and GUSG habitat guidelines would be expected to make progress toward meeting habitat suitability. When considering implementation-level actions, the disturbance calculation would include all discrete anthropogenic disturbances within the OHMA and UHMA, independently, of a GUSG population area. The disturbance cap calculation, restoration objectives, and monitoring requirements would be identified during the site-specific project planning/NEPA phase. **Select citations include: Walker, B., 2022; Knick et al. 2013, Kirol et. Al., 2020; GRSG NTT Report, 2011.*	
12	***SSS Management Action 4.4*** *Compensatory mitigation*	All plans: no similar action.	In OHMA and UHMA, avoid, minimize, and compensate (mitigate) for impacts on GUSG and their habitat. In undertaking BLM management actions and consistent with valid existing rights and applicable law, in authorizing third-party actions that result in habitat loss and/or degradation, the BLM will require and ensure a compensatory mitigation strategy that meets the conservation objectives and management decisions outlined for GUSG within this plan. The mitigation strategy will incorporate a minimum of a 5:1 ratio where one acre of disturbance results in 5 acres of mitigation. Mitigation ratios may need to be higher than 5:1 in order to result in compensatory mitigation and meet conservation objectives for GUSG. Project-specific analysis will be necessary to determine how a compensatory mitigation proposal addresses impacts from a proposed action. The BLM will cooperate with the State to determine appropriate project design and alignment with State policies and requirements, including those regarding compensatory mitigation. The mitigation strategy will account for any uncertainty associated with the effectiveness of such mitigation. This will be achieved by avoiding, minimizing, and	*Same as Alternative B, except only applies in OHMA and the mitigation ratio is 3:1, where one acre of disturbance results in 3 acres of mitigation.* In OHMA, avoid, minimize, and compensate (mitigate) for impacts on GUSG and their habitat. In undertaking BLM management actions and consistent with valid existing rights and applicable law, in authorizing third-party actions that result in habitat loss and/or degradation, the BLM will require and ensure a compensatory mitigation strategy that meets the conservation objectives and management decisions outlined for GUSG within this plan. The mitigation strategy will incorporate a minimum of a 3:1 ratio where one acre of disturbance results in 3 acres of mitigation. Mitigation ratios may need to be higher than 3:1 in order to result in compensatory mitigation and meet conservation objectives for GUSG. Project-specific analysis will be necessary to determine how a compensatory mitigation proposal addresses impacts from a proposed action. The BLM will cooperate with the State to determine appropriate project design and alignment with State policies and requirements, including those regarding compensatory mitigation. The mitigation	*Same as Alternative B, except the mitigation ratio is a minimum of 4:1, where one acre of disturbance results in 4 acres of mitigation.*	In OHMA, apply the mitigation hierarchy prior to offsite mitigation by avoiding, minimizing, and restoring impacts. Mitigation objectives are to avoid net Tier 2 habitat loss and achieve a net gain in Tier 1 habitat. The following permanent land-use authorizations cannot be fully mitigated on-site and therefore offsite mitigation is included as a design criterion in order for specified new, ground-disturbing infrastructure (*CCA p. 36*). At a maximum, the service area for offsite mitigation implementation is limited to Federal lands in OHMA GUSG habitat in the Gunnison Basin. At a minimum, distance between the action area and the offset area is a project-specific discretionary determination, and should be made during project planning and authorization processes. By definition, offsite mitigation consists of compensating for resource impacts by replacing or providing substitute resources or habitat at a different location than the project area. The offset action should not be located within the action's direct impact area, (i.e., permitted area). Further, the functional value of the offset may be

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			compensating for impacts by applying beneficial mitigation actions. The Mitigation Hierarchy actions include: • Avoiding the impact altogether by not taking a certain action or parts of an action. • Minimizing impacts by limiting the degree of magnitude of the action and its implementation. • Repairing, rehabilitation, or restoring the affected area. • Compensating or mitigating for the residual adverse direct and indirect impact by replacing or providing substitute resources or environments at a minimum ratio of 5 acres per 1 acre disturbed. Money for research or monitoring will not be counted as mitigation. Compensatory mitigation includes actions that are designed to create new habitat or ameliorate disturbances by the creation of or protection of other habitat, within the same population or in other GUSG populations. The preference is that mitigation for impacts within OHMA and UHMA will occur within the same population area of the impact and meet suitable habitat guidelines as outlined in the HAF (see Appendix F, *Habitat Monitoring and Reporting*). For off-site mitigation associated with mitigation of actions within OHMA, project proponents will work closely with the BLM and the State Wildlife Agency to identify OHMA where off-site mitigation could occur. The ratio for mitigation will be a minimum of 5 acres mitigated per 1 acre disturbed (5:1). For compensatory mitigation (either onsite or off-site), actions should consider the type and quality of habitat being impacted by a project and the proportional impact a project will have on the population. In turn, proposed mitigation actions should address the same type and quality of habitat that may be impacted (e.g., breeding, nesting, brood-rearing, wintering, transitional habitats). The value of the habitat may increase if the birds use the area for more than one time of the	strategy will account for any uncertainty associated with the effectiveness of such mitigation. This will be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. The Mitigation Hierarchy actions include: • Avoiding the impact altogether by not taking a certain action or parts of an action. • Minimizing impacts by limiting the degree of magnitude of the action and its implementation. • Repairing, rehabilitation, or restoring the affected area. • Compensating or mitigating for the residual adverse direct and indirect impact by replacing or providing substitute resources or environments at a minimum ratio of 3:1 per acre disturbed. Money for research or monitoring will not be counted as mitigation. Compensatory mitigation includes actions that are designed to create new habitat or ameliorate disturbances by the creation of or protection of other habitat, within the same population or in other GUSG populations. The preference is that mitigation for impacts within OHMA will occur within the same population area of the impact and meet suitable habitat guidelines as outlined in the HAF (see Appendix F, *Habitat Monitoring and Reporting*). For off-site mitigation associated with mitigation of actions within OHMA, project proponents will work closely with the BLM and the State Wildlife Agency to identify OHMA where off-site mitigation could occur. The ratio for mitigation will be a minimum of 3 acres mitigated per 1 acre disturbed (3:1). For compensatory mitigation (either onsite or off-site), actions should consider the type and quality of habitat being impacted by a project and the proportional impact a project will have on the population. In turn, proposed mitigation actions should address		overshadowed if located within the action's functional impact area. Ultimately, the offset should be located to maximize the net benefit to GUSG habitat in the Gunnison Basin (*CCA p. 37*). If the impact occurs in Tier 1, yet the replacement or offset action is identified in Tier 2, then the standard > 1:1 ratio would apply, on the condition that the offset action is calculated to bump the offset area from Tier 2 to Tier 1 classification. If the offset action would not result in reclassifying the offset area as Tier 1 habitat, then a 3:1 replacement ratio would be necessary (*CCA page 45*). For UHMA, same as Alternative B.

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			year, if it is relatively higher in quality, or if the type of habitat is a limiting factor for the local population. Similarly, mitigation should account for the proportional impact a project will have on a specific population (if a given project impacts 1 percent of wintering habitat versus 30 percent of the wintering habitat). Mitigation should be performed in areas which have the highest likelihood of occupation by the species. Mitigation strategies will be developed and conducted according to the mitigation framework outlined in Appendix G, *Gunnison Sage-Grouse Mitigation Strategy*, which include the BLM's Mitigation Manual Section (MS-1794) and the BLM's Mitigation Handbook (H-1794-1).	the same type and quality of habitat that may be impacted (e.g., breeding, nesting, brood-rearing, wintering, transitional habitats). The value of the habitat may increase if the birds use the area for more than one time of the year, if it is relatively higher in quality, or if the type of habitat is a limiting factor for the local population. Similarly, mitigation should account for the proportional impact a project will have on a specific population (if a given project impacts 1 percent of wintering habitat versus 30 percent of the wintering habitat). Mitigation should be performed in areas which have the highest likelihood of occupation by the species. Mitigation strategies will be developed and conducted according to the mitigation framework outlined in Appendix G, *Gunnison Sage-Grouse Mitigation Strategy*, which include the BLM's Mitigation Manual Section (MS-1794) and the BLM's Mitigation Handbook (H-1794-1).		
13	***SSS Management Action 4.5*** (HAF mid- and fine-scale)	All plans: no similar action.	In coordination with partners across land management jurisdictions, use mid- and fine-scale habitat assessments, in conjunction with other best-available data and science, to strategically design and implement conservation and/or restoration projects that will maintain or increase habitat suitability, availability, and connectivity.	No similar action.	Same as Alternative B.	No similar action.
14	***SSS OBJECTIVE 5*** *Habitat Objectives*	Most plans have habitat objectives of some kind that are intended to improve habitat, particularly in special management areas.	Restore and maintain sagebrush steppe to its ecological potential across the decision area. Manage OHMA, UHMA, LCMA, and Adjacent Non-habitat to maintain and increase sagebrush cover where ecological potential exists.	Sustain OHMA through management and restoration of sagebrush habitat to meet GUSG habitat guidelines as outlined in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*. Provide or make significant progress toward providing (see 43 CFR 4180.1) suitable seasonal habitats for GUSG, where appropriate relative to ecological site potential.	Manage OHMA and UHMA to provide suitable seasonal habitats for GUSG, where appropriate relative to ecological site potential. Seasonal habitat may include areas where sagebrush is the current or potential dominant vegetation type or is a primary species within the various states of the ecological site description or other areas important to the GUSG life cycle, such as mesic habitat, riparian areas, or wet meadows. This objective will be accomplished through the combination of RMP land use allocations and management actions, proactive habitat treatments, and the project-level application of mitigation (avoid, minimize, compensate) to internal and external project proposals.	Monitor and assess GUSG habitat conditions relative to RCP sage-grouse Structural Habitat Guidelines for nesting and brood-rearing sagebrush habitat at the landscape scale. Use RCP/GUSG Rangewide Steering Committee 2007 habitat monitoring protocol. Habitat data will be used in conjunction with other monitoring data (grouse and non- grouse) to inform Land Health Assessments and Determinations (BLM) and relevant long-term management actions (*CCA p. 42, Sec 7.1*).

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15	***SSS Management Action 5.1*** *Habitat Suitability Guidelines*	All plans: no similar action.	Within each population area, assess suitability separately for OHMA and UHMA, using the site-scale methods from the Sage-Grouse Habitat Assessment Framework guidelines (Stiver et al. 2015, BLM TR 6710-1, as revised) and the BLM Sage-Grouse HAF Implementation Guidelines. The Habitat Indicators and Guidelines Table (Table F-1 in Appendix F, *Habitat Monitoring and Reporting)* provides a list of site-scale habitat suitability indicators (e.g., sagebrush cover, perennial grass and forb cover, preferred forb availability). The suite of indicators and guidelines should also be used to inform measurable project objectives during implementation-level planning for BLM-permitted and BLM-initiated actions within OHMA and UHMA.	*Same as Alternative B, except only applies in OHMA.* Within each population area, assess the suitability of OHMA using the site-scale methods from the Sage-Grouse Habitat Assessment Framework guidelines (Stiver et al. 2015, BLM TR 6710-1, as revised) and the BLM Sage-Grouse HAF Implementation Guidelines. The Habitat Indicators and Guidelines Table (Table F-1 in Appendix F, *Habitat Monitoring and Reporting*) provides a list of site-scale habitat suitability indicators (e.g., sagebrush cover, perennial grass and forb cover, preferred forb availability). The suite of indicators and guidelines should also be used to inform measurable project objectives during implementation-level planning for BLM-permitted and BLM-initiated actions within.	Same as Alternative B.	No similar action.
16	***SSS Management Action 5.2*** *Coordination*	All plans: no similar action.	In OHMA, UHMA, and LCMA and in coordination with partners, use results of site-scale habitat assessments to inform management decisions and the design and implementation of habitat projects to improve or maintain the suitability of GUSG seasonal habitats. For example, projects should be designed to improve sagebrush cover where it is a limiting factor and can be accomplished based on the ecological potential of the area. The indicators and guidelines in Table F-1 in Appendix F, *Habitat Monitoring and Reporting*, will be used to inform measurable project objectives during implementation-level planning for BLM-permitted and BLM-initiated actions in OHMA and UHMA.	*Same as Alternative B, except only applies in OHMA.* In OHMA and in coordination with partners, use results of site-scale habitat assessments to inform management decisions and the design and implementation of habitat projects to improve or maintain the suitability of GUSG seasonal habitats. For example, projects should be designed to improve sagebrush cover where it is a limiting factor and can be accomplished based on the ecological potential of the area. The indicators and guidelines in Table F-1 in Appendix F, *Habitat Monitoring and Reporting*, will be used to inform measurable project objectives during implementation-level planning for BLM-permitted and BLM-initiated actions in OHMA and UHMA.	Same as Alternative B.	No similar action.
17	***SSS OBJECTIVE 6*** *Habitat Fragmentation*	All plans: no similar action.	Reduce existing fragmentation in OHMA from anthropogenic disturbances that will reduce distribution or abundance of GUSG and their habitat, subject to valid existing rights. Avoid additional fragmentation, through application of minimization criteria (SSS Management Action 12), from anthropogenic disturbances in UHMA that	Minimize anthropogenic disturbances and fragmentation in OHMA that will reduce distribution or abundance of GUSG and their habitat.	Minimize and avoid additional fragmentation, through application of minimization criteria (SSS Management Action 12), in OHMA from anthropogenic disturbances that will reduce distribution or abundance of GUSG and their habitat. Avoid additional fragmentation, through application of minimization criteria (SSS Management Action 12), from anthropogenic disturbances in UHMA that	In OHMA, reduce existing net fragmentation in Tier 1 habitat and avoid additional net fragmentation in Tier 2 habitat, impacts from specified new human infrastructure are avoided, minimized, and mitigated via off-site mitigation (*CCA p. 14*).

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			will reduce distribution, movement, and/or abundance of GUSG and their habitat.		will reduce distribution, movement, and/or abundance of GUSG and their habitat.	
18	***SSS Management Action 7*** *Noise Restrictions*	Three plans address noise restrictions in GUSG habitats during the lekking season.	In OHMA, UHMA, and Adjacent Non-habitat limit noise from discrete anthropogenic disturbances, whether during construction, operation, or maintenance, to not exceed 10 decibels above ambient sound levels at all leks (active, inactive, historic, and unknown) from 2 hours before to 2 hours after official sunrise and sunset during breeding season, (March 1 to May 15). Support the establishment of ambient baseline noise levels for OHMA habitat area leks. Limit project related noise in other OHMA habitats and seasons where it will be expected to reduce functionality of habitats that support associated GUSG populations from March 1 to July 15. As additional research and information emerges, specific new limitations appropriate to the type of projects being considered will be evaluated and appropriate measures will be implemented where necessary to minimize potential for noise impacts on OHMA GUSG population behavioral cycles.	No similar action.	*Same as Alternative B, except only applies in OHMA and UHMA.* In OHMA and UHMA limit noise from discrete anthropogenic disturbances, whether during construction, operation, or maintenance, to not exceed 10 decibels above ambient sound levels at all leks (active, inactive, historic) from 2 hours before to 2 hours after official sunrise and sunset during breeding season, (March 1 to May 15). Support the establishment of ambient baseline noise levels for OHMA habitat area leks. Limit project related noise in other OHMA habitats and seasons where it will be expected to reduce functionality of habitats that support associated GUSG populations from March 1 to July 15. As additional research and information emerges, specific new limitations appropriate to the type of projects being considered will be evaluated and appropriate measures will be implemented where necessary to minimize potential for noise impacts on OHMA GUSG population behavioral cycles.	Site [new construction or infrastructure] using topography to conceal or minimize noise and visual impacts to sage-grouse (*CCA, p. 17*).
19	***SSS Management Action 8*** *Buffer Distances*	Four of the eleven plans identify buffers for GUSG leks ranging from a minimum of 0.6 miles up to 4 miles from leks. These buffers are recommended to either avoid or prohibit surface disturbance for a variety of activities or structures including fences, powerlines, renewable energy infrastructure, and other construction activities. In addition, seasonal timing limitations on surface disturbing activities are applied for some of the buffer areas.	The BLM will exclude new authorizations for placement of the following features within the specified buffer distance of all leks, including active, inactive, historic, and unknown: • No linear features (roads, pipelines, ROW designated trails) within 3.1 miles of leks.[1] • No low structures (e.g., structures that are taller than the surrounding sagebrush such as fences, weather stations) within 1.2 mile of leks.[1] • No tall structures (e.g., communication or transmission towers, transmission lines) within 4 miles of leks. • No infrastructure related to energy development within 4 miles of leks.	The BLM will use the buffer distance to inform application of minimization criteria (SSS Management Action 12)/ROW avoidance criteria to new authorizations for placement of the following features within the specified buffer distance of all active leks: • Apply minimization criteria ROW avoidance criteria/CSU to restrict or minimize linear features and (e.g., roads, designated trails, pipelines) within 1 mile of active leks. • Apply minimization criteria/ROW avoidance to restrict or minimize low structures (e.g., structures that are taller than the surrounding sagebrush such as fences, weather stations) within 1.2 mile of active leks.[1] • Apply minimization criteria/ROW avoidance to restrict or minimize tall	*Same as Alternative C, except applies to active, inactive, and historic leks.* The BLM will use the buffer distance to inform application of minimization criteria (SSS Management Action 12)/ROW avoidance to new authorizations for placement of the following features within the specified buffer distance of all active, inactive, and historic leks: • Apply minimization criteria ROW avoidance criteria/CSU to restrict or minimize linear features and small-scale infrastructure (e.g., roads, pipelines, ROW, designated trails) within 1 mile of leks. • Apply minimization criteria /ROW avoidance to low structures (e.g., structures that are taller than the surrounding sagebrush such as fences,	In Tier 1 Habitat: • New infrastructure (see section 4.4.4 of CCA) will be covered under the CCA if: o Total acres of new ground disturbance is < ¼ acre; and o Infrastructure is sited at least .6 miles from active leks, with the exception of signs and culverts along existing development footprints; and o Standard minimization measures are applied (*Section 4.2*). In Tier 2 Habitat: • New infrastructure will be covered under the CCA if:

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			[1]*Manier et al, 2014, Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review*	structures (e.g., communication or transmission towers, transmission lines) within 2 miles of active leks.[1] • Apply minimization criteria/ROW avoidance/CSU to restrict or minimize infrastructure related to energy development within 3.1 miles of active leks.[1] Justifiable departures to decrease from these distances based on local data, best available science, landscape features, and other existing protections (e.g., land use allocations, State regulations) may be appropriate for determining activity impacts at a site-scale. All variations in lek buffer-distances will require appropriate analysis and disclosure as part of site-specific authorizations. In determining lek locations, the BLM will use the most recent lek data in coordination/ consultation with the appropriate Federal and State agencies (e.g., USFWS and State wildlife agency). [1]*Manier et al., 2014, Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review*	weather stations) within 1.2 mile of leks.[1] • Apply minimization criteria /ROW avoidance to tall structures (e.g., communication or transmission towers, transmission lines) within 2 miles of leks.[1] • Apply minimization criteria /ROW avoidance/CSU to infrastructure related to energy development within 3.1 miles of leks.[1] Justifiable departures to decrease or increase from these distances based on local data, best available science, landscape features, and other existing protections (e.g., land use allocations, State regulations) may be appropriate for determining activity impacts at a site-scale. All variations in lek buffer-distances will require appropriate analysis and disclosure as part of site-specific authorizations. In determining lek locations, the BLM will use the most recent lek data in coordination/ consultation with the appropriate Federal and State agencies (e.g., USFWS and State wildlife agency). [1]*Manier et al., 2014, Conservation Buffer Distance Estimates for Greater Sage-Grouse—A Review*	○ Total acres of new ground disturbance is <u>< 1 acre</u>; and ○ Standard minimization measures are applied (*Section 4.2*).
20	***SSS Management Action 9*** *Predation*	Several plans address managing the impacts of predation on GUSG.	Apply BMPs and/or RDFs (Appendix H, *Best Management Practices and Required Design Features*) for authorized activities or infrastructure within OHMA, UHMA, LCMA to reduce opportunities for GUSG predators, such as limiting food sources (trash reduction), nesting, cover, or perches. Apply actions specific to the predators of concern for the given GUSG population (e.g., ravens, red fox, badgers, raccoons, raptors).	*Same as Alternative B, except only applies in OHMA and UHMA.* Apply BMPs and RDFs (Appendix H, *Best Management Practices and Required Design Features*) for authorized activities or infrastructure within OHMA and UHMA to reduce opportunities for GUSG predators, such as limiting food sources (trash reduction), nesting, cover, or perches. Apply actions specific to the predators of concern for the given GUSG population (e.g., ravens, red fox, badgers, raccoons, raptors).	Same as Alternative C.	In Tier 1 and Tier 2 Habitat, if unable to bury utility lines, install the most effective perch deterrents available on all utility poles for the proposed segment and apply standard minimization measures (*CCA, Section 4.2*). Apply these same design features during new authorizations, routine maintenance on existing infrastructure, and as a condition of renewal during maintenance and upgrades (*CCA p. 21*). Other predator related BMPs: same as Alternative C.
21	***SSS Management Action 10*** *Predation*	All plans: no similar action.	In OHMA, UHMA, and LCMA support the control of predators. Coordinate in predation research and monitoring with other partners.	In OHMA support the control of predators. Coordinate in predation research and monitoring with other partners. Lethal removal of predators (e.g., ravens) requires a USFWS depredation permit and	*Same as Alternative B, except only applies to OHMA and UHMA.* In OHMA and UHMA support the control of predators.	Same as Alternative D.

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			Consider predator control measures if a local GUSG population is below 25 breeding individuals or 25% of the long-term population goal (especially if it is a declining or recently augmented population) (*RCP p. 139*). Lethal removal of predators (e.g., ravens) requires a USFWS depredation permit and coordination with Federal, State, and local cooperating agencies would be identified and included in planning and implementing predator control. Quantifiable objectives within a specific timeframe must be specified, and long-term monitoring of both predator and prey communities are necessary in order to objectively evaluate the success of implementation (*RCP p. 139*).	coordination with Federal, State, and local cooperating agencies would be identified and included in planning and implementing predator control.	Coordinate in predation research and monitoring with other partners. Consider predator control measures if a local GUSG population is below 25 breeding individuals or 25% of the long-term population goal (especially if it is a declining or recently augmented population) (*RCP p. 139*). Lethal removal of predators (e.g., ravens) requires a USFWS depredation permit and coordination with Federal, State, and local cooperating agencies would be identified and included in planning and implementing predator control. Quantifiable objectives within a specific time-frame must be specified, and long-term monitoring of both predator and prey communities, are necessary in order to objectively evaluate the success of implementation (*RCP p. 139*).	
22	***SSS Management Action 11*** *Seasonal Habitat Restrictions*	Most plans have seasonal use restrictions on surface-disturbing activities for various GUSG habitat types within the planning area. Dates for seasonal use restrictions are variable across all plans.	In OHMA and UHMA, prohibit anthropogenic disturbances, surface disturbance, or activities disruptive to GUSG populations and habitat (including scheduled maintenance activities) during seasonal life cycle periods as follows (current authorized uses excepted): • In breeding/lekking areas from March 1 – May 15 • In nesting habitat from April 15 – June 30 • In brood-rearing habitat from July 1 – September 30 • In known winter habitat concentration areas from October 1 – March 15 (*Dates from RCP) At a minimum, prohibit surface-disturbing activities* in OHMA and UHMA during lekking, nesting, or early brood-rearing from March 1 – July 15. *See Appendix I, *Glossary*, for surface-disturbing activities definition. Specific time and distance determinations will be based on site-specific conditions and may be modified due to documented local variations (e.g., higher/lower elevations) or annual climactic fluctuations (e.g., early/late spring and long and/or heavy winter) in order to better protect GUSG, in	In OHMA and in coordination with the appropriate State, Federal, and local governments agency, apply seasonal restrictions, as appropriate, during the period specified below to manage and reduce discretionary discrete anthropogenic disturbances (including scheduled maintenance activities), surface disturbance and uses on public lands to prevent disturbance to GUSG populations and habitat during seasonal life cycle periods as follows: • In breeding/lekking areas from March 1 – May 15 • In nesting habitat from April 15 – June 30 • In brood-rearing habitat from July 1 – September 30 • In known winter habitat concentration areas from December 1 – March 15 (**Dates from RCP*) Specific time and distance determinations would be based on site-specific conditions and may be modified, in coordination with the appropriate State wildlife agency and USFWS, due to documentation of the following:	*Same as Alternative C, except also applies to UHMA and prohibits surface disturbance in OHMA from March 1 – July 15.* In OHMA and UHMA, and in coordination with the appropriate State, Federal, and local governments agency, apply seasonal restrictions, as appropriate, during the period specified below to manage and reduce discretionary discrete anthropogenic disturbances (including scheduled maintenance activities), surface disturbance and uses on public lands to prevent disturbance to GUSG populations and habitat during seasonal life cycle periods as follows: • In breeding/lekking areas from March 1 – May 15 (*CCA, p. 15*) • In nesting habitat from April 15 – June 30 • In brood-rearing habitat from July 1 – September 30 • In known winter habitat concentration areas from December 1 – March 15 At a minimum, prohibit surface-disturbing activities* in OHMA during lekking, nesting, or early brood-rearing from March 1 – July	Seasonal restrictions on construction, maintenance, and access in seasonal grouse habitat (excepting emergency maintenance), including public access (see Figure 2 of CCA) will apply during the lekking period, currently observed from approximately March 15 – May 15 (*CCA, p. 15*). If research indicates additional restrictions are necessary to sustain the sage-grouse population, seasonal restrictions in identified seasonal grouse habitat may be applied to minimize disturbance during the following critical biological periods: nesting, brood-rearing, or winter periods of use by grouse (*CCA, p. 15*). Severe winters would trigger a collaborative, interagency management decision to implement area closures to protect identified grouse concentration areas. Closure decisions will be made in the context of managing for multiple resources, including big- game concentrations, public recreation, range condition, etc. Severe winters would be identified via a collaborative, interagency management discussion using the following criteria:

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			coordination with the appropriate State wildlife agency and USFWS.	• local variations (e.g., higher/lower elevations), • annual climactic fluctuations (e.g., early/late spring and long and/or heavy winter) • located within an area of non-habitat (e.g., forest, sandflat)	15. *See Appendix I, *Glossary*, for surface-disturbing activities definition. Specific time and distance determinations would be based on site-specific conditions and may be modified, in coordination with the appropriate State wildlife agency and USFWS, due to documentation of the following: • local variations (e.g., higher/lower elevations), • annual climactic fluctuations (e.g., early/late spring and long and/or heavy winter) • located within an area of non-habitat (e.g., forest, sandflat)	• Snow depth • Temperature • Snow condition/consistency • Prior year's range condition. Though frequency of severe winters cannot be predicted, on average, severe winters occur every 10 years. All other winter conditions: Unless research indicates further consideration, no additional winter timing restrictions would be implemented during non-severe winters. General messaging to recreation community will encourage cross-country winter travel in Urban Interface Recreation Areas, higher elevations and forested areas. CCA Section 4.2.1, Seasonal Closures and Restrictions applies.
23	***SSS Management Action 12*** *Minimization Criteria*	Uncompahgre Field Office RMP (2020) has a Site-specific Relocation restriction, similar to minimization criteria in that it allows some use and occupancy of BLM administered lands while protecting identified resources or values.	Apply minimization criteria in OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile buffer), as applicable for resources that allow use of OHMA, UHMA, LCMA, and Adjacent Non-habitat. Minimization criteria would apply to all surface-disturbing activities and allow some use and occupancy while protecting identified resources or values. Areas where minimization criteria are applied are potentially open to surface-disturbing activities, but the BLM may require special constraints during the implementation phase, or the activity could be shifted to protect GUSG or their habitat. Examples could include timing limitations, relocation of a project away from sensitive habitat areas, application of minimization measures such as design features, or re-siting of a project outside of habitat. During the evaluation and/or NEPA process the following factors at a minimum will be analyzed: • Co-location • Lek buffers (SSS Management Action 8)	*Same as Alternative B, except only applies in OHMA.* Apply minimization criteria in OHMA, as applicable for resources that allow use of OHMA. Minimization criteria would apply to all surface-disturbing activities and allow some use and occupancy while protecting identified resources or values. Areas where minimization criteria are applied are potentially open to surface-disturbing activities, but the BLM may require special constraints during the implementation phase, or the activity could be shifted to protect GUSG or their habitat. Examples could include timing limitations, relocation of a project away from sensitive habitat areas, application of minimization measures such as design features, or re-siting of a project outside of habitat. During the evaluation and/or NEPA process the following factors at a minimum will be analyzed: • Co-location • Lek buffers (SSS Management Action 8)	*Same as Alternative B, except for the Adjacent Non-habitat is a 1-mile buffer.* Apply minimization criteria in OHMA, UHMA, LCMA, and Adjacent Non-habitat (1-mile buffer), as applicable for resources that allow use of OHMA, UHMA, LCMA, and Adjacent Non-habitat. Minimization criteria would apply to all surface-disturbing activities and allow some use and occupancy while protecting identified resources or values. Areas where minimization criteria are applied are potentially open to surface-disturbing activities, but the BLM may require special constraints during the implementation phase, or the activity could be shifted to protect the specified resource or value. Examples could include timing limitations, relocation of a project away from sensitive habitat areas, application of minimization measures such as design features, or re-siting of a project outside of habitat. During the evaluation and/or NEPA process the following factors at a minimum will be analyzed: • Co-location	*Same as Alternative C, except also applies to UHMA.* Apply minimization criteria in OHMA and UHMA, as applicable for resources that allow use of OHMA and UHMA. Minimization criteria would apply to all surface-disturbing activities and allow some use and occupancy while protecting identified resources or values. Areas where minimization criteria are applied are potentially open to surface-disturbing activities, but the BLM may require special constraints during the implementation phase, or the activity could be shifted to protect the specified resource or value. Examples could include timing limitations, relocation of a project away from sensitive habitat areas, application of minimization measures such as design features, or re-siting of a project outside of habitat. During the evaluation and/or NEPA process the following factors at a minimum will be analyzed: • Co-location

ROW #	Program Area and Number	Alternative A (No Action - Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			• Sensitive habitat areas (e.g., concentrated nesting, brood-rearing, winter concentration areas) • Topology and topographic features • Timing limitations (SSS Management Action 11) • Disturbance caps (SSS Management Action 4.3) • Apply BMPs and RDFs – see Appendix H, *Best Management Practices and Required Design Features* Activities that are not considered surface disturbing include, but are not limited to, livestock grazing, cross-country hiking or equestrian use, installing signs, minimum impact filming, vehicular travel on designated routes, and general use of the land by wildlife.	• Sensitive habitat areas (e.g., concentrated nesting, brood-rearing, winter concentration areas) • Topology and topographic features • Timing limitations (SSS Management Action 11) • Disturbance caps (SSS Management Action 4.3) • Apply BMPs and RDFs – see Appendix H, *Best Management Practices and Required Design Features* Activities that are not considered surface disturbing include, but are not limited to, livestock grazing, cross-country hiking or equestrian use, installing signs, minimum impact filming, vehicular travel on designated routes, and general use of the land by wildlife.	• Lek buffers (SSS Management Action 8) • Sensitive habitat areas (e.g., concentrated nesting, brood-rearing, winter habitats) • Topology and topographic features • Timing limitations (SSS Management Action 11) • Disturbance caps (SSS Management Action 4.3) • Apply BMPs and RDFs – see Appendix H, *Best Management Practices and Required Design Features* Activities that are not considered surface disturbing include, but are not limited to, livestock grazing, cross-country hiking or equestrian use, installing signs, minimum impact filming, vehicular travel on designated routes, and general use of the land by wildlife.	• Lek buffers (SSS Management Action 8) • Sensitive habitat areas (e.g., concentrated nesting, brood-rearing, winter concentration areas) • Topology and topographic features • Timing limitations (SSS Management Action 11) • Disturbance caps (SSS Management Action 4.3) • Apply BMPs and RDFs – see Appendix H, *Best Management Practices and Required Design Features* Activities that are not considered surface disturbing include, but are not limited to, livestock grazing, cross-country hiking or equestrian use, installing signs, minimum impact filming, vehicular travel on designated routes, and general use of the land by wildlife.

2.2.2.2 Land Health

Table 2.5. Comparison of Alternatives: Land Health

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
24	***GOAL***	No similar action.	Manage soils, riparian-wetland areas, native plant and animal communities, special status species, and water quality to meet land health standards.			
25	***OBJECTIVE***	No similar action.	Manage OHMA and UHMA habitat to minimize impacts on GUSG habitat, and to achieve BLM Colorado Public Land Health Standards (BLM 1997) and Utah Standards for Rangeland Health (1997).Measure BLM Land Health Standards on uplands using foliar cover, species composition, canopy gap, soil stability, and other appropriate indicators, and use best available science to determine benchmarks for achieving standards. For aquatic and riparian systems, measure bank stability, floodplain connectivity, aquatic health, water quality, and other appropriate indicators, and use best available science to determine benchmarks for achieving standards.			
26	***Land Health Action 1*** *Land Health Standards*	All RMPs, except two older plans, provide management direction to manage public lands according to BLM Colorado Public Land Health Standards relative to the respective resources.	For all resource uses, proposed actions, or authorizations, given valid existing rights, evaluate the impacts of the proposed authorization on land health standards (see Appendix J, *BLM Standards For Public Land Health and Guidelines for Livestock Grazing Management in Colorado and Utah*). Apply BLM Colorado and Utah Rangeland Health Standards to manage, maintain and improve the condition of the public rangelands.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

2.2.2.3 Vegetation

Table 2.6. Comparison of Alternatives: Vegetation

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
27	***VEGETATION OBJECTIVES***	All RMPs, except one plan, provide objectives relative to sage-grouse habitat, or provide objectives relative to maintaining contiguous stands of sagebrush for connectivity.	OBJECTIVE 1: Conserve and improve habitat quality and quantity, and recruitment, by restoring and maintaining seasonal habitats for GUSG in all populations (*RIS Priority Action 1-1*). OBJECTIVE 2: Reduce and prevent further fragmentation to improve connectivity of intact vegetation. OBJECTIVE 3: Maintain and improve mesic meadows and riparian areas (*RIS Priority Action 1-1*). OBJECTIVE 4: Control, suppress, eradicate, and prevent the spread of noxious and invasive species using integrated vegetation management practices (*RIS Priority Action 1-2*).			
28	***Vegetation Management Action 1*** *Vegetation Treatments*	Generally, all plans encourage vegetation treatments that will promote healthy sagebrush ecosystems and rangeland plant communities. Vegetation treatment management actions range from using native plant species, resting treated areas from livestock, to including treatment goals that meet GUSG habitat guidelines as outlined in the Gunnison Sage-Grouse Rangewide Conservation Plan (Gunnison Sage-Grouse Rangewide Steering Committee 2005).	1. Use non-surface disturbing vegetation treatments, (e.g., lop and scatter, reseeding, and targeted grazing) to move toward meeting habitat guidelines where ecological site information indicates treatments are reasonable and feasible. Heavy equipment that disturbs soil and prescribed fire may not be used in treatments. Treat appropriate areas of OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile buffer). Prioritize areas with the highest chance of success and that have the greatest benefit to GUSG. 2. Treat decadent, late-seral sagebrush stands and stands not meeting sagebrush	1. Use vegetation treatments, including prescribed fire, (e.g., mechanical treatments, chemical treatments, biological treatments, prescribed fire, reseeding, targeted grazing) to move toward meeting habitat guidelines where ecological site information indicates treatments are reasonable and feasible. Treat appropriate areas of OHMA and UHMA. Using the Resist-Accept-Direct (RAD) framework, and considering near future (next 20-30 years) climate, prioritize areas with the highest chance of success and that have the greatest benefit to GUSG	1. Same as item 1 in Alternative C, and includes LCMA. 2. Same as item 2 in Alternative C. 3. Treat OHMA, UHMA, and LCMA to improve or maintain sites that have ecological site potential to support sagebrush habitat. Rely on best available science to determine where treatments will be most beneficial. Actions may include conifer removal, sagebrush planting, and native forb and grass seeding or planting. Prioritize areas that hinder connectivity between intact habitat.	Same as Alternative D.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			shape, if appropriate, to provide a mosaic of sagebrush heights and age classes and to improve understory vegetation using non-ground disturbing methods. Treatments may include lop and scatter by hand and seeding. This should only be considered in areas where sagebrush cover exceeds habitat structural guidelines and is limiting understory grass and forb growth. 3. Treat OHMA, UHMA, and LHMA to expand sagebrush habitat including conifer removal, sagebrush planting, and native forb and grass seeding where ecological potential includes a sagebrush component. Rely on best available science to determine where treatments will be most beneficial. 4. In OHMA and UHMA, implement post-treatment monitoring and management to promote long-term persistence of seeded native plants and/or treatment success. This may require temporary or long-term changes to grazing, travel management, recreation, and other uses to achieve and maintain the desired condition of treatments. Resume regular management only once treatment objectives have been met or after two growing seasons after treatment. 5. Where loss of soil organic matter, drought, or other conditions limit likelihood of seed germination prioritize use of proven amendments like compost, biochar, and/or use of hydromulch, straw, or wood straw to promote native vegetation establishment. Complete monitoring to evaluate success.	(Schuurman et al. 2020 and Schuurman et al. 2022). 2. Treat decadent, late-seral sagebrush and stands not meeting sagebrush shape, if appropriate, to provide a mosaic of sagebrush heights and age classes and to improve understory vegetation through mastication, mowing, seeding, prescribed fire or other methods while minimizing risk of nonnative plant invasion. This should only be considered in areas where sagebrush cover exceeds habitat structural guidelines and is limiting understory grass and forb growth (*RIS 5.02*). 3. Treat OHMA and UHMA habitat to maintain sites that have ecological site potential to support sagebrush habitat. Rely on best available science to determine where treatments will be most beneficial. Treatments may, resist and direct strategies, such as conifer removal, sagebrush planting, and native forb and grass seeding. 4. Same as item 4 in Alternative B. 5. Same as item 5 in Alternative B.	4. Same as item 4 in Alternative B. 5. Same as item 5 in Alternative B.	
29	***Vegetation Management Action 2*** *Seed Mixes*	Almost all RMPs include management actions that promote use of native species where possible. Two older RMPs do not include a similar management action.	Require the use of native seeds for restoration based on availability, adaptation (ecological site potential) and probability of success. When selecting seed mixes prioritize site-specific native species with a diversity of grasses, forbs, and sagebrush. Prioritize forbs when treating nesting and brood-rearing habitat. Ensure seed mixes do not contain state-listed noxious weeds (*GUSG 2022 IM*).	Require the use of native seeds for restoration based on availability, adaptation (ecological site potential), current and near-future (next 20-30 years) climate, and probability of success. When selecting seed mixes prioritize site-specific native species with a diversity of grasses, forbs, and sagebrush. Prioritize forbs when treating nesting and brood-rearing habitat. If appropriate native seed is unavailable or likelihood of success is low, use species that meet GUSG habitat guidelines. Ensure seed mixes do not contain state-listed	Same as Alternative C.	In OHMA implement actions and BMPs as outlined in Appendix A of the CCA.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			Seed Source Priority: 1. Native seed sourced from the local area. 2. Native species (found in local ecotypes) sourced commercially 3. Cultivars of native species (found in the local ecotypes), sourced commercially	noxious weeds (National Seed Strategy for Rehabilitation and Restoration 2015-2020). Seed Source Priority: 1. Native seed sourced from the local area. 2. Native species (found in local ecotypes) sourced commercially 3. Cultivars of native species (found in local ecotypes), sourced commercially 4. Non-invasive, non-native species that meet GUSG habitat objectives only when no other options are available and: • The natural biological diversity of the proposed management area will not be diminished; • Exotic and naturalized species can be confined within the proposed management area; • Analysis of ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural environment; and • Resource management objectives cannot be met with native species.		
30	***Vegetation Management Action 3*** *Inventory and Monitoring*	Most RMPs include management action to ensure monitoring efforts focus on meeting Public Land Health Standards. Other RMPs and the older ones have no similar action.	1. Establish a monitoring plan that includes specific quantitative objectives, for treatments in OHMA and UHMA. Consider use of the Assessment, Inventory, and Monitoring (AIM) protocol (or similar approved quantitative monitoring method) as a primary method or develop a treatment-specific comparable quantitative methodology. Monitoring will ideally begin 1-2 years prior to treatment to establish baseline conditions and may include a control as a point of comparison. 2. Use AIM (or similar approved quantitative monitoring method) as the primary monitoring method to assess	Same as Alternative B.	Same as Alternative B.	In OHMA, implement the monitoring plan as outlined in the CCA Section 7 and CCA Appendix E.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			habitat conditions relative to habitat guidelines at a landscape scale. 3. All habitat treatments and vegetation management prescriptions in GUSG habitat should incorporate appropriate effectiveness monitoring to determine whether one or more of the following goals are being achieved: • Meeting site-specific GUSG habitat guidelines consistent with best available science as shown in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*. • Enhancing the long-term sustainability of local GUSG populations. • Promoting the maintenance of large intact sagebrush stands. • Limiting the expansion and dominance of invasive species. • Maintaining or improving soil site stability, hydrologic function, and biological integrity. • Enhancing the native plant community, including the native shrub reference state in the State and Transition Model, with appropriate shrub, grass, and forb composition identified in the applicable ecological site description where available. • Meeting specific project or management objectives as they relate to GUSG or the HAF report.			
31	***Vegetation Management Action 4*** *Reduce Encroachment*	Some RMPs have management actions that allow reduction in encroachment of juniper and conifer encroachment. Some other RMPs have no similar action.	1. Plan conifer removal treatments using non-ground disturbing methods such as lop and scatter in areas where conifers are encroaching into sagebrush habitats, in a manner that considers Tribal cultural values. Incorporate existing and new science into treatment design and implementation to improve or create suitable GUSG habitat in OHMA, UHMA, and LCMA habitat where ecological potential exists. 2. No similar action.	1. Plan conifer removal treatments using best available methods in areas where conifers are encroaching into sagebrush habitats, in a manner that considers Tribal cultural values. Incorporate existing and new science into treatment design and implementation to improve or create suitable GUSG habitat in OHMA and UHMA where ecological potential exists. In planning treatment locations, consider ecological site potential, near-future (next 20-30 year) climate, and	1. Same as item 1 in Alternative C and includes LCMA. 2. Same as item 2 in Alternative C. 3. Same as item 3 in Alternative B.	Same as Alternative D.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			3. Prioritize treatments in areas that provide connectivity and linkage between intact sagebrush habitat and/or riparian habitat.	likelihood of meeting GUSG habitat objectives. 2. In OHMA, UHMA, and LCMA balance treatments so as not to harm other species, such as pinyon jays, by considering timing and design of the project with other migratory bird needs. Project design and treatment size should consider surrounding pinyon-juniper habitat available within the larger landscape (e.g., watershed) and maintaining a balanced ecotone between sagebrush and pinyon-juniper woodlands. In OHMA, UHMA, and LCMA use the Resist-Accept-Direct (RAD) framework to identify priority areas for treatments (Schuurman et al. 2020 and Schuurman et al. 2022).. 3. Same as Alternative B.		
32	***Vegetation Management Action 5*** *Minimize Fragmentation*	Some RMPs provide management direction to reduce habitat fragmentation. Other RMPs have no similar action.	Use best available science, data, and analysis, to assess or develop habitat suitability and connectivity models to aid in prioritizing vegetation treatments to improve connectivity within OHMA, UHMA, and LCMA to improve connectivity where ecological site information indicates sagebrush could exist.	*Same as Alternative B, but does not include LCMA.*	Same as Alternative B.	No similar action.
33	***Vegetation Management Action 6*** *Vegetation Mosaics*	Some RMPs specify management relative to vegetation resources as creating mosaics and other RMPs are more general in guidance. Other RMPs have no similar action.	1. All GUSG habitat improvement projects and vegetation manipulation within habitat should clearly articulate and document the need for the project to achieve desired habitat guidelines (*Gunnison Sage-Grouse Rangewide Steering Committee 2005, Appendix H*). 2. Documentation for vegetation management will require a HAF report and site-specific vegetation monitoring data to evaluate treatment objectives as they relate to GUSG seasonal habitats. Sagebrush manipulation and removal should be limited to areas of high sagebrush mortality, and where understory may be limited in OHMA, UHMA, and LCMA. Carefully consider the timing of treatments during drought conditions in the project-specific NEPA analysis. 3. All vegetation treatments in sagebrush habitat should consider and incorporate	1. Same as item 1 in Alternative B. 2. Same as item 2 in Alternative B. 3. Same as item 3 in Alternative B, but for OHMA only. Plan vegetation treatments within the context of the limiting seasonal habitat (i.e., if winter habitat is the most limiting, reconsider vegetation treatments that fragment or remove taller, dense sagebrush stands). Use HAF reports to assist in understanding limiting habitat.	Same as Alternative B.	No similar action.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			seasonal GUSG habitat indicators into project design, analysis, and approval. Project implementation should include the recommendations for sagebrush removal or treatment projects within seasonal habitats as follows: • Any sagebrush removal or treatment should be limited within 1 mile of an active, inactive, historic, or unknown lek (Wallestad 1975), unless implemented to maintain or enhance the lek or surrounding nesting or brood-rearing habitat. If seasonal habitat is uniform and not fragmented, then sagebrush loss, removal, treatments, or other surface-disturbing activities should be limited and not exceed 20-30% (Connelly et al. 2000) of the total mapped habitat. Treatments must have recovery objectives that meet the habitat guidelines listed Appendix F, *Habitat Monitoring and Reporting*. • Treatment blocks should be small (< 50 acres), interspersed across the landscape, and irregular in shape. • Treatment areas should not be distributed systematically or predictably across the landscape. If > 40% of the original mapped breeding habitat has been lost (Connelly et al. 2000) to other factors, all remaining habitat should be protected (*RCP, Appendix I, p. 6 and 7*).			
34	***Vegetation Management Action 7*** *Guidance for the Management of Sagebrush Plant Communities for Sage-Grouse Conservation*	Some RMPs provide management action to consider sage-grouse parameters in sagebrush treatments and other RMPs have no similar action or address vegetation treatments generally.	GUSG habitat guidelines will be incorporated as part of treatment and restoration monitoring objectives within OHMA and where appropriate based on ecological site information in UHMA and LCMA. Provide exceptions for inclusions of non-habitat.	Same as Alternative B.	Same as Alternative B.	No similar action.
35	***Vegetation Management Action 8*** *Invasive Species*	All RMPs, except some older RMPs have management actions relative to integrated noxious weed management and consider sensitivity to other resources.	1. Identify and address vectors of cheatgrass and non-native, invasive weeds spread (*RIS 2.03*), prioritizing OHMA followed by all other habitat types. 2. Monitor all surface-disturbing activities for establishment of invasive species and implement adaptive management.	1. Identify and address vectors of cheatgrass and other invasive species spread in OHMA and UHMA. 2. Same as item 2 in Alternative B. 3. Chemical treatments in OHMA and UHMA may include spot treatments	1. Same as item 1 in Alternative B. 2. Same as item 2 in Alternative B. 3. Same as item 3 in Alternative C. 4. Same as item 4 in Alternative B. 5. Same as item 5 in Alternative B. 6. Same as item 6 in Alternative B.	1. No similar action. 2. Integrated weed prevention practices used for all construction and maintenance activity (*See Appendix A of CCA*) (*CCA, p. 17*). 3. Habitat reclamation employed for any ground disturbance, in order to minimize establishment of invasive

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			Respond with integrated weed management strategies. 3. Chemical treatments in OHMA and UHMA are limited to targeted spot treatments of infestations with backpack sprayers; no boom or aerial application may occur. 4. Include a monitoring plan and adaptive management for all treatments. Work across management boundaries whenever possible to treat large-scale infestations (*Conceptually from RIS 2.04*). 5. Where native vegetation or seedbanks remain intact, rely primarily on passive restoration post-treatment. Where native vegetation is no longer present, revegetate with native seed or plantings. Implement monitoring and adaptive management when needed (*Conceptually from RIS 2.06*). 6. Implement BMPs for equipment use on BLM lands (i.e., clean all equipment of soil and seed between sites, minimize off-road travel, minimize soil disturbance).	using backpack sprayers, boom sprayers, and aerial application. 4. Same as item 4 in Alternative B. 5. Same as item 5 in Alternative B. 6. Same as item 6 in Alternative B.		weeds and to accelerate restoration of habitat function. (*See Appendix A of CCA*) (*CCA, p. 17*). Tier 1 & Tier 2 Habitat Ground disturbance associated with general road maintenance: Implement integrated weed prevention BMPs for road maintenance and ground disturbance operations, consistent with CCA Appendix A, Section I. Incorporate integrated weed prevention terms and conditions for road maintenance and ground disturbance operations, consistent with CCA Appendix A, Section II. These terms and conditions shall apply to the signatory as well as any signatory-contracted operators that maintain and construct infrastructure within Gunnison sage-grouse habitat on Federal lands (*CCA p. 43*). See Appendix A of the CCA for BMPs.
36	***Vegetation Management Action 9*** *Riparian/Brood-Rearing Habitat*	All RMPs have management direction for maintaining and/or improving riparian wildlife habitat. No plans specify management of riparian values specifically for Gunnison sage-grouse.	Prioritize restoration of meadows and riparian areas using low-tech, process-based restoration in areas not meeting land health standards in OHMA and UHMA, then LCMA. Place higher priority on sites with erosional features that cause lowered water tables and proneness to drought. Adapt management where needed, temporarily or long-term, to ensure treatment success (*Conceptually from RIS Priority 1-1*). Establish monitoring on restoration projects to determine if objectives have been met. Follow Riparian & Wetland AIM protocols or comparable quantitative methods. Manage wet meadows and riparian areas to maintain diverse forb communities (relative to reference state) (*2015 GRSG ARMPA*). If seeding riparian areas, prioritize inclusion of appropriate native sage-grouse preferred forbs in the seed mix to improve brood-rearing habitat in OHMA, UHMA, and LCMA. Maintain and improve willow patches that provide late summer habitat (*RIS 1.04*).	*Same as Alternative B, but only applied to OHMA and UHMA.*	Same as Alternative B.	Same as Alternative B.

2.2.2.4 Livestock Grazing Management

Table 2.7. Comparison of Alternatives: Livestock Grazing Management

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B		Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
37	***LIVESTOCK GRAZING MANAGEMENT OBJECTIVE***	N/A	OBJECTIVE 1: Manage permitted livestock grazing to maintain and/or enhance GUSG habitat to meet or make significant progress toward meeting GUSG seasonal habitat objectives and guidelines, based on ecological site potential.				
38	***Livestock Grazing Management Action 1*** *Livestock Management*	Generally, all RMPs make GUSG habitat available for livestock grazing (Map A.4). Number of AUMs, season of use, and other aspects of livestock grazing management may be adjusted during site-specific evaluations for term permit renewals on a case-by-case basis. All plans allow for adjustment to AUMs or allotment closure based on resource conditions determined through site specific evaluation. Monitoring is generally a required component of these evaluations. Although not specific to Gunnison sage-grouse, the intent of these management actions is to reduce impacts to sensitive resources on a case-by-case basis. The BLM administers 16 grazing allotments of NPS-administered lands within the Curecanti National Recreation Area.	**B1 Sub-Alt** 1. Make OHMA (391,490 acres) and UHMA (258,630 acres) unavailable for livestock grazing* (Map A.5). Do not renew or issue expiring livestock grazing permits or allow transfer of livestock grazing permits in OHMA and UHMA. **Acres unavailable for livestock grazing would be for the life of the RMP Amendment.*	**B2 Sub-Alt** 1. Make OHMA (391,490 acres) unavailable for livestock grazing* between March 1 and July 15 (Map A.6). Continue to authorize livestock grazing in OHMA between July 16 and February 28. Continue to authorize livestock grazing in UHMA (258,630 acres). 2. BLM will work cooperatively with permittees to reduce impacts to GUSG habitat. Develop management strategies that are as seamless as possible with respect to actions on public and adjacent private lands. 3. Develop adaptive management plans that incorporate appropriate livestock management guidelines (see Appendix J, *BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado and Utah*) into livestock grazing permits that will address potential drought and allow progress toward meeting GUSG habitat guidelines. **Acres unavailable for livestock grazing would be*	1. Authorize livestock grazing in OHMA (391,490 acres) and UHMA (258,630 acres) (Map A.7). Issue or renew and allow transfer of livestock grazing permits, provided livestock can be managed to meet or make progress toward meeting land health standards. Implement appropriate Livestock Management Best Practices (Appendix H, *Best Management Practices and Required Design Features*) when renewing livestock grazing permits. 2. Work cooperatively on integrated ranch planning in GUSG habitat. Develop management strategies that are as seamless as possible with respect to actions on public and adjacent private lands, but which are not unduly restrictive of private land actions and are in conformance with BLM-management. 3. Where land health determinations indicate GUSG habitat guidelines are not being met due to current livestock grazing management, develop adaptive management plans that incorporate appropriate livestock management guidelines (see Appendix J, *BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado and Utah*) into livestock grazing permits that will address progress toward meeting GUSG habitat guidelines.	1. Same as item 1 in Alternative C (Map A.7). 2. Same as item 2 in Alternative C. 3. Same as item 3 in Alternative B2.	1. Apply CCA section 5.4, including but not limited to: Renew grazing permits on Federal land in OHMA, provided grazing management guidelines, herbaceous height guidelines, and adaptive management are incorporated into grazing permits and associated AMPs/CMPs, adequate monitoring of herbaceous heights is conducted, and grazing in riparian areas is managed to improve habitat conditions (*See Appendix K, Candidate Conservation Agreement for the Gunnison Sage-Grouse, Centrocercus minimus, Gunnison Basin Population, p. 30*). 2. At permit renewal for each grazing permit wholly/partially in OHMA, incorporate into all applicable permits, allotment management plans, and coordinated management plans the following framework of actions that will take effect if herbaceous heights are not met (*See Appendix K, Candidate Conservation Agreement for the Gunnison Sage-Grouse, Centrocercus minimus, Gunnison Basin Population, p. 30*). 3. Conduct adequate monitoring of herbaceous heights on active grazing allotments in OHMA in accordance with the monitoring protocols outlined in the CCA (BLM, USFS). RCP Grazing Objective 2-1, p. 212. (See *K, Candidate Conservation Agreement for the Gunnison Sage-Grouse, Centrocercus minimus, Gunnison Basin Population,* Section 7.2, p. 33). A. Short-term monitoring will be conducted during season of

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B		Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
				for the life of the RMP Amendment.			grouse use (nesting, brood-rearing, etc.) for early-season grazing, and following livestock use for late-season grazing (See Appendix K, *Candidate Conservation Agreement for the Gunnison Sage-Grouse, Centrocercus minimus, Gunnison Basin Population,* Section 7.2). b. Prioritize limited funding to ensure adequate monitoring is accomplished in Tier 1 habitat.
39	***Livestock Grazing Management Action 2*** *Livestock Trailing*	Several plans have management restrictions on livestock trailing activities. None of these restrictions are specifically for Gunnison sage-grouse. However, they are intended to provide protection to sensitive resources such as fragile vegetation, threatened or endangered species and their habitats, or other sensitive wildlife and may result in protection to Gunnison sage-grouse.	No similar action.	Authorize livestock crossing/trailing permits through OHMA on existing approved trailing routes between July 16 and February 28. Do not approve any new livestock crossing/trailing permits on new routes, precludes existing routes (States/Counties may authorize livestock trailing down county roads at their discretion).	Authorize livestock crossing/trailing permits through OHMA on existing approved trailing routes in compliance with the existing terms and conditions. New routes could be approved. Priority for new trail route proposals: (1) State/County roads (at the discretion of the state/county), (2) Open BLM roads, (3) Existing closed BLM roads, and (4) Areas with marginal or no potential to become suitable habitat. Only allow livestock crossing/trailing outside of existing roads/trails through suitable habitat when no other reasonable route exists or where trailing on existing routes would result in a greater than twice the distance as a cross country route. Only allow new crossing/trailing routes between March 1 and May 15 when necessary to get to private pasture or other federal/state grazing permits with on/off dates between March 1 and May 15. Incorporate terms and conditions into all new crossing/trailing permits that limit impacts to seasonal sage-grouse habitat (such as, designate overnight stop locations that are away from leks and outside of nesting habitat during the lekking and nesting season, do not trail up riparian corridors or swales, etc.).	Same as Alternative C.	No similar action.
40	***Livestock Grazing Management Action 3*** *Relinquished permits, Forage Reserves, and*	Almost all plans contain direction for managing voluntary relinquishment of grazing preference. The management direction in these plans generally directs BLM to assess the relinquished allotment for grazing suitability and consider closing the allotment or	**B1 Sub-Alt** 1. When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment in OHMA or UHMA do not reissue the	**B2 Sub-Alt** 1. When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment or for existing vacant allotments	Same as Alternative B2.	Same as Alternative B2.	1. Seek opportunities to achieve greater flexibility in the distribution of current AUMs across the landscape in order to improve GUSG habitat. Inventory inactive grazing allotments on Federal lands.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B		Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
	Temporary Use of Allotments	establishing a forage reserve allotment where the allotment is not meeting land health standards, or where biological resources would benefit from reduced or no grazing. Although no plan addresses relinquishment and forage reserves specifically for sage grouse, the intent of these management actions is to protect sensitive resources such as Gunnison sage-grouse. Only the two plans which were written in the 1990s (Gunnison Resource Area and San Luis Resource Area) do not have this type of management direction.	permit. Retire the allotment from livestock grazing for the life of this plan.	in GUSG OHMA, the BLM will consider: • Reissuing a permit on the allotment with terms and conditions that are consistent with meeting the Land Health Standards (43 CFR, Part 4180.2). • Converting the allotment to a forage reserve allotment that is available for occasional use by permittees when other allotments need to be rested from use to meet resource objectives. Priority for use of reserve allotments in GUSG habitat would be given to operations that need to be rested to enhance or restore GUSG habitat. Maintenance of fences and other range improvements on reserve allotments would be completed by the temporary user prior to livestock grazing in the reserve allotment. Temporary use of reserve allotments would not be allowed due to overuse of an individual's permitted allotment(s). • Merging the allotment with adjacent allotment(s) in GUSG habitat to enhance management flexibility and reissuing a permit with terms and conditions that are consistent with			Identify vacant allotments that may enable short and long-term flexibility in the grazing system. Apply CCA Section 2.2: CCA relationship to CCAA.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B		Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
				meeting the Land Health Standards (43 CFR, Part 4180.2). • Temporarily or permanently closing the allotment to livestock grazing for the life of this plan. 2. When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment in UHMA, the BLM will consider: • Reissuing a permit on the allotment with terms and conditions that are consistent with meeting the Land Health Standards (43 CFR, Part 4180.2).			
41	***Livestock Grazing Management Action 4*** *Livestock use levels*	Most plans contain direction to manage livestock grazing utilization levels during site-specific allotment evaluation. Some plans establish baseline utilization limits that are subject to change during allotment specific evaluation. Plans commonly establish example criteria for changing utilization limits, such as not meeting land heath standards for upland or riparian vegetation, or to meet other biological objectives. Although only two plans address utilization specifically for Gunnison sage-grouse, all plans with utilization management direction are intended to allow BLM to address utilization limits for sensitive resources at the site-specific level. Only three plans contain no reference to managing grazing utilization limits to benefit biological resources.	**B1 Sub-Alt** No similar action.	**B2 Sub-Alt** 1. Manage livestock grazing duration and utilization to retain adequate residual vegetation in all riparian areas in the planning area to maintain healthy, native riparian plant communities and to prevent accelerated erosion of riparian soils. Where livestock grazing is not allowing riparian areas to retain adequate residual vegetation, incorporate appropriate livestock management guidelines (see Appendix J, *BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado and Utah*) into livestock grazing permits based on ecological site potential.	1. Same as item 1 in Alternative B2. 2. Same as item 2 in Alternative B2. 3. No similar action.	Same as Alternative B2.	1. RCP/CCA grazing management guidelines (*See CCA, Appendix D*) continue to be incorporated into all permits and any associated allotment management plans and/or coordinated management plans in occupied sage-grouse habitat (BLM, USFS, NRCS, NPS) (*RCP Grazing Objective 1-1, p. 211*). Allotments and/or pastures containing occupied habitat will be managed for relevant RCP habitat guidelines. Manage grazing in riparian areas, swales, and wet meadows to improve habitat conditions (Appendix K, *Candidate Conservation Agreement for the Gunnison Sage-Grouse, Centrocercus minimus, Gunnison Basin Population, p. 33):* • Manage grazing in riparian areas to maintain or move towards the desired riparian vegetation condition (Appendix K, *Candidate Conservation*

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B		Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
				2. Incorporate livestock utilization levels, monitoring, and duration of use requirements that are compatible with meeting GUSG habitat suitability, based on ecological site potential, into adaptive management plans for all livestock grazing permits in OHMA. 3. For Improve and Maintain category allotments (IM 2009-018), in OHMA and UHMA, the NEPA analysis for renewals and modifications of livestock grazing permits/leases shall include an adaptive management plan that incorporates relevant thresholds and defined responses, based on ecological site potential, into the terms and conditions of the grazing permit or lease. For custodial allotments in OHMA/UHMA where the BLM is the minority landowner, the BLM may consider, in coordination with the permittee/lessee, including at least one alternative that analyzes incorporation of relevant thresholds and defined responses into the terms and conditions of the grazing permit or lease. Thresholds specific to sage-grouse habitat in OHMA/UHMA will be developed to maintain or move OHMA toward providing suitable GUSG habitat (Table F-1, Appendix F, *Habitat Monitoring and Reporting*) based upon consideration of ecological site potential, and relevant locally			*Agreement for the Gunnison Sage-Grouse, Centrocercus minimus, Gunnison Basin Population, p. 33*). • Salt at least ¼ mile away from riparian areas to the extent feasible within existing pasture boundaries (*CCA p. 33*). Maintain at least 4" of stubble height (residual material) on hydrophytic plant species (wide-leaved sedges such as beaked sedge, water sedge, rushes, tufted hairgrass, and spikerush) in riparian areas throughout the growing season (Appendix K, *Candidate Conservation Agreement for the Gunnison Sage-Grouse, Centrocercus minimus, Gunnison Basin Population, p. 34*). Move 95% of all livestock from one pasture to the next within 3 days of scheduled move, with 100% moved within one week from scheduled move (Appendix K, *Candidate Conservation Agreement for the Gunnison Sage-Grouse, Centrocercus minimus, Gunnison Basin Population, p. 34*). If after 1 year, the Authorized Officer determines an allotment is not meeting habitat guidelines for herbaceous heights and due in part or whole to current livestock grazing: (Appendix K, *Candidate Conservation Agreement for the Gunnison Sage-Grouse,* Centrocercus minimus, *Gunnison Basin Population, p. 31*) • Adjust intensity, timing, distribution and/or duration of livestock grazing for year 2. Employ grazing BMPs (see Appendix K, *Candidate Conservation Agreement for the*

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B		Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
				specific conditions, and Land Health Standards (43 CFR 4180.2).			*Gunnison Sage-Grouse,* Centrocercus minimus, *Gunnison Basin Population, p. 31*). • Address any other contributing factors, as appropriate. • Applicable BMPs to move towards sage- grouse habitat guidelines. Continue to monitor progress towards meeting relevant guidelines. 2. At permit renewal for each grazing permit wholly/partially in OHMA, if not earlier, an agency IDT, in cooperation with the permittee, will use the Habitat Condition Assessment (see *CCA Section 7.2*) to incorporate habitat guidelines for herbaceous heights as a term and condition of the permit (see *CCA p. 30, Section 5.4*). 3. At permit renewal for each grazing permit wholly/partially in OHMA, incorporate into all applicable permits, allotment management plans, and coordinated management plans the following framework of actions that will take effect if herbaceous heights are not met: • If monitoring shows that herbaceous heights are not meeting the terms and conditions of the permit and changes in grazing are needed, changes will be coordinated with a team approach that involves the permittee. • If the sagebrush habitat structure is a limiting factor to achieving the guidelines, habitat treatments will be considered as funding and opportunities become available. • If permitted or dispersed recreation is identified as a

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B		Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
							causal factor for the failure to meet the guidelines, agencies will address as practicable. • If other land use authorizations and factors are limiting factors to achieving the guidelines, address as appropriate (see *CCA p. 30, Section 5.4*).
42	***Livestock Grazing Management Action 5*** *Season of Use Grazing Restrictions*	Most RMPs require BLM to consider changes to season of use on a case-by-case basis when resource conditions indicate that a change is needed. One RMP (Monticello Field Office) is specific to Gunnison sage-grouse nesting and applies seasonal restrictions for some allotments.	**B1 Sub-Alt** No similar action.	**B2 Sub-Alt** Do not authorize any livestock grazing in OHMA between March 1 and July 15.	Do not apply season of use restrictions on permitted livestock use, provided livestock grazing management is compatible with meeting GUSG habitat suitability (i.e., guidelines), where ecological potential exists, for Land Health Standards (43 CFR, Part 4180.2). If current livestock grazing management is not compatible with meeting GUSG habitat suitability, apply appropriate livestock management guidelines (see Appendix J, *BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado and Utah*) and/or livestock management best practices (Appendix H, *Best Management Practices and Required Design Features*). These may include adjusting season of use.	Same as Alternative C.	No similar action.
43	***Livestock Grazing Management Action 6*** *Water Developments*	Four plans place restrictions on water developments specifically. Two plans provide specifics for water developments in Gunnison sage-grouse habitat. Other RMPs may discuss range improvements in general but are not specific to water developments or sage-grouse habitat.	**B1 Sub-Alt** No similar action.	**B2 Sub-Alt** 1. In OHMA and UHMA, do not develop additional livestock water sources from undisturbed (not currently developed), naturally occurring springs and seeps that support mesic or riparian vegetation. 2. Incorporate appropriate design features (Appendix H, *Best Management Practices and Required Design Features*) for all new water developments in OHMA and UHMA. Implement best practices on all existing water developments as time and funding allow. Prioritize	1. Previously undisturbed springs and seeps in OHMA and UHMA may be developed for livestock water if development enhances livestock distribution and provides a net improvement of GUSG habitat. 2. Incorporate appropriate design features (Appendix H, *Best Management Practices and Required Design Features*) for all new water developments in OHMA and UHMA. Evaluate existing water developments to determine where incorporating best practices would enhance GUSG habitat. Prioritize modification or relocation (or removal of unneeded developments) in areas with high concentrations of active leks.	1. Previously undisturbed springs and seeps in OHMA and UHMA may be developed for livestock water if development enhances livestock distribution, provides a net improvement of GUSG habitat, and would not result in a reduction of riparian/mesic habitat. 2. Same as item 2 Alternative C.	1. New spring developments and spring reconstructions should be designed to minimize changes to the natural flow of the water (*CCA p. 33*). Develop any new alternative livestock water sources outside of naturally occurring riparian areas (develop wells, dig wells, install pipelines, etc.) (*CCA p. 33*). Where possible (when sufficient water is present to support riparian habitat and supply livestock water), redesign existing water developments that are in naturally occurring riparian areas to protect riparian habitat and pipe a portion of the water to troughs that are well away from naturally

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B		Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
				modification or relocation (or removal of unneeded developments) in OHMA.			occurring riparian habitat (*CCA p. 33*).
44	***Livestock Grazing Management Action** 7 Structural Range Improvements (cattleguards, fences, enclosures, corrals, or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling), windmills, ponds/reservoirs, solar panels, and spring development)*	Most RMPs specify some general best practices for range improvements project to reduce impacts to biological resources, including Gunnison sage-grouse. The Grand Junction Field Office RMP (2015) is more specific and addresses fencing and other practices for range improvements.	**B1 Sub-Alt** 1. In OHMA and UHMA, remove structural range improvements and fencing within allotments that are no longer necessary to exclude grazing from adjacent allotments as capacity and funding allow.	**B2 Sub-Alt** 1. Incorporate appropriate design features (Appendix H, *Best Management Practices and Required Design Features*) for all new range improvements in OHMA and UHMA. Design new range improvement projects to enhance livestock distribution and to control the timing and intensity of utilization. 2. Implement appropriate design features (Appendix H, *Best Management Practices and Required Design Features*) on all existing range improvements in OHMA and UHMA as time and funding allow. Prioritize modification or relocation (or removal of unneeded developments) in OHMA.	1. Same as item 1 in Alternative B2. 2. Evaluate existing range improvements to determine where incorporating best practices would enhance GUSG habitat. Prioritize modification or relocation (or removal of unneeded developments) in areas with high concentrations of active leks.	1. Same as item 1 in Alternative B2. 2. Same as item 2 in Alternative C.	1. In OHMA, new fences must meet the following criteria: • Fence is necessary to improve habitat conditions for sage-grouse; • Built to general wildlife standards, as recommended by CPW (Hanophy 2009): • Posts at minimum 16' intervals; • Gates, drop-downs, removable fence sections or other passages where animals concentrate and cross; • If area is identified as high-risk for grouse collision based upon topography, use flagging to mark the fence; • Otherwise, use a high-visibility wire, flagging or other visual markers for the top; • Fencing wire placed on the side of the fence posts where the domestic animals are located; • Smooth wire on the bottom; • Height of top rail or wire should be 42" or less; • At least 12" between the top two wires; • At least 16" between the bottom wire or rail and the ground; and • Standard minimization measures are applied (*see CCA Section 4.2, p. 31*). Integrated weed prevention practices are used for all construction and maintenance activity (see CCA Appendix A) (Appendix K, *Candidate Conservation Agreement for the Gunnison Sage-Grouse, Centrocercus minimus, Gunnison Basin Population, p. 37*).

2.2.2.5 Wildland Fire Ecology and Management

Table 2.8. Comparison of Alternatives: Wildland Fire Ecology and Management

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
45	***WILDLAND FIRE OBJECTIVE***	N/A	OBJECTIVE 1: Manage the wildland fire, fuels, and fire rehabilitation program to avoid GUSG habitat loss, enhance contiguous sagebrush habitat, restore damaged habitats, and address post-wildfire threats to GUSG Habitat.			
46	***Wildland Fire Management Action 1*** *Emergency Stabilization and Rehabilitation*	Most plans contain management direction for seeding disturbed areas. Management ranges from requiring weed free seed, prioritization of local native seed, and use of non-native seed under certain circumstances. No RMP has specific management requirements for seeding during Emergency Stabilization and Rehabilitation (ES&R) activities. However, the seed guidelines in current RMPs would apply to ES&R efforts.	In OHMA and UHMA prioritize native seed allocation for use in GUSG habitat in years when preferred native seed is in short supply. This may require reallocation of native seed from ES&R (BLM) projects outside of GUSG OHMA to those inside it. Use of native plant seeds for ESR or Burn Area Emergency Rehabilitation seedings is required based on availability, adaptation (site potential), and probability of success (Richards et al. 1998). Where probability of success or native seed availability is low, nonnative seeds may be used as long as they meet GUSG habitat guidelines (See Vegetation Management Action 2). Re-establishment of appropriate sagebrush species/subspecies and important understory plants, relative to site potential, shall be the highest priority for rehabilitation efforts. Guidelines from Vegetation Management Action 2 should be followed for seed selection.	Same as Alternative B.	In OHMA and UHMA require use of native plant seeds that are beneficial for GUSG for vegetation treatments based on availability, adaptation (site potential), probability for success (Richards et al. 1998), and the vegetation management guidelines for the area covered by the treatment. Where attempts to use native seeds have failed, or native seed availability is low, use species that meet soil stability and hydrologic function guidelines as well as vegetation and GUSG habitat guidelines. Guidelines from Vegetation Management Action 2 should be followed for seed selection.	Same as Alternative D.
47	***Wildland Fire Management Action 2*** *ES&R*	Under current management, most RMPs specify management direction for ES&R efforts in sage brush habitat, Moab Field Office RMP (2008) specifies that treatment actions are designed for specific criteria that include special status species and habitat. Other RMPs provide more general management actions for ES&R that are intended to rehabilitate burned landscapes for biological benefit.	In OHMA and UHMA design post-fire ES&R plan management to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, travel management, and other uses to achieve and maintain the desired condition of Burned Area Emergency Stabilization and Rehabilitation projects to benefit GUSG (Eiswerth and Shonkwiler 2006).	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
48	***Wildland Fire Management Action 3*** *ES&R*	One plan (Tres Rios Field Office RMP) suggests use of seed sources from multiple climate zones during revegetation efforts.	In OHMA and UHMA consider potential changes in climate (Miller et al. 2011) when proposing restoration seedings when using native plants. Consider collection from the warmer component of the species' current range when selecting native species (Kramer and Havens 2009).	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
49	***Wildland Fire Management Action 4*** *ES&R*	Two plans require rest from grazing after ES&R activity. Several other plans contain general grazing guidelines that incorporates rest from grazing for biological benefits on a case by case basis.	In OHMA and UHMA livestock grazing should be excluded from burned areas until woody and herbaceous plants achieve GUSG habitat guidelines (Appendix F, *Habitat Monitoring and Reporting*).	No similar action.	In OHMA and UHMA rest burned areas from grazing for two full growing seasons unless vegetation recovery dictates otherwise.	Same as Alternative D.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
50	***Wildland Fire Management Action 5*** *Fuels Management*	Under current management three RMPs have general management prescriptions for vegetation composition and canopy cover in Gunnison sage-grouse habitat. Other plans have guidance for managing vegetation that is non-specific to Gunnison sage-grouse, and/or non-specific to sagebrush habitat.	In OHMA and UHMA do not reduce sagebrush canopy cover to less than 15 percent (Connelly et al. 2000a; Hagen et al. 2007) unless a fuels management objective requires additional reduction in sagebrush cover to meet strategic protection of GUSG OHMA and conserve habitat quality for the species. Closely evaluate the benefits of the fuel breaks against the additional loss of sagebrush cover in the future NEPA process.	No similar action.	In OHMA and UHMA do not reduce sagebrush canopy cover to less than 15 percent (Connelly et al. 2000a; Hagen et al. 2007) in a project area unless a vegetation management objective requires additional reduction in sagebrush cover to meet strategic protection of GUSG OHMA and UHMA to conserve habitat quality for the species, in consultation with the State of Colorado, State of Utah, and USFWS.	Same as Alternative D.
51	***Wildland Fire Management Action 6*** *Fuels Management*	Most plans have seasonal use restrictions or timing limitations on surface-disturbing activities for various GUSG habitat types within the planning area. Dates for seasonal use restrictions are variable across all plans.	In OHMA and UHMA apply appropriate seasonal restrictions for implementing fuels management treatments according to the type of seasonal habitats present in the HMA (see SSS Management Action 11).	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
52	***Wildland Fire Management Action 7*** *Fuels Management*	All plans allow for the use of prescribed fire for biological benefits. No plans address prescribed fire in Gunnison sage-grouse habitat.	In OHMA and UHMA allow no prescribed fire as a treatment method in known winter concentration areas unless the treatments are designed to strategically reduce wildfire risk around or in the winter range and will maintain winter range habitat quality, unless in consultation with the State of Colorado or State of Utah it is deemed necessary to reduce risk to life and property.	Same as Alternative B.	Prescribed fire in known GUSG winter concentration areas shall only be considered after the NEPA analysis for the burn plan has addressed the four bullets: • why alternative techniques were not selected as viable options; • how GUSG goals and guidelines would be met by its use; • how the RIS objectives would be addressed and met; • a risk assessment to address how potential threats to GUSG habitat would be minimized. Any prescribed fire in winter habitat would need to be designed to strategically reduce wildfire risk around and/or in the winter range and designed to protect winter range habitat quality.	Same as Alternative B.
53	***Wildland Fire Management Action 8*** *Fuels Management*	All plans allow for the use of prescribed fire for biological benefits. No plans address prescribed fire in Gunnison sage-grouse habitat.	In OHMA and UHMA do not allow prescribed fire in GUSG habitat.	No similar action.	In OHMA and UHMA do not use prescribed fire to treat sagebrush in less than 12-inch precipitation zones (e.g., Wyoming big sagebrush or other xeric sagebrush species) (Connelly et al. 2000a; Hagen et al. 2007; Beck et al. 2009). However, if as a last resort and after all other treatment opportunities have been explored, and site-specific variables allow, the use of prescribed fire for fuels breaks that would disrupt fuel continuity or	Same as Alternative D.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					enhance land health could be considered where cheatgrass is deemed a minor threat. If prescribed fire is used in GUSG habitat, the NEPA analysis for the burn plan will address: • why alternative techniques were not selected as viable options; • how GUSG goals and guidelines would be met by its use; • how the RIS objectives would be addressed and met; • a risk assessment to address how potential threats to GUSG habitat would be minimized. Prescribed fire could be used to meet specific fuels objectives that would protect GUSG habitat in OHMA (e.g., creating fuel breaks that would disrupt the fuel continuity across the landscape in stands where annual invasive grasses are a minor component in the understory, burning slash piles from conifer reduction treatments, or being used as a component with other treatment methods to combat annual grasses and restore native plant communities).	
54	***Wildland Fire Management Action 9*** *Fuels Management*	All RMPs, except one have management actions relative to integrated noxious weed management and consider sensitivity to other resources.	In OHMA and UHMA monitor and control invasive weeds post-treatment as outlined in the above vegetation alternative in Vegetation Management Action 8for invasive species.	*Same as Alternative B (i.e., same as Vegetation Management Action 8 in vegetation section).*	*Same as Alternative B (i.e., same as Vegetation Management Action 8 in vegetation section).*	*Same as Alternative B (i.e., same as Vegetation Management Action 8 in vegetation section).*
55	***Wildland Fire Management Action 10*** *Fuels Management*	Two plans require rest from grazing after vegetation treatments or other disturbances. Several other plans contain general grazing guidelines that incorporates rest from grazing for biological benefits on a case-by-case basis.	In OHMA and UHMA rest treated areas from grazing until vegetation objectives for GUSG recovery have been met.	No similar action.	In OHMA and UHMA rest treated areas from grazing for two full growing seasons unless vegetation recovery dictates otherwise.	Same as Alternative B.
56	***Wildland Fire Management Action 11*** *Fuels Management*	All recent RMPs include management actions that promote use of native species where possible. Two older RMPs do not include a similar management action.	In OHMA and UHMA require use of native plant seeds for vegetation treatments as outlined in the above vegetation alternative in Vegetation Management Action 2 for seed mixes.	*Same as Alternative B (i.e., same as Vegetation Management Action 2 in vegetation section).*	*Same as Alternative B (i.e., same as Vegetation Management Action 2 in vegetation section).*	*Same as Alternative B (i.e., same as Vegetation Management Action 2 in vegetation section).*
57	***Wildland Fire Management Action 12*** *Fuels Management*	Most plans have direction for post-vegetation treatment (including fuels treatments) management. These actions frequently include having a post-treatment plan, monitoring, or pre-treatment	In OHMA and UHMA design post fuels management to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, travel	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
		assessment to ensure pot-treatment success.	management, and other uses to achieve and maintain the desired condition of fuels projects to benefit GUSG (Eiswerth and Shonkwiler 2006).			
58	***Wildland Fire Management Action 13*** *Fuels Management*	All recent plans have management actions which are intended to facilitate safety, reduce wildfire behavior, and protect property. Management actions vary from plan to plan, and only one RMP (Grand Junction Field Office RMP) is specific to Gunnison sage-grouse habitat.	In OHMA and UHMA, use best available science, data, and analysis to assess habitat suitability and connectivity to aid in design of vegetation treatments in GUSG habitats. Ensure treatment design strategically facilitates firefighter safety, reduces wildfire threats, and prevents extreme fire behavior. This may involve spatially arranging new vegetation treatments with past treatments, vegetation with fire-resistant seral stages, natural barriers, and roads in order to constrain fire spread and growth. This may require vegetation treatments to be implemented in a more linear versus block design (Launchbaugh et al. 2007).	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
59	***Wildland Fire Management Action 14*** *Fire Operations*	All recent RMPs prioritize fire suppression to protect human life and high value resources.	In OHMA and UHMA prioritize suppression immediately after firefighter and public safety and threats to real property. Consider GUSG habitat requirements commensurate with all resource values at risk managed by the BLM.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
60	***Wildland Fire Management Action 15*** *Fire Operations*	Although no RMPs have a similar action, a temporary closure could be considered for emergency purposes under 43 CFR 9212.2 in any field office.	In OHMA and UHMA, temporary closures would be considered in accordance with 43 CFR 9212.2.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

2.2.2.6 Recreation

Table 2.9. Comparison of Alternatives: Recreation

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
61	***RECREATION OBJECTIVES***	N/A	OBJECTIVE 1: While managing for recreational outcomes, within SRMAs manage recreation to avoid, minimize, and compensate for activities that (1) disrupt GUSG or their habitat, (2) fragment and/or result in loss of GUSG habitat, or (3) spread noxious weeds. OBJECTIVE 2: While allowing multiple use, BCAs would be managed for wildlife habitat and backcountry recreation and hunting			
62	***Recreation Management Action 1*** *Urban Interface Recreation Areas and Special Recreation Management Areas (SRMAs)*	Manage the existing Special Recreation Management Areas (Map A.8) as described in existing RMPs: • Spring Creek (Zone 1) (Uncompahgre Field Office) • Cross Canyons (Canyons of the Ancients NM) • Alpine Triangle Recreation Area (Gunnison Field Office) • Cochetopa Canyon (Gunnison Field Office) • Hartman Rocks (Gunnison Field Office) • Bangs Canyon (Grand Junction Field Office) • Cactus Park (Dominguez-Escalante NCA) • Two Rivers (Moab Field Office) • San Miguel River (Uncompahgre Field Office) • Dolores River Canyon (Uncompahgre & Tres Rios Field Offices) • Utah Rims (Moab Field Office) • Gunnison River (Moab Field Office) • Ridgeway Trails (Uncompahgre Field Office) • Roubideau (Uncompahgre Field Office) • Flat Top-Peach Valley (Uncompahgre Field Office)	No new SRMAs are designated within OHMA (Map A.9). Designated trails and routes located outside of SRMAs and UIRAs, in OHMA and UHMA would be included within the disturbance cap (SSS Management Action 4.3).	*Same as Alternative A, except implement seasonal use restrictions to reduce disturbance during lekking season when appropriate (Map A.10).*	Manage new SRMAs within OHMA with emphasis on a variety of personal, community, economic environmental benefits and compatible with conservation of sage-grouse habitat. Designate Signal Peak ERMA/UIRA as a SRMA (13,200 acres) in the Gunnison Field Office **(**CCA**,** Appendix B); (SRMA-specific outcomes, proposed recreation setting characteristics and the management framework can be found in Appendix L, *Recreation Management Areas*) (Map A.11). All existing SRMAs remain.	See CCA Appendix B: *Urban Interface Recreation Areas* (Map A.12). Signal Peak UIRA (CCA Appendix B). Offsite mitigation standards outlined in *sections 4.3, 4.4, 5.2, and 5.3 of the CCA* would not apply. All existing SRMAs in Gunnison Field Office remain.
63	***Recreation Management Action 2*** *Extensive Recreation Management Areas (ERMAs)*	Manage the following existing Extensive Recreation Management Areas (Map A.8): • Gunnison Field Office • Kinikin Hills (Uncompahgre Field Office)	Remove ERMA designation where overlap occurs with OHMA (Map A.9).	Same as Alternative A (Map A.10).	All existing ERMAs remain same as Alternative A, except as identified in Recreation Management Action 1 Designate Signal Peak ERMA/UIRA as a SRMA (13,200 acres) in the Gunnison Field Office (*CCA, Appendix B*).	See CCA Appendix B: *Urban Interface Recreation Areas* (Map A.12). Offsite mitigation standards outlined in *sections 4.3, 4.4, 5.2, and 5.3 of the CCA* would not apply.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
		• East Creek (Grand Junction Field Office) • Burn Canyon (Uncompahgre Field Office) • Paradox Valley (Uncompahgre Field Office) • Gateway (Uncompahgre Field Office) • Monticello Field Office • Moab Field Office • San Luis Resource Area – Area #1 (San Luis Valley Field Office)			Manage OHMA within ERMAs commensurate with protection of GUSG habitat (Map A.11).	All existing ERMAs in the Gunnison Field Office remain.
64	***Recreation Management Action 3*** *Backcountry Conservation Areas (BCAs)*	All plans: no similar action.	No similar action; no BCAs would be designated under this alternative.	Designate one BCA (Map A.10). • Sugar Creek BCA (17,300 acres) in the Gunnison Field Office Management framework can be found in Appendix L, Recreation Management Areas.	No similar action; no BCAs would be designated under this alternative.	No similar action.
65	***Recreation Management Action 4*** *Timing Restrictions: Seasonal Restrictions on Construction, Maintenance, and Access (including Public Access)*	Most plans consider timing limitations on surface disturbing activities in various habitats for Gunnison sage-grouse. Dates for seasonal use restrictions are variable across all plans.	In OHMA, allow no new recreation facility construction from March 1 – July 15, unless needed for human health and safety.	Same as Alternative B.	Same as Alternative B.	Place seasonal restrictions on construction and maintenance of recreational facilities and access in seasonal grouse habitat (except emergency maintenance), including public access per the following: • Currently implemented: Lekking period, currently observed from approximately March 15 – May 15. • If research indicates additional restrictions are necessary to sustain the sage-grouse population, seasonal restrictions in identified seasonal grouse habitat may be applied to minimize disturbance during the following critical biological periods: nesting, brood-rearing, or winter periods of use by grouse. (*CCA Section 4.2.1 and Figure 2, p. 15-16*)
66	***Recreation Management Action 5*** *Recreation Development*	Three plans prohibit construction or development within variable distances of leks and/or habitat. The Uncompahgre Field Office prescribes SSR for construction activities.	In OHMA and UHMA, no new construction of small scale- recreation-related infrastructure.	In OHMA apply minimization criteria (SSS Management Action 12) for small scale recreation-related infrastructure to address health and human safety concerns.	In OHMA and UHMA apply minimization criteria (SSS Management Action 12) for small scale recreation-related infrastructure. In OHMA and UHMA, small scale recreation-related infrastructure would be counted toward the disturbance cap when greater than 0.25 acres. If the disturbance cap has been exceeded, then new infrastructure will be deferred until	See CCA *Section 4.4.4 Miscellaneous Infrastructure* (p. 23-24). See CCA *Section 5.2. Travel Management* (p. 25).

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					disturbance levels are back below the cap (SSS Management Action 4.3).	
67	***Recreation Management Action 6*** *SRPs*	All recent RMPs have management guidance for issuance of SRPs. Most plans consider SRPs on a case-by-case basis after review of resources and other applicable RMP decisions. A few plans limit or prohibit issuance of SRPs in sensitive resources areas, including Gunnison sage-grouse habitat.	For SRPs issued within OHMA, include additional educational/etiquette messaging in all use authorization stipulations. Redirect SRPs which are disruptive to GUSG or their habitat away from ERMAs/undesignated lands and into SRMAs whenever possible, except when those activities (e.g. environmental education field trip, wildlife observation or photography) are conducted during a time (i.e., seasonal timing limitations or daily times) or in a manner that is not disruptive to GUSG or GUSG habitat. Do not allow SRPs in OHMA or UHMA which would result in the degradation or removal of GUSG habitat or adversely affect GUSG.	Same as Alternative B.	Same as Alternative B.	See CCA *Section 5.2.3 Recreation Events and Outfitters* (p. 27), which describes the conditions under which SRPs would be permitted.

2.2.2.7 Travel and Transportation

Table 2.10. Comparison of Alternatives: Travel and Transportation

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
68	***TRAVEL AND TRANSPORTATION OBJECTIVES***	N/A	OBJECTIVE 1: In the context of multiple-use management, travel and transportation are managed to (1) decrease habitat fragmentation and increase habitat connectivity and function, (2) reduce mortality from vehicle collisions, (3) avoid, minimize, and compensate for habitat fragmentation, (4) limit the spread of noxious weeds, and (5) limit disruptive activity associated with human access. OBJECTIVE 2: In areas where travel management planning has not been completed, or where existing travel management plans have not addressed GUSG, implement a travel management plan (TMP) per Handbook 8342.			
69	***Travel Management Action 1*** *Open, Limited, Closed Travel*	All existing plans have allocation level travel designations (Map A.13). Many plans have allocation level seasonal travel limitations for big game or other resources unrelated to GUSG habitat. Travel limitations which overlap with GUSG lifecycle timeframes may provide some protection to GUSG habitats. Open: • OHMA: 0 acres • UHMA: 0 acres Limited: • OHMA: 385,970 acres	1. Manage all OHMA (391,490 acres) as OHV-Closed, allowing for the exceptions to the definition of an OHV provided for in 43 CFR 8340.0-5a (Map A.14). 2. The WSAs adjacent to the Powderhorn Wilderness will be managed as OHV-Closed.	1. Manage all OHMA (386,660 acres) and UHMA (222,350 acres) as OHV-Limited except for areas already managed as OHV-Closed (4,820 acres OHMA and 36,280 acres UHMA), which will remain closed (Map A.15), allowing for the exceptions to the definition of an OHV provided for in 43 CFR 8340.0-5a. 2. Same as item 2 in Alternative B.	1. Same as item 1 in Alternative C. 2. Same as item 2 in Alternative B.	See CCA Section 4.3 *Travel Management.* 1. See CCA Section 4.3 *Travel Management*. 2. Same as Alternative B (Map A.16).

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
		• UHMA: 221,060 acres Closed: • OHMA: 4,820 acres • UHMA: 36,160 acres Several plans have allocation level travel decisions specific to GUSG. The Gunnison Gorge NCA RMP (2004), Gunnison Resource Area RMP (1993) as amended in 2010, Dominguez Escalante NCA RMP (2017), and San Luis Valley RMP, as amended in 2009 have allocation level travel designations that are specific to GUSG. Gunnison Gorge limits motorized and mechanized travel from November 15 to April 30 in the Gunnison sage-grouse ACEC. Gunnison Resource area limits motorized travel from March 15 to May 15 on 191,00 acres. The Dominguez-Escalante RMP used GUSG winter habitat as designation criteria for allocation level decisions in the 2017 RMP and TMP. San Luis Valley limits snowmobile travel to designated routes on the Poncha Pass Loop.				
70	***Travel Management Action 2*** *Rehabilitation and Reduce Routes (During Implementation Level Planning)*	All recent RMPs direct reduction of routes during implementation level planning and/or provide direction on when or how to reclaim and rehabilitate closed routes.	1. Prioritize for closure and rehabilitation the BLM managed routes in OHMA during implementation level planning, allowing for the exceptions to the definition of an OHV provided for in 43 CFR 8340.0-5a. 2. Rehabilitation: Seed, plant, and/or vertical mulch closed roads and trails to promote habitat connectivity (*RIS 3.19 and 5.04*). See Vegetation Management Action 2 for seed mix information.	1. Same as Alternative A. 2. Rehabilitation: Seed, plant, and/or vertical mulch closed roads and trails to promote habitat connectivity (*RIS 3.19 and 5.04*). See Vegetation Management Action 2 for seed mix information. Prioritize closed routes within riparian areas and within 1 mile of active leks.	1. During implementation level planning, place high priority on improving/restoring intact habitat within OHMA and UHMA when making route designation decisions, while maintaining access connectivity to key locations /facilities /amenities, allowing for the exceptions to the definition of an OHV provided for in 43 CFR 8340.0-5. 2. Rehabilitation: Seed, plant, and/or vertical mulch closed roads and trails to promote habitat connectivity (*RIS 3.19 and 5.04*). See Vegetation Management Action 2 for seed mix information. Prioritize closed routes within riparian areas and within 4 miles of active, inactive, and historical leks within OHMA and UHMA followed by all other occupied, unoccupied, and linkage-connectivity management areas.	When implementing route closures under the 2010 Gunnison Travel Management Plan (TMP) and the NPS Motorized Vehicle Access Plan (MVAP): • Tier 1 habitat will be prioritized for reclamation work, to the extent feasible. • Using the Habitat Prioritization Tool and/or a route density map, reclamation options will be compared to optimize the size of intact, unfragmented Tier 1 habitat patches. *(CCA Section 5.2.1, p. 25)* See CCA Section 6.3.1, p. 39 for additional guidelines on route decommissioning.
71	***Travel Management Action 3*** *Limit Disturbance (During Implementation Level Planning)*	Most plans have various types of disturbance limitations, such as seasonal travel closures for motorized and mechanized use, and/or surface disturbance limitations. These disturbance	1. Pursue opportunities to reduce/eliminate permitted activities on routes within OHMA when evaluating	1. No similar action. 2. During implementation level planning, prescribe route maintenance levels based on multiple factors (such as	1. During implementation planning, evaluate opportunities to limit use on BLM managed roads/trails within OHMA to minimize disturbance to	See CCA Section 4.2.1 (p. 15). 1. If research indicates additional restrictions are necessary to sustain the sage-grouse population, seasonal

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
		limitations fall under other categories of actions, such as seasonal timing limitations on surface disturbing activities or seasonal travel limitations. One plan (Grand Junction Field Office RMP) suggests limiting disturbance from travel management for GUSG during implementation level planning. Other plans recommend reducing overall route density generally, in certain locations such as ACECs, or for other resources not related to GUSG. Some plans recommend managing travel to reduce resource conflicts during RMP implementation and prescribe methods which are intended to reduce overall disturbance. Some plans contain BMPs intended to reduce disturbance (not listed here).	permit applications and permit renewals and during travel management planning. 2. During implementation level planning, prescribe only Level 1 maintenance to routes within OHMA (maintaining routes only to the level necessary to protect adjacent resources). 3. When evaluating trail designations during Implementation level planning, do not authorize any new recreational trails within OHMA that are not conducive to the protection or beneficial management of GUSG. 4. During Implementation level planning, evaluate for closure existing recreational trails within OHMA that are not conducive to the protection or beneficial management of GUSG. 5. Promote healthy landscapes, free of invasive species, by including noxious weed interpretation (Identification, Observation Reporting #, Pre/Post washing practices, etc.) into Travel Management Maps and related messaging. 6. During implementation level planning, evaluate the effectiveness and implement-ability of restricting mechanized use (and e-bikes) to designated routes in OHMA year round. Except for access required by law or for emergency services or administrative or permitted activities. 7. No similar action.	budgets, anticipated use levels, desired experience and setting, etc.) 3. Allow for recreational trail development in OHMA, based on site specific NEPA analysis. 4. If new recreation trail development occurs in OHMA, focus on trails which provide key access between communities, public lands, and destination sites rather than stacked loop (experience driven) trail systems. Evaluate use restrictions (such as timing, type of use, and seasonal of use), based on site specific need. 5. Same as item 5 in Alternative B. 6. Same as No Action Alternative (regarding restrictions on mechanized use and e-bikes). 7. No similar action.	GUSG, including seasonal timing limitations or volume of use 2. During Implementation level planning, emphasize reduced route maintenance levels (Level 1) on BLM managed routes within OHMA and focus pro-active (Level 3 or 5) maintenance on routes outside of OHMA. 3. Focus recreational (experience driven) trail development in SRMAs (and to a lesser extent, ERMAs), limiting the extent of fragmentation of OHMA to the extent possible. 4. Same as item 4 in Alternative C. 5. Same as item 5 in Alternative B. 6. During implementation level planning, evaluate the effectiveness and implement-ability of restricting mechanized use (and e-bikes) to designated routes in OHMA during lekking season (March 1-May 15). Except for access required by law or for emergency services or administrative or permitted activities. 7. In OHMA and UHMA in the Gunnison ERMA, maintain current, designated route system limiting both motorized (Gunnison Field Office TMP (2010)) and mechanized travel and to include over-snow vehicle travel. Any route subsequently approved by the BLM will be incorporated into the designated the route system (see Map A.17).	restrictions in identified seasonal grouse habitat may be applied to minimize disturbance during the following critical biological periods: nesting, brood-rearing, or winter periods of use by grouse. 2. Seasonal restrictions on construction, maintenance, and access in seasonal grouse habitat (excepting emergency maintenance), including public access (see Figure 2 in the CCA) currently observed from March 15 – May 15. 3. No similar action. 4. No similar action. 5. Use integrated weed prevention practices for all construction and maintenance activities. 6. No similar action. 7. Same as item 7 in Alternative D. See CCA Section 5.2.2.
72	***Travel Management Action 4*** *New Routes (During Implementation Level Planning)*	Most plans provide directions for where, when, and how to construct new routes. This direction is variable across plans, but generally aims to reduce fragmentation and disturbance in sagebrush habitats.	When evaluating proposals for new routes (roads, primitive roads, and trails) do not approve any new route construction in OHMA that is not conducive to the protection and beneficial management of GUSG.	When analyzing new route proposals in OHMA through implementation level planning, seek to minimize impacts to habitat fragmentation by location/relocation (edge of habitat vs. bisecting), mitigation/offset (add a mile, subtract a mile), management controls (gating/authorized use only, timing limitations, etc.), and similar methods.	Same as Alternative C.	See CCA Section 4.3.1 (p. 18-19).

2.2.2.8 Mineral Split-Estate

Table 2.11. Comparison of Alternatives: Mineral Split-Estate

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
73	***Mineral Split-Estate Objective***	N/A	OBJECTIVE 1: Utilize Federal authority to protect GUSG habitat on split-estate lands to the extent provided by law.			
74	***Mineral Split-Estate Management Action 1***	The Grand Junction Field Office RMP (2015) allows no leasing for split-estate in Gunnison sage-grouse critical habitat as closed to fluid mineral leasing and geophysical exploration. On split-estate lands, Monticello Field Office RMP (2008), provide that lease stipulations will consist of those necessary to comply with non-discretionary Federal laws, such as the Endangered Species Act. The one exception to this will be the stipulations developed for Gunnison sage-grouse as identified in Appendix B, *Detailed Alternative A, No Action Alternative*. SSP-23 Lek habitat (within 0.6 miles of active strutting ground): • NSO for oil and gas leasing activities.	In OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile buffer): Where the Federal government owns the mineral estate and the surface is in non-Federal ownership, apply the same stipulations, COAs, conservation measures, and/or design features applied to public lands to the maximum extent permissible under existing authorities and in coordination with the landowner.	*Same as Alternative B except only in OHMA.* In OHMA: Where the Federal government owns the mineral estate and the surface is in non-Federal ownership, apply the same stipulations, COAs, conservation measures, and/or design features applied to public lands to the maximum extent permissible under existing authorities and in coordination with the landowner.	*Same as Alternative B except only in OHMA and UHMA.* In OHMA and UHMA: Where the Federal government owns the mineral estate and the surface is in non-Federal ownership, apply the same stipulations, COAs, conservation measures, and/or design features applied to public lands to the maximum extent permissible under existing authorities, and in coordination with the landowner.	Same as Alternative D.
75	***Mineral Split-Estate Management Action 2***	The Grand Junction Field Office RMP (2015) allows no leasing for split-estate in Gunnison sage-grouse critical habitat as closed to fluid mineral leasing and geophysical exploration. On split-estate lands, Monticello Field Office RMP (2008), provide that lease stipulations will consist of those necessary to comply with non-discretionary Federal laws, such as the Endangered Species Act. The one exception to this will be the stipulations developed for Gunnison sage-grouse as identified in Appendix B, *Detailed Alternative A, No Action Alternative*. SSP-23 Lek habitat (within 0.6 mile of active strutting ground): • NSO for oil and gas leasing activities.	In OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile buffer): Where the Federal government owns the surface and the mineral estate is in non-Federal ownership, apply appropriate surface use COAs, stipulations, and design features through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.	*Same as Alternative B except only in OHMA.* In OHMA: Where the Federal government owns the surface and the mineral estate is in non-Federal ownership, apply appropriate surface use COAs, stipulations, and design features through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.	*Same as Alternative B except only in OHMA and UHMA.* In OHMA and UHMA: Where the Federal government owns the surface and the mineral estate is in non-Federal ownership, apply appropriate surface use COAs, stipulations, and design features through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.	Same as Alternative B.

2.2.2.9 Fluid Minerals

Table 2.12. Comparison of Alternatives: Fluid Minerals

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
76	***FLUID MINERALS OBJECTIVES***	N/A	OBJECTIVE 1 (Leasable Fluid Minerals): Manage fluid minerals to avoid, minimize, and compensate for: (1) direct disturbance, displacement, or mortality of GUSG (2) direct loss of habitat or loss of effective habitat through fragmentation and (3) cumulative landscape-level impacts. OBJECTIVE 2 (Leased Fluid Minerals): Where a proposed fluid mineral development project on an existing lease could adversely affect GUSG populations or habitat, the BLM will work with the lessees, operators, or other project proponents to avoid, minimize, and compensate for adverse impacts to the extent compatible with valid existing rights.			
77	***Fluid Minerals Management Action 1*** *Unleased*	Manage fluid minerals leasing in GUSG habitat as follows (Map A.18): • Open to leasing, subject to standard stipulations: o OHMA: 0 acres o UHMA: 0 acres • Open to leasing, subject to CSU and/or timing (TL) stipulations: o OHMA: 28,930 acres o UHMA: 112,410 acres • Open to leasing, subject to NSO stipulations: o OHMA: 100,590 acres o UHMA: 34,620 acres o Adjacent Non-Habitat (4-mile buffer): 217,380 acres • Closed to leasing: o OHMA: 31,410 acres o UHMA: 105,380 acres No fluid minerals leasing stipulations are reported for the Gunnison Field Office.	Subject to valid existing rights, close OHMA (556,760 acres) and UHMA (403,440 acres) to fluid mineral exploration, leasing, and/or development (Map A.19). Apply NSO stipulation across 4,830 acres in Adjacent Non-habitat areas within a 1-mile buffer of active, inactive, historic, and unknown leks without waivers, exceptions, and modifications (WEMs). See Appendix M, *Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations*.	Apply NSO stipulation to OHMA (556,760 acres). (Map A.20). In UHMA (403,440 acres), apply Controlled Surface Use (CSU) and Timing Limitation (TL) stipulations. See Appendix M, *Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations* for stipulations, modifications, waivers, and exceptions.	Subject to valid existing rights, close areas identified as **no known potential and low potential**, to fluid mineral exploration, leasing, and/or development in OHMA (466,410 acres) and UHMA (274,680 acres) (Map A.21). For areas with medium or higher potential, apply NSO stipulation in OHMA without WEMs (90,350 acres). For areas with medium or higher potential, apply NSO stipulation in UHMA (128,760 acres). See Appendix M, *Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations* for stipulations, modifications, waivers, and exceptions.	No similar action (Map A.22).
78	***Fluid Minerals Management Action 2*** *Leased*	The RMPs stipulate a range of protections for GUSG habitat. Recently completed plans, Uncompahgre Field Office RMP prohibits surface occupancy in lek habitat and GUSG critical habitat; Grand Junction RMP closes fluid mineral leasing and geophysical exploration in GUSG occupied habitat. Other plans provide no surface-disturbing activities allowed within 0.6 mile of a lek where GUSG leks are discovered within sage-grouse habitat.	Upon expiration or termination of existing leases, prohibit reinstatement and issuance of new leases in OHMA and UHMA.	Upon expiration or termination of existing leases, consider issuance of new leases in OHMA and UHMA.	Same as Alternative C.	Same as Alternative C.
79	***Fluid Minerals Management Action 3***	Most recent plans prohibit surface occupancy for GUSG breeding and critical	During the implementation phase of existing leases within OHMA and UHMA preclude surface occupancy and apply seasonal	*Same as Alternative B, but does not include UHMA or Adjacent Non-habitat (4-mile buffer).*	*Same as Alternative B, but does not include Adjacent Non-habitat (4-mile buffer).*	Same as Alternative D.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
	Leased	habitat and prohibit surface-disturbing activities and have seasonal restrictions.	restrictions to disruptive activities, when feasible given valid existing rights. If it is determined that this restriction would render the recovery of fluid minerals infeasible or nonviable, considering the lease as a whole, or where development of existing leases requires that disturbance does not exceed disturbance cap use the criteria* below to site proposed lease activities to meet GUSG habitat guidelines and require mitigation. Criteria*: • Location of proposed lease activities in relation to GUSG seasonal habitat and lekking areas. • An evaluation of the potential threats from proposed lease activities that may affect the local population as compared to benefits that could be compensatory or off-site mitigation. • An evaluation of the proposed lease activities, including design features, in relation to the site-specific terrain and habitat features. To authorize an activity based on the criteria above, the environmental record of review must show avoidance and minimization (see minimization criteria in SSS Management Action 12) of direct or indirect disturbance, displacement, or mortality of GUSG. Preclude surface occupancy in Adjacent Non-habitat (4-mile buffer) areas when there is a potential for activity to be disruptive to GUSG based on the following criteria: Criteria*: • Location of proposed lease activities in relation to seasonal GUSG habitat and lekking areas. • An evaluation of the potential threats from proposed lease activities that may affect the local population as compared to benefits that could be accomplished through compensatory or off-site mitigation.	During the implementation phase of existing leases within OHMA preclude surface occupancy and apply seasonal restrictions to disruptive activities, when feasible given valid existing rights. If it is determined that this restriction would render the recovery of fluid minerals infeasible or nonviable, considering the lease as a whole, or where development of existing leases requires that disturbance does not exceed disturbance cap use the criteria* below to site proposed lease activities to meet GUSG habitat guidelines and require mitigation. Criteria*: • Location of proposed lease activities in relation to GUSG seasonal habitat and lekking areas. • An evaluation of the potential threats from proposed lease activities that may affect the local population as compared to benefits that could be compensatory or off-site mitigation. • An evaluation of the proposed lease activities, including design features, in relation to the site-specific terrain and habitat features. To authorize an activity based on the criteria above, the environmental record of review must show avoidance and minimization (see minimization criteria in SSS Management Action 12) of direct or indirect disturbance, displacement, or mortality of GUSG.	During the implementation phase of existing leases within OHMA and UHMA preclude surface occupancy and apply seasonal restrictions to disruptive activities, when feasible given valid existing rights. If it is determined that this restriction would render the recovery of fluid minerals infeasible or nonviable, considering the lease as a whole, or where development of existing leases requires that disturbance does not exceed disturbance cap use the criteria* below to site proposed lease activities to meet GUSG habitat guidelines and require mitigation. Criteria*: • Location of proposed lease activities in relation to GUSG seasonal habitat and lekking areas. • An evaluation of the potential threats from proposed lease activities that may affect the local population as compared to benefits that could be compensatory or off-site mitigation. • An evaluation of the proposed lease activities, including design features, in relation to the site-specific terrain and habitat features. To authorize an activity based on the criteria above, the environmental record of review must show avoidance and minimization (see minimization criteria in SSS Management Action 12) of direct or indirect disturbance, displacement, or mortality of GUSG.	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			An evaluation of the proposed lease activities, including design features, in relation to the site-specific terrain and habitat features.			
80	***Fluid Minerals Management Action 4*** *Leased*	The RMPs stipulate a range of protections for GUSG habitat. Recently completed plans, Uncompahgre Field Office RMP prohibits surface occupancy in lek habitat and GUSG critical habitat; Grand Junction RMP closes fluid mineral leasing and geophysical exploration in GUSG occupied habitat. Other plans do not allow surface-disturbing activities within 0.6 mile of a lek where GUSG leks are discovered within sage-grouse habitat.	During the implementation phase, prohibit geophysical exploration within OHMA and UHMA. If it is determined that this restriction would render the recovery of fluid minerals infeasible or nonviable, considering the lease as a whole, or where development of existing leases requires that disturbance does not exceed disturbance cap use the criteria* below to site proposed lease activities to meet GUSG habitat guidelines and require mitigation. Criteria*: • Location of proposed lease activities in relation to GUSG seasonal habitat and lekking areas. • An evaluation of the potential threats from proposed lease activities that may affect the local population as compared to benefits that could be compensatory or off-site mitigation. • An evaluation of the proposed lease activities, including design features, in relation to the site-specific terrain and habitat features. To authorize an activity based on the criteria above, the environmental record of review must show avoidance and minimization of direct or indirect disturbance, displacement, or mortality of GUSG (see minimization criteria in SSS Management Action 12).	Allow for geophysical exploration within OHMA, subject to the following conditions: • Require low impact methods (helicopter- portable drilling, wheeled or tracked vehicles, or other approved methods) on existing roads. • Allow for wheeled vehicles off existing roads if only making one pass. Apply applicable timing limitation, ground disturbance, and mitigation standards.	During the implementation phase, prohibit geophysical exploration in OHMAs. Allow for geophysical exploration within UHMA, to obtain information for existing Federal fluid mineral leases. Allow geophysical operations only using helicopter-portable drilling, wheeled, or tracked vehicles on existing roads, or other approved methods conducted in accordance with other restrictions that may apply. If it is determined that this restriction would render the recovery of fluid minerals infeasible or nonviable, considering the lease as a whole, or where development of existing leases requires that disturbance does not exceed disturbance cap use the criteria* below to site proposed lease activities to meet GUSG habitat guidelines and require mitigation. Criteria*: • Location of proposed lease activities in relation to GUSG seasonal habitat and lekking areas. • An evaluation of the potential threats from proposed lease activities that may affect the local population as compared to benefits that could be compensatory or off-site mitigation. • An evaluation of the proposed lease activities, including design features, in relation to the site-specific terrain and habitat features. To authorize an activity based on the criteria above, the environmental record of review must show avoidance and minimization of direct or indirect disturbance, displacement, or mortality of GUSG (see minimization criteria SSS Management Action 12).	Same as Alternative C.
81	***Fluid Minerals Management Action 5***	No similar action. Measures that reduce or eliminate impacts to GUSG are considered on a case-by-case basis during implementation.	During the implementation phase, prohibit the siting of pipeline compressors in OHMA, UHMA, and Adjacent Non-Habitat (4-mile buffer) areas when there is a	*Same as Alternative B except for just OHMA and UHMA areas.* During the implementation phase, prohibit the siting of pipeline compressors in OHMA	*Same as Alternative C except also applies to Adjacent Non-habitat (1-mile buffer) areas.* During the implementation phase, prohibit the siting of pipeline compressors in	No similar action.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
	Leased		potential for activity to be disruptive to GUSG. If it is determined that this restriction would render the recovery of fluid minerals infeasible or nonviable, considering the lease as a whole, or where development of existing leases requires that disturbance does not exceed disturbance cap use the criteria* below to site proposed lease activities to meet GUSG habitat guidelines and require mitigation. Criteria*: • Location of proposed lease activities in relation to GUSG seasonal habitat and lekking areas. • An evaluation of the potential threats from proposed lease activities that may affect the local population as compared to benefits that could be compensatory or off-site mitigation. • An evaluation of the proposed lease activities, including design features, in relation to the site-specific terrain and habitat features. To authorize an activity based on the criteria above, the environmental record of review must show avoidance and minimization of direct or indirect disturbance, displacement, or mortality of GUSG (see minimization criteria in SSS Management Action 12).	and UHMA, areas when there is a potential for activity to be disruptive to GUSG. If it is determined that this restriction would render the recovery of fluid minerals infeasible or nonviable, considering the lease as a whole, or where development of existing leases requires that disturbance does not exceed disturbance cap use the criteria* below to site proposed lease activities to meet GUSG habitat guidelines and require mitigation. Criteria*: • Location of proposed lease activities in relation to seasonal GUSG habitat areas. • An evaluation of the potential threats from proposed activities that may affect the local population as compared to benefits that could be accomplished through compensatory or off-site mitigation. • An evaluation of the proposed activities, including design features, in relation to the site-specific terrain and habitat features. To authorize an activity, the environmental record of review must show avoidance and minimization of direct or indirect disturbance, displacement, or mortality of GUSG (see minimization criteria SSS Management Action 12).	OHMA, UHMA, and Adjacent Non-habitat (1-mile buffer) areas when there is a potential for activity to be disruptive to GUSG. If it is determined that this restriction would render the recovery of fluid minerals infeasible or nonviable, considering the lease as a whole, or where development of existing leases requires that disturbance does not exceed disturbance cap use the criteria* below to site proposed lease activities to meet GUSG habitat guidelines and require mitigation. Criteria*: • Location of proposed lease activities in relation to seasonal GUSG habitat areas. • An evaluation of the potential threats from proposed lease activities that may affect the local population as compared to benefits that could be accomplished through compensatory or off-site mitigation. • An evaluation of the proposed activities, including design features, in relation to the site-specific terrain and habitat features. To authorize an activity, the environmental record of review must show avoidance and minimization of direct or indirect disturbance, displacement, or mortality of GUSG (see minimization criteria in SSS Management Action 12).	

2.2.2.10 Solid Minerals

Table 2.13. Comparison of Alternatives: Solid Minerals

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
82	***SOLID MINERALS OBJECTIVE***	N/A	OBJECTIVE 1: Manage solid mineral programs to avoid, minimize, and compensate for adverse impacts to GUSG habitat to the extent practical under the law and BLM jurisdiction.			
83	***Locatable Minerals Management Action 1*** Withdrawals	Existing withdrawals include 50,630 acres of OHMA and 81,970 acres of UHMA (Map A.23).	Recommend to the Secretary of the Interior withdrawal from mineral entry and location the following areas totaling 827,600 acres: Lands in the decision area of designated OHMA (506,120 acres) and UHMA (321,470 acres) (Map A.24).	Recommend to the Secretary of the Interior withdrawal from mineral entry and location the following areas totaling 506,120 acres: Lands in the decision area of designated OHMA (506,120 acres) (Map A.25).	Recommend to the Secretary of the Interior withdrawal from mineral entry and location the following areas totaling 84,200 acres (82,670 acres OHMA and 1,530 acres UHMA) (Map A.26): ACECs • Dry Creek Basin ACEC (10,917 acres) • Chance Gulch ACEC (13,147 acres) • Sapinero Mesa ACEC (17,242 acres) • Sugar Creek ACEC (17,214 acres) • Grand Junction Field Office RMP: ACEC-MA-11: Rough Canyon ACEC (2,122 acres) • Gunnison Gorge NCA RMP: Management Unit 4: Gunnison Sage-Grouse ACEC/IBA (22,189 acres) • Gunnison Field Office RMP: Management Unit 7: West Antelope Creek ACEC (28,932 acres) • Gunnison Field Office RMP: Management Unit 8: South Beaver Creek ACEC (4,512 acres)	Recommend to the Secretary of the Interior withdrawal from mineral entry and location the following areas totaling 26,480 acres (26,330 acres OHMA and 150 acres UHMA) (Map A.27): ACECs • Grand Junction Field Office RMP: Management Unit 7: West Antelope Creek ACEC • Grand Junction Field Office RMP: Management Unit 8: South Beaver Creek ACEC
84	***Locatable Minerals Management Action 2*** Open to Mineral Entry	Manage 506,120 acres OHMA and 321,470 acres UHMA as open to mineral entry in GUSG habitat (areas that are not already withdrawn or recommended for withdrawal would be available for locatable mineral entry).	To the extent allowable by law, work with claimants to apply the seasonal restrictions. To the extent consistent with the rights of a mining claimant under existing laws and regulations, provide for compensatory mitigation. Regardless of agreements with the claimant disturbance from locatable mineral development would be included as disturbance when calculating disturbance for other land uses.	No similar action.	Same as Alternative B.	Same as Alternative B.
85	***Salable Minerals Management Action 1*** *Disposal Areas: Open*	Manage mineral materials in GUSG habitat as follows (Map A.28): Open: 247,020 acres	Open 0 acres to mineral material disposal in the following areas (Map A.29): *OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile) not open to mineral material disposal.	Open 1,728,430 acres to mineral material disposal in the following areas (Map A.30): Lands in the decision area outside of designated OHMA would remain open to	Open 341,050 acres to mineral material disposal in the following areas (Map A.31): In OHMA, allow for expansion of existing mineral material operations (i.e., gravel pits).	*Same as Alternative D (97,880 acres UHMA) and allow for expansion of existing sites (Map A.32).*

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			Lands in the decision area outside of (OHMA, UHMA, LCMA, and Adjacent Non-habitat [4-mile buffer]) would remain open (unless already withdrawn) to mineral material disposal.	mineral material disposal, unless already closed or withdrawn. Existing mineral material operations could be expanded based on site-specific conditions.	Lands in UHMA would remain open to mineral material disposal if the following criteria are met: • The activity is within the disturbance cap. • The activity is subject to the provisions set forth in the mitigation strategy. • All applicable RDFs are applied. Areas already closed or withdrawn would remain.	
86	***Salable Minerals Management Action 2*** *Disposal Areas Closed*	Manage mineral materials in GUSG habitat as follows (Map A.28): Closed: 72,590 acres	Subject to valid existing rights, close 2,450,140 acres to mineral material disposal in the following areas (Map A.29): Lands in designated OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile buffer) in the decision area closed to new disposals. Close acreage to all new disposals.	Subject to valid existing rights, close 556,760 acres to mineral material disposal in the following areas (Map A.30): Lands in the decision area of designated OHMA. Close acreage to commercial mineral material sites, and expansion of existing sites.	Subject to valid existing rights, close 556,760 acres to mineral material disposal in the following areas (Map A.31): Close OHMA to new mineral material sites. However, these areas would remain open to free use permits and the expansion of existing sites, only if the following criteria are met: • The activity is within the disturbance cap. • The activity is subject to the provisions set forth in the mitigation strategy. • All applicable RDFs are applied.	Close OHMA (372,590 acres) to mineral material sales in Gunnison Basin population (Map A.32). However, these areas would remain open to free use permits and the expansion of existing sites, only if the following criteria are met: • The activity is within the disturbance cap. • The activity is subject to the provisions set forth in the mitigation strategy. • All applicable RDFs are applied.
87	***Salable Minerals Management Action 3*** *Salable Mineral Pits*	All RMPs: no similar action.	In OHMA and UHMA, restore salable mineral material sites no longer in use to provide suitable GUSG habitat.	*Same as Alternative B except only in OHMA.* In OHMA restore salable mineral material sites no longer in use to provide suitable GUSG habitat.	*Same as Alternative C except with reclamation/restoration requirement.* In OHMA restore salable mineral material sites no longer in use to provide suitable GUSG habitat. Require reclamation/restoration of GUSG habitat as a viable long-term goal to improve the GUSG habitat.	Same as Alternative D.
88	***Non-energy Solid Leasable Minerals Management Action 1*** *Open to Consideration for Leasing*	Manage Non-Energy Solid Leasable Minerals (Map A.33) GUSG habitat, open to leasing consideration: 181,380 acres	Open 310,280 acres, except where already withdrawn/closed, to solid non-energy leasable mineral exploration and/or development in the following areas (Map A.34): Existing leases are able to operate and expansions can be permitted under certain criteria. Lands in the decision area outside of designated habitat (OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile buffer))	Open 1,771,770 acres to solid non-energy leasable mineral exploration and/or development in the following areas (Map A.35): Lands in the decision area outside of OHMA would remain open, except where already withdrawn/closed, to non-energy solid minerals leasing. Apply the following conservation measures as conditions of approval (COAs) where applicable:	*Same as Alternative C but includes inactive, and historic leks within COAs.* Open 1,771,770 acres to solid non-energy leasable mineral exploration and/or development in the following areas (Map A.35): Lands in the decision area outside of OHMA would remain open, except where already withdrawn/closed, to non-energy solid minerals leasing. Apply the following conservation measures as COAs where applicable:	Same as Alternative D (98,460 acres) (Map A.36).

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			would remain open to non-energy solid minerals leasing.	• Preclude new surface occupancy on existing leases within 1 mile of active leks (Blickley et al. 2012; Harju et al. 2012). • If the lease is entirely within 1 mile of an active lek, require any development to be placed in the area of the lease least harmful to GUSG based on vegetation, topography, or other habitat features. • Preclude new surface disturbance on existing leases within 2 miles of active leks within OHMA. If the lease is entirely within 2 miles of an active or inactive lek, require any development to be placed in the area of the lease least harmful to GUSG based on vegetation, topography, or other habitat features. • Limit permitted disturbances to the disturbance cap across the landscape in OHMA and UHMA.	• Preclude new surface occupancy on existing leases within 1 mile of active, inactive, and historic leks (Blickley et al. 2012; Harju et al. 2012). • If the lease is entirely within 1 mile of an active, inactive, and historic leks, require any development to be placed in the area of the lease least harmful to GUSG based on vegetation, topography, or other habitat features. • Preclude new surface disturbance on existing leases within 2 miles of active, inactive, and historic leks within OHMA. If the lease is entirely within 2 miles of an active or inactive lek, require any development to be placed in the area of the lease least harmful to GUSG based on vegetation, topography, or other habitat features. • Limit permitted disturbances to the disturbance cap across the landscape in OHMA and UHMA.	
89	***Non-Energy Solid Leasable Minerals Management Action 2*** *Closed*	Manage Non-Energy Solid Leasable Minerals (Map A.33) GUSG habitat, closed to leasing: 130,170acres	Subject to valid existing rights, close 2,419,590 acres to solid non-energy leasable mineral exploration and/or development in the following areas (Map A.34): Lands in the decision area of designated OHMA, UHMA, LCMA and Adjacent Non-habitat (4-mile buffer) and areas already withdrawn/closed would remain. Close area to new leases.	Subject to valid existing rights, close 556,760 acres to solid non-energy leasable mineral exploration and/or development in the following areas (Map A.35): OHMA would be closed to new leasing or lease modification of surface nonenergy leasable minerals. This includes not issuing or modifying leases to expand existing mines that would result in surface mining. Areas already withdrawn/closed would remain.	Subject to valid existing rights, close 556,760 acres to solid non-energy leasable mineral exploration and/or development in the following areas (Map A.35): Same as Alternative C.	Same as Alternative D (372,590 acres) (Map A.36).
90	***Non-Energy Solid Leasable Minerals Management Action 3*** *Existing*	One recent RMP, Tres Rios Field Office RMP (2015), applies BMPs to mineral proposals within occupied sage-grouse habitat to provide for adequate habitat.	In OHMA and UHMA, existing nonenergy mineral leases: Apply the following conservation measures as conditions of approval (COAs) where applicable and feasible: • Preclude new surface structures or facilities on existing leases within 1 mile of active, inactive, and historic leks (Blickley et al. 2012; Harju et al. 2012). • If the lease is entirely within 1 mile of an active, inactive, and historic leks, require any development to be placed in the area of the lease least harmful to GUSG	No similar action.	*Same as Alternative B but only in OHMA.* In OHMA, existing nonenergy mineral leases: Apply the following conservation measures as conditions of approval (COAs) where applicable: • Preclude new surface structures or facilities on existing leases within 1 mile of active, inactive, and historic leks (Blickley et al. 2012; Harju et al. 2012). • If the lease is entirely within 1 mile of an active, inactive, and historic leks, require any development to be placed in the area of the lease least harmful to GUSG	Same as Alternative D.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			based on vegetation, topography, or other habitat features. • Preclude new surface disturbance on existing leases within 2 miles of active, inactive, and historic leks within OHMA. If the lease is entirely within 2 miles of an active or inactive lek, require any development to be placed in the area of the lease least harmful to GUSG based on vegetation, topography, or other habitat features. • Limit permitted disturbances to the disturbance cap across the landscape in OHMA and UHMA.		based on vegetation, topography, or other habitat features. • Preclude new surface disturbance on existing leases within 2 miles of active, inactive, and historic leks within OHMA. If the lease is entirely within 2 miles of an active or inactive lek, require any development to be placed in the area of the lease least harmful to GUSG based on vegetation, topography, or other habitat features. • Limit permitted disturbances to the disturbance cap across the landscape in OHMA and UHMA.	

2.2.2.11 Lands and Realty Management

Table 2.14. Comparison of Alternatives: Lands and Realty Management

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
91	***LANDS AND REALTY OBJECTIVES***	N/A	OBJECTIVE 1: Manage the Lands and Realty program to avoid, minimize, and compensate for the loss of habitat and habitat connectivity during the authorization of ROWs (including other land use authorizations), land tenure adjustments, and proposed land withdrawals. OBJECTIVE 2: Effects of infrastructure projects, including siting, will be minimized using the best available science, updated as monitoring information on current infrastructure projects becomes available. OBJECTIVE 3: Land disposal and acquisitions are used to consolidate and conserve GUSG habitat to enhance management of the species.			
92	***Lands and Realty Management Action 1*** *ROW Exclusion Areas*	BLM ROWs in GUSG habitat managed as follows: • Exclude 48,960 acres (Map A.37)	Manage OHMA (391,490 acres) and UHMA (258,630 acres) as ROW exclusion areas (Map A.38). Exceptions within OHMA and UHMA include, but does not except authorizations from the applicable timing limitations, minimization measures, and compensatory mitigation: • West-Wide Energy Corridors.* • Designated utility corridors. • 100' buffer from center line of county roads & highways. • Allow ROWs for private inholdings or edge holdings for reasonable access and utilities in locations that minimize, to the extent feasible, impacts to leks. • Recognize the valid existing rights of grant holders to continue to operate,	No similar action.	Within OHMA and UHMA, manage 1-mile buffer of active and inactive leks as ROW exclusion areas (88,620 acres) (Map A.40). The following ACECs (10,880 acres) would be ROW exclusion areas: • Dry Creek ACEC • Rough Canyon ACEC Exceptions within 1-mile of active and inactive lek buffers include, but does not except authorizations from the applicable timing limitations, minimization measures, and compensatory mitigation: • West-Wide Energy Corridors.* • Designated utility corridors. • 100' buffer from center line of county roads & highways. • Allow ROWs for private inholdings or edge holdings for reasonable access and	CCA Section 4.2 Standard/General Minimization Measures and Section 4.4 Miscellaneous Infrastructure. Appendix A Terms and Conditions for contractors, Rights of Way and Easement holders applies.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			maintain and improve, upgrade, amend, and renew facilities. **West-Wide Energy Corridors include 19,270 acres of OHMA and 1,970 acres of UHMA, and 9,850 acres of Adjacent Non-habitat.*		utilities in locations that minimize, to the extent feasible, impacts to leks. • Recognize the valid existing rights of grant holders to continue to use, operate, and maintain. In addition, upgrades, amendments, and renewals of existing facilities may be considered with latest/greatest terms and conditions **West-Wide Energy Corridors include 19,270 acres of OHMA, 1,970 acres of UHMA, and 9,850 acres of Adjacent Non-habitat.*	
93	***Lands and Realty Management Action 2*** *ROW Avoidance Areas*	All RMPs have ROW avoidance management actions. For some RMPs avoidance areas are general and some are specific to address critical habitat for Gunnison sage-grouse, Grand Junction RMP (2015) specifies SSS-SGR-AU-02: Allowable use (SSS-SG-AU2): Identify the following as ROW avoidance areas (19,260 acres OHMA and 62,110 acres UHMA) (Map A.37): • Sage-Grouse occupied habitat and • Within a 4-mile radius of Sage-Grouse leks.	Manage LCMA (214,250 acres) as ROW avoidance areas (Map A.38). Authorizations may be issued after documenting that the ROWs/Special Use Authorizations would not adversely affect GUSG populations based on the following criteria: • Location of proposed activities in relation to GUSG habitat areas (OHMA and UHMA) as identified by factors including, but not limited to, average male lek attendance and/or important seasonal habitat. • An evaluation of the potential threats from proposed activities that may affect the local population as compared to benefits that could be accomplished through compensatory or off-site mitigation. • An evaluation of the proposed activities in relation to the site-specific terrain and habitat features. For example, within 4 of from a lek, local terrain features such as ridges and ravines may reduce the habitat importance and shield nearby habitat from disruptive factors.	Manage OHMA as ROW avoidance areas (391,490 acres) (Map A.39). ROWs may be issued if it can be demonstrated that the proposed authorization would have no adverse impacts on GUSG or its habitat based on at least one of the following: • The location of the proposed authorization is determined to be nonhabitat, lacks the ecological potential to become habitat, does not provide important connectivity between habitat areas, and the project includes design features to prevent indirect disturbance to or disruption of adjacent seasonal habitats that would impair their biological function. • Topography/areas of non-habitat create an effective barrier to impacts. • By co-locating the proposed authorization with existing disturbance, impacts would be minimized or similar to impact associated with the existing infrastructure. • The proposed location would be undertaken as an alternative to a similar action occurring on a nearby parcel (for example, due to landownership patterns), and authorizing the ROW on the parcel in question would have less of an impact on GUSG or its habitat than on the nearby parcel; this criterion must also include measures sufficient to allow the BLM to conclude that such benefits will endure for the duration of the proposed action's impacts. In addition to meeting one of the criteria above, applicable minimization measures	*Same as Alternative C except for OHMA, UHMA outside of 1-mile active and inactive lek buffers.* Manage OHMA (304,350 acres) and UHMA (257,150 acres) as ROW avoidance areas outside of 1-mile active and inactive lek buffers (Map A.40). ROWs may be issued if it can be demonstrated that the proposed authorization would have no adverse impacts on GUSG or its habitat based on at least one of the following: • The location of the proposed authorization is determined to be nonhabitat, lacks the ecological potential to become habitat, does not provide important connectivity between habitat areas, and the project includes design features to prevent indirect disturbance to or disruption of adjacent seasonal habitats that would impair their biological or ecological function. • Topography/areas of non-habitat create an effective barrier to impacts. • By co-locating the proposed authorization with existing disturbance, impacts would be minimized or similar to impact associated with the existing infrastructure. • The proposed location would be undertaken as an alternative to a similar action occurring on a nearby parcel (for example, due to landownership patterns), and authorizing the ROW on the parcel in question would have less of an impact on GUSG or its habitat than on the nearby parcel; this criterion must also include measures sufficient to	Manage OHMA (291,980 acres) as ROW avoidance areas (Map A.41). ROWs may be authorized for new roads, utility lines, pipelines, and communication sites, MET towers, and comparable infrastructure if the following conditions are met: • Permitted area would be less than 5 acres; • Permitted area width for a utility ROW would be less than 25 feet; and • Aboveground infrastructure (not including buried utilities and pipelines) would be less than 0.5 mile. For ROW authorizations that meet the above criteria apply the CCA guidelines in Section 4.2.2, 4.4.1, and 4.4.2.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
				including Disturbance Caps, Timing Limitations, Compensatory Mitigation, Design Features (Appendix H, *Best Management Practices and Required Design Features*), or other site-specific constraints would be included as Terms & Conditions of the ROW. Exceptions within 1-mile of active lek buffers include, but does not except authorizations from the seasonal timing limitations or minimization measures and compensatory mitigation: • West-Wide Energy Corridors.* • Designated utility corridors. • 100' buffer from center line of county roads & highways. • Allow ROWs for private inholdings or edge holdings for reasonable access and utilities in locations that minimize, to the extent feasible, impacts to leks. • Recognize the valid existing rights of grant holders to continue to operate, maintain and improve, upgrade, amend, and renew facilities. **West-Wide Energy Corridors include 19,270 acres of OHMA.*	allow the BLM to conclude that such benefits will endure for the duration of the proposed action's impacts. In addition to meeting one of the criteria above, applicable minimization measures including Disturbance Caps, Timing Limitations, Compensatory Mitigation, Design Features (Appendix H, *Best Management Practices and Required Design Features*), or other site-specific constraints would be included as Terms & Conditions of the ROW. Exceptions within 1-mile of active and inactive lek buffers include, but does not except authorizations from the applicable timing limitations or minimization measures and compensatory mitigation: • West-Wide Energy Corridors.* • Designated utility corridors. • 100' buffer from center line of county roads & highways. • Allow ROWs for private inholdings or edge holdings for reasonable access and utilities in locations that minimize, to the extent feasible, impacts to leks. • Recognize the valid existing rights of grant holders to continue to use, operate, and maintain. In addition, upgrades, amendments, and renewals of existing facilities may be considered. **West-Wide Energy Corridors include 19,270 acres of OHMA and 1,970 acres of UHMA.*	
94	***Lands and Realty Management Action 3*** *Disposal*	Most RMPs include a management action that in order to be available for disposal lands must meet specific criteria in accordance with Sections 203 (a) of FLPMA 9.	Maintain public ownership of OHMA and UHMA. Consider exceptions to retention for disposal through exchanges, state selections, boundary adjustments, R&PP Act leases and patents, leases under Section 302 of FLPMA, sales under Sections 203 and 209 of FLPMA, and sales authorized by other Congressional Acts and special legislation in cases where (1) disposal of the lands, including land exchanges, would result in a conservation benefit for GUSG; or (2) disposal of the lands, including land exchanges, would not cause any direct or indirect adverse effect on GUSG conservation; (3) or in areas with mixed ownership, disposal of the lands, including	Lands previously identified would be available for disposal through exchanges, state selections, boundary adjustments, R&PP Act leases and patents, leases under Section 302 of FLPMA, sales under Sections 203 and 209 of FLPMA, and sales authorized by other Congressional Acts and special legislation. Consider other lands suitable for disposal by any method. Disposal lands must meet one or more of the following criteria: • Lands suitable for public purposes adjacent to or of special importance to local communities and to State or Federal agencies for purposes such as	Same as Alternative B.	Same as Alternative C.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			land exchanges, would be considered to facilitate additional or more contiguous Federal ownership within OHMA and UHMA. In isolated Federal parcels within OHMA and UHMA, only allow tract disposals that are beneficial or neutral to long-term management of GUSG populations. For lands in OHMA and UHMA that are identified for disposal, the BLM would only dispose of such lands consistent with the goals and objectives of this RMP Amendment, including, but not limited to, the RMP Amendment objective to maintain or increase GUSG abundance and distribution.	community expansion, extended community services, or economic development. • Isolated parcels that are small or so located as to make effective and efficient management impractical. • Unintentional occupancy trespasses where disposal is the best tool to meet management objectives. • Parcels containing or integral to significant habitat for special status species may be disposed of only if the habitat for the species of concern can be maintained and if the USFWS and CPW concur. • Parcels containing or integral to NRHP eligible cultural resources may be disposed of only if the resources can be mitigated through data recovery and if the SHPO concurs with the proposed mitigation. • Additional lands may be identified for disposal in urbanizing areas on a case by-case basis to meet community expansion needs and where the public interest will be well served. • Lands without legal public access.		
95	***Lands and Realty Management Action 4*** *Retention*	Some RMPs include a management action that emphasizes retention for important resource values. Other RMPs have no similar action.	Maintain public ownership of OHMA and UHMA. Consider exceptions to retention for disposal in cases where (1) disposal of the lands, including land exchanges, would result in a conservation benefit for GUSG; or (2) disposal of the lands, including land exchanges, would not cause any direct or indirect adverse effect on GUSG conservation; (3) or in areas with mixed ownership, disposal of the lands, including land exchange, would be considered to facilitate additional or more contiguous Federal ownership within OHMA.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
96	***Lands and Realty Management Action 5*** *Acquisition*	Generally, all RMPs have management regarding lands acquisition in accordance with FLPMA.	• Consider acquiring lands or easements for GUSG habitat values. For example: Identify key GUSG habitats on private land, adjacent to existing BLM land, where acquisition and protection by BLM could substantially benefit the local GUSG population. This could be accomplished via purchase, exchange, or	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			donation to satisfy mitigation requirements.			
97	***Lands and Realty Management Action 6*** *Withdrawal*	Existing withdrawals include 50,570 acres of OHMA and 81,240 acres of UHMA (Map A.23). No areas are recommended for withdrawal from mineral entry and location.	Refer to Alternative B under *Solid Minerals* and *ACEC* sections for a comprehensive list of the areas proposed for recommended withdrawals. Existing withdrawals will remain in effect.	Refer to Alternative C under *Solid Minerals* and *ACEC* sections for a comprehensive list of the areas proposed for recommended withdrawals. Existing withdrawals will remain in effect.	Refer to Alternative D under *Solid Minerals* and *ACEC* sections for a comprehensive list of the areas proposed for recommended withdrawals. Existing withdrawals will remain in effect.	Refer to Alternative E under *Solid Minerals* and *ACEC* sections for a comprehensive list of the areas proposed for recommended withdrawals. Existing withdrawals will remain in effect.

2.2.2.12 Renewable Energy

Table 2.15. Comparison of Alternatives: Renewable Energy

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
98	***RENEWABLE ENERGY OBJECTIVE***	N/A	OBJECTIVE 1: Manage the Lands and Realty program to avoid, minimize, and compensate for the loss of habitat and habitat connectivity during the authorization of ROWs (including other land use authorizations), land tenure adjustments, and proposed land withdrawals.			
99	***Renewable Energy Management Action 1*** *Wind*	Several plans allocate critical habitat areas for species protected under the ESA of 1973 (as amended) as ROW exclusion or avoidance areas for wind energy (Map A.42).	Manage OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile buffer) as exclusion areas for wind energy development (1,988,680 acres) (Map A.43).	Manage OHMA as exclusion areas for wind energy development (391,490 acres) (Map A.44). Manage UHMA as avoidance areas for wind energy development (258,630 acres) (Map A.44).	Manage OHMA and UHMA as exclusion areas for wind energy development (650,120 acres) (Map A.45).	Same as Alternative C (291,980 acres OHMA exclusion and 62,280 acres UHMA avoidance) (Map A.46).
100	***Renewable Energy Management Action 2*** *Solar*	Several plans allocate critical habitat areas for species protected under the ESA of 1973 (as amended) as ROW exclusion areas for solar energy (Map A.47).	Manage OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile buffer) as exclusion areas for industrial solar energy development (1,988,680 acres) (Map A.48).	Manage OHMA as exclusion areas for industrial solar energy development (391,490 acres) (Map A.49). Manage UHMA as avoidance areas for industrial solar energy development (258,630 acres) (Map A.49).	Manage OHMA and UHMA as exclusion areas for industrial solar energy development (650,120acres) (Map A.50).	Same as Alternative C (291,980 acres OHMA exclusion and 62,280 acres UHMA avoidance) (Map A.51).

2.2.2.13 Areas of Critical Environmental Concern

Table 2.16. Comparison of Alternatives: Areas of Critical Environmental Concern

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
101	***ACEC OBJECTIVE 1***	N/A	OBJECTIVE 1: Manage ACECs to protect significant resource values and prevent damage to important natural and biological values. Refer to Appendix D, *Areas of Critical Environmental Concern Report.*			
102	***ACEC OBJECTIVE 2***	Manage the following areas (57,755 acres) as ACECs and IBAs (Map A.52): **GRAND JUNCTION Field Office RMP (2015)** • ACEC-MA-11: Rough Canyon ACEC (2,800 acres) **GUNNISON GORGE NCA RMP (2004)** • Management Unit 4: Gunnison Sage-Grouse ACEC/IBA (22,180 acres) **GUNNISON RESOURCE AREA RMP (1993)** • Management Unit 7: West Antelope Creek ACEC (28,280 acres) • Management Unit 8: South Beaver Creek ACEC (4,570 acres) • All other (relevance and important values not related to GUSG) existing ACECs shall remain.	Manage the following areas as ACECs (Map A.53 – Overview, Map A.54 – GUSG Habitat ACEC, Map A.55 – Satellite Populations, Map A.56 – Other ACECs): • All BLM-administered surface lands within GUSG OHMA and UHMA ACEC (650,120 acres) • GUSG satellite populations habitat ACEC (295,860 acres) • Northdale ACEC (5,230 acres) • Dry Creek Basin ACEC (34,730 acres) • Chance Gulch ACEC (22,660 acres, expanded area nominated by CPW) • Kezar Basin ACEC (16,270 acres) • North Parlin ACEC (17,900 acres) • Sapinero Mesa ACEC (16,740 acres) • South Parlin ACEC (26,160 acres) • Sugar Creek ACEC (17,210 acres) • Ohio Creek ACEC (9,250 acres) • Waunita ACEC (8,370 acres) • Grand Junction Field Office RMP: ACEC-MA-11: Rough Canyon ACEC (2,120 acres) • Gunnison Gorge NCA RMP Management Unit 4: Gunnison Sage-Grouse ACEC/IBA (22,190 acres) • Grand Junction Field Office RMP: Management Unit 7: West Antelope Creek ACEC (28,930 acres) • Grand Junction Field Office RMP: Management Unit 8: South Beaver Creek ACEC (4,510 acres) • All other (relevance and important values not related to GUSG) existing ACECs shall remain.	*Same as Alternative A.* Manage the following areas (57,755 acres) as ACECs (Map A.57): • Grand Junction Field Office RMP: ACEC-MA-11: Rough Canyon ACEC (2,120 acres) • Gunnison Gorge NCA RMP Management Unit 4: Gunnison Sage-Grouse ACEC/IBA (22,190 acres) • Grand Junction Field Office RMP: Management Unit 7: West Antelope Creek ACEC (28,930 acres) • Grand Junction Field Office RMP: Management Unit 8: South Beaver Creek ACEC (4,510 acres) • All other (relevance and important values not related to GUSG) existing ACECs shall remain.	Manage the following areas as ACECs (Map A.58): • Dry Creek Basin ACEC (10,920 acres) • Chance Gulch ACEC (13,150 acres) • Sapinero Mesa ACEC (17,240 acres) • Sugar Creek ACEC (17,210 acres) • Grand Junction Field Office RMP: ACEC-MA-11: Rough Canyon ACEC (2,120 acres) • Gunnison Gorge NCA RMP Management Unit 4: Gunnison Sage-Grouse ACEC/IBA (22,190 acres) • Grand Junction Field Office RMP: Management Unit 7: West Antelope Creek ACEC (28,930 acres) • Grand Junction Field Office RMP: Management Unit 8: South Beaver Creek ACEC (4,510 acres) • All other (relevance and important values not related to GUSG) existing ACECs shall remain.	Manage the following areas as ACECs (Map A.59). • Grand Junction Field Office RMP: Management Unit 7: West Antelope Creek ACEC (28,930 acres) • Grand Junction Field Office RMP: Management Unit 8: South Beaver Creek ACEC (4,510 acres) • All other (relevance and important values not related to GUSG) existing ACECs shall remain.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
103	***ACEC Management Action 2.1*** *Common to all*	No similar action in current RMPs.	All management would align with Alternative B in this planning effort for each resource unless identified within each ACEC. Apply the following management prescriptions to all ACECs: • Manage as ROW exclusion. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Subject to valid existing rights, close OHMA and UHMA to fluid mineral exploration, leasing, and/or development. • Close OHMA and UHMA to OHV use, except for access required by law or for emergency services or administrative or permitted activities. • No new SRMAs or ERMAs within OHMA and UHMA. • Make OHMA unavailable for livestock grazing.* Do not renew expiring livestock grazing permits or allow transfer of livestock grazing permits in OHMA. Continue to authorize livestock grazing in UHMA. • Upon expiration or termination of existing fluid minerals leases, prohibit reinstatement and issuance of new leases in OHMA and UHMA. • Lands in designated OHMA, UHMA, closed to new mineral material disposals. • Only allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. **Acres unavailable for livestock grazing would be for the life of the RMP Amendment.*	All management would align with Alternative C in this planning effort for each resource (as described above) unless identified below within each ACEC.	All management would align with Alternative D in this planning effort for each resource (as described above and summarized here) unless described differently within each ACEC section further below. • Manage 1-mile buffer of active and inactive leks as ROW exclusion areas in OHMA and UHMA (see Lands and Realty Management Action 1). • Manage OHMA as wind and solar energy exclusion areas. • Apply NSO without WEMs in OHMA and UHMA to fluid minerals activities. • Recommend to the Secretary withdrawal from mineral entry from solid minerals. • In OHMA and UHMA use vegetation treatments, including prescribed fire (e.g., mechanical treatments, chemical treatments, prescribed fire, reseeding, targeted grazing) to move toward meeting habitat guidelines where ecological site information indicates treatments are reasonable and feasible. • Apply minimization criteria (SSS Management Action 12) to minimize anthropogenic surface-disturbing activities within OHMA and UHMA. Co-locate, consolidate, and cluster localized disturbances as much as possible to maintain and conserve in-tact, connected sagebrush habitat areas. • In OHMA and UHMA limit noise from discrete anthropogenic disturbances, whether during construction, operation, or maintenance, to not exceed 10 decibels above ambient sound levels at all leks (active, inactive, historic) from 2 hours before to 2 hours after official sunrise and sunset during breeding season (March 1 to May 15). • Seasonal habitat restrictions apply to UHMA and prohibit surface disturbance in OHMA from March 1 – July 15. At a minimum, prohibit	All management would align with Alternative E in this planning effort for each resource (as described above) unless identified below within each ACEC. • Recommend to the Secretary withdrawal from mineral entry from solid minerals.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					surface-disturbing activities* in OHMA during lekking, nesting, or early brood-rearing from March 1 – July 15. *See Appendix I, *Glossary*, for definition of surface-disturbing activities. • In OHMA, allow no new recreation facility construction from March 1 – July 15, unless needed for human health and safety. • Renew and allow transfer of livestock grazing permits, provided livestock can be managed to meet or make progress toward meeting land health standards. Implement appropriate Livestock Management Best Practices (Appendix H, *Best Management Practices and Required Design Features*) when renewing livestock grazing permits. Incorporate appropriate design features (Appendix H, *Best Management Practices and Required Design Features*) for all new range improvements in OHMA and UHMA. Design new range improvement projects to enhance livestock distribution and to control the timing and intensity of utilization. • Place high priority on improving/restoring intact habitat within OHMA and UHMA when making route designation decisions, while maintaining access connectivity to key locations /facilities /amenities, allowing for the exceptions to the definition of an OHV provided for in 43 CFR 8340.0-5. • Limit motorized and mechanized travel to designated route system (Gunnison Field Office TMP 2010). • Close designated routes to motorized travel from March 15 – May 15 (Gunnison Field Office TMP 2010) • Limit over-snow vehicle travel to designated routes (restriction only in Gunnison Basin). • Any route subsequently approved by the BLM will be incorporated into the designated the route system.	

Rough Canyon ACEC

Table 2.17. Comparison of Alternatives: Rough Canyon ACEC (Existing)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
104	***Rough Canyon ACEC Management Action 1***	Manage Rough Canyon ACEC (2,800 acres) to protect geologic, wildlife habitat, cultural resources, and plants. Management actions include the following: • Manage as VRM Class II. • Classify a portion of the ACEC (2,200 acres) for motorized and mechanized travel as limited to designated routes. • Classify a portion of the ACEC (600 acres) for motorized and mechanized travel as closed. • Prohibit new trail development in those portions of Bangs Canyon RMZ 2 that are located within the ACEC, unless impacts on the ACEC relevance and importance criteria can be mitigated. • Manage as a ROW exclusion area. • Withdrawn from mineral entry. • No Leasing: ACECs. Close to fluid mineral leasing and geophysical exploration. (Refer to Appendix B of Grand Junction Field Office RMP) See Figure 2-12, Appendix A of Grand Junction Field Office RMP. • Allowable Use: **STIPULATION** NSO-13: Current and Historically Occupied Habitat of Threatened, Endangered, Proposed, and Candidate Species. Prohibit certain surface uses, as specified in Appendix B, to protect threatened, endangered, proposed, and candidate plants and animals from indirect impacts, loss of immediately adjacent suitable habitat, or impacts to primary constituent elements of critical habitat as designated by USFWS. Maintain existing buffer distances where pre-existing disturbance exists, and reduce redundancies in roads to minimize fragmentation, and minimize direct impacts from motorized and mechanized users of roads, routes and trails. In undisturbed environments and ACECs, prohibit new disturbance within 200 meters (656 feet) of current and historically occupied and suitable habitat. This stipulation includes emergency closures of roads where damage to T&E habitat has occurred. Standard exceptions apply; see Appendix B. • Allowable Use: **STIPULATION** NSO-37: Allocation to Conservation Use Category. Prohibit surface occupancy and surface-disturbing activities, including archaeological excavation, within 100 meters (328 feet) around eligible sites allocated to Conservation Use. (Refer to Appendix B of GJFO RMP.) See Figure 2-13 in Appendix A of GJ Field Office RMP. Standard exceptions apply; see Appendix B of Grand Junction Field Office RMP.				

Gunnison Sage-Grouse ACEC/IBA

Table 2.18. Comparison of Alternatives: Gunnison Sage-Grouse ACEC/IBA (Existing)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
105	***GUSG ACEC/IBA Management Action 1***	Gunnison Sage-Grouse ACEC/IBA (Management Unit 4) Management and protection of the Gunnison sage-grouse and its habitat in the NCA will be emphasized in this 22,180 acre management unit. Management actions include application of buffers for oil and gas development, timing limitations on surface disturbance, and vegetation treatments to enhance GUSG habitat.	Gunnison Sage-Grouse ACEC/IBA (Management Unit 4) Management and protection of the Gunnison sage-grouse and its habitat in the NCA will be emphasized in this 22,180 acre management unit. Management actions include the following: • Manage as ROW exclusion. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to non-energy solid mineral leasing. Same as Alternative B in alternatives above for resources.	Same as Alternative A.	Gunnison Sage-Grouse ACEC/IBA (Management Unit 4) Management and protection of the Gunnison sage-grouse and its habitat in the NCA will be emphasized in this 22,180 acre management unit. Management actions include the following: Same as Alternative D (from above resources); with the following specific direction: **Lands and Rights-of-Way and Withdrawals** **LAND-4-1** Approximately one mile of the public lands in the management unit parallel to Red Canyon Creek will be located within a recommended ROW utility corridor for future growth in the North Fork Valley area. Part of this corridor is also located in Management Unit 6. See Figure 2-2 in GGNCA RMP, for the location. Measures to prevent damage and injury to sage-grouse during the crucial seasonal use periods (strutting, nesting, and potentially winter), such as raptor-proofing utility poles, placing power lines in a horizontal array, will be required. **LAND-4-2** Construction and maintenance of new ROWs in the management unit will be restricted from December 1 through July 15 during crucial periods for wintering mule deer, elk, and Gunnison sage-grouse and migratory birds. Existing ROW holders will be permitted to operate within the parameters of their existing stipulations. • Exception: administrative access and maintenance activity for right of way holders may be permitted during the seasonal restriction with prior BLM authorization. **LAND-4-3** Except as described below for the relict tree stand on Black Ridge, this management unit will be ROW Avoidance. ROWs may be permitted with appropriate conditions where the ROW will not adversely affect the values for which the	Not applicable, Gunnison Sage-Grouse ACEC/IBA is outside the Gunnison Basin. All other currently designated, existing ACECs shall remain.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					management unit was designated. Mitigation will be required in all applications to meet the objectives of this management unit. Site-specific authorizations may be issued within ROW avoidance areas after documenting that the ROW would not adversely affect GUSG populations based on the following criteria in Lands & Realty Management Action 2: Public lands in the relict tree stand on Black Ridge will not be available for surface linear ROWs of any kind, nor aerial ROWs or special use permits occupying more than 100 square feet and needing vehicular access constructed, or needing existing vehicular access maintained for distances greater than 200 feet. Buried ROWs will be authorized on a case-by-case basis along previously disturbed areas along existing travel routes. Mitigation will be required in all applications to meet the objectives of this management unit. Exceptions will be made on a case-by-case basis if the proposal supports meeting management unit objectives. Manage as Wind and Solar Energy exclusion areas. **Minerals and Energy Resources** **Fluid Minerals** **MIN-4-1** A NSO stipulation, without WEMs, will be applied to the ACEC to prevent disturbance to leks and habitat. **Solid Minerals** ACECs: Recommend to the Secretary withdrawal from mineral entry and location. **Vegetation** **VEG-4-1** OHMA and UHMA: Use vegetation treatments, including prescribed fire, (e.g., mechanical treatments, chemical treatments, prescribed fire, reseeding, targeted grazing) to move toward meeting habitat guidelines where ecological site information indicates treatments are reasonable and feasible. Treat appropriate areas of OHMA and UHMA. Prioritize areas with the highest chance of success	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					and that have the greatest benefit to GUSG. In the Black Ridge area of the unit, the size, number, and types of vegetation (see Figure 3-8 in Chapter 3 of the DRMP [BLM 2003c]) will be tailored first to Gunnison sage-grouse needs, and second to big game winter range needs. **VEG-4-2** Vegetation treatments will be managed to ensure that appropriate plant communities are present for all life functions for the Gunnison sage-grouse. **VEG-4-3** Slightly degraded vegetation will be managed to minimize the source of degradation so that the vegetation community may recover on its own. **VEG-4-4** In areas of severely degraded vegetation, restoration treatments will be undertaken. **Forestry** **FOR-4-1** In areas that receive vegetation treatments, prescribed burns, or other techniques, fuelwood collection could be allowed as a means to accomplish a resource objective, priority, clean up, or to remove fuel from the ground and to facilitate the purposes of the treatment, if appropriate. Fuelwood collection or cutting, where authorized, will be allowed only if all other management unit objectives will continue to be met and, upon completion of fuelwood collection, existing ground conditions will not hinder proposed treatments. **Wildlife, Fish, and Aquatic Life** **WFA-4-1** As appropriate to enhance management, and if information is available, habitat management objectives will be included in follow-on activity planning and management plans for wildlife species and habitat in the unit, specifically for mule deer, elk, and other species. **Special Status Species and Habitat** **SSS-4-1** This unit will be managed for enhancement of the Gunnison sage-grouse population. **SSS-4-2** As appropriate to enhance management, and if information is available, habitat management objectives	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					will be included in follow-on activity planning and management plans for special status species and habitat in the unit, specifically for the Fruitland Mesa area, including Gunnison sage-grouse and other species. **SSS-4-3** These lands will be closed seasonally to motorized and non-motorized mechanical vehicular travel from December 1 to May 15 prevent disturbance to breeding sage-grouse and wintering big game. • Exception: administrative access for livestock grazing permittee grazing operations may be permitted during the seasonal travel closure without prior BLM authorization. **SSS-4-4** Motorized and mechanical vehicular travel on public lands containing leks or potential leks will be limited seasonally to designated routes and trails from May 16 to November 30. **SSS-4-5** Livestock management, road and trails management, recreation activity management, and vegetation management will be conducted to maintain and restore Gunnison sage-grouse habitat in this area subject to seasonal timing restriction for surface disturbing activity from March 1 – July 15. **SSS-4-6** Surface-disturbing activities will be restricted in special status species occupied locations and their potential habitat for their protection from March 1 – July 15. At a minimum, prohibit surface-disturbing activities* in OHMA during lekking, nesting, or early brood-rearing from March 1 – July 15. *See Appendix I, *Glossary*, for surface-disturbing activities definition. Specific time and distance determinations would be based on site-specific conditions and may be modified, in coordination with the appropriate State wildlife agency and USFWS, due to documentation of the following: • local variations (e.g., higher/lower elevations),	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					• annual climactic fluctuations (e.g., early/late spring and long and/or heavy winter) • located within an area of non-habitat (e.g., forest, sandflat) • No documented use or occurrence of GUSG within the past year (e.g., pellet transects, observations.) **Recreation** **REC-4-1** The East Side Scenic Overlook in Section 30, Township 15 South, Range 93 West, 6th Principal Meridian, Delta County, will be designed and developed to provide opportunities to view the outstanding vistas of the Gunnison Gorge Wilderness, including views of the Gunnison River at Ute Park. (Other views include the west rim of the Gorge to the west, the Gunnison River north of the Wilderness, the San Juan Mountains to the south, the West Elk Mountains to the east, and the greater Uncompahgre Valley to the west. The site is located on a cliff on the east side of the Gunnison Gorge immediately east of and outside the Wilderness. The unit is approximately one mile south of the junction of the Gunnison River and Smith Fork Creek. It is accessible by four-wheel-drive roads). The development will be unintrusive and semi primitive in nature. Natural materials will be used at the site to mark and denote parking, and barriers such as rocks, dead trees, and limbs will be placed to prevent motorized travel beyond confined parking at the termination of the existing access road uphill of the cliff overlook site. The concern at this site is the likely increased use of the overlook and potential proliferation of user-established off-road travel via motorized vehicles, and off-route travel by foot or horseback. **REC-4-2** Motorized travel within the confines of the East Side Scenic Overlook will be limited to the parking space identified uphill form the overlook. **REC-4-3** Interpretation of the vistas could be installed at the cliff in a manner keeping with preserving and considering Wilderness values.	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					REC-4-4 Additional seasonal vehicular closures may be imposed according to management objectives for Gunnison sage-grouse on site-specific basis. **REC-4-5** To prevent disturbance to wintering big game and to reduce impacts on strutting Gunnison sage-grouse in the spring, public lands in the unit will be closed to motorized and mechanized use and travel from December 1 to May 15 annually. If these and related human uses are determined to cause disturbance to breeding sage-grouse or wintering big game during the periods when these uses will be permitted, BLM will extend the periods of vehicular closure where and when necessary to prevent disturbance to these species or habitat. The closure extension will be for up to 30 days, depending on the circumstances warranting the extension. • Exception: administrative access for livestock grazing permittee grazing operations may be permitted during the seasonal travel closure without prior BLM authorization. **REC-4-6** From May 16 to November 30, motorized and non-motorized, mechanical vehicular travel and use on public lands in the unit will be limited to the designated routes shown on Figure 2-4 (see end of this chapter) to prevent disturbance to sage grouse leks or potential leks. The routes shown are preliminary and may not be all inclusive. **REC-4-7** Designated routes will be further refined with the assistance of a BLM/citizen work group. Until routes are refined, all motorized and mechanical travel will be limited to the designated routes shown on Figure 2-4 (see end of this chapter) from May 16 to November 30. The seasonal limitation period could change if an extended closure period is necessary. **REC-4-8** At BLM's discretion, target shooting on public lands may be authorized on public lands in the planning area only in those portions of Management Units 2, 4, and 6 located outside the NCA	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					boundary. See the recreation-specific decisions for these management units below. Target shooting will not be authorized on public lands in the remainder of the planning area in order to provide a safe environment for all users in the planning area, and to protect resources, health, and property. Authorization will occur according to BLM and other applicable regulations. Special operating procedures and local BLM regulations will be established and posted. Patrols by law enforcement personnel will be conducted to help ensure compliance with this decision. All BLM and other Federal, State, and local regulations and BMPs will be followed. If monitoring results indicate resource or other problems are occurring, areas selected for this activity will be closed and rehabilitated. **Travel Management** **REC-4-9** Limited OHV area. **REC-4-10** The management unit will be closed to motorized and mechanical vehicular use and travel from December 1 to May 15 annually to prevent disturbance to wintering big game or breeding/strutting sage-grouse. Closure could be extended an additional 30-days if warranted by circumstances • Exception: administrative access for livestock grazing permittee grazing operations may be permitted during the seasonal travel closure without prior BLM authorization. **REC-4-11** Motorized and mechanical vehicle travel on public lands in this management unit will be limited to the designated routes as shown on Figure 2-4 from May 16 through November 30, unless necessary to extend closure another 30 days. **Camping:** **REC-4-12** Dispersed camping will be allowed.	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					Stay Limit: **REC-4-13** 14 days will be allowed unless special regulations (such as seasonal closures, etc.) are in effect. **Campfires:** **REC-4-14** Campfires must be in fire pans. Portable stoves and grills will be permitted in dispersed camping areas. **Maximum Group Size:** **REC-4-15** 25 people **REC-4-16** Organized group permits will be required for groups over 25 people. **Competitive Events:** **REC-4-17** Motorized and non-motorized competitive events will not be permitted in the management unit or this zone. **Target Shooting:** **REC-4-18** Will not be permitted on public lands within the NCA boundary. At BLM's discretion, target shooting on public lands may be authorized on public lands in the management unit outside the NCA boundary. Target shooting will not be authorized on public lands in the remainder of the planning area in order to provide a safe environment for all users in the planning area, and to protect resources, health, and property. Authorization would occur according to BLM and other applicable regulations. Special operating procedures and local BLM regulations will be established and posted. Patrols by law enforcement personnel will be conducted to help ensure compliance with this decision. All BLM and other Federal, State, and local regulations and BMPs will be complied with. If monitoring results indicate resource or other problems are occurring, areas selected for this activity will be closed and rehabilitated. **Hunting:** **REC-4-19** Will be allowed in accordance with State regulations.	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					REC-4-20 Continue coordination with CDOW to increase visitor contacts during hunting season. **REC-4-21** No-hunting zones will be established in NCA areas in cooperation with CDOW if determined necessary for visitor protection. **Commercial and Private Permits:** ***Existing Commercial Permits:*** **REC-4-22** BLM will continue to manage 5-7 commercial permits for big game hunting in Recreation Management Zone. ***New Commercial Permits:*** **REC-4-23** BLM will develop commercial use needs assessment for providing additional outfitted services such as jeep tours, horseback rides, etc. **REC-4-24** BLM will allow new permits if activities appropriate to zone. **Private Permits: REC-4-25** Individual private permits will not be required. **REC-4-26** Organized group permits will be required for groups over 25 people. **Facilities and Signs:** Existing: Rec-4-27 BLM boundary and directional signs will be installed at major road intersections. **REC-4-28** East Side Scenic Overlook (on Wilderness rim near Smith Fork Creek in Section 30, Township 15 South, Range 93 West, 6 Principal Meridian, Delta County). **REC-4-29** NCA entrance signs and informational kiosks will be installed at major NCA access roads. **REC-4-30** Additional boundary, informational, regulatory, and directional signs. **REC-4-31** Fences, rock barricades, etc., to: protect private lands; contain use within Recreation Management Zone; protect special status species, unique soils, etc.; and allow for success of restoration measures.	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					Trail and Road Construction/Maintenance: **REC-4-32** BLM will allow new road construction only if needed to resolve resource concerns or user conflicts. **REC-4-33** BLM will continue to maintain designated roads at current maintenance levels and road standards. **REC-4-34** Areas impacted by unauthorized use will be closed, either temporarily or permanently as needed, and rehabilitated. **REC-4-35** This maintenance will be accomplished within funding capabilities and will be implemented where appropriate. **Visual Resource Management:** **REC-4-36** East Side Scenic Overlook – VRM Class I. Relict tree stand on Black Ridge – VRM II. Remaining areas – VRM Classes III and IV. **Recreation Opportunity Spectrum:** **REC-4-37** ROS Unit III (semi-primitive motorized). **Administrative and Monitoring Actions for ALL Recreation Management Zones in Management Unit 4: REC-4-38** Set carrying capacity for NCA areas within zones based on desired resource conditions and visitor satisfaction levels. **REC-4-39** Implement additional management actions if needed to ensure recreation use, including motorized and non-motorized, mechanical vehicular use, within Gunnison Sage-Grouse ACEC/IBA is consistent with ACEC objectives. Actions could include: special stipulations for commercial, competitive (outside NCA), and organized groups permits; seasonal restrictions on camping and/or other recreational activities in lek areas to protect strutting birds; and allow camping, firewood gathering, etc., only in designated areas in critical habitat areas.	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					REC-4-40 Develop and implement methods to assess and monitor visitor satisfaction levels and resource conditions. **REC-4-41** Set specific regulations for appropriate travel on designated routes to enhance visitor safety and protect resources. Educate users about responsible travel on designated routes and regulations regarding resource damage. **REC-4-42** Implement low-impact use regulations for camping, campfires, sanitation, etc. **REC-4-43** Educate users about low impact camping, "Tread Lightly," and other land use ethics. **REC-4-44** Develop maximum group size and vehicle limits, selection criteria, and special regulations for commercial, organized group, and competitive permits based on carrying capacities, resource conditions, etc. **REC-4-45** Provide maps, brochures, and website information. **REC-4-46** Continue coordinating with the Park Service to provide and improve visitor information, signing, and compliance and annually fund the joint Park Service/BLM Visitor Guide. Where feasible, BLM will coordinate joint funding for permanent and seasonal positions to increase ground presence and coordination between the agencies to improve customer service and user education. **Fire Management** **FIRE-4-1** All fire will be suppressed in the relict tree stand on Black Ridge. **FIRE-4-2** Fuel treatments or reduction or other vegetative treatments will not be conducted within the stands. **FIRE-4-3** Fuels treatments, including mechanical treatment or prescribed fire, will be encouraged in younger vegetation near relict stands to protect the stands from catastrophic (crown) fire.	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					Livestock Grazing Authorize livestock grazing in OHMA (21,440 acres) and UHMA (180 acres). Renew and allow transfer of livestock grazing permits, provided livestock can be managed to meet or make progress toward meeting land health standards. Implement appropriate Livestock Management Best Practices (Appendix H, *Best Management Practices and Required Design Features*) when renewing livestock grazing permits.	

West Antelope Creek ACEC (Existing)

Table 2.19. Comparison of Alternatives: West Antelope Creek ACEC (Existing)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
106	***West Antelope Creek ACEC Management Action 1***	Management Unit 7 of Gunnison Field Office RMP 1993: Manage 28,280 acres as the West Antelope Creek ACEC to improve the capabilities of the resources in the unit to support wintering elk, deer, and bighorn sheep.	Manage 28,280 acres as the West Antelope Creek ACEC to improve the capabilities of the resources in the unit to support wintering elk, deer, and bighorn sheep. • Management actions would align with Alternative B for each resource (as described above) and as follows: • Manage as ROW exclusion. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • All management would align with Alternative B for each resource (as described above).	Same as Alternative A.	Manage 28,280 acres as the West Antelope Creek ACEC to improve the capabilities of the resources in the unit to support wintering elk, deer, and bighorn sheep. Management would align with Alternative D in this planning effort for each resource (as described above) and as follows: • Subject to valid existing rights, close West Antelope Creek ACEC, to fluid mineral exploration, leasing, and/or development. • Limit motorized and mechanized travel to designated route system (Gunnison Field Office TMP 2010). • Close designated routes to motorized travel from March 15 – May 15 (Gunnison Field Office TMP 2010). • Limit over-snow vehicle travel to designated routes (restriction only in Gunnison Basin). Any route subsequently approved by the BLM will be incorporated into the designated the route system.	Same as Alternative A. All existing ACECs shall remain.

South Beaver Creek ACEC (Existing)

Table 2.20. Comparison of Alternatives: South Beaver Creek ACEC (Existing)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
107	***South Beaver Creek ACEC Management Action 1***	The unit, Management Unit 8 of Gunnison Field Office RMP 1993, will be designated and managed as the South Beaver Creek Area of Critical Environmental Concern (ACEC), 4,570 acres of public surface. Management actions are as follows: • The unit will be managed to protect and enhance existing populations and habitat of skiff milkvetch. • Plant monitoring studies will be designed and conducted cooperatively with the Colorado Natural Areas Program and The Nature Conservatory to determine population trends; actions designed to improve habitat conditions will be initiated. Surface-disturbing activities will be restricted to protect the species and potential habitat. An ACEC management plan will be prepared. No chemical spraying will occur on public lands within the unit. Any research activities will require approval by the BLM.	Manage 4,570 acres as the South Beaver Creek ACEC for protection and enhancement of existing populations and habitat for skiff milkvetch. Management actions are as follows: • Manage as ROW exclusion. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Plant monitoring studies will be designed and conducted cooperatively with the Colorado Natural Areas Program and The Nature Conservatory to determine population trends; actions designed to improve habitat conditions will be initiated. • Surface-disturbing activities will be restricted to protect the species and potential habitat. • An ACEC management plan will be prepared. • No chemical spraying will occur on public lands within the unit. • Any research activities will require approval by the BLM.	The unit, Management Unit 8 of Gunnison Field Office RMP 1993, will be designated and managed as the South Beaver Creek Area of Critical Environmental Concern (ACEC), 4,570 acres of public surface. Management actions are as follows: • The unit will be managed to protect and enhance existing populations and habitat of skiff milkvetch. • Plant monitoring studies will be designed and conducted cooperatively with the Colorado Natural Areas Program and The Nature Conservatory to determine population trends; actions designed to improve habitat conditions will be initiated. • Surface-disturbing activities will be restricted to protect the species and potential habitat. • An ACEC management plan will be prepared. • No chemical spraying will occur on public lands within the unit. • Any research activities will require approval by the BLM.	Manage 4,570 acres as the South Beaver Creek ACEC for protection and enhancement of existing populations and habitat for skiff milkvetch. *Same as Alternative A and as follows, except the following management action would be removed:* • *"No chemical spraying will occur on public lands within the unit."* Management actions would align with Alternative D for each resource as described above and as follows: • Plant monitoring studies will be designed and conducted cooperatively with the Colorado Natural Areas Program and The Nature Conservatory to determine population trends; actions designed to improve habitat conditions will be initiated. • Surface-disturbing activities will be restricted to protect the species and potential habitat. • An ACEC management plan will be prepared. • Any research activities will require approval by the BLM. • Limit motorized and mechanized travel to designated route system (Gunnison Field Office TMP 2010). • Close designated routes to motorized travel from March 15 – May 15 (Gunnison Field Office TMP 2010) • Limit over-snow vehicle travel to designated routes (restriction only *in Gunnison Basin*). • Any route subsequently approved by the BLM will be incorporated into the designated the route system.	Same as Alternative A. All existing ACECs shall remain.

All Gunnison Sage-Grouse Habitat Area ACEC (Nominated)

Table 2.21. Comparison of Alternatives: All Gunnison Sage-Grouse Habitat Area ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
108	***GUSG OHMA and UHMA ACEC Management Action 1***	No similar action in current RMPs	Manage 650,120 acres as the GUSG OHMA and UHMA ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing.	No similar action (GUSG Occupied Habitat Management Area and Unoccupied Habitat Management Area is not proposed as an ACEC under this alternative).	No similar action (GUSG Occupied Habitat Management Area and Unoccupied Habitat Management Area is not proposed as an ACEC under this alternative).	No similar action (GUSG Occupied Habitat Management Area and Unoccupied Habitat Management Area is not proposed as an ACEC under this alternative).

GUSG Satellite Populations ACEC (Nominated)

Table 2.22. Comparison of Alternatives: GUSG Satellite Populations ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
109	***GUSG Satellite Populations ACEC Management Action 1***	No similar action in current RMPs	Manage 295,860 acres as the GUSG satellite populations ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • See ACEC Management Action 2.1 for additional management action.	No similar action (GUSG satellite populations is not proposed as an ACEC under this alternative).	No similar action (GUSG satellite populations is not proposed as an ACEC under this alternative).	No similar action (GUSG satellite populations is not proposed as an ACEC under this alternative).

Northdale ACEC (Nominated)

Table 2.23. Comparison of Alternatives: Northdale ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
110	***Northdale/ Northdale Expansion ACEC Management Action 1***	No similar action in current RMPs	Manage 5,230 acres as the Northdale ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Classify the ACEC for motorized and mechanized travel as closed (Travel Management Action 1); travel is also already prohibited in currently designated Willow Creek Wildlife Management Area. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing in OHMA and UHMA (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management), except where prohibited in currently designated Willow Creek Wildlife Management Area. • Upon expiration or termination of existing fluid minerals leases, prohibit reinstatement and issuance of new leases in OHMA and UHMA.	No similar action (Northdale is not proposed as an ACEC under this alternative).	No similar action (Northdale is not proposed as an ACEC under this alternative).	No similar action (Northdale is not proposed as an ACEC under this alternative).

Dry Creek Basin ACEC (Nominated)

Table 2.24. Comparison of Alternatives: Dry Creek Basin ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
111	***Dry Creek Basin ACEC Management Action 1***	No similar action in current RMPs	Manage 34,730 acres as the Dry Creek Basin ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • For travel management see Travel Management Action 1. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing in OHMA (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management). • Upon expiration or termination of existing fluid minerals leases, prohibit reinstatement and issuance of new leases in OHMA.	No similar action (Dry Creek Basin is not proposed as an ACEC under this alternative).	Manage 10,920 acres as the Dry Creek Basin ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing in OHMA (see Livestock Grazing Management Action 1 in Livestock Grazing Management).	No similar action (Dry Creek Basin is not proposed as an ACEC under this alternative).

Chance Gulch ACEC (Nominated)

Table 2.25. Comparison of Alternatives: Chance Gulch ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
112	***Chance Gulch ACEC Management Action 1***	No similar action in current RMPs	Manage 22,660 acres as the Chance Gulch ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights.	No similar action (Chance Gulch is not proposed as an ACEC under this alternative).	Manage 13,150 acres as the Chance Gulch ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • No new construction of roads/routes would be permitted, excluding pending applications which may be granted	No similar action (Chance Gulch is not proposed as an ACEC under this alternative).

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			• Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing • Prohibit new surface facilities (small scale infrastructure, including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers). • Prohibit new livestock management structures to include fences, water developments, pipelines, cattleguards, and wells. • Prohibit development of new stockponds or springs. • For travel management see Travel Management Action 1. • Close to all human use during lekking, nesting, and brood-rearing season (March 15 to July 15) with exceptions for administrative access and emergency maintenance. • All pets on leash. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing within the ACEC according to Alternative B2 under the Livestock Grazing Management section above (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management). • See Alternative B2 at livestock grazing MA-3 above, when a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment within the ACEC, or existing allotments are vacant, do not reissue the permit. The Authorized Officer may choose to either: (1) retire the allotment from livestock grazing or (2) establish the allotment as a forage reserve. • Upon expiration or termination of existing fluid minerals leases, prohibit		after appropriate NEPA evaluation at the Authorized Officers discretion. • Routine maintenance, amendments, and ROW authorizations may be granted on existing ROWs. • ROW: OHMA and UHMA, manage 1-mile buffer of active and inactive leks as ROW exclusion areas, with exceptions (see Lands and Realty Management Action 1). • ROW: In areas outside of exclusion area; ROWs for pipelines, transmission/utility lines, communication sites, or other comparable infrastructure may only be authorized under the following criteria: o Infrastructure upgrade and/or reconstruction occurs or is co-located, within the existing ROW; o New utility lines are co-located on existing overhead lines to the maximum extent feasible; o Pipelines, communication sites, or other infrastructure are co-located within the disturbed footprint or ROW of existing structures. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Maintain current, designated route system limiting both motorized and mechanized travel and to include over-snow vehicle travel. Any route subsequently approved by the BLM will be incorporated into the designated route system. • Prohibit new trail development. • At implementation planning, identify the purpose/objective for each BLM managed route under consideration for analysis. Routes found to be redundance and/or lacking an identified purpose/objective should be	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			reinstatement and issuance of new leases.		prioritized for closure and rehabilitation. • Close to motorized (including e-bikes) travel during lekking and nesting, season (March 15 to June 30) to prevent disturbance to breeding sage-grouse with exceptions for administrative access and emergency maintenance. • Close to all human use during lekking season (March 15 to May 15) with exceptions for administrative access and emergency maintenance. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Provide adequate protection (signs, use stipulations, barricades, as needed) to protect sage-grouse and their habitats. • Allow trail/road realignment only if found to be beneficial for the relevant and important values. • Continue to allow livestock grazing within the ACEC as outlined under Alternative D, in the Livestock Grazing Management section above. (see Livestock Grazing Management Action 1 in Livestock Grazing Management). • When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment within the ACEC, the BLM will consider the management outlined under Alternative D, in Livestock Grazing Management Action 1, of the Livestock Grazing Management section, above. • No fluid mineral leasing within the ACEC.	

Kezar Basin ACEC (Nominated)

Table 2.26. Comparison of Alternatives: Kezar Basin ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
113	***Kezar Basin ACEC Management Action 1***	No similar action in current RMPs	Manage 16,270 acres as the Kezar Basin ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Prohibit new surface facilities (small scale infrastructure; signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers). • Prohibit new livestock management structures to include fences, water developments, pipelines, cattleguards, and wells. • Prohibit development of new stockponds or springs. • For travel management see Travel Management Action 1. • Close to all human use, including dispersed camping during lekking, nesting, and brood-rearing season (March 15 to July 15) with exceptions for administrative access and emergency maintenance. • All pets on leash. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing in OHMA (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management). • Upon expiration or termination of existing fluid minerals leases, prohibit reinstatement and issuance of new leases.	No similar action (Kezar Basin is not proposed as an ACEC under this alternative).	No similar action (Kezar Basin is not proposed as an ACEC under this alternative).	No similar action (Kezar Basin is not proposed as an ACEC under this alternative).

North Parlin ACEC (Nominated)

Table 2.27. Comparison of Alternatives: North Parlin ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
114	***North Parlin ACEC Management Action 1***	No similar action in current RMPs.	Manage 17,900 acres as the North Parlin ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Prohibit new surface facilities (small scale infrastructure, including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers). • Prohibit new livestock management structures to include fences, water developments, pipelines, cattleguards, and wells. • Prohibit development of new stockponds or springs. • For travel management see Travel Management Action 1, above. • Close to all human use during lekking, nesting, and brood-rearing season (March 15 to July 15) with exceptions for administrative access and emergency maintenance. • All pets on leash. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing within the ACEC according to Alternative B2 under the Livestock Grazing Management section above (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management).	No similar action (North Parlin is not proposed as an ACEC under this alternative).	No similar action (North Parlin is not proposed as an ACEC under this alternative).	No similar action (North Parlin is not proposed as an ACEC under this alternative).

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			• When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment within the ACEC, do not reissue the permit. The Authorized Officer may choose to either: (1) retire the allotment from livestock grazing or (2) establish the allotment as a forage reserve. • Upon expiration or termination of existing fluid minerals leases, prohibit reinstatement and issuance of new leases.			

Sapinero Mesa ACEC (Nominated)

Table 2.28. Comparison of Alternatives: Sapinero Mesa ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
115	***Sapinero Mesa ACEC Management Action 1***	No similar action in current RMPs.	Manage 16,740 acres as the Sapinero Mesa ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Prohibit new surface facilities including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers. • Prohibit new livestock management structures to include fences, water developments, pipelines, cattleguards, and wells. • Prohibit development of new stockponds or springs. • For travel management see Travel Management Action 1. • Close to all human use, including dispersed camping during lekking, nesting, and brood-rearing season (March 15 to July 15) with exceptions for	No similar action (Sapinero Mesa is not proposed as an ACEC under this alternative).	Manage 17,240 acres as the Sapinero Mesa ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Subject to valid existing rights, close Sapinero Mesa ACEC, to fluid mineral exploration, leasing, and/or development. • No new construction of roads/routes would be permitted, excluding pending applications which may be granted after appropriate NEPA evaluation at the Authorized Officers discretion. • Routine maintenance, amendments, and ROW authorizations may be granted on existing ROWs. • ROW: OHMA and UHMA, manage 1-mile buffer of active and inactive leks as ROW exclusion areas, with exceptions (see Lands and Realty Management Action 1). • ROW: In areas outside of exclusion area; ROW for pipelines, transmission/utility lines, communication sites, or other comparable infrastructure may only be authorized under the following criteria:	No similar action.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			administrative access and emergency maintenance. • All pets on leash. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing in OHMA (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management). • When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment within the ACEC, do not reissue the permit. The Authorized Officer may choose to either: (1) retire the allotment from livestock grazing or (2) establish the allotment as a forage reserve. • Upon expiration or termination of existing fluid minerals leases, prohibit reinstatement and issuance of new leases.		○ Infrastructure upgrade and/or reconstruction occurs or is co-located, within the existing ROW; ○ New utility lines are co-located on existing overhead lines to the maximum extent feasible; ○ Pipelines, communication sites, or other infrastructure are co-located within the disturbed footprint or ROW of existing structures. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Maintain current, designated route system limiting both motorized and mechanized travel and to include over-snow vehicle travel. • Close the area west of County Road 26 to motorized and mechanized travel during lekking, nesting, and brood-rearing season (March 15 to July 15) to prevent disturbance to breeding, nesting, brood-rearing sage-grouse, with exceptions for administrative access and emergency maintenance (see Map A.58) (8,462 acres). • Close to all human use during lekking season (March 15 to May 15) with exceptions for administrative access and emergency maintenance. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Provide adequate protection (signs, use stipulations, barricades, as needed) to protect sage-grouse and their habitats. • Allow trail/road realignment only if found to be beneficial for the relevant and important values. • Continue to authorize livestock grazing in OHMA (see Livestock Grazing Management Action 1 in Livestock Grazing Management).	

South Parlin ACEC (Nominated)

Table 2.29. Comparison of Alternatives: South Parlin ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
116	***South Parlin ACEC Management Action 1***	No similar action in current RMPs.	Manage 26,160 acres as the South Parlin ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry . • Close to nonenergy solid mineral leasing • Prohibit new surface facilities (small scale infrastructure, including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers). • Prohibit new livestock management structures to include fences, water developments, pipelines, cattleguards, and wells. • Prohibit development of new stockponds or springs. • For travel management, see Travel Management Action 1, above. • Close to all human use during lekking, nesting, and brood-rearing season (March 15 to July 15) with exceptions for administrative access and emergency maintenance. • All pets on leash. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing within the ACEC according to Alternative B2 under the Livestock Grazing Management section above (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management).	No similar action (South Parlin is not proposed as an ACEC under this alternative).	No similar action (South Parlin is not proposed as an ACEC under this alternative).	No similar action (South Parlin is not proposed as an ACEC under this alternative).

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			• When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment within the ACEC, do not reissue the permit. The Authorized Officer may choose to either: (1) retire the allotment from livestock grazing or (2) establish the allotment as a forage reserve. • Upon expiration or termination of existing fluid minerals leases, prohibit reinstatement and issuance of new leases.			

Sugar Creek ACEC (Nominated)

Table 2.30. Comparison of Alternatives: Sugar Creek ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
117	***Sugar Creek ACEC Management Action 1***	No similar action in current RMPs.	Manage 17,210 acres as the Sugar Creek ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Prohibit new surface facilities (small scale infrastructure, including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers). • See travel management above, Travel Management Action 1. • Close to all human use, including dispersed camping, during lekking, nesting, and brood-rearing season (March 15 to July 15) with exceptions for administrative access and emergency maintenance. • All pets on leash. • Allow vegetation treatments and wildlife habitat improvements for the benefit of	No similar action (Sugar Creek is not proposed as an ACEC under this alternative).	Manage 17,210 acres as the Sugar Creek ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • No new construction of roads/routes would be permitted, excluding pending applications which may be granted after appropriate NEPA evaluation at the Authorized Officers discretion. • Routine maintenance, amendments, and ROW authorizations may be granted on existing ROWs. • ROW: OHMA and UHMA, manage 1-mile buffer of active and inactive leks as ROW exclusion areas, with exceptions (see Lands and Realty Management Action 1). ROW: In areas outside of exclusion area; ROW for pipelines, transmission/utility lines, communication sites, or other comparable infrastructure may only be authorized under the following criteria: ○ Infrastructure upgrade and/or reconstruction occurs or is co-located, within the existing ROW;	No similar action.

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing in OHMA (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management). • Continue to authorize livestock grazing within the ACEC (Alt B2) (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management). • When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment within the ACEC, do not reissue the permit. The Authorized Officer may choose to either: (1) retire the allotment from livestock grazing or (2) establish the allotment as a forage reserve. • Upon expiration or termination of existing fluid minerals leases, prohibit reinstatement and issuance of new leases.		○ New utility lines are co-located on existing overhead lines to the maximum extent feasible; ○ Pipelines, communication sites, or other infrastructure are co-located within the disturbed footprint or ROW of existing structures. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing. • Maintain current, designated route system limiting both motorized and mechanized travel and to include over-snow vehicle travel. • Prohibit new trail development. • Close to all human use during lekking season (March 15 to May 15) with exceptions for administrative access and emergency maintenance. • Close to all dispersed camping during lekking and nesting season (March 15 – June 30). • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Allow trail/road realignment only if found to be beneficial for the relevant and important values. • Prioritize restoration and re-vegetation of decommissioned or closed routes. • Continue to allow livestock grazing within the ACEC as outlined under Alternative D, in the Livestock Grazing Management section above (see Livestock Grazing Management Action 1 in Livestock Grazing Management). • When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment within the ACEC, the BLM will consider the management outlined under	

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
					Alternative D, in Livestock Grazing Management Action 1 of the Livestock Grazing Management section. • No fluid mineral leasing within the ACEC.	

Ohio Creek ACEC (Nominated)

Table 2.31. Comparison of Alternatives: Ohio Creek ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
118	***Ohio Creek ACEC Management Action 1***	No similar action in current RMPs.	Manage 9,250 acres as the Ohio Creek ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing • Prohibit new surface facilities (small scale infrastructure, including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers). • Prohibit new livestock management structures to include fences, water developments, pipelines, cattleguards, and wells. • Prohibit development of new stockponds or springs. • See travel management, Travel Management Action 1, above. • Close to all human use during lekking, nesting, and brood-rearing season (March 15 to July 15) with exceptions for administrative access and emergency maintenance. • All pets on leash. • Allow vegetation treatments and wildlife habitat improvements for the benefit of	No similar action (Ohio Creek is not proposed as an ACEC under this alternative).	No similar action (Ohio Creek is not proposed as an ACEC under this alternative).	No similar action (Ohio Creek is not proposed as an ACEC under this alternative).

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing within the ACEC according to Alternative B2 under the Livestock Grazing Management section above (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management). • When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment within the ACEC, do not reissue the permit. The Authorized Officer may choose to either: (1) retire the allotment from livestock grazing or (2) establish the allotment as a forage reserve. • Upon expiration or termination of existing fluid minerals leases, prohibit reinstatement and issuance of new leases.			

Waunita ACEC (Nominated)

Table 2.32. Comparison of Alternatives: Waunita ACEC (Nominated)

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
119	***Waunita ACEC Management Action 1***	No similar action in current RMPs.	Manage 8,370 acres as the Waunita ACEC for protection and enhancement of Gunnison sage-grouse habitat and to reduce disruption to wildlife by users. Management actions are as follows: • Manage as ROW exclusion, subject to valid existing rights. • Recommend to the Secretary of the Interior for withdrawal from locatable mineral entry. • Close to nonenergy solid mineral leasing • Prohibit new surface facilities (small scale infrastructure, including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers). • Prohibit new livestock management structures to include fences, water	No similar action (Waunita is not proposed as an ACEC under this alternative).	No similar action (Waunita is not proposed as an ACEC under this alternative).	No similar action (Waunita is not proposed as an ACEC under this alternative).

ROW #	Program Area and Number	Alternative A (No Action – Current Management)	Alternative B	Alternative C	Alternative D (Preferred Alternative)	Alternative E (Gunnison Basin)
			developments, pipelines, cattleguards, and wells. • Prohibit development of new stockponds or springs. • For travel management, see Travel Management Action 1, above. • Close to all human use during lekking, nesting, and brood-rearing season (March 15 to July 15) with exceptions for administrative access and emergency maintenance. • All pets on leash. • Allow vegetation treatments and wildlife habitat improvements for the benefit of the identified relevant and important values. • Prohibit new trail development. • Continue to authorize livestock grazing within the ACEC according to Alternative B2 under the Livestock Grazing Management section above (see Livestock Grazing Management Action 1, Sub-Alternative B2 in Livestock Grazing Management). • When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment within the ACEC, do not reissue the permit. The Authorized Officer may choose to either: (1) retire the allotment from livestock grazing or (2) establish the allotment as a forage reserve. • Upon expiration or termination of existing fluid minerals leases, prohibit reinstatement and issuance of new leases.			

2.2.3. Comparison of the Effects of the Alternatives

Table 2.33 summarizes the effects of the alternatives for each of the analyzed program areas.

Table 2.33. Summary of Effects of the Alternatives

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Special Status Species	Alternative A would continue current BLM management of GUSG and other special status species as defined under existing RMPs in the planning area, all of which contain some management objectives to manage GUSG habitats, sagebrush habitats, and other special status species. Rangewide management actions for GUSG would not be implemented and would not be consistent in the planning area. Section 7(a)(1) consultation under the ESA would still be required for site-specific actions.	Alternative B proposes the most conservation-focused management actions to remove threats to GUSG on the landscape. Surface disturbance restrictions would be applied to OHMA and UHMA, resulting in closures or restrictions to resources uses. A 1% surface disturbance cap would be applied in OHMA and UHMA, which would be the most restrictive of all the alternatives. Alternative B would provide the greatest conservation benefit to GUSG when compared to the other alternatives.	Alternative C proposes management actions for protection of GUSG habitat with the least amount of restriction to resource uses when compared to the other action alternatives. This alternative proposes more surface use restrictions than Alternative A, but fewer than Alternatives B, D, and E. Surface use restrictions would be applied only to OHMA, and exceptions would be allowed to OHMA and UHMA designations. A 3% surface disturbance cap would be applied in OHMA only. Less area would be subject to closures and restrictions than under Alternatives B, D, and E, resulting in less conservation benefit to the species than	Alternative D proposes a balanced approach to provide for conservation management actions to remove threats to GUSG on the landscape while minimizing restrictions of other resources uses in the planning area. Alternative D would apply surface use restrictions to OHMA and UHMA, but to a lesser extent than those proposed under Alternative B. A 2% disturbance cap is proposed in OHMA and a 3% disturbance cap is proposed in UHMA. Minimization measures proposed under Alternative D would provide conservation benefits within OHMA and UHMA while still allowing for balanced resource use. Alternative D would	Alternative E proposes adoption of management actions set forth in the CCA for the Gunnison Basin; therefore, management objectives and actions proposed under this alternative would only apply to the Gunnison Basin. Effects would be similar to those described under Alternative D, but would be limited to the Gunnison Basin.

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Alternatives B, D, and E.	have greater conservation benefits to the species than Alternatives A, C and E, but less than Alternative B.	
Fish and Wildlife	Alternative A would continue current BLM management of wildlife and their habitats in accordance with existing land use plans. All RMPs have management actions described for the conservation of wildlife and management of habitats.	Alternative B proposes surface use restrictions in OHMA and UHMA, resulting in closures or restrictions to resource uses. A 1% surface disturbance cap would be applied in OHMA and UHMA, which would be the most restrictive of all the alternatives. Alternative B would provide the greatest residual conservation benefit to wildlife species and their habitats where they overlap with GUSG HMAs when compared to the other alternatives.	Alternative C proposes management actions for protection of GUSG habitat with the least amount of restriction to resource uses when compared to the other action alternatives. Surface use restrictions would be applied only to OHMA, and exceptions would be allowed to OHMA and UHMA designations. A 3% surface disturbance cap would be applied in OHMA only. Less area would be subject to closures and restrictions than under Alternatives B, D, and E.	Alternative D proposes a balanced approach to GUSG management and other resources uses. Alternative D would apply surface use restrictions to OHMA and UHMA, but to a lesser extent than those proposed under Alternative B. A 2% disturbance cap is proposed in OHMA and a 3% disturbance cap is proposed in UHMA. Minimization measures proposed under Alternative D would provide conservation benefits within OHMA and UHMA while still allowing for balanced resource use. Alternative D would provide conservation benefits to wildlife where they overlap with GUG, but to a lesser extent that Alternative B.	Alternative E would apply management actions to the Gunnison Basin only, based on measures set forth in the CCA. Effects would be similar to those described under Alternative D, but would be limited to the Gunnison Basin.

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Air Resources	Alternative A would continue current BLM management direction in the 11 RMP administrative units in the planning area. Alternatives B through E propose varying degrees of proactive conservation measures and habitat protection that go beyond Alternative A, which would indirectly reduce criteria pollutants and greenhouse gas emissions.	Alternative B takes a more proactive stance towards GUSG conservation. It applies the most restrictive conservation measures within the agency's jurisdiction, prioritizing the removal of threats within occupied and unoccupied habitat. Because of these reasons, Alternative B would be the most beneficial to air resources, as conservation efforts such as limiting livestock grazing, mineral leasing, and development indirectly benefit air resources.	Alternative C aims to minimize, avoid, or compensate for impacts from resource uses and activities in GUSG habitat. By avoiding or minimizing the impacts of resource uses, Alternative C may directly contribute to reducing greenhouse gas emissions associated with activities such as energy development or transportation and help reduce criteria pollutants.	Alternative D represents a balanced approach that allocates resource uses while conserving resource values and enhancing ecological integrity. This alternative can potentially result in better land use practices that promote carbon sequestration and reduce criteria pollutant emissions, while allowing for agency consultation.	Alternative E only affects the Gunnison Basin Population. The direct greenhouse gas and criteria pollutant reductions of this alternative may be more limited because of its limited scope.
Soil Resources	Large-scale surface disturbance would be expected to increase across BLM surface for OHMA and UHMA. Existing surface disturbance restrictions would remain in place under OHMA and UHMA. Increased surface disturbance would impact soil stability and productivity.	Large portions of OHMA and UHMA would be placed under surface disturbance restrictions, which would reduce development and vegetation-removal activities. Alternative B would be the most beneficial to soil stability and productivity because of these surface use and disturbance restrictions.	Alternative C places more BLM surface in OHMA and UHMA under surface disturbance restrictions than Alternative A, but less than Alternative B. As a result, Alternative C would result in similar protections for soils resources as Alternative B, but to a lesser extent.	Impacts to soil resources under Alternative D would be similar to Alternative C, except conservation measures and restrictions in OHMA and UHMA could extend to linkage-connectivity areas and confer additional benefits to soil resources.	Impacts to soil resources within the Gunnison Basin would be similar to those described under Alternative D.

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Terrestrial Vegetation (including riparian areas and wetlands)	Large-scale surface disturbance would be expected to increase across BLM surface for OHMA and UHMA. Existing surface disturbance restrictions would remain in place under OHMA and UHMA. The surface disturbance would be detrimental to native vegetation communities through the direct removal of native vegetation and increased risk of the spread of noxious weeds and other non-native invasive plant species.	Large portions of OHMA and UHMA would be placed under surface disturbance restrictions, which would support native vegetation community productivity from development and vegetation-removal activities. Alternative B would be the most beneficial to vegetation communities.	Alternative C places more BLM surface in OHMA and UHMA under surface disturbance restrictions than Alternative A, but less than Alternative B. As a result, Alternative C would result in similar protections for native vegetation communities as Alternative B, but to a lesser extent.	Impacts to native vegetation communities under Alternative D would be similar to Alternative C, except conservation measures and restrictions in OHMA and UHMA could extend to linkage-connectivity areas.	Impacts to vegetation communities within the Gunnison Basin would be similar to those described under Alternative D.
Noxious Weeds and Invasive Species	Large-scale surface disturbance would be expected to increase across BLM surface for OHMA and UHMA resulting in an increased risk of additional adverse impacts of noxious weed and other invasive plant species upon existing vegetation communities and OHMA and UHMA habitat. Existing surface disturbance restrictions would remain in place	Large portions of OHMA and UHMA would be placed under surface disturbance restrictions, which would support the reduction of new and spreading noxious weed infestations. Chemical treatments in OHMA and UHMA are limited to targeted spot treatments of infestations with backpack sprayers; no boom or aerial application may occur.	Alternative C places more BLM surface in OHMA and UHMA under surface disturbance restrictions than Alternative A, but less than Alternative B. As a result, Alternative C would result in similar protections against new and spreading noxious weed infestations as Alternative B, but to a lesser extent. Chemical treatments in OHMA and UHMA	Impacts to noxious weed control under Alternative D would be similar to Alternative C, except conservation measures and restrictions in OHMA and UHMA could extend to linkage-connectivity areas.	Impacts to noxious weed control within the Gunnison Basin would be similar to those described under Alternative D.

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	under OHMA and UHMA. Currently, management and control of vegetation for resource and habitat enhancement is accomplished using a variety of treatment methods, including, but not limited to use of herbicides (ground and aerial), manual (use of hands or handheld tools), mechanical (use of large equipment), and biological controls such as insects, pathogens, fish, and domestic grazing animals. The GUSG RMP Amendment will make no decision regarding the number of acres to be treated under any of the alternatives. Additionally, it is not possible to provide the maximum projected treatment acreage for any specific vegetation type or species based on the best available information.	This would reduce the ability of the BLM to conduct large scale chemical treatments.	may include spot treatments using backpack sprayers, boom sprayers, and aerial application allowing the BLM to better address large weed infestations.		

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Lands with Wilderness Characteristics	Alternative A proposes land protections of lands inventoried as lands with wilderness characteristics that are greater than Alternatives C and E, but less than B and D.	Alternative B proposes land protections of lands inventoried as lands with wilderness characteristics that are the greatest among all alternatives.	Alternative C and E propose the least amount of land protection of lands inventoried as lands with wilderness characteristics.	Alternative D proposes land protections of lands inventoried as lands with wilderness characteristics that are greater than Alternative A but less than Alternative B.	Alternative E and C propose the least amount of land protection of lands inventoried as lands with wilderness characteristics.
Wildland Fire Ecology and Management	Alternative A would offer the least amount of protection for GUSG and GUSG habitat due to inconsistent management and allocation of resources across all OHMA and UHMA. Issues affecting wildfire would result in increased fires and fire cycles, requiring a greater need for post fire management resources and less for prevention.	Alternative B offers the highest level of protection from wildfire for GUSG and GUSG habitat through implementation of consistent management across all OHMA and UHMA with prioritization of GUSG habitat. This alternative contains the highest number of restrictions and would therefore necessitate the most resources for implementation.	Alternative C provides more protection for GUSG and GUSG habitat than Alternative A by implementing consistent management across all OHMA and UHMA, but less than Alternatives B and D by allowing the greatest resource use such as livestock grazing and recreation which may negatively impact GUSG and their habitat. guidelines. Fire management and prevention actions would be moderate when compared to Alternative B, allowing for more resources to be utilized in other areas.	Alternative D provides more protection for GUSG and their habitat than Alternatives A, C, and E, but less than Alternative B. This alternative implements consistent management across all OHMA and UHMA prioritizing vegetation and GUSG habitat guidelines. It also allows for adaptive management through agency consultation which would allow for more intense management on an as needed basis and would maximize management resource use.	Alternative E management is similar to the preferred Alternative D, but with more resources devoted to fuel management and applied only to the Gunnison Basin population. This alternative would provide similar protections as Alternatives B and D, but over a smaller area.

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Livestock Grazing Management	Acreages of current grazing allotments and permitted AUMs per allotment would remain unchanged under Alternative A. The existing RMPs include a mix of grazing guidance and stipulations, which vary across the RMPs, but are generally less restrictive than the action alternatives.	This alternative would have the greatest adverse effect on current grazing permittees and their grazing operations. Alternative B1 would make OHMA and UHMA unavailable for renewal of livestock grazing permits and would not allow for transfer of grazing permits. Over time, as expiring permits are not renewed within OHMA and UHMA, the acres available for grazing would be reduced until no acres or AUMs within OHMA or UHMA would be available for grazing. This would result in a substantial disruption of grazing operators ability to operate over the long-term. Early season pastures that operators may rely upon would not be available resulting in operators needing to locate alternative private land pasture and/or supplement forage to	Most management actions would adversely affect grazing permittees and grazing allotments within OHMA. Under Alternative C, livestock grazing in OHMA and UHMA would continue to be authorized. Where land health determinations indicate GUSG habitat guidelines are not being met due to current livestock grazing management, seasonal of use stipulations or allowable AUMs could be reduced or grazing management systems that include adaptive management can be implemented to address deficient conditions within allotments.	Actions proposed under Alternative D are generally the same as Alternative C. Livestock grazing would continue to be authorized in OHMA and UHMA and permits would continue to be renewed consistent with FLPMA, BLM grazing regulations, and GUSG habitat guidelines. The acreage of available grazing allotments and AUMs would remain the same as under Alternative A.	This alternative applies the CCA measures within the Gunnison Basin population area only, which generally identify less prescriptive restrictions for livestock grazing management than the other action alternatives. Minerals management within other population areas would be the same as Alternative A. Grazing would continue to be allowed and permits would be renewed in OHMA provided that management guidelines outlined in the CCA and livestock grazing is managed in riparian areas to improve GUSG habitat conditions. This action could result in a reduction of the acreages or AUMs available to grazing within certain underperforming allotments.

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		continue to produce at current levels. Under Alternative B2, OHMA would be unavailable for livestock grazing* between March 1 and July 15. Livestock grazing would continue to be authorized in OHMA between July 16 and February 28, resulting in fewer impacts to livestock grazing than Alternative B1. **Acres unavailable for livestock grazing would be for the life of the RMP Amendment.*			
Recreation	Allowable uses and restrictions would remain unchanged, resulting in no new impacts to recreation. Alternative A would continue current BLM management direction related to the number of sites where recreational opportunities and experiences are reduced or eliminated, the acres of special recreation management areas (SRMAs)/	Alternative B would result in the greatest adverse impact on recreation sites and activities, the number and type of SRPs allowed in GUSG habitat because recreationists are unable to achieve targeted beneficial outcomes. Alternative B has the same level of impact on changes in seasonal timing acres or restrictions compared	Alternative C designates the Sugar Creek Backcountry Conservation Area (BCA) in the Gunnison Field Office which provides primitive recreation opportunities in a natural setting. Impacts on the types and level of recreation would be greater than Alternative A, but less than Alternative B. Impacts on the number and types of SRPs	Alternative D designates the Signal Peak ERMA/UIRA as a SRMA which provides a specific focus on recreation opportunities. Impacts on the changes in recreation sites and activities would be greater than Alternative C but less than Alternative B. Impacts on the number and types of SRPs would be the same as Alternative B.	Impacts on the types and level of recreation would be greater than Alternative D but less than Alternative B. Under Alternative E, impacts on the types and level of recreation would be greater than Alternative D, but less than Alternative B. Alternative E would have the least impact on changes in seasonal timing acres or restrictions across alternatives.

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	extensive recreation management areas (ERMAs), and the number and types of SRPs therefore, Alternative A would have the least impact on changes in the number of acres and area where recreationists are unable to achieve targeted beneficial outcomes.	to alternatives C and D.	would be the same as Alternative B. Alternative C has the same level of impact on changes in seasonal timing acres or restrictions compared to alternatives B and D.		
Travel and Transportation Management	Alternative A generally aims to reduce fragmentation and disturbance in sagebrush habitats. It would maintain use as it is currently managed under existing plans.	Alternative B applies the most restrictive GUSG conservation measures available within the BLM's jurisdiction and authority. All OHMA would have an area designation of off-highway vehicle (OHV) -Closed, except for access required by law or for emergency services or administrative or permitted activities.	Alternative C proposes managing all OHMA and UHMA as OHV-Limited except for areas already managed as OHV Closed, which will remain closed. Functionally, Alternative C would have the same impact as the no-action since there are currently no OHV Open areas within the analyzed habitat types.	Alternative D proposes managing all OHMA and UHMA as OHV-Limited except for areas already managed as OHV Closed, which will remain closed. Functionally, Alternative C would have the same impact as the no-action since there are currently no OHV Open areas within the analyzed habitat types. The WSAs adjacent to the Powderhorn Wilderness would be managed as OHV Closed.	Travel and access across BLM land within the Gunnison Basin population area would be restricted seasonally and on designated routes. Access throughout the remainder of the decision area would remain as is, and therefore impacts on travel and transportation would be minimal under this alternative.

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Minerals	Minerals management includes a mix of closures and stipulations, which vary across the RMPs, but are generally less restrictive than the action alternatives.	This alternative would have the greatest adverse impact on the availability of Federal minerals for development due to closures, withdrawals, and major stipulations that often encompass all or large portions of OHMA, UHMA, linkage-connectivity habitat, and portions of Adjacent Non-habitat areas. Notably, only two population areas have capacity for additional mineral development without exceeding the disturbance cap of 1 percent, which would in effect preclude mineral development from most locations within the decision area.	Most closures and major stipulations that would adversely impact the availability of Federal leasable minerals for development are limited to OHMA under this alternative. Other areas are generally subject to more moderate stipulations than Alternative B and D for these mineral types. However, Alternative C identifies more areas for withdrawal from locatable mineral entry and closed to mineral material sales than Alternative D.	This alternative would have an adverse impact on the availability of Federal leasable minerals for development due to closures and major stipulations encompassing all or large portions of OHMA and UHMA. However, Alternative D identifies fewer areas for withdrawal from locatable mineral entry and closed to mineral material sales than Alternative C.	This alternative applies the CCA measures within the Gunnison Basin population area only, which generally identify less prescriptive restrictions for Federal mineral development than the other action alternatives. Minerals management within other population areas would be the same as Alternative A.

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Lands and Realty	Requests for disposal and acquisition of land would continue to be reviewed by the BLM for all lands including OHMA and UHMA.Requests for ROWs would continue to be managed under existing RMPs with most of the decision area remaining open to ROWs. Critical habitat areas for several species, outlined under the ESA of 1973 (as amended) would remain as ROW avoidance or exclusion areas for wind energy and exclusion areas for solar.	All lands within OHMA and UHMA would remain in public ownership. Exceptions would continue to be reviewed by the BLM for all lands including OHMA and UHMA, Under this alternative, disposal and/or acquisition of land may be more difficult. Exceptions would be considered on a case-by-case basis. OHMA and UHMA would be managed as ROW exclusion areas and LCMA would be classified as avoidance areas. This alternative would classify the most acres as ROW exclusion and avoidance areas. Renewable energy would be the most limited under Alternative B with OHMA, UHMA, LCMA, and Adjacent Non-habitat (4-mile buffer) managed as exclusion areas for both wind energy and solar energy development.	Lands previously identified would be available for disposal. Additional lands would be considered based on BLM-identified criteria. This alternative would allow for more land disposals. OHMA would be managed as avoidance areas. Exceptions would be considered. This alternative classifies the least ROW restrictions than the other action alternatives. Compared to Alternative B, renewable energy would be less limited with OHMA managed as exclusion areas for wind and solar energy development and UHMA allocated as avoidance areas for wind energy and solar energy development.	Impacts from disposal, retention, and acquisitions would be the same as Alternative B. OHMA in the decision area would be managed as ROW avoidance areas, but ROWs would be allowed after specific criteria were met, leaving the rest of the decision area open to ROWs. This would classify the most acres as ROW avoidance areas. Alternative D would also classify more acres as ROW exclusion than Alternative A but less than Alternative B. Alternative D would manage all habitat (OHMA and UHMA) as exclusion areas for wind energy and industrial solar energy development. This would exclude less renewable energy than Alternative B but more than Alternative C.	Lands available for disposal would be the same as Alternative C. Management of lands available for retention and acquisition would be managed the same as Alternative B. All OHMA within the Gunnison Basin would be managed as ROW avoidance. ROWs would be allowed if specific criteria were met. Alternative E would manage ROWs for renewable energy the same as Alternative C within the Gunnison Basin.

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Areas of Critical Environmental Concern	Alternative A would continue to manage four existing ACECs that are managed to protect R&I values and all other existing ACECs in the decision area.	Alternative B would designate an additional 12 ACECs, the greatest number of ACECs and acres to protect GUSG R&I values. The alternative would have the highest level of protection of GUSG populations when compared to other alternatives.	Same as Alternative A.	Alternative D would designate a subset of the ACECs and acres identified in Alternative B to protect GUSG R&I values. Alternative D would have similar benefits as Alternative B but to a lesser degree since only an additional four ACECs would be designated.	Same as Alternative A.
Social and Economic Conditions	There would be no changes to resource use and access which impacts socioeconomics under this alternative.	Alternative B applies the most restrictive GUSG conservation measures available within the BLM's jurisdiction and authority. Reductions to use and access of resources which support economic activity negatively impact the overall economic status of impacted communities. Alternative B would impose the largest negative economic impacts on the analysis area. Due to the restrictions on resource utilization in the analysis area Alternative B would result in the greatest ecosystem service benefits and nonmarket	Resource uses, and other actions would be allowed if their impacts could be avoided, minimized, rectified, reduced/eliminated over time, or mitigated through compensatory mitigation. Reductions to use and access of resources which support economic activity negatively impact the overall economic status of impacted communities. Alternative C's cumulative impacts would be less than those under Alternative B due to the continuation of resource uses so long as impacts can be avoided, minimized,	Alternative D applies a balanced approach for allocating resource uses and conserving resource values while sustaining and enhancing ecological integrity across the planning area. Reductions to use and access of resources which support economic activity negatively impact the overall economic status of impacted communities. Alternative D's cumulative impacts are anticipated to be similar to those under Alternative C due to some resource use continuing while sustaining and	This alternative applies the CCA measures within the Gunnison Basin population area only, which generally identify less prescriptive restrictions for resource utilization that impacts socioeconomics than the other action alternatives. Reductions to use and access of resources which support economic activity negatively impact the overall economic status of impacted communities. Alternative E's cumulative impacts are anticipated to be similar to those under Alternative C due to the less prescriptive

Program Area	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		benefits for communities within the analysis area that derive value from greater environmental protection and ecosystem services.	rectified, reduced or eliminated. Due to the limitations on resource use in the analysis area applied under Alternative C, fewer ecosystem service benefits and nonmarket benefits would be preserved when compared to Alternative B for communities within the analysis area that derive value from greater environmental protection and ecosystem services.	enhancing ecological integrity. Due to similar restrictions on resource utilization as Alternative C, Alternative D is anticipated to result in similar nonmarket and ecosystem service benefits to communities in the analysis area that derive value from greater environmental protection and ecosystem services.	restrictions for resource utilization. Due to similar restrictions on resource utilization as Alternative C, Alternative E is anticipated to result in similar nonmarket and ecosystem service benefits to communities in the analysis area that derive value from greater environmental protection and ecosystem services.

2.3. EVALUATION, MONITORING, ADAPTIVE MANAGEMENT, AND MITIGATION

The BLM planning regulations (including 43 CFR 1610.4-9) require that land use plans establish intervals and standards for monitoring and evaluation, based on the sensitivity of the resource decisions involved.

2.3.1. Evaluation

Evaluation is the process of reviewing the RMP and determining whether the decisions and NEPA analysis are still valid and whether the RMP is being adequately implemented. The BLM Land Use Planning Handbook (H-1601-1; BLM 2005a) directs that RMPs should be evaluated at a minimum period of every 5 years. Specifically, RMPs are evaluated to determine if:

- Decisions remain relevant to current issues;
- Decisions are effective in achieving (or making progress toward achieving) desired outcomes;
- Any decisions should be revised;
- Any decisions should be dropped from further consideration; and
- Any areas require new decisions.

Data collected during RMP implementation helps to inform the RMP evaluation.

2.3.2. Monitoring

Land use plan monitoring is the process of tracking the implementation of land use plan decisions (implementation monitoring) and collecting data/information necessary to evaluate the effectiveness of land use plan decisions (effectiveness monitoring) in meeting the purpose and need of the plan or plan amendment. Monitoring strategies for GUSG habitat and populations must be collaborative, as habitat occurs across jurisdictional boundaries. Therefore, efforts will continue to be conducted in partnership with Federal and State fish and wildlife agencies. The BLM and other partners will use the resulting information to guide implementation of conservation activities.

In accordance with BLM's Land Use Planning Handbook, the BLM will develop a monitoring plan as a part of the implementation plan. The monitoring plan will describe the process the BLM will use to monitor implementation and effectiveness. The monitoring plan will include methods, data standards, and intervals of monitoring; analysis and reporting methods; and the incorporation of monitoring results into future management actions. More specifically, the plan will discuss how the BLM will monitor and track implementation and effectiveness of planning decisions. To monitor habitats, the BLM will measure and track attributes of occupied habitat and unoccupied habitat and attributes of habitat availability.

During implementation of this RMP Amendment, population trends would be monitored by BLM, USFWS, CPW, and Utah Division of Wildlife Resources (UDWR) biologists. This monitoring would evaluate the effects on GUSG habitat and populations due to BLM permitted activities and make recommendations for changes in management. Monitoring would also evaluate the effectiveness of restoration activities and mitigation (to include compensatory mitigation) associated with permitted activities.

2.3.3. Adaptive Management

Adaptive management is a decision process that promotes flexible resource management decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes advances scientific understanding and helps with adjusting resource management directions as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. Adaptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits. On February 1, 2008, the DOI published its Adaptive Management Implementation Policy (522 DM 1). The adaptive management strategy outlined in this RMP Amendment/EIS complies with this policy. The adaptive management strategy will be fully developed as an activity level plan during the implementation phase of the RMP Amendment. For those RMP Amendment/EIS management actions that allow for adaptive management, the adaptive management plan will guide the BLM in determining the most effective course of action to promote GUSG conservation in response to conditions observed through monitoring.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1. INTRODUCTION

This chapter presents a description of the existing affected environment and an analysis of the environmental consequences for each resource, resource use, administrative designation, and social and economic resources that could be affected by implementing the alternatives described in Chapter 2. This chapter is organized by applicable planning issues. The planning issues were identified through collaboration across BLM field office staff and planning teams, public input, and related planning documents. Each resource, resource use, administrative designation, and social and economic resources section includes an introduction, description of analytical methods and assumptions, description of the affected environment, analysis of environmental consequences, and analysis of unavoidable adverse effects, relationship of short-term uses and long-term productivity, and irreversible and irretrievable commitment of resources.

3.1.1. Analytical Assumptions

Several overarching assumptions have been made to facilitate the analysis of the RMP alternatives. These assumptions set guidelines and provide reasonably foreseeable projected levels of development that would occur in the decision area during the planning period. These assumptions should not be interpreted as constraining or redefining the management objectives and actions proposed for each alternative, as described in Chapter 2. The following assumptions apply to all resource categories. Specific resource assumptions are provided in the Analytical Methods and Assumptions section for each resource.

- Sufficient funding and personnel would be available for implementing the final decision.
- Implementing actions from any of the RMP Amendment alternatives will comply with all Federal regulations, BLM policies, and other requirements and will respect valid existing rights unless otherwise stated.
- Implementation-level actions necessary to execute land use plan-level decisions in this RMP Amendment would be subject to further environmental review pursuant to, NEPA, ESA Section 7(a)(1), Section 106 of the NHPA, and others as appropriate.
- The discussion of impacts is based on best available data. Knowledge of the planning area and decision area and professional judgment are used for environmental impacts where data are limited.

- Restrictions (such as siting, design, and mitigation measures) would apply, where appropriate, to surface-disturbing activities associated with land use authorizations and permits issued on BLM-administered lands and Federal mineral estate.
- Data from Geographic Information Systems (GIS) has been used in developing acreage calculations and to generate the figures. Calculations depend on the quality and availability of data. Acreages presented in this document are approximate projections and rounded to the nearest 10 acres. Readers should not infer that they reflect exact measurements or precise calculations.

3.1.2. General Methodology for Analyzing Effects

Potential impacts or effects are described using the following categories:

- **Types of effects** are changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and include the following:
    - **Direct effects,** which are caused by the action and occur at the same time and place.
    - **Indirect effects,** which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
    - **Cumulative effects,** which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.
- The **context** of the effects refers to the specific area or geographic location where they would occur. This can range from site-specific impacts at the action location to local impacts in the surrounding vicinity, planning area-wide impacts affecting a larger portion of lands in Colorado and Utah, and regional impacts that extend beyond the planning area boundaries.
- **Duration** describes the length of time an effect would last, categorized as either short-term or long-term. Short-term effects are anticipated to occur within the first five years after implementing the action, while long-term effects extend beyond five years, potentially until the end or beyond the life of the RMP Amendment.

- **Intensity** is discussed using quantitative data whenever possible. However, when quantitative information is lacking, the analysis relies on qualitative inferences or comparisons among alternatives to provide context.

The following resources found within the planning area are addressed.

- Special Status Species
- Fish and Wildlife
- Air Resources
- Soil Resources
- Vegetation, including Riparian Areas and Wetlands
- Noxious Weeds and Invasive Species
- Lands with Wilderness Characteristics
- Wildland Fire Ecology and Management
- Livestock Grazing Management
- Recreation
- Travel and Transportation
- Minerals
- Lands and Realty
- ACECs
- Social and Economic Conditions

3.1.3. Cumulative Analysis Methodology

Cumulative effects are effects on the environment that result from the impact of implementing any one of the alternatives in combination with other actions outside the scope of this EIS/RMP Amendment, either within the planning area or adjacent to it.

The following factors were considered in this cumulative effects assessment:

- Federal, non-Federal, and private actions
- Potential for synergistic effects or synergistic interaction among or between impacts
- Potential for impacts to cross political and administrative boundaries
- Other spatial and temporal characteristics of each affected resource
- Comparative scale of cumulative effects across alternatives

Temporal and spatial boundaries used in the cumulative analysis are determined based on the resources of concern and the actions that could contribute to an impact. The geographic scope of the cumulative effects analysis differs for each resource and is described within their

respective sections. Each resource-specific analysis considers an analysis area that allows for the assessment of past, present, and reasonably foreseeable future actions relevant to that particular resource and its interactions with other resources. At times, spatial boundaries may be confined within the boundaries of the planning area or a specific area within it. This targeted approach to analysis ensures efficiency and avoids dilution, aligning with the NEPA goal of effective resource management.

3.1.3.1 Past, Present, and Reasonably Foreseeable Future Actions

Past, present, and reasonably foreseeable future actions are analyzed to determine the extent to which the environment has been or will be disturbed, maintained, or enhanced. This assessment also examines the impact of ongoing activities and identifies trends in activities and their effects within the area. Projects and activities are evaluated based on their proximity, connection to the same environmental systems, potential subsequent impacts or activities, likelihood of occurrence, and whether they are reasonably foreseeable.

The analysis considers the effects of past actions and activities, which are manifested in the current condition of the resources as described in the affected environment. Additionally, reasonably foreseeable future actions are taken into account, including committed actions and known proposals (Table 3.1.1). These future action scenarios are projections based on current conditions and trends, serving as an analytical tool and representing the best professional estimate. However, it is important to note that unforeseen changes in factors such as economics, demand, and laws and policies could lead to different outcomes.

The availability and extent of data on resource locations within the planning area vary across resource types and locales. As knowledge improves, management measures, including adaptive strategies, will be considered to mitigate potential cumulative effects in compliance with applicable laws, regulations, and existing RMPs for the planning area.

Table 3.1.1. Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Compose the Cumulative Effects Scenario

Type	Description
Other Land Use Plans	BLM RMP Amendment and EIS for Big Game Habitat Conservation for Oil and Gas Management in Colorado is currently in progress. This plan aims to evaluate oil and gas program and other management decisions across existing RMPs to promote the conservation of big game corridors and other important big game habitat on BLM-administered land and minerals in Colorado.
	BLM Greater Sage-Grouse RMP Amendment is currently being developed. The plan will evaluate the need to amend the 2015 greater sage-grouse plans to account for new scientific information and changing conditions accelerated by the effects of climate change and address continued declines in sage-grouse populations and loss of habitat.
	BLM Supplemental EIS for the Grand Junction and Colorado River Valley RMPs is under development. The plan is being developed in response to a court decision on the Colorado River Valley plan. The supplement will consider an expanded range of

Type	Description
	alternatives for oil and gas management throughout the land managed by the two field offices. The BLM will also reanalyze climate impacts to include post-production GHG emissions.
	BLM Utility-Scale Solar Programmatic EIS is in progress. The programmatic EIS will guide responsible solar energy development on public lands and aid in the continued development of the clean energy economy.
	BLM Uncompahgre RMP Amendment is being developed in response to a court order. The amendment will reconsider the eligibility of lands open to oil and gas leasing, the designation and management of ACECs, and management of lands with wilderness characteristics.
	BLM Bears Ears National Monument RMP EIS is in progress. The plan will protect the monument's cultural, physical, social, biological, historic, and scientific objects and values consistent with Presidential Proclamation 10285.
	BLM Conservation and Landscape Health-Proposed Rule (BLM 2023-0001) is in development. The proposed rule would apply land health standards to all BLM-managed public lands and uses, clarify that conservation is a "use" within FLPMA's multiple-use framework, and revise existing regulations to better meet FLPMA's requirement that the BLM prioritize designating and protecting ACECs.
	USFS Thompson Divide Withdrawal NEPA documents are being developed as a result of the USFS request for 224,704 acres of NFS and BLM lands be withdrawn from all forms of entry, appropriation, and disposal under the public land laws, mining laws, and mineral and geothermal leasing laws, subject to valid existing rights.
	USDA - USFS Grand Mesa, Uncompahgre, and Gunnison (GMUG) National Forests has completed a draft revised forest plan and associated Draft EIS (2021) and a final plan and draft ROD are expected in 2023. The plan provides direction for Gunnison sage-grouse habitat invasive species and native species diversity. Specifically for Gunnison sage-grouse, the plan directs the forest to meet desired conditions, objectives, and standards in GUSG habitat, and identifies special management area prescriptions the Flat Top Wildlife Management Area in which no new trail construction would be permitted.
	The USFWS Establishment of a Nonessential Experimental Population of the Gray Wolf in the State of Colorado EIS is being developed to evaluate the potential environmental impacts of issuing a proposed rule requested by the State of Colorado for its reintroduction and management of the gray wolf (*Canis lupus*).
Minerals	**Oil and Gas** There are 222,290 acres of active oil and gas leases within the decision area, of which 186,580 acres are held by production (currently producing or receiving allocated production). Continued oil and gas development is anticipated. See Section 3.13.2 for additional information.
	Geothermal There are currently two active geothermal leases totaling 1,204[1] acres in the decision area, located within the Gunnison Field Office, but no submitted plans for development. The potential for development of known or undiscovered geothermal resources on public lands within the decision area is considered low. See Section 3.13.2 for additional information.
	Leasable Solid Minerals There are no pending prospecting permit applications and no current exploration, leasing, or development for leasable solid minerals within the decision area. There has been exploration and prospecting for potash within the decision area but are no pending or authorized activities at this time. However, if viable deposits are proven

Type	Description
	through exploration, leasing and development could occur in the future. See Section 3.13.3 for additional information.
	Locatable Minerals There are 4,181 active claims wholly or partially within the decision area encompassing a total of 143,680 acres. There are four active and one pending plan of operations encompassing a total of 99 acres. Future exploration and development of various minerals, primarily precious metals, base metals, uranium, and vanadium could occur depending on market conditions. See Section 3.13.4 for additional information.
	Salable Minerals There are an estimated 11 mineral material sales or free use permits in the decision area encompassing a total of 5,513 acres. With the continued increase in the human population in the planning area, the need for additional sand and gravel resources, aggregate and fill materials, and decorative landscaping and stone will likely increase. See Section 3.13.5 for additional information.
Vegetation	Conversion of sagebrush shrublands has occurred and will continue within the decision area. Past conversion of sagebrush communities has resulted from wildfire, development of roads, industrial facilities (energy and non-energy related), urbanization, and outdated grazing permits. Historical and improper livestock grazing has resulted in overutilization of vegetation resources including native grass/forb plant communities, riparian areas, and wetlands.
	Travel off of designated or existing routes, as well as the creation of social trails has occurred and will likely continue to occur within the decision area. Unauthorized overland travel results in the direct removal of and adverse effects on native vegetation.
	In the Poncha Pass area, past vegetation treatments aimed at improving vegetation conditions have included seeding, plowing, terracing, mowing sagebrush, thinning pinyon-juniper woodland, and thinning decadent Gambel oak stands. Future treatments could include: sagebrush steppe and montane shrubland treatments to reduce late-seral sagebrush, followed by seeding of native grasses and forbs (this treatment would not occur within the 4-mile lek buffer); hand-thinning, mechanical mastication/mowing, or prescribed fire in Gambel oak and mountain shrub communities; treatments targeted at improving forest health in mixed-conifer and aspen stands near Poncha Pass; pinyon-juniper treatments that consist of a mixture of hand thinning and mastication of pinyon-juniper stands to improve habitat and stand conditions.
	Oil and gas development has occurred and will continue to occur in the Dove Creek, Monticello, San Miguel Basin and Crawford population areas. Oil and gas development has also occurred and will continue to occur in the eastern portion of the Piñon Mesa population area and the northern half and southeastern corner of the Gunnison Basin population area. Development has resulted in direct removal of sagebrush and other native vegetation communities that compose GUSG habitat.
	Solid and leasable mineral development has occurred within the decision area associated with sand gravel and other hard rock mineral extraction. Mining activities at these locations has likely resulted in the loss of sagebrush and other vegetation. Future mineral mining activities are likely to be limited on BLM-managed lands; however, activities on privately owned lands in the planning area may further contribute to the loss or degradation of sagebrush and other vegetation.
	ROW authorizations have occurred and will continue to occur within the decision area resulting in the direct removal of and adverse effects on sagebrush and other

Type	Description
	vegetation communities. Future ROW applications would be processed and potentially authorized throughout the analysis area, although ROWs on BLM land are likely to be limited to areas outside of OHMA. ROWs crossing private lands would not be subject to authorization restrictions proposed under the action alternatives and may result in adverse impacts to sagebrush and other vegetation.
	Climate change within the cumulative impact analysis area could cause an increase in temperatures and variations in precipitation that could affect soil conditions, vegetative health, and water availability. Such changes would alter conditions to potentially reduce the acreage of sagebrush canopy cover and favor an increase in the coverage areas of grass/forb species alliances.
Air Resources	Reasonably foreseeable actions on Federal, State, and private lands outside the scope of the RMP Amendment contribute to cumulative effects on air resources in the planning area. These actions involve emission sources such as construction equipment, motor vehicles, industrial processes, electricity generation, and commercial and residential development, which can be dispersed throughout the planning area.
	Other Federal planning efforts, such as the Eastern Colorado RMP and the Pike and San Isabel National Forests Motorized Travel Plan, as well as local planning efforts, contribute to motorized vehicle patterns in the region, which can result in increased emissions from motorized vehicle engines. Planned projects in the region, such as vegetation treatments, hazardous fuels reduction, and transportation activities like the Union Pacific and Denver & Rio Grande Railroad, also contribute to impacts on air quality and Air Quality–Related Values. Additionally, natural summertime smoke transport from the Gunnison County area affects air quality.
	The 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends provides emissions estimates for reasonably foreseeable Federal fossil fuel development and production. It evaluates the cumulative effects of GHG emissions from fossil fuel energy leasing and development on the Federal onshore mineral estate. Additionally, recent rules and regulations, such as Colorado's GHG Pollution Reduction Roadmap and Utah's administrative code R307-500, affect oil and gas development and operations, aiming to reduce GHG emissions. The 2028 Regional Modeling Results demonstrate the cumulative air quality impacts, with a focus on pollutants of concern, including O_3, NO_2, $PM_{2.5}$, PM_{10}, and nitrogen deposition. These modeling results highlight the significant contributions of regional oil and gas activities and ozone transport from western states to the cumulative O_3 concentrations in the planning area. For primary PM_{10}, exceedances above 150 $\mu g/m^3$ are identified in some grid cells in Mesa and Saguache Counties, mainly due to natural sources within Colorado. It is noted that no O_3 exceedances are predicted in the planning area counties for this project.
Livestock Grazing Management	Grazing continues to occur in the Cerro Summit-Cimmaron-Sims Mesa population area on 16 individual BLM-administered allotments covering a total of 54,930 acres. Approximately 1,270 acres and 7,250 acres are within OHMA and UHMA, respectively.
	Grazing continues to occur in the Crawford population area on 23 individual BLM-administered allotments covering a total of 109,220 acres. Approximately 22,120 acres and 9,770 acres are within OHMA and UHMA, respectively.
	Grazing continues to occur in the Dove Creek population area on 33 individual BLM-administered allotments covering a total of 533,700 acres. Approximately 4,090 acres and 52,150 acres are within OHMA and UHMA, respectively.
	Grazing continues to occur in the Gunnison Basin population area on 72 individual BLM-administered allotments covering a total of 517,340 acres. Approximately

Type	Description
	280,278 acres and 58,880 acres are within OHMA and UHMA, respectively. Since 2013, approximately 36 grazing permits have been renewed. Throughout this timeframe, both short-term and long-term monitoring of grazing allotments has been ongoing according to the CCA reports.
	Grazing continues to occur in the Monticello population area on 16 individual BLM-administered allotments covering a total of 83,110 acres. Approximately 2,580 acres and 1,110 acres are within OHMA and UHMA, respectively.
	Grazing continues to occur in the Piñon Mesa population area on 56 individual BLM-administered allotments covering a total of 367,170 acres. Approximately 17,680 acres and 90,020 acres are within OHMA and UHMA, respectively.
	Grazing continues to occur in the Poncha Pass population area on 11 individual BLM-administered allotments covering a total of 29,780 acres. Approximately 12,440 acres and 11,360 acres are within OHMA and UHMA, respectively. In the last 10 years, approximately nine permits have been transferred and approximately 16 permits have been renewed. Several range improvement projects that were previously analyzed are potentially planned within the area that includes the 11 allotments: one new stock water well, one stock water well re-drill, 25 new stock tanks, approximately 24 miles of pipeline (placed within existing road ROWs or fence lines where possible), approximately 2 miles of new fence, and 2 cattle guards. Both short-term and long-term monitoring of the vegetation within the allotments has been ongoing, in some cases, since the 1970s.
	Grazing continues to occur in the San Miguel Basin population area on 42 individual BLM-administered allotments covering a total of 471,910 acres. Approximately 35,440 acres and 21,280 acres are within OHMA and UHMA, respectively.
	Based on CCA reports, between 2013 and 2018, 24 grazing permits were renewed; in 2019 11 grazing permits were renewed; in 2020 8 grazing permits were renewed; and in 2021 and 2022 zero permits were fully processed by the BLM.
Recreation	According to the 2022 CCA Implementation Report, in the last three years, the BLM closed approximately 113 miles of illegal, user-created routes (BLM 2023).
	Unauthorized travel, travel off of designated or existing routes, as well as the creation of social trails, has occurred and will likely continue to occur within the decision area.
	CPW and Great Outdoors Colorado (GOCO) are collaborating to fund new and existing coalitions to ensure Colorado's land, water, and wildlife thrive while also providing for equitable and quality outdoor recreation experiences. These are called Colorado Outdoor Regional Partnerships. Partnerships within the Planning Area include Central Colorado Recreation Partnership, San Luis Valley Great Outdoors, Ouray Regional Recreation & Conservation Alliance, and Two Rivers Conservation & Recreation Roundtable (CPW 2023).
	Colorado Conservation, Outdoor Recreation & Climate Resilience Plan. In partnership with CPW, Governor Polis, and the Department of Natural Resources, GOCO initiated the collaborative development of a statewide plan that establishes a vision, direction, and statewide metrics for climate-resilient, biodiversity-supporting, community-driven conservation, and recreation planning and management, that takes into consideration equitable outdoor access. This plan will build on and align with the Regional Partnership Initiative, the SCORP, the State Wildlife Action Plan, and other planning efforts to provide a centralized resource and legacy of tools to support future resource management planning and decision-making. This effort will also look to capitalize on Federal funding opportunities, including America the Beautiful Initiative and the Bipartisan Infrastructure and Inflation Reduction Act.

Type	Description
	Continued growth and urban expansion in the planning area may result in an increased demand for recreation opportunities.
Lands and Realty	Currently there are 30,240 acres available for disposal in the decision area, with 13,690 acres in OHMA and 16,550 acres in UHMA. There are approximately 409,340 acres of private land within OHMA and 570,637 acres of private land within UHMA that could possibly be available for acquisition. Potential requests for the disposal/acquisition of land through sale, exchange or R&PP lease or sale are unknown at this time. See Section 3.14 for more information.
	In order to reduce fragmentation and disturbance within GUSG habitat, a number of routes have been permanently closed and restored. According to the CCA, approximately 34 miles have been closed and restored within the Signal Peak Trail System and Hartman Rocks Recreation between 2013 and 2022. An additional 115 acres of routes were closed and restored outside of the designated Urban Interface Recreation Areas between 2019–2022. Since the Gunnison Travel Management Plan (2010) the only new roads that have been built have been in the Urban Recreation Area, outside of GUSG habitat.
	Renewable Energy: Xcel Energy's Circuit 9811 115 kV Transmission Line Rebuild Project: Current Action; BLM is responding to Xcel's application on the 9811 Rebuild project. Xcel's Circuit 9811, 115 kV Transmission Line Rebuild is located on BLM, San Luis Valley Field Office (SLVFO) lands in Saguache County, the BLM Royal Gorge Field Office lands in Chaffee County, and USFS, Pike-San Isabel National Forests & Cimarron and Comanche National Grasslands , Salida Ranger District lands in Chaffee County. Xcel's goals and objectives are to buffer their existing 100-foot ROW by 50 feet (except on Royal Gorge Field Office Lands lands), use steel monopole structures for rebuild construction, and include administrative access to the ROW. The expanded ROW would allow Xcel to safely complete rebuild construction under constrained outage periods.
Noxious Weeds	Conversion of sagebrush shrublands has occurred and will continue within the decision area. Past conversion of sagebrush communities has resulted from wildfire, development of roads, industrial facilities (energy and non-energy related), urbanization, Improper livestock grazing has resulted in overutilization of vegetation resources including native grass/forb plant communities, riparian areas, and wetlands. These impacts to native vegetation communities result in opportunity for new and continued noxious weeds and non-native plant introductions.
	Unauthorized travel, travel off of designated or existing routes, as well as the creation of social trails has occurred and will likely continue to occur within the decision area. Unauthorized overland travel results in the direct removal of and adverse effects on native vegetation. These impacts to native vegetation communities result in opportunity for new and continued noxious weeds and non-native plant introductions.
	Oil and gas development has occurred and will continue to occur in the Dove Creek, Monticello, San Miguel Basin and Crawford population areas. Oil and gas development has also occurred and will continue to occur in the eastern portion of the Piñon Mesa population area and the northern half and southeastern corner of the Gunnison Basin population area. Development has resulted in direct removal of sagebrush and other native vegetation communities that comprise GUSG habitat. These impacts on native vegetation communities result in opportunity for new and continued noxious weeds and non-native plant introductions.
	Solid and leasable mineral development has occurred within the decision area associated with sand gravel and other hard rock mineral extraction. Mining activities

Type	Description
	at these locations has likely resulted in the loss of sagebrush and other vegetation. Future mineral mining activities are likely to be limited on BLM-managed lands; however, activities on privately owned lands in the planning area may further contribute to the loss or degradation of sagebrush and other vegetation. These impacts on native vegetation communities result in opportunity for new and continued noxious weeds and non-native plant introductions.
	ROW authorizations have occurred and will continue to occur within the decision area resulting in the direct removal of and adverse effects on sagebrush and other vegetation communities. Future ROW applications would be processed and potentially authorized throughout the analysis area, although ROWs on BLM land are likely to be limited to areas outside of OHMA. ROWs crossing private lands would not be subject to authorization restrictions proposed under the action alternatives and may result in adverse impacts to sagebrush and other vegetation. These impacts on native vegetation communities result in opportunity for new and continued noxious weeds and non-native plant introductions.
	Climate change within the cumulative effects analysis area could cause an increase in temperatures and variations in precipitation that could affect soil conditions, vegetative health, and water availability. Such changes would alter conditions to potentially reduce the acreage of sagebrush canopy cover and favor an increase in the coverage areas of grass/forb species alliances. These impacts on native vegetation communities are likely to result in opportunity for new and continued noxious weeds and non-native plant introductions.
Wildland Fire Ecology and Management	Increasing wildland fire occurrence and intensity due to fire suppression, fuel buildup, and expansion of the wildland-urban interface. Continued changes and possible intensification to Colorado's climate in association with global climate change, such as increased water temperatures and changes in precipitation patterns, earlier snowmelt and peak runoff, and lower groundwater recharge rates. Continued vegetation and timber treatments and hazardous fuels reduction and mitigation on BLM, USFS, and other public and private lands – fuels treatment and ecological restoration.
	BLM Poncha Villa Programmatic Landscape Vegetation Treatment EA (DOI-BLM-CO-F030-2021-0006) Poncha Pass Timber Salvage Categorial Exclusion (DOI-BLM-F03-2020-0012) approved the treatment of Douglas-fir stands for insects and disease. The plans approved salvage logging and post-harvest prescribed fire treatments.
	Late summer-early fall 2023, the Lowline Fire incident occurred 14 miles north northeast of Gunnison, Colorado and burned 1,999 acres in the USFS, Gunnison Ranger District. The Lowline Fire is a long-duration wildfire event that is currently being administered under a "confine and contain" management strategy.
Travel Management	The Moab Field Office is preparing a TMP for the Dolores Triangle that intersects a small portion of unoccupied habitat. There are 74 miles of designated routes currently within the decision area and under review. No new routes are anticipated to be created as a result of the plan.
	The Uncompahgre Field Office is preparing TMPs for Jumbo Mountain SRMA and has many others planned.

µg/m³ = microgram per cubic meter; ACEC = Area of Critical Environmental Concern; CCA = Candidate Conservation Agreement; CPW = Colorado Parks & Wildlife; FLPMA = Federal Land Policy and Management Act; GHG = greenhouse gas; GOCO = Great Outdoors Colorado; NFS = National Forest System; NO_2 = nitrogen dioxide; O_3 = ozone; OHMA = other habitat management area; PM_{10} = particulate matter 10 microns or smaller in diameter; $PM_{2.5}$ = particulate matter 2.5 microns

or smaller in diameter; R&PP = Recreation and Public Purposes; ROW = right-of-way; TMP = Travel Management Plan; UHMA = Unoccupied Habitat Management Area; USFS = U.S. Forest Service; USFWS = U.S. Fish and Wildlife Service

[1] BLM retracted the original geothermal acres in 2022, currently 640 acres remain.

3.2. SPECIAL STATUS SPECIES

3.2.1. Introduction

Special status species analyzed in this document include USFWS-listed or candidate species and BLM Sensitive species for the states of Colorado and Utah. Only species for which the proposed action might substantially change conditions to an extent that analysis in an EIS is necessary are addressed in this document. Gunnison Sage-Grouse is the primary focus of this analysis.

For the purposes of this analysis, special status species considered in this section include:

- USFWS-listed, proposed, and candidate species for the planning area (USFWS 2023)
- State of Colorado BLM State Director's Sensitive Species List for Field Offices, National Monuments, and NCAs that occur within the planning area (BLM 2015)
- State of Utah BLM State Director's Sensitive Wildlife Species List for Field Offices occurring within the planning area (BLM 2018a)
- State of Utah BLM State Director's Sensitive Plant Species List for Field Offices occurring within the planning area (BLM 2018b)

The goal of special status species management is to improve or maintain habitats for special status species that occur on lands managed by the BLM to maintain viable populations of these species. As part of the BLM's management responsibility, the BLM identifies areas where other resource actions may conflict with special status species habitat and life history needs in order to develop conservation strategies and meet agency obligations for other resource uses. The BLM not only implements conservation actions for special status species, but also must consider the potential impacts of other management actions on special status species when authorizing agency actions.

Existing current management actions and protections for special status species outlined in existing land use plans would remain in place. Special status species that co-occur with GUSG in the planning area may receive residual protection or benefits from the action alternatives. Special status species other than GUSG are described and analyzed further under Issue 5 of this section. It is assumed no increase in surface-disturbing activities would be authorized under any of the action alternatives above what is permitted in existing land use plans. Other action alternatives may have impacts on special status species, such as implementation of habitat improvement projects.

3.2.2. Issue 1: How would management actions under each alternative affect occupied and unoccupied GUSG habitat?

3.2.2.1 Analytical Methods and Assumptions

Indicators

- Acres of occupied/unoccupied habitat by population area
- Acres of existing surface disturbance by population area
- Acres of proposed management actions
- Percent of habitat quality and/or percent of monitoring plots meeting seasonal habitat guidelines

Assumptions

- The occupied and unoccupied GUSG habitat reflects the current distribution of habitat and population of the species. These habitat areas combine the mapped habitat by CPW, in addition to the critical habitat designated by USFWS.
- The BLM will continue to apply conservation measures to manage and conserve GUSG and its habitat and implement the USFWS recommendations for minimizing or avoiding adverse effects on the GUSG or its habitat.
- The BLM's objective is to maintain and enhance populations and distribution of GUSG by protecting and improving sagebrush habitats and ecosystems that sustain GUSG populations.

3.2.2.2 Affected Environment

Habitat Description

The GUSG requires sagebrush habitats year-round to provide food resources and protective cover (Connolly et al. 2000; Gunnison Sage-Grouse Rangewide Steering Committee 2005; USFWS 2019) Seasonally, the GUSG requires different resources and use different areas within a mosaic of sagebrush habitats; including for breeding/lekking, summer, and winter habitats (USFWS 2019). While sagebrush is a key component to GUSG habitats throughout its range, the species also uses riparian areas, wet meadows, or mesic sites within sagebrush shrublands, adjacent to pinyon-juniper woodlands, and in areas where sagebrush co-dominates with other shrubs, such as Gambel oak (*Quercus gambelii*), serviceberry (*Amelanchier* spp.) and snowberry (*Symphoricarpos* spp.) (Braun et al. 2014).

The Gunnison Sage-Grouse RCP (Gunnison Sage-Grouse Rangewide Steering Committee 2005) divides habitat types into three major types based on seasonal use, as discussed briefly below.

Breeding Habitat: Breeding habitat includes lekking, nesting, and early brood-rearing habitats, generally used from March 1 to June 30. Leks are in open areas adjacent to sagebrush shrublands usually in proximity to suitable nesting habitat. Leks are usually positioned in valley bottoms, basins, ridges, or agricultural fields (Young et al. 2020). Male GUSG may avoid or abandon using lekking areas that have tall shrubs, trees, or other visual obstructions (USFWS 2019).

Nesting habitat comprises areas with sagebrush cover with sufficient grass and forb cover understory, which provides food resources and protective cover for nesting females and chicks (USFWS 2019). In suitable nesting habitat, total shrub canopy cover ranges between 20 and 40 percent in arid sites and 15 to 35 percent in mesic sites. Sagebrush cover in arid sites in suitable nesting habitat is between 15 and 25 percent, with average sagebrush height between 25 to 50 cm. For mesic sites, suitable breeding habitat has between 10 to 20 percent sagebrush canopy cover and sagebrush height between 30 and 50 cm. For arid sites, grass cover ranges from 10 to 30 percent and 20 to 40 percent for mesic sites with forb cover ranging from 5 to 15 at arid sites and 20 to 40 percent at mesic sites. The average height of grasses at suitable nesting habitat ranged between 10 and 15 cm for arid and mesic sites. Forb height at arid sites ranged between 5 and 10 cm, and between 5 and 15 cm at mesic sites (Gunnison Sage-Grouse Rangewide Steering Committee 2005; USFWS 2019).

Early brood-rearing habitat includes areas close to nest sites that support a high diversity of plant species, such as forbs, for food. Brood-rearing habitat may include sagebrush shrublands if conditions are favorable and vegetation is succulent. If dry conditions develop, GUSG may move to more mesic meadows or drainages within sagebrush shrublands during the summer (USFWS 2019).

Summer Habitat: Summer habitats are those used by males, non-breeding females, females with broods, and juveniles during the summer and early fall. These habitats are typically mesic areas in sagebrush shrublands and may include agricultural areas, wet meadows, and riparian habitats (Gunnison Sage-Grouse Rangewide Steering Committee 2005; USFWS 2019).

Winter Habitat: Winter habitats are those areas where sagebrush is available above the depth of accumulated snow. Separate flocks of males and females use winter habitats, and their use depends on snow depth and availability of sagebrush, which is the sole source of food for the species during the winter months (USFWS 2019).

Because GUSG use a variety of seasonal habitat types throughout their yearly life-cycle, the area required to capture their resource needs can be extensive at the landscape scale. Per the USFWS GUSG Species Status Assessment (2019), the habitat factors can be characterized by habitat quantity and quality. Habitat quantity can be measured by acres of sagebrush habitat available, and generally includes consideration for areas that provide the overall geographic

scale comprising seasonal habitats for the species. Habitat quality is the ability for the area to provide the conditions suitable for feeding, breeding, and protective shelter and can be measured by the areas within the sagebrush habitat that offer the understory of grasses and forbs that provide the resource requirements of the species.

Per Instruction Memorandum IM2022-056 *Gunnison and Greater Sage-grouse Habitat Assessment Policy*, the BLM directs offices to complete sage-grouse habitat assessments in consideration of site-specific proposals and for land management planning. Habitat assessments follow the Technical Reference 6710-1 *Sage-grouse Habitat Assessment Framework* (HAF, Stiver et al. 2015). The HAF provides analysis of habitat indicators at multiple spatial scales. The scales and types of indicators for habitat assessments are:

- Broad-scale – Habitat availability, configuration, connectivity
- Mid-scale – Habitat availability, configuration, connectivity, and anthropogenic disturbance
- Fine-scale – Seasonal habitat availability and connectivity, conifer cover, noxious/annual grass cover, and anthropogenic disturbance
- Site-scale (seasonal habitats) – Vegetation composition, structure and other site characteristics and anthropogenic disturbance.

The BLM conducts HAF assessments within GUSG populations to track habitat indicators within occupied GUSG habitats and near lek locations to assess whether or not habitats are meeting guideline characteristics for each indicator. Guidelines for habitat indicators are described in Table F.1 in Appendix F, *Habitat Monitoring and Reporting*. In addition, habitat indicators for AIM plots within occupied and unoccupied habitat are presented for each population as either meeting or not meeting the desired guidelines in Appendix F. Not all monitoring locations presented in Appendix F will be able to achieve the habitat indicator values due to inherent variation in vegetation communities and ecological site potential. Monitoring locations where one or more of the habitat guidelines are met may or may not be providing suitable GUSG seasonal habitat; these summaries do not include an interpretation of the site-scale metrics (e.g., ecological site potential, fire, vegetation treatments) which collectively inform the habitat suitability evaluation of the HAF.

The following HAF reports have been completed or are in draft, to date:

- Gunnison Sage-Grouse Habitat Assessment Summary Report: Piñon Mesa Fine-Scale Assessment Area. Gunnison Mid-scale, Colorado. May 2023. (Final)
- Gunnison Sage-Grouse Site-Scale Habitat Assessment Summary for the Crawford Area, Colorado. May 2021. (Final)
- Sage-Grouse Habitat Assessment Summary Report for the Poncha Pass Fine-Scale Assessment Area, Gunnison Sage-Grouse, Colorado. June 2019. (Final)

- Gunnison Sage-Grouse Habitat Assessment Summary Report Gunnison Mid-Scale, Colorado. September 2022. (Final)
- Gunnison Sage-Grouse Habitat Assessment Summary Report Gunnison Basin Population, Colorado. January 2023 (In Draft)

For populations for which site-scale HAF reports are completed, results are discussed further under those populations, below. For the remaining populations, AIM data are summarized for HAF indicators for seasonal habitats are summarized in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*.

Habitat Management Areas

Occupied habitats are those where breeding is known to take place or has taken place previously. Unoccupied habitats are areas outside of occupied habitat that were formerly occupied by GUSG and may still exhibit biophysical characteristics for GUSG habitat. Some areas in unoccupied habitat may need intervention (e.g., restoration) to provide suitable habitat for this species. Other areas within unoccupied habitat include vacant or unknown areas that exhibit habitat suitability but are not contiguous with current occupied habitat or occupancy is unknown. The occupied and unoccupied habitat areas encompass all USFWS designated critical habitat (USFWS 2014), in addition to occupied and unoccupied habitat areas that were not formally designated as critical habitat for the species. USFWS-designated critical habitats are described under the ESA in 50 CFR 17 and 226, and are those areas that are occupied by a listed species that contain physical or biological features essential to the conservation of the species and that may require special management consideration or protection. Not all occupied or unoccupied GUSG habitat is designated critical habitat. The BLM planning effort incorporates all mapped habitat recognized by CPW and USFWS. In Section 1.3.1, Figure 1.2 illustrates occupied and unoccupied habitat areas in relation to the eight GUSG populations. In Section 3.6., *Vegetation*, Table 3.6.1 provides acres of each vegetation community type on BLM-administered lands in OHMA and Table 3.6.2 provides acres of each vegetation community type on BLM-administered lands in UHMA.

Population

In the 2014 listing decision for GUSG, the USFWS indicated that lek count data suggested all satellite populations were in decline between 1996 and 2010 (USFWS 2014). Despite moderate increases in population estimates prior to listing, all satellite populations were of a size that warranted concern for future viability of the populations (USFWS 2014). When the USFWS Recovery Plan was finalized in 2020, most populations were experiencing a decrease in numbers from previous years' population estimates (USFWS 2020). The Species Status Assessment and USFWS Final Recovery Plan provides a framework to evaluate GUSG current population conditions to extrapolate the population's future viability based on its resiliency, redundancy, and representation. Population resiliency of the species is defined as the ability for

the species to withstand stochastic events and respond to fluctuations in reproduction or survival. In general, populations with sufficient quality and quantity of habitat and sufficient size and growth rate are more resilient than populations without and are therefore at lower risk from stochastic events (USFWS 2019, 2020). Population redundancy is the ability of the species to withstand catastrophic events where adaptation is unlikely to occur and is best measured by the number and distribution of populations (USFWS 2020). Representation is defined as the ability of the species to adapt to changes in the environment, and can be measured by ecological, genetic, behavior or morphological diversity (USFWS 2020).

High male counts (HMC) conducted at leks are the best available demographic data to evaluate GUSG populations (USFWS 2019). The USFWS established target population numbers for four of the GUSG populations based on past demographic trends: Gunnison Basin, Piñon Mesa, San Miguel Basin, and Crawford (Table 3.2.1). Methods used to develop demographic targets for these populations are further described in the GUSG Final Recovery Plan (USFWS 2020). For Dove Creek, Monticello, and Cerro Summit-Cimmaron-Sims Mesa (CSCSM) populations, recovery goals are based on habitat factors, due to low condition of demographic factors in those populations (USFWS 2020).

Table 3.2.1. USFWS Recovery Plan Targets for Gunnison Sage-Grouse Populations and 2022 Estimates

Population	High Male Count		Estimated Population Size	
	Target	2022 Estimate[1]	Target	2022 Estimate[1]
Gunnison	752	620	3687[2]	3,040
San Miguel	62	49	302	240
Piñon Mesa	29	22	142	106
Crawford	41	8	201	30

Source: USFWS 2020, CPW 2023
[1]Estimates are three-year average for HMC and population.
[2]The CCA uses the RCP population target of 3,000 individuals.

The Species Status Assessment includes an evaluation of the current condition of stressors for each population based on demographic and habitat factors (USFWS 2019, Table 3-1). Two populations are considered in high condition (Gunnison Basin and Piñon Mesa) and one is in critical condition (Dove Creek). The remaining five populations (San Miguel, Crawford, Monticello, CSCSM, and Poncha Pass) are in moderate condition (USFWS 2019). The Gunnison Basin population is currently the most resilient population of the eight based on the demographic and habitat parameters. This population exhibits high population numbers and natural recruitment as well as high habitat quantity and quality (USFWS 2020). Piñon Mesa also exhibits high resiliency; however, moderate scores for demographic trends and habitat quantity indicate this population is likely in need of intervention to maintain resiliency, such as population augmentation and habitat restoration projects (e.g., mesic habitat restoration and pinyon-juniper removal.

The overall GUSG population redundancy can be measured by the number of populations occurring throughout the species' range. Based on the current status, the eight populations represent a narrow distribution in a small geographic area (USFWS 2020). This increases the risk that a catastrophic event, such as widespread drought or catastrophic wildfire at one population, could affect the entire species.

The GUSG population representation can best be measured by how many ecoregions the species occupies, illustrating the species ecological variation throughout its range. The eight populations occupy six different U.S. Environmental Protect Agency (USEPA) level IV ecoregions: Southern Rockies – Sagebrush Park; Arizona/New Mexico Plateau – San Luis Shrublands and Hills; Colorado Plateau – Semiarid Benchlands and Canyonlands, Shale Deserts and Sedimentary Basins, and Monticello-Cortez Uplands; and Southern Rockies – Sedimentary Mid-Elevation Forests (USFWS 2020; USEPA 2006). Each ecoregion is considered unique based on ecology, geology, landforms, soils, vegetation, climate, land use, wildlife, and hydrology; therefore, the ecological variation through the range of GUSG illustrates the adaptive potential of the species (USFWS 2020).

Threats

Threats to GUSG populations include stressors that negatively affect demographic factors or GUSG habitats. In general, small population sizes may result from reduced reproductive success, loss of genetic variation of diversity, human-caused mortality, and environmental factors (USFWS 2019). Habitat loss or decline can result from development of residences, roads, and energy production infrastructure (e.g., oil and gas wells, transmission/power lines, solar developments). Direct habitat loss would include the destruction or removal of sagebrush habitats, and results in the permanent loss of suitable habitat for the species. Habitat degradation is caused by reduction of habitat quality and may include fragmentation or loss of functional habitat parameters required by GUSG during its lifecycle (USFWS 2014). Increased human presence may also cause a loss of habitat function resulting from habitat degradation, establishment of noxious weeds following surface disturbance, noise, and alterations to hydrology.

The listing decision (USFWS 2014) and the Species Status Assessment (USFWS 2019) discuss the specific threats to GUSG in detail.

Gunnison Sage-Grouse Populations

This section includes discussion specific to habitat conditions and population trends for the eight GUSG populations. Lek numbers and 3-year-average population estimates are presented in this section. Lek statuses are also discussed and follow CPW-defined categories:

- Active: For a given season, a lek must have at least one male (satellite populations) or two males (Gunnison population) in attendance during two count periods to be

considered active. A lek is considered officially active unless it has been seasonally inactive for five consecutive years.

- Inactive: For a given season, a lek must have zero males in attendance for two count periods (i.e., not meet the definition for active lek). For an official inactive status, a lek needs to be seasonally inactive for five consecutive years.
- Historic: A historic lek is one that has been inactive for 10 consecutive years.
- Unknown: A lek is considered unknown for a given season if it did not meet the requirements for active or inactive during a given season or was not counted the appropriate number of count periods to determine its status.

Lek statuses in Utah follow the UDWR-defined categories:

- Active Lek: Any lek that has been attended by male sage-grouse during the annual strutting/breeding season.
- Inactive Lek: A lek where it is documented that no strutting activity has occurred during the course of a strutting season.
- Occupied Lek: A lek that has been active during at least one strutting season within the last 10 years.
- Unoccupied Lek: A lek that has not been active in over 10 years.
- Undetermined Lek: Any lek for which lek activity has not been documented for over 10 years, but survey information is inadequate to designate the lek as unoccupied, or strutting males have only been observed on one occasion.

Table 3.2.2 presents the number of leks from 2022 by activity and habitat status for all populations regardless of landownership.

Table 3.2.2. Gunnison Sage-Grouse Leks by Activity and Habitat Status for Each Population, 2022

Population	OHMA				UHMA	Non-Habitat	Total
	Active (Occupied in Utah)	Inactive	Unknown	Historic (Unoccupied in Utah)	Historic (Unoccupied in Utah)	Historic	
CSCSM	1	0	0	4	1	0	6
Crawford	6	0	0	5	0	0	11
Dove Creek	0	3	0	6	0	0	9
Gunnison Basin	50	5	18	23	0	0	96
Piñon Mesa	13	1	5	7	1	3	30
Poncha Pass	4	0	0	0	0	0	4
San Miguel Basin	10	0	0	4	0	0	14
Monticello	3	N/A	N/A	6	0	0	9
Total	**87**	**9**	**23**	**55**	**2**	**3**	**179**

Source: CPW 2022, UDWR
CSCSM=Cerro Summit-Cimarron-Sims Mesa, OHMA=Occupied Habitat Management Area; UHMA=Unoccupied Habitat Management Area

In 2020, the BLM Colorado State Office conducted a site-scale HAF analysis on all known leks in Colorado, regardless of landownership, lek status, or age of lek, for each of the populations by considering the breeding lek habitat indicators (Table F.1 in Appendix F, *Habitat Monitoring and Reporting*). Currently, no HAF data for leks are available for the Monticello population. Table 3.2.3 presents the leks by population and status and a summary of lekking habitat suitability. Overall, the majority of the lek locations regardless of activity status are considered suitable or marginal habitat for seasonal breeding habitat factors. All active leks are in marginal or suitable habitat, except for 1 active lek in the Gunnison Basin population that was considered unsuitable. Suitable leks are those leks and surrounding vicinity with adjacent protective sagebrush cover within 100 meters, and do not have detrimental land uses, trees, or tall structures within the line of sight of the lek or are otherwise absent or uncommon within 3 kilometers. Marginal leks have sagebrush within 100 meters that does not provide protective cover and have detrimental land uses, trees, or tall structures within line of sight of the lek or within 3 kilometers of the lek. Unsuitable leks are those where sagebrush is over 100 meters away from the lek site and where detrimental land uses, trees, or tall structures are in the vicinity of the lek site (Stiver et al. 2015).

Table 3.2.3. HAF Assessment Summary for Habitat Suitability at Gunnison Sage-Grouse Lek Locations by Population through 2020

Lek Status	Suitable	Marginal	Unsuitable	Total
Cimarron/Cerro/Sims Mesa				
Active	1	0	0	1
Historic	3	1	1	5
Total	*4*	*1*	*1*	*6*
Crawford				
Active	6	0	0	6
Historic	5	0	0	5
Total	*11*	*0*	*0*	*11*
Dove Creek				
Historic	3	3	0	6
Inactive	1	2	0	3
Total	*4*	*5*	*0*	*9*
Gunnison Basin				
Active	42	8	1	51
Historic	13	3	6	22
Inactive	4	0	3	7
Unknown	11	3	2	16
Total	*70*	*14*	*12*	*96*
Piñon Mesa				
Active	14	1	0	15
Historic	5	2	4	11
Unknown	3	1	0	4
Total	*22*	*4*	*4*	*30*
Poncha Pass				
Active	3	1	0	4
Total	*3*	*1*	*0*	*4*
San Miguel Basin				
Active	6	4	0	10
Historic	1	2	1	4
Total	*7*	*6*	*1*	*14*
Grand Total (All Populations)	**31**	**121**	**18**	**170**

Source: CPW 2023. HAF=Habitat Assessment Framework. Note – no HAF data available for Monticello Population

Cerro Summit-Cimarron-Sims Mesa

The CSCSM population comprises two subpopulations that are geographically separated. Combined, these subpopulations include approximately 31,860 acres of occupied habitat and approximately 30,820 acres of unoccupied habitat. The BLM manages lands comprising

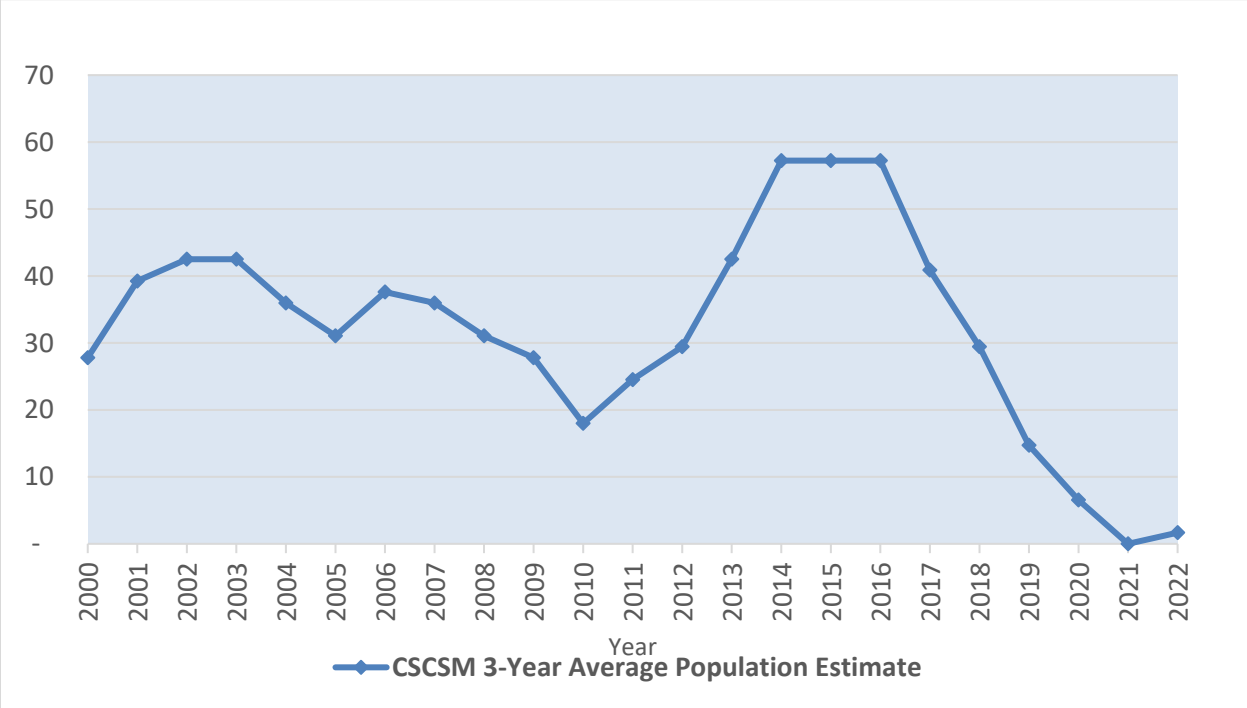
approximately 16 percent of this subpopulation. Approximately 1,800 acres of BLM-managed lands are occupied habitat, or 5 percent of the overall occupied habitat for this population. The BLM manages approximately 8,300 acres of unoccupied habitat, or 27 percent.

The Cerro Summit-Cimarron area is in Montrose County and Gunnison County approximately 15 miles east of Montrose, Colorado. Habitat in this area includes sagebrush fragmented by oakbrush and irrigated pastures. Primary land use within this area includes livestock grazing, hay production, and recreation. The Sims Mesa area is also in Montrose County 7 miles from Montrose, Colorado. Habitat in this area comprises small patches of sagebrush fragmented by pinyon-juniper woodlands, residential or recreational development, and agricultural fields.

A site-scale HAF report has not been completed for the CSCSM population area. Section E.1.1, Table E.1 presents guideline results for AIM plots sampled in CSCSM. Section E.2 in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*, presents the mean value for seasonal habitat indicators across monitoring plots within the population area. There are 11 AIM plots sampled in the winter season and 11 sampled in the summer season in unoccupied habitats in CSCSM. There is no current plot data for breeding habitat or in occupied habitats in CSCSM. Plot data suggest that for habitats sampled in the summer, the majority of plots are not meeting indicator desired conditions. For plots that were sampled during the winter, most plots were not meeting desired conditions for sagebrush cover, but were meeting desired conditions for sagebrush height.

There are six known leks within the CSCSM population area. Of those leks in occupied habitat, there are one active and four historical leks. There is one historical lek in unoccupied habitat. The three-year-average HMC for this population area ranges between 0 and 12 between 2000 and 2022. The 3-year average population estimates based on the HMC have ranged between 2 and 57 from 2000 to 2022 (Figure 3.2.1). HMCs and corresponding population estimates have generally been declining since 2017.

Figure 3.2.1. Cerro Summit-Cimarron-Sims Mesa Gunnison Sage-Grouse 3-year Average Population Estimate, 2000–2022



Source: CPW 2022

Threats to the CSCSM population include small population size and structure, residential development, roads, drought, pinyon-juniper encroachment, invasive species, and limited mesic habitat. Other threats include recreation, power/transmission lines, climate change, and late seral vegetation conditions in occupied habitat (USFWS 2019). Approximately 1.37 percent of occupied habitat has been calculated as disturbance in the CSCSM population, compared to 1.84 percent disturbance in unoccupied habitat. The BLM manages approximately 210 acres of occupied and unoccupied habitat that have experienced some level of disturbance (Table 3.2.4).

Table 3.2.4. Surface Disturbance in Cerro-Summit-Cimarron-Sims Mesa Population

Surface Management Agency	Disturbed (Acres)[1]			Undisturbed (Acres)			Total Acres
	Occupied	*Unoccupied*	*Total*	*Occupied*	*Unoccupied*	*Total*	
BLM	55	154	209	2,127	7,964	10,090	10,299
USFS	0	0	0	0	0	0	0
Other Federal/ BIA	0	0	0	0	151	151	151
State	0	0	0	0	0	0	0
Private	371	413	785	25,242	21,840	47,082	47,866
Other	10	0	10	4,053	295	4,348	4,358
Grand Total	**436** (1.37%)	**568** (1.84%)	**1,004** (1.60%)	**31,422** (98.63%)	**30,250** (98.16%)	**61,672** (98.40%)	**62,675**

Source: BLM 2023
BIA = Bureau of Indian Affairs
[1]Total disturbed acres are current estimates calculated following the methodology outlined in Appendix N, *Methodology for Calculating Disturbance Caps*.

Crawford

The Crawford population is approximately 8 miles southwest of Crawford, Colorado in Montrose County, comprising approximately 115,270 acres, 28 percent of which is managed by the BLM. Occupied habitat comprises approximately 34,996 acres of the population area. Unoccupied habitat comprises approximately 80,274 acres of the population area. The BLM manages approximately 22,150 acres of occupied habitat, or 63 percent of the total occupied habitat for the population area. Approximately 10,240 acres of unoccupied habitat are managed by the BLM, or approximately 13 percent.

Habitat in the Crawford population area consists of diverse topography, including rocky drainages dominated by pinyon-juniper woodlands, rolling uplands with sagebrush shrublands, and hay meadows on gentler slopes. The Crawford area receives approximately 14 inches of precipitation each year, mostly consisting of winter snowpack. Primary land uses are livestock grazing, recreation, and agriculture.

A site-scale HAF assessment has been completed for the Crawford population, providing insight into seasonal habitat suitability for GUSG. Table 3.2.5 provides a summary of the GUSG habitat suitability ratings for this population. Section E.1.2, Table E.2 presents habitat indicators by guidelines for AIM plots sampled in Crawford. Section E.2 in Appendix E presents the mean value for seasonal habitat indicators across monitoring plots within the population area.

Table 3.2.5. Summary of Site-Scale Gunnison Sage-Grouse Habitat Suitability for Seasonal Habitat in the Crawford Population

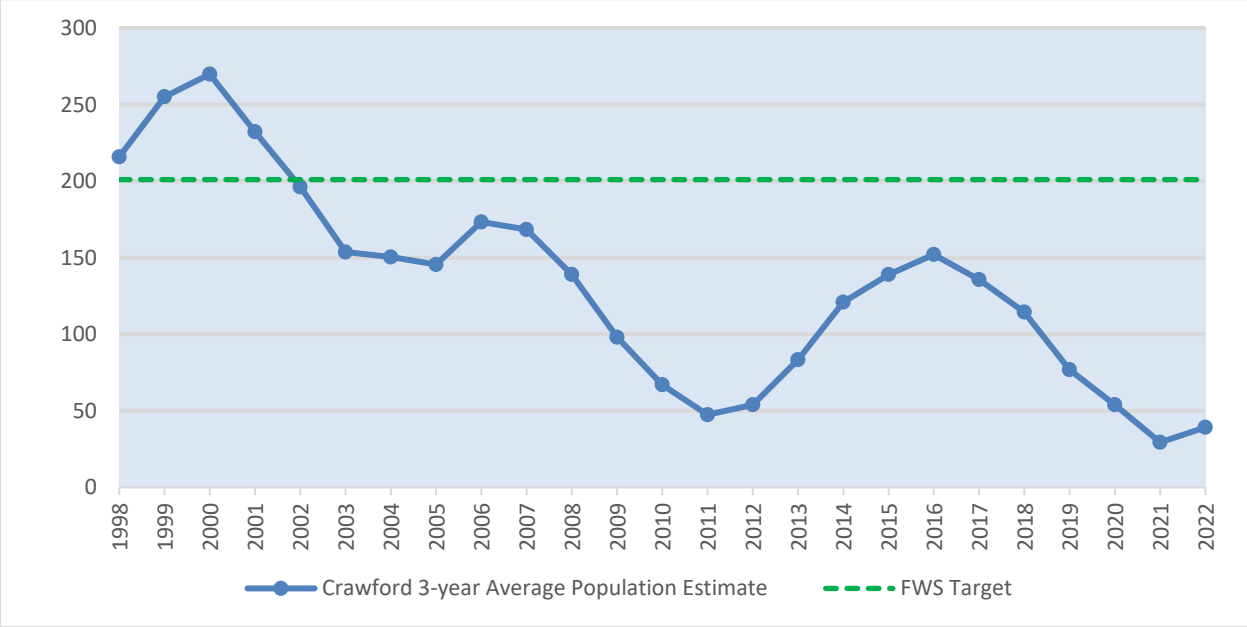
GUSG Seasonal Habitat	Number of Transects/Acres	Suitable	Marginal	Unsuitable
Breeding (March 1 – June 30)	152/14,494	26.9% CI (20.9, 34.0)	45.7% CI (38.5, 53.2)	27.4% CI (21.3, 34.5)
Summer (July 1 – October 31)	152/14,494	57.7% CI (50.3, 64.8)	19.4% CI (14.2, 25.9)	22.9% CI (17.3, 29.6)
Winter (November 1 – February 28)	152/14,494	2.5% CI (1.0, 6.0)	19.8% CI (14.47, 26.37)	77.7% CI (70.9, 83.3)

%=Percent, GUSG=Gunnison Sage-Grouse, CI=Confidence Interval (80%)

In breeding habitat, the primary driver for marginal and unsuitable habitat were low sagebrush cover, low total shrub cover, and low sagebrush height (Table E.1.2 in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*). In summer habitat, the Crawford population habitat generally met site-scale indicators; however, some sites sampled were significant outliers, resulting in marginal or unsuitable habitat determinations. At these locations, sites generally lacked herbaceous cover or were dominated by sagebrush. Winter habitats in Crawford were largely unsuitable, resulting from low sagebrush cover and height (BLM 2021a).

There are 11 known leks in the Crawford population area. Of those on occupied habitat, six are active and five are historical. The 3-year-average HMC for Crawford ranges between 6 and 55 from 1998 to 2022. The 3-year population estimates based on the HMC range between 29 and 270 (Figure 3.2.2). The USFWS has established an approximate target HMC of 41 for this population, which corresponds to an estimated population size of 201. Crawford is well below the desired population target and has been since 2003.

Figure 3.2.2. Crawford Gunnison Sage-Grouse 3-Year-Average Population Estimate, 1998–2022



Source: CPW 2022

Significant threats to the Crawford population include small population size and structure, the limited availability and diminished condition of mesic habitats, improper sheep grazing, pinyon-juniper encroachment, severe drought and extreme weather, and residential development. Other threats include recreation, roads, invasive plants, climate change, and late seral vegetation conditions (USFWS 2019). Approximately 0.72 percent of occupied habitat has been calculated as disturbance in the Crawford population, while 1.4 percent of unoccupied habitat is calculated as disturbed. The BLM manages approximately 270 acres of occupied and unoccupied habitat that have experienced some level of disturbance and 32,350 acres of undisturbed habitat in the Crawford population (Table 3.2.6).

Table 3.2.6. Surface Disturbance in the Crawford Population

Surface Management Agency	Disturbed (Acres)[1]			Undisturbed (Acres)			Total Acres
	Occupied	*Unoccupied*	*Total*	*Occupied*	*Unoccupied*	*Total*	
BLM	164	100	264	21,987	10,365	32,352	32,616
USFS	0	26	26	0	2,164	2,164	2,190
Other Federal/BIA	37	33	70	4,364	7,780	12,144	12,214
State	0	0	0	0	0	0	0
Private	51	961	1,012	8,392	58,847	67,238	68,251
Other	0	0	0	0	0	0	0
Grand Total	**252** (0.72%)	**1,120** (1.40%)	**1,372** (1.20%)	**34,743** (99.28%)	**79,155** (98.61%)	**113,898** (98.81%)	**115,270**

Source: BLM 2023
BIA = Bureau of Indian Affairs
[1]Total disturbed acres are current estimates calculated following the methodology outlined in Appendix N, *Methodology for Calculating Disturbance Caps*.

Dove Creek

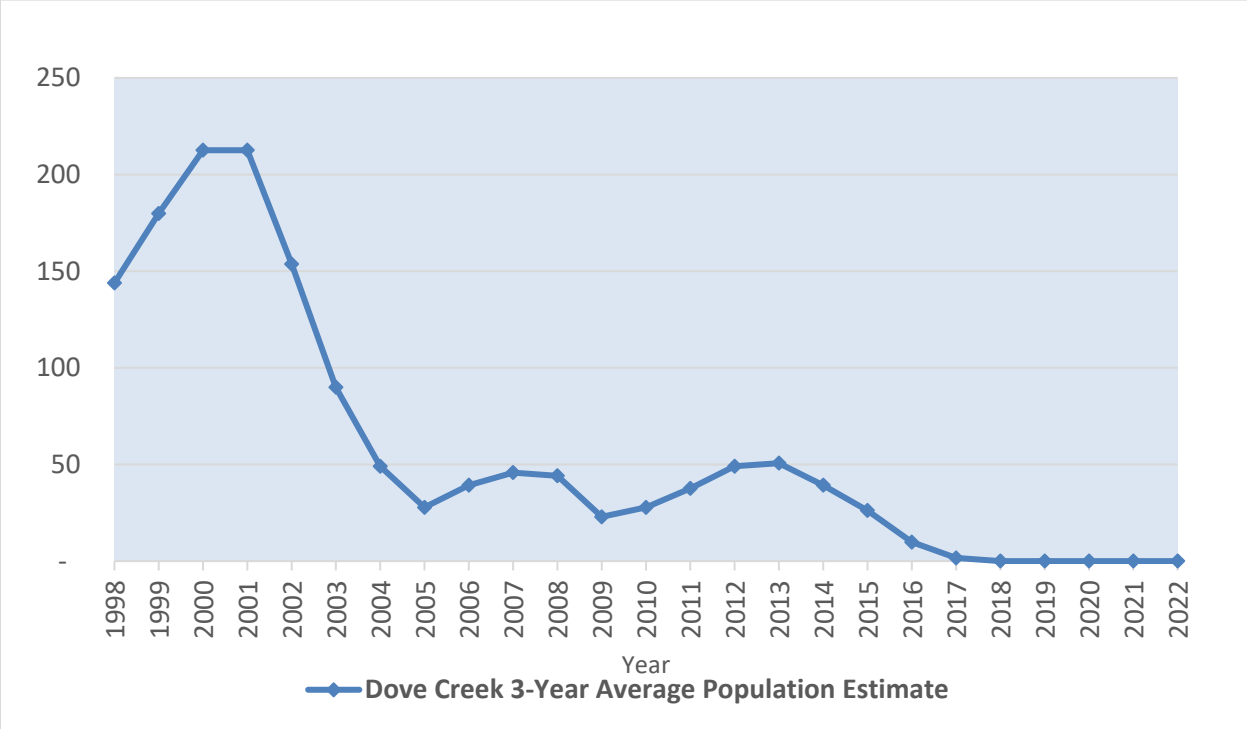
The Dove Creek population area is north and west of Dove Creek, Colorado in Dolores County, Colorado and comprises approximately 321,700 acres, 17 percent of which is managed by the BLM. Occupied habitat comprises 41,790 acres and unoccupied habitat comprises 279,910 acres. The BLM manages approximately 5,160 acres of occupied habitat (12 percent) and 48,160 acres of unoccupied habitat (17 percent). Habitat to the north of Dove Creek consists of mountain shrub habitat, mostly dominated by oakbrush with sagebrush inclusions. Habitat to the west of Dove Creek is predominantly sagebrush shrubland and is highly fragmented with an understory of crested wheatgrass monoculture (Gunnison Sage-Grouse Rangewide Steering Committee 2005).

A site-scale HAF report has not been completed for the Dove Creek population area. Section E.1.3, Table E.3 presents habitat indicators by guidelines for AIM plots sampled in Dove Creek. Section E.2 in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*, presents the mean value for seasonal habitat indicators across monitoring plots within the population area. There are 11 AIM plots sampled in the breeding season, 3 of which are located in occupied habitat; 22 AIM plots sampled during the summer season, 1 of which is located in occupied habitat; and 33 locations sampled during the winter season, 4 of which are in occupied habitat. Plot data suggest that for habitats sampled in the breeding season, the majority of plots are not meeting indicator desired conditions in unoccupied habitat. Most monitoring locations in occupied habitat sampled during the breeding season are meeting indicator desired conditions for sagebrush cover, shrub cover, sagebrush height, and grass and forb cover. Plots sampled in the summer season in occupied habitat are meeting desired conditions for shrub cover, forb cover, and grass and forb height; however, are not meeting desired conditions for sagebrush cover. Plots in both occupied and unoccupied habitat sampled during the winter

season are generally not meeting desired conditions for sagebrush cover, but are mostly meeting desired conditions for sagebrush height.

There are 10 known leks in Dove Creek, all of which are in occupied habitat. Of those, four leks are inactive and six leks are historic. The 3-year-average HMC for Dove Creek ranges between 0 and 43 between 1998 and 2022. The 3-year average population estimates based on HMC for Dove Creek range between 0 and 213 (Figure 3.2.3). In 2010 and 2011, 42 birds were translocated from the Gunnison Basin to Dove Creek (USFWS 2019). The last year a bird was observed on a lek in Dove Creek was 2015.

Figure 3.2.3. Dove Creek 3-Year Average Gunnison Sage-Grouse Population Estimate, 1998–2022



Source: CPW 2022

Significant threats to the Dove Creek population include small population size and structure, limited availability and diminished condition of mesic habitats, severe drought and extreme weather, residential development, mining and oil and gas development, pinyon-juniper encroachment, and changes to Conservation Reserve Program funding and administration. Other threats of lesser magnitude include invasive plants, agricultural conversion, climate change, and roads (USFWS 2019). Approximately 1.13 percent of occupied habitat is calculated as disturbance in the Dove Creek population, with unoccupied habitat calculated at 1.63 percent disturbance. The BLM manages approximately 577 acres of occupied and unoccupied habitat that have experienced some level of disturbance and 52,769 acres of undisturbed occupied and unoccupied habitat in the Dove Creek population (Table 3.2.7).

Table 3.2.7. Surface Disturbance in the Dove Creek Population

Surface Management Agency	Disturbed (Acres)[1]			Undisturbed (Acres)			Total Acres
	Occupied	*Unoccupied*	*Total*	*Occupied*	*Unoccupied*	*Total*	
BLM	35	542	577	5,213	47,556	52,769	53,346
USFS	0	246	246	0	9,649	9,649	9,895
Other Federal/BIA	0	3	3	0	109	109	112
State	0	3	3	0	643	643	646
Private	439	3,724	4,163	36,107	212,073	248,181	252,344
Other	0	54	54	0	5,307	5,307	5,361
Grand Total	**473** (1.13%)	**4,572** (1.63%)	**5,045** (1.57%)	**41,320** (98.87%)	**275,338** (98.37%)	**316,659** (98.43%)	**321,704**

Source: BLM 2023
BIA = Bureau of Indian Affairs
[1]Total disturbed acres are current estimates calculated following the methodology outlined in Appendix N, *Methodology for Calculating Disturbance Caps*.

Gunnison Basin

The Gunnison Basin population is in Gunnison and Saguache Counties in Colorado and comprises approximately 771,960 acres, 599,890 acres of which are occupied and 172,070 acres of which are unoccupied. The BLM manages approximately 47 percent of the population area. The BLM manages approximately 305,200 acres of occupied habitat (51 percent) and approximately 62,440 acres of unoccupied habitat (36 percent).

Habitat consists of sagebrush shrublands in upland areas with variable size and cover, depending on site-specific conditions. The Gunnison Basin is one of only three sagebrush-dominated areas in Colorado that together support the largest occurrences of half of all the sagebrush in Colorado (Boyle and Reeder 2005). The sagebrush ecosystem in the Gunnison Basin is dominated by Wyoming big sagebrush at the lower and drier elevations and mountain big sagebrush at the upper and wetter elevations. Primary land uses in this area are livestock grazing, recreation, and residential development (Gunnison Sage-Grouse Rangewide Steering Committee 2005).

A site-scale HAF assessment has been completed for the Gunnison Basin population, providing insight into seasonal habitat suitability for GUSG. Table 3.2.9 provides a summary of the GUSG habitat suitability ratings for this population. Section E.1.6, Table E.4 presents habitat indicators by guidelines for AIM plots sampled in Gunnison Basin. Section E.2 in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*, presents the mean value for seasonal habitat indicators across monitoring plots within the population area.

Table 3.2.8. Summary of Site-Scale Gunnison Sage-Grouse Habitat Suitability for Seasonal Habitat in the Gunnison Basin Population

GUSG Seasonal Habitat	Number of Leks, Plots, or Sites/ Acres	Suitable	Marginal	Unsuitable
Breeding (Lekking)	96	70 leks	14 leks	12 leks
Breeding (Nesting/ Early Brood-rearing)	95	46.6% CI [37.7, 55.7]	28.3% CI [20.8, 37.2]	25.1% CI [18.0, 33.8]
Upland Summer/ Late Brood-rearing	120	56.7% CI [48.5, 64.5]	36.7% CI [29.344.9]	6.6% CI [13.6, 11.9]
Riparian Summer/ Late brood-rearing	276	162 sites	100 sites	14 sites
Winter	216	28.6% CI [23.4, 34,4]	51.6% CI [45.5, 57.6]	19.8% CI [15.4, 25.1]

%=Percent, GUSG=Gunnison sage-grouse, CI=Confidence Interval (80%)

The majority of leks in the Gunnison Basin population are considered suitable. Leks ranked marginal or unsuitable were primarily due to the presence of anthropogenic disturbance in the vicinity. For nesting/early brood-rearing habitats, most of the sites were considered suitable. Site-scale indicators that contributed to sites that were considered suitable include forb and grass heights, grass cover, and forb species diversity. Drivers of marginal or unsuitable habitat include low forb cover, shrub cover, sagebrush height, and sagebrush cover. For many sites, the potential to attain breeding habitat parameters is limited due to the ecological site.

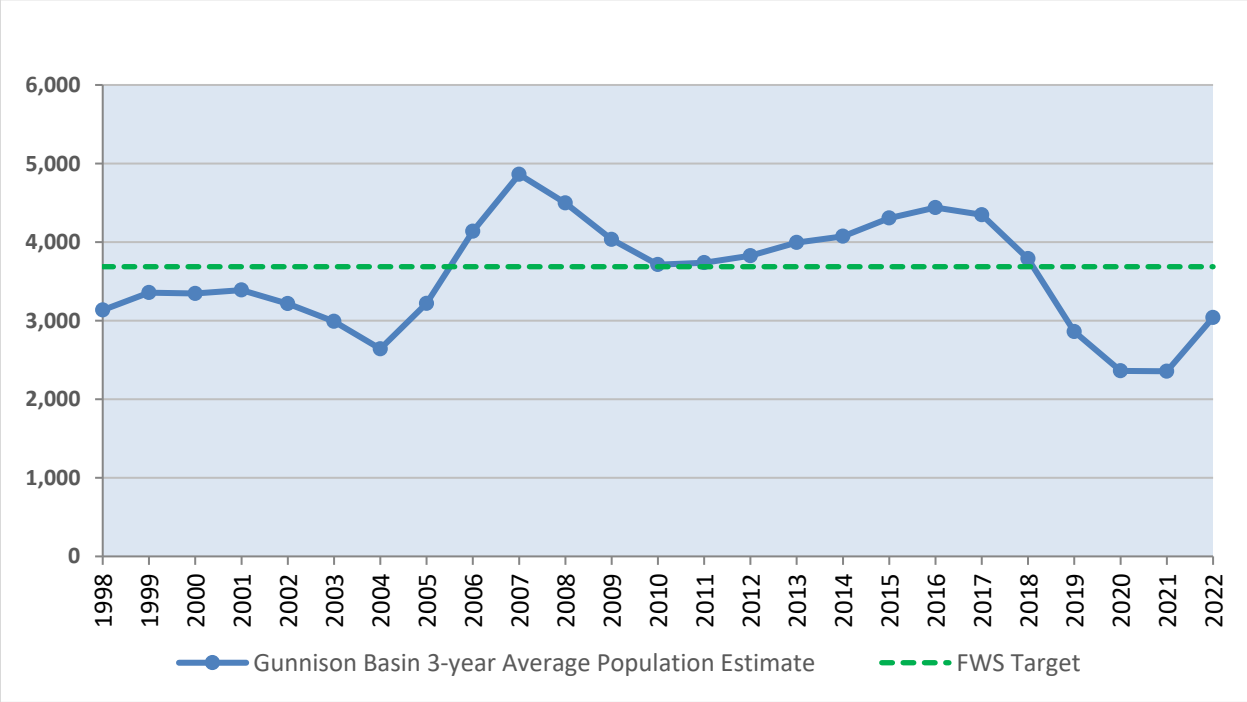
For upland summer/late brood-rearing habitats, the site-scale indicators that were primiarily suitable included forb and grass height and a high forb species diversity. Factors that contributed to marginal or unsuitable habitat including low forb cover and low sagebrush height. Sagebrush cover and grass cover was generally suitable on over 75 percent of sample locations.

Lentic sites were assessed in 217 locations to assess riparian summer/late brood-rearing habitats, divided into springs, meadows, and lotic sites. Of 172 springs sites, 100 were considered suitable, 60 marginal, and 12 unsuitable. The majority of springs had adjacent sagebrush cover, and therefore were suitable for that indicator. Unsuitable springs locations were surrounded by dense trees or were livestock water developments. Of 45 meadows assessed, 33 were suitable, 11 marginal, and 1 unsuitable. Marginal ratings were assigned due to erosion and lowered water tables. Suitable vegetation communities surrounding meadow sites drove suitable rankings, while marginal rankings were assigned to sites with drying meadows and lower forb diversity. For lotic sites, 59 locations were assessed, 29 of which were suitable, 29 were marginal, and one unsuitable. Suitable lotic sites generally had abundant forbs, while marginal lotic sites lacked forbs or Proper Functioning Condition.

Winter habitat suitability is limited by sagebrush heigh and cover. In the Gunnison Basin, sagebrush cover was generally lower than that considered suitable during the winter and sagebrush heights overall were generally lower than the 40 centimeter minimum height for all sites evaluated. Winter habitat in the Gunnison Basin typically varies greatly between years due to differences in winter severity, snow height, and available sagebrush cover. Because the same sites were evaluated for winter habitat as for breeding, sites that were suitable for breeding or brood-rearing habitat are not expected to exhibit the tall, dense sagebrush that makes winter habitat suitable.

There are 96 known leks in Gunnison Basin. All known leks are in occupied habitat and include 50 active, 5 inactive, 18 unknown, and 23 historical leks. The 3-year average HMC for Gunnison Basin ranges between 481 and 991 for 1998 through 2022. The 3-year average population estimates based on HMC for Gunnison Basin range between 2,361 and 4,862 (Figure 3.2.4). The USFWS has established an approximate target HMC of 752 for this population, which corresponds to an estimated population size of 3,687 individuals for Gunnison Basin. The population is currently below the desired USFWS target and has been since 2019. The CCA uses the RCP population target of 3,000 individuals for the Gunnison Basin. Based on the 3-year average population estimate, the population has been above this goal, except in 2004, and recently in 2019–2021.

Figure 3.2.4. Gunnison Basin Population 3-Year Average Population Estimate, 1998–2022



Source: CPW 2022

The most significant threats to the Gunnison Basin population include severe drought and extreme weather and residential development. Other stressors for this population include invasive plants, recreation, roads, climate change, late seral stages of vegetation communities, and reduction of functionality or condition of mesic habitats (USFWS 2019). Approximately 1.65 percent of occupied habitat is calculated as disturbance in the Gunnison Basin population, with unoccupied habitat calculated at 1.73 percent disturbance. The BLM manages approximately 5,102 acres of occupied and unoccupied habitat that has experienced some level of disturbance and 377,503 acres of undisturbed occupied and unoccupied habitat in the Gunnison Basin population (Table 3.2.9).

Table 3.2.9. Surface Disturbance in Gunnison Basin Population

Surface Management Agency	Disturbed (Acres)[1]			Undisturbed (Acres)			Total Acres
	Occupied	*Unoccupied*	*Total*	*Occupied*	*Unoccupied*	*Total*	
BLM	4,420	682	5,102	309,951	67,552	377,503	382,605
USFS	1,391	887	2,277	84,904	38,337	123,241	125,518
Other Federal/BIA	0	31	31	0	1,140	1,140	1,171
State	64	0	64	3,566	15	3,581	3,646
Private	3,893	1,376	5,268	181,783	62,051	243,835	249,103
Other	134	0	134	9,782	0	9,782	9,916
Grand Total	**9,902** (1.65%)	**2,975** (1.73%)	**12,878** (1.67%)	**589,986** (98.35%)	**169,096** (98.27%)	**759,082** (98.33%)	**771,960**

Source: BLM 2023
BIA = Bureau of Indian Affairs
[1]Total disturbed acres are current estimates calculated following the methodology outlined in Appendix N, *Methodology for Calculating Disturbance Caps*.

Monticello

The Monticello population is in San Juan County, Utah near Monticello and comprises approximately 145,600 acres, 3.3 percent of which is managed by the BLM. Occupied habitat comprises 70,480 acres, 3,230 acres of which are managed by the BLM (4.6 percent). Unoccupied habitat comprises 75,140 acres, of which 1,630 acres are managed by the BLM (2.1 percent).

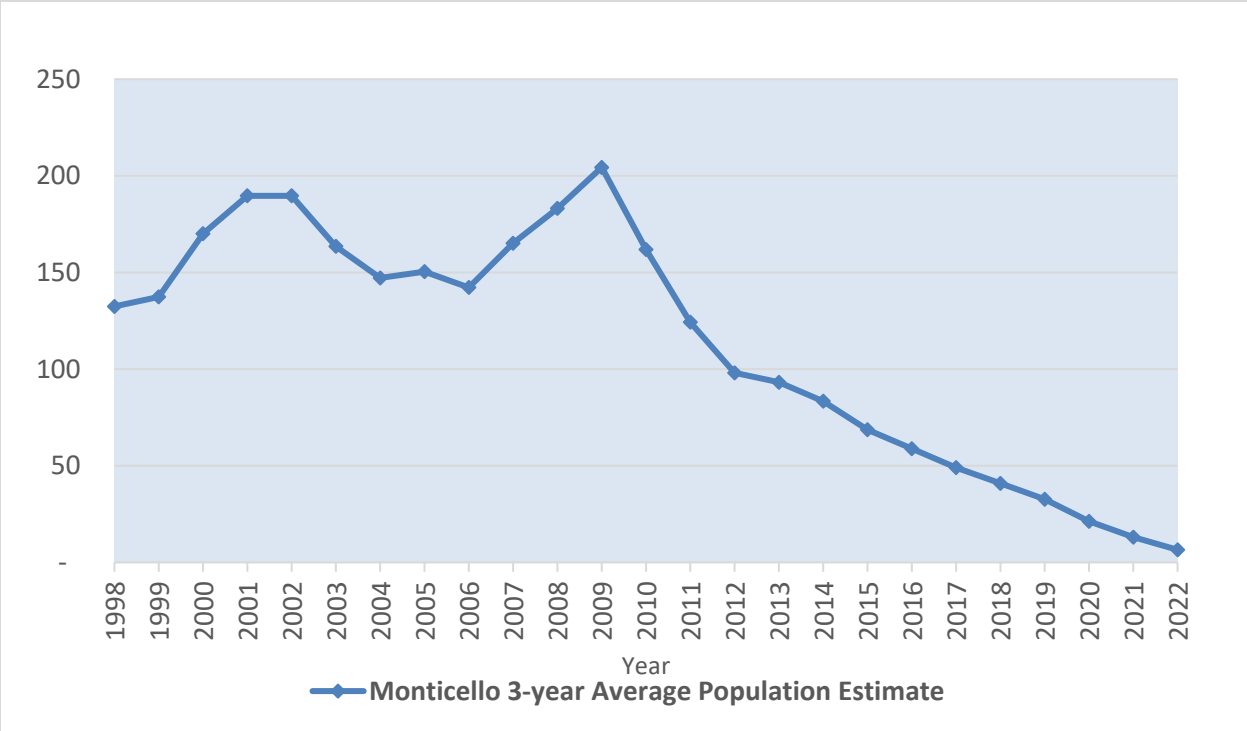
The habitat in this area is composed of large grass pastures and agricultural fields with fragmented stands of big sagebrush and black sagebrush communities. Perennial water sources in this population area are extremely limited (Gunnison Sage-Grouse Range-wide Steering Committee 2005). There are no perennial water sources in occupied habitat in the Monticello population and two perennial streams in unoccupied habitat (USGS 2022).

A site-scale HAF report has not been completed for the Monticello population area. Section E.1.5, Table E.5 presents habitat indicators by guidelines for AIM plots sampled in Monticello. Section E.2 in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*, presents

the mean value for seasonal habitat indicators across monitoring plots within the population area.

There are 3 occupied leks and 6 unoccupied (classified by UDWR) leks in the Monticello population. The 3-year average HMC ranges between 1 and 42 for 1998 through 2022. The 3-year average population estimates based on HMC for Monticello range between 7 and 204 between 1998 and 2022 (Figure 3.2.5). Since 2009, population numbers in the Monticello population area have declined.

Figure 3.2.5. Monticello Gunnison Sage-Grouse Population 3-Year Average Population Estimate, 1998–2022



Source: UDWR 2022

Significant threats to the Monticello population include the reduced condition and availability of mesic habitats, renewable energy development, small population size and structure, severe drought, conversion of habitat to agriculture, changes to Conservation Reserve Program funding and implementation, invasive plants, and pinyon-juniper encroachment. Other threats of lesser magnitude include power or transmission lines, roads, and climate change. Approximately 1.18 percent of occupied habitat is calculated as disturbance in the Monticello population, with unoccupied habitat calculated at 1.33 percent disturbance. The BLM manages approximately 13 acres of occupied and unoccupied habitat that have experienced some level of disturbance and 4,853 acres of undisturbed occupied and unoccupied habitat in the Monticello population (Table 3.2.10).

Table 3.2.10. Surface Disturbance in Monticello Population

Surface Management Agency	Disturbed (Acres)[1]			Undisturbed (Acres)			Total Acres
	Occupied	*Unoccupied*	*Total*	*Occupied*	*Unoccupied*	*Total*	
BLM	11	3	13	3,223	1,630	4,853	4,867
USFS	0	0	0	0	0	0	0
Other Federal/BIA	0	0	0	0	0	0	0
State	3	0	3	919	0	919	922
Private	821	995	1,816	65,500	72,507	138,007	139,823
Other	0	0	0	0	0	0	0
Grand Total	**835** (1.18%)	**998** (1.33%)	**1,832** (1.26%)	**69,642** (98.82%)	**74,138** (98.67%)	**143,779** (98.74%)	**145,611**

Source: BLM 2023
BIA = Bureau of Indian Affairs
[1]Total disturbed acres are current estimates calculated following the methodology outlined in Appendix N, *Methodology for Calculating Disturbance Caps*.

Piñon Mesa

The Piñon Mesa population is in Mesa County, approximately 22 miles southwest of Grand Junction, Colorado; mapped unoccupied habitat extends into adjacent Grand County, Utah. The area encompasses approximately 266,450 acres, 43 percent of which is managed by the BLM. There are approximately 70,480 acres of occupied habitat and 198,760 acres of unoccupied habitat. The BLM manages 19,590 acres of occupied habitat, or 30 percent, and 97,340 acres of unoccupied habitat, or 49 percent.

This area contains canyons and mesas in the interior. Lower elevations contain saltbush, sagebrush, and greasewood shrublands. Higher elevations contain sagebrush and snowberry inclusions in oakbrush. Land use in this area includes livestock grazing, recreation, and hunting (Gunnison Sage-Grouse Rangewide Steering Committee 2005).

A site-scale HAF assessment has been completed for the Piñon Mesa population, providing insight into seasonal habitat suitability for GUSG. Table 3.2.11 provides a summary of the GUSG habitat suitability ratings for this population. Section E.1.6, Table E.6 presents habitat indicators by guidelines for AIM plots sampled in Piñon Mesa. Section E.2 in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*, presents the mean value for seasonal habitat indicators across monitoring plots within the population area.

Table 3.2.11. Summary of Site-Scale Gunnison Sage-Grouse Habitat Suitability for Seasonal Habitat in the Piñon Mesa Population

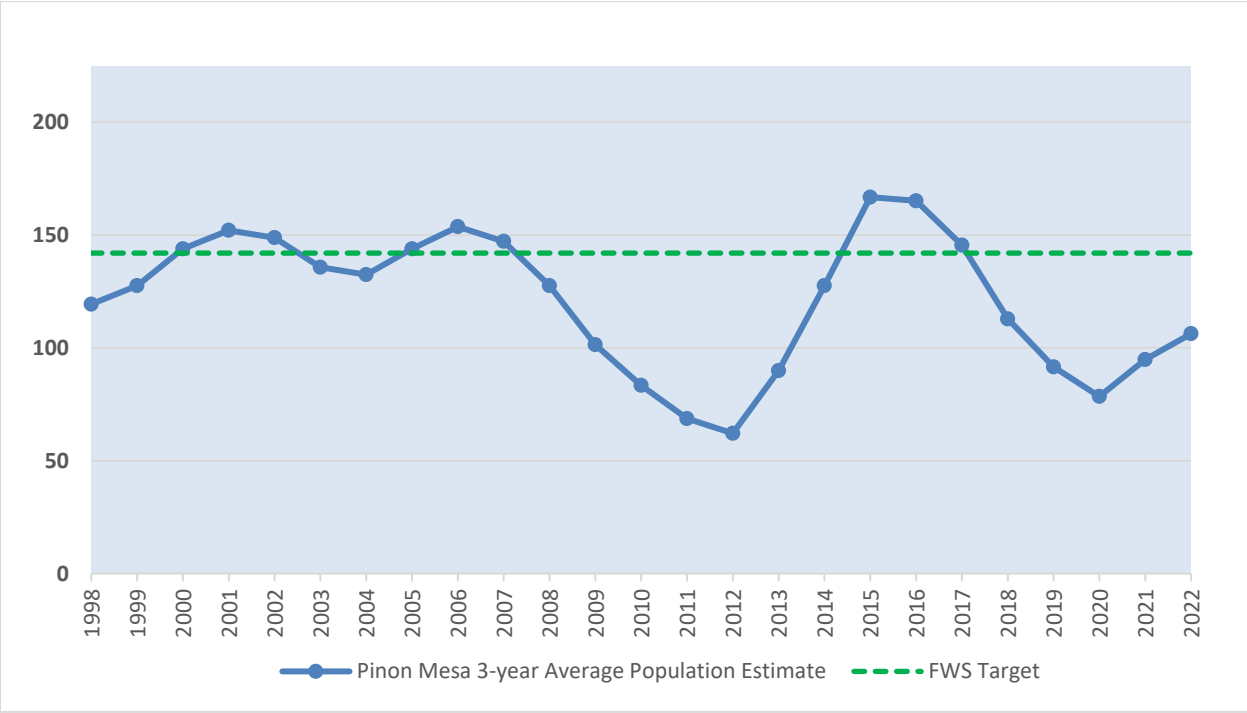
GUSG Seasonal Habitat	Number of Transects/Acres	Suitable	Marginal	Unsuitable
Breeding	8/7,707 acres	14.5% CI (2.9, 49.1)	70.9% CI (37.4, 90.9)	14.5% CI (2.9, 49.1)
Summer	25/17,268 acres	33.8% CI [18.8, 52.8]	53.7% CI [35.5, 71.1	12.5% CI [4.5, 30.0]
Winter	33/17,268 acres	8.9% CI [3.12, 22.5]	59.2% CI [43.3, 74.0]	31.9% CI [18.8, 48.0]

%=Percent, GUSG=Gunnison sage-grouse, CI=Confidence Interval (80%)

In breeding habitat, the primary driver for marginal and unsuitable habitat were low sagebrush cover, low total shrub cover, and low sagebrush height. This was in part attributed to ecological site limitations for much of the assessed habitat. Grass and forb cover generally met threshold values for breeding habitats. Sites that were considered unsuitable and marginal breeding habitat generally lacked herbaceous cover, were dominated by sagebrush cover, or lacked cover. In summer habitat, this population generally met site-scale indicators; however, some sites sampled were significant outliers, resulting in marginal or unsuitable habitat determinations. At these locations, sites generally lacked herbaceous cover or were dominated by sagebrush. Winter habitats in Piñon Mesa were largely marginal, driven by taller sagebrush and limited total canopy and the presence of pinyon and juniper trees or oakbrush. Unsuitable winter habitats in Piñon Mesa are probably limited by ecological potential, due to the presence of shallow soils and pinyon and juniper trees (BLM 2021b).

There are 30 known leks in Piñon Mesa, 26 of which occur in occupied habitat. Of those, 13 are active, 1 is inactive, 5 are unknown, and 7 are historical. Leks in unoccupied habitat are historical leks. The 3-year average HMC ranges between 13 and 34 for 1998 through 2022. Population estimates based on the HMC range between 62 and 167 (Figure 3.2.6).

Figure 3.2.6. Piñon Mesa Gunnison Sage-Grouse Population Estimate 1998–2022



Source: CPW 2022

The greatest threat to the Piñon Mesa population is the small population size and structure. Other significant threats include severe drought and extreme weather and residential development. Threats of lesser magnitude include catastrophic wildfire, climate change, and invasive plants (USFWS 2019). Approximately 1.0 percent of occupied habitat is calculated as disturbance in the Piñon Mesa population, with unoccupied habitat calculated at 0.81 percent disturbance. The BLM manages approximately 769 acres of occupied and unoccupied habitat that have experienced some level of disturbance and 116,213 acres of undisturbed occupied and unoccupied habitat in the Piñon Mesa population (Table 3.2.12).

Table 3.2.12. Surface Disturbance in Piñon Mesa Population

Surface Management Agency	Disturbed (Acres)[1]			Undisturbed (Acres)			Total Acres
	Occupied	*Unoccupied*	*Total*	*Occupied*	*Unoccupied*	*Total*	
BLM	170	599	769	19,462	96,751	116,213	116,982
USFS	37	410	447	2,115	41,097	43,212	43,659
Other Federal/BIA	0	1	1	0	24	24	25
State	0	0	0	0	0	0	0
Private	472	591	1,062	45,434	59,290	104,724	105,787
Other	0	1	1	0	5	5	5
Grand Total	**678** (1.00%)	**1,602** (0.81%)	**2,280** (0.86%)	**67,010** (99.00%)	**197,167** (99.19%)	**264,177** (99.14%)	**266,457**

Source: BLM 2023
BIA = Bureau of Indian Affairs
[1]Total disturbed acres are current estimates calculated following the methodology outlined in Appendix N, *Methodology for Calculating Disturbance Caps*.

Poncha Pass

The Poncha Pass population is in Saguache County approximately 10 miles north of Villa Grove, Colorado. The population area is approximately 56,370 acres, 58 percent of which is managed by the BLM. There are approximately 27,760 acres of occupied habitat and 21,060 acres of unoccupied habitat in the population area. The BLM manages approximately 13,170 acres of occupied habitat, or 48 percent, and 11,670 acres of unoccupied habitat, or 55 percent.

Habitat in this area is dominated by big sagebrush with black sagebrush and oakbrush in drainages. San Luis Creek occurs in the population area, which provides riparian and wet meadow habitat for the species.

A site-scale HAF assessment has been completed for the Poncha Pass population, providing insight into seasonal habitat suitability for GUSG. Table 3.2.13 provides a summary of the GUSG habitat suitability ratings for this population.

Table 3.2.13. Summary of Site-Scale Gunnison Sage-Grouse Habitat Suitability for Seasonal Habitat in the Poncha Pass Population

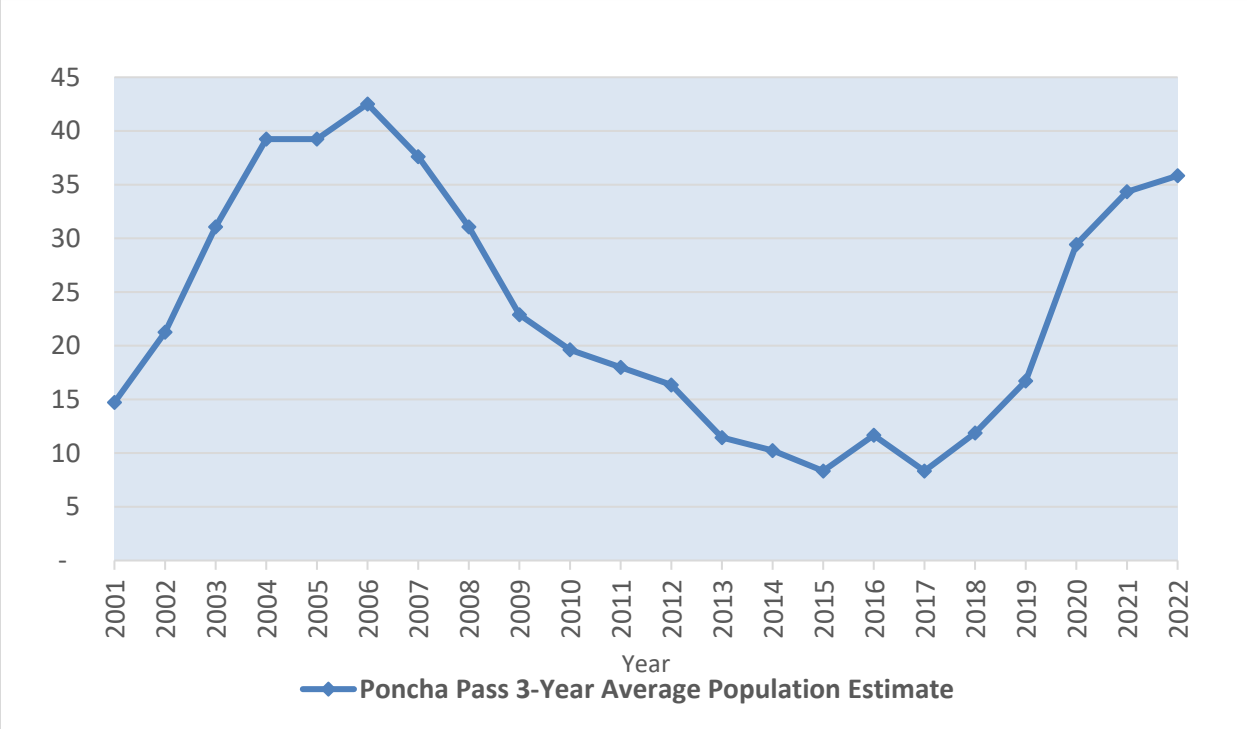
GUSG Seasonal Habitat	Number of Transects/Acres	Suitable	Marginal	Unsuitable
Breeding	21/8,041 acres	13.1% CI (6.9, 23.4)	48.3% CI (36.6, 602)	38.6% CI (27.7, 50.7)
Upland Summer	28/11,915 acres	19.4% CI (12.4, 28.9)	49.7% CI (39.4, 60)	30.9% CI (22.2, 41.3)
Riparian Summer	23/28.4 km	40.5% (of kms)	39.4% (of kms)	20.1% (of kms)
Winter	4/1,260 acres	0	75% CI (43.3, 92.2)	25% (7.8, 56.7)

%=Percent, GUSG=Gunnison sage-grouse, CI=Confidence Interval (80%)

Overall breeding habitat in Poncha Pass is marginal. Breeding habitat suitability is limited by sagebrush cover and perennial forb cover and availability. In upland summer habitats, the majority of habitat is considered marginal, and is mostly limited by sagebrush cover. Lotic sampling sites were used to assess riparian suitability for GUSG summer habitat, and indicate that the majority of riparian reaches on BLM land are suitable for GUSG. Overall, suitability was generally driven by low stream flows and sagebrush availability. Winter habitats are considered marginal in this population, mostly due to the lack of sagebrush cover and height; however, the area lacks data on snow depth, which could result in over-emphasis of sagebrush cover in the analysis. The HAF analysis indicates that the winter habitat may be suitable in low snow years, but not in high snow years (BLM 2019).

There are five known leks in Poncha Pass, all of which are in occupied habitat and active. The 3-year-average HMC ranges between 2 and 9 for 2001 through 2022. The 3-year average population estimates based on HMC range between 8 and 43 (Figure 3.2.7).

Figure 3.2.7. Poncha Pass Gunnison Sage-Grouse 3-Year Average Population Estimate, 2001-2022



The greatest threat to the Poncha Pass population results from small population sizes and associated structure. Other threats that pose significant risk include severe drought and the loss of functionality or conditions of mesic habitats. Other threats in the area include recreation, power or transmission lines, residential development, climate change, invasive species, roads or fences, and late seral vegetation stages resulting in diminished condition

(USFWS 2019). Approximately 2.77 percent of occupied habitat is calculated as disturbance in the Poncha Pass population, with unoccupied habitat calculated at 2.26 percent disturbance. The BLM manages approximately 768 acres of occupied and unoccupied habitat that have experienced some level of disturbance and 24,029 acres of undisturbed occupied and unoccupied habitat in the Poncha Pass population (Table 3.2.14).

Table 3.2.14. Surface Disturbance in Poncha Pass Population

Surface Management Agency	Disturbed (Acres)[1]			Undisturbed (Acres)			Total Acres
	Occupied	*Unoccupied*	*Total*	*Occupied*	*Unoccupied*	*Total*	
BLM	427	342	768	12,709	11,320	24,029	24,797
USFS	44	1	45	5,510	176	5,686	5,731
Other Federal/BIA	0	0	0	0	0	0	0
State	40	6	46	1,081	959	2,040	2,086
Private	258	127	385	7,694	8,125	15,819	16,204
Other	0	0	0	0	0	0	0
Grand Total	**768** (2.77%)	**475** (2.26%)	**1,244** (2.55%)	**26,995** (97.23%)	**20,580** (97.74%)	**47,575** (97.45%)	**48,818**

Source: BLM 2023
BIA = Bureau of Indian Affairs
[1]Total disturbed acres are current estimates calculated following the methodology outlined in Appendix N, *Methodology for Calculating Disturbance Caps*.

San Miguel

The San Miguel population is in Montrose, San Miguel, and Ouray Counties in Colorado. The entire population area comprises approximately 204,686 acres, 29 percent of which is managed by the BLM. Within, there are 101,219 acres of occupied habitat and 103,467 acres of unoccupied habitat in the population area. The BLM manages approximately 35,879 acres of occupied habitat, or 35 percent, and 22,588 acres of unoccupied habitat, or 22 percent.

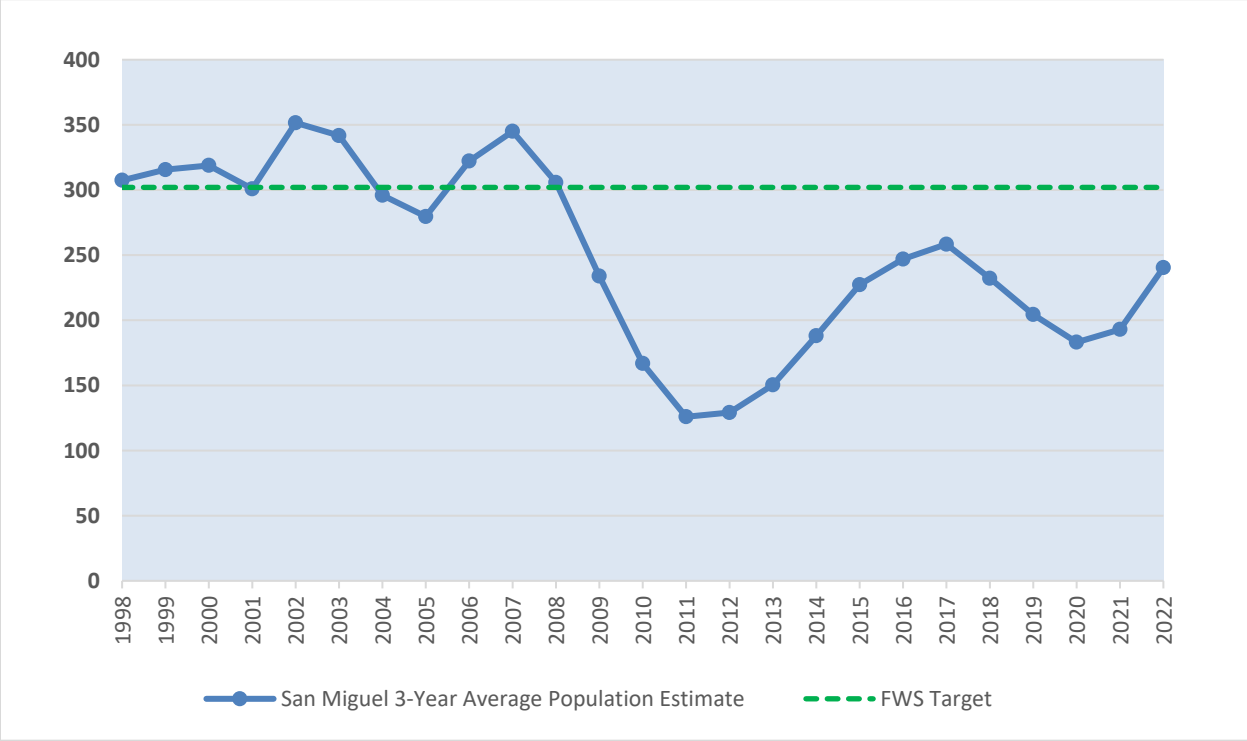
There are six subpopulations in this population area: Dry Creek Basin, Hamilton Mesa, Miramonte Reservoir, Gurley Reservoir, Beaver Mesa, and Iron Springs. The central portion of the basin is dominated by saltbush, greasewood, and low sagebrush, while the uplands surrounding include big sagebrush. Private lands in Dry Creek Basin are mostly cultivated and irrigated, where sagebrush habitat has been removed or are composed of rangelands. Hamilton Mesa includes summer habitat for GUSG. Miramonte Reservoir contains sagebrush stands with mixed grass and forb understory. Gurley Reservoir sagebrush habitat is heavily fragmented with some mixed grass and forb understory. Iron Springs and Beaver Mesa habitats include sagebrush stands with mixed grass understory. Primary land uses in San Miguel Basin include livestock grazing and agriculture.

A site-scale HAF report has not been completed for the San Miguel Basin population. Section E.1.8, Table E.8 presents habitat indicators by guidelines for AIM plots sampled in San Miguel Basin. Section E.2 in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*,

presents the mean value for seasonal habitat indicators across monitoring plots within the population area. There are 17 AIM plots sampled in the breeding season, 15 of which are located in occupied habitat; 27 AIM plots sampled during the summer season, 20 of which is located in occupied habitat; and 46 locations sampled during the winter season, 37 of which are in occupied habitats. Plot data suggest that for habitats sampled in the breeding season, the majority of plots are not meeting indicator desired conditions in unoccupied habitat. Most monitoring locations in occupied habitat sampled during the breeding season are meeting indicator desired conditions for sagebrush height, perennial grass cover, and herbaceous vegetation height. Plots sampled during the breeding season in occupied habitat are not meeting desired conditions for sagebrush cover. Plots sampled in the summer season in occupied habitat are meeting desired conditions for shrub cover and herbaceous perennial vegetation height; however, are not meeting desired conditions for sagebrush cover, sagebrush height, grass cover, and perennial forb cover. Plots in both occupied and unoccupied habitat sampled during the winter season are generally not meeting desired conditions for sagebrush cover but are mostly meeting desired conditions for sagebrush height.

There are 14 known leks in the San Miguel Basin, all of which are in occupied habitat. Ten of these leks are active and four are historic. The 3-year average HMC ranges between 26 and 72 for 1998 through 2022. The 3-year population estimates based on HMC range between 126 and 352 (Figure 3.2.8). The UFSWS has established a target HMC of 62 for this population, which corresponds to an estimate population size of 300 individuals for the San Miguel Population. The population has been below this population target since 2009.

Figure 3.2.8. San Miguel Gunnison Sage-Grouse 3-year Average Population Estimate, 1998–2022



The greatest threats to populations in the San Miguel Basin come from small population size and structure. Other immediate threats include severe drought, limited availability and diminished condition of mesic habitats, pinyon-juniper encroachment, catastrophic wildfire, and climate change. Threats of lesser magnitude include residential development (USFWS 2019).

Approximately 1.38 percent of occupied habitat is calculated as disturbance in the San Miguel population, with unoccupied habitat calculated at 2.93 percent disturbance The BLM manages approximately 1,048 acres of occupied and unoccupied habitat that have experienced some level of disturbance and 57,401 acres of undisturbed occupied and unoccupied habitat in the San Miguel Basin population (Table 3.2.15).

Table 3.2.15. Surface Disturbance in San Miguel Basin Population

Surface Management Agency	Disturbed (Acres)[1]			Undisturbed (Acres)			Total Acres
	Occupied	*Unoccupied*	*Total*	*Occupied*	*Unoccupied*	*Total*	
BLM	537	511	1,048	35,297	22,104	57,401	58,449
USFS	31	254	286	1,435	12,139	13,574	13,859
Other Federal/BIA	0	0	0	0	0	0	0
State	29	3	32	3,407	322	3,729	3,761
Private	695	2,259	2,954	51,447	65,875	117,322	120,276
Other	104	0	104	8,236	0	8,236	8,340
Grand Total	**1,397** (1.38%)	**3,027** (2.93%)	**4,424** (2.16%)	**99,822** (98.62%)	**100,440** (97.07%)	**200,262** (97.84%)	**204,686**

Source: BLM 2023
BIA = Bureau of Indian Affairs
[1]Total disturbed acres are current estimates calculated following the methodology outlined in Appendix N, *Methodology for Calculating Disturbance Caps*.

3.2.2.3 Environmental Consequences

Effects Common to All Alternatives

This section provides an overview of common impacts from management actions addressed under all alternatives. The intent of this section is to provide a high-level discussion of the potential impacts and impact mechanisms that may occur summarized for each resource and resource use as described in Section 2.2.2 *Detailed Alternatives*. Impacts specific to each alternative are addressed further under the No Action Alternative and action alternatives in this section.

Vegetation

All alternatives allow for some form of vegetation management or treatment that will promote healthy sagebrush ecosystems on BLM-managed lands. Sagebrush ecosystems exhibiting preferred structure and composition are vital components of GUSG seasonal habitats. Aldridge et al. (2012) found that GUSG use of nesting habitat declines when 10 percent or greater of an area within 1.5 kilometers did not include sagebrush cover. A more recent study by Saher et al. (2022) that focused on habitat selection models suggested that although there are vegetation similarities across the satellite populations for GUSG, there are some specific environmental differences that should be considered when planning vegetation treatments. In particular, the spatial scale, season, and treatment type can lead to different responses by GUSG depending on the underlying environmental variables within that satellite population. Consideration of vegetation treatments at both the patch and landscape spatial scale should help guide habitat management, but in most populations GUSG were more likely to select for increased cover and/or height of sagebrush.

Non-native invasive species can alter the native plant community composition and structure, resulting in diminished habitat quality for GUSG. Surface-disturbing activities (e.g., operation of heavy equipment to construct well pads, roads, pits and reservoirs; installation of pipelines and power lines; and the conduct of several types of vegetation treatments [e.g., prescribed fire, chaining]) can spread non-native invasive species. Cheatgrass (*Bromus tectorum*) is considered a threat to the overall population. Once established, cheatgrass outcompetes perennial graminoids and potentially increases fire frequency and spread (Whisenant 1990; Grahame and Sisk 2002). Establishment of a cheatgrass understory results in decline of food availability for GUSG and loss of cover for nesting or brood-rearing habitat (Gunnison Sage-Grouse Rangewide Steering Committee 2005). Other invasive plants may cause decline in habitat quality or quantity over the long-term, resulting from loss of native species diversity, nutrient cycling, or habitat composition, which would in turn affect population parameters for the species (Gunnison Sage-Grouse Rangewide Steering Committee 2005).

Pinyon pine (*Pinus edulis*) and juniper (*Juniperus* spp.) have become more established in sagebrush shrubland-dominated ecosystems over the last century, facilitated by fire suppression, livestock grazing, and climate change (Commons et al. 1999). Encroachment of conifer species, such as pinyon and juniper, into sagebrush ecosystems can cause habitat degradation for GUSG. Based on studies of sage-grouse, birds tend to avoid areas with pinyon-juniper encroachment, which can influence their behavior and survival rates (Coates et al. 2017) and result in reduced lek activity or lek abandonment, reduced habitat use surrounding pinyon-juniper woodlands, and reduced female survival and nest survival (USFWS 2019).

Livestock Grazing Management

Livestock grazing that results in the concentration of livestock or over-utilization of vegetation in sagebrush communities may impact sage-grouse and their habitats, including the reduction of sagebrush, grass, and forb cover which are essential for GUSG life history and survival (USFWS 2014).

Effects of grazing on sage-grouse are generally dependent on the timing, duration, and intensity of livestock grazing and can vary by vegetation productivity coupled with seasonal habitats (i.e., nesting and brood-rearing) for GUSG. Grazing before vegetation productivity may increase mortality of grasses and forbs, while the inverse (i.e., stimulate growth) may occur if livestock remove the standing dead vegetation later in the fall or winter. (Monroe et al. 2017). Therefore, grazing during the nesting and brood-rearing period can have direct impacts to vegetation and indirectly affect the availability of herbaceous cover and structure available for nesting and loss of food sources available for chicks and juveniles in brood-rearing habitat, potentially limiting recruitment in populations (USFWS 2019; Monroe et al. 2017).

Studies in Wyoming indicate that at landscape scales, grazing may have both positive and negative impacts on sage-grouse population trends. Monroe et al. (2017) found that effects were dependent on the timing and intensity of grazing. Sage-grouse populations in Wyoming

declined when grazing occurred in the early vegetative growth season at high levels, and increased when high-intensity grazing was applied in sage-grouse habitats later. At low grazing levels, effects of grazing on sage-grouse populations were minimal.

Additionally, common raven (*Corvus corax*), a known predator of GUSG and their eggs and young, occurrence increases in areas where livestock are present by up to 45 percent, which may be associated with the presence of subsidies such as water sources. Coates et al. (2016) noted that ravens are more likely to select areas near sage-grouse leks, although there was no association with this observation and livestock presence. Limiting livestock and artificial water sources around leks during nesting and brood-rearing and raven access to other anthropogenic subsidies may reduce exposure of breeding sage-grouse to predation by ravens (Coates et al. 2016) Predators, including ravens, are discussed further in Section 3.2.5.

Recreation

Recreation impacts on GUSG may include degradation of habitat characteristics in seasonal habitat types through development of recreation-related infrastructure such as parking areas or kiosks as well as the development of trails or roads. Recreation also may result in increased human visitation and anthropogenic noise or disruption near leks, potentially causing the abandonment of leks or nest sites. This may result in physiological stress, an increase in energy expenditure of individual GUSG, and potential reduction in survival (USFWS 2019). Recreation and some recreation developments may also lead to an increased presence of predators, such as ravens, which are attracted to human subsidies such as food and waste collection sites (Marzluff et al. 2021; Dinkins et al. 2021).

Travel and Transportation

Development of roads in GUSG habitat can result in direct habitat loss, mortality from collisions, fragmentation, seasonal movement barriers, introduction and spread of invasive species, and spread and facilitation of predators (USFWS 2014). Roads can provide corridors and opportunities for predators to enter habitats (USFWS 2014). Sage-grouse exhibit an avoidance of paved, high volume traffic roads (Carpenter et al. 2010; Aldridge et al. 2012) and avoid unpaved roads with high traffic levels (Holloran 2005; Tack 2009; Walker et al. 2007). Road use might be a better predictor of sage-grouse occurrence than road density (Tack 2009). Aldridge et al. (2012) found that GUSG were more likely to nest in areas with road densities less than 0.55 km/km^2 within a 6.4 km radius area.

Fluid and Solid Mineral Extraction

Impacts from management actions related to the Mineral Split-Estate, fluid minerals extraction and development, and solid minerals extraction and development are combined in this discussion based on the similarity of impacts to GUSG resulting from surface disturbance, noise, human presence, and habitat degradation. The development and extraction of fluid and solid minerals (e.g., oil and gas, geothermal, mineral extraction [sand and gravel, clays, and other

mineral mining], coal) and associated infrastructure (e.g., roads, pipelines, well pads) also result in the direct loss or degradation of GUSG habitat (USFWS 2014). Indirect habitat loss, avoidance of habitat areas, and degradation may come from fragmentation, noise, emissions, and human presence in GUSG habitat. Sage-grouse lek attendance may be affected by energy and mineral extraction development and ongoing production. Lek attendance was stable in areas with no oil and gas development, and significant declines were observed when well densities was greater than 4 wells/km^2 (Green et al. 2016). Multiple studies have identified the avoidance of oil and gas fields by sage-grouse (Aldridge and Boyce 2007, Carpenter et al. 2010, Doherty et al. 2006, Dzialak et al. 2012, Holloran et al. 2010, Holloran 2007) and other studies have identified declines in sage-grouse lek attendance as a result of energy development (Gregory and Beck 2014, Harju et al. 2010, Hess and Beck 2012, Holloran 2005, Walker et al. 2007).

Lands and Realty

For the purposes of this analysis, environmental consequences related to lands and realty management are combined with renewable energy due to similarity in impacts from ROW authorizations and subsequent infrastructure construction. Management actions may include ROW authorizations, designation of ROW exclusion or avoidance areas, disposals, and acquisitions. Impacts related to ROW authorizations may result from the construction of transmission or distribution electrical lines; wind turbines and associated infrastructure; solar development; and other related infrastructure for renewable energy. Construction may result in surface disturbance and direct loss of GUSG habitat. Indirect effects may include the fragmentation of or degradation of habitats adjacent to GUSG habitats.

Construction and presence of powerlines may impact GUSG, resulting in direct mortality by collision or electrocution and loss or destruction of habitat during construction (USFWS 2014). Transmission lines appeared to have a negative effect on lek use trends, nest-site selection, nest success, and brood success at distances up to 2.4 km (Kohl et al. 2019). Indirectly, powerlines may result in the increased presence of predators, such as raptors or common ravens (*Corvus corax*) because they offer perching opportunities (USFWS 2014).Where raven density was greater than 0.4 per square kilometer, negative impacts were observed in greater sage-grouse populations, including depressed population growth (Coates et al. 2020). Impacts of the action alternatives related to predators are discussed in more detail under Section 3.2.5.

Alternative A – (No Action – Current Management)

Under the No Action Alternative, Section 7(a)(1) consultation under the ESA would be required for site-specific actions. Range-wide management actions for GUSG would not be implemented, and therefore, would not be consistent across the GUSG range. Existing plans vary based on management action described for GUSG and are described further in this section.

Special Status Species Management

Under the No Action Alternative, GUSG and their habitats would continue to be managed on BLM lands in accordance with the existing 11 RMPs that overlap GUSG range. All of these plans have objectives to manage GUSG habitats, sagebrush habitats, and/or other sensitive species and their habitats.

Four of the 11 plans have habitat designations for GUSG that generally describe important seasonal habitats for GUSG. Eight of the plans do not incorporate identification of seasonal or habitat areas for GUSG. Under the No Action Alternative, habitat management areas would not be incorporated rangewide on BLM-managed lands.

Eight of the 11 plans have habitat objectives that are intended to improve or conserve GUSG habitat in special management areas. Objectives in the plans range from overarching habitat and vegetation management or restoration objectives to specific objectives to protect or restore GUSG habitats. Under the No Action Alternative, restoration, and enhancement of GUSG habitats would continue to be managed in accordance with the existing land-use plans. Habitat restoration and management implemented as part of existing plans would have overall beneficial impacts to GUSG and their habitats; however, there would be no rangewide standardized habitat improvement or maintenance objectives established on BLM lands across the GUSG range.

Existing land use plans do not have measures to evaluate habitat conditions or to complete HAF analyses for GUSG seasonal habitats. BLM units implement habitat monitoring of GUSG habitats in accordance with BLM IM 2022-056, *Gunnison and Greater Sage-Grouse (Including the Bi-State Distinct Population Segment) Habitat Assessment Policy*; however, monitoring objectives for GUSG in accordance with recent BLM guidance are not part of existing decisions at the field office level. Under the No Action alternative, monitoring of GUSG habitats would be conducted at the field office level. Implementation of updated BLM IMs would not be formalized in an RMP-level decision under the No Action alternative.

Results of habitat monitoring showing the percent of monitoring locations meeting key habitat indicators for GUSG habitat is presented in Section E.2 in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*. Under the No Action Alternative, the percentage of monitoring locations meeting key indicator standards for GUSG habitat suitability are expected to stay the same as current levels.

Under the No Action Alternative, there are no plans that implement disturbance or density caps for anthropogenic disturbances in GUSG habitat or require compensatory mitigation. However, the Tres Rios Field Office RMP requires that projects in occupied habitat be designed to mitigate or avoid the direct or indirect loss of habitat.

Lek buffers are identified for 5 of the existing BLM plans. Plans vary based on the size and purpose of the management within the buffers. Some buffers are used for No Surface Use

restrictions, while some buffers are used to apply seasonal timing limitation for anthropogenic disturbance during critical life history periods:

- 0.6-mile buffer for No Surface Use applied in the Moab Field Office RMP, Monticello Field Office RMP, Tres Rios RMP, and Gunnison RMP;
- 4.0-mile buffer for surface use restrictions for certain above-ground structures in the Moab RMP and seasonally in the Uncompahgre Field Office RMP;.

When applied to the decision area, approximately 128,900 acres of BLM-managed lands are within an applied buffer distance of a GUSG lek. Under the No Action alternative, lek buffers would not be consistently applied rangewide.

Vegetation

Under the No Action Alternative, vegetation management and restoration would be guided by existing land use plans. Each of the 11 RMPs establishes vegetation management objectives as they relate to specific vegetation types, such as sagebrush ecosystems and riparian areas. Some RMPs include management objectives for sage-grouse seasonal habitats or to minimize fragmentation of habitats; however, under the No Action Alternative, management objectives as they relate to sage-grouse habitats would not be uniformly implemented across the range of GUSG.

Management actions for the treatment, monitoring, and control of invasive species would be implemented in accordance with existing land use plans. Current management actions for invasive species do not specifically account for impacts to or management of GUSG habitats; however, it is likely that on-going monitoring and treatment of noxious weeds has beneficial impacts to GUSG habitats.

Under the No Action Alternative, vegetation management, including habitat restoration and management of invasive weed species, would be implemented by the BLM units.

Livestock Grazing Management

Under the No Action Alternative, livestock management, grazing permits, and range improvements would continue to be managed by the 11 existing land-use plans. All existing plans include evaluation or monitoring objectives to identify whether grazing allotments are achieving BLM land health standards. The Tres Rios Field Office RMP requires the incorporation of the GUSG RCP Guidelines.

Grazing in the decision area would continue at current levels on BLM-managed lands under Alternative A, subject to meeting state standards for rangeland health. Impacts to GUSG would be the same as those described in effects common to all alternatives.

Recreation

Under the No Action Alternative, recreation and recreational developments would continue in accordance with existing authorization and management actions implemented by the 11 existing plans in the decision area. Most of the plans include seasonal restrictions for protecting GUSG and their habitats or have seasonal restrictions for big game that would also benefit GUSG habitats where their seasonal habitats overlap. There are 12 SRMAs and 6 ERMAs that overlap OHMA and UHMA in the GUSG populations. Tables 3.15.3 and 3.15.4 in Section 3.15, *Recreation*, provide details and acreages of SRMAs and ERMAs by population and in relation to OHMA and UHMA. Crawford and Dove Creek populations do not overlap with SRMAs or ERMAs. In areas where SRMAs or ERMAs overlap with OHMA and within a distance of leks, recreation may result in impacts to GUSG, such as disturbance to lekking birds and degradation of habitats, similar to those described in effects common to all alternatives.

Timing limitations for travel on roads are implemented in four of the 11 BLM management units. These seasonal travel limitations are discussed in the Recreation section under Section 3.11.3.2. Seasonal closures of these roads are directly related to GUSG lekking season for Gunnison (between March 15 and May 15) and for other wildlife for CSCSM and Piñon Mesa (between December 1 and May 15 and March 1 and June 30, respectively). These limitations limit the number of visitors and recreational use in the vicinity of the closures and, therefore, limit the potential for anthropogenic noise or disturbance associated with recreational use in GUSG habitat.

Special Recreation Permits would continue to be issued per the guidance in the existing RMPs. The BLM currently considers SRPs on a case-by-case basis to minimize impacts to resources and resource values within the BLM units. Management actions under this alternative for SRPs include restrictions on the types of uses allowed; for example, restrictions on motorized events or races. Stipulations for SRPs issued by BLM units include measures to protect lands and resources. Three plans include measures directly related to reducing or eliminating impacts to GUSG through timing limitations: Monticello, Moab, and Gunnison. Current measures in SRPs issued include measures to avoid or minimize impacts to GUSG through planning, siting, timing, and consultation with the USFWS; however, conditions or stipulations for protecting GUSG are not consistent rangewide for the species.

Travel and Transportation

All existing plans have management actions related to travel designations; however, only two plans (Gunnison Gorge NCA RMP and Gunnison Resource Area RMP) have travel designations that considered impacts to GUSG. Most plans also have management actions that frame how existing routes are retired and reclaimed and how new routes are established. Approximately 85 percent of the decision area is designated as limited to existing routes. Under the No Action Alternative, management of travel and transportation would continue to be implemented by individual BLM plans.

Fluid and Solid Mineral Extraction

Impacts resulting from fluid and solid mineral extraction will be the same as those common to all alternatives. Under the No Action Alternative, development of fluid and solid minerals would occur in accordance with existing land use plans within existing leases. Currently, existing fluid mineral leases only occur in Dry Creek Basin in the Tres Rios Field Office and in the Monticello Population in Utah's Monticello Field Office. There are no other existing fluid mineral leases in occupied habitat. Twenty percent of the mineral estate in the decision area would remain closed to fluid mineral leasing under current conditions, and up to 15 percent of the mineral estate would be subject to existing NSO restrictions. Under the No Action Alternative, 6 percent of OHMA would be closed to leasing and 18 percent of OHMA would be subject to NSO restrictions.

Under the No Action Alternative, approximately 506,190 acres of OHMA and 322,300 acres of UHMA in the decision area are open to solid mineral entry. Existing withdrawals include 50,570 acres of OHMA and 81,240 acres of UHMA. Approximately 284,00 acres of GUSG habitat are open to consideration for leasing for non-energy solid leasable minerals materials and 66,940 of GUSG habitat are closed to leasing. Development of infrastructure and mineral extraction would be subject to Conditions of Approval issued by BLM units.

Lands and Realty

Impacts resulting from authorization of ROWs and renewable energy development are described in effects common to all alternatives. Under the No Action Alternative, approximately 41,570 acres of BLM-managed lands in the decision area are exclusion areas for ROW authorizations and 82,960 acres are ROW avoidance areas. Current utility corridors are designated for 63,530 acres in OHMA and 33,710 acres in UHMA.

Areas of Critical Environmental Concern

Under the No Action Alternative, there are currently four ACECs in the decision area that include management actions to protect GUSG and relevant and important values or overlap with GUSG habitat. These ACECs are managed by the Grand Junction Field Office, Uncompahgre Field Office, and Gunnison Field Office:

- Rough Canyon ACEC
- Gunnison Sage-Grouse ACEC/IBA
- West Antelope Creek ACEC
- South Beaver Creek ACEC

These ACECs would be managed in accordance with current management actions and stipulations as described in existing land use plans. Specific management actions in Rough Canyon ACEC include provisions to avoid impacts to USFWS-listed species and their habitats. In West Antelope Creek special management for GUSG includes a 0.25-mile NSO buffer on

GUSG leks for fluid minerals and restrictions on mineral estate disposal applied to a 0.25-mile buffer of GUSG leks. There are no current management actions in the South Beaver Creek ACEC specifically related to GUSG and their habitats because this ACEC was designated to manage skiff milkvetch, a sensitive plant species. Current management actions prohibit chemical spraying within the ACEC and therefore prevent feasible control and treatment of invasive cheatgrass, which is a threat to GUSG habitat. The Gunnison Sage-Grouse ACEC/IBA was established to protect GUSG and their habitats in the Gunnison Gorge NCA. In general, management of the ACECs provide beneficial impacts to GUSG and their habitats. No new ACECs would be established.

Action Alternatives

Special Status Species Management

For all action alternatives, the BLM would establish HMAs (e.g., OHMA and UHMA). OHMA and UHMA are defined the same for each alternative; however, management objectives differ between the action alternatives. Under all action alternatives, objectives would include maintaining and improving habitat quantity, quality, and connectivity; however, under Alternative B, D, and E, objectives would also include management for connected sagebrush habitat.

Under Alternative B, there would be no habitat exception criteria for designated OHMA and UHMA. Alternatives C, D, and E would allow for exception criteria for OHMA and UHMA designations (and for LCMA under Alternatives D and E). Allowing for exception criteria under Alternatives C, D, and E may allow for surface disturbance or disruptive activities to occur in those HMAs if exception criteria are granted. Exception criteria would include field-based, site-specific, assessments of OHMA or UHMAs and NEPA analyses that would consider impacts to GUSG and their habitats. Exception criteria would only apply to site-specific project-level actions. Alternative B would provide the greatest conservation benefit to GUSG because OHMA and UHMA would not grant exceptions with the designated habitat management areas, and thereby, likely decrease subsequent development. Implementation of exception criteria and subsequent analysis for impacts to GUSG and their habitats would result in avoidance of any potential direct or indirect effects on GUSG and their habitats.

Under Alternative E, occupied GUSG habitat in the Gunnison Basin would be further characterized based on the presence of seasonal habitats, defined as Tier 1 and Tier 2 habitats. The CCA defines Tier 1 habitat as those areas identified using a Habitat Prioritization Tool and typically include two or more overlapping seasonal habitats and minimal development. Tier 2 habitats are those areas identified through the Habitat Prioritization Tool and include more fragmented areas on the landscape. Refer to the CCA for more details (Appendix K). Management actions would be applied to achieve net gain of habitat and reduce fragmentation

in Tier 1 habitats and to avoid fragmentation or habitat loss in Tier 2 habitat in the Gunnison Basin only.

Under all action alternatives, the BLM would implement evaluation and monitoring of GUSG mid-scale and fine-scale habitats using the HAF, BLM Implementation Guidelines, and the Habitat Indicators Table. This monitoring framework would be applied to OHMA in Alternatives B, C, and D, and to UHMA for Alternatives B, and D. Under alternative C, monitoring would only be conducted in OHMA. For Alternative E, the RCP Habitat Guidelines data collection protocol would be implemented per the CCA. Implementation of a rangewide, uniform monitoring program would benefit GUSG and their habitats because habitat indicators could be monitored throughout the species' range through standardized data collection. Subsequent management actions for habitat management, restoration, or protection could be implemented across the species' range. Alternatives B, D, and E would provide greater conservation benefit because UHMAs would also be monitored in accordance with BLM standards.

Existing conditions related to the percentage of monitoring locations that meet habitat suitability indicators for all GUSG populations are reported in Section E.2 in Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*, for all GUSG populations. Key indicators for habitat suitability include sagebrush cover, perennial grass cover, and perennial forb cover. Under Alternative B, the percentage of monitoring locations meeting key indicator thresholds in OHMA and UHMA for GUSG populations would likely increase, because management actions proposed under this alternative include the greatest amount of restrictions to surface uses that may result in the loss of sagebrush or perennial grass and forb cover. Under Alternative C, the percentage of monitoring locations meeting suitability indicator thresholds is likely to stay the same or decline, because management actions proposed under this alternative may allow more development and surface disturbance in GUSG habitats than the other action alternatives. The percentage of monitoring locations meeting suitability indicator thresholds is likely to stay the same or increase under Alternative D. Alternative D proposes surface use restrictions in OHMA and UHMA, but not to the extent to that is proposed under Alternative B. Under Alternative E, the percent of monitoring locations in the Gunnison Basin is likely to stay the same or increase.

For Alternative C, a density cap is proposed for OHMA and UHMA. The density cap would be applied to populations such that the density of energy and mining facilities do not exceed 1 per 640 acres. In Wyoming, lek attendance by male greater sage-grouse is negatively influenced by well densities higher than 1 per 699 acres (Holloran 2005). Harju and others (2010) noted that when well pad densities were greater than 1.5 well pads per square kilometer, male greater sage-grouse attendance at leks was 13 to 74 percent lower than for leks without infrastructure. Where well densities were greater than 3.09 well pads per square kilometer, lek attendance was between 77 and 79 percent lower. The number of active leks also declines with increasing density of oil and gas wells (Doherty et al. 2010). Due to site-fidelity, adult female sage-grouse

will continue to nest in the same nest areas regardless of the level of development in those areas (Holloran 2005). In addition to the loss of nesting habitat, sage-grouse experience decreased survival, increased predation, and lower fecundity. These factors all lead to observed lek abandonment in natural gas fields (Holloran et al. 2007). While oil and gas development in GUSG range is not as prevalent a threat as in GRSG habitats, oil and gas development is likely to occur in the Monticello population, Dove Creek population and the Dry Creek subpopulation of the San Miguel population (USFWS 2019). Implementation of density caps under Alternative C would result in beneficial impacts to GUSG and their habitats. Under Alternative C, density caps would be implemented in 650,120 acres of OHMA and UHMA.

Implementation of a surface disturbance cap for GUSG habitat is proposed under all action alternatives. Studies have indicated that over 90 percent of seasonal use locations are typically in areas that had less than 3 percent disturbance within 1,000 meters (Kirol et al. 2020, Walker et al. 2021). Walker and others (2021) found overall that breeding and wintering females also selected locations that were less disturbed, reclaimed, and had less overall anthropogenic disturbance. Recommended disturbance for GRSG seasonal habitats ranged from 1.8 percent anthropogenic surface disturbance in breeding habitat to 3.5 percent total anthropogenic surface disturbance in winter habitat to minimize impacts to GRSG (Walker et al. 2020).

All surface disturbance caps would be calculated regardless of land ownership, but would only be implemented on BLM-managed surface or mineral estate. Under Alternative B, surface disturbance caps of 1 percent of OHMA and UHMA by population would be implemented. Under Alternative C, a 3 percent disturbance cap would be implemented for OHMA for each population. Alternative D would include a 3 percent disturbance cap for UHMA and a 2 percent disturbance cap for OHMA. For Alternative E, UHMA disturbance caps would be the same as Alternative D. For OHMA in Alternative E, for the Gunnison Basin, the CCA guidelines for minimization measures for infrastructure would be applied, but no surface disturbance cap in OHMA would be implemented.

Surface disturbance estimates range from 0.86 percent (Piñon Mesa) to an estimated 2.55 percent (Poncha Pass) of the population areas. Although surface disturbance estimates may be refined during implementation-level analysis and as a result of habitat restoration, based on current estimates, only two population areas (Crawford OHMA and Piñon Mesa UHMA) would have capacity for additional surface disturbance without exceeding the cap of 1 percent under Alternative B. Under Alternative D, all population areas except Poncha Pass OHMA have capacity for additional surface disturbance. Under Alternative C, additional anthropogenic surface disturbance would be possible in all population areas up to the proposed 3 percent cap. Alternative B would provide the greatest conservation benefit to GUSG and their habitats because it would place the lowest restriction (1 percent) on surface disturbance caps in OHMA and UHMA. Alternatives D and E would provide similar benefits, but would allow for more development in OHMA and UHMA than Alternative B. Of the action alternatives, alternative C

would provide the least benefit to the species' because it would allow the most surface disturbance under all the action alternatives.

The BLM proposes implementation of minimization criteria for HMAs under all action alternatives; however, which HMAs these apply to differ by alternative. Minimization criteria would apply to all surface-disturbing activities and would allow for some surface use in GUSG HMAs in consideration of other management actions proposed under the action alternatives, including lek buffers, timing limitations, and disturbance caps and biophysical characteristics of the location to ensure avoidance of impacts to GUSG habitats. Under Alternatives B, D, and E, minimization criteria would be applied in OHMA and UHMA. Alternative C would implement minimization criteria in OHMA only. Alternatives B and D would provide the greatest conservation benefit considering implementation of minimization criteria, because the largest area would be subject to minimization criteria during implementation-level decisions. Alternative E would apply minimization criteria only in OHMA and UHMA in the Gunnison Basin. Alternative C would provide the least conservation benefit because it would apply and implement minimization criteria only in OHMA.

Compensatory mitigation for third-party actions authorized on BLM lands would be implemented under all action alternatives. The highest mitigation ratio is 4:1 and would be applied to OHMA and UHMA under Alternatives B and D. Alternative C would apply a 3:1 mitigation ratio to OHMA. Under Alternative E, compensatory mitigation in the Gunnison Basin Population would be applied in accordance with the existing CCA in OHMA, where mitigation objectives would be to avoid net loss in Tier 2 habitats and net gain in Tier 1 habitat. Compensatory mitigation would provide a conservation benefit for GUSG when implemented. Alternatives B and D would provide the greatest conservation benefit, followed by Alternative C and E.

Vegetation

The BLM proposes habitat management and restoration objectives to improve sagebrush habitats for GUSG in order to achieve goals established by the USFWS in the *Recovery Implementation Strategy* for all action alternatives. Implementation of vegetation treatments, including sagebrush vegetation treatments, conifer removal, habitat enhancement or restoration, and invasive weed management, differs between the alternatives by the types of vegetation treatments that would be authorized and in which HMAs vegetation treatments would be prioritized or applied.

Alternative B would focus vegetation treatments for habitat areas in OHMA, UHMA, LCMA and Adjacent Non-habitat, and would generally apply the most conservative vegetation management actions. For example, surface disturbing management actions would not be authorized in HMAs; seed mixes authorized in HMAs would not include any non-native species; and weed treatment actions would only include spot-treatments. Utilizing only spot treatments of noxious weeds may limit the acreage of weed treatments authorized under Alternative B

when compared to using other broadcast methods, but would reduce the potential for overspray and impacts to desirable vegetation outside of the treatment area. Alternatives C, D, and E could authorize vegetation treatments that may be considered more disturbing of potential GUSG habitats or the landscape at large, such as those that may result in surface disturbance, boom/broadcast weed treatments, or prescribed fire. Surface disturbing activities in sagebrush habitats may result in impacts similar to those described previously for surface disturbance caps. Vegetation management actions would be prioritized in OHMA and UHMA under Alternative C, and in OHMA, UHMA, and LCMA for Alternatives B, D, and E.

Alternative B would prioritize the most areas for vegetation treatment to achieve habitat restoration and enhancement and would apply the most conservative methods for vegetation treatment so as not to result in additional impacts in HMAs. Alternatives D and E would prioritize the same acreage for vegetation treatments, but would be less than Alternative B, and may authorize the use of surface-disturbing treatments to achieve results. Alternative C would prioritize the least amount of acreage for vegetation treatments. Alternatives C, D, and E would provide the most flexible array of options to land managers to achieve habitat objectives. For example, for re-seeding purposes, land managers may select non-native (but non-invasive) cultivars to achieve habitat structure or cover objectives if native cultivars are not available. Section 3.6, *Vegetation*, reports the amount of sagebrush that could be targeted under each Alternative (USGS 2020). These acreages are based on GIS analysis, and all acres may not be suitable based on ecological site potential to meet GUSG habitat criteria; however, illustrates the acreages that may be available for vegetation treatments under each action alternative.

Livestock Grazing Management

Under the action alternatives, the BLM would implement measures to reduce the effect of livestock grazing on GUSG habitats, but to various degrees. Impacts to GUSG resulting from livestock grazing under the action alternatives are the same as those described generally in effects common to all alternatives. Sub Alternative B1 would likely result in the highest conservation benefit for the species, because OHMA and UHMA would be unavailable for livestock grazing, and grazing permits would not be renewed or issued and would eventually expire. Grazing would still be authorized in OHMA and UHMA under the remaining action alternatives, including Sub Alternative B2. Seasonal limitations described under B2 would avoid impacts to lekking, nesting, and brood-rearing GUSG in OHMA; however, would authorize grazing in OHMA during other times of the year. Livestock grazing outside of the timing limitation and within UHMA may result in impacts to GUSG seasonal habitat composition and structure. Implementation of grazing restrictions proposed under Alternatives B1 and B2 may result in the concentration of livestock on private lands or other federally managed lands. Increases in concentration of livestock and changes to grazing patterns in these areas may result in impacts to the quantity and quality of sage-grouse habitat. Impacts may be greater in areas where seasonally important GUSG habitats occur, such as the Gunnison Basin, where private

lands comprise a large portion of wet-meadow habitats important to nesting and brood rearing for GUSG.

Under Alternatives C and D, grazing would be authorized in OHMA and UHMA. Impacts to GUSG habitat from livestock grazing may occur during periods of authorized grazing use as outlined under the applicable grazing permit, including during breeding/lekking and brood-rearing seasons where herbaceous cover is vital to GUSG for protective cover and as food resources. The BLM would implement adaptive management strategies to monitor GUSG habitat indicators and guidelines in grazing allotments, identify areas that are not meeting habitat guidelines or land health standards and implement changes to livestock grazing to make progress toward meeting land health standards and habitat guidelines. Implementation of adaptive management strategies may reduce impacts to GUSG habitats from grazing over the long-term; however, in some cases, it may be difficult to reestablish habitat suitability in a biologically appropriate time frame.

Recreation

Under all action alternatives, management activities would be implemented to avoid, minimize, or compensate for recreational activities that may impact GUSG and their habitats, including indirect impacts that may result in fragmentation or loss of habitat function. Impact mechanisms to GUSG and their habitats resulting from recreation would be the same as those described in effects common to all alternatives. Under Alternative B, no new SRMAs, ERMAs, or BCAs would be authorized within OHMA, which would be the most restrictive of the action alternatives. Because no additional recreation management areas would be authorized, Alternative B would provide the most conservation benefit for the species when compared to the action alternatives. Alternative D would allow for new SRMAs or ERMAs in OHMA; however, would prioritize uses that are compatible with conservation of GUSG and their habitats. Impacts resulting from recreation in new SRMAs or ERMAs in OHMA would be avoided or minimized based on management emphasis, while balancing recreational use. Alternative D would provide conservation benefit to the species related to the designation of new SRMAs and ERMAs; however, not to the extent as Alternative B because SRMAs and ERMAs could still be designated and all impacts to GUSG and their habitats may not be avoided.

Special Recreation Permits could be authorized in each of the action alternatives and would include provisions for limiting the size of groups and activities authorized under SRPs. Under Alternatives B, C, and D, SRPs would not be authorized that have the potential to adversely affect GUSG or GUSG habitat.

Actions proposed under each alternative differ based on where actions would be implemented (e.g., in which HMAs), and which restrictions on infrastructure would be implemented. Alternative B would be the most restrictive and would provide the greatest conservation benefit to GUSG. Under this alternative, new recreation-related infrastructure would not be authorized in OHMA and UHMA, which would prevent additional acres of surface disturbance

in OHMA and UHMA and reduce new anthropogenic disturbance on BLM-managed lands. Alternatives C and D would allow for some recreation infrastructure. Alternative C proposes to avoid small-scale infrastructure in OHMA, while Alternative D would place restrictions on the size and types of infrastructure that would be authorized in OHMA and UHMA such that infrastructure is designed to minimize impacts to GUSG and their habitats. Under Alternative E, recreation and associated infrastructure would be implemented in accordance with the existing CCA, and impacts to GUSG and their habitats would be the same for Gunnison Basin population as for the No Action alternative.

Travel and Transportation

Under all Alternatives, the BLM is proposing actions that would avoid or minimize impacts from roads and travel/transportation on BLM-managed lands. Impacts to GUSG from roads and associated vehicle travel would be the same as those described in effects common to all alternatives. Alternative B would prohibit OHV use in OHMA, resulting in the closure of 391,490 acres of GUSG HMAs to OHV use. Under Alternatives C and D, OHV closed areas would remain closed. All other areas would be OHV-limited, except under Alternative C, which would open areas that cannot functionally support sage-grouse habitat. Under Alternatives C and D, OHV use may cause loss of habitat functionality if noise or disturbance from OHVs occurs in occupied habitats, causing alterations to GUSG life behaviors, such as lekking, or avoidance of areas and abandonment of nests.

Alternative B would close and rehabilitate all BLM-managed routes in OHMA and UHMA during implementation-level planning, which would be the most restrictive for road closures, and likely offer the greatest conservation benefit for GUSG. Impacts under Alternative C would be the same as the No Action Alternative. Alternative D would result in reduction of the number of BLM managed routes in OHMA through closure of redundant routes; however, would not result in the same level of conservation benefit as closing all BLM-managed routes as described in Alternative B. Alternative E would implement the 2010 Gunnison Travel Management Plan for the Gunnison Basin Population, which prioritizes actions related to road closures and rehabilitation for Tier 1 habitats as described in the CCA.

The BLM proposes measures to limit disturbance to GUSG and their habitats during future implementation-level planning and analysis for travel and road management on BLM-managed lands. Alternative B would result in the most restrictions to travel, including reducing or eliminating permitted activities on routes, prohibiting authorization of new recreational trails, and relocation of existing trails. Reducing the presence and use of routes or trails would minimize impacts to GUSG, reducing indirect habitat loss and potentially avoiding the alteration of seasonal behavior patterns. Alternative C would provide the least restrictions to travel and routes/trail development of all the action alternatives. While new trails or routes would be analyzed through site-specific NEPA and would utilize the Designation Criteria found in 43 CFR 8342.1(b) to minimize impacts to wildlife and endangered species, this alternative does not

otherwise provide guidance to restrict permitted uses for the purpose of benefitting GUSG. Seasonal use restrictions under this alternative may avoid or minimize impacts to GUSG during the most sensitive times of the year; however, use of and potential development of routes may result in indirect habitat impacts or loss of functional habitat from noise, disturbance, or introduction of invasive species.

Alternative D provides conservation benefits to GUSG, but not to the extent of Alternative B. Limitations on permitted use volumes, seasonal limitations, and prioritization of avoidance of new routes/trails in OHMA would avoid and minimize many impacts to GUSG. This alternative directs development of trails to existing ERMAs or SRMAs, which are areas previously identified for recreation management, and outside of OHMA unless absolutely necessary. Alternative D would avoid or minimize many impacts to GUSG and their habitats from travel, roads, and routes through site-specific analysis of actions in context and application of seasonal limitations.

Alternative E would implement seasonal restrictions on routes on BLM-managed lands in accordance with the CCA. No additional restrictions on routes or travel management would be implemented in the Gunnison Basin Population, which may result in an increase in trails or routes in all HMAs in the Gunnison Basin Population, and the potential for loss or fragmentation of GUSG habitats. Increased road or trail density on the landscape may result in functional habitat loss.

Fluid and Solid Mineral Extraction

Under Alternative B, new leases and reinstatement of existing leases upon termination would be prohibited in OHMA and UHMA. Under the remaining alternatives, new leases may be considered in OHMA and UHMA following termination of existing leases. Alternative B would result in the most restrictions on leases, and eventually approximately 960,200 acres of BLM-managed lands and mineral estate would be closed to mineral leasing. Impacts resulting from mineral exploration and extraction would cease over the long-term, resulting in reduction and eventual elimination of impacts from fluid and solid mineral extraction to GUSG as described in effects common to all alternatives.

During fluid mineral development implementation, surface occupancy in OHMA would be precluded and seasonal timing limitations would be implemented for all fluid mineral activities under all alternatives. Alternative B would extend these protections to UHMA and for Adjacent Non-habitat under certain conditions. Alternative B would result in the most protections for GUSG because limitations would be applied to all potential habitat areas regardless of occupancy or current function.

Alternative B, D and E would prohibit geophysical exploration in OHMA. Geophysical exploration would also be prohibited in UHMA under Alternative B and would be allowed in Alternatives D and E under certain conditions that would reduce impacts to GUSG habitats. Geophysical exploration would be authorized under Alternative C subject to conditions that would require low-impact methods and application of timing limitation, disturbance, and

mitigation. Alternative B would result in the closure of approximately 960,200 acres across the decision area to exploration with few exceptions. Alternative D would result in the closure of OHMA only (approximately 556,760 acres) and restrictions to geophysical exploration in approximately 403,440 acres (UHMA). Alternative C would allow for geophysical exploration in OHMA with restrictions. There would be no closure of HMAs under Alternative C; however, conditions would be applied to minimize and mitigate impacts to GUSG and their habitats.

In general, Alternative B would provide the most restrictions for fluid and solid mineral leasing and extraction on BLM-managed lands and the Federal mineral estate, which would result in the closure of up to 960,200 acres to fluid mineral development and closure of up to 2,450,140 acres to solid mineral development. Alternatives, C, D, and E restrict mineral leasing and extraction to varying degrees, and provide considerations for siting mineral development components (e.g., pipeline compressors) based on analysis of impacts to GUSG and their habitats. Alternative C would only apply restrictions to OHMA and UHMA. Alternative D would apply restrictions to OHMA, UHMA, and Adjacent Non-habitat areas. Fluid mineral leasing under Alternative D would be closed in areas with no or low mineral potential, which would include the majority of GUSG population areas.

Lands and Realty

Under all action alternatives, the BLM is proposing management actions that would restrict ROW authorizations in HMAs to protect GUSG. Subsequent development of ROWs and construction of utility lines may result in impacts to GUSG and their habitats. Impacts would be the same as those described in effects common to all alternatives Under Alternative B, the BLM would manage all OHMA and UHMA as ROW exclusion areas, with few exceptions, resulting in the closure of 492,540 acres of GUSG HMAs on BLM-managed lands, with some exceptions. Under Alternative D, areas of OHMA and UHMA within 1-mile of active and inactive GUSG leks would be managed as ROW exclusion areas, with few exceptions. Approximately 62,090 acres of OHMA and UHMA would be managed as ROW exclusion areas under Alternative D. Areas in OHMA and UHMA outside of a 1-mile buffer of active and inactive leks, approximately 429,950 acres, would be ROW avoidance areas under Alternative D. There would be no ROW exclusions implemented under Alternative B; however, OHMA would be managed as a ROW avoidance area, with exceptions granted if there would be no adverse impacts to GUSG and GUSG habitat from authorization and subsequent development of ROWs. Rights of Way would be subject to terms and conditions described in the CCA under Alternative E.

The BLM proposes to manage HMAs to limit wind and solar energy development to reduce potential impacts to GUSG and their habitats. Wind and solar energy development may result in surface disturbance and the construction of transmission lines, impacts of both of which are described under effects common to all alternatives. Wind energy turbines may also cause impacts to GUSG. Under Alternatives B, D, and E, OHMA and UHMA would be exclusion areas for wind or solar energy development, resulting in the elimination of 650,120 acres in

HMAs for wind or solar development on BLM-managed lands. Under Alternative C, OHMA would be managed as an exclusion area, and UHMA as an avoidance area for wind or solar energy development, resulting in the elimination of 391,490 acres to wind or solar energy development and the restriction of wind development on 258,630 acres.

Areas of Critical Environmental Concern

Under action Alternatives B, and D, the BLM proposes the designation and management of new ACECs. Alternative B would result in the designation of 12 new ACECs and establish ACECs across all satellite populations and habitat areas. Alternative B would result in the highest conservation benefit for GUSG because new ACECs would be established where development would be excluded or restricted, and ACECs would be managed specifically for GUSG and their habitats. Under Alternative D, 4 new ACECs would be designated, with 3 in the Gunnison Basin population and 1 in the San Miguel population. These ACECs would be managed for high-quality GUSG habitat needs and designate approximately 58,520 acres across the 2 population areas. Appendix D, *Areas of Critical Environmental Concern Report,* provides details on each ACEC proposed under Alternative B and D.

The All GUSG Habitat Area ACEC and the GUSG Satellite Populations ACEC proposed under Alternative B would include all OHMA and UHMA in the decision area, which would provide protection and enhancement of GUSG habitat throughout its range. Management actions under this alternative would include the exclusion of ROWs; and the immediate or eventual closure to nonenergy mineral leasing, OHV use, livestock grazing, fluid mineral leases, and mineral disposal. Vegetation management in the proposed ACEC would only be authorized for wildlife habitat improvements or benefitting relevant and important values of the ACEC. The proposed management actions within the ACEC would result in the greatest conservation benefit to the species because GUSG threats resulting from resource uses would be restricted to the greatest extent. These two ACECs and the resulting management actions are not proposed under any other action alternatives.

Additional ACECs proposed under Alternative B, but not other action alternatives, include Northdale/Northdale Expansion ACEC, Kezar Basin ACEC, North Parlin ACEC, South Parlin ACEC, Ohio Creek ACEC, and Waunita ACEC. Management actions for these ACECs include surface use restrictions, timing limitations, livestock management, and restrictions to fluid and solid mineral leasing which reduce or eliminate threats and stressors to GUSG and their habitats, as described generally under effects common to all alternatives. Specific management actions are described in detail in the alternatives table in Chapter 2. These 6 ACECs would only be designated under Alternative B.

There are 4 ACECs that are proposed under both Alternative B and Alternative D – Dry Creek Basin ACEC, Chance Gulch ACEC, Sapinero Mesa ACEC, and Sugar Creek ACEC. Under Alternative B, 2 of the 4 proposed ACECs would be larger than the same ACECs proposed under Alternative D: the Dry Creek Basin ACEC (34,777 acres vs. 10,917 acres) and

Chance Gulch ACEC (22,661 acres vs. 13,147 acres). One of the proposed ACECs would be larger under Alternative D than Alternative B: Sapinero Mesa (16,744 acres vs. 17,214 acres). Sugar Creek ACEC would be the same under Alternative B and D. For ACECs proposed under both alternatives, Alternative B would include the most acres when compared with Alternative D.

Management actions and potential impacts for these 4 ACECs are described in detail in Section 3.15. In general, Alternative B would result in the greatest conservation benefit to GUSG because the most acres would be managed as an ACEC, including all OHMA and UHMA. Management actions under Alternative B also include the most restrictions on surface uses and other resource uses that may result in impacts to GUSG than those proposed under Alternative D. Alternatives A, C, and E would have the least conservation benefit to GUSG when compared to other alternatives because new ACECs to protect GUSG relevant and importance values for the species and their habitats would not be designated.

3.2.2.4 Conclusion

All of the action alternatives would result in greater restrictions of surface disturbance and disruption to GUSG and their habitats, resulting in the reduced potential for impacts from development, including loss of habitat, fragmentation, decreased lek attendance, decreased breeding success, and disruption to GUSG lifecycle behaviors. Of the No Action and action alternatives, Alternative B would provide the most conservation benefit to GUSG because the majority of OHMA and UHMA acres have been closed or restricted from other resource uses. Alternatives D and E offer the next most conservation benefit to GUSG because the alternatives close some acres of OHMA and UHMA to other resources and balance resource allocation within OHMA and UHMA by applying minimization measures. Alternative C provides the least conservation benefit to GUSG, when compared to Alternative B, D, and E, because it closes and restricts the least acres within OHMA and UHMA, does not designate any ACECs, but prioritizes management objectives and actions within OHMA.

All alternatives address management activities identified in the USFWS Recovery Implementation Strategy through BLM's identification and implementation of goals, objectives, and management actions (USFWS 2020).

3.2.2.5 Cumulative Effects

The cumulative effects analysis area for special status species is the decision area and the timeframe for the analysis is the life of this RMP Amendment, generally 10 to 15 years. Past, present, and reasonably foreseeable actions and conditions in the analysis area have affected and are likely to continue to affect GUSG and their habitats, including residential development, mineral exploration, industrial development (e.g., powerlines or ROWs), grazing, recreation, road construction, fires, land planning, vegetation treatments, and drought. These actions can

change, and have changed, habitat conditions in the analysis area. Under all action alternatives, impacts to GUSG would be reduced compared to the No Action Alternative through the application of surface use restrictions; timing limitations; closures to development, recreation, and motorized travel; conditions of approval for development; and monitoring.

Other planning efforts to manage threats to GUSG include cooperative actions with agencies, counties, organizations, landowners, and developers throughout the range of GUSG. These efforts have been applied at various spatial scales and on lands with various surface ownership, outside of BLM-managed lands. Some counties have land use regulations that guide or restrict development on private lands in GUSG habitats. These efforts are likely to continue for GUSG rangewide over the life of the RMP Amendment:

Colorado Efforts

- Gunnison Sage-Grouse Candidate Conservation Agreement - Gunnison Basin
- Candidate Conservation Agreement - Gunnison Sage-Grouse Conservation Plan: Dove Creek, Colorado
- Gunnison Sage-Grouse Rangewide Conservation Plan 2005
- Gunnison Sage-Grouse Rangewide Steering Committee
- San Miguel Basin Local Working Group
- Gunnison Basin Sage-Grouse Strategic Committee
- Crawford Area Local Working Group
- Dove Creek Local Working Group
- Piñon Mesa Gunnison Sage-Grouse Partnership
- Poncha Pass Gunnison Sage-Grouse Working Group

Utah Efforts

- Gunnison Sage-Grouse Rangewide Conservation Plan 2005
- Strategic Management Plan for Sage-Grouse 2002
- San Juan County Gunnison Sage-Grouse Working Group Conservation Plan
- Monticello-Dove Creek Local Working Group
- San Juan County Local Working Group

Additional BLM planning efforts in the analysis area are summarized in Table 3.1.1. Land use plans in development would likely not supersede management actions developed under this RMP Amendment in the decision area.

While agricultural and residential development is not a stressor to GUSG habitats on BLM-managed lands, approximately 271,000 acres, or 58 percent, of the GUSG range is privately owned. Conversion of GUSG seasonal habitat, especially sagebrush shrublands, may continue

rangewide on non-BLM managed lands under all alternatives. Residential development may result in habitat fragmentation in GUSG habitats, and the overall reduction in the size and availability of expansive areas of sagebrush habitats the species requires. Residential density greater than one housing unit per 0.5 mi^2 could result in declines in GUSG; however, this hypothesis does not factor in potential lag in response to changes in habitat (Gunnison Sage-grouse Rangewide Steering Committee 2005). Development may cause both direct loss of habitat and indirect loss of habitat through the loss of functionality resulting from increasing human disturbance, noise, predators, and weed invasion (USFWS 2014).

The 2014 listing decision provides an overview of human population growth projections for all GUSG populations, and residential development is expected to match the projected human population growth throughout the GUSG range. Between 1985 and 2014, human populations have increased by 58 percent in Colorado counties occupied by GUSG and 25 percent in Utah counties occupied by GUSG. Population forecasts project 60 percent population growth in Colorado counties and 14 percent population growth in Utah counties. Based on these projections and proportions of private land that could be developed, the USFWS provided an overview of the percentage of GUSG occupied habitats at risk for development. Rangewide, this is estimated to be approximately 35 percent of total occupied habitat, and varies among the GUSG populations between 18 percent of occupied habitat and 85 percent of occupied habitats at risk for development (see Table 6 in USFWS 2014).

Management actions related to surface use restrictions and vegetation/habitat enhancement on BLM lands would likely have a beneficial cumulative effect across the range, especially in consideration of the potential for development and agricultural conversion on private lands throughout its range. Planning efforts conducted by counties and local working groups for GUSG help to reduce threats from private lands development of GUSG.

Restrictions on livestock grazing on BLM-managed lands may result in the increase of livestock grazing on private lands, and the potential for increase in impacts to individual GUSG and their habitats on private lands resulting from grazing pressure. Runge et al. (2017) predict that restrictions of grazing on public lands by 50 percent may result in the loss of sage-grouse habitats on private lands in addition to predicted loss from other impacts.

The past development of roads and trails throughout GUSG range has resulted in the loss of habitat and indirectly, the loss of habitat function through increase in fragmentation and loss of connectivity. Management actions proposed under the action alternatives would likely result in fewer roads or trails in GUSG occupied habitats. Development of trails and roads on private or other lands is likely to continue in the future. Implementation of recommendations from the RCP and from working groups would likely reduce the impact to GUSG habitat from new roads or trails; however, these considerations may not be applied rangewide.

Oil and gas development in the analysis area is limited to areas in the Dove Creek, Monticello, San Miguel Basin and Crawford populations; the eastern portion of the Piñon Mesa population;

and the northern half and southeastern corner of the Gunnison Basin population (Gunnison Sage-Grouse Rangewide Steering Committee 2005). The majority of these areas are considered low potential for oil and gas reserves as discussed in Section 3.13.2, *Minerals*. Development of oil and gas resources in the analysis area has resulted in surface disturbance in GUSG range, and likely has contributed overall to the loss of habitat and fragmentation of contiguous GUSG habitat throughout its range. There are 222,290 acres in the decision area that are currently leased, 6,720 acres of which occur in OHMA and 38,460 acres of which occur in UHMA. The majority of those leased acres are held by production, meaning they are currently producing or receiving allocated production. Future development of oil and gas resources in the analysis area is likely to be limited based on surface use restrictions implemented as part of this planning process and through the CPW and Colorado Energy and Carbon Management Commission (ECMC) 1200 series rule effective as of January 15, 2021.

Solid mineral extraction has occurred historically in GUSG habitat, mostly associated with sand, gravel, and other hard rock mineral extraction. There are very limited coal reserves in GUSG range and no known coal mines in the analysis area. Sand, gravel, and other mineral mining activities may be sited within GUSG seasonal habitats adjacent to anthropogenic residential or municipal development. Mining activities at these locations has likely resulted in the loss of habitat and increase in anthropogenic disturbance in GUSG habitats. Future mineral mining activities are likely to be limited on BLM-managed lands; however, activities on privately owned lands in GUSG habitats may further contribute to the loss or degradation of GUSG habitats across the range.

ROWs would be processed and authorized throughout the analysis area. Under the action alternatives, ROWs on BLM land are likely to be limited to areas outside of OHMA. ROWs crossing private lands would not be subject to authorization restrictions proposed under the action alternatives, and may result in habitat impacts to GUSG. There have been no ROW authorizations or proposals for renewable energy projects within OHMA and UHMA for any of the BLM units in the decision area. Restrictions to renewable energy ROW authorizations on BLM lands would reduce GUSG habitat impacts from those types of activities; however, these may still be sited on private lands within GUSG habitat.

3.2.3. Issue 2: How would management actions under each alternative affect linkage-connectivity areas and Adjacent Non-habitat?

3.2.3.1 Analytical Methods and Assumptions

Indicators

- Acres of linkage-connectivity areas and non-habitat areas by population area

- Acres of existing surface disturbance by population area
- Acres of proposed management actions

Assumptions

- The occupied and unoccupied GUSG habitat reflects the current distribution of habitat and population of the species. These habitat areas combine the mapped habitat by CPW, in addition to the critical habitat designated by USFWS.
- The BLM will continue to apply conservation measures to manage and conserve the GUSG and its habitat and implement the USFWS recommendations for minimizing or avoiding adverse effects on GUSG or its habitat.
- The BLM's objective is to maintain and enhance populations and distribution of GUSG by protecting and improving sagebrush habitats and ecosystems that sustain GUSG populations.

3.2.3.2 Affected Environment

Linkage-connectivity areas are those areas that have been identified as potential areas that may facilitate movement of GUSG between populations and seasonal habitat areas. These linkage areas do not necessarily correlate with movement corridors or those areas that connect large blocks of habitat and are often narrow or linear in shape (RCP 2015). Linkages for GUSG are heterogeneous landscapes within the historical range of GUSG and comprise isolated patches of landcover types that are used by the species in its occupied range. Landforms and land uses also vary in linkage areas (Gunnison Sage-Grouse Rangewide Steering Committee 2005). The effectiveness of these linkages between population areas will depend on the ability of GUSG to disperse among isolated patches in the landscape. The ability for GUSG to use linkages may depend on landscape composition (e.g., landcover and associated vegetation types or habitat suitability), configuration (size and shape of linkages), and distance between habitat patches. Other factors that will influence how GUSG may use linkage-connectivity areas include the ability of GUSG to move through unsuitable habitat types, permeability of landforms, and predator presence/behavior in linkage areas.

As part of the HAF, the BLM prepares a mid-scale assessment for GUSG (Stiver et al. 2015). Unlike the fine or site-scale assessments in the HAF, the mid-scale descriptions are linked to bird dispersal capabilities in populations and subpopulation areas. For GUSG, this mid-scale assessment area would be the current rangewide distribution of GUSG occupied habitat. Suitability at the mid-scale assessment is based on the configuration of sagebrush or sagebrush associated vegetation patches as well as the existing land cover types and land use types (e.g., agriculture, anthropogenic disturbance, infrastructure). Generally, suitable landscapes for GUSG at the mid-scale would have connected mosaics of sagebrush shrublands that would allow for migration or movement between the population areas. In addition, anthropogenic disturbances,

such as transmission lines, oil and gas infrastructure, and renewable energy facilities, would be absent or limited across the landscape.

In 2022, the BLM Colorado State Office completed a mid-scale assessment for GUSG, which included an area of roughly 6.3 million acres and was completed using the geospatial methodologies described in the summary report (BLM 2022). The assessment found that approximately 13 percent of the mid-scale area was available habitat, 35 percent is unoccupied potentially suitable habitat, and 52 percent is non-habitat. The assessment concluded that connectivity between patches (i.e., populations) is minimal. There were four patches identified for the Gunnison Basin specifically which were found to have a potentially high degree of connectivity because they were only separated by major highways or subdivided by high voltage transmission lines. However, the next nearest patch with effective connectivity, based on this assessment, was in the San Miguel Basin population and would require a movement of roughly 111 kilometers by GUSG. Although this is a long distance for GUSG to travel between populations, there is potential that they could use associated vegetation types as linkage areas between populations or patches of habitat. However, roughly two-thirds of the area between existing patches was considered unsuitable for GUSG movement primarily to non-habitat or associated vegetation land cover types as well as existing habitat fragmentation. Overall, the mid-scale assessment determined that GUSG connectivity was unsuitable due to the lack of unavailable habitat patches, density of major roads, fragmentation between sagebrush patches, and minimal existing connectivity between occupied habitat patches.

The RCP presents potential linkage areas among the eight populations in Colorado and Utah. For this analysis, vegetation layers were derived from satellite imagery and the Utah Gap Analysis, and were selected for inclusion based on sagebrush communities and those that may have contained sagebrush historically (e.g., pinyon-juniper/sagebrush communities, agriculture). The resulting classified vegetation map was overlaid with existing occupied and unoccupied habitat polygons to illustrate areas between populations that may serve as linkage areas (Gunnison Sage-Grouse Rangewide Steering Committee 2005).

The BLM further refined linkage-connectivity areas using Circuitscape (Anatharaman et al. 2020). This analysis requires input user-defined parameters for species movement and landscape heterogeneity, permeability, and habitat suitability. For GUSG, the BLM selected vegetation parameters (e.g., sagebrush cover, associated vegetation cover) related to GUSG movements and existing anthropogenic disturbances (e.g., transmission lines, major roads, oil and gas, renewable energy) to model portions of the landscape that could be used by GUSG as linkage areas within populations (e.g., between occupied and unoccupied patches) and between populations. The linkage-connectivity areas include portions of mapped potential linkage within UHMA; however, for planning purposes the linkage-connectivity areas for implementing specific management decisions would only be those areas that fall outside of mapped UHMA (Map A.3). During implementation, field offices can use the entirety of the linkage-connectivity model to

help inform decision making or site-scale analysis. Appendix O, *Linkage-Connectivity Methodology*, provides additional methodology and details on this geospatial modeling analysis.

Adjacent Non-habitat areas are those areas that are adjacent to OHMA and UHMA that do not contribute to the annual life-cycle of GUSG. In general, these areas do not support the preferred vegetation structure or composition or other geophysical characteristics (e.g. slope) that are necessary components of suitable GUSG habitat. To identify Adjacent Non-habitat areas, the BLM applied a 4- or 1-mile buffer distance to OHMA and UHMA areas. These buffer distances correspond to conservation buffer distances that would capture both the potential dispersal distance of GUSG from a lek site to provide protection for nesting locations and areas in which resource uses could be managed in order to reduce impacts or disruption to GUSG in OHMA and UHMA areas. The USGS established conservation buffer distances for greater sage-grouse, in which the lower interpreted buffer ranged between 1.2 and 3.1 miles (Manier et al. 2014). For GUSG, the majority of seasonal use locations are located within 4 miles of a lek (Gunnison Sage-Grouse Rangewide Steering Committee 2005).

3.2.3.3 Environmental Consequences

Effects Common to All Alternatives

Impacts to GUSG resulting from resource uses are described generally in Section 3.2.2.3 – effects common to all alternatives, in which the general impact mechanisms for overarching resource uses are presented. While the previous issue in this section addresses impacts to GUSG habitat, this section presents impacts to GUSG and their habitats that may arise from management actions implemented in LCMA and Adjacent Non-habitat areas. LCMAs and Adjacent Non-habitat areas are, by definition, those areas that may not support all characteristics of suitable GUSG habitats; however, management actions implemented in those areas may result in indirect impacts to GUSG and their habitats. Development of oil and gas resources in LCMA or Adjacent Non-habitat may result in increased noise or human disturbance in adjacent occupied GUSG habitat, which may result in disruption to life history behaviors such as lekking or breeding or nesting. Increased anthropogenic disturbance and associated infrastructure may create opportunities for GUSG predators to expand their range.

Alternative A – (No Action – Current Management)

Under the No Action Alternative, LCMA and Adjacent Non-habitat areas would not be established. Linkage-connectivity areas and associated management actions to improve connectivity would be managed under existing land-use plans, which may include management actions that could disturb potential areas where GUSG disperse or have the potential to disperse. None of the current plans contain language pertaining to linkage or connectivity areas for GUSG or surrounding non-habitat areas; however, four of the 11 plans include buffers on leks to protect GUSG during breeding season and most plans include management actions to

maintain, manage, enhance, restore, or protect GUSG habitats or sagebrush. Several plans include habitat designations for breeding areas, seasonal use areas, and occupied/unoccupied habitat; however, these are not consistent throughout the decision area. Potential dispersal or linkage habitat and Adjacent Non-habitat areas would not be managed or protected for GUSG.

Resource uses in these areas may result in loss of or degradation to linkage areas, such as construction of roads, ROWs, oil and gas development, and mineral development. Discrete projects sited in linkage areas and Adjacent Non-habitat could have indirect impacts to GUSG and their habitats. Oil and gas facilities could increase noise, human disturbance, and traffic in linkage areas or Adjacent Non-habitat that could attenuate into occupied GUSG habitats. As described in Section 3.2.2.3 previously, anthropogenic disturbance, construction of facilities or tall structures, and development or roads could result in the increase of GUSG predators such as common ravens in areas adjacent to occupied habitats (see Section 3.2.4. for detailed discussion on GUSG predation under the alternatives). Increasing predator populations in these areas could result in increased predation pressure on GUSG in adjacent areas. Vegetation treatments may be authorized in linkage areas or Adjacent Non-habitat that may not account for impacts to GUSG. Vegetation treatments could potentially alter habitat characteristics in linkage areas that may provide dispersal habitat between populations, making them more unsuitable for GUSG occupancy. Additionally, treatments may be carried out in parts of the year where noise and increased human presence may be disruptive to GUSG life history, such as during lekking or nesting times.

For areas where existing ACECs may overlap with GUSG LCMA or Adjacent Non-habitat areas, limitations to surface disturbance and anthropogenic activities and seasonal timing limitations may reduce or eliminate impacts to GUSG and their habitats in LCMA or Adjacent Non-habitat areas. Seasonal timing limitations implemented for big game in these areas may include portions of sensitive breeding or nesting periods for GUSG. For example, in the West Antelope Creek ACEC, for areas in big game crucial wintering habitat, seasonal limitations are applied between December 1 and April 30 for a majority of the ACEC, which encompasses winter habitat use and lekking for GUSG, although does not cover other critical periods for the species.

Action Alternatives

Under Alternatives B, D, and E, LCMA and Adjacent Non-habitat areas would be established. LCMA would be identified the same for alternatives B and D; however, under Alternative E it would only be those areas surrounding the Gunnison Basin population. Management actions in LCMA for Alternatives B, D, and E would include development of habitat objectives for enhancement and connectivity of GUSG populations. Management actions under Alternatives B, D, and E could improve habitats for GUSG outside of currently occupied habitat, thereby possibly increasing the availability of suitable seasonal habitats and the potential for movement

between populations of GUSG, which would provide a conservation and genetic benefit for the species. There are no similar management actions proposed under Alternative C for LCMAs.

Adjacent Non-habitat areas established under Alternatives B, D, and E are identified to manage for minimization of threats to GUSG in areas where the species may disperse from adjacent OHMA or UHMA or experience indirect impacts to existing nearby habitat within OHMA or UHMA. Alternative B establishes a 4-mile buffer of OHMA and UHMA to identify Adjacent Non-habitat areas, while Alternatives D and E apply a 1-mile buffer to OHMA and UHMA to identify Adjacent Non-habitat areas. Alternative B would offer the greatest conservation benefit to GUSG and their habitats occurring outside of OHMA or UHMA. Per the RCP, 81.3 percent of all seasonal habitat locations rangewide were located within 4 miles of the lek of capture (Gunnison Sage-Grouse Rangewide Steering Committee 2005). While OHMAs account for current lek buffers, the conservation focus of Alternative B would provide for avoidance and minimization of threats to GUSG in areas that could become occupied in the future, while also limiting indirect impacts to GUSG and their adjacent habitat from noise, tall structures, predation, roads, and other anthropogenic disturbances that may indirectly impact GUSG populations.

The 1-mile buffer established for Adjacent Non-habitat areas for Alternatives D and E would provide some conservation benefit for GUSG, but not to the degree as under Alternative B because the Adjacent Non-habitat area has been reduced from 4-miles to 1-mile. While the Adjacent Non-habitat areas are primarily composed of vegetation types that are not currently used by GUSG or in some cases do not have the potential to provide habitat qualities, such as sagebrush, they may still provide some conservation benefit by reducing indirect impacts to nearby GUSG populations through the reduction of noise, tall structures, roads or other anthropogenic disturbances that may indirectly impact GUSG or attract predators to nearby habitat areas. Management actions under these alternatives would include minimizing effects of discrete activities to GUSG, rather than avoidance.

The BLM proposes implementation of minimization criteria for LCMA and Adjacent Non-habitat under Alternatives B and D. Minimization criteria would apply to all surface-disturbing activities and would allow for some surface use in LCMA and Adjacent Non-habitat in consideration of other management actions proposed under the action alternatives, including lek buffers, timing limitations, and disturbance caps and biophysical characteristics of the location to ensure avoidance of impacts to GUSG habitats. Alternative B would provide the greatest conservation benefit considering implementation of minimization criteria, because the largest area would be subject to the evaluation and implementation of minimization criteria based on the 4-mile buffer established for non-habitat areas under this alternative. Alternative D would provide similar conservation benefit; however, minimization criteria would be implemented in a 1-mile buffer for Adjacent Non-habitat areas. Minimization criteria would not be applied to LCMA or Adjacent Non-habitat under Alternatives C and E because LCMA and Adjacent Non-habitat areas would not be established under those alternatives.

Under Alternatives B, D, and E, the BLM proposes to analyze site-specific projects within Adjacent Non-habitat for impacts to GUSG populations and their habitats, including incorporation of HAF assessments for analysis and decision-making. If, during these analyses, there is potential to adversely affect GUSG and their habitats, other alternatives may be proposed or considered and minimization measures and design features would be required. Under these alternatives, impacts to GUSG in non-habitat areas from anthropogenic disturbance would be analyzed and considered during implementation, and any resulting impacts would be avoided or minimized through siting or project-level minimization measures.

Adjacent Non-habitat areas would not be established under Alternative C, and resource uses authorized under this Alternative in non-habitat areas adjacent to OHMA or UHMA may result in indirect impacts to GUSG. Surface use restrictions in Adjacent Non-habitat areas are proposed for fluid and solid minerals. Under Alternative C, there would be no surface use restrictions in the Adjacent Non-habitat areas for solid and fluid minerals because these areas would not be established. Oil and gas development in these areas may result in increased noise, traffic, and predation risk to GUSG in adjacent occupied habitats. Surface disturbance in these areas may result in the establishment and proliferation of invasive weeds, that could extend into occupied GUSG habitats, potentially resulting in the degradation of habitat quality in occupied habitats.

Vegetation treatments in GUSG habitat would be implemented in LCMA under Alternatives B, D, and E, and in Adjacent Non-habitat under Alternative B. Vegetation treatments under these alternatives would be implemented to enhance GUSG habitat and manage for threats (e.g., conifer encroachment or invasive species). Impacts to GUSG and their habitats in LCMA and Adjacent Non-habitat would be beneficial, and additional GUSG habitat may be restored or created under these alternatives such that this species may have dispersal opportunities.

The BLM proposes managing LCMA as ROW avoidance areas and wind and solar energy development avoidance areas under Alternative B, totaling 214,250 acres of BLM-managed lands, with exceptions for authorizations following documentation that the ROW would not adversely affect GUSG and their habitats. Further, under Alternative B, the BLM would manage Adjacent Non-habitat areas as exclusion areas for wind and solar development. None of the other action alternatives would propose limitations on ROWs or renewable energy development in LCMA or Adjacent Non-habitat areas. When compared to the No Action and other action alternatives, Alternative B would result in the greatest conservation benefit to GUSG in LCMA and Adjacent Non-habitat areas. Impacts to GUSG in those areas from ROW authorizations and development of utility lines and renewable energy (i.e., wind and solar), would be avoided through the application of minimization criteria.

3.2.3.4 Conclusion

The No Action Alternative and Alternative C do not propose management actions to protect or enhance GUSG habitat in LCMA or Adjacent Non-habitat areas. Alternative B proposes the most protective actions for LCMA and Adjacent Non-habitat because the BLM would apply protective measures to LCMA and Adjacent Non-habitat areas and implement habitat restoration or habitat actions that may result in increased connectivity or available habitats for GUSG in the long-term. Under Alternatives D and E, the BLM proposes a smaller buffer to identify Adjacent Non-habitat areas (1-mile vs. 4-mile under Alternative B). The BLM would restrict some management actions in Adjacent Non-habitat areas under Alternatives D and E, but not to the degree considered under Alternative B. For mineral exploration and development, the BLM proposes more restrictions in Adjacent Non-habitat areas under Alternative D, than under Alternative E. Under Alternatives B, D, and E, the BLM would conduct site-specific analysis for implementation-level decisions in non-habitat areas, which could result in avoidance and minimization of direct and indirect impacts to GUSG from discrete projects through analysis, re-siting, and design features incorporating minimization measures.

Alternatives C and A would have the least conservation benefit to the species for linkage areas and Adjacent Non-habitat because these areas would not be designated under those alternatives, and management actions would not be prioritized to manage, restore, protect, or enhance GUSG habitat or to implement measures to avoid or minimize impacts from resource use in those areas. Further, analysis for implementation-level decisions would not be conducted in non-habitat areas, which could result in indirect impacts to GUSG and their habitats in occupied areas.

Alternative B would have the most conservation benefit to GUSG, followed by Alternatives D, E, and Alternative C and the No Action Alternative.

3.2.3.5 Cumulative Effects

Cumulative effects and reasonable foreseeable past, present, and future actions for LCMA and Adjacent Non-habitats are generally similar to those described under Issue 1. Management actions in LCMA are proposed for Alternatives B, D, and E, and could improve connectivity or potential habitat for GUSG outside of currently occupied areas. Improvements in LCMA may beneficially contribute to cumulative effects throughout the GUSG range; however, these effects may be difficult to measure. The limitation and reduction of surface uses and anthropogenic disturbance in LCMA proposed under Alternatives B, D, and E would likely result in beneficial cumulative effects on GUSG and their habitats that may occur in adjacent OHMA or UHMA. LCMA would not be established under Alternative C. It is likely that linkage and connectivity between GUSG populations on non-BLM lands would continue to be impacted by threats discussed in Section 3.2.2.2. Residential, recreational, and mineral development may

be concentrated in LCMA and surrounding non-habitat areas where precluded in OHMA and UHMA, especially under Alternative C, where management actions are not established for LCMA and surrounding non-habitat. Detrimental cumulative effects from anthropogenic development under Alternative C would be greater.

3.2.4. Issue 3: How would management actions related to lek buffers and seasonal timing limitations under each alternative affect GUSG seasonal habitats and their life cycle?

3.2.4.1 Analytical Methods and Assumptions

Indicators

- Acres of occupied/unoccupied habitat by population area
- Acres within lek buffers, by activity status
- Acres of proposed management actions

Assumptions

- The occupied and unoccupied GUSG habitat reflects the current distribution of habitat and population of the species. These habitat areas combine the mapped habitat by CPW, in addition to the critical habitat designated by USFWS.
- The BLM will continue to apply conservation measures to manage and conserve GUSG and its habitat and implement the USFWS recommendations for minimizing or avoiding adverse effects on GUSG or its habitat.
- The BLM's objective is to maintain and enhance populations and distribution of GUSG by protecting and improving sagebrush habitats and ecosystems that sustain GUSG populations.

3.2.4.2 Affected Environment

Refer to Section 3.2.2.2, Affected Environment for Issue 1 for the affected environment.

3.2.4.3 Environmental Consequences

Effects Common to All Alternatives

Lek buffers are established to provide protection of both seasonally important habitat areas, such as leks, and to reduce anthropogenic disturbance to GUSG at critical times of their

lifecycle, such as nesting. The USGS established conservation buffer distances for greater sage-grouse, in which the lower interpreted buffer ranged between 1.2 and 3.1 miles (Manier et al. 2014). For GUSG, the majority of seasonal use locations are located within 4 miles of a lek (Gunnison Sage-Grouse Rangewide Steering Committee 2005). Because GUSG females disperse from a lek to nest, applying a buffer to the lek which adequately captures the potential dispersal distance provides protection for nesting locations.

Anthropogenic disturbance to GUSG may result in the decrease in lek attendance by males, increase in nest abandonment, decrease in nesting success, and potential for other direct impacts such as injury or mortality from vehicle collisions and loss of nesting habitat. Indirect impacts may occur from facilitation of predator movement or introduction and increase in predation on GUSG nests and their chicks. Transmission lines, as discussed previously, have been shown to impact greater sage-grouse, causing avoidance of areas out to 6.2 miles, decreased demographic rates out to 7.7 miles, and decreased population growth out to 3.1 miles (Gibson et al. 2018). Modeling revealed that oil and gas development had a strong negative effect on local-scale lek attendance within a 3.2 km (2 mile) radius around a well (Ramey 2018).

Anthropogenically derived noise may result in decreases in lek attendance and an increase in predation risk (Blickley et al. 2012a). The masking footprint of oil and gas infrastructure that produces highest noise levels likely attenuates to ambient noise levels within approximately 0.6 mile (Blickley and Patricelli 2012). Leks that experience higher noise levels may be more susceptible to predation because noise masking may prevent predator detection. Fecal corticosteroid metabolites, a measure of physiological stress in wildlife, was significantly higher at leks where noise levels were elevated than for leks at ambient noise levels (Blickley et al. 2012b). Low frequency, high amplitude, and low duration anthropogenic noise disturbance resulted in impacts to lekking GUSG at least 50 percent of the time in the Gunnison Basin. Further, noises from recreational birders and traffic on a road resulted in disturbance behaviors in lekking males (Hicks et al. 2012 as cited in Young et al. 2015).

Timing limitations are also applied to protect GUSG during critical periods of the life cycle. Critical periods for GUSG include lekking, nesting and brood-rearing, and wintering. Gunnison sage-grouse leks are occupied from mid-March to late May depending on elevation (Rogers 1964 cited in Young 2015). Male GUSG establish territories on leks in early March, the timing of which varies 1 to 2 weeks depending on weather conditions, snow melt, and daylight (Gunnison Sage-Grouse Rangewide Steering Committee 2005). Nest initiation may vary by weather, up to 1 to 2 weeks (Young 1994 as cited in Young 2015). Eggs are laid in May and June, hatching begins in mid-May through July, with juveniles present June through August (USFWS 2019). Winter telemetry data suggests that movements back to central winter areas occurs in October through December. Sage-grouse disperse to breeding areas in March and April (Bradbury et al. 1989).

Alternative A – (No Action – Current Management)

Buffer distances are identified in 4 of the 11 existing land use plans, ranging between 0.6 mile to 4 miles from leks. Buffers are established for a variety of actions, including construction of infrastructure (e.g., fences, powerlines, renewable energy, and oil and gas development) and roads. Some plans include management actions that focus sagebrush treatment or restoration within buffer distances to allow for achieving habitat objectives set in the Gunnison Sage-Grouse Rangewide Conservation Plan. Under the No Action Alternative, buffer distances would be implemented at the field office level in accordance with existing land use plans. Buffer distances would not be developed to manage GUSG at the rangewide scale.

Some of the existing land use plans have management actions to develop seasonal use restrictions for anthropogenic disturbance. Typically, these actions focus on the lekking season (4 of 11 plans). Two plans include restrictions on surface occupancy and surface disturbance in winter habitat during the wintering season. Under the No Action Alternative, seasonal habitat restrictions would continue to be implemented at the field office level in accordance with existing land use plans. In some cases, seasonal restrictions would not be implemented under the existing RMPs, however consultation would occur with USFWS for actions that have the potential to impact GUSG or their habitat.

Under the No Action Alternative, noise restrictions are implemented during the active lekking season, between March 1 and May 15 in two of the existing plans. One of the existing plans applies a timing limitation to prohibit surface-disturbing activities within 4 miles of an active lek from March 1 to July 15. Sound level restrictions are implemented for one plan, and procedures for site-specific analysis of baseline sound and impacts from proposed implementation-level projects are described.

Action Alternatives

Under Alternative B, the BLM proposes to exclude new authorizations for specific infrastructure within three spatial buffers of leks: no linear features (roads) within 3.1 miles, no low structures (e.g., structures taller than the average sagebrush height within the area such as fences) within 1.2 miles, and no tall structures (e.g., communication towers or transmission lines) or energy development infrastructure within 4 miles. The proposed buffers would be applied to all leks, regardless of status (i.e., active, inactive, historic, unknown for Colorado, and occupied/unoccupied in Utah). Alternative B would provide the greatest conservation benefit to the species, because it would apply the largest buffers around all leks for excluding infrastructure development, thereby eliminating surface disturbance that may result in changes to habitat suitability at a landscape scale and reducing anthropogenic disturbance within minimum buffer distances for sage-grouse as described in Manier et al. (2014).

Under Alternatives C and D, the BLM proposes the same lek buffers: 1 mile of leks for roads, 1.2 miles for low structures, 2 miles for tall structures, and 3.1 miles for energy development.

However, unlike Alternative B, Alternatives C and D would apply these lek buffer distances under the minimization criteria management direction and would allow the buffers and potential authorization to be evaluated on a site-specific level. Alternative D would apply these buffer distances, under minimization criteria, to active, inactive, and historic leks while Alternative C would apply them only to active leks, but still under minimization criteria. Alternative D would be more restrictive to surface disturbance than Alternative C because it applies buffers to leks beyond active status, and therefore provides a greater conservation benefit to GUSG because there would be more areas where surface use and anthropogenic disturbance would be reduced or eliminated. Alternative E applies a 0.6-mile lek buffer to active leks for Tier 1 habitat. No lek buffers are established for leks within Tier 2 habitat. Table 3.2.16 provides a summary of acres that would be potentially impacted by either prohibiting development or minimization criteria in relation to the various lek buffers under the action alternatives.

Table 3.2.16. Acres Restricted to Development Under the Alternatives

Buffer Distance	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
0.6 mile	12,590	N/A	N/A	N/A	29,710
1.0 mile	N/A	N/A	78,800	98,130	N/A
1.2 miles	N/A	148,250	102,070	127,020	N/A
2.0 miles	N/A	N/A	206,720	257,740	N/A
3.1 miles	N/A	436,970	341,170	426,240	N/A
4.0 miles	250,510	549,190	N/A	N/A	N/A

N/A – not applicable

Spatial buffers are also proposed under Alternatives C and D for solid mineral development. For solid mineral leases, conservation measures that would be applied under Conditions of Approval (COA) include buffer distances of leks under Alternatives C and D. New surface occupancy would be precluded within 1-mile of active leks. If the lease is entirely within 1 mile of an active lek, development would be designed to be least harmful to GUSG through consideration of topography, vegetation, and other habitat features, while recognizing valid existing rights. In OHMA, these COAs are extended to within 2 miles of leks, and are applied to active leks under Alternative C, and active, inactive, and historic leks under Alternative D. Similar conditions of approval would be applied for non-energy solid minerals in OHMA and UHMA under Alternatives B and D – the same surface occupancy restrictions would be applied as described for mineral development for active, inactive, and historic leks.

Alternatives B, C, and D apply seasonal restrictions based on critical life history periods provided in the Rangewide Conservation Plan (Gunnison Sage-Grouse Rangewide Steering Committee 2005):

- In breeding/lekking areas from March 1 – May 15
- In nesting habitat from April 15 – June 30

- In brood-rearing habitat from July 1 – September 30
- In known winter habitat concentration areas from October 1 – Mar 15

Alternatives differ by where seasonal timing limitations are applied and whether or not actions would be prohibited or avoided. Alternative B is the most restrictive to anthropogenic disturbance, and would prohibit surface-disturbing activities, anthropogenic disturbance, and activities otherwise disruptive to GUSG during the seasonal timing and within seasonal habitats as identified above. Modifications would be allowed based on site-specific conditions. Limitations would be applied in OHMA and UHMA. Alternative D would provide conservation benefit; however, not to the extent that Alternative B would. Seasonal limitations would be applied to OHMA and UHMA; however, activities described previously would be evaluated on a site-specific level rather that prohibited as they would be under Alternative B. Under both Alternative B and Alternative D, surface-disturbing activities are prohibited in OHMA and UHMA during lekking, nesting, or early brood-rearing from March 1 – July 15. Seasonal habitat limitations in the Gunnison Basin population would be managed under Alternative E based on provisions in the existing CCA. Currently, restrictions are placed on seasonal GUSG habitat between March 15 and May 15. Winter restrictions may occur if certain conditions are observed. No specific seasonal timing limitations are identified under Alternative E for nesting or brood-rearing periods.

Seasonal timing limitations are also proposed for rangeland management under Alternative B, Sub-alternative B2. Under this sub-alternative, grazing would not be authorized between March 1 and July 15 in OHMA, which corresponds to the lekking and breeding season and early brood-rearing for GUSG. Removal of livestock grazing in OHMA during this period would reduce impacts to GUSG from grazing. Impacts to habitat from grazing during this period may include the loss or reduction of grasses and forbs in nesting and brood-rearing habitat and a resulting loss of available forage for GUSG and their broods (USFWS 2019).

Under Alternatives B, C, and D, recreation facility construction would be prohibited between March 1 and July 15 in OHMA. Construction of facilities during this timeframe may result in disturbance to lekking, nesting, or brooding GUSG.

3.2.4.4 Conclusion

All of the action alternatives would result in greater restrictions of surface disturbance and disruption to GUSG and their habitats, resulting in the reduced potential for impacts from development, including loss of habitat, fragmentation, decreased lek attendance, decreased breeding success, predation, and disruption to GUSG lifecycle behaviors. Of the No Action and action alternatives, Alternative B would provide the most conservation benefit to GUSG and their habitats, followed by Alternatives D and C, and Alternative E. The No Action Alternative would provide the least conservation benefit of the alternatives for those plans which currently have few or no timing restrictions.

3.2.4.5 Cumulative Effects

The cumulative effects analysis area for special status species is the decision area, which encompasses GUSG populations and their habitats, Adjacent Non-habitat areas, and potential linkage-connectivity areas. Cumulative effects and past, present, and expected future actions that are related to lek buffers and seasonal timing limitations are similar to those described under Section 3.2.2.5. Implementation of lek buffers and seasonal timing limitations in HMAs in the analysis area would result in beneficial cumulative effects rangewide for GUSG, because these management actions would be implemented uniformly across the range on BLM-managed lands. Lek buffers and timing limitations would reduce stressors and anthropogenic disturbance impacts to GUSG in lekking and breeding areas and during the most sensitive times of the year, although this would vary by alternative.

3.2.5. Issue 4: How would management actions under each alternative affect Gunnison Sage-Grouse predator populations?

3.2.5.1 Analytical Methods and Assumptions

Indicators

- Acres of surface disturbance restrictions on BLM-administered lands in mapped predator habitat types.

Assumptions

- Distribution and density of GUSG predators of GUSG is related to the presence and location of anthropogenic disturbance, including habitat fragmentation.
- GUSG predators are expected to be at higher densities near anthropogenic disturbance such as powerlines, roads, infrastructure, and development.
- Increasing human pressure and anthropogenic disturbance is expected to increase predation risk to GUSG.
- BLM-mapped surface disturbance is sufficient to map anthropogenic disturbance on the landscape

3.2.5.2 Affected Environment

For the purposes of this analysis, the predator species considered are those that may commonly prey upon sage-grouse or their eggs, including common ravens, raptors, coyotes, and foxes (Dinkins et al. 2016; Coates and Delahanty 2010; Conover and Roberts 2016; USFWS 2014, 2019). In studies conducted in the Gunnison Basin, approximately 22 and 40

percent of adult GUSG mortalities were the result of avian or mammal predators, and 25 and 35 percent or GUSG chick mortalities were caused by avian and mammal predators, respectively (Childers 2009 in USFWS 2014). Nest predation likely is a localized threat to GUSG, and may impact the smaller, more isolated populations where habitat quality and quantity may be declining and anthropogenic influences are greater (Coates et al. 2021).

The GUSG has evolved traits for the avoidance of predation pressure, including cryptic plumage and anti-predator behavior. For example, GUSG will crouch or freeze under vegetation in the presence of predators or will fly in the opposite direction of a predator attack or detection (Young et al. 2020). Nesting females may display erratic movements to attempt to distract predators from their brood or nest (Young et al. 2020). Females may also attempt to re-nest after nests are destroyed by predators (Schroeder 1997). Despite these evolutionary adaptations, predation is still a factor that contributes to GUSG population dynamics. Predation pressure on the species is strongly influenced by anthropogenic factors within their habitats. As human presence and disturbance increases on the landscape, predation pressure on GUSG is expected to increase, as well. Raven surveys in relation to human resources in the Gunnison Basin found that ravens preferred sites with a combination of human and natural features and clearly benefit from human activities (Magee 2013 as cited in USFWS 2014).

Anthropogenic structures and disturbances are typically the primary conduit for GUSG predators to move through ecosystems. Transmission and distribution lines offer perching opportunities for predators such as common ravens and golden eagles (*Aquila chrysaetos*) that may facilitate predation of GUSG and their nests (Connelly et al. 2000). Raptor predation of GUSG is generally on juvenile birds or older age classes (Gunnison Sage-Grouse Rangewide Steering Committee 2005). Common ravens are opportunistic foragers and have been documented preying on sage-grouse nests and broods (Bui et al. 2010, Coates 2007). Common ravens are also well-adapted to anthropogenic landscapes, where the species can exploit food, water, nesting sites, and perches (Boarman et al. 2006, Coates et al. 2021). Common ravens are also able to adapt quickly to new foraging opportunities and learn novel hunting strategies (Knight and Call 1980).

Mammalian predators of GUSG may include weasels, coyotes, and foxes, and vary depending on the life stage of sage-grouse. Adult sage-grouse may be depredated by red foxes or bobcats, while nests/eggs or juvenile sage-grouse may be taken by badgers, red foxes, coyotes, or weasels (USFWS 2014). Coyotes and foxes are considered to be "human adapters" that have high use of natural habitats but can become habituated to anthropogenic disturbance or urbanization, while bobcats were human avoiders and tend to use more natural habitats and avoid anthropogenic disturbance (Rodriguez et al. 2021). In one study at Strawberry Reservoir in Utah, a high density of red foxes potentially driven by anthropogenic activities at the reservoir was found to contribute to low survival rates in male and female greater sage-grouse (Bambrough et al. 2000 in USFWS 2014).

Because GUSG predation is related to the existence and expansion of anthropogenic features on the landscape, for this analysis, areas are identified that may exhibit landscape characteristics that are indicative of anthropogenic influences, and therefore, areas that may provide opportunities for increased GUSG predation.

3.2.5.3 Environmental Consequences

Effects Common to All Alternatives

Livestock Grazing Management

Livestock grazing in GUSG habitat may result in the increased potential for predators in areas where livestock congregate, including corrals, fences, and water resources. Common raven occurrence increases in areas where livestock are present by up to 45 percent which may be associated with the presence of subsidies such as water sources. Limiting livestock and artificial water sources around leks during nesting and brood-rearing may reduce exposure of breeding sage-grouse to predation by ravens (Coates et al. 2016).

Recreation and Travel and Transportation

Recreation and associated development of user trails may result in the increased presence of GUSG predators. Common raven presence can also increase with forms of recreation that may provide supplemental food sources such as fishing, hunting, or garbage disposal (Webb et al. 2021). In general, avian species within the Corvidae family have been shown to be associated with human presence and in recreation areas with anthropogenic food sources, corvids may maintain smaller home ranges and increase in numbers and density (Marzluff and Neatherlin 2006). In addition, the presence of linear features such as roads and trails can increase raven presence, density, and resource use because ravens can efficiently forage along edges where vegetation cover has been reduced (Webb et al. 2021; Walker and Marzluff 2015; Coates et al. 2016).

Fluid and Solid Mineral Extraction

Development of fluid and solid minerals results in surface disturbance and associated infrastructure, such as pumps, tanks, pipeline compressors, pipelines, roads, and electrical distribution lines. Aboveground infrastructure associated with fluid and solid mineral development would provide opportunities for avian predators to perch or nest. Development of linear features, such as access roads and pipelines may increase the presence of predators as described above for recreation and travel. Increased noise associated with mineral development may result in masking effects, described previously in Section 3.2.2.3. Leks that experience higher noise levels may be more susceptible to predation because noise masking may prevent predator detection. As with increased recreation, increased human disturbance at mineral development locations may result in increased supplemental food sources for predators.

Lands and Realty

Construction and presence of powerlines may result in the increased presence of predators, such as raptors or common ravens (*Corvus corax*) because they offer perching opportunities (USFWS 2014). Common ravens have been documented to seek out anthropogenic features for nesting (Coates et al. 2014; Howe et al. 2014; Bui 2009). Howe found that the odds of raven nesting decreased with every 3,330-foot increase in distance from a transmission line. Where raven density was greater than 0.4 per square kilometer, negative impacts were observed in greater sage-grouse populations, including depressed population growth (Coates et al. 2020).

Alternative A – (No Action – Current Management)

There are three existing plans that address managing impacts of predation for GUSG. Management actions listed in existing plans include removing/modifying perching opportunities in GUSG habitat, including fences, power poles, and other aboveground structures. The Moab Field Office RMP implements these measures within 4 miles of a lek. The remaining plans only specify that these actions occur in GUSG habitat. Impacts may result in the reduction of predator presence for the three BLM units that implement predator management for GUSG; however, there would be no predator management strategy implemented rangewide.

Under the No Action Alternative, no plans implement disturbance caps or density caps for anthropogenic disturbances in GUSG habitat. Implementation-level decisions for siting actions with anthropogenic disturbance considers impacts to GUSG, which would be further avoided, minimized, or mitigated through Section 7(a)(1) consultation with the USFWS on a case-by-case basis. However, landscape-scale disturbance caps and density caps in GUSG habitat are not considered in the 11 BLM plans. Under the No Action alternative, these measures would not be implemented, and management of anthropogenic disturbance would not be applied consistently rangewide in GUSG habitats.

Under the No Action Alternative, surface disturbance restrictions are applied in identified buffers around leks for 5 of the BLM plans. When applied to the decision area, approximately 250,510 acres of BLM-managed lands have surface use restrictions within an applied buffer distance of a GUSG lek. Restrictions within these areas would likely minimize the presence of predators within GUSG lek buffers; however, these would not be applied rangewide and impacts from predators would likely differ between BLM units.

Livestock management, grazing permits, and range improvements would continue to be managed by the 11 existing land use plans. Grazing in the decision area would continue at current levels on BLM-managed lands under Alternative A. Impacts to predator populations would be the same as those described in impacts to all alternatives.

Recreation would continue at current levels in accordance with existing authorization and management actions implemented by the 11 existing plans in the decision area. Impacts to

predators would be the same as those described in effects common to all alternatives. In SRMAs and ERMAs, where they overlap with OHMA and UHMA, concentrated recreation use may result in increased predator presence, attracted by increased human presence and infrastructure. Recreational use in LCMA or Adjacent Non-habitat areas may also increase predator presence in adjacent OHMA or UHMA. Special recreation permits and construction of recreation infrastructure would still be subject to Section 7(a)(1) consultation with the USFWS to analyze impacts to GUSG and their habitats.

Under the No Action Alternative, management of travel and transportation would continue to be implemented by individual BLM plans. Most plans also have management actions that frame how existing routes are retired and reclaimed and how new routes are established. Approximately 85 percent of the decision area is designated as limited to existing routes.

Impacts resulting from fluid and solid mineral extraction will be the same as those common to all alternatives. Under the No Action Alternative, development of fluid and solid minerals would occur in accordance with existing land use plans within existing leases. Currently, existing fluid mineral leases only occur in Dry Creek Basin in the Tres Rios Field Office and in the Monticello population. There are no other existing fluid mineral leases in occupied habitat.

Development of infrastructure and mineral extraction would be subject to conditions of approval issued by BLM units. Twenty percent of the Federal oil and gas estate in the decision area would remain closed to leasing under current conditions, and up to 15 percent of the fluid mineral estate would be subject to existing NSO restrictions.

Impacts resulting from authorization of ROWs and renewable energy development are described in effects common to all alternatives. Under the No Action Alternative, approximately 41,570 acres of BLM-managed lands in the decision area are exclusion areas for ROW authorizations and 82,960 acres are ROW avoidance areas. Current utility corridors are designated for 483,150 acres of BLM surface and mineral estate in the decision area.

Action Alternatives

Each of the action alternatives proposes best management practices (BMPs) and design features to reduce predator presence in GUSG HMAs for implementation-level actions. These measures include limiting potential human-derived food sources for predators and opportunities for nesting, cover, and perching. The action alternatives differ based on the HMAs in which the actions would be implemented. Alternative B would implement these actions in the most area – in OHMA, UHMA, and LCMA, resulting in 1,245,860 acres for predator management. Under Alternatives C and D, the actions would be limited to OHMA and UHMA, resulting in 960,200 acres for predator management. In Alternative E, predator management actions would include burying utility lines and application of perch deterrents for utility poles in Tier 1 and Tier 2 habitats in the Gunnison Basin.

In addition to implementation of measures that would reduce the potential for predators to occur in HMAs, the BLM proposes to consider options for predator control through coordination with USDA Animal and Plant Health Inspection Service (APHIS) during annual MOU reviews under all alternatives. Alternative B would support predator control in OHMA, UHMA, and LCMA. Alternatives D and E would support predator control in OHMA and UHMA. Alternative C would support predator control measures only in OHMA. Alternatives B, D, and E also propose management actions to implement predator control measures in coordination with State agencies and identify specific GUSG population triggers for predator control (i.e., if below 25 breeding individuals of 25 percent of the long-term population goal). Alternative B would implement predator control in the most acres in the decision area, and includes further management actions to reduce predator presence in areas below GUSG population targets. Alternatives D and E would implement similar actions; however, not to the extent as Alternative B. Alternative C would implement predator control in the fewest acres in the decision area, and of the action alternatives, would provide the least benefit to reducing predator populations.

All of the action alternatives include restrictions on surface disturbance, which could reduce the presence of predators in GUSG HMAs. Alternative B includes the most restrictive management actions applied to GUSG HMAs and lek buffers, including restrictions on recreation, OHV use, roads and trails, livestock grazing, mineral and energy development, and authorizations of ROWs, which may minimize predator presence to the greatest extent when compared to other alternatives. Alternative D includes surface use restrictions, but not to the extent of Alternative B. Alternatives C and E would provide the least surface use restrictions, and may result in higher predator presence when compared to the other action alternatives.

The BLM proposes implementation of minimization criteria for HMAs under all action alternatives; however, which HMAs these apply to differ by alternative. Minimization criteria would apply to all surface-disturbing activities and would allow for some surface use in GUSG HMAs in consideration of other management actions proposed under the action alternatives, including lek buffers, timing limitations, and disturbance caps and an evaluation of biophysical characteristics of the location to ensure avoidance of impacts to GUSG habitats. Implementation of minimization criteria would manage the development of infrastructure and surface disturbances that could result in increasing predator presence in GUSG habitats and would vary based on alternative for where minimization criteria would be implemented.

Under Alternative B, minimization criteria would be applied in OHMA, UHMA, LCMA and Adjacent Non-habitat areas (based on the buffer for each alternative). Alternative C would implement minimization criteria in OHMA only. Alternative B, followed by Alternative D, would provide the greatest conservation benefit to GUSG, because the largest area would be subject to minimization criteria evaluation and implementation. Alternative E would apply minimization criteria only in OHMA and UHMA in the Gunnison Basin. Alternative C would provide the

least conservation benefit because it would apply and implement minimization criteria only in OHMA.

Under Alternatives B and D, the BLM proposes the designation and management of new ACECs. Alternative B would result in the designation of 12 new ACECs. Alternative B would result in the designation of new ACECs where development would be excluded or restricted, and ACECs would be managed specifically for GUSG and their habitats. Under Alternative D, 4 new ACECs would be designated, or up to 58,520 acres. Restriction of development and surface use in ACECs managed for GUSG would likely reduce the presence of predators in those locations. Alternative B proposes the highest acreage for management of GUSG in ACECs, followed by Alternative D. Appendix D, *Areas of Critical Environmental Concern Report*, provides details on each specific ACEC proposed under Alternatives B and D.

3.2.5.4 Conclusion

All of the action alternatives would result in greater restrictions of surface disturbance and disruption to GUSG and their habitats than the No Action Alternative, resulting in the reduced potential for impacts from development. These management actions would likely reduce the presence and proliferation of GUSG predators in the decision area. Alternative B would provide the most conservation benefit to GUSG and their habitats. The most acres are proposed for surface use restrictions and closures under Alternative B, which would reduce anthropogenic disturbance to the greatest extent in GUSG habitats, followed by Alternatives D and E, and Alternative C. Alternative B would also propose the greatest area for predator control (in OHMA, UHMA, and LCMA) when compared to other action alternatives. Alternatives C and D propose predator control in OHMA and UHMA, but not in LCMA, and therefore, would not provide the same level of conservation benefit to control predators as Alternative B.

3.2.5.5 Cumulative Effects

The cumulative effects analysis area for special status species is the decision area, which encompasses GUSG populations and their habitats, Adjacent Non-habitat areas, and potential linkage areas.

Cumulative effects for GUSG predators are generally similar to those described under Issue 1. Past and current development in the analysis area that results in an increase in anthropogenic disturbance, habitat edges, and perching opportunities in GUSG habitats have likely contributed to increased predation on GUSG in the species' range. Management actions in HMAs to restrict anthropogenic disturbance are proposed for all alternatives, which could result in the reduction of GUSG predators in GUSG habitats, and predation rates could decrease on lands managed by the BLM. Anthropogenic development on private lands, including residential and industrial development (e.g., renewable energy, transmission lines, oil and gas development, or mining)

would not be subject to limitations proposed under the BLM alternatives, and would likely continue in the future. Implementation of conservation measures or recommendations in the RCP, RIS, and from GUSG working groups may reduce the potential for predator impacts to GUSG in the future on lands not managed by the BLM; however, these measures would not be implemented consistently throughout the species' range, and it is likely that increases or continuing anthropogenic disturbance would contribute to cumulative effects caused by predation rangewide.

3.2.6. Issue 5: How would management actions under each alternative affect other special status species?

3.2.6.1 Analytical Methods and Assumptions

Indicators

- Acres of occupied/unoccupied habitat
- Acres of vegetation types in HMAs
- Acres of proposed management actions

Assumptions

- There would be no increased surface disturbance authorized under this RMP Amendment that would be in addition to that in existing authorized land use plans.
- Other special status species are grouped by general habitat preference to identify those that may co-occur with the GUSG.
- Existing current management actions and protections for special status species outlined in existing land use plans would remain in place.

3.2.6.2 Affected Environment

There are 126 special-status species other than GUSG that were considered in this analysis. Table C.1 in Appendix C, *Special Status Species Supporting Information*, presents those species, their conservation status, habitat preferences, and potential to occur in the decision area and in GUSG habitats or adjacent habitats that may be affected by management actions. Of the 126 species, 92 species may occur in the decision area.

There are 22 USFWS-listed; proposed; experimental, non-essential populations; or candidate species that have the potential to occur in the decision area (USFWS 2023). Three species on the USFWS Information for Planning and Consultation (IPaC) list likely do not occur in the decision area. Of the remaining species, 17 species are likely to occur in the decision area and 2 species may occasionally occur in the decision area (California condor [*Gymnogyps californianus*]

and gray wolf [*Canis lupus*] are wide-ranging species that may occasionally travel through the decision area). Based on a review of habitat preference for species that are likely to occur in the decision area, 4 have the potential to occur in habitats that overlap GUSG occupied or unoccupied habitats or occur in habitat that may be affected by management actions in adjacent habitat: Ute ladies'-tresses (USFWS threatened, *Spiranthes diluvialis*), southwestern willow flycatcher (USFWS endangered, *Empidonax traillii extimus*), Silverspot butterfly (USFWS proposed threatened, *Speyeria nokomis nokomis*), and Monarch butterfly (USFWS candidate, *Danaus plexippus*).

There are 106 BLM sensitive species in BLM Field Offices in the planning area. Of these species, there are 78 species that are likely to occur in the decision area based on a review of species distributions. Of the species that occur in the decision area, 52 species have potential to occur in habitats that overlap GUSG occupied or unoccupied habitat or may occur in habitat that may be affected by management actions in adjacent habitat: 3 amphibian species, 10 bird species, 2 insect species, 12 mammal species, 5 reptile species, and 20 plant species.

Some species, such as the Brewer's sparrow (*Spizella breweri*), a sagebrush obligate species, are known to use the same seasonal habitats as GUSG. In other cases, species may forage in GUSG seasonal habitats, but may breed, or roost (e.g., golden eagle [*Aquila chrysaetos*] and BLM sensitive bat species) in different habitat types. Other species in this table are those that may occur in adjacent habitats not typically used by GUSG, but that could be impacted by management actions, for example, those species that occur in pinyon-juniper habitat types, such as the pinyon jay (*Gymnorhinos cyanocephalus*).

The decision area also contains USFWS-designated critical habitat for 4 listed fish species (Table 3.2.17). Table 3.2.17 presents acres of critical habitat in the decision area.

Table 3.2.17. USFWS Designated Critical Habitat in the Planning Area

Critical Habitat	Acres in Decision Area	Acres in Occupied GUSG Habitat	Acres in Unoccupied GUSG Habitat
Bonytail (*Gila elegans*)	210	0	0
Colorado pikeminnow (*Ptychocheilus lucius*)	410	0	0
Humpback chub (*Gila cypha*)	210	0	0
Razorback sucker (*Xyrauchen texanus*)	410	0	0

3.2.6.3 Environmental Consequences

Effects Common to All Alternatives

Effects common to all alternatives for other special status species would be similar to those described in Section 3.2.2.3 where other special status species habitats overlap with GUSG habitats.

Alternative A – (No Action – Current Management)

Under the No Action Alternative, special status species would be managed in accordance with existing land use plans for the 11 BLM units in the decision area. For USFWS-listed species, other than GUSG, implementation-level actions on BLM-managed lands are required to consider impacts to USFWS-listed species and their critical habitats under Section 7(a)(1) of the ESA. Implementation-level actions that may result in effects to listed species may require formal consultation. BLM sensitive species are managed by each field office in accordance with Manual 6840 *Special Status Species Management*. The BLM considers impacts to special status species during land use planning and implementation-level actions and decision-making. It is at the discretion of each field office how to manage BLM sensitive species. Two of the 11 existing land use plans include high-level habitat objectives for special status species, one of which includes sagebrush habitat goals for species other than GUSG. Under the No Action Alternative, management of BLM sensitive species would remain in accordance with existing land use plans and Manual 6840 *Special Status Species Management*.

Action Alternatives

Under the action alternatives, management of BLM sensitive species would remain in accordance with existing land use plans and Manual 6840 *Special Status Species Management*. Some special status species may be impacted by management actions proposed under this RMP Amendment/EIS and are described further in this section.

USFWS-Listed Species

There are three USFWS-listed species that have the potential to co-occur with GUSG: southwestern willow flycatcher, silverspot butterfly and Ute ladies'-tresses orchid. These species occur in riparian habitats and adjacent to perennial aquatic ecosystems. Southwestern willow flycatchers breed in dense riparian shrubs adjacent to perennial water but may migrate in riparian areas that do not meet the composition or structure of habitats preferred for breeding. The silverspot butterfly occurs in wet meadows, seeps, marshes, and meadows, typically adjacent to permanent springs or water and is reliant on the bog violet (*Viola nephrophylla*) as a larval host plant. Ute ladies'-tresses is an orchid species that grows in wet meadows adjacent to perennial waterways. The action alternatives may provide protection for riparian habitats for species that occur in HMAs that are proposed for surface use restrictions.

Table 3.2.18 provides a summary of riparian habitats that could benefit by surface use restrictions under each alternative. It is not known how many acres of the reported riparian habitats would be considered suitable habitat for these species; however, it provides a comparison between alternatives of how riparian habitats may benefit from conservation actions under each Alternative. Alternative B would provide the greatest conservation benefit to these species because surface use restrictions would be applied to OHMA and UHMA, followed by Alternatives D, E, and C.

Table 3.2.18. Wetland and Riparian Habitat on BLM-Administered Land in Gunnison-Sage Grouse Habitat Management Areas and the Decision Area

Habitat	OHMA	UHMA	LCMA	Non-Habitat (1-mile buffer)	Non-Habitat (4-mile buffer)
Riparian (acres)	1,760	1,100	690	1,430	4,710
Wetland (acres)	1,270	1,700	300	840	2,590
NHD perennial streams (miles)	250	110	100	260	560

Management actions proposed for vegetation management would prioritize restoration of meadows or riparian habitats for GUSG, the results of which may provide benefits in the long-term for southwestern willow flycatcher and Ute ladies'-tresses. Site-specific analysis of restoration activities in riparian habitats would need to consider the effects on USFWS-listed species in accordance with Section 7(a)(1) of the ESA prior to implementation. Under Alternatives B, D, and E, restoration actions would be prioritized for OHMA, UHMA, and LCMA, and for OHMA and UHMA for Alternative C.

BLM-Sensitive Species

Special status species that co-occur with GUSG are likely to benefit from conservation actions proposed under the action alternatives, including restriction of surface disturbance in HMAs, minimization criteria, lek buffers, seasonal timing limitations, noise limitations, grazing restrictions, and travel management. Sagebrush obligate species, such as the Brewer's sparrow, would likely benefit the most from management actions, due to the fact that sagebrush ecosystems are similarly essential to their life history. Management actions would similarly benefit other species that may co-occur with GUSG, including those that may breed, forage, or disperse through sagebrush habitats. For example, BLM-sensitive raptor species such as ferruginous hawk and golden eagle and BLM-sensitive bat species such as Townsend's big-eared bat, may forage through sagebrush habitats protected by surface disturbance limitations. Species that may occur in mesic habitats or riparian areas may also benefit from conservation actions in the action alternatives, such as BLM-sensitive amphibians. In comparing the action alternatives, Alternative B would provide the greatest conservation benefit to BLM-sensitive species that co-occur with GUSG. Table 3.2.19 provides a summary of sagebrush, shrubland, and pinyon-

juniper habitats that may benefit from surface use restrictions under each Alternative for HMAs and within lek buffers.

Table 3.2.19. Acres of Sagebrush and Pinyon-Juniper Habitat by Alternative

Habitat	OHMA	UHMA	LCMA	Non-Habitat (1-mile Buffer)	Non-Habitat (4-mile Buffer)
Sagebrush	271,530	46,360	25,290	35,240	107,380
Shrubland	28,650	31,250	67,530	39,040	160,530
Pinyon-Juniper	34,390	116,430	80,950	225,570	647,510

Sources: BLM 2022; USGS 2020

Surface use restrictions in GUSG HMAs and lek buffers may result in indirect impacts to habitats and special status species that occur adjacent to those in which restrictions are proposed. Anthropogenic development and surface disturbance may be concentrated in areas immediately adjacent to closures or surface use restrictions, especially for those locations where subsurface minerals are inaccessible from GUSG habitats and may require directional drilling or other technology to access leased minerals. Impacts to special status species in these areas may include habitat loss; disturbance or avoidance of the project area due to increased human presence, machinery or noise; and direct injury or mortality from collisions with machinery or vehicles. Alternative B would restrict surface use on the most acres (2,419,500 acres), and may result in greater concentrations of anthropogenic disturbance outside of GUSG HMAs, followed by Alternatives D, E, and C. Impacts to adjacent habitats may be greatest under Alternative B, followed by Alternatives D, E, and C.

The BLM proposes habitat restoration and objectives for GUSG sagebrush habitats. Habitat restoration and enhancement actions may also benefit BLM-Sensitive species. Habitat restoration and treatments in sagebrush habitats may result in localized impacts to BLM-sensitive species, including BLM-sensitive plants that may occur in sagebrush ecosystems. Impacts to BLM-sensitive wildlife may occur from direct removal of habitat and increased human noise and presence during restoration activities. Impacts to BLM-sensitive plants may include trampling, soil compaction, and habitat removal resulting from restoration activities. The action alternatives differ in the extent and methods proposed for habitat restoration. Alternative B proposes the greatest amount of potential areas where habitat restoration and enhancement could be applied. Restoration actions proposed under Alternative B would not include surface disturbance or heavy machinery, and weed treatments would be limited to spot-treatments. Alternatives D and E would provide similar conservation benefit; however, treatments would be prioritized in fewer acres than Alternative B. Alternatives C, D and E propose to authorize some treatment methods that may result in surface disturbance or impacts, such as mechanical treatments and may use heavy machinery. Site-specific analysis of proposed implementation-level sagebrush treatments would be required to ensure adverse impacts to BLM-sensitive species would be avoided or minimized.

All of the action alternatives propose to treat conifers encroaching in sagebrush habitats, but to varying degrees. BLM-sensitive species that use pinyon-juniper woodlands, such as the pinyon jay, may be negatively impacted by conifer treatments. Impacts may include loss of breeding, nesting, foraging, or dispersal habitats and avoidance of treatment areas and disturbance caused by increase of human presence or noise. Alternative B proposes the largest amount of acres available to conifer treatments (i.e., OHMA, UHMA, LCMA, and Adjacent Non-habitat). Alternative C would include treatments only in OHMA and UHMA, and Alternatives D and E would include OHMA, UHMA, and LCMA. Treatments would be limited to where ecological potential to restore GUSG habitats exist. Treatment methods under Alternative B would use non-ground disturbing methods, but could include surface disturbance under Alternatives C, D, and E. Alternatives C, D, and E include measures to design projects to balance restoration objectives to avoid impacting other wildlife, including BLM-sensitive species and migratory birds.

3.2.6.4 Conclusion

Under all alternatives, special status species would be managed under the BLM Manual 6840. Management actions and implementation-level decisions would require Section 7(a)(1) consultation with the USFWS to consider impacts to listed species under all alternatives. Alternative B would result in the greatest number of acres that would be closed or restricted from other resource uses within OHMA and UHMA. For species that co-occur with GUSG, Alternative B would provide the most conservation benefit because it would close the most area to surface-disturbing and disruptive activities. Alternatives D and E would offer some conservation benefit for those species co-occurring with GUSG because some acres of OHMA and UHMA would be closed to resource use, and minimization measures would be applied for GUSG conservation that may also extend benefit to other special status species. Alternative C would close or restrict the least amount of acres in OHMA and UHMA, and therefore would provide the least conservation benefit to special status species that co-occur with GUSG in the decision area.

Under Alternative B, the most acres would be proposed for vegetation treatments, which may result in impacts to species that occur in adjacent habitats such as pinyon-juniper woodlands or sagebrush communities that currently do not exhibit the composition and structure for suitable GUSG habitat. Alternatives C, D, and E propose balancing treatments in pinyon-juniper encroachment areas to ensure that other special status species are considered in project design to avoid or minimize impacts, including disturbance to individuals and loss of breeding habitat. Management actions would prioritize GUSG habitat suitability under Alternative B; however, under Alternatives C and D, impacts to other species would be considered in balance with habitat management objectives for GUSG. Alternatives C and D would provide the greatest conservation benefit to species that occur in pinyon-juniper woodlands when compared to the no action and other action alternatives.

3.2.6.5 Cumulative Effects

The cumulative effects analysis area for special status species is the decision area, which encompasses GUSG populations and their habitats, Adjacent Non-habitat areas, and potential linkage areas. Past, present, and future actions that may impact special status species are generally similar to those described under Issue 1 and Section 3.1.1. Past anthropogenic development in the analysis area is likely to have also contributed to impacts to other special status species, including loss or alteration of habitat, but at varying degrees, based on their habitat preferences and distribution. For special status species that may co-occur in habitats used by GUSG, management actions proposed under the action alternatives that limit surface use and anthropogenic disturbance or development would likely reduce effects to co-occurring special status species and their habitats in the future. However, for special status species that occur in habitats that are proposed for vegetation management or in areas adjacent to HMAs where surface uses are limited, cumulative effects may be greater than present because vegetation treatments or development may be concentrated in those areas, potentially due to closures for those activities in OHMA and UHMA under the action alternatives, and in LCMA and Adjacent Non-habitat under Alternatives B, D, and E.

The implementation of existing and proposed land use plans includes management actions that protect special status species and their habitats and include considerations for avoidance, minimization, or mitigation of impacts on special status species. Under all alternatives, the BLM would be required to analyze impacts on USFWS listed species for any federally proposed action through consultation with the USFWS under Section 7 of the ESA.

3.2.7. Issue 6: How would climate change affect the resiliency and adaptation of GUSG populations?

3.2.7.1 Analytical Methods and Assumptions

Indicators

- Acres of sagebrush habitat within HMAs and lek buffers
- Acres of sagebrush habitat forecast under RCP 4.5 and 8.5 derived from Rigge et al. 2021.

Assumptions

- Climate change is resulting in an increase in annual variation in weather patterns, including variability in precipitation.
- Climate change is resulting in an increase in temperatures in the region.

- Climate change is resulting in the reduction of water availability across the region, including a reduction in winter water availability and reduction in precipitation in the spring-summer growing season.
- Climate change is expected to increase the risk of establishment and proliferation of invasive species in sagebrush habitats.
- Climate change is resulting in the increased intensity, severity, and size of wildfires in sagebrush ecosystems.
- Climate change may result in varying impacts to seasonal habitats for GUSG.
- Climate resilience is defined as the ability of the species to withstand and recover from climate-driven events, trends, and disruptions.
- Climate adaptation is defined as the ability of the species to adjust to changing climate and associated impacts.
- Climate change scenarios to be considered in the analysis are the RCP 4.5 and 8.5 scenarios.

The analytical methods consist of a qualitative analysis and quantitative, where feasible, of each action alternative as it relates to identified climate stressors for GUSG, and how each action alternative may improve or negatively affect the resiliency or the potential for adaptation of GUSG populations.

3.2.7.2 Affected Environment

The GUSG has been identified as a species that is highly vulnerable to climate change impacts (USFWS 2014, 2019; Neely et al. 2011). Vulnerability is defined as the degree to which a species or ecosystem is susceptible to or unable to cope with the adverse effects of climate change. Vulnerability can be assessed by considering a species or ecosystem's exposure and sensitivity. Exposure is the rate, intensity and factors of climate change a species is likely to experience given climate projections. Sensitivity is defined as the qualitative description of effects a species or system is likely to experience from climate change (Neely et al. 2011).

Climate change is anticipated to result in increased temperatures; increase variability in precipitation events, including potential increases in winter precipitation and decreases in spring/summer precipitation in the region; decreases in snowpack; and increased variability in storms and precipitation events (e.g., increase intensity and change timing of seasonal weather events). Overall drought conditions throughout GUSG habitat rangewide, between 1999 and 2003, resulted in population declines in all GUSG populations (USFWS 2014).

The GUSG is heavily dependent on sagebrush ecosystems and seasonal habitats located therein; therefore, any anticipated climate change impacts to sagebrush are likely to have ramifications to the species, particularly for reductions in the extent and quality of sagebrush habitats and other seasonal habitat types. Overall predictions of changes to sagebrush extent indicate some

uncertainty in the geographic extent of impacts; however, it is expected that there will be significant reductions in sagebrush in the hottest and driest portions of the biome, some of which occur within the GUSG range (Remington et al. 2021).

Montane sagebrush communities, such as those comprising occupied and suitable habitats in Gunnison Basin, are likely to expand under changing climate conditions, especially at the upper elevational range of the ecosystem (Neely et al. 2011). Lower elevation sagebrush systems may experience drier conditions than upper elevation ranges. Understory vegetation at lower elevation systems is likely far more susceptible to invasive species, such as cheatgrass, resulting from increased drought and higher temperatures and higher water stress in native graminoids and forbs. Understory grasses and forbs are more likely to be vulnerable to adverse impacts from drought, increased temperatures, and changes to the quantity and timing of water availability (Neely et al. 2011).

More recent climate projections offer insight into predicted sagebrush conditions under RCP 4.5 and 8.5. Rigge and others (2021) developed model predictions of sagebrush and fractional cover which can provide insight into understory and seasonal habitat climate predictions for GUSG habitat. Broadly, these models predict an increase in shrub cover, bare ground, and annual herbaceous cover (e.g., annual grass such as cheatgrass) and a decrease in sagebrush cover and perennial grass cover (Rigge et al. 2021). Conditions will likely favor shrub species that are suited to drier and hotter conditions, such as greasewood (*Sarcobatus vermiculatus*) or rabbitbrush (*Chrysothamnus* sp.). Further, while sagebrush may be well adapted to semiarid conditions throughout its range and have the ability to withstand small fluctuations in temperature and available water, projected changes to water availability and timing is likely to result in the reduction of recruitment and survival of sagebrush seedlings and corresponding reduction in sagebrush cover as stands reach late seral stages (Rigge et al. 2021).

Detailed descriptions of projected shifts in sagebrush communities are presented in Section 3.6, *Vegetation*, and are summarized briefly in this section (Table 3.2.20). Within OHMA, the modeling outputs for the 2050 RCP 4.5 and RCP 8.5 scenarios indicate a potential dramatic reduction in sagebrush canopy densities (Rigge et al. 2021). Under the RCP 4.5 scenario, sagebrush canopy coverage is anticipated to drop below 10 percent in the Gunnison Basin and Poncha Pass population areas; within the remaining population areas, sagebrush cover is expected to decrease to nearly zero under the RCP 4.5 and RCP 8.5 scenarios (see Table 3.6.23 in Rigge et al. 2021). Within UHMA, sagebrush cover under the RCP 4.5 and RCP 8.5 scenarios is anticipated to reduce to zero percent across all population areas by 2050.

Table 3.2.20. Current and Forecasted Acres of Sagebrush Cover[1] in Gunnison Sage-Grouse HMAs

	OHMA	UHMA	LCMA	Non-Habitat (1-mile buffer)	Non-Habitat (4-mile buffer)
Current	103,110	7,762	799	4,623	7,966
Forecast – RCP 4.5	0	0	0	0	28
Forecast – RCP 8.5	0	0	0	0	1

[1]Sagebrush cover greater than 15 percent.

Anticipated shifts in annual herbaceous cover types within OHMA and UHMA under the RCP 4.5 and 8.5 scenarios indicate an anticipated reduction to zero percent herbaceous cover by 2050 within the decision area across all populations (see Tables 3.6.25 and 3.6.26 in Section 3.6, *Vegetation*). Models for perennial herbaceous cover types within OHMA under the RCP 4.5 and 8.5 scenarios indicate a potential for increased coverage in most population areas, while expected coverage areas may slightly decline in the Dove Creek and Piñon Mesa population areas (see Table 3.6.25 in Section 3.6, *Vegetation*). Perennial herbaceous cover in UHMA under the RCP 4.5 and RCP 8.5 scenarios may slightly increase in most population areas and slightly decline in the Dove Creek, Monticello, Piñon Mesa, and San Miguel Basin population areas (see Table 3.6.24 in Section 3.6, *Vegetation*).

GUSG was ranked as "highly vulnerable" to modeled climate change by the year 2050 (The Nature Conservancy 2011) due to degradation of brood-rearing habitat resulting from the loss of mesic meadows, springs, seeps, and riparian areas, in addition to potential changes in sagebrush cover and landscape-scale disturbances such as fire and invasive species proliferation (USFWS 2014). In addition, the apparent sensitivity of GUSG to drought effects may mean that the species is likely to have limited capacity to adapt to more severe and intense droughts as well as additional other factors that may become exacerbated by climate change, such as disease and invasive plant proliferation (USFWS 2014).

3.2.7.3 Environmental Consequences

Effects Common to All Alternatives

The projected shifts of sagebrush communities and loss of sagebrush cover due to climate change is likely to result in the loss of suitable habitat for GUSG in all eight populations and currently occupied habitat (See Map A.60 through Map A.68). Brood-rearing habitat, which is highly dependent on the availability of mesic sites and associated food resources, is likely to be most impacted by climate change-related drought (USFWS 2014; Neely et al. 2011). Loss and degradation of low-elevation springs or wetlands is expected to result in the reduction of availability of brood-rearing habitat for this species (Neely et al. 2011). Reduction in the quantity and quality of brood-rearing habitat would have impacts on key GUSG demographics, particularly as they relate to the survival of chicks and juveniles, which is vital to population

growth rates for the species (USFWS 2014; Davis 2012). Wetland and riparian areas currently represent less than one percent of the overall OHMA and UHMA acreages within the decision area; among the population areas, the Gunnison Basin includes the most acres of riparian and wetland areas.

In addition to the loss and alteration of seasonal GUSG habitat types, impacts to GUSG may result from alterations to weather patterns, including frequency and severity of storms, more extreme drought, and increased variation in temperatures and precipitation. Alterations in temperature and weather may result in changes to GUSG phenology. Extreme weather events such as spring snows, hailstorms, or large precipitation events may result in reduced survivorship, especially for newly hatched chicks (USFWS 2019).

Alternative A – (No Action – Current Management)

Under the No Action Alternative, GUSG and their habitats would be managed by existing land use plans. There are no current management actions in existing plans that specifically address climate change related to GUSG and their habitats. Some management actions under existing land use plans may provide protection for GUSG habitats, including those that limit or remove surface disturbance in GUSG habitats. Removal of surface disturbance in GUSG habitats may result in the reduction of additional stressors to vegetation communities, which may improve the resilience of vegetation to climate-related stressors, such as drought, changes to water availability, and changes to disturbance regimes. Existing plans differ in timing of seasonal use restrictions, areas in which restrictions are applied (e.g., lek buffers or habitat areas), and for which activities surface use restrictions are required. Under the No Action Alternative, rangewide management actions related to surface use restrictions would not be implemented, which may result in varying degrees of habitat resiliency in climate change scenarios.

Management actions related to fire suppression and fuel treatments, habitat improvement, and livestock grazing management vary across the 11 RMPS. Generally, all plans encourage vegetation treatments that will promote healthy sagebrush ecosystems and rangeland plant communities. Vegetation treatment management actions include noxious weed management, habitat restoration, and vegetation inventory and monitoring standards. Existing management actions pertaining to restoration of GUSG habitats may also facilitate adaptation and protection of available habitats for GUSG under climate change scenarios; however, actions are not uniformly applied throughout the range of GUSG.

Action Alternatives

All of the action alternatives would result in greater restrictions of surface disturbance and disruption to sagebrush and other vegetation communities that compose GUSG habitat when compared to the No Action Alternative. Under Alternatives B and B1, the BLM proposes to restrict surface use and surface disturbance in OHMA, UHMA, LCMA, and Adjacent Non-habitat, including livestock grazing, development, and ROW allocations, which would result in

the most acres removed of potential stressors to vegetation communities in the decision area. With the removal of these additional stressors, vegetation communities in the decision area under Alternatives B and B1 may be more resilient to climate change. Effects to GUSG habitats under Alternative B2 would be similar to those described for Alternative B1; however, livestock grazing would be allowed in OHMA and UHMA outside of the breeding season.

Alternative C would authorize surface disturbance in GUSG HMAs if effects can be avoided and minimized. When compared to the other action alternatives, Alternative C may result in more surface disturbance in GUSG habitat than other alternatives and, therefore, reduce resiliency in vegetation communities to additional climate change stressors due to surface disturbance or surface use activities. Alternatives D and E propose the closure of some acres of OHMA and UHMA to other resources and to balance resource allocation within OHMA and UHMA by applying minimization measures. Alternatives D and E would provide more conservation benefit and the potential for vegetation resiliency through the management of surface use and disturbance than Alternative C, but not to the extent as Alternative B.

Management actions that include specific measures to address drought conditions under all other action alternatives would not be required under Alternative E. Under Alternative E, the effects of climate change and drought on the resiliency of sagebrush, riparian, and wetland communities within the Gunnison Basin would be similar to those described under Alternative D but would not extend to the other population areas.

3.2.7.4 Conclusion

Alternative A would maintain the current management of lands in the decision area, resulting in an inconsistent rangewide approach to surface disturbance restrictions, vegetation management, and restoration objectives, and would not require rangewide implementation of adaptive management actions focused on improving the resiliency of native vegetation to resist the potential effects of climate change. The lack of consistent management for addressing potential climate change impacts through focused vegetation treatments and other adaptive management actions would likely result in varying resiliency and productivity of upland, wetland, and riparian vegetation communities within the decision area.

Alternatives B through D would implement restrictions on surface disturbance and disruption to sagebrush and other vegetation communities. These surface use restrictions may result in reduction of landscape stressors on vegetation communities that are impacted by climate change and potentially could result in the increase in biomass, resilience, and general health of vegetative communities. Alternative B would apply the most restrictive management of surface-disturbing activities within the decision area and would result in the greatest benefit to native vegetation communities including surface use restrictions in OHMA, UHMA, LCMA, and Adjacent Non-habitat. Alternative D would provide the next highest conservation benefit to GUSG habitats when compared to the other action alternatives because surface use

restrictions would be applied to OHMA and UHMA. Alternative C would propose the least amount of surface use restrictions and, therefore, may result in the least conservation benefit and protection to vegetation exposed to climate stressors.

3.2.7.5 Cumulative Effects

The cumulative effects analysis area for special status species is the decision area, which encompasses GUSG populations and their habitats, Adjacent Non-habitat areas, and potential linkage areas.

The cumulative effects analysis area for special status species is the decision area and the timeframe for the analysis is the life of this RMP Amendment, 10 to 15 years. Climate change within the cumulative effects analysis area could cause an increase in temperatures and variations in precipitation that could affect soil conditions, vegetative health, and water availability, which in turn could result in potentially dramatic shifts in vegetation community composition within the planning area. These changes could result in the reduction or elimination of habitat for GUSG. Changing conditions may require adaptation to new habitats, which may prove difficult for GUSG, a species that has narrow habitat requirements for survival. GUSG may unable to adapt to changing conditions or move with specific habitat location changes.

Past, present, and foreseeable development may contribute to cumulative effects for climate change on wildlife habitats because changes to temperature and precipitation may result in increased stressors to vegetation and additional vegetation loss my exacerbate indirect cumulative effects, such as the increase in invasive species and wildfire. The proposed alternatives would result in the limitation of development and anthropogenic stressors within HMAs on BLM-managed lands, which could result in positive, but likely negligible, cumulative effects for habitats impacted by climate change by removing other landscape or vegetation stressors in those HMAs.

3.2.8. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(C)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is implemented. Management actions proposed under the action alternatives would result in reduction of threats to GUSG. Application of site-specific mitigation measures during site-scale implementation actions would avoid impacts to GUSG and special status species. Further, all implementation actions under all alternatives would require consideration of effects to GUSG and other USFWS-listed species under Section 7(a)(1) of the ESA, which would avoid adverse effects to listed species. There would be no unavoidable adverse effects to special status species under the action alternatives.

3.2.9. Relationship of Short-term Uses and Long-term Productivity

Section 102(2)(C)(iv) of NEPA requires a discussion of the relationship of short-term local uses of the environment and the maintenance and enhancement of long-term productivity of resources. For this RMP Amendment/EIS, "short-term" is defined as occurring only during or immediately after implementation and "long-term" as occurring for an extended period after implementation (several years or more).

The objective of management actions in this RMP/EIS is to provide for consistent, efficient, and scientifically backed management of public land for the conservation of GUSG and their habitats. Management actions applied under the action alternatives would provide for consistent management of GUSG and their habitats range-wide, including reduction in anthropogenic disturbance and threats, enhancement or restoration of habitat, and effective monitoring strategies. Short-term uses in portions of the decision area for energy or mineral development, transportation, recreation, ROW authorization and construction, and livestock grazing may result in the long-term alteration or loss of habitats for GUSG. These impacts would persist for as long as the alterations or loss of habitat would continue. Alternatives A and C would have the greatest potential for short-term uses resulting in long-term loss to GUSG habitat suitability because fewer surface disturbance restrictions are proposed in less area when compared to Alternatives B, D, and E. Alternative B would provide the greatest long-term protection for GUSG habitats because surface use restrictions would be applied in OHMA, UHMA, LCMA, and Adjacent Non-habitat.

3.2.10. Irreversible and Irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. None of the alternatives would result in an irreversible or irretrievable commitment of special status species.

3.3. FISH AND WILDLIFE

3.3.1. Introduction

Section 3.3 describes the existing conditions for wildlife resources in the decision area, which includes terrestrial animal species and their habitats. UDWR and CPW are the primary authorities for management of fish and wildlife species in their respective states. The BLM manages habitat for wildlife on BLM-administered lands.

This analysis focuses on big game. Big game species considered in this analysis include mule deer and elk, because these are the primary species that overlap GUSG range and use similar habitats seasonally.

Management of fisheries was not identified as a key issue in developing alternatives for this RMP Amendment/EIS. Further, analysis of water quality, a key issue for maintenance of fish habitat and fisheries, was not further analyzed in this RMP Amendment/EIS. Management of GUSG habitats adjacent to water bodies, such as mesic or riparian habitats, would have subsequent benefits to fish and their habitats. Based on this, fish and their habitats are not analyzed further in this section.

3.3.2. Issue 1: How would management actions under each alternative affect big game species and their habitats?

3.3.2.1 Analytical Methods and Assumptions

Indicators

- Acres of surface disturbance restrictions on BLM-administered lands in big game seasonal habitat types and overall habitats.
- Acres of livestock grazing on BLM-administered allotments/lands in big game seasonal habitat types and overall habitats.
- Acres of ROW exclusion or avoidance areas in big game seasonal habitat types and overall habitats.
- Acres and qualitative discussion of proposed ACECs.
- Acres and qualitative discussion on recreation limitations, OHV travel management.

The analysis of effects to big game and their habitat reflect the following assumptions:

- The occupied/unoccupied GUSG habitat reflects the current distribution of habitat and population of the species and will be used as a basis to describe how big game habitats overlap with GUSG habitats by subpopulation and habitat status.

- BLM will continue to coordinate with CPW/UDWR on the implementation of management actions that consider or benefit important big game habitats on public lands, including Federal mineral estate. BLM will consider future land use actions and decisions to avoid, minimize, and mitigate adverse impacts to big game species.
- BLM management actions under existing RMPs related to big game would remain in place.

3.3.2.2 Affected Environment

Elk

Elk are migratory game and portions of their seasonal habitats overlap with GUSG habitat. Elk have high economic and recreational value. This species uses several habitat types throughout its life history, mostly comprising forested areas and shrublands. Elk typically move between higher elevation summer habitats where they utilize more forested areas, to lower elevation winter habitats, consisting of shrublands and forested areas. Important winter ranges for elk in Colorado and Utah provide crucial resources to this species during inclement winters. Crucial winter habitat, and other important seasonal habitats are described further in this section.

Elk have a varied diet, consisting primarily of grasses, forbs, and shrubs, and are able to meet nutrient requirements in a wide range of habitat types, provided that adequate quantities of forage are available. Forage quantity in summer and winter ranges was found to have the strongest effect on elk recruitment relative to other habitat factors, such as precipitation, harvest pressure, and natural predator pressure (Lukacs et al. 2018). In summer, Elk use higher elevation habitats, and have shown preference for aspen/conifer communities in Colorado and Utah (UDWR 2022).

Distribution in the Decision Area

In Colorado, elk are managed in Data Analysis Units (DAU). There are 15 elk DAUs that intersect the decision area. Each DAU is comprised of Game Management Units, which are spatial units where harvest of big game is distributed. Approximately 2,563,000 acres of DAUs overlap with the decision area. Eleven of the DAUs overlap with GUSG populations in Colorado. Table 3.3.1 presents the Colorado DAUs, elk herd names, acreage within the decision area and acres managed by the BLM, as well as population estimates between 2016 and 2022.

In Utah, elk are managed by UDWR in hunt units. There are six hunt units that overlap the decision area in Utah, which include both bull and antlerless hunt draw units (UDWR 2023). Approximately 502,150 acres of the six hunt units are in the decision area. Table 3.3.2 presents the elk hunt units in the decision area, the boundary names, acres in decision area and acres managed by the BLM, and population estimates between 2017 and 2021.

Table 3.3.1. Elk Data Analysis Units and Game Management Units in the Decision Area in Colorado

Elk DAU	Elk Herd Name	GMUs	Total Acres	Acres in Decision Area	Percent Decision Acres	BLM Acres	Percent BLM Acres	Population Estimate						GUSG Population Area that overlaps DAU
								2021	*2020*	*2019*	*2018*	*2017*	*2016*	
E-5[1]	West Elk Mountains	53, 54, and 63	864,080	195,150	23%	101,910	12%	8,476	8.530	7,690	8,070	6,860	7,150	Crawford and Gunnison
E-10	Yellow Creek	21,22, 30, 31, and 32	2,400,580	1,370	0%	1,370	0%	14,930	12,070	12,420	11,070	11,420	11,230	N/A
E-11	Sand Dunes	82	696,560	24,130	3%	19,710	3%	5,783	5,280	5,970	5,080	4,530	5,580	Poncha Pass
E-14	Grand Mesa	41, 411, 42, 421, 52, and 521	1,585,330	2,540	0%	890	0%	14,337	15,400	15,390	13,340	14,040	14,480	N/A
E-17	Collegiate Range	48, 481, 56, and 561	606,540	140	0%	0	0%	3,066	2,820	2,990	3,420	3,560	3,100	Poncha Pass
E-19	Glade Park	40	476,050	269,720	57%	216,360	45%	3,914	3,430	3,760	3,400	3,100	2,490	Piñon Mesa
E-20	Uncompahgre	61 and 62	1,472,580	470,480	32%	422,140	29%	12,540	11,720	10,380	9,540	8,750	8,590	CCSM, Piñon Mesa, San Miguel Basin
E-24	Disappointment Creek	70, 71, 711, 72, and 73	3,023,100	868,350	29%	643,050	21%	19,551	19,980	16,890	16,890	17,950	19,230	Dove Creek, San Miguel Basin
E-25	Lake Fork	66 and 67	1,006,650	426,950	42%	316,450	31%	6,568	5,990	5,350	6,560	6,030	6,060	Gunnison
E-26	Saguache	68 and 681	669,960	25,170	4%	23,440	3%	4,814	4,560	4,260	3,710	3,350	3,380	Poncha Pass
E-27	Sangre de Cristo	86, 691, and 861	611,260	820	0%	0	0%	2,337	2,640	2,190	2,090	2,020	2,150	Poncha Pass
E-35	Cimarron	64 and 65	602,380	155,840	26%	72,080	12%	7,398	7,340	6,570	6,190	6,090	6,040	CCSM and Gunnison
E-40	Paradox	60	152,370	7,100	5%	7,030	5%	2,582	3,990	3,360	2,810	2,520	2,210	N/A
E-43	Fossil Ridge	55 and 551	916,310	115,300	13%	101,510	11%	6,552	5,720	4,690	4,650	4,710	4,950	Gunnison
E-55	Northern San Luis Valley Floor	682 and 791	372,520	0	0%	0	0%	150	150	150	150	150	270	N/A
Total			**15,456,270**	**2,563,060**	**17%**	**1,925,940**	**12%**	**112,998**	**85,187**	**95,080**	**96,970**	**95,080**	**96,910**	

Sources: CPW 2022a, 2021a, 2020a, 2019a, 2018a, 2017a.
[1]DAU E-5 was created in 2020 following the combination of previous DAUs E-41 and E-52. Population estimates for 2016 to 2019 are the combination of those two DAUs from CPW data. DAU=Data Analysis Unit, GMU=Game Management Unit, BLM=Bureau of Land Management, %=Percent, CCSM=Cimarron, Cerro, Sims Mesa

Table 3.3.2. Big Game Management Units in the Decision Area in Utah and Elk Population Estimates

Elk Management Unit	Hunt Management Subunit	Total Acres	Acres in Decision Area	Percent Decision Acres	BLM Acres	Percent BLM Acres	Winter Population Estimate					GUSG Population Area that overlaps Unit
							2021	*2020*	*2019*	*2018*	*2017*	
13 – La Sal	Dolores Triangle (108), La Sal Mtns (617)	1,707,980	98,780	6%	97,450	6%	2,100	2,700	2,900	2,700	2,700	Piñon Mesa
14 – San Juan	San Juan Bull Elk (183)	2,805,500	96,320	3%	59,520	2%	1,450	1,400	1,300	1,300	1,300	Dove Creek and Monticello

Sources: UDWR 2023, 2021
BLM=Bureau of Land Management, %=Percent

Seasonal Elk Habitat

In Colorado, CPW maps seasonal elk habitats that identify areas or habitat features that are used by or are crucial to elk during different times of the year (CPW 2022b). In this section, the types and acres of seasonal elk habitat that overlap with the GUSG population areas are discussed. Those seasonal habitats include:

- Elk Migration Corridor – a defined area through which higher than average density of elk make seasonal movements between summer and winter ranges.
- Elk Summer Concentration Area – areas were elk concentrate between mid-June and mid-August.
- Elk Production Area – portions of the overall range of elk occupied by females between May 15 and June 15 for calving.
- Elk Resident Population Area – an area used year-round by a population of elk.
- Elk Winter Range – the part of the overall range where 90 percent of individuals are located during the average five winters out of ten.
- Elk Severe Winter Range – that part of the range of elk where 90 percent of individuals are located with the annual snowpack is at its maximum and/or temperatures are at the minimum in the two worst winters out of ten.
- Elk Winter Concentration Area – that part of the winter range of elk where densities are at least 200 percent greater than the surrounding winter range density during the average five winters out of ten.

Of the seasonal elk habitats described above, the limiting habitats for elk in the decision area include migration corridors, production areas, severe winter range, and winter concentration areas, and these are analyzed further in this section. These habitats are also considered High Priority Habitats by CPW, and for which CPW provides management recommendations to avoid or minimize impacts to big game from land use development (CPW 2021).The summer concentration areas occur at higher elevations and in forested habitat types, which are unlikely to overlap GUSG habitats. Resident population areas are not limiting for elk and are generally widespread.

In Utah, the UDWR maps elk habitat based on its seasonal use (e.g., winter, spring/fall, or year-long) and by its value to the species (e.g., substantial or crucial) (UDWR 2023). For UDWR-mapped elk habitat, crucial habitats are generally limiting, and by definition are essential to the species.

- Substantial value are those habitats that are used by a species, that are not crucial for the population survival. The degradation or unavailability of substantial habitats generally do not lead to significant declines in carrying capacity or population numbers of elk. Crucial habitats are those that the local population of elk depends on for survival because no alternative habitats are available.

- Crucial habitats are essential to the life history requirements of elk. The degradation or unavailability of crucial habitats lead to declines in carrying capacity and subsequent declines in numbers of elk.

Seasonal elk habitats are present in all GUSG populations (Table 3.3.3).

Table 3.3.3. Acres of Seasonal Elk Habitats in GUSG Population Areas

Elk Seasonal Habitat	CSCSM	Crawford	Dove Creek	Gunnison	Monticello	Piñon Mesa	Poncha Pass	San Miguel Basin	OHMA	UHMA	LCMA	Overall (OHMA, UHMA, LCMA)
CO – Summer Concentration Area	3,580	25,080	2,930	168,700	N/A	78,790	8,340	26,100	144,760	168,760	81,750	395,270
CO – Production Area	9,920	10,870	10,720	76,010	N/A	58,180	3,550	24,630	102,590	91,300	74,890	268,770
CO – Resident Population Area	1,320	0	108,720	5,290	N/A	0	0	5,480	10,780	110,020	9,340	103,150
CO – Winter Range	62,290	113,930	215,050	709,330	N/A	166,270	45,660	173,690	804,180	682,040	348,080	1,834,290
CO – Severe Winter Range	26,090	51,420	91,040	316,860	N/A	16,280	14,130	123,260	342,330	296,760	160,960	680,060
CO – Winter Concentration Area	27,680	33,840	110,760	362,500	N/A	21,730	2,060	0	382,980	219,420	160,960	680,300
UT – Winter – Crucial	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	0	3,560	14,970	18,530
UT – Year-long – Crucial	N/A	N/A	N/A	N/A	16,180	N/A	N/A	N/A	10,290	5,890	14,580	30,760
UT – Year-long – Substantial	N/A	N/A	N/A	N/A	35,740	N/A	N/A	N/A	4,680	31,320	5,120	41,120

Sources: CPW 2022b, UDWR 2023

Mule Deer

Mule deer are big game species that occur in the decision area with high economic and recreational value. This species uses a variety of habitats throughout the year, including both shrublands and forested areas. Similar to elk, mule deer move between elevational ranges, moving to lower elevation habitats in the winter months from higher-elevation habitats inhabited during the summer.

Throughout all seasons, mule deer forage in habitats that are a mosaic of plant species, age classes, and successional stages adjacent to cover areas (Watkins et al. 2007). Winter range for mule deer is the limiting habitat type for deer for most of the decision area. Important mule deer winter range habitats include sagebrush shrublands, pinyon-juniper woodlands, and pine forests below 7,500 feet. During winter mule deer diets include more shrubs than during other parts of the year, typically because forbs and grasses are unavailable (Watkins et al. 2007). Summer diets are typically comprised of forbs, deciduous shrubs, and grasses. In summer, mule deer select higher-elevation forest types with preferred summer forage. Optimum forage quality during the summer is related to how well individual mule deer will gain necessary fat stores and lead body mass to survive during the winter (Watkins et al. 2007).

Distribution in the Decision Area

In Colorado, mule deer are managed in DAUs. There are 16 mule deer DAUs that intersect the decision area. As with elk, each DAU is comprised of Game Management Units where harvest of big game is distributed and managed. Approximately 2,563,000 acres of mule deer DAUs overlap with the decision area. Thirteen of the DAUs overlap with GUSG populations in Colorado. Table 3.3.4 presents the Colorado DAUs, deer herd names, acreage within the decision area and acres managed by the BLM, and population estimates between 2016 and 2022.

In Utah, mule deer are managed by UDWR in hunt units. There are six hunt units that overlap the decision area in Utah. Approximately 502,150 acres of the six hunt units are in the decision area. Table 3.3.5 presents the mule deer hunt units in the decision area, the boundary names, acres in decision area and acres managed by the BLM, and population estimates.

Table 3.3.4. Mule Deer Analysis Units and Management Units in the Decision Area in Colorado

Mule Deer DAU	Mule Deer Herd Name	GMUs	Total Acres	Acres in Decision Area	Percent	BLM Acres	Percent BLM Acres	Population Estimate						GUSG Population Area That Overlaps DAU
								2021	*2020*	*2019*	*2018*	*2017*	*2016*	
D-11	Bookcliffs	21 and 30	1,125,270	1,370	0%	1,370	0%	8,662	7,180	7,450	7,570	6,720	8,560	N/A
D-15	Cottonwood Creek	48, 56, 481, and 561	606,540	140	0%	0	0%	3,596	3,480	3,270	3,560	3,620	4,010	Poncha Pass
D-18	Glade Park	40	476,050	269,720	57%	216,360	45%	3,904	4,690	5,260	4,810	4,420	4,820	Piñon Mesa
D-19	Uncompahgre	61 and 62	1,472,580	470,480	32%	422,140	29%	10,520	17,100	14,900	14,820	16,440	18,590	CSCSM, Piñon Mesa, and San Miguel Basin
D-20	North Fork Gunnison River	53 and 63	490,020	106,450	22%	61,780	13%	7,849	7,840	7,440	7,330	7,150	6,910	Crawford and Gunnison
D-21	West Elk	54	374,060	88,690	24%	40,130	11%	5,261	5,710	3,800	5,570	3,950	4,440	Gunnison
D-22	Taylor River	55 and 551	916,310	115,300	13%	101,510	11%	6,221	6,380	5,230	7,950	5,010	6,580	Gunnison
D-23	La Sal	60	152,370	7,100	5%	7,030	5%	1,439	1,500	1,380	1,340	1,440	1,530	N/A
D-24	Groundhog	70, 71, and 711	1,825,530	718,920	39%	531,680	29%	14,949	14,890	14,910	14,860	15,080	16,770	Dove Creek and San Miguel Basin
D-25	Powderhorn	66 and 67	1,006,650	426,950	42%	316,450	31%	6,213	7,450	6,450	7,360	5,780	5,760	Gunnison
D-26	Saguache	68, 681, and 682	832,930	25,170	3%	23,440	3%	5,425	5,890	6,050	5,460	5,680	5,070	Poncha Pass
D-29	Mesa Verde	72 and 73	1,197,570	149,430	12%	111,370	9%	8,500	7,650	6,960	6,480	6,290	6,460	Dove Creek
D-34	Wet Mountain	69, 84, 86, 691, and 861	1,617,080	820	0%	0	0%	13,075	10,040	11,420	11,680	12,390	11,640	Poncha Pass
D-37	Sand Dunes	82	696,560	24,130	3%	19,710	3%	2,526	2,530	2,830	2,650	2,480	2,360	Poncha Pass
D-40	Cimarron	64 and 65	602,380	155,840	26%	72,080	12%	6,166	6,270	6,950	6,830	7,780	8,210	CSCSM and Gunnison
D-51	South Grand Mesa	52, 411, and 521	641,490	2,540	0%	890	0%	9,108	8,450	8,230	8,750	8,300	8,400	N/A
		Total	**14,033,390**	**2,563,050**	**18%**	**1,925,940**	**14%**	**113,414**	**117,050**	**112,530**	**117,020**	**112,530**	**120,110**	

Sources: CPW 2022c, 2021b, 2020b, 2019b, 2018b, 2017b
DAU=Data Analysis Unit, GMU=Game Management Unit, BLM=Bureau of Land Management, %=Percent, CCSM – Cimarron, Cerro, Sims Mesa;

Table 3.3.5. Mule Deer Management Units in the Decision Area in Utah

Game Management Unit	Game Management Unit Name	Total Acres	Acres in Decision Area	Percent	BLM Acres	Percent BLM Acres	Winter Population Estimate[1]					GUSG Population Area That Overlaps Unit
							2021	*2020*	*2019*	*2018*	*2017*	
13 – La Sal	Dolores Triangle (108), La Sal Mtns (617)	1,707,980	98,780	6%	97,450	6%	7,800	6,500	7,000	7,400	7,200	Piñon Mesa
14 – San Juan	Abajo Mtns (618), Elk Ridge (185)	3,272,310	189,250	6%	132,630	4%	13,350	11,750	12,000	12,500	13,700	Dove Creek and Monticello

BLM=Bureau of Land Management, %=Percent

Seasonal Mule Deer Habitat

In Colorado, CPW maps seasonal mule deer habitats that identify those areas or habitat features that are used by or critical to mule deer during different times of the year (Table 3.3.6). In this section, the types and acres of seasonal elk habitat that overlap with the GUSG population areas is discussed. Those seasonal habitats include:

- Mule Deer Migratory Corridor – a defined area through which higher than average density of mule deer make seasonal movements between summer and winter ranges.
- Mule Deer Concentration Area – part of the overall range where higher quality habitat supports significantly higher densities than surrounding areas.
- Mule Deer Resident Population Area – an area used year-round by a population of mule deer.
- Mule Deer Winter Range – the part of the overall range where 90 percent of individuals are located during the average five winters out of ten.
- Mule Deer Severe Winter Range – the part of the range of elk where 90 percent of individuals are located with the annual snowpack is at its maximum and/or temperatures are at the minimum in the two worst winters out of ten.
- Mule Deer Winter Concentration Area – the part of the winter range of elk where densities are at least 200% greater than the surrounding winter range density during the average five winters out of ten.

Of the seasonal mule deer habitats, the migratory corridors, severe winter range, and winter concentration areas are the seasonal habitats that overlap GUSG and are most limiting for mule deer range-wide. These habitats are also considered High Priority Habitats by CPW, and for which CPW provides management recommendations to avoid or minimize impacts to big game from land use development (CPW 2021).

In Utah, the UDWR maps mule deer habitat based on its seasonal use (e.g., winter, spring/fall, or year-long) and by its value to the species (e.g., substantial or crucial). Substantial and crucial habitat values for mule deer are the same as those described for elk previously.

Table 3.3.6. Seasonal Mule Deer Habitats in GUSG Population Areas

Mule Deer Seasonal Habitat	CSCSM	Crawford	Dove Creek	Gunnison	Monticello	Piñon Mesa	Poncha Pass	San Miguel Basin	OHMA	UHMA	LCMA	Overall (OHMA, UHMA, LCMA)
CO - Summer Concentration Area	360	70,340	0	9,950	0	4,480	4,340	15,400	33,290	71,560	19,603	1,124,450
CO - Resident Population Area	11,050	76,510	275,190	9,210	0	0	990	14,670	81,940	313,170	25,100	420,220
CO - Winter Range	56,620	109,110	299,780	641,040	0	124,760	33,730	154,780	758,870	660,970	325,570	1,745,410
CO - Severe Winter Range	17,230	58,240	30,780	192,970	0	29,660	5,000	100,680	225,810	208,750	134,680	569,240
CO - Winter Concentration Area	29,910	64,080	175,310	431,960	0	41,520	2,160	88,980	448,110	385,820	59,120	893,050
UT – Spring/Fall Crucial	0	0	0	0	29,000	0	0	0	25,350	3,650	6,260	32,260
UT – Summer Crucial	0	0	0	0	14,620	0	0	0	6,010	8,600	150	14,760
UT – Winter Crucial	0	0	100	0	102,250	5,850	0	0	39,294	68,900	43,360	151,550
UT – Winter Substantial	0	0	20	0	0	0	0	0	0	20	0	20

Sources: CPW 2022b, UDWR 2023

3.3.2.3 Environmental Consequences

Effects Common to All Alternatives

Under all alternatives, big game management actions described in existing RMPs would remain in place. For example, timing limitations for big game crucial habitats designated by BLM units would remain. The BLM would continue to coordinate with CPW and UDWR to manage habitats for big game species on BLM-managed lands.

Vegetation

All alternatives include management objectives that would improve habitats for GUSG. Because big game habitats overlap GUSG habitats, particularly in winter, improvements to GUSG habitat would have beneficial effects to big game habitats. Winter habitats for big game are historically limiting in the region. Improvements to sagebrush habitats designed to benefit GUSG that include increasing live sagebrush cover, increasing grass and forb cover, and sagebrush height would have beneficial impacts on big game, and mule deer in particular, as they are a species that relies more heavily on sagebrush for browsing during the winter.

Although pinyon-juniper woodlands provide thermal and escape cover for mule deer during the winter, encroachment of pinyon-juniper woodlands into sagebrush areas, and crucial winter range for the species in particular, could have detrimental effects. In encroached areas, understory vegetation may be shaded out or eliminated, thereby reducing the available forage to wintering big game.

Big game habitats may be degraded by the establishment and proliferation of invasive exotic plant species. Changes to native plant communities from invasive weeds include the loss of suitable forage in seasonal habitats where native forage species have been outcompeted by exotics. In some portions of the region, where human disturbance and human-caused alteration of habitats are minimal, habitat degradation caused by cheatgrass (*Bromus tectorum*) is a driving factor of threats to mule deer populations (Watkins et al. 2007). Cheatgrass may also alter fire return intervals and increase intensity of fires on rangelands, which could result in the destruction of native shrublands in crucial big game habitats.

Livestock Grazing Management

Livestock grazing that is properly managed may result in beneficial effects to big game habitats, including improving forage productivity and community composition, particularly as it relates to mule deer, because livestock grazing may maintain shrubs in suitable mule deer habitat. However, in some areas, livestock grazing may also directly impact big game habitats through the removal of forage by livestock that would otherwise be available to big game. The BLM considers big game use when determining carrying capacity based on forage production for grazing allotments, and allocates a percentage of forage for big game. Heavy grazing pressure and overstocking would almost always be detrimental to big game habitats and available forage

(Watkins et al. 2007). Cattle may also directly compete with big game species for forage, and may alter their behavior, potentially negatively interfering with habitat use and foraging opportunities. Livestock grazing resulted in shifting use patterns of mule deer, generally into habitats avoided by cattle (Loft et al. 1991; Stewart et al. 2002). Indirect effects of livestock grazing may result in the long-term alteration of forage composition and structure in big game habitats (Holecheck 2001).

Recreation

Recreation impacts to big game are similar to those described for GUSG in Section 3.2 and may include degradation of habitats through the development of trails or roads. Impacts would be greater if recreational trails were to be created in critical seasonal habitats for big game. Additional impacts on big game resulting from recreation include avoidance or displacement from seasonal habitats due to increased human presence or noise. During the winter, impacts from human disturbance may be greater, causing increased energy expenditure for big game during a period when physiological resources are limited.

Travel and Transportation

Development of roads may result in the loss of big game habitat. Big game may be killed or injured along roads. Indirect effects include habitat fragmentation and barriers to movement, particularly those related to moving within or between important seasonal habitats. Responses to roads by big game likely differ based on the amount of traffic on the road – main roads were found to have greater impact to big game than less traveled roads (Perry and Overly 1977).

Fluid and Solid Mineral Development

Development of fluid and solid minerals may result in the direct loss of big game habitats from the construction of well pads, pits, pipelines, compressor stations, mine sites, geothermal development, and other above-ground structures. Impacts resulting from the loss of habitat may be greater if they occur in ecologically important habitat for big game, such as critical winter habitat. Similar to GUSG, impacts on big game and their habitats are greater when energy development or mineral extraction is conducted at higher intensities and densities. Increased human disturbance at energy developments may also contribute to impacts on big game. Mule deer avoided areas where traffic and development were greatest in oil and gas fields in Wyoming (Sawyer et al. 2009). Elk were found to avoid areas of human activity at twice the distance when compared to when no human disturbance was present.

Lands and Realty

For the purposes of this analysis, environmental consequences related to lands and realty management are combined with renewable energy due to similarity in impacts from ROW authorizations and subsequent infrastructure construction. Management actions may include ROW authorizations, designation of ROW exclusion or avoidance areas, disposals, and

acquisitions. Impacts related to ROW authorizations may result from the construction of transmission or distribution electrical lines; wind turbines and associated infrastructure; solar development; and other related infrastructure for renewable energy. Construction may result in surface disturbance and direct loss of big game habitat. Indirect effects may include the fragmentation of or degradation of habitats adjacent to big game habitat. Effects would be greater in magnitude if they were located in critical seasonal habitats.

Alternative A – (No Action – Current Management)

Under the No Action alternative, big game management actions developed in each RMP would remain in place. Big game and their habitats would continue to see the same level of impacts from development, livestock grazing, roads, oil and gas development, and ROW authorizations.

Action Alternatives

All action alternatives include management actions to maintain and improve habitat quality, quantity, and connectivity for GUSG. These management actions would provide additional benefits to big game and their habitats where they overlap with GUSG habitat (Table 3.3.6).

Special Status Species

Application of surface disturbance restrictions in GUSG HMAs would have benefits to big game and their habitats. Alternative B includes the most restrictive management actions applied to GUSG HMAs and lek buffers, including restrictions on recreation, OHV use, roads and trails, livestock grazing, mineral and energy development, and authorizations of ROWs, which would provide the greatest conservation benefit to big game when compared to the action alternatives. Alternative D provides similar conservation benefits, but not to the extent of Alternative B. Alternatives C and E would provide the least conservation benefit of the action alternatives to big game species.

Vegetation

Vegetation management actions proposed under all alternatives could provide long-term benefits to big game and their habitats. Vegetation treatment objectives include enhancement and restoration of sagebrush habitats and riparian habitats that are also important seasonally to big game. Alternatives differ in the types of HMAs that would be prioritized for vegetation treatments – Alternative B would proposed the greatest amount of acres for vegetation treatments, followed by Alternatives D and E, and Alternative C. Under all alternatives, vegetation treatments may impact big game species because of increases in human disturbance, noise, or surface disturbance (in the case of Alternatives C, D, and E). Impacts on big game would be greater if these activities were carried out during the winter, when big game are more susceptible to disturbance. Current management actions under existing RMPs that restrict activities during seasonally sensitive times for big game would avoid or minimize this impact.

Travel and Transportation

Restrictions on road development and emphasis on road closures in OHMA and UHMA under Alternative B would reduce existing habitat fragmentation and movement barriers for big game in those areas when compared across alternatives. Alternative D would result in the reduction of roads in OHMA and UHMA through closure of redundant routes, but would not provide the same level of benefit resulting from road closures as Alternative B. Alternative C would provide the least restrictions to travel and routes/trail development, and would not emphasize road closures in HMAs as the other action alternatives do. Alternative C would provide the least conservation benefit to big game species related to roads. Alternative E would implement seasonal restrictions on routes on BLM-managed lands based on the CCA.

Livestock Grazing Management

The BLM proposes measures to reduce the impact of livestock grazing in GUSG HMAs in all action alternatives, but to varying degrees. Sub-alternative B1 proposes to make OHMA and UHMA unavailable for livestock grazing and would allow permits and allotments in those HMAs to expire. Removal of livestock grazing may result in beneficial impacts on big game because big game would no longer compete with livestock for available forage. In some site-specific cases, removal of livestock grazing may result in changes to plant composition and structure that could adversely impact big game seasonal habitats. For example, properly managed cattle grazing may maintain or improve mule deer forage by maintenance of shrub cover in grassland areas (Watkins et al. 2007). These impacts are likely only observed in certain areas where the ecological site potential is appropriate for such management. Under the remaining action alternatives, grazing would still be authorized; however, it would be seasonally limited during GUSG nesting periods under Alternative B2. BLM would implement adaptive management strategies for GUSG habitat guidelines, which closely align with those for big game seasonal habitats. Adaptive management actions could be applied that would improve big game seasonal habitats in grazed areas.

Fluid and Solid Mineral Development

Alternative B would provide the most restrictions for fluid and solid mineral leasing and extraction on BLM-managed lands, which would resulting in the closure of up to 650,120 acres in OHMA and UHMA to fluid mineral leasing and place restrictions on solid mineral development. Alternatives, C, D, and E restrict mineral leasing and extraction to varying degrees, and provide considerations for siting mineral development components (e.g., pipeline compressors) based on analysis of effects to GUSG and their habitats, benefits of which would be extended to big game that may co-occur with GUSG in those areas. Alternative C would only apply restrictions to OHMA and UHMA. Alternative D would apply restrictions to OHMA, UHMA, and Adjacent Non-habitat areas.

Lands and Realty

Under the action alternatives, the BLM is proposing management actions that would restrict ROW authorizations in HMAs. Subsequent development of ROWs and construction of utility lines may result in impacts on wildlife and wildlife habitat. The types of impacts would be the same as those described in effects common to all alternatives.

Under Alternative B, the BLM would manage all OHMA and UHMA as ROW exclusion areas, with few exceptions, resulting in exclusions on 492,540 acres of GUSG HMAs on BLM-managed lands. Alternative C proposes managing OHMA as ROW avoidance areas (approximately 317,070 acres), with exceptions for authorizations that would not result in adverse impacts to GUSG and GUSG habitat. Alternative D proposes managing OHMA and UHMA within 1 mile of active and inactive leks as a ROW exclusion area with some exceptions, resulting in exclusions on 62,090 acres. OHMA and UHMA outside of a 1-mile buffer of active and inactive leks in OHMA and UHMA (approximately 432,200 acres) would be managed as ROW avoidance areas. ROWs that may be authorized and utility lines constructed may cause impacts on wildlife, potentially resulting in avoidance of habitat areas due to increased noise and human disturbance and the alteration, loss, and fragmentation of habitats.

The BLM proposes to manage HMAs to limit wind and solar energy development to reduce potential impacts on GUSG and their habitats, which may result in residual conservation benefit to wildlife in places where habitats overlap. Wind and solar energy development may result in surface disturbance and the construction of transmission lines, impacts of both of which are described under effects common to all alternatives. Under Alternatives B, D, and E, OHMA and UHMA would be exclusion areas for wind or solar energy development, with few exceptions, resulting in the elimination of 650,120 acres in HMAs for wind or solar development on BLM-managed lands. Under Alternative C, OHMA would be managed as an exclusion area, and UHMA as an avoidance area for wind or solar energy development, resulting in the elimination of 391,490 acres for wind or solar energy development and the restriction of wind development on 258,630 acres.

3.3.2.4 Conclusion

All of the action alternatives would result in greater restrictions of surface disturbance and disruption to big game and their habitats than the No Action Alternative, resulting in the reduced potential for impacts from development, including loss of habitat, fragmentation, disturbance from increased noise or human presence, decreased breeding success, and decreased fitness during seasonally critical portions of the year. Alternative B would provide the most conservation benefit to big game and their habitats, followed by Alternatives D and E, and Alternative C.

3.3.2.5 Cumulative Effects

The cumulative effects analysis area for wildlife is the planning area and the timeframe for the analysis is the life of this RMP Amendment. Past, present, and reasonably foreseeable actions and conditions in the analysis area have affected and are likely to continue to affect wildlife and their habitats, including residential development, mineral exploration, industrial development (e.g., powerlines or ROWs), grazing, recreation, road construction, fires, vegetation treatments, drought, and hunter harvest. These actions can change, and have changed, habitat conditions in the analysis area. Under all of the action alternatives, impacts to wildlife may be reduced where seasonal habitats overlap GUSG HMAs from the No Action Alternative through the application of surface use restrictions; timing limitations; closures to development, recreation, and motorized travel; conditions of approval for development; and monitoring.

3.3.3. Issue 2: How would climate change affect the resiliency and adaptation of wildlife species?

3.3.3.1 Analytical Methods and Assumptions

Indicators:

- Acres of types of habitat within habitat areas
- Acres of sagebrush habitat forecast under RCP 4.5 and 8.5 derived from Rigge et al. 2021

Assumptions:

- Climate change is resulting in the increase in annual variation in weather patterns, including variability in precipitation.
- Climate change is resulting in an increase in temperatures in the region.
- Climate change is resulting in the reduction of water availability across the region, including a reduction in winter water availability and reduction in precipitation in the spring-summer growing season.
- Climate change is expected to increase the risk of establishment and proliferation of invasive species in sagebrush habitats.
- Climate change is resulting in the increased intensity, severity, and size of wildfires in sagebrush ecosystems.
- Climate change may result in varying impacts to seasonal habitats for wildlife
- Climate resilience is defined as the ability of the species to withstand and recover from climate-driven events, trends, and disruptions.

- Climate adaptation is defined as the ability of the species to adjust to changing climate and associated impacts.
- Climate change scenarios to be considered in the analysis are the RCP 4.5 and 8.5 scenarios.

The analytical methods consist of a qualitative analysis of each action alternative as it relates to identified climate stressors for wildlife and how each action alternative may improve or negatively impact the resiliency or the potential for adaptation of wildlife by functional group (e.g., big game, predators, small game, prey base).

3.3.3.2 Affected Environment

Climate change is anticipated to result in increased temperatures; increased variability in precipitation events, including potential variability in winter precipitation and decreases in spring/summer precipitation in the region; decreases in snowpack; increased variability in storms and precipitation events (e.g., increase in intensity and changes to timing of seasonal weather events); and increased fire frequency. The resulting changes to habitat composition and structure are likely to have consequences for wildlife.

CPW completed a Climate Change Assessment as part of a revision to the 2015 State Wildlife Action Plan (CPW 2015). The assessment provides an evaluation of how climate change may influence habitat distribution, factors that may affect habitat resiliency, and a vulnerability rating for priority habitats. The analysis followed methods set forth in Glick et al. 2011 – which provides a framework for conducting vulnerability assessments. The vulnerability assessment considers a habitat's exposure to climate change and its sensitivity to those changes, which describes the potential impact. The vulnerability of habitats considers this impact and the habitat's adaptive capacity to frame a habitat's vulnerability (Glick et al. 2011). For more details on methods, see Appendix F of the *Colorado 2015 State Wildlife Action Plan* (CPW 2015).

Vegetation communities in the decision area, described in detail in Section 3.6, *Vegetation, Including Riparian Areas and Wetlands*, provide a basis for considering impacts on wildlife habitats under climate change scenarios. The primary vegetation communities within and around GUSG habitat are sagebrush shrubland, pinyon-juniper woodland, montane shrubland, grassland-forbland, and forest. As temperatures increase and precipitation patterns change due to climate change, vegetation species and/or habitats may shift in elevation or latitude, resulting in changes to the composition of native and non-native vegetation communities within the decision area and the potential for different tree, shrub, and understory species to dominate a particular landscape. Loss or significant reduction in current vegetation communities may occur, and the emergence of new vegetation communities may occur.

CPW evaluated the relative vulnerability of 13 habitats to a moderate scenario of climate change (CPW 2015), based on their importance to Species of Greatest Conservation Need. The assessment analyzes exposure and sensitivity based on climate variables for each habitat,

characterization of projected future climate, and calculations of projected shift in range of climate variables. Most habitat types were ranked as moderately vulnerable in CPW's analysis; however, the separation between moderately and highly vulnerable designations is less clear than the separation between low and moderate vulnerability. For the purposes of this analysis, the focus is on wildlife habitats that are considered suitable for GUSG and their life history because those areas are where management actions proposed under this RMP are mostly likely to occur.

Sagebrush shrublands were assigned a low exposure and sensitivity ranking, a moderate resilience-adaptive capacity ranking, and a low overall vulnerability to climate change. Resilience components for sagebrush shrublands include the persistence of various sagebrush species across a wide latitudinal gradient and a somewhat wide range of precipitation in addition to no expected barriers to dispersal (CPW 2015). Overall predictions of changes to sagebrush extent indicate some uncertainty in the geographic extent of impacts; however, it is expected that there would be significant reductions in sagebrush in the hottest and driest portions of the biome, some of which occur within the GUSG range (Remington et al. 2021). Further discussion on sagebrush communities and vulnerability to climate change is presented in Section 3.2.7, under special status species, and Section 3.6.3, under vegetation.

Wetlands (meadows, fens, emergent marshes, seeps, springs) were assigned a moderate exposure and sensitivity ranking, a moderate resilience-adaptive capacity ranking, and a low to moderate overall vulnerability to climate change in the CPW State Wildlife Action Plan (CPW 2015). Wetland habitats in the decision area may experience reduced overall wetland size and depth and loss of seasonal wetland habitat due to shifts in climate regimes. Land use in conjunction with climate change can directly affect riparian areas, particularly where native plants are removed or where heavy grazing occurs (Neely et al. 2011).

Pinyon-juniper woodlands were assigned a low exposure and sensitivity ranking, a low resilience-adaptive capacity ranking, and a moderate overall vulnerability to climate change based on the vulnerability of these woodlands to stressors likely to increase under changing climate, and the extent to which the current landscape condition of the habitat has been impacted by anthropogenic disturbance (CPW 2015). Resilience components for pinyon-juniper woodlands include higher temperatures during the growing season compared to other woody vegetation types in Colorado.

UDWR identified 13 key habitat types (8 terrestrial and 5 aquatic) in the Utah Wildlife Action Plan (UDWR 2015) and identified threats to each. Threats identified for lowland and mountain sagebrush that may be related to climate change include drought, habitat shifting and alteration, non-native/invasive species, and inappropriate fire frequency and intensity. Threats identified for mountain shrub include non-native/invasive species. Threats identified for aquatic - scrub/shrub and aquatic – riverine that may be related to climate change include drought, non-native/invasive species, and inappropriate fire frequency and intensity, and threats identified for emergent include drought and non-native/invasive species.

3.3.3.3 Environmental Consequences

Effects Common to All Alternatives

With changes in temperature and precipitation, suitable climatic conditions for species and habitats may shift in elevation or latitude (CPW 2015; UDWR 2015). This may result in different dominant vegetation types or assemblages of species. Current habitat assemblages may be lost or reduced in size. Other habitats may expand. Wildlife species with narrow life history requirements may experience more intense impacts from habitat alteration than for species that are generalists. Generalist species are those that are able to use a wide variety of habitats or use a variety of food resources.

This section provides a broad overview of the potential impacts of climate change on wildlife and their habitats at a broad, landscape-level scale. Climate change refugia, or areas that may be relatively buffered from effects of climate change due to biophysical characteristics such as slope position, vegetation composition, and topography or temporally due to local-scale weather phenomena, may be present within the decision area. These areas provide areas where wildlife and their habitat may be less impacted by climate change; however, identifying these areas is challenging and outside the scope of this analysis. For the purposes of this planning effort, the analysis focuses on the large-scale impacts of climate change predicted under two RCPs.

More frequent and intense droughts would likely result in an overall reduction in the availability of water for wildlife, and potentially higher variability of water sources. Water sources that wildlife may have depended on may no longer serve as reliable sources under climate change projections. Fluctuations in precipitation would likely result in more frequent and intense droughts. Reductions in available water and soil moisture would likely result in overall decrease in fitness for plants and therefore could reduce cover and food for wildlife.

Temperature extremes resulting from climate change would likely impact individual wildlife. Extended heat waves would likely result in physiological stress to wildlife species. Indirectly, extreme temperatures and general warming trends may result in fewer cold spells or warmer winter temperatures than those that control wildlife pests or diseases, potentially causing proliferation of wildlife diseases, especially in populations that may already be physiologically stressed.

Climate change may also indirectly affect wildlife and their habitats through mechanisms that exacerbate or amplify the impacts of other threats to wildlife habitat. For example, impacts resulting from improperly managed livestock grazing under climate projections may be more severe under more frequent and intense droughts when vegetation and water resources are already stressed. Higher temperatures and fluctuations in water availability may also lead to more frequent and intense fires, resulting in the potential destruction of wildlife habitats.

Alternative A – (No Action – Current Management)

Under the No Action Alternative, wildlife and wildlife habitats would be managed by existing land use plans. Given the GUSG conservation focus of this RMP Amendment, management actions considered in the No Action Alternative are those closely related to management of GUSG and their habitats. Any management actions currently in place under existing land use plans related to wildlife and climate change would continue. Management actions in existing land use plans that restrict surface use and disturbance in GUSG habitats and provide some protection and enhance resiliency of vegetation to climate stressors would also benefit wildlife and their habitats where they overlap with GUSG habitats. Existing plans differ in application of surface use restrictions, including the types of activities that may require restrictions, timing limitations, and areas in which surface use restrictions are implemented. Under the No Action Alternative, rangewide management actions related to surface use and limitations would not be implemented.

Management actions that relate to fire suppression, fuel treatments, habitat improvements, and grazing management vary across the existing land use plans. Most RMPs have management actions related to encouraging vegetation treatments to promote healthy sagebrush ecosystems and wildlife habitats. These actions include noxious weed management, habitat restoration, and vegetation inventories and monitoring. These actions may benefit vegetation communities experiencing climate stressors because they would be implemented to increase the resiliency of communities through development of healthy ecosystems, prevention of large-scale wildfires, control of noxious weeds, and implementation of grazing systems that do not overutilize forage. Increased resiliency of vegetation to climate change could result in higher quality wildlife habitats over the long term, including elements for cover, foraging, and breeding.

Action Alternatives

All of the action alternatives would result in greater restrictions of surface disturbance and disruption of sagebrush and other vegetation communities than under the No Action Alternative. Limiting surface-disturbing stressors on the landscape may result in vegetation communities that are better able to withstand climate change impacts, providing greater stability of habitat for many wildlife species. Under Alternative B, the BLM proposes to restrict surface use and disturbance in OHMA, UHMA, LCMA, and Adjacent Non-habitat, resulting in the largest acreage of restrictions of surface use and, therefore, the greatest conservation benefit to wildlife habitats. Alternative C would propose the least amount of surface use restrictions on the fewest acres when compared to the other alternatives. Alternative C may result in more surface disturbance in habitats than other alternatives and therefore reduced resiliency in vegetation communities to additional climate change stressors due to surface disturbance or surface use activities. Alternatives D and E propose closure of some acres of OHMA and UHMA and application of minimization measures to reduce impacts of resource allocation in other areas. Alternatives D and E would provide more conservation benefit and

the potential for vegetation resiliency through the management of surface use and disturbance than Alternative C, but not to the extent as Alternative B.

Habitat management and restoration objectives under the action alternatives may provide the opportunity to increase vegetation resiliency to climate change in wildlife habitats where they overlap with GUSG habitat. Alternative B proposes restoration and maintenance objectives for sagebrush habitats in OHMA, UHMA, LCMA, and Adjacent Non-habitat, which would prioritize the most acres for restoration and maintenance when compared to the other action alternatives. Alternative D proposes similar restoration and maintenance objectives, but only to OHMA and UHMA, which would result in the potential to increase vegetation resiliency in those areas, but not in LCMA or Adjacent Non-habitat areas. Alternative C proposes restoration objectives only for OHMA and would result in the least amount of potential increase in vegetation resiliency when compared to the other action alternatives. Alternative E would follow the CCA in Gunnison Basin for habitat restoration objectives and would likely result in increased vegetation resiliency for that population, but it would not be extended to other populations.

3.3.3.4 Conclusion

Alternative A (No Action) would maintain the current management of lands in the decision area, including those actions related to wildlife and their habitats. Management actions related to GUSG habitat management in the No Action Alternative have the potential to benefit wildlife and their habitats where they overlap. Under the No Action Alternative, surface use restrictions and vegetation management or restoration objectives in GUSG habitats would not be implemented consistently rangewide. The lack of consistent management in GUSG range for addressing potential climate change impacts through focused vegetation treatments and other adaptive management actions would likely result in varying resiliency and productivity of upland, wetland, and riparian vegetation communities within the decision area.

Alternatives B through D would implement restrictions on surface disturbance and disruption to sagebrush and other vegetation communities. These surface use restrictions may result in reduction of landscape stressors on vegetation communities that are impacted from climate change and potentially could result in the increase in biomass, resilience, and general health of vegetative communities and, therefore, maintenance or increase of quality of wildlife habitat. Alternative B would apply the most restrictive management of surface-disturbing activities within the decision area and would result in the greatest benefit to native vegetation communities including surface use restrictions in OHMA, UHMA, LCMA and Adjacent Non-habitat areas. Alternative D would provide the next highest conservation benefit to wildlife and their habitats where they overlap GUSG habitats when compared to the action alternatives because surface use restrictions would be applied to OHMA and UHMA. Alternative C would propose the least amount of surface use restrictions and, therefore, may result in the least conservation benefit and protection to vegetation exposed to climate stressors.

3.3.3.5 Cumulative Effects

The cumulative effects analysis area for wildlife is the decision area and the timeframe for the analysis is the life of this RMP amendment, 10 to 15 years. Climate change within the cumulative effects analysis area could cause an increase in temperatures and variations in precipitation that could affect soil conditions, vegetative health, and water availability, which in turn could result in potentially dramatic shifts in vegetation community composition within the planning area. These changes could result in the reduction or elimination of habitat for various wildlife species and the consequent need for some wildlife species to adapt to new and changing conditions or result in the elimination of various wildlife species that are unable to adapt to changing conditions or that are unable to move with specific habitat location changes.

Past, present, and foreseeable development may contribute to cumulative effects for climate change on wildlife habitats because changes to temperature and precipitation may result in increased stressors to vegetation and additional vegetation loss my exacerbate indirect cumulative effects, such as the increase in invasive species, fire, and land cover change. The proposed alternatives would result in the limitation of development within HMAs on BLM-managed lands, which could result in positive cumulative effects for habitats impacted by climate change by removing other landscape or vegetation stressors in habitats.

3.3.4. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is implemented. Management actions proposed under the action alternatives would result in reduction of impacts to wildlife in areas where seasonal habitats overlap GUSG habitat. There would be no unavoidable adverse effects to wildlife under the action alternatives.

3.3.5. Relationship of Short-term Uses and Long-term Productivity

Section 102(2)(C)(iv) of NEPA requires a discussion of the relationship of short-term local uses of the environment and the maintenance and enhancement of long-term productivity of resources. For this RMP Amendment/EIS, "short-term" is defined as occurring only during or immediately after implementation and "long-term" as occurring for an extended period after implementation (several years or more).

The objective of management actions in this RMP Amendment/EIS is to provide for consistent, efficient, and scientifically backed management of public land for the conservation of GUSG and their habitats, which would by extension, provide conservation benefits to wildlife in the decision area. Short-term uses in portions of the decision area for energy or mineral development, transportation, recreation, ROW authorization and construction, and livestock

grazing may result in the long-term alteration or loss of habitats for wildlife. These impacts would persist for as long as the alterations or loss of habitat would continue. Alternatives A and C would have the greatest potential for short-term uses resulting in long-term loss to wildlife habitat suitability (where habitat overlaps with GUSG habitat) because fewer surface-disturbing restrictions are proposed in less area when compared to Alternatives B, D, and E. Alternative B would provide the greatest long-term protection for wildlife habitats where they overlap with GUSG habitat because surface use restrictions would be applied in OHMA, UHMA, LCMA, and Adjacent Non-habitat.

3.3.6. Irreversible and Irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. None of the alternatives would result in an irreversible or irretrievable commitment of fish and wildlife resources.

3.4. AIR RESOURCES AND CLIMATE

3.4.1. Introduction

This section describes the affected environment for air resources in the planning area, which includes 19 Colorado counties: Alamosa, Archuleta, Conejos, Costilla, Delta, Dolores, Garfield, Gunnison, Hinsdale, La Plata, Mesa, Mineral, Montezuma, Montrose, Ouray, Rio Grande, Saguache, San Juan, and San Miguel; and two Utah counties: Grand and San Juan.

This section also describes the environmental consequences, specifically focusing on two primary issues regarding air resources. The first issue examines how management actions under each alternative would affect criteria pollutants emissions and the second analyzes how greenhouse gas emissions would be affected by management activities under each alternative. For more detailed information about this section see Appendix P, *Technical Support Document – Air Resources and Climate*.

3.4.2. Issue 1: How would management actions under each alternative affect criteria pollutants compared to the original future projected concentration levels?

3.4.2.1 Analytical Methods and Assumptions

The methods used to analyze how management actions under each alternative could affect criteria pollutants in comparison to the original future projected concentration levels (Alternative A: No Action) were employed through the following approaches:

- Baseline Trends: The Affected Environment section provides an overview of current levels and trends of criteria pollutants. This analysis establishes a comprehensive understanding of the existing situation.
- Environmental Consequences: The Environmental Consequences section presents a qualitative discussion to explore the nature and type of effects on criteria pollutants based on different management actions and land use allocations for each alternative. This allows for the identification of potential impacts and facilitates a comparison between alternatives.

These methods aim to conduct a thorough and accurate analysis of the potential effects of management actions on criteria pollutants. This analysis is crucial for informed decision-making to determine the best alternative that promotes the recovery of the Gunnison sage-grouse while minimizing environmental impacts.

Certain assumptions were considered during the analysis, including:

- Continuing current trends in demands for motorized use.
- Following regulations and permit conditions of the Utah and Colorado Smoke Management Programs for prescribed burning.
- Maintaining attainment for all criteria pollutants in the analysis area, meaning that current pollutant levels will not be exceeded.
- Expecting minor increases or decreases in air quality emissions in the planning area for BLM-authorized activities in Alternatives B, C, D, and E compared to Alternative A (No Action).

These assumptions provide a consistent and realistic basis for analysis, ensuring accurate evaluation of potential impacts on criteria pollutants. By utilizing these assumptions, the resulting analysis will be reliable and informative, assisting in the selection of the most suitable alternative to support the recovery of the Gunnison sage-grouse while preserving environmental quality.

In addition, to analyze the effects of management actions on criteria pollutants, several inventories and modeling results were utilized, including the BLM Western US Photochemical Air Quality Modeling for 2028 and 2032, the USEPA National Emission Inventory Assessment for 2017 and 2021, the Utah Division of Air Quality 2021 Annual Report, the Colorado Air Quality Control Commission's Report to the Public 2021-2022, and the Clean Air Status and Trends Network.

The primary quantitative indicators used to evaluate the impacts of the RMP Amendment alternatives on air quality and climate include predicted pollutant emission levels relative to current and foreseeable baselines, project-level concentrations compared to significant impact levels, predicted cumulative concentrations compared to ambient air quality standards, predicted visibility levels relative to planning goals, and predicted deposition levels relative to planning goals. These indicators provide a quantitative framework for assessing changes in pollutant levels, visibility, and deposition resulting from different management actions. Additionally, indicators for other emission-generating activities are based on anticipated acreage affected or activity intensity, and qualitative comparisons are made when emissions cannot be predicted, or data is unavailable. These indicators enable a thorough evaluation of the potential impacts on air quality, both localized and cumulative, and aid in informed decision-making.

Finally, the USEPA National Ambient Air Quality Standards (NAAQS) for criteria pollutants was referenced to understand the current conditions of the project area. For more detailed information about this section see Appendix P, *Technical Support Document – Air Resources and Climate*.

3.4.2.2 Affected Environment

Air pollution within the planning area originates from numerous sources and activities, including a multitude of industrial point sources, agricultural activities, energy production, transportation, residential activities, and consumer product use. The National Emission Inventory Assessment (USEPA 2023a) for the three most recent inventories (2014, 2017, and 2020) for the Colorado and Utah counties within the planning area boundaries illustrate that there is no clear trend in total emissions over time, likely due to emissions from wildfires which vary widely from year to year.

Air quality in the analysis area is good, typical of undeveloped regions in the western United States. The counties within the analysis area are all designated by the USEPA as attainment (meeting the standards) for particulate matter 10 microns in diameter or smaller (PM_{10}) and particulate matter 2.5 microns in diameter or smaller ($PM_{2.5}$). In addition to PM_{10} and $PM_{2.5}$, there are several other criteria pollutants that are monitored and regulated to assess air quality in Utah and Colorado. These pollutants include ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and carbon monoxide (CO).

O_3 is formed by the reaction of sunlight with volatile organic compounds and nitrogen oxides emitted from sources like vehicles and industries. It can harm vegetation and ecosystems, leading to visible leaf damage, reduced crop yields, and disruptions in plant communities. O_3 levels are monitored and efforts are made to comply with national air quality standards. Ozone W126 is a specific index used to assess ozone's impact on vegetation over a defined period.

NO_2 is primarily emitted from fossil fuel combustion, particularly from vehicles and industrial processes. High NO_2 concentrations occur in congested urban areas and are monitored to ensure compliance with air quality standards. SO_2 is produced from sulfur-containing fuels, mainly coal and oil, and monitoring is done to maintain acceptable limits set by the USEPA.

CO, a colorless and odorless gas from incomplete fuel combustion, is mainly emitted by vehicles. It is monitored to ensure compliance with standards and identify areas requiring additional control measures. While the specific details and trends for these pollutants may vary across different monitoring sites and years, the air quality management agencies in Utah and Colorado continually monitor and report on these criteria pollutants to ensure that concentrations remain within the established standards and to implement appropriate measures when needed.

The Clean Air Status and Trends Network operates two deposition monitors near the planning area: one in Mesa Verde National Park in Colorado, and the other in Canyonlands National Park in Utah. The deposition monitors at these national parks show that deposition rates have been declining over the 20-year period. Additionally, from 2016 through 2020, the NPS critical load threshold of 3 kilograms of nitrogen per hectare per year was not exceeded at both national parks (USEPA 2023b).

3.4.2.3 Environmental Consequences

Effects Common to All Alternatives

All alternatives presented in the planning process share a common goal of addressing the conservation of GUSG and preserving its habitat within the planning area. Detailed air quality assessments for both 2028 and 2032 Regional Modeling Results indicate that O_3 concentrations in the region would not exceed NAAQS under any of the alternatives. However, it is important to note that regional oil and gas activities are identified as the primary contributors to cumulative O_3 concentrations in both Colorado and Utah, emphasizing the significance of managing these activities for overall air quality improvement.

All alternatives prioritize GUSG conservation and habitat protection; therefore, it is likely that their implementation would indirectly influence air quality.

In summary, the modeling results demonstrate that all alternatives would maintain O_3 concentrations within NAAQS limits.

Alternative A – (No Action – Current Management)

Under Alternative A (No Action), the 2028 Regional Modeling Results indicate for both Colorado and Utah regional oil and gas activities have the largest cumulative effect on O_3 concentrations in the area. Additionally, O_3 transport from western states, including California, is identified as another significant contributor to the cumulative O_3 concentrations in the region. However, no O_3 exceedances are predicted in the planning area counties for this planning process. Furthermore, for Colorado, the modeling results indicate that cumulative concentrations for primary PM_{10} NAAQS show a few grid cells occurring in Mesa and Saguache Counties with exceedances higher than 150 micrograms per cubic meter ($\mu g/m^3$). This is due to sources in the modeled natural source group inside Colorado. For Utah, the modeling results indicate that concentrations in San Juan and Grand Counties would not lead to any exceedances of the NAAQS for any of the pollutants of concern. New Federal emission source impacts would be minimal with Alternative A and would likely be even lower for Alternatives B through E because of their varying degrees of proactive conservation measures, habitat protection, and resource use management.

Action Alternatives

In contrast to Alternative A (No Action), Alternative B takes a more proactive stance toward GUSG conservation. It applies the most restrictive conservation measures within the agency's jurisdiction, prioritizing the removal of threats within occupied and unoccupied habitat. This approach can have positive implications for criteria pollutants as well. By preserving and enhancing the GUSG habitat, there can be a positive effect on air quality in the planning area and a reduction in certain criteria pollutants such as particulate matter and nitrogen oxides. It

also designates ACECs that meet specific criteria, potentially offering additional protection for GUSG and its habitat. In turn, this protection can indirectly benefit air quality in the planning area by maintaining healthy ecosystems that aid in reducing certain pollutants.

Unlike Alternative A (No Action), Alternative C aims to minimize, avoid, or compensate for impacts from resource uses and activities in GUSG habitat. It allows resource uses if their impacts can be avoided, minimized, rectified, reduced/eliminated over time, or mitigated through compensatory measures. This alternative emphasizes the need for careful management practices to ensure the preservation and enhancement of GUSG habitat. While the direct effect on criteria pollutants may not be explicit, avoiding or minimizing the impacts of resource uses can indirectly contribute to reducing air pollutants.

Alternative D (Preferred Alternative) represents a significant departure from Alternative A by adopting a more balanced approach. It focuses on allocating resource uses while conserving resource values and enhancing ecological integrity across the planning area. It incorporates public scoping comments, guidance from the USFWS Final Recovery Plan, and related management direction from the Greater Sage-Grouse RMP Amendment. Alternative D places particular emphasis on occupied and unoccupied GUSG habitat, with consideration given to linkage-connectivity areas. By focusing on GUSG occupied and unoccupied habitat and linkage-connectivity areas, this alternative may further contribute to preserving carbon sinks and enhancing ecosystem resilience, which can indirectly benefit air quality in the planning area and mitigate some criteria pollutants.

Compared to Alternative A, Alternative E considers adopting applicable management direction from the interagency CCA for the Gunnison Sage-Grouse, Gunnison Basin Population. This alternative aims to engage key stakeholders in a collaborative planning process and prioritize conservation measures across occupied habitat. It also addresses the cumulative effects of habitat fragmentation. However, it is important to note that the management direction under Alternative E applies only to GUSG habitat in the Gunnison Basin population. Because of this, the benefit to air quality in the planning area and reduction in localized criteria pollutants may be less than under Alternatives B, C, and D.

In summary, Alternatives B through E propose varying degrees of proactive conservation measures and habitat protection, which can indirectly influence criteria pollutants. While their primary focus is on GUSG conservation, the measures they implement can lead to improved air quality in the planning area by preserving and enhancing natural habitats. A healthier ecosystem with preserved carbon sinks can indirectly contribute to improving local air quality by reducing certain criteria pollutants. Overall, while the direct effect on criteria pollutants might be relatively minor, the focus on conservation and habitat protection in these alternatives can bring about positive environmental consequences, including improved air quality and reduced criteria pollutants in the planning area.

3.4.2.4 Conclusion

Overall, the management measures and conservation efforts proposed in the alternatives would contribute to environmental protection, which may have positive impacts on air quality in the planning area. From an air quality perspective, the differences between Alternatives B through E are minor, and compared to Alternative A (No Action), management actions would not affect criteria pollutants in a significant way in the planning area.

3.4.2.5 Cumulative Effects

Reasonably foreseeable future actions on Federal, State, and private lands that would occur outside the scope of management decisions in this RMP Amendment would contribute to cumulative effects on air quality in the planning area. Actions that could lead to cumulative effects would encompass emission sources such as construction equipment, motor vehicles, industrial processes, electricity generation, and commercial and residential development, and could be located throughout the planning area.

Actions that could lead to cumulative effects would encompass other Federal planning efforts, including the Eastern Colorado RMP and the Pike and San Isabel National Forests Motorized Travel Plan. Local planning efforts will also contribute to motorized vehicle patterns in the region. Planned projects in the region that result in pollutant emission sources such as continued vegetation treatments and hazardous fuels reduction and the Union Pacific and Denver & Rio Grande Railroad would contribute to impacts on air quality and air quality–related values, as well as natural summertime smoke transport from the Gunnison County area. Increases in recreation and traffic in the region would also lead to greater impacts from motorized vehicle engines and particulate emissions from travel on unpaved roads.

Additionally, the 2028 and 2032 Regional Modeling Results model the BLM Colorado Federal sources and several other non-BLM Colorado source groups, which contribute to the overall cumulative air quality impacts. See Appendix P, *Technical Support Document – Air Resources and Climate,* for modeling results for the pollutants of greatest concern (O_3, NO_2, $PM_{2.5}$, and PM_{10}) and nitrogen deposition for both Utah and Colorado.

Based on the modeling results, for both Colorado and Utah, regional oil and gas activities have the largest cumulative effect on O_3 concentrations in the area. Additionally, O_3 transport from western states, including California, is identified as another significant contributor to the cumulative O_3 concentrations in the region. However, no O_3 exceedances are predicted in the planning area counties for this project.

Further, for Colorado, the modeling results indicate that cumulative concentrations for primary PM_{10} NAAQS show a few grid cells occurring in Mesa and Saguache Counties with exceedances higher than 150 $\mu g/m^3$. This is due to sources in the modeled natural source group inside Colorado. For Utah, the modeling results indicate that concentrations in San Juan and Grand

Counties would not lead to any exceedances of the NAAQS for any of the pollutants of concern.

In conclusion, none of the alternatives under consideration are expected to have cumulative effects on air quality that would exceed the NAAQS for the pollutants in question.

3.4.3. Issue 2: What would be the potential differences / reductions in BLM's expected contribution to future greenhouse gas emissions levels associated with management activities and allocations for allowable uses when compared to the original projected cumulative greenhouse gas emissions levels?

3.4.3.1 Analytical Methods and Assumptions

To provide a comprehensive analysis of the potential impacts of management actions on greenhouse gas (GHG) emissions, the following analytical methods will be employed:

- First, in the Affected Environment section, a discussion of baseline trends for GHG emissions will be provided, allowing for a comprehensive understanding of current levels and trends.
- Second, in the Environmental Consequences section, a qualitative discussion will be conducted to explore the nature and type of GHG impacts based on management actions and land use allocations for each alternative. This will help identify potential impacts and allow for the comparison of alternatives.

By utilizing these analytical methods, a thorough and detailed analysis of the potential impacts of management actions on GHG emissions can be conducted. This will enable the selection of the most appropriate alternative to promote the recovery of the Gunnison sage-grouse while minimizing environmental impacts related to GHG emissions.

To conduct a comprehensive cumulative effects analysis, the following assumption will be made:

- GHG emissions from other Federal, State, and private lands will continue at current levels.

This assumption is relevant because it provides a consistent baseline for analyzing the cumulative effects of GHG emissions on the environment. By assuming that emissions from other lands will continue at current levels, the analysis can more accurately evaluate the potential impacts of management actions on GHG emissions.

By accounting for the cumulative effects of GHG emissions, the analysis can provide a more thorough understanding of the potential impacts of management actions. This will enable the

selection of the most appropriate alternative to support the recovery of the Gunnison sage-grouse while minimizing the cumulative environmental impacts of GHG emissions.

The primary quantitative indicators used to assess impacts on climate are based on the anticipated acreage affected or level of intensity for each activity that would occur under each alternative. Where emissions cannot be reasonably predicted, or data are unavailable, potential impacts on GHGs are compared qualitatively.

3.4.3.2 Affected Environment

Climate refers to long-term atmospheric conditions averaged over a specific location, including temperature, humidity, pressure, precipitation, solar radiation, and wind. Climatologists use 30-year averages as guidelines for historical comparison and climate change assessment.

The planning area described has an arid to semi-arid climate with significant daily and seasonal temperature variations due to its continental mid-latitude location and clear skies. Mountain ranges and elevation differences shape the local climate, leading to considerable variation over short distances.

Temperatures generally decrease by 3 degrees Fahrenheit (°F)–5°F per 1,000 feet, with colder winter nights in valleys due to cold-air drainage. Winter temperatures average between 35°F and 45°F during the day, with freezing nights in valleys, while summer temperatures reach 85°F to 95°F in low elevation areas, occasionally exceeding 100°F during heatwaves. The growing season varies from 5 to 6 months in warm locations to just a few weeks in high mountains. Precipitation increases with altitude, with valley locations receiving 8" to 15" annually, while windward slopes of the Rocky Mountains can receive 40" or more.

Western Colorado sees significant high-elevation snowfall, melting in spring to feed the Colorado River. Precipitation is distributed throughout the year, with peak basin runoff occurring between May and June. Over the past 30 years, the timing of snowmelt and peak runoff has shifted earlier by 1 to 4 weeks across Colorado's river basins.

There is strong evidence of global climate change, primarily driven by the burning of fossil fuels. The IPCC estimates a human-caused increase in global surface temperature between 1850–1900 and 2010–2019 of 1.4 to 2.3°F (IPCC 2021).

Climate change has resulted in increased average precipitation over land areas and a poleward shift in mid-latitude storm tracks. In Colorado, the average annual temperature has increased by about 2.5°F since the start of the 20th century, with the Colorado Basin experiencing nearly twice as much warming as other basins. Minimum temperatures have risen more than maximum temperatures, and the growing season has extended by three weeks since 1991. Precipitation patterns have been variable, with above-average fall precipitation and below-average spring precipitation. Snowpack levels have generally been below average since 2000, with significant variability among locations. Future climate projections indicate further warming in Colorado,

with mid-century temperature increases ranging from 4.5°F to 8.7°F under different emission scenarios. The growing season is projected to lengthen, and precipitation changes are uncertain, with models showing a range of -16 percent to +15 percent change in annual precipitation by 2050.

Decreased snowpack, earlier snowmelt, and increased evaporation will impact water availability, and extreme precipitation events are expected to increase. River flows are projected to decrease, and there is an increased risk of megadroughts, wildfires, and impacts on ecosystems and communities.

3.4.3.3 Environmental Consequences

Effects Common to All Alternatives

All alternatives prioritize GUSG conservation and habitat protection, which can indirectly contribute to reducing GHG emissions. The differences between the alternatives in terms of their direct effect on GHG emissions are relatively minor, and their primary focus on GUSG conservation would most likely result in reduced GHG emissions. As a consequence, social costs of GHG emissions among the alternatives, including Alternative A (No Action), would also be relatively minor because the focus on GUSG conservation inherently leads to a reduction in GHG emissions.

Alternative A – (No Action – Current Management)

Alternative A (No Action) would continue current BLM management direction in the 11 RMP administrative units in the planning area. Allowable uses and restrictions would remain unchanged. The BLM would continue to initiate informal or formal consultation with the USFWS, through biological assessments and biological opinions, for individual authorizations that may directly or indirectly affect GUSG or their habitat. Under Alternative A, the 2028 BLM Western U.S. Photochemical Air Quality Modeling results are the best indicator of future GHG emissions. These results are included in Appendix P, *Technical Support Document – Air Resources and Climate*. The modeling studies are relevant when describing Alternative A because they are based on the USEPA, Western Regional Air Partnership platforms and BLM future projections that were made prior to this GUSG RMP Amendment effort; therefore, they do not account for the potential actions associated with Alternatives B through E. The modeling studies are essentially the "future affected environment" if Alternative A is chosen.

Action Alternatives

Alternative B takes a proactive approach toward GUSG conservation by implementing the most restrictive conservation measures and prioritizing the removal of threats within occupied and unoccupied habitat. This can indirectly contribute to reducing GHG emissions by preserving

and enhancing the GUSG habitat, which acts as a carbon sink and helps mitigate climate change impacts. The designation of ACECs further enhances protection, potentially preserving additional carbon storage capacity.

Alternative C aims to minimize, avoid, or compensate for impacts from resource uses and activities in GUSG habitat. By emphasizing careful management practices, this alternative can help prevent habitat degradation and preserve the ecological functions that aid in carbon sequestration. By avoiding or minimizing the impacts of resource uses, Alternative C may indirectly contribute to reducing GHG emissions associated with activities such as energy development or transportation.

Alternative D represents a balanced approach that allocates resource uses while conserving resource values and enhancing ecological integrity. By incorporating public input, guidance from the USFWS, and related management direction, this alternative can potentially result in better land use practices that promote carbon sequestration and reduce emissions. The focus on occupied and unoccupied GUSG habitat, along with linkage-connectivity areas, may further contribute to preserving carbon sinks and enhancing ecosystem resilience.

Alternative E considers adopting applicable management direction from the interagency CCA for the Gunnison Sage-Grouse, Gunnison Basin Population. While the direct GHG implications of this alternative may be limited, engaging stakeholders and prioritizing conservation measures can indirectly support ecosystem health and resilience, contributing to the preservation of carbon sinks and mitigating climate change impacts.

In summary, Alternatives B through E propose varying degrees of proactive conservation measures and habitat protection, which can indirectly influence GHG emissions. These alternatives aim to strike a balance between resource uses and conservation efforts, potentially leading to the preservation and enhancement of carbon sinks and the reduction of emissions associated with human activities. In conclusion, the differences between the alternatives in terms of their direct impact on GHG emissions are relatively minor, and their primary focus of GUSG conservation would most likely reduce GHG emissions.

3.4.3.4 Conclusion

In conclusion, the differences between the alternatives in terms of their direct effect on GHG emissions are relatively minor, and their primary focus of GUSG conservation would most likely reduce GHG emissions compared to Alternative A (No Action).

3.4.3.5 Cumulative Effects

Reasonably foreseeable future actions on Federal, State, and private lands that would occur outside the scope of management decisions in this RMP Amendment would contribute to cumulative effects on GHGs in the planning area. Actions that could lead to cumulative effects would encompass emission sources such as construction equipment, motor vehicles, industrial

processes, electricity generation, and commercial and residential development, and could be located throughout the planning area.

Actions that could lead to cumulative effects would encompass other Federal planning efforts, including the Eastern Colorado RMP and the Pike and San Isabel National Forests Motorized Travel Plan. Local planning efforts will also contribute to motorized vehicle patterns in the region. Planned projects in the region that result in GHG emission sources such as continued vegetation treatments and hazardous fuels reduction and the Union Pacific and Denver & Rio Grande Railroad would contribute to impacts on GHGs. Increases in recreation and traffic in the region would also lead to greater impacts from motorized vehicle engines**.**

Additionally, the 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends includes a summary of emissions estimates from reasonably foreseeable Federal fossil fuel development and production over the next 12 months, as well as longer term assessments of potential Federal fossil fuel GHG emissions and the anticipated climate change impacts resulting from the cumulative global GHG burden. The report is an important tool for evaluating the cumulative effects of GHG emissions from fossil fuel energy leasing and development authorizations on the Federal onshore mineral estate relative to several emission scopes and base years. Recent rules and regulations may affect oil and gas development and operations on the Federal mineral estate in Colorado. In January 2021, Colorado published its GHG Pollution Reduction Roadmap report to describe pathways and strategies for achieving Colorado's 2025 and 2030 GHG emissions reduction goals. Reaching the goals will require increasing renewable electricity generation to achieve an 80-percent reduction below 2005 emissions levels by 2030, reducing methane emissions from the oil and gas sector more than 50 percent by 2030, increasing investments in energy efficiency, and expanding electrification of buildings and industry (BLM 2022).

For Utah, the Utah Department of Environmental Quality implemented administrative code R307-500, which applies to various operations in the oil and natural gas industry. These rules adopt emissions control standards from 40 CFR Part 60, Subpart OOOO. The code mandates controls for various components such as pneumatic controllers, venting and flaring, tank truck loading, storage vessels, dehydrators, volatile organic compound control devices, stationary natural gas engines, and leak detection and repair requirements.

All of these rules and regulations for both Utah and Colorado would help alleviate cumulative GHG effects from oil and gas production.

3.4.4. Unavoidable Adverse Effects

The implementation of management actions, including habitat restoration activities, may result in temporary disturbances that could impact air quality. Construction activities, increased vehicular traffic, and dust generation during habitat restoration and infrastructure development could lead to short-term deterioration in air quality in the project area. Although measures

such as dust suppression techniques can be employed to mitigate these impacts and construction activities are short-term in nature, therefore it is unlikely that there will be unavoidable adverse effects.

3.4.5. Relationship of Short-term Uses and Long-term Productivity

The GUSG RMP Amendment project seeks to strike a balance between short-term land uses and the long-term productivity and sustainability of the study area. It will assess potential conflicts between activities such as energy extraction and recreational activities and their implications for air quality and GHG emissions. Evaluating the trade-offs and benefits associated with different management approaches will consider the short-term economic gains derived from land uses, while recognizing the long-term benefits of habitat restoration and conservation efforts for air quality improvement and reducing GHG emissions. The project aims to inform decisions that promote sustainable land uses, minimizing negative impacts on air quality and GHG emissions while supporting the recovery of the GUSG population.

3.4.6. Irreversible and Irretrievable Commitment of Resources

The implementation of management actions, such as habitat restoration and conservation measures, may result in permanent land use changes and modifications that can influence air quality and GHG emissions. Once implemented, these alterations may have long-lasting effects on local air quality and GHG dynamics; however, in general the management actions associated with the alternatives are more conservative than Alternative A (No Action), meaning air quality and GHGs will most likely improve because of this amendment. Additionally, the commitment of resources, including financial investment, time, and personnel, is necessary to support ongoing monitoring of air quality indicators and GHG emissions. By dedicating resources to these efforts, the project can effectively manage and mitigate potential adverse effects, ensuring the responsible allocation of resources in achieving long-term air quality improvements and GHG reduction goals.

3.5. SOIL RESOURCES

3.5.1. Introduction

Soils are intricately linked to watershed function, ecological processes, water quality, and habitat quality for threatened and endangered species, including the GUSG. While the GUSG occupies different ecoregions, its habitat can be delineated by common geology, landforms, soils, vegetation, climate, land use, wildlife, and hydrology (USFWS 2020). In addition to RMPs and land use planning documents, CO public land health standard 1 states the following: "Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, landform, and geologic processes. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff. Requires soils to be assessed for erosion, appropriate organic matter and litter, as well as adequate infiltration and permeability." BLM Utah Standards for Rangeland Health standard I states: "Upland soils exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform." BLM Manual 7100 (Soils) objectives include "Prevent impairment of soil productivity due to accelerated soil loss or physical, chemical, or biological degradation of the soil resource." The analysis for soil resources is organized by issue statements for key soil characteristics with potential to affect the management of GUSG habitat.

3.5.2. Issue 1: How would the management actions and allowable uses under each alternative affect soil stability and productivity?

3.5.2.1 Analytical Methods and Assumptions

- Existing surface and vegetation disturbance will be expressed as:
    - Acres of disturbance. Existing surface disturbance estimates consist of anthropogenic disturbances including energy facilities (wells, power plants, wind turbines, solar energy fields), mining (coal mines, locatable developments), infrastructure (roads, railroads, power lines and communication towers), and recreation.
- Fragile soils will be identified using information and assumptions from the Colorado Plateau Rapid Ecoregional Assessment Report (Bryce et al. 2012), including U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) soil survey data. Low, moderate, and high potential for fragile soil characteristics expressed in acres for BLM-administered surface in the decision area.

- Soil slopes with steep slopes will be identified using 10-meter digital elevation model and NRCS soil survey data.
- The potential for surface and vegetation disturbance will be expressed as:
    - Acres of vegetation manipulation including vegetation treatments, prescribed burns, and wildfire
    - Acres open to surface-disturbing activities
- Analysis will be conducted by conditions within occupied/unoccupied habitat rather than by population group.
- The potential for soil disturbance will be used as an indicator and will be analyzed among alternatives.
- Roads and areas open to OHV will be analyzed between the alternatives. Moreover, road density, position of the road on the landscape (floodplain vs. a ridge), and road miles within occupied habitat will be analyzed to determine potential for soil disturbance between alternatives.
- The analysis will compare the levels of protection from surface-disturbing activities (defined as activities that modify the soil surface: roads/trails, recreational facilities, mineral development, pipelines, ROWs, and range improvements).
    - Alternatives that limit or close areas to various resource uses will be assumed to reduce soil disturbance.
- Alternatives that reduce the amount of land grazed by domestic livestock will be assumed to reduce vegetation removal and disruption to biological soil crusts.
- Alternatives that increase prescribed fires or the potential for wildfire will be assumed to decrease soil stability in the short term but will be considered neutral over the long term as revegetation progresses.
- The erosion potential associated with surface-disturbing activities will be influenced by several factors including fragile soil; location in the watershed; the type, time, and degree of disturbance; existing vegetation, slope, soil properties; precipitation; roads; and mitigating actions applied to the disturbance.
- Short-term effects on upland soils would occur over a timeframe of up to 10 years and long-term effects could occur from anywhere over 10 years and possibly exceeding several decades.
- Soil resources would be managed under Standards for Public Land Health in Colorado, Rangeland Health Standards (Utah) and BLM Technical Reference 1734-6 (Interpreting Indicators of Rangeland Health, Version 5).

Methods and Data

- Evaluate: (1) potential changes to the management of land use activities and (2) trends in land use to assess the potential impact of those activities qualitatively and quantitatively on the stability and productivity of soil resources (including biological soil crusts, to the extent practicable)
- Describe and evaluate the function of biological soil crusts and vegetation in relation to soil stability and nutrient retention.
- Describe and evaluate the potential for soil disturbance as an indicator for the analysis of impacts across the alternatives due to its relationship to soil stability.
- Describe and evaluate the influence of wildfires and prescribed fire on soil stability and productivity.

3.5.2.2 Affected Environment

Soils across the planning area are largely undeveloped and are dominated by Aridisol and Entisol soil orders and were formed from sedimentary rocks in the Colorado Plateau ecoregion, and from igneous rocks in the Southern Rocky Mountain ecoregion (Bryce et al. 2012). Soils across the planning area are generally shallow with low organic content, and have sparse vegetative cover which leaves them exposed to erosion by a number of natural and anthropogenic change agents (Bryce et al. 2012). Soil physical and chemical properties can make soils more susceptible to erosion, compaction, and salinization (Pellant et al. 2020). Many resources and resource uses, including livestock grazing, wildlife habitat, riparian habitat, special status species, fisheries, recreation, water quality, and forestry depend on suitable soil (BLM 2012). These uses can cause changes to the properties which lead to accelerated rates of erosion and loss of soil productivity that can alter the natural ecological community (Arriaga and Lowery 2003). This can lead to less productive habitat for the GUSG. With respect to GUSG habitat, soil stability is the primary soil characteristic relevant to management of the GUSG due to its relationship to vegetation cover and because soil stability and erosion can be affected by land management practices associated with GUSG conservation. GUSG habitat may also be affected by compaction, as it can affect vegetation establishment important to the species.

Several different indicators are used to assess soil stability and productivity on BLM surface land in occupied and unoccupied habitat. These include past and present sources of surface disturbance, slope, depth to bedrock, and protections from future disturbances for activities where data sets are relatively complete. Soil stability reflects the resistance of soils to wind and water erosion and is considered a terrestrial function of high ecological value across the GUSG range (BLM 1991; Bryce et al. 2012). Much of this stability is due to biological soil crusts (Bryce et al. 2012). Land uses that disturb the soil surface, biological soil crusts, and protective plant cover reduce soil stability (Bryce et al. 2012; BLM 1991). For the purposes of this RMP Amendment, the BLM has identified *fragile soils* as soils prone to erosion by wind or water, soils

with elevated levels of salinity (dissolvable salts), soils prone to erosion by wind or water, soils prone to impacts from drought conditions, soils with shallow rooting depths, and soils with potential for supporting biological soil crust. Soils that meet the fragile soil characteristics identified in Table 3.5.1 and Table 3.5.2 are considered highly susceptible to impacts and difficult to restore or reclaim.

Table 3.5.1. Fragile Soils on BLM Lands Across GUSG Habitat

Soil Attribute	Criteria	Restrictive Feature	GUSG Habitat – Occupied *Acres*	GUSG Habitat – Unoccupied *Acres*	Total *Acres*	Percent of BLM Surface in Decision Area[1]
Wind Erodibility Group	1, 2	Wind Erosion Hazard	2,100	8,300	10,400	0.5%
Slope (percent) Kw < 0.20 Kw 0.20 – 0.36 Kw >0.36	 >40 >35 >25	Water Erosion Hazard (Steep Slopes)	39,680	47,980	87,660	4.1%
Available Water Capacity (Average to 40 inches or limiting layer; inches/inches)	<0.05	Droughty Soils	740	1,460	2,200	0.1%
Salinity (Surface Layer) (micro-mhos per centimeter)	≥16	Excess Salts	0	1,100	1,100	0.1%
Sodium Adsorption Ratio (Surface Layer)	≥13	Excess Sodium	0	250	250	<0.1%
Depth to Bedrock/Cemented Pan (inches)	<10	Rooting Depth	1,410	23,460	24,870	1.2%
Compaction Bulk density (grams per cubic centimeter)	Medium and High Rating	Bulk Density	23,120	40,810	63,930	3.0%
Biological Soil Crust[2]	See note[1]	N/A	170,000	294,900	464,890	21.6%

Source: NRCS SSURGO 2023; BLM 2023
Notes: Kw = whole soil factor. Soil slopes determined using 10-meter digital elevation model.
[1]Calculated as percent of total BLM-surface lands for both OHMA and UHMA (650,120 acres).
[2]Biological soil crust data based on U.S. Geological Survey moss and lichen dataset and models for the Colorado Plateau, including early and late successional crust cover relative to classes of landscape intactness (Bryce et al. 2012). Coverage for estimated biological soil crust data only available for Colorado Plateau portion of the decision area.

Table 3.5.2. Fragile Soils on BLM Lands within Adjacent Non-habitat

Soil Attribute	Criteria	Restrictive Feature	GUSG Adjacent Non-habitat (1-Mile Buffer) (acres)	GUSG Adjacent Non-habitat (4-Mile Buffer (acres)	Total *Acres*	Percent of BLM Surface in Decision Area[1]
Wind Erodibility Group	1, 2	Wind Erosion Hazard	4,030	10,450	14,470	<0.7%
Slope (percent) Kw < 0.20 Kw 0.20 – 0.36 Kw >0.36	>40 >35 >25	Water Erosion Hazard (Steep Slopes)	95,900	186,930	282,830	13.1%
Available Water Capacity (Average to 40 inches or limiting layer; inches/inches)	<0.05	Droughty Soils	8,430	29,700	38,130	1.8%
Salinity (Surface Layer) (millimhos per centimeter)	≥16	Excess Salts	230	2,010	2,240	0.1%
Sodium Adsorption Ratio (Surface Layer)	≥13	Excess Sodium	30	690	720	<0.1%
Depth to Bedrock/Cemented Pan (inches)	<10	Rooting Depth	59,360	153,430	212,780	9.9%
Compaction Bulk density (grams per cubic centimeter)	Medium and High Rating	Bulk Density	56,080	149,790	205,870	9.6%
Biological Soil Crust[2]	See note[1]	N/A	425,190	1,265,330	1,690,520	78.4%

Source: NRCS SSURGO 2023; BLM 2023
Notes: Kw = whole soil factor.
[1]Calculated as percent of total BLM-surface lands for both 1-mile buffer and 4-mile buffer Adjacent Non-habitat areas.
[2]Biological soil crust data based on U.S. Geological Survey moss and lichen dataset and models for the Colorado Plateau, including early and late successional crust cover relative to classes of landscape intactness (Bryce et al. 2012). Coverage for estimated biological soil crust data only available for Colorado Plateau portion of the decision area.

Persistent wind and wind erosion of soil are natural phenomena in the planning area, but human activities, including mining, energy and urban development, agriculture, recreation, and grazing, disturb the soil surface, affect protective crusts, and expose underlying soils to wind and water erosion (Bryce et al. 2012). Fine-textured soft shales, mudstones, and siltstones (such as the Mancos shale), besides being susceptible to mechanical disturbance, are also particularly vulnerable to water erosion (Bryce et al. 2012). In sagebrush and other plant communities of semi-arid environments, vegetation cover, biological soil crust, and a network of filamentous fungi maintain soil stability and resistance to erosion. When vegetation and biological soil crusts

are disturbed or eliminated, underlying soils are exposed to wind and water erosion, causing the soil to lose much of its ability to fix nitrogen, store carbon, capture dust and airborne nutrients, and retain moisture (Bryce et al. 2012). Soil crust populations are damaged or reduced when surface disturbances (such as vehicular traffic, vegetation clearing, or trampling) disturb the soil surface (Bryce et al. 2012). Based on available data, approximately 464,890 acres (21.6 percent) of BLM surface in OHMA and UHMA have high potential for soil crusts (Table 3.5.1). Within Adjacent Non-habitat, approximately 1,690,520 acres (78.4 percent) of BLM surface has a high potential for soil crusts (Table 3.5.2). It should be noted that these estimates are based on U.S. Geological Survey moss and lichen dataset and models for the Colorado Plateau, including early and late successional crust cover relative to classes of landscape intactness (Bryce et al. 2012). Areas with any percentage of moss and lichen coverage were considered as having potential for soil crusts and were counted as such for this analysis.

Factors that influence soil erosion include soil texture, structure, length and percent of slope, vegetative cover, and rainfall or wind intensity. The erodibility of a soil, known as the "K" factor presented in soil surveys, represents both the susceptibility of soil to erosion and the rate of runoff. As shown in Table 3.5.1 and Table 3.5.2, a total of 10,396 acres have a high potential for wind erosion and 87,663 acres have a high potential for water erosion across GUSG habitat on BLM surface. Soils most susceptible to erosion by wind or water are typified by bare or sparse vegetative cover, non-cohesive soil particles with low infiltration rates, and moderate to steep slopes. Wind erosion processes are less affected by slope angles but are highly influenced by wind intensity. The potential for soil erosion increases with increasing slope.

Existing surface disturbance for the decision area has been quantified for anthropogenic disturbances, which include energy facilities (wells, power plants, wind turbines, solar energy fields), mining (coal mines, locatable developments) and infrastructure (roads, railroads, power lines and communication towers) (Appendix N, Table N.1 and Table 3.5.3). Soils on approximately 1.3 percent of the BLM-administered lands in occupied and unoccupied habitat have been affected by anthropogenic disturbances, with occupied habitat having a slightly larger proportion disturbed than unoccupied habitat (approximately 5,820 acres or 1.4 percent of OHMA disturbed compared to approximately 2,930 or 1.1 percent of UHMA disturbed).

Protections from future surface disturbances are indicated by RMP or other planning level designations which greatly restrict surface disturbance, surface occupancy, and associated vegetation removal. These protections generally include Wilderness Areas, WSAs (although grazing is not always prohibited in Wilderness Areas and WSAs), and areas with ROW exclusion or NSO stipulations, and areas withdrawn from mineral leasing or development. As a result, soil stability across most of the BLM-administered lands in the decision area is currently protected by RMP-level surface disturbance restrictions (as described in Section 2.2.1.7).

Where information is available from management units across BLM surface in occupied and unoccupied habitat, additional surface disturbance is anticipated to accrue at current rates and increase in some areas (BLM 2005a, 2005b, 2006, 2009, 2011). Growing levels of recreation use

and requests to develop ROWs and energy projects, along with increasing rates of wildfire, are all cited as factors decreasing soil stability. This appears to be a pattern across the GUSG range despite the mitigating effects anticipated with travel management, route closure, and rehabilitation.

Table 3.5.3. Surface Disturbance on BLM Lands Across GUSG Habitat

Gunnison Sage-Grouse Population	Acres Disturbed: Occupied Habitat		Acres Disturbed: Unoccupied Habitat		Total Acres Disturbed	
	Acres	*Percent*[1]	*Acres*	*Percent*[1]	*Acres*	*Percent*[2]
Cimarron/Cerro/Sims Mesa	55	2.5%	154	2.0%	209	2.0%
Crawford	164	0.7%	100	1.0%	264	0.8%
Dove Creek	35	0.7%	542	1.1%	577	1.1%
Gunnison	4,420	1.4%	682	1.0%	5,102	1.3%
Monticello	11	0.3%	3	0.2%	13	0.3%
Piñon Mesa	170	0.9%	599	0.6%	769	0.7%
Poncha Pass	427	3.3%	342	2.9%	768	3.1%
San Miguel Basin	537	1.5%	511	2.3%	1,048	1.8%
Total	**5,819**	**1.4%**	**2,933**	**1.1%**	**8,750**	**1.3%**

Source: BLM 2023
[1]Calculated as acres disturbed within total BLM-administered lands by GUSG population.
[2]Calculated as acres disturbed within total BLM-administered lands in OHMA and UHMA by GUSG population.

3.5.2.3 Environmental Consequences

The potential for surface disturbance is used as an indicator and analyzed between alternatives due to its relationship to soil stability and productivity. Effects on soil resources can result from several causes, including improper livestock grazing practices, recreation, mineral resource activities, renewable energy development, vegetation treatments, and travel and transportation activities. Surface disturbance and compaction can lead to accelerated erosion, soil loss, and reduced productivity. The susceptibility to adverse impacts from surface disturbance is exacerbated within fragile soil areas or due to the position on the landscape, such as along riparian areas, on steep slopes, or within floodplains. Compaction leads to impeded drainage and inadequate soil aeration, while also decreasing diffusivity and soil air permeability. This decreased gas-exchange rate negatively affects plant growth and productivity by reducing oxygen, and elevating carbon dioxide concentrations in the soil (Ben-Noah and Friedman 2018). This process stresses vegetation, which is a key component of soil stabilization. Lastly, soils with steep slopes (i.e., greater than 30 percent) pose concerns for reclamation and long-term soil health and productivity.

The intensity and extent of impacts on soil resources are determined in part by the type and location of the surface-disturbing activities or surface occupancy. Impacts on soil resources can also be affected by stipulations and plans of operations that address site-specific environmental

concerns and require mitigation to stabilize soil, to prevent unnecessary erosion, and to revegetate disturbed surfaces.

The analysis contained below contrasts the levels of protection from surface-disturbing activities, which are defined as those activities which modify the soil surface, except for very small-scale soil surface modifications such as trampling. For the purposes of this analysis, surface disturbance is considered to reduce short- and long-term soil stability, and alternatives that prohibit or limit surface-disturbing activities are expected to protect soil stability more than alternatives that do not limit these activities.

Because vegetation cover is a factor that influences soil stability, activities that reduce or remove it are also compared between alternatives. If managed improperly, livestock grazing can remove effective ground cover (vegetation and litter accumulation). This can elevate potential soil erosion and alter reproductive capabilities in desirable vegetation communities. This effect can increase the potential for the establishment of undesirable species, which may lack soil stabilizing characteristics, over desirable vegetation species. Based on the availability of data, the acreage unavailable to livestock grazing across the alternatives is used as another indicator for potentially decreased soil stability.

Effects Common to All Alternatives

All of the action alternatives would involve greater restrictions on surface disturbances and disruption to GUSG and their habitat, resulting in reduced potential for compaction and erosion as compared with continuation of existing management under the No-Action Alternative. However, valid existing rights would be preserved under all alternatives, which includes any leases, claims, or other use authorizations established before a new or modified authorization, change in land designation, or new or modified regulation is approved. Existing fluid mineral leases are managed through the stipulations attached to the existing lease and, where supported by site-specific analysis, conditions of approval to an approved permit.

Under all alternatives, wildlife would graze and trample soils throughout the BLM surface in OHMA and UHMA and reduce vegetation cover, thereby reducing soil stability. Wildfires would continue to ignite and burn across this same area—decreasing soil stability within the burned patch for both the short and long term. However, lands containing fragile soils and rare biological crusts would be retained and considered for acquisition under all alternatives (Alternative A [Uncompahgre Field Office], and Alternatives B, C, D, and E), increasing the ability for BLM to specifically manage for soil stability and productivity in these areas.

Alternative A – (No Action – Current Management)

Under Alternative A, large-scale surface disturbance would be expected to increase across the BLM surface of OHMA and UHMA, as well as on BLM lands in the Adjacent Non-habitat 4-mile buffer areas. This is primarily due to unchanged allowable uses and restrictions currently in-

place under current BLM management direction in the 11 RMP administrative units of the planning area, several of which do not provide adequate protection consistent with the latest measures for GUSG. While existing surface disturbance restrictions would remain in place in OHMA and UHMA under Alternative A, additional restrictions could increase as RMP revisions are completed. If this occurs, it would be expected that soil stability and productivity would be protected across more acreage. Under Alternative A, the travel and transportation management on the majority of OHMA and UHMA on BLM surface would be expected to be limited to designated routes, resulting in limited potential for adverse soil stability and productivity impacts from compaction, vegetation disturbance, and erosion. The risk for these impacts would increase in areas of fragile soils. Soils with the highest water erosion potential would be closed to motorized and mechanized travel on 680 acres (less than 0.1 %) of OHMA and 6,170 acres (0.3%) of UHMA under Alternative A (Table 3.5.4). Travel would be limited to existing routes on a greater portion of the decision area containing soils with high erosion potential (37,480 acres or 1.7% of OHMA and 33,340 acres or 1.5 % of UHMA; Table 3.5.4).

Other surface disturbance restrictions under Alternative A pertaining to lands and realty actions (ROW exclusion), renewable energy development (wind and solar exclusion), and mineral leasing stipulations provide protection for soils with high water erosion potential on 0.1% to 1.8% of OHMA and UHMA in decision area, depending on the restriction (Table 3.5.4).

Livestock grazing would be expected to continue at roughly the current level of activity across BLM surface in OHMA, UHMA and the Adjacent Non-habitat areas, over the short term, resulting in little change to soil stability and productivity. All plans allow for adjustment to AUMs or allotment closure based on resource conditions determined through site-specific evaluation. Although not specific to Gunnison sage-grouse, the intent of these management actions is to reduce impacts to sensitive resources on a case-by-case basis. Over the long term, urbanization of private agricultural lands and associated changes to the livestock industry may reduce the amount of actively grazed lands in this area, which could contribute to increased soil stability on the ungrazed lands.

Wildfires documented over the past several decades have burned approximately 1% of OHMA and 7% of UHMA on BLM surface; approximately 9% of Adjacent Non-habitat areas have been subjected to wildfire over the same period. Additional wildfires and burns would reduce short term soil stability across a growing proportion of these areas. However, data from past fires suggest that only a small proportion of the areas would be impacted, even over the long term.

Action Alternatives

Aside from biological soil crusts, soils with a high susceptibility to water erosion represent the largest fragile soil type identified in decision area (Table 3.5.1 and Table 3.5.2). Because soils in the decision area are generally characterized as fine-textured soft shales, mudstones, and siltstones (such as the Mancos shale), soil stability and productivity in the decision area are vulnerable to mechanical disturbances and water erosion. The susceptibility to these adverse

impacts increases with increasing slope. Therefore, the quantitative impact analysis across alternatives primarily focuses on the potential for surface disturbance in areas of soil with high water erosion potential. Table 3.5.4 compares surface disturbance restrictions on soils with high water erosion potential within OHMA and UHMA across the alternatives. Generally, alternatives with fewer surface disturbance restrictions and more allowable surface-disturbing uses, especially in areas of steep slopes, are anticipated to increase soil erosion and decrease soil stability and productivity. It should be noted that data for biological soil crusts is currently limited to only the Colorado Plateau portion of the decision area and therefore is not included in a quantitative comparison of effects by alternative. However, alternatives with fewer surface disturbance restrictions are anticipated to adversely impact biological soil crusts.

Table 3.5.4. Surface Disturbance Restrictions on Soils with High Water Erosion Potential

Surface Disturbance Restrictions[1] on Soils with High Water Erosion Potential[2]										
Resource Area and Habitat Type	**Alternative A (No Action)**		**Alternative B**		**Alternative C**		**Alternative D**		**Alternative E**	
	Acres	**%**	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Travel and Transportation										
Closed to Motorized and Mechanized Travel										
OHMA	680	<0.1%	38,160	1.8%	680	<0.1%	680	<0.1%	0	0.0%
UHMA	6,170	0.3%	250	<0.1%	6,170	0.3%	6,170	0.3%	250	<0.1%
Limited to Existing Routes										
OHMA	37,480	1.7%	0	0.0%	37,490	1.7%	37,490	1.7%	0	0.0%
UHMA	33,340	1.5%	0	0.0%	33,480	1.6%	33,480	1.6%	0	0.0%
Lands and Realty – ROW Exclusion										
OHMA	1,830	0.1%	38,160	1.8%	0	0%	0	0.0%	0	0.0%
UHMA	5,290	0.2%	39,660	1.8%	0	0.0%	0	0.0%	0	0.0%
Renewable Energy										
Solar - Exclusion										
OHMA	38,160	1.8%	38,160	1.8%	38,160	1.8%	38,160	1.8%	33,820	1.6%
UHMA	39,660	1.8%	39,660	1.8%	0	0.0%	39,660	1.8%	14,580	0.7%
Wind - Exclusion										
OHMA	1,830	0.1%	38,160	1.8%	38,160	1.8%	38,160	1.8%	33,820	1.6%
UHMA	5,290	0.2%	39,660	1.8%	0	0.0%	39,660	1.8%		0.0%
Fluid Mineral Leasing										
Closed – OHMA	1,570	0.1%	38,160	1.8%	1,570	0.1%	37,920	1.8%	0	0.0%
Closed – UHMA	18,690	0.9%	39,660	1.8%	18,690	0.9%	37,110	1.7%	0	0.0%
NSO – OHMA	3,340	0.2%	0	0.0%	36,600	1.7%	240	<0.1%	2,720	0.1%
NSO – UHMA	3,660	0.2%	0	0.0%	3,660	0.2%	2,550	0.1%	1,730	0.1%
CSU/TL – OHMA	750	<0.1%	0	0.0%	0	0.0%	0	0.0%	420	<0.1%
CSU/TL – UHMA	2,410	0.1%	0	0.0%	17,310	0.8%	0	0.0%	30	0.0%

Surface Disturbance Restrictions[1] on Soils with High Water Erosion Potential[2]										
Resource Area and Habitat Type	**Alternative A (No Action)**		**Alternative B**		**Alternative C**		**Alternative D**		**Alternative E**	
	Acres	**%**	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Locatable Minerals										
Withdrawn or Recommended for Withdrawal – OHMA	4,240	0.2%	38,160	1.8%	38,160	1.8%	14,750	0.7%	8,300	0.4%
Withdrawn or Recommended for Withdrawal – UHMA	8,280	0.4%	39,660	1.8%	8,280	0.4%	8,890	0.4%	1,620	0.1%
Non-energy Solid Leasable Minerals										
Closed – OHMA	1,630	0.1%	38,160	1.8%	38,160	1.8%	38,160	1.8%	33,820	1.6%
Closed – UHMA	19,100	1.3%	39,660	1.8%	19,100	0.9%	6,360	0.3%	0	0.0%
Salable Minerals – Mineral Material Disposal										
Closed – OHMA	520	<0.1%	38,160	1.8%	38,160	1.8%	38,160	1.8%	33,820	1.6%
Closed – UHMA	6,390	0.3%	39,660	1.8%	19,100	0.9%	19,100	0.3%	14,580	0.6%

Notes:
[1] Surface disturbance restrictions defined as:
[2]Soils with high water erosion potential were identified using criteria listed in Table 3.5.1 whereby slopes greater than 30 percent were determined using 10-meter digital elevation data.
Travel and transportation: Closed to Motorized and Mechanized Travel, Limited to Existing Routes
Lands and Realty: ROW Exclusion
Renewable Energy: Solar exclusion, Wind exclusion
Fluid Mineral Leasing: CSU/TL, NSO, Closed
Solid Mineral Leasing: Closed
Mineral Material Leasing: Closed

Under Alternative B, large portions of OHMA and UHMA would be placed under surface disturbance restrictions, which would protect soil stability and productivity from development and vegetation-removal activities. Compared to Alternative A, Alternative B would increase the total amount of surface disturbance restrictions in areas of soils with high water erosion potential with mineral leasing stipulations providing the greatest increased in protective restrictions (an approximate 0.9-1.7% increase in protection depending on the mineral leasing restriction comparted to Alternative A; Table 3.5.4). Alternative B also closes OHMA (and portions of Adjacent Non-habitat) to motorized and mechanized travel on BLM surface, decreasing the potential adverse effects of soil compaction, vegetation disturbance, and erosion, particularly in areas of fragile soils and steep slopes when compared to Alternative A (Table 3.5.4).

Under Sub-Alternative B-1, the entirety of OHMA and UHMA would be unavailable for livestock grazing, while Sub-Alternative B-2 would close only OHMA to livestock grazing between March 1 and July 15. This represents an increase in acreage protected from livestock grazing and associated vegetation removal and trampling impacts to soil stability and productivity as compared with Alternative A. Additionally, Sub-Alternative B-2 would manage livestock grazing duration and utilization to retain adequate residual vegetation in all riparian areas, reducing the potential for accelerated erosion of riparian soils when compared to Alternative A.

Only non-surface disturbing vegetation treatments would be allowed under Alternative B and the use of heavy equipment that disturbs soil would be prohibited in treatments. As a result, short-term impacts on soil stability and productivity would be reduced when compared to Alternative A as the potential for soil disturbance and compaction would be decreased. Other vegetation treatments under Alternative B, such as the prioritization of soil amendments in areas where loss of soil organic matter, drought, or other conditions limit the likelihood of seed germination, would be anticipated to increase soil resiliency, stability, and productivity when compared to Alternative A.

Alternative C places more BLM surface in OHMA and UHMA under surface disturbance restrictions than Alternative A, but less than Alternative B. As a result, Alternative C would result in similar protections for soil stability and productivity as Alternative B, but to a lesser extent. Impacts in the Adjacent Non-habitat areas would be the same as Alternative A; no specific avoidance or minimization of threats (including disturbance, development or infrastructure) to GUSG populations or their habitats within Adjacent Non-habitat (4-mile buffer of OHMA and UHMA) would occur under Alternative C. Adverse effects to soil stability and productivity from travel and transportation management would be the same as Alternative A, but slightly reduced because Alternative C would manage all OHMA and UHMA as OHV-limited except for areas already managed as OHV-closed. Alternative C maintains livestock grazing across the BLM surface in OHMA and UHMA. This would likely result in similar short-term impacts to soil stability and productivity as Alternative A. While Alternative C would

close the same amount of area to fluid mineral leasing as Alternative A, 36,600 acres (1.7%) of soils with high water erosion potential in OHMA would be subject to NSO restrictions, a 1.5% increase compared to Alternative A (Table 3.5.4). Under Alternative C, livestock grazing would be authorized in OHMA and UHMA resulting in little change to soil stability and productivity as under Alternative A.

Vegetation treatments on BLM surface in appropriate areas of OHMA and UHMA would include prescribed fire, mechanical treatments, chemical treatments, and biological treatments under Alternative C, with generally similar direct effects on soil stability as Alternative A. However, similar to Alternative B, prioritization of soil amendments in areas where loss of soil organic matter, drought, or other conditions limit the likelihood of seed germination, would be anticipated to increase soil resiliency, stability, and productivity when compared to Alternative A. While increased use of prescribed fire would decrease short-term soil stability in burned areas, indirect long-term benefits are anticipated to increase due to the expected reduction in acreage burned by wildfire compared to Alternatives A and B. This outcome is anticipated due to reduced fuels from vegetation treatments, and adequate access for effective firefighting.

Impacts to soil stability and productivity under Alternative D would be similar to Alternative C, except conservation measures and restrictions in OHMA and UHMA could extend to linkage-connectivity areas, based on the latest science, input from BLM specialists, and cooperating agencies, as appropriate. Like Alternative C, Alternative D places more BLM surface in OHMA and UHMA under surface disturbance restrictions than Alternative A, but less than Alternative B. Impacts to soil stability and productivity from travel and transportation management and livestock grazing under Alternative D would be the same as Alternative C. Under Alternative D, surface disturbance restrictions for wind energy development and fluid mineral leasing would increase protections for soils with high water erosion potential by approximately 0.8% to 1.7% in both OHMA and UHMA when compared to Alternative A (Table 3.5.4).

Vegetation treatments on BLM surface in OHMA and UHMA under Alternative D would be the same as under Alternative C. Like Alternatives B and C, Alternative D would prioritize us of soil amendments in areas where loss of soil organic matter, drought, or other conditions limit the likelihood of seed germination, would be anticipated to increase soil resiliency, stability, and productivity when compared to Alternative A. Therefore, impacts to soil stability and productivity are anticipated to be to similar to Alternative A and the same as C. Like Alternative C, increased use of prescribed fire would decrease short term soil stability in burned areas, but result in indirect long-term benefits compared to Alternatives A and B.

Management direction under Alternative E only applies to GUSG habitat in the Gunnison Basin population. Management actions that have implications for soil stability and productivity under all other action alternatives would not be required under Alternative E. Under Alternative E, the impacts to soil stability and productivity within the Gunnison Basin would be similar to those described under Alternative D but would not extend to the other population areas.

3.5.2.4 Conclusion

All of the action alternatives would involve greater restrictions on surface disturbances and disruption to GUSG and their habitat, resulting in reduced potential for compaction and erosion as compared with continuation of existing management under Alternative A. As a result, impacts on soil stability and productivity would not be as substantial under Alternatives B, C, D, or E when compared with Alternative A. In summary, management actions and allowable uses under Alternative B would provide the greatest protection for soil resources, followed by Alternatives D and E, and Alternative C.

3.5.2.5 Cumulative Effects

Past, present, and reasonably foreseeable future actions and conditions within the cumulative effects analysis area that have affected and will likely continue to affect soil stability and productivity. These activities include mineral development, livestock grazing, infrastructure development, vegetation treatments, wildfires, recreation, and travel and transportation activities.

Mineral development, including oil and gas, coal, and other minerals, could cause localized effects on soils. Intensive mechanical vegetation treatments likely have and would continue to impact soil resources locally, but they could increase vegetation cover and thus soil health, over the long term. Past livestock grazing and improper grazing practices have impacted soil resources. Improved management of grazing allotments has led to improvements in soil health over time in the cumulative effects analysis area. Under all of the action alternatives, impacts on soil stability and productivity would be reduced compared to Alternative A through the application of surface use restrictions; timing limitations; closures to development, recreation, and motorized travel; conditions of approval for development; and monitoring.

An important trend in the region is rapidly increasing recreational use. This growth in recreation on public lands is due to local population growth, as well as the area's reputation as a national and international recreation destination. All forms of recreational activities can increase potential for erosion, sedimentation, gully creation, biologic soil crust damage, and riparian and upland vegetation damage. However, the significance of such impacts varies with the nature and degree of disturbance as well as site specific environmental conditions. Larger disturbances typically represent greater potential to damage soils and affect productivity.

3.5.3. Issue 2: How would management actions and allowable uses under each alternative impact climate-driven drought, aridification, and related effects on soil stability and productivity?

3.5.3.1 Analytical Methods and Assumptions

- The known existing trends/impacts of climate change on soil stability and productivity within the planning area will be expressed in terms of acres (to be evaluated semi-qualitatively dependent on available data within the planning area).
- The implementation and effectiveness of management actions on soils can be influenced by funding, political constraints, workloads, enforcement, compliance, staffing levels, litigation, conflicting priorities and regulations, climate change, and other factors.
- The effects of climate change, including drought and aridification, would increase fire frequency and have corollary effects on soil stability and productivity.
- Generalizations about the impacts of climate change on soil resources can be derived from available research.
- Generalizations about the impacts of BLM management practices can be derived from agency research or monitoring.

3.5.3.2 Affected Environment

Climate largely influences soil development processes including the rate of rock weathering, decomposition of plant materials, accumulation of organic matter, and nutrient cycling. Climate also has a strong influence on soil moisture and temperature, which in turn affects the rates of addition, removal, translocation, and transformation of material within the soil. Topography influences site conditions, such as precipitation amounts and effectiveness, drainage, runoff, erosion potential, and temperature. As discussed in Section 3.5.2.2, the current condition of soils in the planning area are typical of shallow soil types with low organic content, and sparse vegetative cover. Generally, soils in the planning area are vulnerable to erosion by various natural and anthropogenic change agents, are difficult to reclaim, and are susceptible to changes in climate.

Future trends for soils indicate increasing temperatures and more variable precipitation, including extreme droughts, which will likely increase risks associated with erosion and dust (Duniway et al. 2019). The interactions of increased soil temperature and moisture, and changes in type and amount of precipitation is anticipated to affect soil functions differently across different soil types. The Colorado Plateau is one of North America's most rapidly warming hot spots, with rates of warming of up to 2 to 3 °C within the last 100 years (Finger-Higgens et al. 2022). These warming trends have already been linked to increasing drought

severity, leading to loss of grass cover, and increases in aeolian sediment flux (Finger-Higgens et al. 2022). In Colorado, warmer temperatures are anticipated to result in earlier melting of snowpack and increased evaporation of soil moisture, further decreasing water availability during the already dry summer months (BLM 2021). Similarly, higher temperatures in Utah would amplify the effects of naturally occurring droughts by increasing the rate of loss of soil moisture (BLM 2021). Potential climate-driven shifts and declines in late-successional biological soil crust communities could ultimately lead to an ecological state change in biological soil crust-dominated ecosystems (Finger-Higgens et al. 2022). The loss of protective biological soil crusts may leave soils more susceptible to accelerated erosion and subsequent loss of soil fertility and water-holding capacity (Finger-Higgens et al. 2022).

3.5.3.3 Environmental Consequences

As discussed in Section 3.5.2.3, BLM management and resource use decisions influence long-term soil health, stability, and productivity. Surface disturbing activities, improper livestock grazing practices, recreation, mineral resource activities, renewable energy development, vegetation treatments, and travel and transportation have the potential to remove vegetation and increase the risk of erosion. Increases in frequency and severity of drought associated with climate change would reduce protective soil cover and complicate soil recovery from surface disturbance. Hotter and drier conditions coupled with more erratic precipitation events would make seed germination and establishment more difficult and reduce overall plant vigor. Most climate projections also indicate that droughts and wildfires will increase in frequency and severity in Colorado by 2050, mainly due to continued warming (CSU 2023). Increased wildfire would result in larger acreages of unvegetated states for a longer duration, reducing overall soil stability across the planning area over the long term.

Conventional restoration and reclamation approaches often entail surface disturbance and rely on adequate moisture to prevent erosion, thereby carrying considerable erosion risk if wet conditions do not occur (Duniway et al. 2019). The adaptive management strategy outlined in this RMP Amendment/EIS will be fully developed as an activity level plan during the implementation phase of the RMP Amendment. For those RMP Amendment/EIS management actions that allow for adaptive management, the adaptive management plan will guide the BLM in determining the most effective course of action to promote GUSG conservation in response to conditions observed through monitoring.

Effects Common to All Alternatives

While the effects of climate change are identified as a threat to GUSG (USFWS 2020), there is no BLM program area that specifically addresses climate change. Additionally, the alternatives carried forward for detailed analysis in this RMP Amendment do not include management actions specific to soil resources. The effects of the alternatives of climate-driven drought, aridification and implications for soil stability and productivity is anticipated to be similar to the

analysis contained in Section 3.5.2.3: alternatives with fewer surface disturbance restrictions and more allowable surface-disturbing uses, especially in areas of fragile soils, are anticipated to increase soil erosion and compaction and decrease soil stability and productivity. Therefore, the analysis of each alternative below focuses on specific management actions that could reduce the potential adverse effects of climate-driven drought and aridification on soil stability and productivity.

Alternative A – (No Action – Current Management)

As discussed in Section 3.5.2.3, large-scale surface disturbance would be expected to increase across the BLM surface of OHMA and UHMA, as well as on BLM lands in the Adjacent Non-habitat areas (4-mile buffer) under Alternative A. The frequency and intensity of wildfire is anticipated to increase the amount of burned, unvegetated acreage over the long term with anticipated rising temperatures. The additional wildfires and burns would reduce short term soil stability across a growing proportion of these areas. Alternative A would implement vegetation treatments designed to reduce pinyon-juniper and conifer encroachment, replenish diminished native seed banks, control noxious and invasive species, and provide periods of grazing rest or reduced usage during drought. Two plans under Alternative A require rest from grazing after emergency stabilization and rehabilitation efforts in response to wildfire. Several other plans contain general grazing guidelines that incorporate rest from grazing for biological benefits on a case-by-case basis. While these treatments may result in short-term effects to soil, long-term beneficial effects on soil resiliency would be likely under future climate change scenarios by increasing native vegetation coverage, reducing fire risk, and resting areas from grazing during periods of drought.

Action Alternatives

As discussed in Section 3.5.2.3, Alternative B would apply the most restrictive conservation measures and afford the most protection to soil stability and productivity among the alternatives, especially in fragile soil areas. Additionally, and compared to Alternative A, Alternative B would implement several management actions for vegetation treatments and livestock grazing specially addressing drought conditions. The timing of vegetation treatments under Alternative B would carefully consider drought conditions in project-specific NEPA analysis. BLM would prioritize the use of proven soil amendments to promote native vegetation establishment under conditions that limit the likelihood of seed germination, such as loss of soil organic matter and drought while also placing higher priority on sites with erosional features. In UHMA, adaptive management plans that incorporate appropriate livestock management guidelines into grazing permits to address drought potential would also be implemented under Alternative B. These management actions under Alternative B to specifically address drought conditions would likely afford additional protection from climate-related effects on soil stability and productivity when compared to Alternative A.

Climate-related effects on soil stability and productivity under Alternative C would be similar to Alternative B, but to a lesser extent given the overall fewer surface disturbance restrictions. Alternative C would implement the same management actions for vegetation treatments and livestock grazing as Alternative B that specially address drought conditions; however, unlike Alternative B, Alternative C would authorize livestock grazing in OHMA and UHMA, increasing potential for grazing and trampling-related impacts that could make some soil areas more prone to the effects of climate-driven drought and aridification if improper livestock grazing occurs. Overall, management actions under Alternative C to specifically address drought conditions would likely afford additional protection from climate-related effects on soil stability and productivity when compared to Alternative A, but fewer protections when compared to Alternative B.

Climate-related effects on soil stability and productivity under Alternative D would be similar to Alternative C, except conservation measures and restrictions on OHMA and UHMA could extend to linkage-connectivity areas. Alternative D places more BLM surface in OHMA and UHMA under surface disturbance restrictions than Alternative A, but less than Alternative B. These additional surface disturbance restrictions would provide more protection from climate-driven drought and aridification when compared to Alternative A. Also similar to Alternative C, Alternative D would implement the same management actions for vegetation treatments and livestock grazing that specifically address drought conditions as Alternative B; therefore, Alternative D would likely afford the same beneficial protection from climate-related effects on soil stability and productivity as described under Alternatives B and C.

Management direction under Alternative E only applies to GUSG habitat in the Gunnison Basin population. Some management actions that contain specific measures to address drought conditions all other action alternatives would not be required under Alternative E. Under Alternative E, the effects of climate-driven drought and aridification on soil stability and productivity within the Gunnison Basin would be similar to those described under Alternative D, but would not extend to the other population areas.

3.5.3.4 Conclusion

As described in Section 3.5.2.4, all of the action alternatives would involve greater restrictions on surface disturbances and disruption to GUSG and their habitat, resulting in reduced potential for compaction and erosion as compared with continuation of existing management under Alternative A. Alternative B would likely afford the most protection from climate-related effects on soil stability and productivity primarily due to application of the most restrictive conservation measures, followed by Alternatives D and E, and Alternative C which would general confer the same protection from climate-related effects on soil conditions.

3.5.3.5 Cumulative Effects

Past, present, and reasonably foreseeable future actions and conditions within the cumulative effects analysis area that have affected and will likely continue to affect soils resources are described in 3.5.2.5. Climate change within the cumulative effects analysis area could cause an increase in temperatures and variations in precipitation that could exacerbate the effects of drought and aridification on soil stability and productivity. Such changes could increase susceptibility of soils in the planning area to drought and erosion and decrease overall stability and productivity.

3.5.4. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is implemented. Although they are generally more evident during the implementation phase of planning, there are some unavoidable adverse effects that can be assessed through this RMP Amendment/EIS. In particular, management actions aimed at protecting a certain resource may have unavoidable adverse effects on other resources in the planning area.

Surface-disturbing activities would result in unavoidable adverse effects under current BLM policy to foster multiple uses. Although these effects would be mitigated to the extent possible, unavoidable damage to soil stability and productivity would be possible. Long-term conversion of areas to other uses such as ROWs, and mineral and energy development would increase erosion and reduce soil productivity. Areas not protected by surface disturbance restrictions would result in unavoidable long-term impacts to soil stability and productivity.

3.5.5. Relationship of Short-term Uses and Long-term Productivity

Section 102(2)(C)(iv) of NEPA requires a discussion of the relationship of short-term local uses of the environment and the maintenance and enhancement of long-term productivity of resources. For this RMP Amendment/EIS, "short-term" is defined as occurring only during or immediately after implementation and "long-term" as occurring for an extended period after implementation (several years or more).

Short-term use of portions of the decision area for energy and mineral development, ROWs, and OHV use could result in long-term loss of soil stability and productivity. Impacts would persist as long as surface disturbance and vegetation loss continue. In general, the loss of soil stability and productivity would be directly at the point of disturbance. Alternatives A and C would have the greatest potential for short-term loss of soil stability and productivity due to fewer surface disturbance restrictions when compared to Alternatives B, D, and E. Alternative

B would provide the greatest long-term protection for soil stability and productivity by prioritizing the removal of identified threats within OHMA and UHMA and reducing impacts within the decision area to the maximum extent allowable.

3.5.6. Irreversible and Irretrievable Commitment of Resources

CEQ and NEPA regulations require that the discussion of environmental consequences include a description of "any irreversible or irretrievable commitment of resources which would be involved in the proposal should it be implemented" (40 CFR 1502.16). An irretrievable commitment of resources in one that results in the loss of resources for a certain period of time. For example, the construction of a road will result in a loss of livestock or wildlife forage for as long as the road remains. An irreversible commitment of resources is one that results in the permanent loss of those resources. This can occur, for example, when the production of oil and gas depletes nonrenewable resources in the planning area. The BLM requires BMPs, reclamation, and mitigation to reduce the magnitude and scope of irretrievable and irreversible resource impacts of actions taken or authorized by the agency.

Implementation of RMP management actions resulting in surface-disturbing activities, including energy development, mineral development, and ROWs, would result in a commitment to the loss of irreversible or irretrievable resources. Although new soil can develop, soil development is a slow process in many parts of the planning area. Soil erosion or the loss of productivity and soil structure may be considered irreversible commitments to resources. Surface-disturbing activities, therefore, would remove vegetation and accelerate erosion that would contribute to irreversible soil loss; however, management actions and BMPs to reduce impacts of identified threats in OHMA and UHMA within the decision area would also reduce the magnitude of impacts on soil and restore some of the soil and vegetation lost in the decision area. Generally, such disturbances would occur to the greatest degree under Alternative A due to the number of acres available for OHV use, energy and mineral development, and ROW development. Alternative C would be similar but with more restrictions for surface disturbing activities (e.g., wind energy exclusion within OHMA). Alternatives D and E, and to a greater extent Alternative B, contain additional conservation measures and stipulations to protect resources in the decision area, conferring increased protection for soil resources.

3.6. VEGETATION, INCLUDING RIPARIAN AREAS AND WETLANDS

3.6.1. Introduction

This section provides a general description of the acreage and condition of vegetation resources in the planning area. Select objectives for vegetation management are as follows:

- Objective 2: Reduce and prevent further fragmentation to improve connectivity of intact vegetation communities.
- Objective 3: Maintain and improve mesic meadows and riparian areas (RIS Priority Action 1-1).

Vegetation communities provide multiple foundational ecosystem services including providing forage for GUSG, other wildlife species, and domestic livestock, providing thermal and visual cover for wildlife, protecting soils from wind- and water-driven erosion, sequestering carbon and cycling of nutrients (Havstad et al. 2007; Yapp et al. 2010). GUSG depend on a mosaic of native sagebrush vegetation communities and are considered obligate users of several sagebrush species to meet their unique life history requirements. GUSG require ecosystems with continuous and healthy sagebrush stands for food and cover throughout the year, while understory grass and forb species provide cover and forage during annual nesting and brood-rearing periods (Connelly et al. 2000). Riparian and wet meadow (mesic) habitats provide habitat and forage for brood-rearing hens and chicks (Young et al. 2015).

3.6.2. Issue 1: How would the management actions and allowable uses under each alternative affect upland and riparian plant communities?

3.6.2.1 Analytical Methods and Assumptions

Indicators

The status of vegetation communities on BLM-administered lands in OHMA, UHMA, LCMA, and Adjacent Non-habitat areas is described in terms of:

- The acreage of each major plant community in these HMAs/Adjacent Non-habitat areas on BLM-administered land; and
- The acreage of each major plant community in these HMAs/Adjacent Non-habitat areas on BLM-administered land achieving or not achieving Land Health Standards: Colorado

Land Health Standards #2 and #3 (BLM 1997a) or Utah Land Health Standard #3 (BLM 1997b).

Riparian and wetland status throughout BLM-administered land in OHMA, UHMA, LCMA, and Adjacent Non-habitat areas is described in terms of:

- Mileage of riparian areas on BLM-administered land;
- Acreage of wetlands on BLM-administered land; and
- Mileage of streams and riparian habitat and acres of wetlands on BLM-administered land in Proper Functioning Condition (PFC), Functioning at Risk, and Not Functional categories.

Assumptions

- Vegetation, including riparian and wetland communities, would be managed to achieve Colorado and Utah Land Health Standards. Implementation rates would be dependent on available budgets and resources.
- Methods and projects implemented to restore watersheds and increase desirable vegetation communities or wildlife habitats (including surface disturbance associated with these efforts) would achieve long-term benefits to vegetation resources. Surface disturbance would initially have potential to increase invasive, non-native plant species.
- Potential construction and use of new roads, designation and use of ROWs, and other development would negatively affect vegetation condition and increase habitat fragmentation.
- The degree of impact attributed to disturbances would be influenced by the location within the watershed; the type, timing, and degree of disturbance; existing vegetation composition and condition; precipitation and climate change; and mitigation.
- Invasive, non-native plant species would continue to be introduced and spread by vehicle traffic, recreation activities, wildlife and livestock movements, and surface-disturbing activities.
- Climate change models predict hotter and drier conditions, greater evaporation, earlier snowmelt, and earlier spring runoff. This would lead to more plant stress, shorter-duration stream flows, and increased drought-tolerant species abundance and result in changes in vegetation communities (Bryce et al. 2012; Cayan et al. 2001; Seager et al. 2007).
- Short-term effects on upland vegetation would occur over a timeframe of ten years or less and long-term effects would occur for longer than ten years.
- Short-term effects on riparian and wetland vegetation would occur over a timeframe of two years or less and long-term effects would occur longer than two years.

- Fire suppression activities would be effective and keep burned acreage to a minimum level.

3.6.2.2 Affected Environment

The following metrics can be used to analyze vegetation communities and conditions in GUSG HMAs and Adjacent Non-habitat areas within 1-mile and 4-mile buffers.

- Acres of LANDFIRE EVT vegetation communities in OHMAs, UHMAs, LCMAs, and Adjacent Non-habitat areas on BLM-administered land;
- Vegetation conditions in OHMAs, UHMAs, LCMAs, and Adjacent Non-habitat areas on BLM-administered land;
- Miles of National Hydrography Dataset (NHD) streams, acres of riparian habitat, and acres of National Wetlands Inventory (NWI) wetlands in OHMAs, UHMAs, LCMAs, and Adjacent Non-habitat areas on BLM-administered land;
- Riparian areas in PFC on BLM-administered land in OHMAs, UHMAs, LCMAs, and Adjacent Non-Habitat areas on BLM-administered land; and
- Past vegetation management on BLM-administered land.

Invasive, non-native plant species are analyzed in Section 3.7, *Noxious Weeds and Invasive Species*.

LANDFIRE EVT Vegetation Communities

The planning area is within the Colorado Plateaus, Southern Rockies, and Arizona/New Mexico Plateau Level 3 Ecoregions (USEPA 2016). Twenty Level 4 ecoregions are within these Level 3 categories in the planning area. The primary vegetation communities within and around GUSG habitat are sagebrush shrubland, pinyon-juniper woodland, montane shrubland, grassland-forbland, and forest. Vegetation communities were determined from U.S. Geological Survey (USGS) LANDFIRE EVT (2020a) data and have been grouped into broader categories for this analysis.

Sagebrush Communities

The primary sagebrush communities within the planning area are the intermountain basins big sagebrush shrubland and the intermountain basins montane sagebrush steppe. The Intermountain basins big sagebrush shrubland community is dominated by Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and exhibits drier conditions. The Intermountain Basins montane sagebrush steppe is dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and exhibits wetter conditions. Three other sagebrush communities are smaller constituents of the sagebrush community in the planning area: the *Artemisia tridentata* ssp. *vaseyana* shrubland alliance, Colorado Plateau mixed low sagebrush shrubland, and Intermountain Basins big sagebrush steppe.

Shrubland Communities

Shrublands in the decision area consist of the following communities (USGS 2020a):

- Colorado Plateau blackbrush-Mormon tea shrubland;
- Great Basin and intermountain ruderal shrubland;
- Interior western North American temperate ruderal shrubland;
- Intermountain basins greasewood flat;
- Intermountain basins mat saltbush shrubland;
- Intermountain basins mixed salt desert scrub;
- Intermountain basins semi-desert shrub-steppe;
- Rocky Mountain Gambel oak-mixed montane shrubland;
- Rocky Mountain lower montane-foothill shrubland; and
- Southern Colorado Plateau sand shrubland.

The Rocky Mountain lower montane-foothill shrubland community is characterized by mountain mahogany (*Cercocarpus* spp.) and is usually associated with rocky substrates and dry conditions that limit tree and Gambel oak (*Quercus gambelii*) growth. Both Wyoming and mountain big sagebrush can occur in this community. The other important montane shrubland type in the decision area is the Gambel oak shrubland alliance. This community contains many associations dominated by Gambel oak and some sagebrush species.

Pinyon-Juniper Communities

Three pinyon-juniper communities are within the decision area: Colorado Plateau pinyon-juniper shrubland, Colorado Plateau pinyon-juniper woodland, and southern Rocky Mountain pinyon-juniper woodland (USGS 2020a). Pinyon-juniper associations occur on flat to gentle slopes and contain a shrub understory dominated by mountain or Wyoming big sagebrush. Pinyon-juniper vegetation communities are considered non-GUSG habitat within the decision area (Davies et al. 2011).

Grass-Forb Communities

Three grass-forb communities are within the decision area: interior western North American temperate ruderal grassland, intermountain basins semi-desert grassland, and southern Rocky Mountain montane-subalpine grassland (USGS 2020a).

Introduced Grassland Communities

Introduced upland vegetation-annual grasslands are often dominated by cheatgrass and represents a substantial threat to the long-term viability of GUSG habitat in the decision area. Other introduced species may include crested wheatgrass (*Agropyron cristatum*), smooth brome

(*Bromus inermis*), bulbous bluegrass (*Poa bulbosa*), common meadow-grass (*Poa pratensis*), and fountaingrass (*Pennisetum* spp.).

Forest and Woodland Communities

The forest and woodland communities within the decision area consist of the following species and associations (USGS 2020a):

- Intermountain basins aspen-mixed conifer forest and woodland;
- Rocky Mountain aspen forest and woodland;
- Rocky Mountain lodgepole pine forest;
- Rocky Mountain subalpine dry-mesic spruce-fir forest and woodland;
- Rocky Mountain subalpine mesic-wet spruce-fir forest and woodland;
- Rocky Mountain subalpine-montane limber-bristlecone pine woodland;
- Southern Rocky Mountain dry-mesic montane mixed conifer forest and woodland;
- Southern Rocky Mountain mesic montane mixed conifer forest and woodland;
- Southern Rocky Mountain ponderosa pine savanna; and
- Southern Rocky Mountain ponderosa pine woodland.

Coniferous forests are not considered to provide suitable habitat for GUSG (Braun et al. 1977).

Riparian Communities

LANDFIRE EVT riparian communities within the decision area include the following species and associations (USGS 2020a):

- Interior west ruderal riparian forest;
- Interior west ruderal riparian scrub;
- Rocky Mountain lower montane-foothill riparian shrubland;
- Rocky Mountain lower montane-foothill riparian woodland;
- Rocky Mountain subalpine-montane riparian shrubland; and
- Rocky Mountain subalpine-montane riparian woodland.

Riparian areas in the West have been significantly impacted by a variety of conditions, including development, dewatering of streams, and alteration of watersheds through land use changes. Development and road construction have compounded impacts to natural variability in flow so that most streams in the West that were once mapped as perennial are now considered ephemeral (Stoddard et al. 2005; Carlisle et al. 2011).

Wetland Community

Three LANDFIRE EVT wetland communities are within the decision area: North American arid west emergent marsh, Rocky Mountain alpine-montane wet meadow, and Rocky Mountain subalpine-montane mesic meadow (USGS 2020a). Wet meadow communities within or near sagebrush habitats provide important GUSG summer and fall habitats for brood-rearing hens and chicks. Juveniles and all-life stages of GUSG use mesic (wet) habitats that provide forage in the form of forbs and invertebrates (Young et al. 2015). In the decision area, wet meadows are primarily associated with springs, riparian areas, and scattered lentic wetlands.

Table 3.6.1 through Table 3.6.5 present the acreages and percentages of general vegetation community types according to LANDFIRE EVT within each GUSG population management area and Adjacent Non-habitat areas. Additional information on wetland and riparian conditions is presented below.

Table 3.6.1. Vegetation Communities on BLM-Administered Lands in Occupied Habitat Management Areas

Vegetation Communities	GUSG Population								
	Rangewide OHMA[2]	Cerro Summit – Cimarron – Sims Mesa Acres (percent)	Crawford Acres (percent)	Dove Creek Acres (percent)	Gunnison Basin Acres (percent)	Monticello Acres (percent)	Piñon Mesa Acres (percent)	Poncha Pass Acres (percent)	San Miguel Basin Acres (percent)
Sagebrush (acres)	271,526	633 (35%)	6,403 (29%)	779 (15%)	229,284 (79%)	1,937 (64%)	4,356 (23%)	3,226 (26%)	24,908 (69%)
Shrubland (acres)	28,652	249 (14%)	4,547 (21%)	2,159 (41%)	12,354 (4%)	62 (2%)	3,486 (19%)	3,538 (28%)	2,257 (6%)
Pinyon-Juniper Woodland (acres)	23,762	715 (40%)	10,625 (48%)	1,971 (38%)	3,687 (1%)	839 (28%)	7,572 (40%)	1,207 (10%)	7,771 (22%)
Grass-Forb (acres)	15,399	14 (1%)	89 (0%)	31 (1%)	12,066 (4%)	3 (0%)	225 (1%)	2,843 (23%)	128 (0%)
Introduced Grassland	1,012	17 (1%)	128 (1%)	35 (1%)	49 (0%)	3 (0%)	348 (2%)	27 (0%)	405 (1%)
Forested and Woodland (acres)	33,193	5 (0%)	47 (0%)	121 (2%)	30,000 (10%)	0 (0%)	2,461 (13%)	502 (4%)	57 (0%)
Riparian	1,756	21 (1%)	110 (0%)	71 (1%)	1,180 (0%)	4 (0%)	152 (1%)	135 (1%)	83 (0%)
Wetland	1,267	4 (0%)	15 (0%)	4 (0%)	408 (0%)	3 (0%)	32 (0%)	779 (6%)	22 (0%)
Other (acres)	4,293	128 (7%)	200 (1%)	79 (2%)	2,953 (0%)	186 (6%)	114 (1%)	321 (3%)	312 (1%)

Sources: BLM 2022; USGS 2020a
[1]Other includes the following LANDFIRE categories Developed, Intermountain Basin Dune, Intermountain Shale Badland, Open Water, Bedrock and Scree, and Agricultural. Percentages are calculated against the total BLM-administered land in OHMAs.
[2]Totals may vary due to rounding.

Table 3.6.2. Vegetation Communities on BLM-Administered Lands in Unoccupied Habitat Management Areas

Vegetation Communities	GUSG Population								
	Rangewide UHMA	Cerro Summit – Cimarron – Sims Mesa Acres (percent)	Crawford Acres (percent)	Dove Creek Acres (percent)	Gunnison Basin Acres (percent)	Monticello Acres (percent)	Piñon Mesa Acres (percent)	Poncha Pass Acres (percent)	San Miguel Basin Acres (percent)
Sagebrush (acres)	46,357	2,453 (34%)	1,248 (12%)	8,696 (18%)	13,838 (22%)	335 (20%)	11,614 (12%)	179 (2%)	7,994 (37%)
Shrubland (acres)	31,245	658 (9%)	3,474 (34%)	6,615 (14%)	799 (1%)	29 (2%)	8,715 (9%)	7,912 (68%)	3,043 (14%)
Pinyon-Juniper Woodland (acres)	116,434	4,001 (55%)	4,628 (46%)	30,492 (64%)	3,158 (5%)	1,104 (68%)	63,915 (67%)	136 (1%)	9,001 (41%)
Grass-Forb (acres)	2,811	35 (0%)	39 (0%)	256 (1%)	675 (1%)	1 (0%)	313 (0%)	1,431 (12%)	62 (0%)
Introduced Grassland	945	0 (0%)	21 (0%)	221 (0%)	6 (0%)	5 (0%)	430 (0%)	55 (0%)	206 (1%)
Forested and Woodland (acres)	49,934	9 (0%)	252 (2%)	458 (1%)	42,261 (68%)	0 (0%)	6,942 (7%)	7 (0%)	5 (0%)
Riparian	1,105	9 (0%)	69 (0%)	169 (0%)	318 (1%)	2 (0%)	432 (0%)	7 (0%)	98 (0%)
Wetland	1,702	0 (0%)	9 (0%)	26 (0%)	55 (0%)	0 (0%)	101 (0%)	1,490 (13%)	21 (0%)
Other (acres)	8,098	152 (2%)	410 (4%)	916 (2%)	1,169 (2%)	157 (10%)	3,531 (4%)	447 (4%)	1,316 (6%)

Sources: BLM 2022; USGS 2020a
[1]Other includes the following LANDFIRE categories Developed, Intermountain Basin Dune, Intermountain Shale Badland, Open Water, Bedrock and Scree, and Agricultural. Percentages are calculated against the total of BLM-administered land in UHMAs.

Table 3.6.3. Vegetation Communities on BLM-administered Lands in Linkage-Connectivity Management Areas

Sagebrush (acres)	Shrubland (acres)	Pinyon-Juniper Woodland (acres)	Grass-Forb (acres)	Forested and Woodland (acres)	Developed or Non-vegetated Area (acres)
25,290	67,530	80,950	2,210	22,040	14,520

Sources: BLM 2022; USGS 2020a
Other vegetation communities occupy a minor fraction of the area and are not included in this table. Percentages are calculated against the total BLM-administered land in LCMAs.

Table 3.6.4. Vegetation Communities on BLM-Administered Lands in Adjacent Non-habitat Areas within 1.0 mile

Sagebrush (acres)	Shrubland (acres)	Pinyon-Juniper Woodland (acres)	Grass-Forb (acres)	Forested and Woodland (acres)	Developed or Non-vegetated Area (acres)
35,240	39,040	225,570	4,030	45,940	15,350

Sources: BLM 2022; USGS 2020a
Other vegetation communities occupy a minor fraction of the area and are not included in this table. Percentages are calculated against the total BLM-administered land in Adjacent Non-habitat areas.

Table 3.6.5. Vegetation Communities on BLM-Administered Lands in Adjacent Non-habitat Areas within 4 miles

Sagebrush (acres)	Shrubland (acres)	Pinyon-Juniper Woodland (acres)	Grass-Forb (acres)	Forested and Woodland (acres)	Developed or Non-vegetated Area (acres)
107,380	160,530	647,510	10,050	132,090	59,450

Sources: BLM 2022; USGS 2020a
Other vegetation communities occupy a minor fraction of the area and are not included in this table. Percentages are calculated against the total BLM-administered land in Adjacent Non-habitat areas.

Wetland and Riparian Proper Functioning Condition Status

GUSG habitat quality guidelines for wetlands and riparian areas are not described in the Gunnison Sage-Grouse RCP (Gunnison Sage-Grouse Rangewide Steering Committee 2005). The RCP states that current BLM guidelines for managing streams are consistent with GUSG habitat requirements and that BLM managers should strive to meet the full potential of any given site. Currently, the BLM manages streams and wetlands for PFC, which encompasses the wetland and riparian area indicators described under the Colorado Standards for Public Land Health (Standards #2 and #3) (BLM 1997a) and Utah Standards for Rangeland Health (Standard #2) (BLM 1997b).

Colorado Standards for Public Land Health

- Standard #2: Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment, and provides forage, habitat and biodiversity. Water quality is improved or maintained. Stable soils store and release water slowly.
- Standard #3: Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes.

Utah Standards for Rangeland Health

- Standard #2: Riparian and wetland areas are in properly functioning condition. Stream channel morphology and functions are appropriate to soil type, climate and landform. As indicated by:
    - Streambank vegetation consisting of, or showing trend toward, species with root masses capable of withstanding high streamflow events. Vegetative cover adequate to protect stream banks as dissipate streamflow energy associated with high-water flows, protect against accelerated erosion, capture sediment, and provide for groundwater recharge.
    - Vegetation reflecting: Desired plant community, maintenance of riparian and wetland soil moisture characteristics, diverse age structure and composition, high vigor, large woody debris when site potential allows, and providing food, cover, and other habitat needs for dependent animal species.
    - Revegetating point bars; lateral stream movement associated with natural sinuosity; channel width, depth, pool frequency and roughness appropriate to landscape position.
    - Active floodplain.

Proper Functioning Condition Criteria

Lotic Systems

Lotic aquatic systems are associated with having fast or flowing water, such as rivers, streams, and creeks. Flowing water when concentrated in a channel, has enough shear stress to form and maintain a scour channel that is generally devoid of vegetation and capable of transporting sediment as bedload (USDI 2020). The PFC methodology for assessing the functionality of the physical processes occurring within a stream or wetland area includes evaluating the interactions of hydrology, stabilizing vegetation, and geomorphology (USDI 2015). A PFC assessment compares the existing conditions and physical processes of a stream or a specific stream reach against its own potential for proper functioning. Seventeen individual attributes and/or processes are evaluated to determine the functional status of a stream or stream reach. The evaluation of a stream can make three different determinations including PFC, Functional-at risk (FAR), or Non-functional.

A stream determined to have a PFC status indicates that the aquatic system exhibits adequate vegetation, landform, or woody material present to have a high likelihood of withstanding long term adverse effects of a moderate to high flow event (generally a 10- to 25-year stream flow event). Streams determined to have a status of FAR are limited in functioning condition are at greater risk of impairment. Streams determined to have a Non-functional status do not exhibit the vegetation and landforms to dissipate the stream energy associated with high flows and therefore are at risk of adverse erosion and poor water quality (USDI 2015). The BLM considers any rating below PFC to be unacceptable as streams with a reduced status indicate a situation that is unsustainable and therefore not meeting BLM Standards for Public Land Health or BLM Guidelines for Rangeland Health.

Lentic Systems

Lentic aquatic systems are characterized by still or very slow-moving water. Lentic riparian-wetland systems include but are not limited to seeps, springs, marshes, swamps, bogs, fens, muskegs, prairie potholes, wet and moist meadows, vegetated drainageways, oxbows, beaver complexes, shallow (i.e., typically a depth of 2 meters or less) lakes and ponds, and constructed reservoirs (USDI 2020). Water within a lentic system generally does not have the energy to form and maintain a scour channel when functioning properly or at the system's potential. Movement of sediment and organic matter within a lentic system may occur through dissolved or suspended transport.

A lentic riparian-wetland area is in PFC, or functioning properly, when adequate vegetation, soil and landform, or woody material is present to:

- Dissipate energies associated with overland flows (e.g., storm and snowmelt events) and wind and wave action, thereby reducing erosion.
- Protect/stabilize shorelines, islands, and soil surfaces from erosion and direct physical alteration from human and animal activities.

- Improve floodwater retention as well as ponding, storage, and retention of surface water.
- Saturate soil and retain soil moisture.
- Maintain or improve groundwater recharge.
- Capture sediment.
- Maintain soil attributes (e.g., organic matter, pore space, structure, soil chemistry).

Table 3.6.6 and Table 3.6.7 present acreages of wetlands and mileage of riparian areas in GUSG population HMAs and Adjacent Non-habitat areas according to the National Wetlands Inventory dataset (USFWS 2021). Table 3.6.8 through Table 3.6.10 present riparian conditions in GUSG population HMAs and Adjacent Non-habitat areas. Conditions of wetland and riparian areas within the decision area are broadly affected by existing water rights allocated to non-BLM entities and existing stream flow and groundwater diversions for other uses including agriculture, livestock grazing, and other consumptive uses. Groundwater use directly affects riparian and wetland areas by lowering water levels in shallow aquifers.

Although wetland and riparian areas represent less than one percent of the overall OHMA and UHMA acreages within the decision area, these areas provide substantial benefit to GUSG throughout the year and especially within the brood-rearing season through the diversity of insect and vegetative forage available to GUSG. In dryer years when sagebrush vegetative conditions decline, brood-rearing GUSG may select mesic meadows and other wet habitat areas to concentrate foraging activity (USFWS 2019). Among the population areas, the Gunnison Basin includes the most acres of riparian and wetland areas.

Table 3.6.6. Riparian and Wetland Areas on BLM-administered Land in Gunnison Sage-Grouse Habitat

GUSG Population	Riparian Areas in OHMA (acres)	Wetland Areas in OHMA (acres)	Riparian Areas in UHMA (acres)	Wetland Areas in UHMA (acres)
Rangewide	1,760	1,260	1,110	1,700
Cerro Summit – Cimarron – Sims Mesa	20	4	9	0
Crawford	110	20	70	9
Dove Creek	70	4	170	30
Gunnison Basin	1,180	410	320	60
Monticello	4	3	2	0
Piñon Mesa	150	30	430	100
Poncha Pass	140	780	7	1,490
San Miguel Basin	80	20	100	20

Sources: USFWS 2021; BLM 2022
Wetland data are derived from the NWI for Freshwater Emergent and Freshwater Forested/Shrub Wetlands.
Stream data are based on the NHD showing only named streams or those categorized as general or perennial streams.

Table 3.6.7. Riparian and Wetland Areas on BLM-Administered Land in Adjacent Non-habitat Areas

Riparian Areas in Adjacent Non-habitat within 1.0 mile (acres)	Wetland Areas in Adjacent Non-habitat within 1.0 mile (acres)	Riparian Areas in Adjacent Non-habitat within 4.0 miles (acres)	Wetland Areas in Adjacent Non-habitat within 4.0 miles (acres)
1,430	840	4,710	2,590

Sources: USFWS 2021; USGS 2020b; BLM 2022
Wetland data are derived from the NWI for Freshwater Emergent and Freshwater Forested/Shrub Wetlands categories.
Stream data are based on the NHD showing only named streams or those categorized as general or perennial streams.

Table 3.6.8. Riparian Conditions on BLM-Administered Land in Occupied Habitat Management Areas

Proper Functioning Condition	GUSG Population								
	Rangewide OHMA	*Cerro Summit – Cimarron – Sims Mesa*	*Crawford*	*Dove Creek*	*Gunnison Basin*	*Monticello*	*Piñon Mesa*	*Poncha Pass*	*San Miguel Basin*
Proper Functioning Condition (stream miles)	130	-	-	1	80	-	-	40	10
Functioning at Risk[1] (stream miles)	90	-	-	-	60	-	-	10	20
Non-Functional (stream miles)	30	1	-	-	30	-	-	10	10
Proper Functioning Condition (wetland acres)	440	-	-	-	430	-	1	-	-
Functioning at Risk (wetland acres)	190	-	-	-	190	-	-	-	-
Non-Functional (wetland acres)	10	-	-	-	4	-	-	-	-

Source: BLM 2022
Note: Mileages of streams classified as "unknown" are not included in this table. Wetland and riparian PFC status for aquatic features within the decision area are often affected by existing water rights allocated to non-BLM entities. Some streams and wetlands within OHMA have not been evaluated using PFC; therefore, the condition of stream miles may not be representative of the landscape.
[1] Includes all streams in the Functioning at Risk category irrespective of trend.

Table 3.6.9. Riparian Conditions on BLM-administered Land in Unoccupied Habitat Management Areas

Proper Functioning Condition	GUSG Population								
	Rangewide UHMA	*Cerro Summit – Cimarron – Sims Mesa*	*Crawford*	*Dove Creek*	*Gunnison Basin*	*Monticello*	*Piñon Mesa*	*Poncha Pass*	*San Miguel Basin*
Proper Functioning Condition (stream miles)	70	-	10	10	30	-	30	9	4
Functioning at Risk[1] (stream miles)	30	-	-	10	10	-	8	6	2
Non-Functional (stream miles)	10	10	-	10	10	-	-	3	4
Proper Functioning Condition (wetland acres)	10	-	-	-	10	-	-	-	-
Functioning at Risk (wetland acres)	10	-	-	-	10	-	-	-	-
Non-Functional (wetland acres)	-	-	-	-	-	-	-	-	-

Source: BLM 2022
Note: Mileages and percentages of streams classified as "unknown" are not included in this table. Wetland and riparian PFC status for aquatic features within the decision area are often affected by existing water rights allocated to non-BLM entities. Some streams and wetlands within UHMA have not been evaluated using PFC; therefore, the condition of stream miles may not be representative of the landscape.
[1] Includes all streams in the Functioning at Risk category irrespective of trend.

Table 3.6.10. Riparian Conditions on BLM-administered Land in Linkage-Connectivity Management Areas and Adjacent Non-habitat Areas within 1.0 and 4.0 Miles

	Proper Functioning Condition	Functioning at Risk[1]	Non-functional
Linkage Connectivity Management Areas (stream miles)	80	10	10
Non-Habitat Areas within 1.0 mile (stream miles)	130	90	40
Non-Habitat Areas within 4.0 miles (stream miles)	320	180	50
Linkage Connectivity Management Areas (wetland acres)	-	-	-
Non-Habitat Areas within 1.0 mile (wetland acres)	20	-	-
Non-Habitat Areas within 4.0 miles (wetland acres)	120	10	-

Source: BLM 2022
Note: Mileages of streams classified as "unknown" are not included in this table.

Rangeland Condition Monitoring Assessment and Projection Mapping, Time Series, Cover

Rangeland Condition Monitoring Assessment and Projection mapping (RCMap) is a remotely sensed data set representing percent cover of annual herbaceous cover, perennial herbaceous cover, sagebrush cover, non-sagebrush shrub cover, tree cover, bare ground, and litter from 1985–2021 (Rigge et al. 2021). Land managers can utilize this data to evaluate how vegetation community composition has changed over time, identify specific locations in need of management, and assess landscape health (Rigge et al. 2021).

RCMap analyses include annual herbaceous, perennial herbaceous, sagebrush, non-sagebrush shrub, and tree, with percent cover of each parameter representing desired conditions identified in Appendix E, *Gunnison Sage-Grouse Habitat Indicators and Guideline Results*. Datasets analyzed include years 2021, 2011, and 2001 to demonstrate change in vegetation community cover over 20 years.

Annual Herbaceous Cover

Species within the annual herbaceous cover class are dominated by non-native, invasive species such as cheatgrass, medusahead (*Taeniatherum caput-medusae*), and a variety of mustard species (Rigge et al. 2021).

Perennial Herbaceous Cover

Perennial herbaceous cover includes grasses, forbs, and cacti with lifecycles greater than two growing seasons (Rigge et al. 2021).

Sagebrush Cover

Sagebrush cover includes almost all *Artemisia* species across the western U.S., except for species with low stature such as prairie sage (*A. frigida*) and white sagebrush (*A. ludoviciana*) (Rigge et al. 2021).

Non-sagebrush Shrub Cover

Non-sagebrush shrub cover includes all other species with woody stems less than 6 meters tall (Rigge et al. 2021).

Tree Cover

Tree cover includes all species with woody stems greater than 6 meters tall; however, pinyon and juniper species are included regardless of height (Rigge et al. 2021).

Table 3.6.11 through Table 3.6.20 present the acreages and percent cover of RCMap vegetation community types by OHMA and UHMA for each population from 2001–2021. Overall cover of annual herbaceous, perennial herbaceous, and non-sagebrush shrub increased from 2001–2021 in each management area, while tree cover stayed the same. In the OHMA, overall sagebrush

cover increased from 2001–2011, but decreased from 2011–2021, while in the UHMA overall sagebrush cover decreased from 2001–2021.

Table 3.6.11. Annual Herbaceous Cover on BLM-Administered Land in Occupied Habitat Management Areas from 2001–2021

GUSG Population	OHMA					
	Acres of Annual Herbaceous Cover[1] 2021	*% Annual Herbaceous Cover 2021*	*Acres of Annual Herbaceous Cover[1] 2011*	*% Annual Herbaceous Cover 2011*	*Acres of Annual Herbaceous Cover[1] 2001*	*% Annual Herbaceous Cover 2001*
Rangewide OHMA	12,003	100%	13,002	100%	11,416	100%
Cerro Summit – Cimarron – Sims Mesa						
Crawford	307	3%	307	2%	187	2%
Dove Creek	337	3%	318	2%	318	3%
Gunnison Basin	36	0%	49	0%	52	0%
Monticello	423	4%	405	3%	398	3%
Piñon Mesa	3,612	30%	4,227	33%	3,213	28%
Poncha Pass						
San Miguel Basin	7,289	61%	7,696	59%	7,247	63%

[1]Annual herbaceous cover of 5 percent or greater.

Table 3.6.12. Annual Herbaceous Cover on BLM-Administered Land in Unoccupied Habitat Management Areas from 2001–2021

GUSG Population	UHMA					
	Acres of Annual Herbaceous Cover[1] 2021	*% Annual Herbaceous Cover 2021*	*Acres of Annual Herbaceous Cover[1] 2011*	*% Annual Herbaceous Cover 2011*	*Acres of Annual Herbaceous Cover[1] 2001*	*% Annual Herbaceous Cover 2001*
Rangewide UHMA	42,777	100%	40,568	100%	38,024	100%
Cerro Summit – Cimarron – Sims Mesa	654	2%	649	2%	517	1%
Crawford	277	1%	284	1%	268	1%
Dove Creek	5,067	12%	4,616	11%	3,810	10%
Gunnison Basin	1	0%	1	0%	3	0%
Monticello	406	1%	395	1%	353	1%

GUSG Population	UHMA					
	Acres of Annual Herbaceous Cover[1] 2021	*% Annual Herbaceous Cover 2021*	*Acres of Annual Herbaceous Cover[1] 2011*	*% Annual Herbaceous Cover 2011*	*Acres of Annual Herbaceous Cover[1] 2001*	*% Annual Herbaceous Cover 2001*
Piñon Mesa	29,526	69%	28,003	69%	26,533	70%
Poncha Pass	4	0%	1	0%	1	0%
San Miguel Basin	6,843	16%	6,618	16%	6,538	17%

[1]Annual herbaceous cover of 5 percent or greater.

Table 3.6.13. Perennial Herbaceous Cover on BLM-Administered Land in Occupied Habitat Management Areas from 2001–2021

GUSG Population	OHMA					
	Acres of Perennial Herbaceous Cover[1] 2021	*% Perennial Herbaceous Cover 2021*	*Acres of Perennial Herbaceous Cover[1] 2011*	*% Perennial Herbaceous Cover 2011*	*Acres of Perennial Herbaceous Cover[1] 2001*	*% Perennial Herbaceous Cover 2001*
Rangewide OHMA	262,329	100%	261,003	100%	258,610	100%
Cerro Summit – Cimarron – Sims Mesa	1,071	0%	1,103	0%	1,147	0%
Crawford	17,704	7%	17,710	7%	17,654	7%
Dove Creek	4,517	2%	4,527	2%	4,510	2%
Gunnison Basin	187,963	72%	187,400	72%	185,747	72%
Monticello	2,424	1%	2,431	1%	2,434	1%
Piñon Mesa	14,424	5%	13,694	5%	12,893	5%
Poncha Pass	11,837	5%	11,866	5%	11,806	5%
San Miguel Basin	22,389	9%	22,272	9%	22,417	9%

[1]Perennial herbaceous cover of 10 percent or greater.

Table 3.6.14. Perennial Herbaceous Cover on BLM-Administered Land in Unoccupied Habitat Management Areas from 2001–2021

GUSG Population	UHMA					
	Acres of Perennial Herbaceous Cover[1] 2021	*% Perennial Herbaceous Cover 2021*	*Acres of Perennial Herbaceous Cover[1] 2011*	*% Perennial Herbaceous Cover 2011*	*Acres of Perennial Herbaceous Cover[1] 2001*	*% Perennial Herbaceous Cover 2001*
Rangewide UHMA	126,151	100%	125,603	100%	123,934	100%
Cerro Summit – Cimarron – Sims Mesa	3,895	3%	3,926	3%	3,853	3%
Crawford	4,522	4%	4,577	4%	4,665	4%
Dove Creek	25,139	20%	25,024	20%	24,995	20%
Gunnison Basin	33,815	27%	33,652	27%	33,413	27%
Monticello	808	1%	791	1%	782	1%
Piñon Mesa	40,412	32%	39,627	32%	38,867	31%
Poncha Pass	11,439	9%	11,451	9%	11,423	9%
San Miguel Basin	6,122	5%	6,555	5%	5,936	5%

[1]Perennial herbaceous cover of 10 percent or greater.

Table 3.6.15. Sagebrush Cover on BLM-Administered Land in Occupied Habitat Management Areas from 2001–2021

GUSG Population	OHMA					
	Acres of Sagebrush Cover[1] 2021	*% Sagebrush Cover 2021*	*Acres of Sagebrush Cover[1] 2011*	*% Sagebrush Cover 2011*	*Acres of Sagebrush Cover[1] 2001*	*% Sagebrush Cover 2001*
Rangewide OHMA	103,093	100%	107,793	100%	101,423	100%
Cerro Summit – Cimarron – Sims Mesa	966	1%	943	1%	1,018	1%
Crawford	396	0%	409	0%	428	0%
Dove Creek	481	0%	516	0%	418	0%
Gunnison Basin	96,628	94%	101,111	94%	95,150	94%
Monticello	19	0%	19	0%	13	0%

GUSG Population	OHMA					
	Acres of Sagebrush Cover[1] 2021	*% Sagebrush Cover 2021*	*Acres of Sagebrush Cover[1] 2011*	*% Sagebrush Cover 2011*	*Acres of Sagebrush Cover[1] 2001*	*% Sagebrush Cover 2001*
Piñon Mesa	265	0%	229	0%	169	0%
Poncha Pass	4,291	4%	4,522	4%	4,199	4%
San Miguel Basin	45	0%	43	0%	28	0%

[1]Sagebrush cover of 15 percent or greater.

Table 3.6.16. Sagebrush Cover on BLM-Administered Land in Unoccupied Habitat Management Areas from 2001–2021

GUSG Population	UHMA					
	Acres of Sagebrush Cover[1] 2021	*% Sagebrush Cover 2021*	*Acres of Sagebrush Cover[1] 2011*	*% Sagebrush Cover 2011*	*Acres of Sagebrush Cover[1] 2001*	*% Sagebrush Cover 2001*
Rangewide UHMA	7,763	100%	8,621	100%	8,114	100%
Cerro Summit – Cimarron – Sims Mesa	190	2%	188	2%	236	3%
Crawford	420	5%	402	5%	473	6%
Dove Creek	1,094	14%	1,058	12%	960	12%
Gunnison Basin	5,490	71%	6,419	74%	5,980	74%
Monticello	11	0%	11	0%	8	0%
Piñon Mesa	331	4%	283	3%	244	3%
Poncha Pass	225	3%	256	3%	208	3%
San Miguel Basin	2	0%	4	0%	4	0%

[1]Sagebrush cover of 15 percent or greater.

Table 3.6.17. Non-Sagebrush Shrub Cover on BLM-Administered Land in Occupied Habitat Management Areas from 2001–2021

GUSG Population	OHMA					
	Acres of Non-Sagebrush Shrub Cover[1] 2021	*% Non-Sagebrush Shrub Cover 2021*	*Acres of Non-Sagebrush Shrub Cover[1] 2011*	*% Non-Sagebrush Shrub Cover 2011*	*Acres of Non-Sagebrush Shrub Cover[1] 2001*	*% Non-Sagebrush Shrub Cover 2001*
Rangewide OHMA	26,779	100%	25,910	100%	25,830	100%
Cerro Summit – Cimarron – Sims Mesa	723	3%	724	3%	646	3%
Crawford	4,552	17%	4,670	18%	4,597	18%
Dove Creek	2,005	7%	2,070	8%	2,024	8%
Gunnison Basin	11,355	42%	10,534	41%	10,712	41%
Monticello	37	0%	35	0%	32	0%
Piñon Mesa	5,705	21%	5,784	22%	5,652	22%
Poncha Pass	1,924	7%	1,713	7%	1,709	7%
San Miguel Basin	479	2%	378	1%	457	2%

[1]Non-sagebrush shrub cover of 20 percent or greater.

Table 3.6.18. Non-Sagebrush Shrub Cover on BLM-Administered Land in Unoccupied Habitat Management Areas from 2001–2021

GUSG Population	UHMA					
	Acres of Non-Sagebrush Shrub Cover[1] 2021	*% Non-Sagebrush Shrub Cover 2021*	*Acres of Non-Sagebrush Shrub Cover[1] 2011*	*% Non-Sagebrush Shrub Cover 2011*	*Acres of Non-Sagebrush Shrub Cover[1] 2001*	*% Non-Sagebrush Shrub Cover 2001*
Rangewide UHMA	26,578	100%	26,594	100%	25,093	100%
Cerro Summit – Cimarron – Sims Mesa	516	2%	506	2%	490	2%
Crawford	3,045	11%	3,033	11%	2,991	12%
Dove Creek	8,233	31%	7,998	30%	7,400	29%
Gunnison Basin	2,690	10%	2,533	10%	2,540	10%
Monticello	125	0%	117	0%	122	0%

GUSG Population	UHMA					
	Acres of Non-Sagebrush Shrub Cover[1] 2021	*% Non-Sagebrush Shrub Cover 2021*	*Acres of Non-Sagebrush Shrub Cover[1] 2011*	*% Non-Sagebrush Shrub Cover 2011*	*Acres of Non-Sagebrush Shrub Cover[1] 2001*	*% Non-Sagebrush Shrub Cover 2001*
Piñon Mesa	10,983	41%	11,479	43%	10,634	42%
Poncha Pass	342	1%	296	1%	306	1%
San Miguel Basin	644	2%	632	2%	611	2%

[1]Non-sagebrush shrub cover of 20 percent or greater.

Table 3.6.19. Tree Cover on BLM-Administered Land in Occupied Habitat Management Areas from 2001–2021

GUSG Population	OHMA					
	Acres of Tree Cover[1] 2021	*% Tree Cover 2021*	*Acres of Tree Cover[1] 2011*	*% Tree Cover 2011*	*Acres of Tree Cover[1] 2001*	*% Tree Cover 2001*
Rangewide OHMA	335,436	100%	335,646	100%	334,489	100%
Cerro Summit – Cimarron – Sims Mesa	1,248	0%	1,230	0%	1,315	0%
Crawford	11,320	3%	11,118	3%	10,920	3%
Dove Creek	1,922	1%	1,867	1%	1,847	1%
Gunnison Basin	269,827	80%	270,052	80%	270,083	81%
Monticello	2,343	1%	2,353	1%	2,353	1%
Piñon Mesa	8,769	3%	8,990	3%	7,927	2%
Poncha Pass	11,152	3%	11,229	3%	11,296	3%
San Miguel Basin	28,855	9%	28,806	9%	28,748	9%

[1]Tree cover of 3 percent or less.

Table 3.6.20. Tree Cover on BLM-Administered Land in Unoccupied Habitat Management Areas from 2001–2021

GUSG Population	UHMA					
	Acres of Tree Cover[1] 2021	*% Tree Cover 2021*	*Acres of Tree Cover[1] 2011*	*% Tree Cover 2011*	*Acres of Tree Cover[1] 2001*	*% Tree Cover 2001*
Rangewide UHMA	100,331	100%	102,333	100%	100,344	100%
Cerro Summit – Cimarron – Sims Mesa	3,847	4%	3,850	4%	3,862	4%
Crawford	4,238	4%	4,121	4%	4,182	4%
Dove Creek	15,525	15%	15,634	15%	15,331	15%
Gunnison Basin	19,034	19%	19,252	19%	19,207	19%
Monticello	499	0%	511	0%	503	1%
Piñon Mesa	29,193	29%	30,851	30%	29,266	29%
Poncha Pass	11,487	11%	11,496	11%	11,507	11%
San Miguel Basin	16,508	16%	16,618	16%	16,486	16%

[1]Tree cover of 3 percent or less.

Ecological Potential

Ecological Potential (EP) of a site is the possible natural vegetation cover and type expected in the absence of human and natural disturbances (Rigge et al. 2020). Datasets include cover for bare ground, litter, perennial herbaceous, shrub, and sagebrush. This analysis includes perennial herbaceous, shrub, and sagebrush cover, with variables representing percent cover of desired conditions identified in Appendix E, *Gunnison Sage-Grouse Habitat Indicators and Guideline Results*.

EP data represents sites that are considered most ecologically intact and serves as a baseline to compare existing conditions (Rigge et al. 2020). These comparisons inform how vegetation community composition and extents have changed over time and can aid land managers in determining if ecosystems can recover to a desired state over time (Rigge et al. 2020). EP is determined using remotely sensed data and not on-the-ground inventories.

Perennial Herbaceous Cover

Perennial herbaceous cover includes grasses (live and residual standing), forbs, and cacti (Rigge et al. 2020).

Shrub Cover

Shrub cover includes all other species with woody stems that are less than 6-meters tall (Rigge et al. 2020).

Sagebrush Cover

Sagebrush cover includes all *Artemisia* species within the western U.S. (Rigge et al. 2020).

Table 3.6.21 through Table 3.6.23 present the acreages of EP vegetation community types within each GUSG population management area and adjacent non-habitat areas. The Gunnison population has the highest EP acreage of all three vegetation community types within the OHMA, while Cerro Summit – Cimmaron – Sims Mesa population has the lowest perennial herbaceous EP acreage and the Monticello population has the lowest shrub and sagebrush EP acreage. Within the UHMA, the Piñon Mesa population has the highest EP acreage of the three vegetation community types, while Monticello population has the lowest EP acreage of perennial herbaceous and Poncha Pass population has the lowest EP acreage of shrub and sagebrush.

Table 3.6.21. Ecological Potential of Vegetation Communities on BLM-Administered Lands in Occupied Habitat Management Areas

GUSG Population	Perennial Herbaceous (acres)[1]	Shrub (acres)[2]	Sagebrush (acres)[3]
Rangwide OHMA	346,918	234,048	235,010
Cerro Summit – Cimarron – Sims Mesa	1,371	1,673	1,425
Crawford	17,041	16,272	11,868
Dove Creek	3,490	4,752	2,686
Gunnison	268,290	181,001	189,230
Monticello	2,655	636	956
Piñon Mesa	11,113	14,871	10,485
Poncha Pass	11,099	6,140	4,992
San Miguel Basin	31,858	8,703	13,369

Source: Rigge et al. 2021
[1]Perennial herbaceous cover of 10 percent or greater.
[2]Shrub cover of 20 percent or greater.
[3]Sagebrush cover of 15 percent or greater.

Table 3.6.22. Ecological Potential of Vegetation Communities on BLM-Administered Lands in Unoccupied Habitat Management Areas

GUSG Population	Perennial Herbaceous (acres)	Shrub (acres)	Sagebrush (acres)
Rangewide UHMA	142,830	176,220	124,234
Cerro Summit – Cimarron – Sims Mesa	5,381	2,925	1,806
Crawford	4,962	6,904	5,484
Dove Creek	28,457	31,519	19,984
Gunnison	32,807	52,938	43,068
Monticello	615	1,313	1,186
Piñon Mesa	40,387	73,867	49,739
Poncha Pass	11,530	772	423
San Miguel Basin	18,691	5,982	2,545

Source: Rigge et al. 2021

[1]Perennial herbaceous cover of 10 percent or greater.
[2]Shrub cover of 20 percent or greater.
[3]Sagebrush cover of 15 percent or greater.

Table 3.6.23. Ecological Potential of Vegetation Communities on BLM-administered Lands in Adjacent Non-Habitat 1-mile buffer, Adjacent Non-Habitat 4-mile buffer, and Linkage-Connectivity Management Areas

Vegetation Community	Adjacent Non-Habitat 1-mile buffer	Adjacent Non-Habitat 4-mile buffer	LCMA
Perennial Herbaceous[1] (acres)	318,696	909,884	169,492
Shrub[2] (acres)	246,612	657,875	118,356
Sagebrush[3] (acres)	177,855	447,112	75,559

Source: Rigge et al. 2021
[1]Perennial herbaceous cover of 10 percent or greater.
[2]Shrub cover of 20 percent or greater.
[3]Sagebrush cover of 15 percent or greater.

Assessment and Inventory Monitoring

Data collected using the BLM's Assessment, Inventory, and Monitoring (AIM) methodology were summarized using published indicator values from Terradat (Appendix E, *Gunnison Sage-Grouse Habitat Indicator and Guideline Results*). The tables below include summary statistics for mean, standard deviation, and plot count. To calculate these summaries, NA (not available) and zero values were removed from the dataset, such that only plots which had recorded each respective functional group were used in mean and standard deviation calculations (e.g., the tree cover table reflects only plots which had greater than 0% cover of trees). The number of plots which were used in each calculation is reflected in the plot count columns.

A subset of AIM plots are revisited on a regular interval. The data used for this summary represents the most recent visit to each plot and therefore these summaries do not include data from multiple sampling efforts in the same location.

AIM data is provided below in Table 3.6.24 through Table 3.6.32.

Table 3.6.24. Total Number of Plot Counts within Gunnison Sage-grouse Habitat by Population Area

AIM Total Plot Counts by GUSG Population			
GUSG Population	**OHMA**	**UHMA**	**Total**
Cerro Summit – Cimarron – Sims Mesa	0	11	11
Crawford	49	5	54
Dove Creek	4	21	25
Gunnison Basin	223	19	242
Monticello	1	1	2
Piñon Mesa	39	45	84
Poncha Pass	29	7	36
San Miguel Basin	35	9	44
Totals	379	117	496

Source: BLM 2023

Table 3.6.25. Plot Counts with Tree Cover (percent) within Gunnison Sage-grouse Habitat by Population Area

Percent Tree Cover						
GUSG Population	**OHMA**			**UHMA**		
	Plot Count (Percent of Total Plots)	***Mean Cover***	***Standard Deviation***	***Plot Count (Percent of Total Plots)***	***Mean Cover***	***Standard Deviation***
Cerro Summit – Cimarron – Sims Mesa	0 (NA)	NA	NA	6 (55)	21	8.2
Crawford	17 (35)	8	5.2	3 (60)	13	8.1

Percent Tree Cover						
GUSG Population	**OHMA**			**UHMA**		
	Plot Count (Percent of Total Plots)	***Mean Cover***	***Standard Deviation***	***Plot Count (Percent of Total Plots)***	***Mean Cover***	***Standard Deviation***
Dove Creek	2 (50)	5	3.7	17 (81)	16	3.9
Gunnison Basin	23 (10)	8	5.5	12 (63)	28	4.3
Monticello	1 (100)	38	NA	0 (0)	NA	NA
Piñon Mesa	17 (44)	13	3.8	36 (80)	20	4.2
Poncha Pass	2 (7)	2	0.5	0 (0)	NA	NA
San Miguel Basin	12 (34)	10	2.7	3 (33)	16	4.0

Source: BLM 2023
NA = not available

Table 3.6.26. Noxious Annual Grass Cover (percent) within Gunnison Sage-grouse Habitat by Population Area

Percent Noxious Annual Grass Cover						
GUSG Population	**OHMA**			**UHMA**		
	Plot Count (Percent of Total Plots)	***Mean Cover***	***Standard Deviation***	***Plot Count (Percent of Total Plots)***	***Mean Cover***	***Standard Deviation***
Cerro Summit – Cimarron – Sims Mesa	0 (NA)	NA	NA	3 (27)	3	0.5
Crawford	23 (47)	4	1.7	0 (0)	NA	NA
Dove Creek	2 (50)	1	0.1	6 (29)	8	6.9
Gunnison Basin	10 (5)	5	4.7	3 (16)	6	0.8
Monticello	0 (0)	NA	NA	0 (0)	NA	NA
Piñon Mesa	14 (36)	9	3.7	18 (40)	8	3.4
Poncha Pass	0 (0)	NA	NA	0 (0)	NA	NA
San Miguel Basin	7 (20)	4	0.9	2 (5)	1	0.0

Source: BLM 2023
NA = not available

Table 3.6.27. Plot Counts with Non-Invasive Perennial Forb Cover (percent) within Gunnison Sage-grouse Habitat by Population Area

Percent Non-Invasive Perennial Forb Cover						
GUSG Population	**OHMA**			**UHMA**		
	Plot Count (Percent of Total Plots)	***Mean Cover***	***Standard Deviation***	***Plot Count (Percent of Total Plots)***	***Mean Cover***	***Standard Deviation***
Cerro Summit – Cimarron – Sims Mesa	0 (NA)	NA	NA	6 (55)	2	0.3

Percent Non-Invasive Perennial Forb Cover						
GUSG Population	**OHMA**			**UHMA**		
	Plot Count (Percent of Total Plots)	***Mean Cover***	***Standard Deviation***	***Plot Count (Percent of Total Plots)***	***Mean Cover***	***Standard Deviation***
Crawford	43 (88)	5	0.9	4 (80)	3	0.2
Dove Creek	3 (75)	6	1.5	13 (70)	4	0.9
Gunnison Basin	217 (97)	7	1.5	18 (95)	9	3.7
Monticello	0 (0)	NA	NA	1 (100)	1	NA
Piñon Mesa	37 (95)	7	1.9	38 (84)	4	1.7
Poncha Pass	28 (97)	4	1.1	7 (100)	3	0.8
San Miguel Basin	25 (71)	3	1.1	6 (67)	1	0.1

Source: BLM 2023
NA = not available

Table 3.6.28. Plot Counts with Perennial Grass Cover (percent) within Gunnison Sage-grouse Habitat by Population Area

Percent Perennial Grass Cover						
GUSG Population	**OHMA**			**UHMA**		
	Plot Count (Percent of Total Plots)	***Mean Cover***	***Standard Deviation***	***Plot Count (Percent of Total Plots)***	***Mean Cover***	***Standard Deviation***
Cerro Summit – Cimarron – Sims Mesa	0 (NA)	NA	NA	9 (82)	4	1.6
Crawford	48 (98)	16	2.5	5 (100)	19	2.0
Dove Creek	4 (100)	25	2.4	18 (86)	10	2.1
Gunnison Basin	223 (100)	26	1.8	19 (100)	28	5.1
Monticello	1 (100)	2	NA	1 (100)	17	NA
Piñon Mesa	39 (100)	21	2.1	41 (91)	12	4.2
Poncha Pass	29 (100)	37	2.6	7 (100)	40	1.3
San Miguel Basin	31 (89)	13	4.2	6 (67)	9	1.2

Source: BLM 2023
NA = not available

Table 3.6.29. Plot Counts with Sagebrush Cover (percent) within Gunnison Sage-grouse Habitat by Population Area

Percent Sagebrush Cover						
GUSG Population	**OHMA**			**UHMA**		
	Plot Count (Percent of Total Plots)	***Mean Cover***	***Standard Deviation***	***Plot Count (Percent of Total Plots)***	***Mean Cover***	***Standard Deviation***
Cerro Summit – Cimarron – Sims Mesa	0 (NA)	NA	NA	11 (100)	11	2.2
Crawford	48 (98)	11	1.7	4 (80)	9	0.4
Dove Creek	4 (100)	17	0.9	16 (76)	11	2.1
Gunnison Basin	223 (100)	24	2.2	14 (74)	17	3.1
Monticello	1 (100)	10	NA	1 (100)	43	NA
Piñon Mesa	32 (82)	10.6	2.2	38 (84)	8	2.2
Poncha Pass	27 (93)	19.0	3.6	4 (57)	3	0.3
San Miguel Basin	31 (89)	14.2	1.9	7 (78)	10	2.5

Source: BLM 2023
NA = not available

Table 3.6.30. Plot Counts with Live Sagebrush Cover (percent) within Gunnison Sage-grouse Habitat by Population Area

Percent with Live Sagebrush Cover						
GUSG Population	**OHMA**			**UHMA**		
	Plot Count (Percent of Total Plots)	***Mean Cover***	***Standard Deviation***	***Plot Count (Percent of Total Plots)***	***Mean Cover***	***Standard Deviation***
Cerro Summit – Cimarron – Sims Mesa	0 (NA)	NA	NA	11 (100)	8	1.9
Crawford	47 (96)	10	1.6	4 (80)	7	0.9
Dove Creek	4 (100)	11	1.4	16 (76)	7	1.7
Gunnison Basin	223 (100)	19	1.9	13 (68)	15	1.8
Monticello	1 (100)	9	NA	1 (100)	33	NA
Piñon Mesa	32 (82)	9	2.1	37 (82)	7	1.9
Poncha Pass	26 (90)	14	2.3	4 (57)	2	0.3
San Miguel Basin	31 (89)	11	1.9	6 (67)	9	2.2

Source: BLM 2023
NA = not available

Table 3.6.31. Plot Counts with Shrub Cover (percent) within Gunnison Sage-grouse Habitat by Population Area

Percent with Shrub Cover						
GUSG Population	**OHMA**			**UHMA**		
	Plot Count (Percent of Total Plots)	***Mean Cover***	***Standard Deviation***	***Plot Count (Percent of Total Plots)***	***Mean Cover***	***Standard Deviation***
Cerro Summit – Cimarron – Sims Mesa	0 (NA)	NA	NA	11 (100)	11	2.6
Crawford	49 (100)	28	4.9	5 (100)	31	2.4
Dove Creek	4 (100)	33	1.6	18 (86)	24	5.2
Gunnison Basin	223 (100)	30	2.9	18 (95)	23	3.1
Monticello	1 (100)	10	NA	1 (100)	45	NA
Piñon Mesa	38 (97)	25	5.6	44 (98)	20	5.4
Poncha Pass	29 (100)	27	3.2	7 (100)	9	2.1
San Miguel Basin	33 (94)	16	1.9	8 (89)	10	2.2

Source: BLM 2023
NA = not available

Table 3.6.32. Plot Counts with Foliar Cover (percent) within Gunnison Sage-grouse Habitat by Population Area

GUSG Population	**OHMA**			**UHMA**		
	Plot Count (Percent of Total Plots)	***Mean Cover***	***Standard Deviation***	***Plot Count (Percent of Total Plots)***	***Mean Cover***	***Standard Deviation***
Cerro Summit – Cimarron – Sims Mesa	0 (NA)	NA	NA	11 (100)	34	2.2
Crawford	49 (100)	53	2.8	5 (100)	53	0.9
Dove Creek	4 (100)	55	0.4	21 (100)	47	3.0
Gunnison Basin	223 (100)	60	2.0	19 (100)	68	3.0
Monticello	1 (100)	47	NA	1 (100)	50	NA
Piñon Mesa	39 (100)	59	2.1	45 (100)	58	4.2
Poncha Pass	29 (100)	63	1.5	7 (100)	55	1.6
San Miguel Basin	35 (100)	38	2.1	9 (100)	30	1.6

Source: BLM 2023
NA = not available

3.6.2.3 Environmental Consequences

Effects Common to All Alternatives

This section provides an overview of common impacts from management actions addressed under all the alternatives. The intent of this section is to provide a high-level discussion of the potential effects and effect mechanisms that may occur summarized for each resource and resource use as described in Section 2.2.2 *Detailed Alternatives*. Impacts specific to each alternative are addressed further under the No Action Alternative (Alternative A) and action alternatives in this section.

All alternatives allow for various vegetation management approaches and treatments with the objective of promoting a mosaic of healthy sagebrush ecosystems and other native vegetation community types on BLM-managed lands. Recent GUSG habitat selection modeling indicates that although similarities in vegetation cover types exist across GUSG satellite populations, vegetation management actions should consider specific environmental differences among GUSG population areas when planning vegetation treatments within the decision area. The spatial extent, seasonality, and treatment type have been observed to result in a range of responses by GUSG depending on the underlying environmental variables within that satellite population as most GUSG are more likely to select habitat areas for increased sagebrush height and cover (Saher et al. 2022).

Improper livestock grazing management that results in over-utilization of rangeland resources in sagebrush communities may impact GUSG habitat through the reduction of sagebrush, grass, and forb cover types which are essential for GUSG life history and survival (USFWS 2014). Effects of properly managed grazing on vegetation communities that compose GUSG habitat are generally dependent on the timing, duration, and intensity of livestock grazing and can vary by season. Grazing before periods of increased vegetation productivity may increase mortality of grasses and forbs, while vegetation productivity rates may increase the following season if livestock remove standing dead vegetation later in the fall or winter (Monroe et al. 2017).

The potential effects of recreation on vegetation communities within the decision area includes direct disturbance resulting from motorized OHV use along designated routes and in open areas where vehicles may travel overland. Vehicles traveling overland may crush existing vegetation, compact soils, release fugitive dust, and introduce opportunities for increased erosion of soils from the movement of wind and surface water. Non-motorized recreation may directly impact vegetation communities similar to motorized activity, but the extent and intensity of potential effects would be greatly reduced in comparison. Non-native plant and noxious weed species may be introduced through the dispersal of seed by both motorized and non-motorized recreational activity.

Development of new roads, trails, and designation of routes within the decision area would result in the direct removal of native vegetation and increase potential for introduction or spread of non-native plant and noxious weed species.

Potential effects from management actions related to the mineral split-estate, fluid minerals extraction and development, and solid minerals extraction and development are combined in this discussion based on the similarity of impacts to existing vegetation communities within the decision area. The development and extraction of fluid and solid minerals (e.g., oil and gas, geothermal, mine sites, potash) and associated infrastructure (e.g., roads, pipelines, well pads, renewable energy development, recreation) also result in the direct loss or degradation of vegetation communities that compose GUSG habitat (USFWS 2014).

The potential environmental consequences related to lands and realty management actions (including access roads to private property and powerlines, and associated maintenance) are combined with renewable energy due to similarity in impacts from ROW authorizations and subsequent infrastructure construction. Management actions may include ROW authorizations, designation of ROW exclusion or avoidance areas, disposals, and acquisitions. Potential effects related to ROW authorizations may result from the construction of transmission or distribution electrical lines; wind turbines and associated infrastructure; solar development; and other related infrastructure for renewable energy. Construction may result in surface disturbance and direct loss of existing vegetation that composes GUSG habitat within the decision area. Annual maintenance of energy-related facilities and infrastructure includes vegetation management activities (vegetation removal and thinning) anticipated to result in effects on adjacent vegetation communities that reoccur on a consistent basis.

Based on current wildfire management, vegetation treatment approaches, and fire suppression efforts, under all alternatives, wildfires would likely continue to increase in size and frequency in the decision area. Areas that experience intense wildfire activity would continue to be degraded or lost as functional GUSG habitat. Cheatgrass infestation would continue to present a wildfire risk within the decision area.

Alternative A – (No Action – Current Management)

Under Alternative A, management of vegetation communities within the decision area would continue to be managed as prescribed under the existing RMPs across the decision area. Existing surface disturbance restrictions would remain in place affecting about 60 percent of the BLM surface in OHMA and UHMA; however, these levels could increase as RMP revisions are completed. If this occurs, it would be expected that the health of native vegetation communities would be protected across more acreage.

Livestock grazing would be expected to continue at roughly the current level of activity across BLM surface in OHMA, UHMA, and the Adjacent Non-habitat areas, over the short term, resulting in little change to current trends of native vegetation communities.

Under Alternative A, recreation and recreational developments would continue in accordance with existing authorization and management actions implemented by the 11 existing plans in the decision area. Special Recreation Permits would continue to be issued per the guidance in the existing RMPs. Effects from recreation on vegetation communities would be similar to those presented under effects common to all alternatives.

Alternative A would include the greatest acreage of lands open to motorized use off designated routes, resulting in the greatest potential impact to vegetation communities through fragmentation and risk of invasive weeds spread. Under Alternative A, the travel and transportation management on the majority of OHMA and UHMA on BLM surface would be expected to be limited to designated routes; however, approximately 690 acres (<1 percent) of OHMA and 18,370 acres (5 percent) of UHMA would remain open resulting in some potential for adverse effects to native vegetation and productivity impacts from soil compaction, surface disturbance, erosion, and removal of vegetation.

Effects resulting from fluid and solid mineral extraction would be the same as those common to all alternatives. Under Alternative A, development of fluid and solid minerals would occur in accordance with existing land use plans within existing leases. Currently, existing fluid mineral leases only occur in Dry Creek Basin in the Tres Rios Field Office and in the Monticello Population in Utah's Monticello Field Office. There are no other existing fluid mineral leases in occupied HMAs. Twenty percent of the mineral estate in the decision area would remain closed to fluid mineral leasing under current conditions, and up to 15 percent of the mineral estate would be subject to existing NSO restrictions. Under the No Action Alternative, six percent of OHMA would be closed to leasing and 18 percent of OHMA would be subject to NSO restrictions. Impacts to vegetation would be absent in these areas closed to leasing and development.

Under Alternative A, approximately 506,190 acres of OHMA and 322,300 acres of UHMA in the decision area are open to solid mineral entry. Vegetation communities in these areas could experience impacts similar to those discussed under impacts common to all and would include direct removal of existing sagebrush and other vegetation communities that compose GUSG habitat.

Existing solid mineral withdrawals include 50,570 acres of OHMA and 81,240 acres of UHMA. These areas would not be affected by development. Approximately 284,00 acres of GUSG habitat are open to consideration for leasing for non-energy solid leasable minerals materials and 66,940 of GUSG habitat are closed to leasing. The Tres Rios Field Office RMP requires that BMPs related to GUSG be applied for mineral proposals.

Development of infrastructure and mineral extraction would be subject to Conditions of Approval issued by BLM units.

Impacts resulting from authorization of ROWs and renewable energy development within the decision area are described under effects common to all alternatives. Under Alternative A,

approximately 41,570 acres of BLM-managed lands in the decision area are exclusion areas for ROW authorizations and 82,960 acres are ROW avoidance areas. Impacts to vegetation communities would be absent in the exclusion areas and would be limited in avoidance areas.

Current utility corridors are designated for 63,530 acres in OHMA and 33,710 acres in UHMA. Potential impacts within these areas would include removal of existing sagebrush and other vegetation community types.

Wildfires documented over the past several decades have burned approximately 1 percent of OHMA and 7 percent of UHMA on BLM surface; approximately 9 percent of Adjacent Non-habitat areas have been subjected to wildfire over the same period. Additional wildfires and burns would reduce short term vegetation community health across a growing proportion of these areas.

Under Alternative A, there are currently four ACECs in the decision area that are managed to protect GUSG and relevant and important values or overlap with GUSG habitat. These four ACECs would be managed in accordance with current management actions and stipulations as described in existing land use plans. The continued management of these ACECs to promote GUSG habitat health would include beneficial effects on vegetation communities through the application of surface disturbance restrictions and other stipulations to avoid and minimize adverse effects to vegetation. In general, continued management of the existing ACECs would provide beneficial effects on sagebrush vegetation and other communities that compose GUSG habitat. No new ACECs would be established under Alternative A.

Riparian and wetland areas are generally prioritized for avoidance under the 11 existing RMPs that provide management direction within the decision area. Resource protection buffers are applied to surface-disturbing activities within the decision area for riparian and wetland areas. Potential impacts to riparian and wetland areas could include direct removal or degradation resulting from construction of roads and renewable and non-renewable energy infrastructure. Riparian and wetland areas may be directly affected by changes in groundwater water use. Riparian and wetland areas may also be indirectly impacted by changes in surface water uses in areas where non-BLM water rights are allocated for agriculture, livestock grazing, and other consumptive uses. Water quality within wetlands and riparian areas may be affected by increased sedimentation and erosion within stream channels resulting from OHV use on roads and trails, livestock grazing within wetland and riparian areas, and other surface disturbing activities that do not include sediment control restrictions or the application of BMPs.

Action Alternatives

Vegetation Management

Under Alternative B, large portions of OHMA and UHMA would be placed under surface disturbance restrictions, which would protect native vegetation community productivity against development and reduce vegetation-removal activities. Compared to Alternative A, Alternative

B would increase the total amount of surface disturbance restrictions in OHMA and UHMA (Table 2.3) which would reduce direct effects on vegetation by reducing acres of vegetation removed, fragmentation, and introduction or spread of noxious weed species.

Vegetation treatments under Alternative B would be designed to return areas of disturbed and altered sagebrush communities to a pre-disturbance state that resembles the reference plant community for the ecological site and soil type for the benefit of GUSG. Only non-surface disturbing vegetation treatments would be allowed under Alternative B and the use of heavy equipment that disturbs vegetation and prescribed fire would be prohibited in treatments. As a result, direct effects including removal of native vegetation would be reduced when compared to Alternative A as the potential for surface disturbance would be decreased. The reduction of surface disturbance from vegetation treatments would result in more robust sagebrush and other vegetation communities, taller vegetation heights that benefit GUSG, greater reproductive potential, and a reduction in the potential for noxious weeds and invasive plant species spread and introduction. Restrictions on the use of prescribed fire would also result in a reduction in the potential for the introduction and spread of noxious weeds and invasive plant species. Relative to other treatment types, prescribed fire has been shown to result in an increased risk of non-native annual herbaceous plants and noxious weeds. Other vegetation treatments under Alternative B, such as the prioritization of soil amendments in areas where loss of soil organic matter, drought, or other conditions limit the likelihood of seed germination, would be anticipated to increase vegetation community health through increased soil resiliency, stability, and productivity when compared to Alternative A. Vegetation treatments under Alternative C and Alternative D would allow for greater flexibility in vegetation treatments through the use of mechanical, chemical, and biological treatments as well as prescribed fire, reseeding, and targeted livestock grazing. Treatment sites under Alternative C and Alternative D would be evaluated using the Resist-Accept-Direct framework. Management of vegetation treatments under Alternative E would be the same as under Alternative D.

Monitoring of vegetation treatment success using quantitative objectives would be required under Alternative B within the decision area. Most existing RMPs include requirements for vegetation monitoring but these requirements may not prioritize GUSG habitat parameters for sagebrush quantity and quality. Under Alternative B, GUSG habitat parameters related to vegetation would be prioritized, therefore Alternative B would result in increased consistency of vegetation treatments and post-treatment monitoring in comparison to Alternative A. Additionally, some of the older RMPs may not include monitoring requirements for vegetation treatments, therefore Alternative B would provide a consistent approach for vegetation treatments within the decision area.

Alternative C places more BLM surface in OHMA and UHMA under surface disturbance restrictions than Alternative A, but less than Alternative B. As a result, Alternative C would result in similar protections for native vegetation communities as Alternative B, but to a lesser

extent. Impacts in the Adjacent Non-habitat areas would be the same as Alternative A; no specific avoidance or minimization of threats (including disturbance, development, or infrastructure) to GUSG populations or their habitats within Adjacent Non-habitat (4-mile buffer of OHMA and UHMA) would occur under Alternative C. Compared to Alternative A, Alternative C would increase the total amount of surface disturbance restrictions in OHMA and UHMA (Table 2.3).

Effects on native vegetation communities under Alternative D would be similar to Alternative C, except conservation measures and restrictions in OHMA and UHMA could extend to linkage-connectivity areas, based on the latest science, input from BLM specialists, and cooperating agencies, as appropriate. Like Alternative C, Alternative D places more BLM surface in OHMA and UHMA under surface disturbance restrictions than Alternative A, but less than Alternative B. Compared to Alternative A, Alternative D would increase the total amount of surface disturbance restrictions areas by in OHMA and UHMA (Table 2.3).

Management direction under Alternative E only applies to GUSG habitat in the Gunnison Basin population. Management actions that have implications for vegetation communities under all other action alternatives would not be required under Alternative E. Under Alternative E, the impacts to vegetation communities within the Gunnison Basin would be similar to those described under Alternative D but would not extend to the other population areas.

Livestock Grazing Management

Under Alternative B1, the entirety of OHMA and UHMA would be unavailable for livestock grazing. Under this alternative, the removal of livestock grazing pressure on vegetation communities within the decision area would result in greater overall vegetation health and increased height and productivity of grasses, forbs, and other native plant species. Vegetation within areas closed to grazing would experience greater reproductive capability and have greater capacity to improve root health in comparison to areas that are open to grazing. Alternative B1 would likely result in the highest conservation benefit for vegetation communities, because OHMA and UHMA would be unavailable for livestock grazing, and grazing permits and allotments would not be renewed and would eventually expire. Removal of grazing activity would also reduce the chance of new noxious weed introductions within the decision area by removing domestic livestock that can serve as a vector for spreading noxious and invasive plant species seed. Removal of livestock grazing activity would also result in a reduction of hoof action in riparian areas, which contributes to altered flow paths. Removal of livestock hoof action within riparian and wetland areas would also benefit these communities through the reduction or cessation of minor surface disturbance that results in soil erosion and sedimentation of surface waters.

Alternative B2 would close OHMA only to livestock grazing between March 1 and July 15. This would result in the increased retention and productivity of vegetation in uplands and riparian areas by removing livestock grazing pressure during the early growing season. The resulting

effect of restricting the timing of grazing activity within OHMA would include increased productivity and resiliency of cool-season grass species as these species would have more time to grow and reproduce without early season grazing pressure.

Alternative C maintains livestock grazing across the BLM surface in OHMA and UHMA. This would likely result in similar short-term effects on native vegetation communities as Alternative A. Over the long term, Alternative C could result in more allotments being closed to livestock grazing because of voluntary relinquishment of grazing preference, resulting in the potential to reduce grazing-related impacts on vegetation communities when compared to Alternative A.

Effects on vegetation communities from livestock grazing management under Alternative D would be the same as Alternative C.

Alternative E would allow grazing activity to continue within OHMA with the implementation of specific conditions related to herbaceous vegetation conditions, regular monitoring effort, and grazing management plans. Alternative E would allow continued grazing in riparian areas, swales, and wet meadows within OHMA with the objective of improving GUSG habitat conditions. Alternative E would prioritize areas of Tier I habitat. These actions would result in beneficial effects to vegetation resources within the decision area with the majority of positive effects occurring in areas dominated by herbaceous species and mesic sites. Alternative E would provide an increase in conservation benefit to vegetation resources in comparison to Alternative A but these effects would only be realized within the Gunnison Basin population area.

Recreation

Under all action alternatives, management activities would be implemented to avoid, minimize, or compensate for recreational activities that may impact vegetation resources. Impact mechanisms to vegetation communities resulting from recreation would be the same as those described in effects common to all alternatives. Special Recreation Permits could be authorized under each of the action alternatives and would include provisions for limiting the size of groups and activities authorized under SRPs.

Alternative B would be the most restrictive and would provide the greatest conservation benefit to sagebrush and other vegetation communities. Under Alternative B1, new recreation-related infrastructure would not be authorized in OHMA and UHMA.

Alternative C identifies OHMA as an avoidance area for small-scale recreation infrastructure. This would result in a reduction of direct effects of surface disturbance and vegetation removal of sagebrush and other vegetation communities in comparison to Alternative A.

Alternative D would place restrictions on the size and types of recreation infrastructure that would be authorized in OHMA and UHMA such that infrastructure is designed to minimize impacts to sagebrush and other vegetation communities that compose GUSG habitat. This

would result in a reduction of direct effects of surface disturbance and vegetation removal of sagebrush and other vegetation communities in comparison to Alternative A.

Under Alternative E, recreation and associated infrastructure would be implemented in accordance with the existing CCA and impacts to sagebrush and other vegetation communities located in designated urban interface recreation areas would be the same for Gunnison Basin population as for the No Action alternative.

Travel and Transportation

Under all Alternatives, the BLM is proposing actions that would avoid or minimize impacts from roads and travel/transportation on BLM-managed lands. Impacts to vegetation from roads and associated vehicle travel would be the same as those described in effects common to all alternatives.

Alternative B closes OHMA and UHMA to motorized and mechanized travel on BLM surface, decreasing the potential adverse effects of vegetation disturbance and removal, by allowing vegetation to reestablish within roads and trails when compared to Alternative A. Alternative B would result in the least impact to vegetation communities and limits future surface disturbance, fragmentation, and invasive weeds spread from vehicles when compared to Alternative A.

Under Alternative C, adverse impacts to existing vegetation communities from travel and transportation management would be the same as Alternative A, because Alternative C would close the same percentage of OHMA and UHMA to motorized and mechanized travel as Alternative A.

Effects on vegetation communities from travel and transportation management under Alternative D would be the same as Alternative C.

Implementation of the CCA measures for travel and transportation management includes locating new roads outside of Tier 1 GUSG habitat and requires reclamation of all closed roads and routes within Tier 1 areas. This would result in avoidance of new direct impacts of vegetation removal for road construction and the beneficial effect of promoting sagebrush health by actively reclaiming past and present road disturbance areas within the Gunnison Basin.

Fluid and Solid Mineral Development

Under Alternative B, new leases and reinstatement of existing leases upon termination would be prohibited in OHMA and UHMA resulting in a reduction of the direct effects of vegetation removal and modification. Geophysical exploration would also be prohibited OHMA and UHMA under Alternative B resulting in a reduction of vegetation removal from construction of new exploration roads and drill pads. Impacts resulting from mineral exploration and extraction would cease over the long-term, resulting in reduction and eventual elimination of impacts from fluid and solid mineral extraction to sagebrush and other vegetation communities as described

in effects common to all alternatives. Alternative B would result in the closure of approximately 650,120 acres across the decision area to exploration. In general, Alternative B would provide the most restrictions for fluid and solid mineral leasing and extraction on BLM-managed lands, which would result in the closure of up to 960,200 acres to fluid mineral development and closure of up to 2,450,140 acres to solid mineral development; therefore having fewer adverse effects on vegetation.

Geophysical exploration would be authorized under Alternative C subject to conditions that would require low-impact methods and application of timing limitation, disturbance, and mitigation. These may result in reductions to direct removal of sagebrush and vegetation within the decision area related to exploration.

Alternative D would result in the closure of 391,490 acres and restrictions to 258,630 of UHMA. Alternative D would prohibit geophysical exploration in OHMA. Geophysical exploration would be allowed under certain conditions that would reduce impacts to sagebrush and other vegetation communities that compose GUSG habitat. These may result in reductions to direct removal of sagebrush and vegetation within the decision area related to exploration.

Alternative E would result in the closure of and restrictions to fewer acres of UHMA than Alternative D because it is limited to the Gunnison Basin. Alternative E would prohibit geophysical exploration in OHMA. Geophysical exploration would be allowed under certain conditions that would reduce impacts to sagebrush and other vegetation communities that compose GUSG habitat. These may result in reductions to direct removal of sagebrush and vegetation within the decision area related to exploration.

Lands and Realty

Under all Action Alternatives, the BLM is proposing management actions that would restrict ROW authorizations in OHMA and UHMA to protect GUSG habitat. Subsequent development of ROWs and construction of utility lines may result in impacts to sagebrush and other vegetation communities. Impacts would be the same as those described in effects common to all alternatives.

Under Alternative B, the BLM would manage all OHMA and UHMA as ROW exclusion areas, with few exceptions, resulting in the closure of 492,540 acres of GUSG HMAs on BLM-managed lands. This would result in a beneficial effects to sagebrush and other vegetation communities through the reduction of potential removal and modification of sagebrush and other vegetation communities. Other potential effects described under common to all alternatives would not occur in OHMA and UHMA.

Alternative C proposes managing OHMA within 1 mile of active leks as a ROW exclusion area with some exceptions, and OHMA outside of 1-mile buffer of active leks as a ROW avoidance area. ROWs that may be authorized and utility lines constructed may cause impacts to sagebrush and other vegetation communities, potentially resulting in decreases in GUSG habitat

suitability. Under Alternative C, 56,750 acres would be managed as exclusion areas, and 315,890 acres would be managed as avoidance areas.

Under Alternative D, OHMA and UHMA would be managed as ROW avoidance areas. Site-specific ROW authorizations may be issued following documentation that the ROW would not adversely affect GUSG lekking areas, populations, and their habitats. Approximately 391,490 acres of OHMA and 258,630 acres of UHMA would be managed as ROW avoidance areas under Alternative D. In areas where ROWs are authorized, sagebrush and other vegetation communities could experience direct removal of vegetation in addition to other impacts discussed under common to all.

Under Alternative E, OHMA (291,980 acres) within the Gunnison Basin would be managed as ROW avoidance areas. New roads, utility lines, pipelines, and communication sites, MET towers, and comparable infrastructure could be authorized for ROW areas limited to no more than five acres of disturbance. This would result in a reduction of potential direct effects of sagebrush and vegetation removal in comparison to Alternative A. Impacts to vegetation within authorized ROW areas would be the same as described under impacts common to all.

Wildfire Management

Alternative B prioritizes the re-establishment of appropriate sagebrush species and herbaceous understory in OHMA and UHMA burned areas based upon site potential. Post-fire ESR plans would prioritize long-term persistence of seeded or pre-burn native plants potentially requiring adaptive management of other actions including livestock grazing, travel management and other actions. Fuels treatments in OHMA and UHMA would not remove sagebrush canopy cover to less than 15 percent and any sagebrush removals for fire breaks would be closely analyzed on a site-specific basis. These actions would result in enhanced protection of existing sagebrush and other vegetation communities and priorities the rehabilitation of areas of burned sagebrush.

Vegetation treatments on BLM surface in OHMA and UHMA would be emphasized under Alternative C, with generally similar direct effects on native vegetation communities as Alternative A. While increased use of prescribed fire would decrease short-term vegetation community stability in burned areas, indirect long-term benefits are anticipated to increase due to the expected reduction in acreage burned by wildfire compared to Alternatives A and B. This outcome is anticipated due to reduced fuels from vegetation treatments, and adequate access for effective firefighting.

Vegetation treatments on BLM surface in OHMA and UHMA would be similarly emphasized under Alternative D, as under Alternative C. Therefore, impacts to vegetation are anticipated to be similar to Alternative C.

Impacts from wildfire management actions (within the Gunnison Basin) under Alternative E would be the same as Alternative D.

Riparian and Wetland Areas

Riparian and wetland areas would be prioritized under all alternatives for avoidance and minimization of actions that result in the direct removal of or adverse effects on vegetation within these habitat types. Designation of ACECs under Alternatives B, C, and D would include NSO stipulations for riparian areas to avoid direct removal of or adverse effects on riparian vegetation.

Under Alternative B, vegetation treatments would be prioritized in areas of linkage between areas of intact sagebrush habitats and/or riparian areas. Wet meadows and riparian areas would be managed to maintain diverse forb communities relative to the reference state. These actions would be anticipated to result in beneficial effects to riparian vegetation communities through the reduction of potential for direct removal of and adverse effects on riparian vegetation.

Under Alternative C, riparian areas within one mile of active leks would be prioritized for travel management route closures. Route closures in riparian habitats would reduce the potential for removal of and adverse effects on riparian vegetation within one mile of active leks. Wetland areas would not be affected by this management action as no designated routes occur in wetland areas.

Under Alternative D, riparian areas would be prioritized for travel management route closures. Route closures in riparian habitats would reduce the potential for removal of and adverse effects on riparian vegetation. Wetland areas would not be affected by this management action as no designated routes occur in wetland areas.

Alternative E would allow for grazing permit renewals in OHMA within the Gunnison Basin only if grazing is managed to specifically improve riparian and wetland habitat conditions. This management action would result in improved grazing management within allotments that include riparian and wetland areas.

3.6.2.4 Conclusions

Alternative A (No Action) would maintain the current management of vegetation communities in the decision area, resulting in an inconsistent approach to surface disturbance restrictions (acreage density caps) and major vegetation treatments, and would not require implementation of adaptive management actions focused on improving native vegetation. Management of the four existing ACECs designated to protect GUSG Relevance and Importance values within the decision area would remain the same under Alternative A.

The action alternatives would have greater restrictions of surface disturbance and disruption to sagebrush and other vegetation communities that compose GUSG habitat through the designation of 12 additional ACECs and other land use limitations. These restrictions would result in the reduced potential for impacts from development, including direct removal of vegetation, reduced productivity and vegetative biomass, and other ecosystem services.

Alternative B would apply the most restrictive management of surface-disturbing activities within the decision area and would result in the greatest benefit to native vegetation communities through the application of the most conservative surface disturbance restrictions, removal of grazing pressure in OHMA and UHMA, and reduction of potential for further spread of noxious weeds on BLM-administered lands. Under Alternative B1, livestock grazing would be phased out over time, thereby removing the ability of the BLM to utilize grazing as a vegetation management tool.

Alternative B2 would make OHMA unavailable for livestock grazing between March 1 and July 15. This restriction of grazing pressure in OHMA during the early season would result in an increase in grass and forb species resiliency and productivity.

The designation of ACECs under the Alternative B and Alternative D would provide enhanced protection to native vegetation communities through limitations on surface disturbance and other actions including but not limited to road and trail construction, ROW exclusion, recommendation for withdrawal from locatable mineral entry, closure of non-energy solid mineral leasing, and closure of fluid mineral exploration and development. Under Alternative B, a total of 650,120 acres of BLM-administered lands within OHMA and UHMA would be designated as an ACEC to protect and enhance GUSG habitat. Under Alternative D, a total of 58,520 acres of BLM-administered lands would be designated as an ACEC to protect and enhance GUSG habitat. Management and designation of ACECs under Alternative C and Alternative E would be the same as under Alternative A (No Action).

3.6.2.5 Cumulative Effects

The cumulative effects analysis area for vegetation resources is defined as the planning area and the timeframe for the analysis is the life of this RMP Amendment.

Past, present, and reasonably foreseeably actions and conditions in the analysis area have affected and are likely to continue to affect existing vegetation communities that compose GUSG habitat, including residential development, mineral exploration, industrial development (e.g., powerlines or ROWs), grazing, recreation, road construction, fires, land planning, vegetation treatments, and drought. With the exception of vegetation treatments, these actions have adversely modified vegetation conditions in the analysis area. Under the action alternatives, impacts on vegetation would be reduced compared to Alternative A through the application of surface use restrictions; timing limitations; closures to development, recreation, and motorized travel; conditions of approval for development; and monitoring.

Other planning efforts to manage threats to GUSG habitat include cooperative actions with agencies, organizations, landowners, and developers throughout the range of GUSG. These efforts have been applied at various spatial scales and on lands with various surface ownership, outside of BLM-managed lands. These are likely to continue across the vegetation communities that support GUSG within the planning area over the life of the RMP Amendment:

Colorado Efforts

- Gunnison Sage-Grouse Candidate Conservation Agreement - Gunnison Basin
- Candidate Conservation Agreement - Gunnison Sage-Grouse Conservation Plan: Dove Creek, Colorado
- Gunnison Sage-Grouse Rangewide Conservation Plan 2005
- Gunnison Sage-Grouse Rangewide Steering Committee
- San Miguel Basin Local Working Group
- Gunnison Basin Sage-Grouse Strategic Committee
- Crawford Area Local Working Group
- Dove Creek Local Working Group
- Piñon Mesa Gunnison Sage-Grouse Partnership
- Poncha Pass Gunnison Sage-Grouse Working Group

Utah Efforts

- Gunnison Sage-Grouse Rangewide Conservation Plan 2005
- Strategic Management Plan for Sage-Grouse 2002
- San Juan County Gunnison Sage-Grouse Working Group Conservation Plan
- Monticello-Dove Creek Local Working Group
- San Juan County Local Working Group

While agricultural and residential development is not a stressor to GUSG habitats on BLM-managed lands, approximately 271,000 acres, or 58 percent, of the surface area within the range of GUSG is privately owned. Conversion of sagebrush shrublands may continue within the planning area on non-BLM-managed lands under all alternatives. Management actions related to surface use restrictions and vegetation/habitat enhancement on BLM lands would likely have a beneficial cumulative effect across the range, especially in consideration of the potential for development and agricultural conversion on private lands throughout the planning area. Planning efforts conducted by local working groups for GUSG help to reduce threats from private lands development. Voluntary coordination with private landowners has the potential to increase management on private lands, with the goal of decreasing impacts and enhancing habitats.

Solid mineral extraction has occurred historically in the planning area, mostly associated with sand, gravel, and other hard rock mineral extraction. Sand, gravel, and other mineral mining activities may be sited within GUSG seasonal habitats adjacent to anthropogenic residential or municipal development. Mining activities at these locations has likely resulted in the loss of sagebrush and other vegetation. Future mining activities are likely to be limited on BLM-

managed lands; however, activities on privately owned lands in the planning area may further contribute to the loss or degradation of sagebrush and other vegetation.

Future ROW applications would be processed and potentially authorized throughout the analysis area. Under the action alternatives, ROWs on BLM land are likely to be limited to areas outside of OHMA. ROWs crossing private lands would not be subject to authorization restrictions proposed under the action alternatives and may result in adverse impacts on sagebrush and other vegetation. Restrictions to renewable energy ROW authorizations on BLM lands would reduce vegetation impacts from those types of activities; however, these may still be sited on private lands within the planning area.

In general, resource use activities have cumulatively caused vegetation removal and fragmentation, and resulting weed spread.

3.6.3. Issue 2: How would the management actions and allowable uses under each alternative affect the resiliency and adaptation of sagebrush, riparian areas, and wetlands in response to climate change and drought?

3.6.3.1 Analytical Methods and Assumptions

Indicators

- Shifts in native and non-native species distributions;
- Resiliency of native plant populations; and
- Average instream flows during periods of drought.

Assumptions

- The effects of climate change, including drought, would affect the composition of native and non-native vegetation communities within the decision area.
- The implementation and effectiveness of management actions on vegetation communities can be influenced by funding, political constraints, workloads, enforcement, compliance, staffing levels, litigation, conflicting priorities and regulations, climate change, and other factors.
- The effects of climate change, including drought and aridification, would increase fire frequency and have corollary effects on vegetation community structure and species diversity.

- Generalizations about the impacts of climate change on vegetation communities can be derived from available research.

3.6.3.2 Affected Environment

The potential effects of climate change, including shifts in species distribution, abundance, and phenology, have been widely documented across ecosystems and are predicted to intensify (Parmesan and Yohe 2003; Parmesan 2006; Urban 2015). Predicted warming air temperatures and changing precipitation translate to increasing air and water temperatures; alteration of hydrology; and changes in the frequency, magnitude, and extent of extreme events such as floods, droughts, and wildfires (Hamlet and Lettenmaier 2007; Howe et al. 2011; Ray et al. 2008). In upland areas within the Rocky Mountain region, cheatgrass invasion has occurred across 22.7 million hectares that were once dominated by native perennials, and it is expected to continue expansion as climate and disturbance regimes change and more areas are disturbed by fire and human impacts (Boyte et al. 2016; Bradley 2009; Smith et al. 2022). Riparian vegetation communities within the decision area have been identified as highly to moderately vulnerable to the effects of climate change depending upon the elevation range of each riparian area (Neely et al. 2011).

As the effects of climate change intensify over time, river and stream systems are anticipated to experience increased air and water temperatures, altered seasonal hydrograph (e.g., earlier peak flows and longer periods with low summer flow), increased flooding, shorter river-ice period, increased sedimentation, and changes in channel structure (Kittel et al. 2011). Similarly, wetland habitats in the decision area may experience reduced overall wetland size and depth, and loss of seasonal wetland habitat due to shifts in climate regimes. Land use in conjunction with climate change can directly affect riparian areas, particularly where native plants are removed, or where heavy grazing occurs. Changes in vegetation cover due to land use, heavy grazing, or other factors can lead to excessive erosion (Neely et al. 2011).

Projected Shifts in Sagebrush Communities within the Decision Area due to Climate Change

Previous climate modeling and projections indicate vegetation community composition, function, and individual species ranges will continue to shift as a result of changes in precipitation volume and timing, changes in soil moisture regimes and evapotranspiration rates, and the occurrence and severity of drought periods (Izaurralde et al. 2011; Collins et al. 2013; Polley et al. 2013). Additionally, variability in weather patterns is also anticipated to increase as the effects of climate change intensify across the western United States (Debinski et al. 2010). Precipitation events are expected to become fewer in number on average but may occur with increased intensity and precipitation volume on average (Collins et al. 2013). Longer and more frequent periods of drought are anticipated to result in lower survival rates of sagebrush canopy cover and potentially an overall decline in sagebrush community health as individual

sagebrush plants may tolerate extremely dry soil conditions in the short term but are more likely to experience reductions in leaf area, overall sagebrush canopy cover, and reduced seedling survival rates (Kolb and Sperry 1999; Palmquist et al. 2016; Renwick et al. 2017).

Recent climatic modeling conducted by Rigge et al. (2021) used USGS RC MAP data consisting of remotely sensed landcover data for rangeland vegetation community functional groups (30-meter grid cell), reference climate data from 1985 to 2015, in conjunction with soils and topography datasets to model the empirical spatiotemporal variation in landcover across the western United States. Outputs of the Rigge models include three separate timeframes (2021, 2050s, and 2080s) applied to two separate atmospheric greenhouse gas concentration scenarios known as representative concentration pathways (RCP) of 4.5 and 8.5. RCP 4.5 is generally equivalent to an atmospheric CO_2 concentration of 580 parts per million (ppm) while RCP 8.5 is generally equivalent to a CO_2 concentration of 1300 ppm. RCP 8.5 is a relatively conservative estimate representing a future with no regulations regarding CO_2 emissions, resulting in little to no reduction in emissions. Because the U.S., as well as Colorado, already have established regulations to reduce CO_2 emissions, the use of RCP 8.5 is generally considered unrealistic, with studies refuting the use of the model for predictions (Hausfather et al. 2020; Colorado Energy Office 2021).

Baseline landcover conditions and results of the Rigge et al. landcover modeling projections for time period 2050 are presented in Table 3.6.33 through Table 3.6.38. Map A.60 through Map A.68 (Appendix A) present the projected changes in sagebrush, annual herbaceous, and perennial herbaceous cover across the decision area as a result of climate change.

Occupied Habitat Management Areas

For the purposes of this analysis sagebrush cover greater than 15 percent is considered to represent suitable habitat for GUSG, although optimal sagebrush densities and canopy cover selected by GUSG for breeding and nesting habitats may be as high as 30 percent. According to the Rigge et al. 2021 modeling outputs, within OHMA, sagebrush coverage and canopy densities within the Cerro Summit-Cimarron-Sims Mesa, Gunnison Basin, and Poncha Pass population areas are estimated to be greater than 33 percent indicating preferable vegetation conditions for GUSG (Table 3.6.33). Within OHMA in the remaining population areas, current sagebrush coverages range from less than one to nine percent representing marginal habitat suitability for GUSG. Modeling outputs for the 2050 4.5 and 8.5 RCP scenarios indicated a potential drastic reduction in sagebrush canopy densities. Under the 2050 4.5 RCP scenario, the acreage of sagebrush canopy coverage (greater than 15 percent) is anticipated to drop below ten percent of the overall acreage of OHMA and UHMA in the Gunnison Basin and Poncha Pass population areas. Within the remaining population areas, acreages of sagebrush canopy coverage (greater than 15 percent) is expected to virtually disappear under both the 4.5 and 8.5 RCP scenarios. Areas of sagebrush canopy with less than 15 percent overall coverage would likely remain under both RCP scenarios but are not likely to meet the habitat requirements for GUSG.

Modeled outputs for annual herbaceous cover types indicate current acreages across population areas range from less than one percent in multiple population areas to as high as twenty percent coverage in the San Miguel Basin population area (Table 3.6.35). Anticipated shifts in annual herbaceous cover types under the 2050 RCP 4.5 and 8.5 scenarios indicate a potential for similar drastic reductions in coverage areas across all populations. Under both scenarios, acreages of annual herbaceous cover types are anticipated to be substantially reduced by 2050 within the decision area. As presented in Table 3.6.35 and Table 3.6.36, the model output estimates that there would be an absence of acreage where greater than 5 percent of vegetative cover is composed of annual herbaceous species. Some limited acreages of annual herbaceous cover types that compose less than 5 percent of the total vegetative cover may still persist within the decision area according to the model. In contrast, the modeled outputs for perennial herbaceous cover types indicate that across population areas current land cover acreages range from 61 percent in the Cerro Summit-Cimarron-Sims Mesa area to approximately 98 percent coverage in the Dove Creek population area (Table 3.6.37). Anticipated shifts in perennial herbaceous cover types under the 2050 RCP 4.5 and 8.5 scenarios indicate a potential for increased coverage of these cover types in the majority of population areas, while expected coverage areas may actually slightly decline in the Dove Creek and Piñon Mesa population areas.

Unoccupied Habitat Management Areas

Within UHMA, sagebrush coverage is slightly reduced in comparison to OHMA units. Sagebrush coverage ranges from less than one percent in multiple population areas to a high of approximately nine percent coverage in the Gunnison Basin unit (Table 3.6.34). Similar to the outputs for OHMA, modeling for the 2050 4.5 and 8.5 RCP scenarios indicated a potential drastic reduction in sagebrush canopy densities across all population areas. Under the 2050 4.5 and 8.5 RCP scenarios, sagebrush canopy coverage within UHMA is anticipated to drop to zero across all populations.

Modeled outputs for annual herbaceous cover types indicate current acreages across population areas range from less than one percent in multiple population areas to as high as 32 percent coverage in the San Miguel Basin population area (Table 3.6.36). Anticipated shifts in annual herbaceous cover types under the 2050 RCP 4.5 and 8.5 scenarios indicate a potential for similar drastic reductions in coverage areas across all populations. Under both scenarios, annual herbaceous cover types are anticipated to reduce to zero percent coverage by 2050 within the decision area.

In contrast, the modeled outputs for perennial herbaceous cover types indicate that across population areas current land cover acreages range from 55 percent in the Gunnison Basin area to approximately 99 percent coverage in the Poncha Pass population area (Table 3.6.38). Anticipated shifts in perennial herbaceous cover types under the 2050 RCP 4.5 and 8.5 scenarios indicate a potential for increased coverage of these cover types in the majority of

population areas, while expected coverage areas may actually slightly decline in the Dove Creek Monticello, Piñon Mesa, and San Miguel Basin population areas.

Table 3.6.33. Projected Change in Sagebrush Cover due to Climate Change Effects within Occupied Habitat Management Areas

GUSG Population	OHMA					
	Acres of Sagebrush Cover[1] 2021	*% Sagebrush Cover 2021*	*Acres of Sagebrush Cover[1] 2050 RCP 4.5*	*% Sagebrush Cover 2050 RCP 4.5*	*Acres of Sagebrush Cover[1] 2050 RCP 8.5*	*% Sagebrush Cover 2050 RCP 8.5*
Cerro Summit – Cimarron – Sims Mesa	970	55	0	0	0	0
Crawford	400	2	0	0	0	0
Dove Creek	480	9	0	0	0	0
Gunnison Basin	96,630	33	0	0	0	0
Monticello	20	<1	0	0	0	0
Piñon Mesa	270	1	0	0	0	0
Poncha Pass	4,290	34	1,020	8	0	0
San Miguel Basin	50	<1	0	0	0	0

Source: Rigge et al. 2021
[1]Sagebrush canopy cover of 15% or greater.

Table 3.6.34. Projected Change in Sagebrush Cover due to Climate Change Effects within Unoccupied Habitat Management Areas

GUSG Population	UHMA					
	Acres of Sagebrush Cover[1] 2021	*% Sagebrush Cover 2021*	*Acres of Sagebrush Cover[1] 2050 RCP 4.5*	*% Sagebrush Cover 2050 RCP 4.5*	*Acres of Sagebrush Cover[1] 2050 RCP 8.5*	*% Sagebrush Cover 2050 RCP 8.5*
Cerro Summit – Cimarron – Sims Mesa	190	3	0	0	0	0
Crawford	420	4	0	0	0	0
Dove Creek	1,090	2	0	0	0	0
Gunnison Basin	5,490	9	0	0	0	0
Monticello	10	<1	0	0	0	0
Piñon Mesa	330	<1	0	0	0	0
Poncha Pass	230	2	0	0	0	0
San Miguel Basin	2	<1	0	0	0	0

Source: Rigge et al. 2021
[1]Sagebrush canopy cover of 15% or greater.

Table 3.6.35. Projected Change in Annual Herbaceous Cover due to Climate Change Effects within Occupied Habitat Management Areas

GUSG Population	OHMA					
	Acres of Annual Herbaceous Cover[1] 2021	*% Annual Herbaceous Cover 2021*	*Acres of Annual Herbaceous Cover[1] 2050 RCP 4.5*	*% Annual Herbaceous Cover 2050 RCP 4.5*	*Acres of Annual Herbaceous Cover[1] 2050 RCP 8.5*	*% Annual Herbaceous Cover 2050 RCP 8.5*
Cerro Summit – Cimarron – Sims Mesa	0	0	0	0	0	0
Crawford	300	1	0	0	0	0
Dove Creek	340	6	0	0	0	0
Gunnison Basin	40	<1	0	0	0	0
Monticello	420	14	0	0	0	0
Piñon Mesa	3,610	19	20	<1	20	<1
Poncha Pass	0	0	0	0	0	0
San Miguel Basin	7,290	20	0	0	0	0

Source: Rigge et al. 2021
[1]Annual herbaceous cover of 5% or greater.

Table 3.6.36. Projected Change in Annual Herbaceous Cover due to Climate Change Effects within Unoccupied Habitat Management Areas

GUSG Population	UHMA					
	Acres of Annual Herbaceous Cover[1] 2021	*% Annual Herbaceous Cover 2021*	*Acres of Annual Herbaceous Cover[1] 2050 RCP 4.5*	*% Annual Herbaceous Cover 2050 RCP 4.5*	*Acres of Annual Herbaceous Cover[1] 2050 RCP 8.5*	*% Annual Herbaceous Cover 2050 RCP 8.5*
Cerro Summit – Cimarron – Sims Mesa	650	9	0	0	0	0
Crawford	280	3	0	0	0	0
Dove Creek	5,070	11	0	0	0	0
Gunnison Basin	1	<1	0	0	0	0
Monticello	410	26	0	0	0	0
Piñon Mesa	29,530	31	170	<1	250	<1
Poncha Pass	4	<1	0	0	0	0
San Miguel Basin	6,840	32	0	0	0	0

Source: Rigge et al. 2021
[1]Annual herbaceous cover of 5% or greater.

Table 3.6.37. Projected Change in Perennial Herbaceous Cover due to Climate Change Effects within Occupied Habitat Management Areas

GUSG Population	OHMA					
	Acres of Perennial Herbaceous Cover[1] 2021	*% Perennial Herbaceous Cover 2021*	*Acres of Perennial Herbaceous Cover[1] 2050 RCP 4.5*	*% Perennial Herbaceous Cover 2050 RCP 4.5*	*Acres of Perennial Herbaceous Cover[1] 2050 RCP 8.5*	*% Perennial Herbaceous Cover 2050 RCP 8.5*
Cerro Summit – Cimarron – Sims Mesa	1,080	61	1,440	80	1,430	80
Crawford	18,180	82	19,040	86	19,000	86
Dove Creek	5,110	98	3,660	69	3,580	68
Gunnison Basin	187,820	64	272,460	93	272,970	93
Monticello	2,880	96	2,930	97	2,840	93
Piñon Mesa	15,980	85	12,080	64	11,980	64
Poncha Pass	11,840	95	11,570	91	11,570	91
San Miguel Basin	33,160	92	34,980	97	34,900	97

Source: Rigge et al. 2021
[1]Perennial herbaceous cover of 10% or greater.

Table 3.6.38. Projected Change in Perennial Herbaceous Cover due to Climate Change Effects within Unoccupied Habitat Management Areas

GUSG Population	UHMA					
	Acres of Perennial Herbaceous Cover[1] 2021	*% Perennial Herbaceous Cover 2021*	*Acres of Perennial Herbaceous Cover[1] 2050 RCP 4.5*	*% Perennial Herbaceous Cover 2050 RCP 4.5*	*Acres of Perennial Herbaceous Cover[1] 2050 RCP 8.5*	*% Perennial Herbaceous Cover 2050 RCP 8.5*
Cerro Summit – Cimarron – Sims Mesa	5,320	72	6,570	89	6,460	88
Crawford	5,600	56	6,530	64	5,800	57
Dove Creek	37,280	78	35,080	73	32,810	69
Gunnison Basin	33,750	55	42,870	69	42,950	69
Monticello	1,350	86	1,240	76	1,230	76
Piñon Mesa	73,160	77	60,920	63	56,960	59
Poncha Pass	11,460	99	11,540	99	11,540	99
San Miguel Basin	16,380	77	16,150	74	12,990	60

Source: Rigge et al. 2021
[1]Perennial herbaceous cover of 10% or greater.

3.6.3.3 Environmental Consequences

Effects Common to All Alternatives

Regardless of alternative, climate change has the potential to impact vegetation community composition, resulting in changes to suitable habitat for GUSG and population size.

Alternative A – (No Action – Current Management)

Under Alternative A, management of vegetation communities within the decision area would remain as prescribed under the existing RMPs, regardless of observed short-term and long-term shifts in climate. There are no current management actions in existing plans that address climate change related to vegetation communities that compose GUSG habitat. This lack of management direction for addressing potential climate change impacts through focused vegetation treatments and other adaptive management actions would likely result in reduced resiliency and productivity of upland, wetland, and riparian vegetation communities within the decision area. Under Alternative A, no additional ACECs would be designated and the potential vegetation management actions resulting in conservation of vegetation communities would not occur.

Action Alternatives

Under Alternative B1, the BLM would prioritize removing identified threats within OHMA and UHMA. Management actions would reduce impacts within the decision area, which includes the 4-mile buffer around habitat, and potential LCMA, to the maximum extent allowable. This alternative would support resiliency of native vegetation communities through the restrictions placed on surface disturbance, the designation of an ACEC encompassing all GUSG habitat, and restrictions on livestock grazing. Vegetation Management Action 6 would require the BLM to carefully consider the timing of vegetation treatments during drought through pre-treatment analyses. Alternative B1 would consolidate and standardize vegetation monitoring requirements and provide quantifiable metrics devised to support the achievement of GUSG habitat guidelines across the decision area. Additionally, Vegetation Management Action 29 would require the use of native, locally adapted seed for restoration, when appropriate. Seed mix species selection and sourcing should prioritize species that are site-specific and include a diversity of life history traits to increase resiliency against climate change. The overarching result of the management actions under Alternative B1 are anticipated to result in native vegetation communities within the decision area that are more resistant and resilient to the potential effects of climate change. Regardless of land use allocations and policy, the anticipated effects of climate change are likely to result in conditions within the decision area that are increasingly less favorable to existing plant communities due to their limited ability to adapt to shifts in climate. Therefore, the more restrictive land use allocations under Alternative B1 are anticipated to result in greater stability of native vegetation communities that compose the

mosaic of GUSG habitat in comparison to the No Action Alternative and the other action alternatives.

Effects on the resiliency and adaptability of native vegetation communities within GUSG habitat under Alternative B2 would be similar to those presented under Alternative B1. However, under Alternative B2 livestock grazing activity would be allowed in UHMA and in OHMA between July 16 and February 28. Removing grazing activity from OHMA during the GUSG lekking season is anticipated to result in mixed impacts upon native vegetation communities within OHMA within the decision area (Davies et al. 2010, 2016a, 2016b). Potential impacts of this action would result in cool-season grass species experiencing less grazing pressure during the grazing restriction period. This may result in increases of vegetative biomass available as cover and forage for GUSG and other wildlife species in the decision area. Under this alternative, the removal of livestock grazing pressure on vegetation communities within the decision area would result in greater overall vegetation health and increased height and productivity of sagebrush and other native plant species. Vegetation within areas closed to grazing would experience greater reproductive capability and have greater capacity to improve root health in comparison to areas that are open to grazing.

Under Alternative C, surface disturbing actions would be allowed in GUSG habitat if the effects of the action could be avoided, minimized, or mitigated through compensatory mitigation. This alternative would likely result in reduced resiliency to climate change induced drought in comparison to Alternatives B1 and B2. Under Alternative C, the increased potential for surface disturbance is likely to result in native vegetation communities that are less resistant and resilient to the effects of climate change. These communities would be more at risk of increasing potential for noxious weed introduction as the effects of climate change advance and become more severe.

Direct vegetation management under, and resulting effects upon, the resiliency and adaptability of native vegetation communities within GUSG habitat under Alternative D would be similar to those presented under Alternative C.

Alternative E considers adopting applicable management direction from the interagency CCA for the Gunnison Basin Population of GUSG. Management direction under this alternative only applies to GUSG habitat in the Gunnison Basin population. Some management actions that contain specific measures to address drought conditions under all other action alternatives would not be required under Alternative E. Under Alternative E, the effects of climate change and drought on the resiliency of sagebrush, riparian and wetland communities within the Gunnison Basin would be similar to those described under Alternative D but would not extend to the other population areas.

3.6.3.4 Conclusions

Alternative A (No Action) would maintain the current management of vegetation communities in the decision area, resulting in an inconsistent approach to surface disturbance restrictions (acreage density caps) and major vegetation treatments, and would not require implementation of adaptive management actions focused on improving the resiliency of native vegetation to resist the potential effects of climate change.

All of the action alternatives would result in greater restrictions of surface disturbance and disruption to sagebrush and other vegetation communities that compose GUSG habitat. These restrictions would result in the reduced potential for impacts from development, including direct removal of vegetation, reduced productivity and vegetative biomass, and other ecosystem services. Alternative B would apply the most restrictive management of surface-disturbing activities within the decision area and would result in the greatest benefit to native vegetation communities through the application of the most conservative surface disturbance restrictions, removal of grazing pressure in OHMA and UHMA, and reduction of potential for further spread of noxious weeds on BLM-administered lands. Under Alternative B1, livestock grazing would be phased out over time, thereby removing the ability of the BLM to utilize grazing as a vegetation management tool.

Alternative B2 would make OHMA would unavailable for livestock grazing between March 1 and July 15. This restriction of grazing pressure in OHMA during the early season would result in an increase in grass and forb species resiliency and productivity.

3.6.3.5 Cumulative Effects

The cumulative effects analysis area for vegetation resources is defined as the planning area and the timeframe for the analysis is the life of this RMP amendment.

The past development of roads and trails throughout the planning area has resulted in the loss and fragmentation of sagebrush and other vegetation communities. Management actions proposed under the action alternatives would likely result in fewer roads or trails in OHMA. Development of trails and roads on private or other lands resulting in removal of or adverse effects on vegetation is likely to continue in the future. Implementation of recommendations from the RCP and from working groups would likely reduce the impact to sagebrush and other vegetation communities from new roads or trails; however, these considerations may not be applied evenly across the planning area.

Oil and gas development in the analysis area is limited to areas in the Dove Creek, Monticello, San Miguel Basin and Crawford population areas; the eastern portion of the Piñon Mesa population area; and the northern half and southeastern corner of the Gunnison Basin population area (Gunnison Sage-Grouse Rangewide Steering Committee 2005). The majority of these areas are considered to have low potential for oil and gas reserves. Development of oil and gas resources in the analysis area has resulted in surface disturbance and the removal of or

adverse effects on sagebrush and other vegetation. Future development of oil and gas resources in the analysis area is likely to be limited based on surface use restrictions implemented as part of this planning process and through the CPW and Colorado Energy and Carbon Management Commission (ECMC) 1200 series rule effective as of January 15, 2021.

Climate change within the cumulative effects analysis area could cause an increase in temperatures and variations in precipitation that could affect soil conditions, vegetative health, and water availability. Such changes would alter conditions to potentially reduce the acreage of sagebrush canopy cover and favor an increase in the coverage areas of grass/forb species alliances. The effects of climate change are not well understood but modeling of potential impacts indicates a high potential for dramatic shifts in vegetation community composition within the planning area. Reductions in water availability or shifts in the seasonal timing of precipitation would be anticipated to affect the functioning condition of riparian and wetland habitats within the planning area. Beneficial impacts from vegetation management would result from restoration efforts, reseeding after wildland fires, weed treatments (spraying), and closing and rehabilitating roads that are no longer needed.

3.6.4. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is implemented. Management actions proposed under the action alternatives have the potential to result in reduction of threats to GUSG through implementation of management actions intended to protect and conserve existing native vegetation communities within the decision area. However, continued alteration of natural fire regimes to protect GUSG habitat could result in future catastrophic fires, resulting in significant changes to plant community composition and habitat suitability for GUSG during post-fire recovery (Crist et al. 2023). Application of site-specific mitigation measures during site-scale implementation actions would avoid impacts to sagebrush, riparian, wetland and other native vegetation communities that compose GUSG habitat. There would be no unavoidable adverse effects to vegetation resources including riparian and wetlands areas under the action alternatives.

3.6.5. Relationship of Short-Term Uses and Long-Term Productivity

Short-term effects would occur over the alternative implementation period, depending on the availability of funding. Long-term productivity is defined as the consequences of implementing the alternatives, both adverse and beneficial, that would occur. The basic objective of the RMP/EIS is to provide for efficient and environmentally sound long-term management of the public land and resources in the decision area. Vegetation management actions applied under

the preferred alternative would be expected to improve vegetation condition over the long term, including proper functioning condition of wetlands and riparian areas. The benefits of achieving the long-term objectives of this RMP outweigh the short-term loss of some resource values that would occur as the plan is implemented. Short-term benefits of the preferred alternative include reduction of potential to introduce additional non-native and noxious weed populations within OHMA and UHMA. Prescriptive restoration activities may reduce time to climax communities by speeding up stages of ecological succession. Long-term benefits of the preferred alternative include reduced surface disturbance, directly impacting plant community composition and health of upland and riparian communities within OHMA and UHMA. Additionally, soil health is expected to increase as soil organic matter accumulates over time, increasing soil resiliency, stability, and productivity. Overall, implementation of the preferred alternative has the potential to increase vegetation and soil community health and resistance and resiliency to the effects of climate change.

3.6.6. Irreversible and Irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. None of the alternatives would result in an irreversible or irretrievable commitment of vegetation resources.

3.7. NOXIOUS WEEDS AND INVASIVE SPECIES

3.7.1. Introduction

Invasive plant species include those that can become established in an area where they were not part of the original plant composition. They are of particular concern following disturbance. Invasive plant species aggressively outcompete native species within a community and often alter the physical and biotic components enough to affect the entire ecological community. Invasive plant species are often exotic and are not desirable forage species. Noxious weeds are a subset of invasive species (BLM 2015).

The Utah Noxious Weed Act defines a noxious weed as any plant that is determined by the Commissioner of Agriculture to be especially injurious to public health, crops, livestock, land, or other property (Utah Code Chapter 17, Noxious Weed Act). The Utah Noxious Weed Act identifies four classes of noxious weeds (Utah Department of Agriculture and Food 2023):

- Class IA: Early Detection Rapid Response - Watch List Declared noxious and invasive weeds not native to the State of Utah and not known to exist in the State that pose a serious threat to the State and should be considered as a very high priority.
- Class 1B: Early Detection Rapid Response - Declared noxious and invasive weeds not native to the State of Utah that are known to exist in the State in very limited populations and pose a serious threat to the State and should be considered as a very high priority.
- Class 2: Control - Declared noxious and invasive weeds not native to the State of Utah, that pose a threat to the State and should be considered a high priority for control. Weeds listed in the control list are known to exist in varying populations throughout the State. The concentration of these weeds is at a level where control or eradication may be possible.
- Class 3: Containment - Declared noxious and invasive weeds not native to the State of Utah that are widely spread. Weeds listed in the containment noxious weeds list are known to exist in various populations throughout the State. Weed control efforts may be directed at reducing or eliminating new or expanding weed populations. Known and established weed populations, as determined by the weed control authority, may be managed by any approved weed control methodology, as determined by the weed control authority. These weeds pose a threat to the agricultural industry and agricultural products.
- Class 4: Prohibited - Declared noxious and invasive weeds, not native to the State of Utah, that pose a threat to the State through the retail sale or propagation in the nursery and greenhouse industry. Prohibited noxious weeds are annual, biennial, or

perennial plants that the commissioner designates as having the potential or are known to be detrimental to human or animal health, the environment, public roads, crops, or other property.

The Colorado Noxious Weed Act states that noxious weeds designated by rule are a present threat to the economic and environmental value of the lands of the State of Colorado (C.R.S. 35-5.5-108). The Colorado Noxious Weed Act designates four categories of noxious weeds.

- List A: Rare noxious weed species that are subject to eradication where detected statewide to protect neighboring lands and the State as a whole;
- List B: Noxious weed species with discrete statewide distributions that are subject to eradication, containment, or suppression in portions of the State designated by the commissioner to stop the continued spread of these species;
- List C: Widespread and well-established noxious weed species for which control is recommended but not required by the State, although local governing bodies may require management.
- Watch List Species: Species that have been determined to pose a potential threat to the agricultural productivity and environmental values of the lands of the State.

The objectives for weed control are presented as:

- Vegetation Objective 4: Control, suppress, eradicate, and prevent the spread of noxious and invasive species using integrated vegetation management practices.
- Travel and Transportation Objective 1: Travel and transportation are managed to: (1) reduce mortality from vehicle collisions, (2) avoid, minimize, and compensate for habitat fragmentation, (3) limit the spread of noxious weeds, and (4) limit disruptive activity associated with human access.
- Recreation Objective 1: Manage recreation to avoid, minimize, and compensate for activities that (1) disrupt GUSG or its habitat, (2) fragment GUSG habitat, or (3) spread noxious weeds.

BLM's weed program uses an Integrated Pest Management (IPM) approach. IPM is an approach for selecting methods for preventing, containing, and controlling noxious weeds and invasive species in coordination with other resource management activities to achieve a desired vegetation condition. It uses a combination of treatment methods that interact to control a particular invasive plant or plant infestations efficiently and effectively, with minimum adverse impacts to non-target organisms. The IPM approach provides for early detection rapid response strategies to address the introduction of new weed species.

3.7.1.1 Trends

Trends in increasing recreational activities and use of travel routes, as well as ongoing natural events such as wildfires and climate change, will maintain the potential to introduce and spread invasive plant species. While new infestations are possible, through implementation of BMPs, Weed Management Protocols, and revegetation efforts following wildfires, the introduction and spread of invasive and noxious weeds can be minimized (BLM 2015). Recreational use and travel management are presented in Sections 3.11 and 3.12, respectively.

Livestock grazing can either promote or reduce invasive plant abundance. When grazing treatments are combined with other control techniques, such as herbicides or biocontrol, severe infestations can be reduced and small infestations may be eliminated. Livestock may be particularly useful in areas where herbicides cannot be applied (e.g., near water) or are prohibitively expensive (e.g., large infestations). Livestock can also be used as part of a restoration program by breaking up the soil and incorporating in seeds of desirable native plants (Tu et al. 2001). Overgrazing can reduce native plant cover, disturb soil, damage native communities, and allow invasive plants to establish. Livestock that are moved between pastures can spread weed seeds and propagules to previously un-infested areas (Tu et al. 2001).

3.7.2. Issue 1: How would management actions and allocations under each alternative affect the potential for invasive plant introduction and spread?

3.7.2.1 Analytical Methods and Assumptions

Indicators

- The risk of invasive species introduction and spread due to presence or absence of surface disturbance restrictions;
- The risk of invasive species introduction and spread due to travel management, travel routes, and recreation activities; and
- The risk of invasive species introduction and spread due to presence or absence of permitted livestock grazing.

Assumptions

- Noxious and invasive weeds would continue to be introduced and spread natural and anthropogenic vectors within the decision area. Dispersal vectors include but are not limited to vehicle traffic, recreational activities, wildland fire, wildlife and livestock movements, vegetation- and surface-disturbing activities, wind, and surface water flows.

- Weeds would be controlled in coordination with the appropriate county weed control districts and with adjacent property owners to comply with State weed eradication and control plans.
- Short-term effects on invasive species and their management would occur over a timeframe of 10 years or less and long-term effects would occur over longer than 10 years.
- For the purposes of this analysis, the term noxious weeds includes those non-native plants species that are determined to be undesirable for site specific land uses.

3.7.2.2 Affected Environment

Native species and communities can be reduced and ecosystem function can be degraded by noxious weed species infestations. Cheatgrass and similar annual invasive grasses make up most large-scale infestations in the decision area (BLM 2023).

Cheatgrass

Cheatgrass roots can be up to 60 inches long; the majority of root biomass is within the top 12 inches of the soil surface. The roots are efficient at absorbing soil moisture, which allows cheatgrass to quickly grow early in the season while other plant species are still dormant. Cheatgrass can green up twice per season. Seeds must be buried in soil or litter and have fall moisture to germinate. The fall seed crop has greater reproductive success than the spring crop. Seeds must be transported to spread far from the parent plant and are readily carried by wildlife, livestock, pets, people, and equipment.

Cheatgrass is one of most competitive non-native plant species in the Western U.S. The species alters fire regimes and triggers a positive fire feedback loop that favors its growth over other species. This fire feedback loop is the reason that cheatgrass forms monocultures throughout the West. Multiple ecosystem types have been impacted by cheatgrass invasion, but the most extensive impacts have occurred in sagebrush-steppe rangelands across the Western U.S. which have been reduced to half of pre-cheatgrass invasion extents due to the cheatgrass-fire cycle and resulting community transition to annual grasslands or to seeded perennial grasslands (Miller et al. 2011).

The following are components of effective integrated cheatgrass management:

- Use a variety of eradication methods along with restoration;
- Prevent seed production and dispersal;
- Monitoring;
- Maintain robust healthy landscapes;
- Restore degraded sites;

- Avoid soil disturbance;
- Rest sites until restored;
- Modify land use practices and use eradication methods appropriate for the site.

Cultural, mechanical, biological, and chemical methods can be effectively used and combined to control and eradicate cheatgrass. Biological soil crusts inhibit cheatgrass germination and are a soil health indicator of arid and semi-arid regions (Chambers et al. 2016). Prescribed fire can be combined with appropriately timed seeding of certain native species. Monitoring and adaptive management are requisite if prescribed fire is used to eradicate cheatgrass. Sheep and cattle will select green cheatgrass. Properly managed livestock grazing can improve vigor of desired plant species and directly reduce cheatgrass (Davies et al. 2009, Davies et al. 2021). For chemical control, Imazapic and Rimsulfuron are selective herbicides that inhibit cheatgrass and are approved by the USEPA and are currently approved for use on BLM-administered lands (BLM 2007).

Soil disturbance is not required for cheatgrass establishment. Cheatgrass can thrive in areas that have little or no history of cultivation or livestock grazing. It may establish in these relatively undisturbed areas when seed disperses from nearby patches and establishes on sites of small natural disturbances (BLM 2015).

Table 3.7.1 presents invasive, non-native plant species that have been documented on BLM-administered land in the Decision area.

Table 3.7.1. Invasive Non-native Species and Noxious Weeds Documented in the Decision Area

Common Name	Scientific Name	Vegetation Community	State Weed List
Absinthium	*Artemisia absinthium*	Upland	Colorado List B
Black henbane	*Hyoscyamus niger*	Upland	Colorado List B Utah Class 2
Broadleaved pepperweed	*Lepidium latifolium*	Upland and Riparian	Colorado List B Utah Class 3
Bulbous bluegrass	*Poa bulbosa*	Upland	Colorado List C
Bull thistle	*Cirsium vulgare*	Upland	Colorado List B
Camelthorn	*Alhagi maurorum*	Upland	Colorado List A Utah Class 1B
Canada thistle	*Cirsium arvense*	Riparian	Colorado List B Utah Class 3
Cheatgrass	*Bromus tectorum*	Upland	Colorado List C
Chickory	*Cichorium intybus*	Upland	Colorado List C
Common burdock	*Arctium minus*	Upland, Riparian	Colorado List C
Common mullein	*Verbascum thapsus*	Upland	Colorado List C
Cutleaf teasel	*Dipsacus laciniatus*	Upland	Colorado List B

Common Name	Scientific Name	Vegetation Community	State Weed List
Cypress spurge	*Euphorbia cyparissias*	Upland	Colorado List A
Dalmatian toadflax	*Linaria dalmatica*	Upland	Colorado List B Utah Class 2
Dames rocket	*Hesperis matronalis*	Upland	Colorado List B Utah Class 4
Diffuse knapweed	*Centaurea diffusa*	Upland	Colorado List B Utah Class 2
Elongated mustard	*Brassica elongata*	Upland	Colorado List A Utah Class 1B
Eurasian watermilfoil	*Myriophyllum spicatum*	Aquatic	Colorado List B
Field bindweed	*Convolvulus arvensis*	Upland	Colorado List C Utah Class 3
Fuller's teasel	*Dipsacus fullonum*	Upland	Colorado List B
Giant reed	*Arundo donax*	Riparian, Wetland	Colorado List A Utah Class 1B
Halogeton	*Halogeton glomeratus*	Upland	Colorado List C
Hoary cress	*Lepidium draba*	Upland	Colorado List B Utah Class 3
Hound's tongue	*Cynoglossum officinale*	Upland	Colorado List B Utah Class 3
Japanese knotweed	*Fallopia japonica*	Upland	Colorado List A Utah Class 1B
Jointed goatgrass	*Aegilops cylindrica*	Upland	Colorado List B Utah Class 3
Leafy spurge	*Euphorbia esula*	Upland	Colorado List B Utah Class 2
Mediterranean sage	*Salvia aethiopis*	Upland	Colorado List A Utah Class 1A
Musk thistle	*Carduus nutans*	Upland	Colorado List B Utah Class 3
Myrtle spurge	*Euphorbia myrsinites*	Upland	Colorado List A Utah Class 4
Orange hawkweed	*Hieracium aurantiacum*	Upland	Colorado List A
Oriental virginsbower	*Clematis orientalis*	Upland	Colorado List B
Oxeye daisy	*Leucanthemum vulgare*	Upland	Colorado List B Utah Class 1B
Parrot feather watermilfoil	*Myriophyllum aquaticum*	Aquatic	Colorado List A
Poison hemlock	*Conium maculatum*	Riparian, Upland	Colorado List C Utah Class 3

Common Name	Scientific Name	Vegetation Community	State Weed List
Purple loosestrife	*Lythrum salicaria*	Riparian, Wetland	Colorado List A Utah Class 2
Quackgrass	*Elymus repens*	Riparian	Colorado List C Utah Class 3
Redstem filaree	*Erodium cicutarium*	Upland	Colorado List C
Russian knapweed	*Rhaponticum repens*	Upland	Colorado List B Utah Class 3
Russian olive	*Elaegnus angustifolia*	Riparian	Colorado List B Utah Class 4
Saltcedar	*Tamarisk* spp.	Riparian	Colorado List B Utah Class 3
Scotch thistle	*Onopordum acanthium*	Upland	Colorado List B Utah Class 3
Siberian elm	*Ulmus pumila*	Upland	Colorado Watch List
Spiny plumeless thistle	*Carduus acanthoides*	Upland	Colorado List B Utah Class 1A
Spotted knapweed	*Centaurea stoebe*	Upland	Colorado List B Utah Class 2
Stinking chamomile	*Anthemis cotula*	Upland	Colorado List B
Yellow star-thistle	*Centaurea solstitialis*	Upland	Colorado List A Utah Class 2
Yellow toadflax	*Linaria vulgaris*	Upland	Colorado List B Utah Class 2

Sources: BLM 2023, Colorado Department of Agriculture 2023, Utah Department of Agriculture and Food 2023

BLM has conducted Assessment, Inventory, and Monitoring (AIM) plots in the decision area from 2015 to 2022. Table 3.7.2 provides the total AIM plot counts by population. Table 3.7.3 through Table 3.7.5 summarizes invasive species data collected on AIM plots. The tables below were calculated using published indicator values from Terradat. Summary statistics include mean, standard deviation, and plot count. To calculate these summaries, NA (not available) and zero values were removed such that only plots which had recorded each respective functional group using the Line-Point-Intercept (LPI) method were used in mean and standard deviation calculations (e.g., the cheatgrass cover table reflects only plots which had greater than 0 percent cover of cheatgrass). The number of plots which were used in each calculation is reflected in the plot count columns. Plot counts may be larger in Table 3.7.3 than Table 3.7.4 because a species can be encountered on the plot and recorded as part of species richness but may not have been encountered during LPI. A subset of AIM plots are revisited on a regular interval. The data used for this summary represents the most recent visit to each plot and therefore these summaries do not include data from multiple sampling efforts in the same location.

Table 3.7.2. AIM Total Plot Counts by GUSG Population

Population	OHMA	UHMA	Total
Cimarron/Cerro/Sims Mesa	0	11	11
Crawford	49	5	54
Dove Creek	4	21	25
Gunnison	223	19	242
Monticello	1	1	2
Piñon Mesa	39	45	84
Poncha Pass	29	7	36
San Miguel Basin	35	9	44
Total	**379**	**117**	**496**

Source: BLM 2023

Table 3.7.3. AIM Total Plot Counts with Cheatgrass Detected in GUSG Habitat

GUSG Population Area	OHMA (Percent of Total Plots)	UHMA (Percent of Total Plots)
Cerro Summit – Cimarron – Sims Mesa	0 (NA)	6 (54.5)
Crawford	36 (73.5)	2 (40.0)
Dove Creek	4 (100)	12 (57.1)
Gunnison Basin	23 (10.3)	3 (15.8)
Monticello	0 (0)	0 (0)
Piñon Mesa	23 (59.0)	26 (57.8)
Poncha Pass	0 (0.0)	0 (0.0)
San Miguel Basin	15 (42.9)	6 (66.7)

Source: BLM 2023
NA = not available

Table 3.7.4. Invasive Annual Grass Cover (percent)

Population	OHMA			UHMA		
	Plot Count (Percent of Total Plots)	Mean Cover	Standard Deviation	Plot Count (Percent of Total Plots)	Mean Cover	Standard Deviation
Cimarron/Cerro/ Sims Mesa	0 (NA)	NA	NA	3 (27.3)	3.2	0.5
Crawford	23 (46.9)	3.5	1.7	0 (0.0)	NA	NA
Dove Creek	2 (50)	1.0	0.1	6 (28.6)	8.4	6.9
Gunnison	10 (4.5)	5.4	4.7	3 (15.8)	6.2	0.8
Monticello	0 (0)	NA	NA	0 (0)	NA	NA
Piñon Mesa	14 (35.9)	8.8	3.7	18 (40.0)	7.8	3.4
Poncha Pass	0 (0.0)	NA	NA	0 (0.0)	NA	NA
San Miguel Basin	7 (20.0)	3.6	0.9	2 (4.5)	0.7	0.0

Source: BLM 2023
NA = not available

Table 3.7.5. Total Invasive Species Cover (Percent)

Population	Occupied			Unoccupied		
	Plot Count (Percent of Total Plots)	Mean Cover	Standard Deviation	Plot Count (Percent of Total Plots)	Mean Cover	Standard Deviation
Cimarron/Cerro/ Sims Mesa	0 (NA)	NA	NA	3 (27.3)	3.2	0.5
Crawford	26 (53.1)	4.3	2.0	0 (0.0)	NA	NA
Dove Creek	2 (50.0)	1.0	0.1	6 (28.6)	8.4	6.9
Gunnison	12 (5.4)	4.3	4.2	3 (15.8)	6.2	0.8
Monticello	0 (0)	NA	NA	0 (0)	NA	NA
Piñon Mesa	22 (56.4)	8.7	2.3	21 (46.7)	7.5	3.0
Poncha Pass	0 (0.0)	NA	NA	0 (0.0)	NA	NA
San Miguel Basin	7 (20.0)	3.6	0.9	3 (33.3)	2.2	0.8

Source: BLM 2023
NA = not available

Surface Disturbance Restrictions

Surface disturbance restrictions on BLM-administered lands can decrease the likelihood of invasion and spread of invasive plant species. Table 2.3 (Section 2.2.1, *Summary of Alternatives*) presents acres of existing surface disturbance restrictions in GUSG habitats within the decision area. Surface disturbance restrictions are defined for this analysis as areas that include the following:

- Travel and transportation: Closed to Motorized and Mechanized Travel
- Lands and Realty: ROW Exclusion
- Renewable Energy: Solar exclusion, Wind exclusion
- Livestock Grazing Management: Unavailable for Livestock Grazing
- Fluid Mineral Leasing: CSU/TL, NSO, Closed
- Solid Mineral Leasing: Closed
- Mineral Material Leasing: Closed

3.7.2.3 Environmental Consequences

BLM employs BMPs, Required Design Features (RDFs), and Weed Management Protocols in place to treat and prevent invasive plant infestations (BLM 2007). The following BMPs are applied by the BLM at the project implementation level to prevent the spread of and/or the establishment of invasive and non-native plant species:

- Before ground-disturbing activities begin, inventory weed infestation and prioritize areas for treatment in project operating areas and along access routes.

- Minimize soil disturbance to the extent practical, consistent with project objectives.
- Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas or restrict travel to periods when the spread of seed or propagules is least likely.
- Pre-treat high risk sites for weed establishment and spread before implementing projects.
- Design vegetation treatments to retain native vegetation in and around project activity areas.
- Begin project operations in areas without non-native or noxious weed species.
- Clean vehicles and equipment (remove soil and plant parts) before entering public land.
- Clean all equipment before leaving the project site if operating in areas infested with weeds. Utilize standard contract provisions to ensure that contractors adhere to this guideline.
- Locate and manage vehicle and equipment wash stations to limit weed and invasive species spread into native plant communities.
- Inspect and treat weeds that become established at equipment cleaning sites.
- Inspect sand, gravel and fill materials on site, and ensure that they are weed-free before use and transport.
- Treat weed-infested sources to eradicate weed seed and plant parts, and strip and stockpile contaminated material before using pit material offsite.
- Survey the area where material from treated weed-infested sources is used for at least three years after project completion to ensure that any weeds transported to the site are promptly detected and controlled.
- Use caution when transporting vegetative materials and wood products from project sites to minimize the spread of invasive and non-native pests.
- Locate project staging areas for refueling, maintenance equipment, materials and operating supplies in weed-free areas.
- Dispose of noxious weed and non-native vegetation properly to prevent unwanted spread.
- Use certified weed-free and/or weed-seed-free hay or straw where certified materials are required and/or are reasonably available.
- Use weed-free feed for horses and pack animals.
- Schedule management activities (e.g., livestock grazing) when they may be most detrimental to populations of noxious weeds and non-native species without harming preferred species.

- Utilize domestic animals to contain the target species in the treatment areas prior to weed seed set. If seed set has occurred, do not move the domestic animals to uninfested areas for seven days.
- Use sterile or non-persistent exotic plants at low planting densities as nurse crops for local natives to preclude the migration of noxious weeds into adjacent natural areas.
- Schedule and coordinate roadside maintenance activities in consultation with weed specialists.
- Inspect and document all limited term ground-disturbing operations in noxious weed infested areas for at least three growing seasons following completion of the project.

Effects Common to All Alternatives

This section provides an overview of common impacts from management actions addressed under all the alternatives. The intent of this section is to provide a high-level discussion of the potential impacts and impact mechanisms that may occur summarized for each resource and resource use as described in Section 2.2.2, *Detailed Alternatives*. Impacts specific to each alternative are addressed further under the No Action Alternative (Alternative A) and action alternatives in this section.

All alternatives allow for various vegetation management approaches and treatments with the objective of promoting a mosaic of healthy sagebrush ecosystems and other native vegetation community types on BLM-managed lands. To achieve this objective, vegetation treatments can include restoration reseeding, conifer removal, application of herbicide, manual removal of noxious weeds and non-native plants, and prescribed fire. All of these treatment types are expected to result in healthier native vegetation communities that are more resistant to noxious weed and non-native plant invasions. The use of prescribed fire does include the risk of non-native annual grass proliferation in areas where post-fire reseeding may not be successful. In these areas, cheatgrass infestation and spread can adversely impact the ability of native vegetation to persist in the face of increased wildfire frequencies that are observed in areas dominated by cheatgrass.

Improper livestock grazing management resulting in over-utilization of rangeland resources in sagebrush communities may impact GUSG habitat through the reduction of sagebrush, grass, and forb cover types which can result in increased opportunity for noxious weed and non-native plant proliferation. Effects of properly managed grazing on vegetation communities that comprise GUSG habitat are generally dependent on the timing, duration, and intensity of livestock grazing and can vary by season.

The potential effects of recreation on noxious weed infestation within vegetation communities includes direct disturbance resulting from motorized OHV use along designated routes and in open areas where vehicles may travel overland. Vehicles traveling overland may crush existing vegetation, compact soils, release fugitive dust, and introduce opportunities for noxious weed

infestation and erosion of soils from the movement of wind and surface water. Non-motorized recreation may directly impact vegetation communities similar to motorized activity, but the extent and intensity of potential effects would be greatly reduced in comparison. Non-native plant and noxious weed species may be introduced through the dispersal of seed by both motorized and non-motorized recreational activity.

Development of new roads and designation of routes within the decision area would result in the direct removal of native vegetation and the introduction of non-native plant and noxious weed species. Areas that are designated as closed to motorized uses are less likely to experience new noxious weed and non-native plant infestations.

The development and extraction of fluid and solid minerals (e.g., oil and gas, geothermal, gravel pits) and associated infrastructure (e.g., roads, pipelines, well pads) are expected to result in the direct loss or degradation of vegetation communities and increased opportunity for the spread of noxious weeds and non-native plants within the decision area.

Management actions may include ROW authorizations, designation of ROW exclusion or avoidance areas, disposals, and acquisitions. Potential effects related to ROW authorizations may result from the construction of transmission or distribution electrical lines; wind turbines and associated infrastructure; solar development; and other related infrastructure for renewable energy. Construction of these facilities may result in direct loss of existing vegetation and increased opportunity for the spread of noxious weeds and non-native plants within the decision area.

Based on current wildfire management, vegetation treatment approaches, and fire suppression efforts, under all alternatives, wildfires would likely continue to increase in size and frequency in the decision area. Areas that experience intense wildfire activity would continue to be degraded and present an opportunity for the spread of noxious weeds and non-native plants within the decision area. Cheatgrass infestation would continue to present a wildfire risk within the decision area.

Alternative A – (No Action – Current Management)

Under Alternative A, management of noxious weed species to avoid and minimize introductions to areas of GUSG habitat would remain as prescribed under the existing RMPS across the decision area. Generally, vegetation management under existing RMPS promote healthy sagebrush ecosystems through a range of vegetation treatments and management actions. These actions range from using native plant species seed mixes in restoration decision to resting areas from livestock grazing in an effort to meet GUSG habitat guidelines outlined in the Gunnison Sage-Grouse RCP (Gunnison Sage-Grouse Rangewide Steering Committee 2005).

Surface disturbance restrictions can decrease the likelihood of invasion and spread of invasive plant species. Table 3.7.6 presents acres of surface disturbance restrictions in GUSG habitats under Alternative A.

Table 3.7.6. Surface Disturbance Restrictions (acres) within GUSG Habitat, by Resource Use under Alternative A

Acres of Surface Disturbance Restrictions by Resource Use	OHMA		UHMA	
	Acres	%	Acres	%
Unavailable to Livestock Grazing	2,480	1	3,410	1
Closed to Motorized Use	4,820	1	31,840	1
Closed to Fluid Mineral Leasing	31,410	6	105,380	26
Closed to Locatable Mineral Entry	50,570	9	81,240	20
Closed to Salable Mineral Entry	4,560	1	25,840	6
Closed to Non-energy Solid Leasable Minerals	16,870	3	50,070	12
Lands and Realty ROW Avoidance	19,260	5	62,110	24
Lands and Realty ROW Exclusion	6,340	2	35,170	14
Renewable Energy Wind Avoidance	19,540	5	62,610	24
Renewable Energy Wind Exclusion	6,340	2	35,170	14
Renewable Energy Solar Avoidance	0	0	0	0
Renewable Energy Solar Exclusion	390,270	100	255,910	99

Livestock grazing would be expected to continue at roughly the current level of activity across BLM surface in OHMA, UHMA, and the Adjacent Non-habitat areas, over the short term, resulting in little change to current trends of native vegetation communities and the rate of noxious weed and non-native plant proliferation. Effects on improperly managed grazing would be the same as discussed under effects common to all alternatives. Effects from recreation on vegetation communities would be similar to those presented under effects common to all alternatives. Alternative A would include the greatest acreage of lands open to motorized use off designated routes, resulting in the greatest potential impact to vegetation communities through direct removal of existing vegetation and increased risk of the spread of invasive weeds. Under Alternative A, the travel and transportation management on the majority of OHMA and UHMA on BLM surface would be expected to be limited to designated routes; however, approximately 690 acres (<1 percent) of OHMA and 18,370 acres (5 percent) of UHMA would remain open resulting in some potential for the spread of noxious weeds.

Action Alternatives

Under Alternative B, Vegetation Management Action 1 would require non-surface disturbing vegetation treatments to promote GUSG habitat areas in meeting guidelines where ecological site descriptions indicate treatments are feasible. Alternative B would also prioritize treatment areas within GUSG habitat that demonstrate the highest likelihood of success. Under Alternative B, areas of OHMA, UHMA, and LHMA would be treated to expand sagebrush habitat through conifer removal, sagebrush planting, and native grass and forb seeding in ecologically appropriate areas. Alternative B1 would make OHMA and UHMA unavailable for

new livestock grazing permits and would require expiring grazing permits within OHMA and UHMA to not be renewed. Removing grazing activity from OHMA and UHMA is anticipated to result in mixed effects upon the propensity of non-native and noxious weed species to spread to new areas within the decision area. Some studies have identified neutral or sometimes desirable effects of grazing on cheatgrass depending on site context (Davies et al. 2009, 2021; Davies, Bates, & Boyd 2016; Davies, Bates, Boyd, & Svejcar 2016), improperly managed livestock grazing is considered to have promoted cheatgrass expansion in sagebrush steppe by causing the selective loss of perennial herbs that are most suited to competing with cheatgrass (Condon & Pyke 2018a, 2018b; Pyke et al. 2016; Reisner et al. 2013; Williamson et al. 2020). Improperly managed livestock can also promote the spread and survival of invasive plant species by wallowing or pawing up soil. Effects on noxious weed population persistence and expansion within GUSG habitat under Alternative B2 would be similar to those presented under Alternative B1 with the exception of livestock grazing activity being allowed in UHMA and in OHMA between July 16 and February 28. Removing grazing activity from OHMA during the GUSG lekking season is anticipated to result in mixed effects upon the propensity of non-native and noxious weed species to spread to new areas within OHMA within the decision area (Davies et al. 2009, 2021; Davies, Bates, & Boyd 2016; Davies, Bates, Boyd, & Svejcar 2016). Properly managed grazing can benefit sagebrush communities by improving vigor of desired plant species and directly reduce cheatgrass prevalence (Davies et al. 2009; Davies et al. 2021).

Direct management of invasive plant species under Alternative B would be prioritized in OHMA, followed by all other habitat types within the decision area. Application of chemical treatments of noxious weed infestations would be limited to spot treatments using backpack sprayers. This would result in limitations on the total area of potential herbicide applications within the decision area but would minimize the potential for overspray that may harm native vegetation and therefore GUSG habitat quality at the treatment site scale.

Table 3.7.7 presents acres of surface disturbance restrictions in GUSG habitats under Alternative B.

Table 3.7.7. Surface Disturbance Restrictions (acres) within GUSG Habitat, by Population Area under Alternative B

Acres of Surface Disturbance Restrictions by Resource Use	OHMA		UHMA	
	Acres	%	Acres	%
Unavailable to Livestock Grazing	391,490[1]	100	258,630	100
Closed to Motorized Use	391,490	100	1,420	1
Closed to Fluid Mineral Leasing	556,760	100	403,440	100
Closed to Locatable Mineral Entry	50,570	9	81,240	20
Recommended Closed to Locatable Mineral Entry	506,1980	91	322,200	80
Closed to Salable Mineral Entry	556,760	100	403,440	100
Closed to Non-energy Solid Leasable Minerals	556,760	100	403,440	100
Lands and Realty ROW Avoidance	0	0	0	0

Acres of Surface Disturbance Restrictions by Resource Use	OHMA		UHMA	
	Acres	%	Acres	%
Lands and Realty ROW Exclusion	294,850	75	197,690	76
Renewable Energy Wind Avoidance	0	0	0	0
Renewable Energy Wind Exclusion	391,490	100	258,630	100
Renewable Energy Solar Avoidance	0	0	0	0
Renewable Energy Solar Exclusion	391,490	100	258,630	100

[1]Under Alternative B2, livestock grazing would be unavailable in OHMA from March 1 to July 15.

Under Alternative C, surface-disturbing activities would be allowed in GUSG habitat if the effects of an action could be avoided minimized or mitigated through compensatory mitigation. This alternative would likely result in increased propensity for noxious weed species to further spread through the decision area in areas of surface disturbance in comparison to Alternative B. Application of standard BMPs would assist in minimization of new weed introductions and infestations in the decision area but would not eliminate the risk altogether.

Direct management of invasive plant species under Alternative C would be the same as under Alternative B with the exception that chemical treatments could be applied using boom or aerial sprayers. This could result in more effective application of chemical herbicide to infested areas in comparison to Alternative B although the potential for overspray of herbicide could be increased through using these application methods.

The implementation of management actions under this alternative represents an increased risk in the spread of noxious weeds within the decision area in comparison to Alternative.

Table 3.7.8 presents acres of surface disturbance restrictions in GUSG habitats under Alternative C.

Table 3.7.8. Surface Disturbance Restrictions (acres) within GUSG Habitat, by Population Area under Alternative C

Acres of Surface Disturbance Restrictions by Resource Use	OHMA		UHMA	
	Acres	%	Acres	%
Unavailable to Livestock Grazing	0	100	0	0
Closed to Motorized Use	4,820	1	30,920	12
Closed to Fluid Mineral Leasing	0	0	0	0
Closed to Locatable Mineral Entry	50,570	9	81,240	20
Recommended Closed to Locatable Mineral Entry	506,190	91	0	0
Closed to Salable Mineral Entry	556,760	100	0	0
Closed to Non-energy Solid Leasable Minerals	556,760	100	0	0
Lands and Realty ROW Avoidance	315,890	81	0	0
Lands and Realty ROW Exclusion	56,750	14	0	0
Renewable Energy Wind Avoidance	0	0	258,630	100
Renewable Energy Wind Exclusion	391,490	100	0	0

Acres of Surface Disturbance Restrictions by Resource Use	OHMA		UHMA	
	Acres	%	Acres	%
Renewable Energy Solar Avoidance	0	0	258,630	100
Renewable Energy Solar Exclusion	391,490	100	0	0

Under Alternative D, surface-disturbing activities would continue to be allowed in GUSG habitat areas although the BLM would apply a balanced approach to allocating resource uses. Vegetation treatments under this alternative would be similar to Alternative B and Alternative C but would extend the same treatment options to LCMA. Reseeding options and priorities would be the same under Alternative C. Vegetation monitoring under Alternative D would be the same as proposed under Alternative C. Management options under this alternative for reducing conifer encroachment in GUSG habitat would be similar to Alternative B and the same as under Alternative C in that the BLM would consider balancing conifer removal treatments in OHMA, UHMA, and LCMA to avoid adverse impacts to wildlife species that rely upon coniferous habitat. Minimizing fragmentation within GUSG habitat resulting from BLM actions under Alternative D would be the same as under Alternative B.

Direct management of invasive plant species under Alternative D would be the same as under Alternative B with the exception that chemical treatments could be applied using boom or aerial sprayers. This could result in more effective application of chemical herbicide to infested areas although the potential for overspray of herbicide could be increased through using these application methods.

Table 3.7.9 presents acres of surface disturbance restrictions in GUSG habitats under Alternative D.

Table 3.7.9. Surface Disturbance Restrictions (acres) within GUSG Habitat, by Population Area under Alternative D

Acres of Surface Disturbance Restrictions by Resource Use	OHMA		UHMA	
	Acres	%	Acres	%
Unavailable to Livestock Grazing	0	100	0	0
Closed to Motorized Use	4,820	1	30,920	12
Closed to Fluid Mineral Leasing	437,140	79	215,090	53
Closed to Locatable Mineral Entry	50,570	9	81,240	20
Recommended Closed to Locatable Mineral Entry	79,840	14	1,410	<1
Closed to Salable Mineral Entry	556,760	100	0	0
Closed to Non-energy Solid Leasable Minerals	556,760	100	0	0
Lands and Realty ROW Avoidance	391,490	100	258,630	100
Lands and Realty ROW Exclusion	0	0	0	0
Renewable Energy Wind Avoidance	0	0	0	0
Renewable Energy Wind Exclusion	391,490	100	258,630	100

Acres of Surface Disturbance Restrictions by Resource Use	OHMA		UHMA	
	Acres	%	Acres	%
Renewable Energy Solar Avoidance	0	0	0	0
Renewable Energy Solar Exclusion	391,490	100	403,440	100

Management direction under Alternative E only applies to GUSG habitat in the Gunnison Basin population. Direct management actions under alternative E would follow integrated weed prevention practices for all construction and maintenance activity as outlined in Appendix A of the Gunnison Sage-Grouse CCA and reclamation of all surface disturbance would be required. All reclamation and restoration efforts would prioritize the avoidance and minimization of noxious weed establishment and to accelerate the restoration of GUSG habitat functioning. Management actions for invasive species under all other action alternatives would not be required under Alternative E. Under Alternative E, the effects to the potential for noxious weed introduction and spread within the Gunnison Basin would be similar to those described under Alternative D but would not extend to the other population areas.

Table 3.7.10 presents acres of surface disturbance restrictions in GUSG habitats under Alternative E.

Table 3.7.10. Surface Disturbance Restrictions (acres) within GUSG Habitat, by Population Area under Alternative E

Acres of Surface Disturbance Restrictions by Resource Use	OHMA		UHMA	
	Acres	%	Acres	%
Closed to Fluid Mineral Leasing	0	0	0	0
Closed to Locatable Mineral Entry	25,250	5	12,730	3
Recommended Closed to Locatable Mineral Entry	69,100	12	1,410	<1
Closed to Salable Mineral Entry	372,590	67	0	0
Closed to Non-energy Solid Leasable Minerals	372,590	67	0	0
Lands and Realty ROW Avoidance	291,980	75	0	0
Lands and Realty ROW Exclusion	0	0	0	0
Renewable Energy Wind Avoidance	0	0	62,280	24
Renewable Energy Wind Exclusion	291,980	75	0	0
Renewable Energy Solar Avoidance	0	0	62,280	24
Renewable Energy Solar Exclusion	291,980	75	0	0

3.7.2.4 Conclusion

Management actions and allocations under each action alternative would negatively affect the potential for invasive plant introduction and spread within the decision area. Alternative A (No Action) would maintain the current management of vegetation communities, noxious weeds,

and invasive plant species in the decision area. Alternative B would apply the most restrictive management of surface-disturbing activities within the decision area and would result in the greatest reduction of potential for further spread of noxious weeds on BLM-administered lands. Under Alternative B1, livestock grazing would be phased out over time, thereby removing the ability of the BLM to utilize grazing as a vegetation management tool. Alternative B2 would make OHMA unavailable for livestock grazing between March 1 and July 15. Under Alternative C, livestock grazing in OHMA and UHMA would continue to be authorized. Management actions proposed under Alternative D are generally the same as those under Alternative C and Alternative B2. Under Alternative E, actions from the GUSG CCA, Sections 5.4 and 4.2, would be implemented.

3.7.2.5 Cumulative Effects

The cumulative effects analysis area for vegetation resources is defined as the planning area and the timeframe for the analysis is the life of this RMP amendment.

Past, present, and reasonably foreseeable future actions and conditions in the analysis area have affected and are likely to continue to affect existing vegetation communities that compose GUSG habitat, including residential development, mineral exploration, industrial development (e.g., powerlines or ROWs), grazing, recreation, road construction, fires, land planning, vegetation treatments, and drought. With the exception of vegetation treatments, these actions have adversely modified vegetation conditions in the analysis area and likely have improved conditions that provide noxious weeds opportunity to proliferate within the planning area. Under the action alternatives, effects on vegetation would be reduced compared to Alternative A through the application of surface use restrictions; timing limitations; closures to development, recreation, and motorized travel; conditions of approval for development; and monitoring. These restrictions would reduce the likelihood of further noxious weed infestation and spread.

3.7.3. Issue 2: How would climate change affect the introduction and spread of invasive plant species?

3.7.3.1 Analytical Methods and Assumptions

Indicators

- Shifts in native and non-native species distributions
- Increased non-native plant species infestations
- Reduced resiliency of native plant populations

Assumptions

- The effects of climate change, including drought, would affect the introduction and spread of invasive plant species.
- Generalizations about the impacts of climate change on invasive plant species can be derived from available research.

3.7.3.2 Affected Environment

The potential effects of climate change, including shifts in species distribution, abundance, and phenology, have been widely documented across ecosystems and are predicted to intensify (Parmesan and Yohe 2003; Parmesan 2006; Urban 2015). Cheatgrass invasion has occurred across 22.7 million hectares that were once dominated by native perennials, and it is expected to continue expansion as climate and disturbance regimes change and more areas are disturbed by fire and human impacts (Boyte et al. 2016; Bradley 2009; Smith et al. 2022).

3.7.3.3 Environmental Consequences

Climate change over the past century has altered vegetation community composition and species distributions across rangelands in the western United States. In general, models predict an increase in shrub cover, bare ground, and annual herbaceous cover (e.g., annual grasses such as cheatgrass) and a decrease in sagebrush cover and perennial grass cover. Conditions would likely favor shrub species that are suited to drier and hotter conditions, such as greasewood (*Sarcobatus vermiculatus*) or rabbitbrush (*Chrysothamnus* sp.). Sagebrush is well adapted to semiarid conditions throughout its range and can withstand small fluctuations in temperature and available water. However, projected changes to water availability and timing are likely to result in the reduction of recruitment and survival of sagebrush seedlings and corresponding reduction in sagebrush cover (Rigge et al. 2021).

An increase in exposed soil during part or all of the growing cycle could potentially favor invasive plant species as annual grasses (cheatgrass) is especially efficient at colonizing bare spaces between perennial native grasses and forbs. Hotter and drier conditions predicted from climate change models are projected to cause plant stress, and associated plant death, changes in plant composition to more drought-tolerant species, and trigger plant community changes (Bryce et al. 2012). In cool sites, some degree of warming to growing season maximum temperature or nongrowing season minimum temperature could be beneficial to sagebrush and shrub growth. Warming nongrowing season maximum temperature is beneficial to shrubs, but not to sagebrush growth (Rigge et al. 2021).

Exotic annual plant species began invading western rangelands over a century ago (Mack 1981) and their continued spread shows little evidence of slowing (Smith et al. 2022). Recent climate change modeling of vegetative conditions across BLM-administered lands completed by Kleinhesselink et al. (2022) identified substantial predicted increases in cover and production of

annual grasses across the western United States and a corresponding reduction in perennial grasses and forbs. These anticipated changes in vegetation community composition may have wide ranging consequences for sagebrush steppe and other native vegetation communities within the decision area as perennial grasses and forbs are considered to play a central role in forage production, carbon storage, and overall biodiversity of a system. The effects of ongoing climate change, specifically regional warming, may be facilitating the invasion of exotic annuals into higher elevations and cooler cli- mates (Compagnoni and Adler 2014 ; Blumenthal et al. 2016; Smith et al. 2022).

The acreage of surface disturbance restrictions within GUSG habitats, by population area are analyzed for each alternative above under Issue 1. These restrictions would be expected to be refined or revised using Adaptive Management strategies if conditions change due to drought or climate change. Under all action alternatives, monitoring plans and adaptive management measures would be developed for all areas of surface disturbances as prescribed in Vegetation Management Action 3. Adaptive management includes applying integrated weed management measures and modifying initial treatment plans based upon site specific monitoring results. Adaptive actions could include but are not limited to temporary or seasonal closures of areas currently in restoration and revegetation status to recreational activity, altering seed mixes based upon site soil and hydrology conditions, modifying noxious weed treatment approaches to best address site specific conditions, and modifying livestock grazing permits to account for observed effects of grazing activity during drought conditions to support progress toward a site achieving GUSG habitat guidelines.

The acreage of surface disturbance restrictions within GUSG habitats, by population area are analyzed for each alternative above under Issue 1. These restrictions would be expected to be refined or revised using Adaptive Management strategies if conditions change due to drought or climate change.

Effects Common to All Alternatives

All of the action alternatives would involve greater restrictions on surface disturbances and disruption to GUSG and their habitat, resulting in reduced potential for introduction and spread of non-native and noxious weed species. All climate model projections indicate that annual average temperatures would increase over time within the decision area and that extreme weather events including drought and flooding are likely to become more widespread and of increased intensity. It is likely that modeled outcomes predicting that exotic annual grasses would continue to reduce bare ground, fuel more frequent and severe wildfires, and ultimately drive losses of cover of sagebrush and other shrubs regardless of the selected action alternative (Chambers et al. 2014; Coates et al. 2016). Section 3.6.3 presents further detail regarding the anticipated short and long-term effects of climate change on vegetation communities within the decision area.

Alternative A – (No Action – Current Management)

Under Alternative A, management of noxious weed species to avoid and minimize introductions to areas of GUSG habitat would remain as prescribed under the existing RMPs across the decision area regardless of observed short term shifts in climate.

Action Alternatives

Under Alternative B, the BLM would prioritize removing identified threats within occupied and unoccupied habitat and reducing impacts within the decision area which includes the 4-mile buffer around habitat, and potential linkage-connectivity areas, to the maximum extent allowable. This alternative would result in the greatest reduction of potential for the introduction and spread of noxious weeds within the decision area due to the restrictions placed upon surface disturbance, the designation of an ACEC encompassing all GUSG habitat, and restrictions on livestock grazing. The overarching result of the management actions under Alternative B are anticipated to result in native vegetation communities within the decision area that are more resistant and resilient to the potential effects of climate change. Regardless of land use allocations and policy, the anticipated effects of climate change are likely to result in conditions within the decision area increasingly favorable to noxious weed introductions. Therefore, the more restrictive land use allocations under Alternative B are anticipated to result in a reduction of potential for noxious weed introductions in comparison to the No Action Alternative and the other action alternatives.

Under Alternative C, surface-disturbing activities would be allowed in GUSG habitat if the effects of an action could be avoided minimized or mitigated through compensatory mitigation. This alternative would likely result in increased propensity for noxious weed species to further spread through the decision area in comparison to Alternative B. Under Alternative C, the increased potential for surface disturbance is likely to result in native vegetation communities less resistant and resilient to the effects of climate change and therefore more at risk of increasing potential for noxious weed introduction as the effects of climate change advance and become more severe over time. These two factors when combined may potentially result in a substantial increase of the risk of noxious weed introductions in comparison to the other action alternatives.

Under Alternative D, surface disturbing actions would continue to be allowed in GUSG habitat areas although the BLM would apply a balanced approach to allocating resource uses. Direct management of invasive plant species under Alternative D would be the same as under Alternative B with the exception that chemical treatments could be applied using boom or aerial sprayers. This could result in more effective application of chemical herbicide to infested areas although the potential for overspray of herbicide could be increased through using these application methods. Under Alternative D, the increased potential for surface disturbance is likely to result in native vegetation communities less resistant and resilient to the effects of climate change and therefore more at risk of increasing potential for noxious weed

introduction as the effects of climate change advance and become more severe over time. The use of boom and aerial sprayers to apply chemical herbicide is anticipated to improve the ability for management and eradication of large noxious weed infestations within the decision area. It is difficult to predict if this effect would offset the effects of continued surface disturbance in the decision area upon the potential for future noxious weed introductions. Under Alternative D, the increased potential for surface disturbance is likely to result in native vegetation communities less resistant and resilient to the effects of climate change and therefore more at risk of increasing potential for noxious weed introduction as the effects of climate change advance and become more severe over time.

Direct management actions under alternative E would follow integrated weed prevention practices for all construction and maintenance activity as outlined in Appendix A of the Gunnison Sage-Grouse CCA and reclamation of all surface disturbance would be required. All reclamation and restoration efforts would prioritize the avoidance and minimization of noxious weed establishment and to accelerate the restoration of GUSG habitat functioning. Under Alternative E, the effects of management actions and climate change upon the potential for noxious weed introduction and spread within the Gunnison Basin population area would be similar to those described under Alternative D.

3.7.3.4 Conclusion

Management actions proposed under the action alternatives with regard to climate change may affect the introduction and spread of invasive plant species. Alternative A (No Action) would maintain the current management of vegetation communities, noxious weeds, and invasive plant species in the decision area. Current management in the existing RMPs does not include potential actions intended to address the effects of climate change on the spread of non-native plants and noxious weeds.

Alternative B would have the greatest reduction potential for the introduction and spread of noxious weeds, resulting in native vegetation being more resistant and resilient to the effects of climate change. While Alternatives C, D, and E have different approaches to noxious weed control and prevention, outcomes of these strategies would allow for increased surface disturbance in GUSG habitat, resulting in the spread of noxious weeds and decreased resistance and resilience of native vegetation to the effects of climate change. These effects may be offset by adaptive management actions intended to increase the resiliency of native vegetation communities and therefore reduce the potential for the spread of non-native plant and noxious weeds.

3.7.3.5 Cumulative Effects

The cumulative effects analysis area for vegetation resources is defined as the planning area and the timeframe for the analysis is the life of this RMP amendment.

Climate change within the cumulative effects analysis area could cause an increase in temperatures and variations in precipitation that could affect soil conditions, vegetative health, and water availability. Such changes would alter the conditions to which vegetative communities are adapted, potentially creating conditions that favor noxious weed introduction. Modeling projections discussed in Section 3.6.3.2, *Projected Shifts in Sagebrush Communities within the Decision Area*, indicate that under 2050 climate scenarios annual herbaceous landcover could be substantially reduced in comparison to current landcover acreages of noxious weeds, including cheatgrass.

3.7.4. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is implemented. Management actions proposed under the action alternatives would result in reduction of threats to GUSG through implementation of management actions intended to reduce the potential for new and continued introduction and spread of noxious weeds within the decision area. Application of site-specific mitigation measures during site-scale implementation actions would avoid removal of and adverse effects on sagebrush, riparian, wetland and other native vegetation communities that result in opportunity for the proliferation of noxious weeds. There would be no unavoidable adverse effects to noxious weed management under the action alternatives.

3.7.5. Relationship of Short-Term Uses and Long-Term Productivity

Short-term impacts would occur over the alternative implementation period, depending on the availability of funding. Long-term productivity is defined as the consequences of implementing the alternatives, both adverse and beneficial, that would occur. Seasonal limitations placed on livestock grazing under Alternatives B2, C, and D have potential for short-term adverse effects on noxious week management in GUSG habitats. Long-term productivity of native vegetation communities would be improved under Alternatives B2, C, D, and E because management actions would be implemented to improve rangeland and livestock management, while improving GUSG habitat and population viability.

3.7.6. Irreversible and Irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources refers to effects on or losses to resources that cannot be recovered or reversed. Under Alternative B1 and B2, livestock grazing would be restricted within OHMA habitat. The restriction of livestock grazing would

represent an irretrievable commitment of annual and seasonal grazing activity the BLM currently uses as a tool for vegetation management. None of the remaining action alternatives would result in an irreversible or irretrievable commitment of resources.

3.8. LANDS WITH WILDERNESS CHARACTERISTICS

3.8.1. Introduction

Wilderness characteristics are considered a resource or value of BLM-administered lands. Managing the wilderness resource is part of BLM's multiple use mission. Section 201 of FLPMA requires the BLM to inventory BLM-administered lands for wilderness characteristics based on size, naturalness, outstanding opportunities for either solitude or primitive and unconfined type of recreation, and supplemental values. Policy guidance is provided by BLM Manual 6310, Conducting Wilderness Characteristics Inventory on BLM Lands (BLM 2021a) and Manual 6320, Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process (BLM 2021b).

Per policy, the BLM will conduct wilderness characteristics inventories as a part of the NEPA analysis for any site-specific projects that have the potential to impact this resource. This applies to both: areas that have been identified as having lands with wilderness characteristics and not yet considered by RMP; and in areas identified as having wilderness characteristics and defined in Field Office RMP Decisions. There are three basic categories on how lands with wilderness characteristics can be managed once that decision is made:

1) Allowing for other multiple uses in an area while not protecting wilderness characteristics;
2) Minimize impacts to wilderness characteristics via management restrictions (e.g., terms and conditions of use or stipulations) while emphasizing other multiple uses; or
3) Protecting wilderness characteristics while providing for compatible multiple uses.

The purpose of and need for this RMP Amendment is limited to making land use planning decisions specific to the conservation of GUSG habitat. No decisions related to the management of lands with wilderness characteristics will be made as part of this planning effort. Any discussion related to lands with wilderness characteristics will be limited to the analysis of potential effects from the management action alternatives in this GUSG RMP.

3.8.2. Issue 1: How would management actions under each alternative affect lands managed as lands with wilderness characteristics and inventories that overlap habitat management areas?

3.8.2.1 Analytical Methods and Assumptions

- Analyze how alternatives affect lands managed as lands with wilderness characteristics, including:
    - Impacts to the size of units
    - Impacts to naturalness found
    - Impacts to solitude found
    - Impacts to primitive and unconfined recreation

3.8.2.2 Affected Environment

Table 3.8.1 identifies the number of acres within OHMA and UHMA GUSG habitat intersecting lands inventoried as lands with wilderness characteristics, by administrative unit. Lands are inventoried to determine if the area has the applicable characteristics. If areas are found to have lands with wilderness characteristics, they are documented as such. Then a decision is made in a Field Office RMP whether to manage the area for wilderness characteristics. There are lands managed for wilderness characteristics per a recent RMP decision in the decision area; however, these areas are outside of OHMA and UHMA. Lands within this RMP decision area that have been inventoried and those acres are shown in Table 3.8.1. Acres inventoried also include those that are managed through a Field Office Decision to protect or mitigate impacts to wilderness characteristics. Inventoried lands by administrative unit are further described in this section following the table. Areas managed for lands with wilderness characteristics and lands inventoried and found to have wilderness characteristics across the decision area are depicted on Map A.69 (Appendix A).

Table 3.8.1. Acres of Lands Inventoried and Lands Managed (RMP Designation) for Lands with Wilderness Characteristics by Administrative Unit

Administrative Unit	Total Acres of Lands Inventoried – Found to have Wilderness Character	Acres of OHMA of Lands Inventoried – Found to have Wilderness Character	Acres of UHMA of Lands Inventoried – Found to have Wilderness Character	Total Acres of Lands with Managed (RMP Designation)	Acres of OHMA of Lands with Managed (RMP Designation)	Acres of UHMA of Lands with Managed (RMP Designation)
Grand Junction Field Office**	83,690	7,150	26,040	27,810	170	9,010
Gunnison Field Office	83,550	233,280	23,500	0	0	0
Moab Field Office	46,230	0	1,870	10	0	0
Monticello Field Office	14,520	0	0	0	0	0
San Luis Valley Field Office	12,230	4,880	2,710	0	0	0
Tres Rios Field Office	122,130	1,330	9,120	64,830	1,330	1,080
Uncompahgre Field Office**	60,170	0	330	45,610	0	330
Grand Total	**422,520**	**62,930**	**52,230**	**138,260**	**1,500**	**10,420**

*If an administrative unit as part of this planning effort, is not listed, there are no acres within that unit.
**Part of these acres are within the Dominguez-Escalante NCA.

Dominguez-Escalante National Conservation Area

The Dominguez-Escalante NCA contains units that have been inventoried as lands with wilderness characteristics. These 6 units include a total of 0 acres OHMA and 5,600 acres of UHMA. The canyons in the area provide outstanding opportunities for solitude and recreation. The primary forms of recreation include hiking, hunting, and horseback riding. Escalante Canyon and the Dominguez Canyon Wilderness are in close proximity. Much of the area includes big horn sheep habitat; winter range for bald eagles, elk, mule deer, and pronghorn; habitat for the Colorado Hookless Cactus, Longnose Leopard Lizard, and Northern Leopard Frog (BLM 2012c, 2017).

Grand Junction Field Office

The Grand Junction Field Office contains eight units that have been inventoried as lands with wilderness characteristics. The steep-walled, frequently rugged, seldom visited terrain characterizes much of the lands with wilderness characteristics units in this Field Office. Hiking, backpacking, camping, sightseeing, photography, and studying nature are primitive and

unconfined activity opportunities considered outstanding within the inventory units. Supplemental values include paleo Indian cultural values, vegetation, wildlife, geological, scenic, ecological, and hydrological features (BLM 2012d). The BLM Grand Junction Field Office manages the following areas to protect lands with wilderness characteristics for outstanding solitude and other features: Unaweep, Maverick, and Bangs. However, these areas are outside of OHMA and UHMA for GUSG.

Gunnison Field Office

The Gunnison Field Office contains 19 units that have been inventoried as lands with wilderness characteristics. The area has a mixture of natural landscapes of rolling hills and densely wooded areas and some forms of human use including livestock grazing and mining. Some areas, especially units adjacent to the Powderhorn Wilderness, provide access to opportunities for solitude. The most common forms of recreation in this area include hiking, backpacking, hunting, fishing, rock-climbing, wildlife viewing and snowmobiling. Supplemental values include habitat for lynx, pronghorn, elk, mule deer, and sage grouse (BLM 2023).

Moab Field Office

The Moab Field Office contains seven units that have been inventoried as lands with wilderness characteristics. The area is largely natural with the exception of roads, uranium mining impacts, farm activity, oil and gas exploration, stock pond developments, and chainings. A large part of the area consists of deep, remote, and seldom-visited canyons. The canyon systems are isolated from each other and from the outside world. Opportunities for backpacking, hiking, photography, primitive hunting, and backcountry fishing are also outstanding. The deep canyons, perennial streams, and wide range of topography and vegetation all enhance opportunities for backcountry exploring. Supplemental values include habitat for elk, mule deer, mountain lion, black bear, varies raptor species, Colorado cutthroat trout, and several prehistorical cultural sites (BLM 1999, 2012a, 2012b).

Monticello Field Office

The Monticello Field Office contains four units that have been inventoried as lands with wilderness characteristics. The area has similar characteristics to the neighboring WSA, but with some human impacts including construction and chaining. Despite these human impacts, they would not likely significantly detract from the average visitor's sense of solitude. Considering the logical extension of the WSA, this area has enhanced opportunities for solitude and outdoor recreation. Common recreation in this area includes hiking, backpacking, horseback riding, sightseeing, photography, and cultural exploration. Supplemental values include permanent water sources (including Bug Canyon) and probable archaeological sites (BLM 2000).

San Luis Valley Field Office

The San Luis Valley Field Office contains two units that have been inventoried as lands with wilderness characteristics. The area includes livestock grazing and associated infrastructure–mainly fences, cattle guarded, and water tanks. Rolling hills and an abundance of vegetation–including juniper trees and sagebrush–allow for solitude throughout the region. There are opportunities for access via four-wheel drive roads, but all use is self-directed and requires basic backcountry travel and maps-reading or GPS skills. Other common recreation activities include backcountry camping, hunting (big and small game), and hiking. No supplemental values are noted for the area (BLM 2018a, 2018b).

Tres Rios Field Office

The Tres Rios Field Office contains 10 units that have been inventoried as lands with wilderness characteristics. The area is in natural condition with the exception of some human impact including two-track routes, retention dams, and mining debris. Having lands located adjacent to the Dolores River Canyon WSA and the McKenna Peak WSA, many units inherit opportunities for solitude, as well as opportunities for primitive and unconfined recreation. The area contains a variety of terrain including bowls, canyons, hills, and cliffs. Recreation activities include canyon exploration, hiking, boating, hunting, and nature study. The area contains supplemental values including geologic features of interest and Mexican spotted owl (endangered species) habitat (BLM 2011a, 2011b). The BLM Tres Rios Field Office manages to preserve wilderness characteristics present (BLM TRFO 2015) in Snaggletooth area of Dolores River (CO-030-30lb, 10,723 acres) and Coyote Wash (CO-030-290h, 1,144 acres); however, these areas do not overlap with OHMA and UHMA.

Uncompahgre Field Office

The Uncompahgre Field Office contains five units that have been inventoried as lands with wilderness characteristics. The area is natural in appearance with few signs of human-caused alterations to the natural landscape. Some of the human impacts include mechanical vegetative treatments (e.g., chaining, roller chopping) that are obvious to a casual observer, small structures, roads, dams/stock ponds at various levels of functionality, and burn scars. Vegetative and topographic screening provide outstanding opportunities for solitude throughout much of the area. With the high topographic relief, rugged terrain, and lack of vehicular access outstanding opportunities for solitude exist in this unit, the area provides excellent visual and aural screening. Primary recreation activities in the area include backpacking, day hiking, equestrian use, and hunting. The area provides important wildlife habitat connectivity between the higher elevation forested lands on the Uncompahgre Plateau at the south end of the unit and the lower elevation lands to the north (BLM 2012). Currently, the BLM Uncompahgre Field Office (UFO RMP 2020) manages 18,320 acres (Camel Back WSA Adjacent, Dry Creek Basin,

Roc Creek/Carpenter Ridge) to minimize impacts on wilderness characteristics, while managing for other uses; these areas occur outside OHMA and UHMA for GUSG.

Dominguez-Escalante National Conservation Area

The Dominguez-Escalante NCA contains six units that have been inventoried as lands with wilderness characteristics. The canyons in the Dominguez-Escalante NCA provide outstanding opportunities for solitude and recreation. The primary forms of recreation include hiking, hunting, and horseback riding. Escalante Canyon and the Dominguez Canyon Wilderness are in close proximity. Much of the area includes big horn sheep habitat; winter range for bald eagles, elk, mule deer, and pronghorn; habitat for the Colorado Hookless Cactus, Longnose Leopard Lizard, and Northern Leopard Frog (BLM 2012c, 2017).

Trends

Inventories for lands with wilderness characteristics have been ongoing by BLM since 1979. The inventory process has remained the same since its inception. FLPMA section 201 requires inventories to continue on BLM-administered lands, while BLM continues to implement management decisions. It is anticipated that inventories for lands with wilderness characteristics will continue as population growth continues to increase, contributing to increased pressure on public land.

3.8.2.3 Environmental Consequences

No new inventory or designation will be completed for this RMP. Although lands managed through a Field Office RMP decision as lands with wilderness characteristics are located within this RMP decision area, none of those acres overlap with proposed ACECs therefore they are not discussed in this section. However, there are management actions related to proposed ACECs within this RMP that could potentially affect lands with wilderness characteristics where these areas overlap.

Effects Common to All Alternatives

There are no effects common to all alternatives.

Alternative A (No Action – Current Management)

Table 3.8.2 shows acres of lands inventoried as lands with wilderness characteristics within proposed ACECs under each alternative. ACEC designations vary by alternative, therefore, the acres of land that have both an ACEC designation and lands identified in inventory as lands with wilderness characteristics changes by alternative. Areas where lands identified in inventory or managed as lands with wilderness characteristics and proposed ACECs overlap are lands where additional management actions would be in place to protect or mitigate the impacts to the

criteria for which lands managed as lands with wilderness characteristics are evaluated (e.g., size, naturalness, solitude, and primitive and unconfined recreation). Alternative A would maintain the existing ACECs and provide no new protections or benefits to lands managed as lands with wilderness characteristics.

Table 3.8.2. Acres of Lands Inventoried as Lands with Wilderness Characteristics within Proposed ACECs Across Alternatives

Administrative Unit*	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Gunnison Field Office	3,090	21,180	0	30,480	3,090
Grand Junction Field Office**	1,820	1,820	0	1,820	0
Tres Rios Field Office	0	23,550	0	0	0
Total	**6,970**	**151,140**	**0**	**32,800**	**3,090**
Surface lands within GUSG OHMA and UHMA ACEC (GJFO, GFO, MOAB FO, SLVFO, TRFO, UFO)***	0	110,200	0	0	0
GUSG satellite populations habitat ACEC (GJFO, MOAB FO, SLVFO, TRFO, UFO)***	0	53,430	0	0	0

**If an administrative unit as part of this planning effort, is not listed, there are no acres within that unit.
**Part of these acres are within the Dominguez-Escalante NCA.
***These two ACECs overlap multiple field offices and other ACEC designations listed in the table above.

Action Alternatives

Wilderness characteristics are primarily influenced by actions that affect the boundary or the size of the area, actions that impact the naturalness of the area, or activities that increase the sights and sounds of other visitors. Generally, actions that create surface disturbance or add man-made features degrade the naturalness of lands managed as lands with wilderness characteristics, as well as the setting for experiences of solitude and primitive recreation. Prohibiting surface-disturbing activities and new developments within lands managed as lands with wilderness characteristics would protect naturalness. Outstanding opportunities for solitude, or primitive and unconfined types of recreation are related to the human experience in an area. Public land visitors have outstanding opportunities for primitive and unconfined recreation when activities in the area are primarily through nonmotorized and nonmechanized means, where there are no or only minimal developed recreation facilities, and where there are few special regulations on recreation.

Lands managed as lands with wilderness characteristics within the decision area would be impacted based on management actions implemented for protection of GUSG and their habitat across alternatives. All action alternatives explore ways to reduce impacts to GUSG and their habitat. Protection of habitat would potentially lead to positive effects for wilderness characteristics including size, naturalness, outstanding opportunities for either solitude or a

primitive and unconfined type of recreation, and supplemental values. Alternative B would apply the most restrictive GUSG conservation measures available within the agency's jurisdiction and authority and therefore would result in the most benefit to lands managed as lands with wilderness characteristics. However, Alternatives C and D would implement management actions consistent with the values of wilderness characteristics in some areas (e.g., OHV Closed areas), subsequently providing a benefit to lands managed as lands with wilderness characteristics as well.

In addition, designation of ACECs and their associated management actions for the protection of the area's values while overlapping with lands with wilderness characteristics would have an effect on these lands. Alternative B, followed by Alternative D, proposes the most acres of ACECs that overlaps with areas currently inventoried for wilderness characteristics. The goals, standards and objectives for ACECs as well as general management practices and uses, including necessary constraints and mitigation measures align with protection of land identified as having wilderness characteristics. Considering this, the overall effect would be positive and alternatives with a higher number of ACEC proposed acreage would benefit lands managed for wilderness characteristics. In either case, with added protection for GUSG habitat and further protections from designation of an ACEC, Alternative B would offer the most benefit followed by Alternative D.

3.8.2.4 Conclusion

No new management actions, or changes to inventory related to lands managed as lands with wilderness characteristics and inventories that overlap habitat management areas, will occur in this RMP Decision. Considering that the action alternatives reduce effects to GUSG and protect their habitat, these protections inherently align with mitigation measures that protect lands with wilderness characteristics. Alternative B, being the most protective of surface distributing activities and proposed the largest acreages of ACECs that overlap with inventoried lands with wilderness characteristics, would have the largest beneficial impact, followed by Alternative D and then Alternative A.

3.8.2.5 Cumulative Effects

The area used to analyze cumulative effects on lands managed for wilderness characteristics is the planning area.

There are no new management actions related to lands managed as lands with wilderness characteristics and inventories that overlap habitat management areas. However, designation of ACECs and their associated management actions would have a positive impact on lands inventoried or managed as lands with wilderness characteristics.

3.8.3. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is implemented. Although they are generally more evident during the implementation phase of planning, there are some unavoidable adverse effects that can be assessed through this RMP Amendment/EIS. Management actions aimed at protecting a certain resource may have unavoidable adverse effects on other resources in the planning area.

There are no new unavoidable adverse effects related to lands managed as lands with wilderness characteristics considering that there are no new management actions related to the topic.

3.8.4. Relationship of Short-term Uses and Long-term Productivity

Section 102(2)(C)(iv) of NEPA requires a discussion of the relationship of short-term local uses of the environment and the maintenance and enhancement of long-term productivity of resources. For this RMP Amendment/EIS, "short-term" is defined as occurring only during or immediately after implementation and "long-term" as occurring for an extended period after implementation (several years or more).

Given that there are no new management actions related to lands managed as lands with wilderness characteristics and inventories that overlap habitat management areas, lands managed as lands with wilderness characteristics would continue to be used in the same ways in the short term that they are currently being used. Long term productivity of the lands managed as lands with wilderness characteristics would also remain the same.

3.8.5. Irreversible and Irretrievable Commitment of Resources

CEQ and NEPA regulations require that the discussion of environmental consequences include a description of "any irreversible or irretrievable commitment of resources which would be involved in the proposal should it be implemented" (40 CFR 1502.16). An *irretrievable* commitment of resources in one that results in the loss of resources for a certain period of time. For example, the construction of a road would result in a loss of livestock or wildlife forage for as long as the road remains. An *irreversible* commitment of resources is one that results in the permanent loss of those resources. This can occur, for example, when the production of oil and gas depletes nonrenewable resources in the planning area. The BLM requires BMPs, reclamation, and mitigation to reduce the magnitude and scope of irretrievable and irreversible resource impacts of actions taken or authorized by the agency.

3.9. WILDLAND FIRE ECOLOGY AND MANAGEMENT

3.9.1. Introduction

Increased wildland fire severity, frequency, and extent threaten GUSG habitat by increasing the potential conversion of sagebrush ecosystems to monocultures of invasive species that in turn provide more fuel for fire and therefore a higher likelihood of future fire spread (Dudley et al. 2021). While wildfires are positively correlated with increased human activity, fire activity can be increased or decreased with effective management (Bowman et al. 2011). This analysis assumes the management actions outlined in Chapter 2, Table 2.3, which allow for the increase of the number and distribution of developments and people across the landscape will increase the opportunities for wildland fire ignition. Consistent with this assumption, alternatives that close routes and restrict surface disturbance will be considered to reduce opportunities for unplanned ignition.

3.9.2. Issue 1: How would vegetation management and treatments under each alternative affect wildland fire ecology and management?

3.9.2.1 Analytical Methods and Assumptions

Indicators

Assess amount of land burned by wildland fire in terms of acreages and percentages of BLM surface burned in occupied and unoccupied GUSG habitat.

- Evaluate frequency of wildland fire based on average annual numbers of wildland fire and origin (unplanned ignitions) to evaluate opportunities for ignition.
- Evaluate amount of land burned by wildland fires (acres burned).
- Evaluate Vegetation Condition Class (VCC) to determine fuel condition.

Assumptions

- Fire is an important natural disturbance in many of the ecological systems found in the region.
- Increased fire severity and extent threaten GUSG habitat by converting sagebrush ecosystems to monocultures of invasive species that in turn provide more fuel for fire and therefore a higher likelihood of future fire spread (Dudley et al. 2021).
- Unplanned ignition opportunities are positively correlated with increased human activity.

- Fire activity can be increased or decreased with effective management (Bowman et al. 2011).

3.9.2.2 Affected Environment

Historical Fire Regime

Literature suggests that wildland fires in the North American sagebrush biome prior to European settlement around 1850 were caused by both lightning and by Native Americans. Peak fire season occurred between April and October and varied geographically. The fires that burned the greatest acreage were often high-severity but the vast majority of fires were low to moderate severity. Left unchecked, fires burned for the entire season and resulted in mosaic of severities. Fire frequency estimates range from decades to centuries, depending on the applicable scale, methods used, and metrics calculated but frequency is generally influenced by site characteristics. Because mountain big sagebrush communities occur over a productivity gradient driven by soil moisture and temperature regimes, fire regimes likely varied across this same gradient, with more frequent fire on more productive sites that supported more continuous fine fuels. Sites dominated by mountain big sagebrush burned more frequently than sites dominated by Wyoming big sagebrush, because the former tend to produce more fine fuels. Mountain big sagebrush communities adjacent to fire-prone forest types may have had more frequent fires than those adjacent to less fire-prone types and those farther from forests and woodlands. Most fires were likely small (less than approximately 1,200 acres), and large fires (more than 24,000 acres) were infrequent. Historically, large fires in big sagebrush most likely occurred after one or more relatively wet years or seasons that favored growth of associated grasses, allowing fine fuels to accumulate and become more continuous (Innes and Zouhar 2018).

Since European-American settlement, fuel and fire regime characteristics in many big sagebrush communities have shifted outside the range of historical variation. Settlement generally began in the mid-1800s and caused changes in ignition patterns and fuel characteristics, although the timing and magnitude of these changes varied among locations. Since then, fuels and fire regimes in many sagebrush ecosystems have changed due to a combination of interrelated factors, including land development for agriculture and energy, urbanization and infrastructure development, proliferation of non-native invasive plants, woodland expansion, overgrazing by livestock, fire exclusion, exclusion of indigenous burning and climate changes. Since 1980, the number of fires each year and total annual area burned have increased in the sagebrush biome (Innes and Zouhar 2018). However, in most mountain big sagebrush communities, available data suggest that fire frequency has either not changed or has been reduced, with the exception of an area in the Colorado Plateaus ecoregion where fire frequency may have increased due to frequent prescribed burning (Innes and Zouhar 2018).

Importance of Fire in Sagebrush Ecosystems

Fire is one of many natural disturbances that occur historically in sagebrush ecosystems. It is important for preventing conifer establishment and maintaining shrub and perennial grass dominance, especially in communities that are relatively moist and occur near woodlands and forests. However, the adaptation of sagebrush to fire is not fully concluded and is likely based upon site specific conditions. Some researchers suggest that sagebrush is poorly adapted to frequent fire, based on its inability to survive burning, lack of sprouting ability, and slow postfire recovery. Others state that sagebrush is well adapted to fire based on its ability to establish quickly from seeds, grow rapidly, reach reproductive maturity at a young age, and recover to pre-fire abundance soon after fire. These different conclusions about sagebrush's postfire recovery time are driven by a number of interacting factors, and it can thereby be concluded that sagebrush adaptation to fire is highly variable (Innes and Zouhar 2018) and departure of fire frequency and intensity from local norms.

Invasive Species: Cheatgrass

Invasive species such as cheatgrass are discussed more thoroughly in Section 3.7, *Noxious Weeds and Invasive Species*. Fire is a primary threat to GUSG populations where increasing exotic annual grasses, primarily cheatgrass, are resulting in sagebrush loss and degradation (Miller et al. 2011). Cheatgrass can more easily invade and create its own positive feedback loop in areas that are dry, with the understory vegetation cover that is not substantial, or where surface-disturbing activities (e.g., road construction) take place. It can facilitate short fire-return intervals by outcompeting native herbaceous vegetation with early germination, early moisture and nutrient uptake, prolific seed production, and early senescence (Hulbert 1955; Mack and Pyke 1983; Pellant 1996). Furthermore, by providing a dry, fine fuel source during the peak of fire season, cheatgrass increases the likelihood of fire and thus increases the likelihood of further cheatgrass spread (Pellant 1990). Without fire, cheatgrass dominance can prevent sagebrush seedlings from establishing, though the presence of cheatgrass is attributed to larger and more frequent fires in the Great Basin (Balch et al. 2013). With fire, areas can be converted to annual grasslands. Without shrubs and a diversity of grasses and forbs, such annual grasslands will not support GRSG, and populations could be displaced or extirpated.

Recent Fire History in Sagebrush Ecosystems

The increase of wildland fire frequency and size in the Great Basin over the last few decades has taken a toll on sagebrush. As more fires burn, the native sagebrush-steppe ecosystem is being replaced by annual invasive species, primarily cheatgrass, which dominates up to 100 million acres in the west (NIFC 2023). As sagebrush cover has decreased, GUSG populations have plunged. This is because in the winter, sagebrush leaves are often the sole source of forage and nutrition for GUSG. Sagebrush also provides cover and thermal protection from the harsh

elements. The GUSG is a sagebrush obligate species and is entirely dependent on access to healthy stands of sagebrush.

Ecosystem Existing Conditions

Table 3.9.1 and Table 3.9.2 identify the wildland fire management indicators on BLM-administered land in occupied habitat, unoccupied habitat, and non-habitat areas.

VCC is a categorization of vegetation composition and structure conditions that currently exist inside Fire Regime Groups. It is a simple categorization of the associated Vegetation Departure (VDep) and is a derivative of the VDep layer (LANDFIRE 2022). VCC across BLM surface in occupied and unoccupied habitat indicates the amount that current vegetation has departed from the simulated historical vegetation reference conditions. VCC is calculated based on changes to species composition, structural stage, and canopy closure. Three condition classes describe low departure (VCC 1), moderate departure (VCC 2), and high departure (VCC 3). This information is interpreted here as an indicator of potential areas where vegetation communities have not burned at their natural rates or severities. However, it only represents an approximate picture of fuel conditions and imbalances.

Currently, 80.7% of occupied habitat is categorized in VCC 2, where vegetation has been moderately altered from historic conditions, (as shown in Table 3.9.1). VCC 2 also dominates unoccupied habitat (71.9%) (Table 3.9.2). This data suggests that vegetation and fuels have been altered from historic conditions across most of the landscape, and this situation is mirrored throughout the different population areas as well (apart from the Poncha Pass population, in which most of the vegetation remains in VCC class 1). The VCC data implies that most of the vegetation and therefore the fuels condition on BLM surface in occupied and unoccupied habitat is being affected by altered natural disturbance regimes, which may affect future fire behavior.

Existing RMPs state that management units focus on suppression of wildland fires with emphasis on protecting human safety and property first, and resource values as a secondary goal. Cost is also an important factor in fire suppression. Additional fire program components include prescribed fire, fuel reduction, and managed fire for habitat or ecological benefit. Fire management is guided by RMPs and activity-level Fire Management Plans. These plans may include desired future condition objectives for both fuels and fire. Fuels management is a priority in areas of wildland-urban interface. Several existing fire management plans already contain measures to protect or enhance GUSG habitat. Current management for each of the RMPs in the planning area is outlined in Appendix B, *Detailed Alternative A, No Action Alternative*.

Table 3.9.1. Wildland Fire Management Indicators on BLM-administered Land in Occupied GUSG Habitat

GUSG Population Area	Land Burned by Wildland Fires (acres)	% of Population Area Habitat Burned	VCC Class 1 (%)	VCC Class 2 (%)	VCC Class 3 (%)
Rangewide Occupied Habitat	920	2.9	7.2	51.9	0.4
Cerro Summit-Cimarron-Sims Mesa	0	0	7.8	10.3	0.1
Crawford	0	0	30.9	37.1	0.0
Dove Creek	0	0	2.0	7.7	0.0
Gunnison	37	0.05	5.6	75.5	0.6
Monticello, UT	0	0	0.1	52.1	8.8
Piñon Mesa	860	1.26	45.3	10.9	0.0
Poncha Pass	21	0.07	34.8	15.7	0.0
San Miguel Basin	0	0	1.7	60.0	0.1

Source: USDA 2023; LANDFIRE 2022

Table 3.9.2. Wildland Fire Management Indicators on BLM-administered Land in Unoccupied GUSG Habitat

GUSG Population Area	Land Burned by Wildland Fires (acres)	% of Population Area Habitat Burned	VCC Class 1 (%)	VCC Class 2 (%)	VCC Class 3 (%)
Rangewide Unoccupied Habitat	490	1.6	6.6	31.2	0.8
Cerro Summit-Cimarron-Sims Mesa	11	0.01	8.9	69.8	0.0
Crawford	130	0.05	6.8	23.4	0.0
Dove Creek	130	0.07	12.1	76.3	0.1
Gunnison	22	0.03	1.8	14.5	0.9
Monticello, UT	0	0	0.9	26.8	3.8
Piñon Mesa	180	0.09	11.7	67.2	1.7
Poncha Pass	0	0	42.8	3.4	0.0
San Miguel Basin	23	0.02	5.2	30.1	0.0

Source: USDA 2023; LANDFIRE 2022

Trends

On BLM-administered lands within occupied habitat and unoccupied habitat, drought and insect-killed trees have altered fuels and fuel loading, and increased the likelihood of fire over the short term but reduced it over the longer term (BLM 2005, 2006). Increasing development adjacent to BLM-administered lands has added to the wildland-urban interface and has made fire and fuels management more challenging (BLM 2010, 2011, 2013). Increased fuels and increased fuel continuity have resulted from weed invasion in some portions of BLM surface in occupied habitat and unoccupied habitat. Cheatgrass is of particular concern as it results in increased fire frequency and size. Fire behavior has also changed with areas of tree invasion into sagebrush

sites (BLM 2010, 2011, 2013). Fire suppression has led to increases in fuels (BLM 2006). Grazing has altered fine-fuel distribution and amounts and is thought to have affected the natural fire regime where cheatgrass is not prevalent by reducing fire frequency and size (Orr et al. 2022). All of these factors have combined to play a substantial role in determining the availability of sagebrush steppe communities and quality of GUSG habitat within the planning area.

3.9.2.3 Environmental Consequences

Effects Common to All Alternatives

There are no effects common to all alternatives.

Alternative A (No Action – Current Management)

Alternative A (No Action) would continue current BLM management direction in the 11 RMP administrative units within the planning area resulting in an inconsistent approach across GUSG habitat. This may make areas more susceptible to wildland fire, as inconsistency in management and treatment would be difficult to implement across the planning area. Allowable uses and restrictions would remain unchanged. The BLM would continue to initiate informal or formal consultation with the USFWS, through biological assessments and biological opinions, for individual authorizations that may directly or indirectly affect the GUSG or their habitat. Emergency stabilization and rehabilitation procedures, fuel management, and fire operations are outlined for all administrative units in the alternatives tables.

Action Alternatives

Alternative B would apply the most restrictive GUSG conservation measures available within the agency's jurisdiction and authority. Under Alternative B, the BLM would prioritize removing identified threats within occupied and unoccupied habitat and reducing impacts within the decision area, which includes the 4-mile buffer around habitat, and potential linkage-connectivity areas, to the maximum extent allowable. This proposed management and treatment would require the greatest resources and therefore higher costs when compared to Alternatives A, D, and E. While the prioritization of proactively removing threats would reduce the potential for wildland fire spread and severity, the focus on reducing impacts to GUSG within Alternative B would result in less effective implementation of threat removal.

In general, Alternative C follows the same wildland fire management actions for emergency stabilization and rehabilitation as those found in Alternative B except that it does not consider livestock grazing as an exclusion from burned areas until woody and herbaceous plants achieve GUSG habitat guidelines (Management Action 4). There is no direction on livestock grazing in burned areas in Alternative C; therefore, it can be assumed that livestock grazing would be allowed in burned areas, not allowing vegetation to recover fully and negatively impacting

GUSG habitat when compared to Alternative B. However, the use of livestock grazing could be strategically utilized in some areas to reduce fine fuels and thereby reduce the potential for wildland fire spread.

Alternative D would achieve the purpose and need of the RMP Amendment by applying a balanced approach for allocating resource uses and conserving resource values while sustaining and enhancing ecological integrity across the planning area. Under Alternative D, conservation measures focus on occupied and unoccupied habitat and could extend to linkage-connectivity areas, based on the latest science, input from BLM specialists, and cooperating agencies, as appropriate. The focused approach under Alternative D would result in lower costs when compared to Alternatives B and C, but higher than those under Alternative A and E.

Alternative E considers adopting applicable management direction from the interagency CCA. Under Alternative E, wildland fire management would be the same as under Alternative D with the exception of Fuels management actions that follow the management outlined in Alternative B. This would result in lower costs when compared to all other action alternatives but higher costs when compared with Alternative A. Alternative E provides more protection than Alternatives A and C, but the management would only apply to the Gunnison Basin population. Management outside the basin would align with the No Action Alternative (Alternative A) and would be inconsistent across the planning area. This may make areas more susceptible to wildland fire, as inconsistency in management and treatment would be difficult to implement across the planning area.

Fire Operations

Fire Operations in Alternative B would prioritize firefighter and public safety and threats to real property immediately before fire suppression in OHMA and UHMA. The highest level of resources would be directed toward protecting real property that has a tangible cost associated with it. This approach would result in a higher probability of wildland fire spread as resources are focused on real property instead of fire suppression. Under Alternative B, GUSG habitat requirements would be considered equal with all other resource values at risk managed by the BLM. Alternatives B, C, D, and E provide the same management direction for fire operations and offer more protection to GUSG and their habitat when compared to Alternative A.

Emergency Stabilization and Rehabilitation

Emergency stabilization and rehabilitation following a fire is a crucial part of post-fire recovery. The process includes wildland fire suppression activity damage repair, burned area rehabilitation, and long-term restoration. Post-fire recovery and rehabilitation face several challenges. One of the challenges is the introduction of invasive species.

Management under Alternative B would prioritize the use of native seeds when available, especially those from the warmer component of the species' current range to account for climate change (Management Actions 1 and 3). However, if native seed availability is low,

nonnative seeds may be used as long as they meet *GUSG habitat guidelines*. Re-establishment of appropriate sagebrush species/subspecies and important understory plants, relative to site potential would be the highest priority for rehabilitation efforts. The long-term persistence of these seeded or pre-burn plants would be managed as described under Management Action 2. This management would provide greater protection for the ecosystem health for GUSG habitat when compared to Alternative A. Implementation and monitoring of guidelines associated with Alternative B would be more costly when compared with Alternative A. However, it would likely result in a more resilient ecosystem, benefiting management in the long term with greater resistance to disturbance events.

Livestock grazing would be excluded from burned areas until woody and herbaceous plants achieve GUSG habitat guidelines (Management Action 4). Because livestock grazing is allowed under Alternative C, management under Alternative B provides greater protection to GUSG habitat when compared to Alternative C.

Management under Alternative D would also prioritize the use of native seeds when available, especially those from the warmer component of the species' current range to account for climate change (Management Actions 1 and 3). However, if native seed availability is low, nonnative seeds may be used as long as they meet *GUSG habitat guidelines and vegetation guidelines*. The adaptive management approach may result in a healthier ecosystem overall with less management resources needed to meet stabilization/rehabilitation goals, but re-establishment of appropriate sagebrush species/subspecies and important understory plants is not considered in Alternative D and therefore GUSG habitat may deteriorate as a result. The long-term persistence of these seeded or pre-burn plants would be managed as described under Management Action 2. Livestock grazing would be excluded from burned areas for two full growing seasons unless vegetation recovery dictates otherwise under Alternative D (Management Action 4). Overall, Alternative D management for emergency stabilization and rehabilitation provides more protection than Alternatives A, C, and E, but less than Alternative B.

Fuels Management

Managing fuels involves reducing their availability to feed fire. This can be done through various practices such as prescribed fire, thinning, pruning, chipping, and mechanically removing fuels. Fuel management programs can also include creating fuel breaks, reducing fuel loads, and removing invasive species.

Fuels management under Alternative B provides greater restrictions within GUSG habitat than those outlined under Alternatives A, C, D, and E. This high level of preventative intervention would result in the highest cost; however, Alternative B allows for a flexible approach to management and allows for treatments to strategically occur within habitat. This would allow for protection of GUSG habitat from wildland fire, but also protect GUSG habitat from disturbance related to fuel management practices.

Alternative C would achieve the purpose and need of the RMP Amendment by minimizing, avoiding, or compensating for effects from resource uses and activities in occupied and unoccupied habitat. Under Alternative C, resource uses and other actions would be allowed if their impacts could be avoided, minimized, rectified, reduced/eliminated over time, or mitigated through compensatory mitigation.

This proposed management and treatment would face the highest costs when compared to all other alternatives, as it includes mitigation through compensatory means while providing similar levels of staff resource use as the other action alternatives. The allowance of multiple uses would likely negatively impact the ecosystem, resulting in more difficult wildland fire management. Unplanned ignitions would likely become more frequent with the higher use associated with Alternative C, increasing wildland fire occurrence.

The management actions under Alternative C would provide more protection to GUSG and their habitat when compared to Alternative A, but less protection to GUSG habitat when compared to Alternative B through the allowance of grazing in burned areas, which may make establishment of vegetation necessary for GUSG habitat difficult.

Alternative D primarily follows the management outlined in Alternative B but does not allow for a reduction in sagebrush canopy cover to less than 15 percent unless consultation with the State of Colorado, State of Utah, and USFWS direct management otherwise to conserve habitat quality (Management Action 5). The adaptive management applied here would allow for fuels reduction to conserve habitat quality after consultation with experts, which would potentially provide greater protection to GUSG and GUSG habitat when compared to Alternatives A, B, and C. Prescribed fire would only be allowed under Alternative D under specific circumstances (allowed in winter after NEPA analysis, in areas with greater than 12 inches of annual precipitation, and to meet specific objectives to protect GUSG habitat). Greater consultation prior to management implementation would result in higher costs associated with outreach efforts but would allow for effective management prescriptions to be made when deemed necessary after expert consultation. This may result in more effective wildland fire management.

Refer to Section 3.6, *Vegetation, Including Riparian Areas and Wetlands,* for guidelines specifically for native and non-native revegetation.

3.9.2.4 Conclusion

Some RMPs currently promote the use of native seed for stabilization and rehabilitation, but this guidance is not consistently applied across the decision area. Based on current levels of management and vegetation treatment, fires would likely continue to increase in size and frequency in GUSG habitats, and those habitats would continue to be degraded or lost. Small and heavily disturbed population areas with cheatgrass-invaded habitats would be particularly susceptible to these effects.

Alternatives B, C, D, and E would each result in a positive impact on the GUSG ecosystem's response to fire through implementation of emergency stabilization and rehabilitation procedures, more defined fuel management objectives, and fire operation strategies. However, management under Alternatives B and D contain specific strategies that would have the greatest impact on reducing wildland fire in areas of GUSG habitat due to the prioritization of fuels treatments and wildland fire suppression based on adaptive management principles when implementing techniques such as prescribed fire. Alternative D allows for the same management prescriptions overall as B, but with greater flexibility in adaptively managing ecosystems after consultation with agencies and analysis through NEPA.

3.9.2.5 Cumulative Effects

The cumulative effects analysis area for vegetation resources is defined as the planning area and the timeframe for the analysis is the life of this RMP Amendment.

Past and present management actions and natural events within the cumulative effects analysis area have altered the condition of vegetation and natural fire regimes across the landscape. These include fire suppression, vegetation treatments, grazing, noxious and invasive weed spread, and drought. In general, areas have become more prone to large intense fires over the short term, but long-term susceptibility for fires would decrease as areas within the planning area are burned.

Recreational activities and increased human development and urbanization in the cumulative effects analysis area are expected to increase, creating additional potential ignition sources and the probability of wildland fire occurrence. Of these two factors, urbanization, especially the expansion of residential areas, is expected to be the larger contributor to cumulative wildland fire impacts. Additional wildland-urban interface areas would increase the need for hazardous fuels projects to reduce the risk of wildland fire moving from BLM-administered land into residential areas. Increased wildland-urban interface can also increase costs associated with suppression and is more dangerous to firefighters and the public. Additional fire suppression resources could be needed, including Federal, State, and local agency resources. Prioritization of fuels treatments and suppression in these areas would result in fewer resources to address fuels treatments and suppression in GUSG Habitat.

Just as prioritization of fuels treatments and fire suppression in the wildland/urban interface would result in fewer resource to protect GUSG Habitat, the prioritization of fuel treatments and fire suppression in GUSG Habitat could cumulatively affect areas inside and outside of the cumulative effects analysis area by placing a lower priority on non-GUSG habitat areas. This prioritization could cause more fires in areas outside of occupied habitat and unoccupied habitat due to fewer fuels treatments and suppression efforts.

Changing land use patterns and increased recreation and visitation would also result in the modification of vegetation communities; both trends present new vectors for the introduction

of noxious weeds and nonnative vegetation species lacking adequate vegetative cover. These introduced species could eventually alter the fire regime of certain areas and potentially increase the frequency, size, and intensity of wildland fires.

3.9.3. Issue 2: How would climate change affect wildland fire ecology and management?

3.9.3.1 Analytical Methods and Assumptions

Indicators

- Assess conditions expected to occur due to climate change utilizing estimates for warming scenarios of 1.5 to 2 degrees Celsius (°C).
- Evaluate frequency of wildland fire during periods of drought and compare to HRV.
- Evaluate current management actions in response to climate change.
- Evaluate resilience of ecosystems.

Assumptions

- Climate change is expected to bring hotter, drier conditions, leading to a longer fire season and more frequent and intense fire over the long term (Archer and Predick 2008). Over the long term, as climate warms and vegetation successional changes continue to build up fuels, more acreage is likely to burn. Fire frequency is also expected to increase over current conditions.
- Adaptive management is necessary due to the variety of conditions and responses between various sagebrush ecosystems
- Chemical treatments are currently the only treatments for sagebrush ecosystems.

3.9.3.2 Affected Environment

Except in areas where mountains receive substantial mountain-induced precipitation, the climate of the Intermountain West—the region of the western United States where mountain big sagebrush communities occur—is semiarid (9.8–19.7 inches mean annual precipitation) north of 41 °N latitude and becomes increasingly arid (less than 9.8 inches mean annual precipitation) farther south. Seasonality of precipitation varies along a geographic gradient, with the importance of winter and spring Pacific frontal storms decreasing and summer convectional storms increasing from north to south and from west to east. Temperature extremes in the Intermountain West range substantially, from a January low of -40 °F (-40 °C) to a July high of 113 °F (45 °C). Wildland fires typically start during dry lightning storms in dry, hot summers but can also occur in wet years (Innes and Zouhar 2018).

Drought is a normal climate pattern that has occurred in varying degrees of length, severity, and size throughout history. However, Colorado's climate is undergoing significant change, with increasingly warmer temperatures in recent decades compared to longer-term averages (CSU 2023). Climate change has and will continue to impact the State's resources in a variety of ways, including more rapid snowmelt, longer and more severe droughts, and longer growing seasons (Colorado Energy Office 2015) According to a study on the intensity and extent of drought in Colorado from 1895 to 2007, changes in the climate were much less in winter than in summer, with the average decline in precipitation being 0.2 inches per decade (Ray et al. 2008). By early 2020, widespread drought conditions emerged across the Colorado River Basin, and over the 20-month period from January 2020 through August 2021, the basin experienced the driest 20-month period in over 100 years of record-keeping (McCoy et al. 2022). Most climate projections indicate that droughts and wildland fires will increase in frequency and severity in Colorado by 2050, mainly as a consequence of continued warming (CSU 2023).

Trends

Drought duration and intensity is expected to increase in the region due to climate change resulting in more frequent fires and a reduction in GUSG habitat. Drought and insect-killed trees have altered fuels and fuel loading, and increased the likelihood of fire over the short term but reduced it over the longer term. Increases in invasive annual grasses (cheatgrass) drastically increase the fire return interval in sagebrush habitat, resulting in a decrease in sagebrush habitat quantity and quality and a reduction in native vegetation.

Climate Change Effect on Ecosystem Disturbance

Climate change can increase the effects of disturbance such as drought, invasive species, and wildland fire. It is expected that the occurrence of these disturbance events such as these would increase in frequency and severity as a result of climate change.

Drought occurrence and severity would increase as temperatures rise, evaporation rates increase, leading to drier soil and less water available for plants and animals. This is in addition to expected reductions in snowpack coupled with early snowmelt resulting in water stress across the growing season (Rigge et al. 2021). This limited resource availability can have negative impacts on ecosystems as plant community composition changes. Fire seasons lengthen in these unplanned conditions when vegetation is dormant.

A study by Palmquist et al. (2021) found that climate change results in varying vegetation responses of sagebrush, grass, and forb communities dependent upon moisture and temperature. Specifically, these varying responses would result in a potential shift of the dominant functional types because of competition for limited resources. Invasive species such as cheatgrass may become more prevalent. Invasive species are discussed more thoroughly in Section 3.7, *Noxious Weeds and Invasive Species.*

During drought conditions, fuels for wildland fire can dry out and become more flammable. Drought can also increase the probability of ignition and the rate at which fire spreads (NOAA 2023). In addition, drought can limit post-fire sagebrush regeneration, which can have long-lasting effects on sagebrush ecosystems (USGS 2020). A few days of water scarcity during critical growth periods can dramatically limit post-fire sagebrush regeneration across the Great Basin (USGS 2020) Even small-scale water deficits after fire events create long-lasting impacts on sagebrush ecosystems as ecological drought during critical germination or emergence periods can cause sagebrush seedings to fail (O'Conner 2020).

Drought and cheatgrass invasion make restoring disturbed habitats following wildland fire challenging. Many areas are now burning once every five years or fewer due to cheatgrass invasion (Audubon 2023). Invasive cheatgrass can greatly increase the fire hazard on a site and change the natural fire return interval from 20 to 100 years for sagebrush grassland ecosystems to 3 to 5 years for cheatgrass-dominated sites (BLM 2003).

3.9.3.3 Environmental Consequences

As sagebrush habitat becomes warmer and drier, wildland fires in these areas would become more frequent and intense. Wildland fires destroy sagebrush habitat, which is essential for GUSG food, cover, and mating grounds. The loss of sagebrush habitat can also lead to a decline in the diversity of plant and animal species in the sagebrush steppe ecosystem. Prioritizing the protection and restoration of sagebrush habitat from wildland fire may minimize risks to the species.

The uncertainty of climate projections results from the imperfect knowledge of initial conditions such as sea surface temperatures, the levels of future anthropogenic emissions, and general system behavior (Bryce et al. 2012). Given the uncertainties associated with the impact of climate change on sagebrush habitats, as well as potential threats for fire, invasive species, and development activities in or near sagebrush ecosystems, management actions that are intended to improve, create, or re-establish healthy ecological conditions in various vegetation types benefit the fire and fuels program in the long term by promoting the most efficient use of fire management resources.

Effects Common to All Alternatives

There are no effects common to all alternatives.

Alternative A (No Action – Current Management)

Alternative A (No Action) would continue current BLM management direction in the 11 RMP administrative units in the planning area. Allowable uses and restrictions would remain unchanged. The BLM would continue to initiate informal or formal consultation with the

USFWS, through biological assessments and biological opinions, for individual authorizations that may directly or indirectly affect the GUSG or their habitat.

Alternative A would result in the least amount of protection for GUSG and their habitat in light of climate change when compared to Alternatives B, C, D, and E. Wildland fire ecology management and response in light of climate change is not outlined in any of the 11 RMP administrative units. Wildland fire, ecosystem resiliency, and frequency of fires would continue current trends.

Action Alternatives

Alternative B would apply the most restrictive GUSG conservation measures available within the agency's jurisdiction and authority. Under Alternative B, the BLM would prioritize removing identified threats within occupied and unoccupied habitat and reducing impacts within the decision area which includes the 4-mile buffer around habitat, and potential linkage-connectivity areas, to the maximum extent allowable.

Under Wildland Fire Management Action 3, Alternative B requires consideration of potential changes in climate (Miller et al. 2011) in OHMA and UHMA habitat when using native plant restoration seedings. Specifically, collections of native plants from the warmer component of the species' current range should be considered (Kramer and Havens 2009). Selecting native plants that are adapted to warmer conditions would aid in increasing the resiliency of the ecosystem.

Adaptive management strategies consider approaches that are flexible and/or temporary followed by monitoring effects and adapting future actions based on the observed results. Varying fire resilience between ecosystems within the plan area highlight the importance of implementing management strategies aimed at reducing the negative effects of wildland fires and restoring burned areas on a case-by-case basis. Adaptive management principles are found in the management actions.

Alternative C would achieve the purpose and need of the RMP Amendment by minimizing, avoiding, or compensating for impacts from resource uses and activities in occupied and unoccupied habitat. Under Alternative C, resource uses and other actions would be allowed if their impacts could be avoided, minimized, rectified, reduced/eliminated over time, or mitigated through compensatory mitigation. Alternative C climate change management for wildland fire is the same as Alternative B.

Alternative D would achieve the purpose and need of the RMP Amendment by applying a balanced approach for allocating resource uses and conserving resource values while sustaining and enhancing ecological integrity across the planning area. Under Alternative D, conservation measures focus on occupied and unoccupied habitat and could extend to linkage-connectivity areas, based on the latest science, input from BLM specialists, and cooperating agencies, as

appropriate. Alternative D climate change management for wildland fire is the same as Alternative B.

Alternative E considers adopting applicable management direction from the interagency CCA for the Gunnison Basin area only. Alternative E climate change management for wildland fire is the same as Alternative B.

3.9.3.4 Conclusion

Climate change would result in more severe and frequent disturbance events such as drought and wildland fire. This would result in the need for additional wildland fire management resources in the planning area. Management under each alternative would have little to no effect on climate change. However, management that maximizes the efficiency of resources and ecosystem resilience would help to diffuse the results of more frequent and severe disturbance expected to occur. When considering Fire Operation strategies, Alternatives B, D, and E consider temporary closures in accordance with 43 CFR 9212.2, which may result in fewer wildland fires, allowing management personnel to spend more time on preventative and rehabilitation efforts. While fuels management is similar across all alternatives, Alternative D (Preferred) offers the highest level of preventative efforts across the planning area by allowing prescribed fire and vegetation treatments to reduce severity and spread of wildland fire.

3.9.3.5 Cumulative Effects

The cumulative effects analysis area for vegetation resources is defined as the planning area and the timeframe for the analysis is the life of this RMP Amendment.

Past, present, and reasonably foreseeable future actions and conditions within the cumulative effects analysis area that have affected and would likely continue to affect wildland fire ecology and management are the creation of wildland-urban interface areas, fuels treatments, noxious weed infestation, and livestock grazing. Alternatives that include management actions that address these issues would likely aid in increasing the resiliency of the ecosystem in which they are applied. Resilient ecosystems can naturally withstand more intense disturbance events, such as drought and wildland fire, expected to occur as a result of climate change.

3.9.4. Unavoidable Adverse Effects

Management actions aimed at protecting a certain resource may have unavoidable adverse effects on other resources in the planning area. Under alternatives that require more resources to implement fire mitigation and prevention efforts in GUSG OHMA or UHMA would reduce wildland fire resources in the wildland/urban interface and vice versa.

3.9.5. Relationship of Short-term Uses and Long-term Productivity

Short-term local uses of the environment that affect wildland fire include recreation uses (Section 3.11, *Recreation*), OHV uses (Section 3.12, *Travel and Transportation*), and grazing uses (Section 3.10, *Livestock Grazing Management*). Increases in uses associated with recreation and OHV use generally increase the potential for wildland fire and necessity for wildland fire mitigation management. Land uses that increase travel within the decision area (Section 3.14, *Lands and Realty*) can also increase wildland fire through increased unplanned ignition opportunities which are positively correlated with increased human activity. This would result in additional resources necessary for management of wildland fires.

3.9.6. Irreversible and Irretrievable Commitment of Resources

Some management actions eliminate grazing entirely or rest areas from livestock grazing for a certain period of time following fire. This would result in an irretrievable commitment of resources due to the loss of livestock forage for as long as the restriction on grazing remains. It is important to note that this is not an irreversible commitment of resources as grazing can always be implemented in the future. No other irreversible or irretrievable commitment of resources exist under any of the alternatives.

3.10. LIVESTOCK GRAZING MANAGEMENT

3.10.1. Introduction

The primary laws that govern grazing on public lands are the Taylor Grazing Act of 1934, as amended, executive orders that implement the Bankhead-Jones Farm Tenant Act of 1937, the FLPMA, and the Public Rangelands Improvement Act of 1978. The BLM manages grazing lands under 43 CFR Part 4100 (version October 1, 2005) and BLM Handbooks 4100-4180, and it conducts grazing management practices through BLM Manual H-4120-1: Grazing Management (BLM 1987).

An allotment is a designated area or management unit that allows grazing and can be made up of multiple pastures. The permitted use of grazing allotments is usually based on allocated Animal Unit Months (AUMs), utilization rates, and season of use. An AUM is equal to the approximate amount of forage needed to sustain one cow, five sheep, or five goats for a month.

The BLM manages livestock grazing on 375,900 acres of public land within the decision area. The terms and conditions for grazing on BLM-administered lands are set forth in grazing permits and leases with permittees and lessees. These terms and conditions outline management of the allotment and may include quantifying allowable number of livestock and identifying the season of use. The BLM administers grazing permits and leases within the decision area across 269 allotments that are within or overlap with the decision area. Appendix Q, *Livestock Grazing Allotments in the Decision Area*, identifies the grazing allotments with acreage located within GUSG OHMA and UHMA by population area.

The BLM also administers 16 livestock grazing allotments which includes approximately 9,500 acres of NPS-administered lands within the Gunnison Basin and CSCSM populations. Management of these allotments is conducted under a General Agreement between the BLM Uncompahgre Field Office, BLM Gunnison Field Office, and the NPS Curecanti National Recreation Area that provides a framework for cooperation and coordination in administration of livestock grazing permits (NPS and BLM 2023). These allotments include:

- Gunnison Field Office
    1. North Cimmaron (350 acres)
    2. Windy Point (280 acres)
    3. Stevens Creek Common (240 acres)
    4. Sapinero Mesa (3,580 acres)
    5. Steuben Creek (5 acres)
    6. Big Willow (50 acres)

7. McIntosh Mountain (20 acres)
8. Blue Creek (220 acres)
9. Iola (2,880 acres)
10. Highway (2 acres)
11. Round Corral Creek (110 acres)
12. Pine Mesa (350 acres)
13. Round Corral Spring (170 acres)

- Uncompahgre Field Office
  1. Rawhide-Coffee Pot (110 acres)
  2. Spring Gulch (1,030 acres)
  3. Dead Horse Common (100 acres)

A grazing permit or lease is typically in place for a 10-year period and the terms and conditions are reevaluated during permit renewal.

BLM may allow permittees or lessees to construct range improvement structures to benefit distribution of livestock across the allotment on a case-by-case basis after site-specific analysis of potential effects. Range improvement structures (e.g., fences, wells, water pipelines) are generally permanent and are meant to improve livestock grazing management, watershed conditions, utilization, wildlife habitat, and other similar purposes. Implementation of non-structural improvements (vegetation treatments) to support and improve livestock grazing management are also likely to benefit other existing resources including wildlife habitat within the decision area.

Livestock grazing Standards and Guidelines for both Colorado and Utah were developed by the respective States in 1997 and have been implemented by the BLM in accordance with 43 CFR 4180.2 (see Appendix J, *BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado and Utah*). Management strategies for livestock grazing are focused on achieving land health standards and meeting objectives for other resources, such as vegetation and soils, as outlined in the rangeland health standards.

3.10.2. Issue 1: How would management actions under each alternative affect the acres available for livestock grazing and the associated acres of BLM-administered lands and AUMs of forage allocated for livestock grazing?

3.10.2.1 Analytical Methods and Assumptions

Indicators

- Active permitted AUMs within the decision area
- Acres within active livestock grazing allotments within the decision area

Assumptions

- The BLM will continue to adjust livestock management to be compatible with meeting the Colorado and Utah Land Health Standards.
- Structural range improvements that concentrate livestock use (e.g., water wells, troughs, catchments, and reservoirs) result in a localized loss of vegetation cover.
- Structural range improvements generally lead to improved livestock distribution and forage utilization. This helps to achieve long-term vegetation objectives. If structural range improvements are not developed, used, and maintained, the result would be a loss of livestock distribution capabilities, resulting in increased stress on native vegetation communities.
- Implementation of more intensive livestock management, season-of-use changes, class of livestock changes, modified grazing systems, removal of structural range improvements, or decreased AUMs may affect permittees by increasing their operational cost.
- All classes of livestock forage on herbaceous vegetation types in a shrubland/grassland community. Some livestock also utilize shrubs, which can be an important forage component during some seasons.
- Increases in shrubs, pinyon pine, or juniper generally reduce herbaceous forage production. Increases in perennial grasses and forbs generally result in increased forage production.
- Vegetation treatments (i.e., prescribed burns or weed control) can improve vegetation community composition and forage availability.
- Overutilization of forage by livestock can adversely affect vegetation community composition and ground cover.

- Placement of water sources can improve livestock distribution and areas without available water will have less use than areas with water.
- Vegetation near water is often utilized at higher rates by livestock and wildlife.
- Fences are important tools used to control areas, timing, and intensity of livestock use. Fences are generally necessary to confine grazing to within allotments, particularly where domestic livestock are grazed.
- Rates of suburban and rural development will continue or increase, thereby potentially reducing the amount of private ranchland in the region. This development could result in a slight reduction in the number of grazing allotments/AUMs that are grazed annually.
- Allotments can include OHMA and UHMA, and Non-habitat Areas. Permitted AUMs may not be currently grazed within GUSG habitat because the allotment may not be entirely within that habitat.
- AUMs are calculated at the allotment level and are assumed to be distributed evenly across allotment acreages.
- Grazing allotment boundaries do not align with mapped habitat management areas (OHMA, UHMA).

3.10.2.2 Affected Environment

Public land grazing in the Gunnison Basin has recently been addressed by the CCA for the Gunnison Sage-Grouse (Gunnison Basin Sage-Grouse Strategic Committee 2012). The agreement lays out a process that provides for continued grazing of public lands in a manner consistent with meeting GUSG habitat requirements. This process is based on the premise that viable ranching operations on private lands are important for GUSG survival, and that public land grazing is an integral part of these ranching operations. The process describes how changes to grazing permits will occur once systematic monitoring for GUSG habitat guidelines indicate changes are needed. Grazing on BLM-administered lands within the remaining population areas is managed according to the existing RMPs for those areas.

BLM grazing allotments within the decision area range in size from 300 acres to approximately 40,000 acres. A total of 186,080 AUMs are currently authorized across the decision area. Grazing may be approved year-round for some BLM allotments but generally occurs within BLM allotments in the decision area in the spring when the average nighttime temperature rises above freezing, snow coverage of allotments melts, and livestock forage begins to emerge. May and June are considered to be the peak growing season for pasture grasses and perennial herbaceous plants. As the snowline moves higher in elevation and BLM lands begin to produce adequate biomass, grazing activity typically follows this elevational gradient until grazing operators move livestock onto adjacent grazing allotments located at higher elevations on USFS administered allotments, which are generally approved for grazing May through October.

Table 3.10.1 presents the acreage of available and unavailable grazing allotments and permitted AUMs within OHMA, UHMA, and Adjacent Non-habitat areas. AUMs presented in Table 3.10.1 are calculated at the allotment level. Allotment boundaries are not consistent with the mapped habitat management areas (OHMA, UHMA, LCMA). Therefore, AUMs presented in Table 3.10.1 do not account for allotments that may extend beyond the boundaries of habitat management areas. The Gunnison Basin population area contains the largest acreage of allotments available to grazing in OHMA (280,280 acres), while the Piñon Mesa population area includes the largest acreage of allotments available to grazing in UHMA (92,140 acres) (Table 3.10.1). The Dove Creek population area includes the largest number of authorized AUMs (68,520) within the decision area.

Federal grazing fees are calculated using a formula set forth by the U.S. Congress in the Public Rangelands Improvement Act of 1978 and continued by Executive Order 12458. Fees are calculated annually. Over the last 36 years, the fee has ranged from $1.35 to $2.11 and has averaged $1.52 per AUM. The receipts from these annual grazing permit fees, in accordance with legislative requirements, are shared with Federal, State, and county governments. Permits that are not renewed become available to applicants that meet the qualifications for public land grazing privileges as specified by the BLM grazing regulations.

Table 3.10.1. Acres Available for Livestock Grazing in OHMA, UHMA, and Active Permitted AUMs within Population Areas

GUSG Population	Acres Available for Livestock Grazing in OHMA	Acres Unavailable for Livestock Grazing in OHMA	Acres Available for Livestock Grazing in UHMA	Acres Unavailable for Livestock Grazing in UHMA	Active Permitted AUMs[1]
Cerro Summit – Cimarron-Sims Mesa	1,270	190	7,250	90	2,150
Crawford	22,120	2	9,770	190	7,630
Dove Creek	4,090	80	52,150	170	68,520
Gunnison Basin	280,280	2,110	58,850	220	40,850
Monticello	2,580	0	1,110	0	2,340
Piñon Mesa	17,680	0	92,140	2,520	40,080
Poncha Pass	12,440	0	11,360	0	7,080
San Miguel Basin	35,440	100	21,280	410	17,430

Source: BLM 2022

[1]AUMs are calculated at the allotment level and do not differentiate between AUMs permitted for allotment boundaries that may extend beyond mapped habitat management areas.

Rangeland Inventory, Monitoring and Evaluation

The BLM collects and compiles annual grazing allotment condition data and provides this information to the public in an annual Rangeland Inventory, Monitoring, and Evaluation (RIME) report. The RIME report identifies the number of vegetation inventories conducted on BLM lands, trends in rangeland vegetation conditions, the number of grazing allotments and total acreages, and the extent to which grazing allotments are achieving the BLM's Standards for Rangeland Health. RIME allotment evaluations do not indicate which land health standards a specific allotment may not be meeting but do indicate causal factors associated with a determination of an allotment not meeting standards. Evaluations of allotments can conclude the following status categories:

- Category A – Rangelands are meeting all standards or making significant progress toward meeting the standards.
- Category B – Rangelands are not meeting all standards or making significant progress toward meeting the standards, but appropriate action has been taken to ensure significant progress toward meeting the standards (livestock is a significant factor).
- Category C – Rangelands are not meeting standards or making significant progress toward meeting the standards, and no appropriate action has been taken to ensure significant progress toward meeting the standards (livestock is a significant factor).
- Category D - Rangelands are not meeting standards or making significant progress toward meeting the standards due to causes other than livestock grazing.
- Category F - Rangelands are not meeting standards or making significant progress, but determination of causal factor(s) has not been identified.

Allotments assessed/evaluated as not meeting standards with a determination of current livestock management as the causal factor would be addressed through modifications to grazing permits or livestock use (e.g., adjust turn out dates, change season of use or duration, reduce AUMs). Allotment land health evaluations are ongoing, and determinations may change over time. Table 3.10.2 and Table 3.10.3 present summaries of RIME allotment evaluations within OHMA and UHMA, respectively.

Table 3.10.2. Summary of Rangeland Inventory, Monitoring, and Evaluations for Grazing Allotments within OHMA by Population

Population Area	RIME Category	Number of Allotments	Total Acreage of Allotments	Active AUMs
Cimarron-Cerro Summit-Sims Mesa	A	1	760	18
	B	1	460	33
	D	2	44	294

Population Area	RIME Category	Number of Allotments	Total Acreage of Allotments	Active AUMs
Crawford	A	5	4,130	689
	B	1	5,090	954
	D	1	11,740	1,656
Dove Creek	A	2	3,000	590
Gunnison Basin	A	14	50,770	8,942
	B	8	93,690	11,721
	D	22	78,130	4,903
Monticello	A	7	1,530	585
	B	2	1,050	148
Piñon Mesa	A	28	17,390	12,178
	D	1	300	30
Poncha Pass	A	1	6	6
	D	8	12,430	3,373
San Miguel Basin	A	5	340	825
	B	4	28,000	6,406
	D	1	380	503

Table 3.10.3. Summary of Rangeland Inventory, Monitoring, and Evaluations for Grazing Allotments within UHMA by Population

Population Area	RIME Category	Number of Allotments	Total Acreage of Allotments	Active AUMs
Cimarron-Cerro Summit-Sims Mesa	A	6	1,030	426
	B	1	20	33
	D	5	6,200	1,261
Crawford	A	12	3,240	628
	B	3	2,400	1,532
	D	5	3,310	1,815
Dove Creek	A	9	1,990	10,010
	B	8	15,410	3,877
	D	1	30	40
Gunnison Basin	A	18	58,680	9,353
	D	1	162	186
Monticello	A	6	1,060	453

Population Area	RIME Category	Number of Allotments	Total Acreage of Allotments	Active AUMs
Piñon Mesa	A	49	82,440	15,925
	B	1	710	401
	D	2	4,550	235
Poncha Pass	A	1	6,410	716
	D	3	4,960	2,988
San Miguel Basin	A	6	1,870	273
	B	9	11,300	6,866
	D	13	8,120	1,697

Outcome Based Grazing Authorizations

In September 2017, the BLM Division of Rangeland Resources announced an initiative for Outcome-Based Grazing Authorizations. The purpose of the initiative is to improve BLM's management of livestock grazing by allowing greater flexibility to respond to changing conditions such as drought or wildfire. In addition to benefiting ranching operations, the Outcome-Based Grazing Authorizations would result in healthy rangelands and high-quality wildlife habitat (BLM 2023). This program allows for necessary, timely grazing adjustments that benefit the health of the rangeland for wildlife as well as its availability of forage for livestock. These flexibilities help to create both ecological and economic resiliency within the decision area and throughout the West. Objectives for the program include:

- Providing BLM managers and livestock operators the ability to make management decisions based on experience, knowledge of local conditions, and a well-articulated set of resource and operational objectives.
- Emphasizing conservation performance and ecological outcomes rather than process and prescription.
- Cooperatively improving, managing and/or protecting public lands within an allotment and/or multiple allotments.
- Supporting enhanced partnerships in managing livestock grazing.
- Continuing to achieve or attain positive economic and social outcomes.

3.10.2.3 Environmental Consequences

Effects Common to All Alternatives

Permitted AUMs

Wildlife forage utilization within BLM-administered allotments impacts the level of available AUMs within a livestock allotment and this is accounted for during permit approvals and renewals. Fire, drought, climate change, insect infestations, and other natural occurrences also could impact available AUMs. Natural succession could result in increased woody vegetation and reduced forage availability, which could reduce AUMs over the long-term.

Adaptive Management Plans

Adaptive management plans would be developed that incorporate livestock management guidelines into permits that would address potential drought and other conditions affecting an allotment's ability to meet BLM standards and guidelines consistent with BLM policy. BLM consideration of adaptive management actions may include the formulation of threshold and response guidelines for implementation within an allotment based on a multitude of factors including but not limited to ecological site potential, livestock type, habitat objectives, land health assessment results, presence of riparian areas, vegetation composition, and management objectives. Examples of the types of thresholds that may be considered for evaluation include but are not limited to:

- In riparian and wetland areas, a minimum 4-inch stubble height will be maintained on all key herbaceous species.
- In riparian and wetland areas, the allowable utilization is 35 percent for key woody browse species.
- In riparian areas, the allowable bank alteration would be 35 percent.
- In uplands, the allowable utilization is 40 percent for herbaceous key species and 40 percent for key shrub species.

Examples of adaptive management responses may include but are not limited to:

- Allow use of an area, but restrict riparian use with temporary fencing, water hauling, or herding.
- For riparian and wetland areas, amend the minimum stubble height on all key herbaceous species to 6 inches.
- For riparian and wetland areas, amend the allowable utilization of key woody browse species to 30 percent.
- Change the season of use for affected areas when warranted, and where feasible given a permittee's overall operation.

Alternative A (No Action – Current Management)

Alternative A would continue current BLM management direction in the eleven RMP administrative units in the decision area. Allowable uses and restrictions would remain unchanged. The BLM would continue to initiate informal or formal consultation with the USFWS, through biological assessments and biological opinions, for individual authorizations that may directly or indirectly affect GUSG or their habitat. Acreages of current grazing allotments and permitted AUMs per allotment would remain unchanged under Alternative A but could be modified in the future dependent upon the results of allotment monitoring and site-specific conditions. Acreages and AUMs available to grazing under Alternative A would include 375,900 acres of OHMA and 251,370 acres of UHMA (Table 3.10.4). Acreages and AUMs unavailable to grazing under Alternative A would include 2,480 acres of OHMA and 3,410 acres of UHMA (Table 3.10.4 and Map A.4). Acres presented in Table 3.10.4 include the acreages of BLM-administered allotments located on NPS-administered lands within the Curecanti National Recreation Area.

Action Alternatives

The primary management actions that could affect the availability of BLM-administered lands to grazing are allotment closures and modifications or restrictions to season of use within allotments. Modifications or restrictions on duration of livestock use, and modifications to authorized AUMs would only result from allotment specific evaluations.

Table 3.10.4. Acres Available and Unavailable to Livestock Grazing in the Decision Area by Alternative

Availability for Grazing	Alternative A		Alternative B[2]		Alternative C		Alternative D		Alternative E	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Available for Livestock Grazing – OHMA	375,900	96%	B1: 0 B2: 0	B1: 0% B2: 0%	391,490	100%	391,490	100%	N/A	N/A
Available for Livestock Grazing – UHMA	251,370	95%	B1: 0 B2: 258,630	B1: 0% B2: 100%	258,630	100%	258,630	100%	N/A	N/A
Unavailable for Livestock Grazing – OHMA	2,480	1%	B1: 391,490 B2: 391,490[1]	B1: 100% B2: 100%[1]	0	0%	0	0%	N/A	N/A
Unavailable for Livestock Grazing – UHMA	3,410	1%	B1: 258,630 B2: 0	B1: 100% B2: 0%	0	0%	0	0%	N/A	N/A

[1] Season of use restriction; OHMA unavailable for livestock grazing March 1 to July 15.
[2]Acres unavailable for livestock grazing would be for the life of the RMP Amendment.

Approved AUMs within the decision area would vary across the alternatives due to season of use restrictions. Table 3.10.5 presents a summary of existing and proposed approved AUMs within the decision area across the 12 counties within the decision area (see Maps A.4 through A.7).

Table 3.10.5. Summary of Available AUMs under all Alternatives within the Decision Area by County

County	Alternative A	Alternative B1*	Alternative B2	Alternative C and Alternative D	Alternative E
	AUMs	AUMs	AUMs	AUMs	AUMs
Delta	12,382	0	5,077	12,877	NA
Dolores	9,286	0	3,807	9,657	NA
Grand	10,525	0	4,315	10,946	NA
Gunnison	18,848	0	7,728	19,602	37,707
Hinsdale	1,477	0	606	1,536	767
Mesa	32,012	0	13,125	33,292	NA
Montezuma	5,516	0	2,262	5,737	NA
Montrose	37,700	0	15,457	39,208	NA
Ouray	732	0	300	761	NA
Saguache	16,289	0	6,679	16,941	26,627
San Juan	22,875	0	9,379	23,790	NA
San Miguel	18,439	0	7,560	19,176	NA
Total	**186,080**	**0**	**76,293**	**193,523**	**65,101**

* Over time, as expiring permits are not renewed within OHMA and UHMA, the acres available for grazing would be reduced until no acres or AUMs within OHMA or UHMA would be available for grazing.

Alternative B1 would apply the most restrictive GUSG conservation measures available within BLM's jurisdiction and authority. Alternative B1 would make allotments within OHMA and UHMA unavailable for livestock grazing for the life of the RMP Amendment and the renewal and/or transfer of livestock grazing permits in these areas would not be allowed. Over time, as expiring permits are not renewed within OHMA and UHMA, the acres available for grazing would be reduced until no acres or AUMs within OHMA or UHMA would be available for grazing. Current grazing regulations require the BLM to provide two-year advance notice to grazing permittees when public lands are to be limited to other non-grazing uses. Permits scheduled to expire within two years of the decision to not renew grazing permits would be renewed for an additional period to allow for the BLM to accommodate the required notification period. Fencing would be removed within OHMA and UHMA allotments that are no longer necessary to exclude livestock from adjacent allotments.

Restricting livestock grazing in OHMA and UHMA would require grazing permittees to move livestock off of BLM-administered grazing allotments and onto private land, or other jurisdiction

pasture. As a result of this restriction, grazing permittees would have to modify current grazing rotations to account for the lack of access to BLM-administered public land allotments and AUMs. Overall, the flexibility of grazing operations would be severely diminished by the closure of public land allotments within OHMA and UHMA. Furthermore, livestock may need additional supplemental forage to be provided throughout the year if private land pastures do not support the same or similar number of AUMs. A total of 391,490 acres and 258,630 acres of existing grazing allotments in OHMA and UHMA, respectively would be unavailable for grazing under Alternative B1 for the life of the RMP Amendment. A total of 186,080 previously authorized AUMs would also be unavailable for grazing use under Alternative B1. Livestock grazing operators with permits on neighboring Forest Service-administered grazing allotments would be adversely impacted as a result of the reduction of BLM allotments. The reduction of BLM-administered allotments would result in increased competition for access to non-BLM-administered grazing allotments and private land pastures for the majority of grazing operators in the planning area and potentially regionally. Additionally, grazing operators with authorizations for shared allotments spanning adjacent BLM and Forest Service lands would be adversely impacted by the removal of access to allotments on BLM-administered lands. These operators would be forced to obtain access to other non-BLM grazing allotments or additional supplemental forage sources to maintain current livestock production levels. Forage conditions on Forest Service allotments could be adversely impacted as shared allotment operators experience reduced operational flexibility resulting from limitations to grazing access to BLM-administered allotments. The BLM and Forest Service would continue to coordinate grazing permit approvals for these shared allotments under all alternatives.

Alternative B1 would result in a substantial adverse disruption to existing permittees livestock grazing operations within the decision area. Some grazing operators may be forced to discontinue operations in the event they cannot obtain access to additional private land pastures for grazing or provide supplemental forage to sustain existing grazing operations. If a livestock operator that currently has access to a grazing permit in GUSG habitat is no longer able to access that permit (at all under Alternative B1 or in the spring under Alternative B2), and as a result they must use their private land throughout the spring and summer to support their cattle, then the quality and/or quantity of the sage-grouse habitat and available livestock forage on those private lands could be reduced or eliminated as a result. Alternatively, grazing operators affected by restrictions on available allotments may need to transport livestock to available grazing pastures located outside of the Gunnison Basin and other population areas via heavy trucks. This would represent an additional economic burden upon grazing operators and may result in the cessation of some grazing operations within the decision area. Potential economic effects on grazing operators and the local economy are discussed further in Section 3.16, *Social and Economic Conditions*.

Under Alternative B1, grazing permits within OHMA and UHMA that are voluntarily relinquished by the operator would not be reissued. The permitted AUMs would not be

reauthorized by the BLM until GUSG have been delisted from the ESA. This represents a potential reduction of available allotment acres and AUMs in comparison to the other alternatives including the No Action Alternative.

Under Alternative B2, OHMA would be unavailable for livestock grazing between March 1 and July 15 for the life of the RMP Amendment. Livestock grazing would continue to be authorized in OHMA between July 16 and February 28. Table 3.10.4 presents acreages available to grazing under the alternatives. Livestock grazing would continue to be authorized in UHMA with no season of use restriction. A total of 391,490 acres of existing grazing allotments in OHMA would be unavailable for grazing under Alternative B2 between March 1 and July 15. A total of 66,945 previously authorized AUMs would also be unavailable for grazing use under Alternative B2 between March 1 and July 15.

As a result of the season of use restriction on grazing in OHMA, livestock grazing operators would be required to keep livestock on private or non-BLM pasture through the early grazing season before turning out onto BLM allotments after July 15. For those operators who currently have no restrictions prior to July 15, this would likely require operators to obtain access to additional private or non-BLM pasture until July 15 or provide additional supplemental forage throughout the early grazing season if private land pastures do not support the same or similar number of AUMs. In addition, for allotments that are currently being used in Gunnison Basin, many of them only have water available during the March 1 to July 15 period; under Alternative B1, if operators were required to use the allotments after July 15 many water sources would be unavailable or dry. This would force operators to haul water to their grazing permits, which would be a economic burden. Additionally, operators that cultivate hay on private pastures during the early gazing season would likely be unable to do so as livestock may be required to stay on those private pastures during that period representing an adverse economic effect for some operators. Similar to Alternative B1, the flexibility of grazing operations would be severely diminished by the closure of public land allotments within OHMA from March 1 to July 15. Alternative B2 would result in a substantial adverse disruption to existing permittees livestock grazing operations within the decision area but less so in comparison to Alternative B1.

Some grazing operators may be forced to discontinue operations in the event they cannot obtain access to additional private land pastures for grazing or provide supplemental forage to sustain existing grazing operations. Alternatively, grazing operators affected by restrictions on available allotments may need to transport livestock to available grazing pastures located outside of the Gunnison Basin and other population areas via heavy trucks. This would represent an additional economic burden upon grazing operators and may result in the cessation of some grazing operations within the decision area. Potential economic effects on grazing operators and the local economy are discussed further in Section 3.16, *Social and Economic Conditions*.

Livestock crossing/trailing permits through OHMA would be authorized on approved routes between July 16 and February 28. New livestock crossing/trailing permits would not be approved. This may result in reduced operational flexibility for grazing permittees and some operators may experience difficulties in moving livestock across BLM lands. This could adversely affect the ability of operators to move livestock from private pastures generally located at lower elevations within the decision area to USFS-administered grazing allotments that are located at higher elevations where forage becomes available later in the grazing season.

Livestock grazing duration and utilization would be managed to retain residual vegetation in all riparian areas in the decision area to maintain healthy, native riparian plant communities and to prevent accelerated erosion of riparian soils. Where livestock grazing is not allowing riparian areas to retain adequate residual vegetation, appropriate livestock management guidelines (Appendix J, *BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado and Utah*) would be incorporated into livestock grazing permits. Livestock utilization levels, monitoring, and duration of use requirements that are compatible with meeting GUSG habitat guidelines would be incorporated into adaptive management plans for all livestock grazing permits in OHMA. In allotments that are not retaining riparian vegetation or not meeting standards and guidelines, grazing permit terms may be modified to account for these issues potentially resulting in reductions in authorized AUMs and/or restrictions on duration of use by livestock. This would result in adverse effects upon grazing operator ability to maintain current levels of livestock production.

Under Alternative B2, grazing permits within OHMA that are voluntarily relinquished by the operator would either be reissued with terms and conditions consistent with achieving Land Health Standards or the allotment could be converted to a reserve allotment that is occasionally utilized or temporary closed. This would represent a potential reduction in available allotment acres and AUMs in comparison to Alternatives A, C, D, and E.

Additionally, under Alternative B2 all existing range improvements in OHMA and UHMA would be upgraded as funding allows through the application of appropriate design features (Appendix H, *Best Management Practices and Required Design Features*). Impacts of the implementation of design features would include beneficial effects on the vitality of grass and forb communities prioritized for forage by livestock and additional conservation of existing riparian and wetland habitats.

Under Alternative C, livestock grazing in OHMA and UHMA would continue to be authorized. A total of 391,490 acres of OHMA and 258,630 acres of UHMA would be available to grazing representing a minor increase in allotment availability and available AUMs in comparison to Alternative A. Transfer of livestock grazing permits would be renewed and allowed, provided livestock can be managed toward meeting land health standards. Appropriate Livestock Management Best Practices (Appendix H, *Best Management Practices and Required Design Features*) would be implemented when renewing livestock grazing permits. BLM would work cooperatively in integrated ranch planning in GUSG habitat and recognize the importance of

private lands to GUSG conservation efforts. Where land health determinations indicate GUSG habitat guidelines are not being met due to current livestock grazing management, adaptive management plans would be developed. Livestock crossing/trailing permits through OHMA would be authorized on existing approved routes. New routes could be approved, and new routes would only be allowed between March 1 and May 15 when necessary. When a qualified permittee or lessee voluntarily relinquishes a grazing permit or lease on an allotment in OHMA, the BLM would consider various options to reissue the permit, convert the allotment to a reserve allotment, merge the allotment with adjacent allotments in GUSG habitat, or temporarily or permanently close the allotment to livestock grazing. Temporary and/or permanent closures would result in a reduction of available allotment acreages and AUMs.

Season of use restrictions on permitted livestock use would not be applied, provided livestock grazing management is compatible with meeting GUSG habitat guidelines for Land Health Standards (43 CFR, Part 4180.2). If current livestock grazing management is not compatible with meeting GUSG habitat guidelines then appropriate livestock management guidelines (Appendix J, *BLM Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado and Utah*) and/or livestock management best practices (Appendix H, *Best Management Practices and Required Design Features*) would be applied. These may include adjusting season of use. In allotments that are not meeting standards and guidelines, grazing permit terms may be modified to account for these issues potentially resulting in reductions in authorized AUMs and/or restrictions on duration of use by livestock. This would result in adverse impacts on grazing operator ability to maintain current levels of livestock production.

Previously undisturbed springs and seeps in OHMA and UHMA may be developed for livestock water only if the development enhances livestock distribution and provides a net improvement of GUSG habitat. Appropriate design features (Appendix H, *Best Management Practices and Required Design Features*) for all new water developments in OHMA and UHMA would be incorporated. Existing water developments would be evaluated to determine where incorporating best practices would enhance GUSG habitat. Modification or relocation (or removal of unneeded developments) would be prioritized in areas with high concentrations of active leks. Existing range improvements would be evaluated to determine where incorporating best practices would enhance GUSG habitat.

Effects on livestock grazing operations would be minor in comparison to Alternative A but would be substantially more beneficial to grazing operators in comparison to Alternative B.

Actions proposed under Alternative D are generally the same as Alternative C and the acres of available allotments and AUMs would remain unchanged from Alternative C (Table 3.10.4). Livestock grazing would continue to be allowed in OHMA and UHMA and permits would continue to be renewed, provided that grazing is managed to meet or make progress toward meeting land health standards. In allotments that are not meeting standards and guidelines, grazing permit terms may be modified to account for these issues potentially resulting in reductions in authorized AUMS and/or restrictions on duration of use by livestock. This would

result in adverse impacts on grazing operators ability to maintain current levels of livestock production.

Under Alternative E, actions from the Gunnison Basin CCA , Sections 5.4 and 4.2 would be implemented for grazing allotments located within the Gunnison Basin population area only. These actions are described in detail in Chapter 2, *Alternatives*, and within the CCA in Appendix K, *Candidate Conservation Agreement for the Gunnison Sage-Grouse, Centrocercus minimus, Gunnison Basin Population*. Grazing would continue to be allowed and permits would be renewed in OHMA, provided that management guidelines outlined in the CCA and livestock grazing is managed in riparian areas to improve GUSG habitat conditions. In allotments that are not meeting CCA guidelines, grazing permit terms may be modified to account for these issues potentially resulting in reductions in authorized AUMS and/or restrictions on duration of use by livestock. This would result in adverse impacts upon grazing operator ability to maintain current levels of livestock production.

During permit renewals, BLM would require the implementation of CCA allotment management plans in allotments that are not meeting herbaceous vegetation standards as observed during required allotment monitoring. Livestock would be required to be moved from pastures with seasonally limited AUMS to new pastures within one-week of the scheduled move. If after a full year of allotment monitoring, the BLM determines an allotment is not meeting CCA GUSG habitat guidelines, the intensity, distribution, and duration of grazing would be modified to return the allotment to meeting GUSG habitat guidelines. This action could result in a reduction of the acreages or AUMs available to grazing within certain underperforming allotments.

In comparison to Alternatives C and D, monitoring requirements under Alternative E would be more intensive and require monitoring of residual herbaceous height instead of solely monitoring forage utilization. Similar to Alternatives C and D, grazing within riparian areas would be managed to improve habitat conditions, resulting in similar effects as described for Alternatives C and D for the Gunnison Basin.

3.10.2.4 Conclusion

Management actions under each action alternative would affect the acres available for livestock grazing and the associated acres of BLM-administered lands and AUMs of forage allocated for livestock grazing.

Alternative A would maintain the current management of livestock grazing in the decision area under existing RMPs. Livestock grazing under this alternative would continue but may experience adverse effects over time as existing management does not include consistent management direction across the decision area. In addition, management actions focused on addressing the potential impacts of climate change on livestock grazing and existing forage resources would not be applied, potentially degrading the quality of vegetation over time.

Alternative B1 would apply the most restrictive management of livestock grazing within the decision area by removing livestock grazing as existing permits expire. Alternative B2 would also restrict livestock grazing in the decision area, where OHMA would be unavailable for livestock grazing between March 1 and July 15, which could result in a reduction of AUMs, increased pressure on private or other Federal lands, modification or loss of permittee operations, adverse effects on the quantity and quality of private land livestock forage, and potential adverse effects upon the quantity and quality of sage-grouse habitat located on private lands. As a result of the implementation of these alternatives, livestock grazing operations within the decision area would be substantially affected by the removal of access to public land grazing and many operations would cease to exist.

Under Alternatives C and D, livestock grazing in OHMA and UHMA would continue to be authorized with the application of management actions focused on improving both grazing conditions and the quality and quantity of GUSG habitat. Alternatives C and D present fewer constraints and potential adverse effects to livestock grazing in comparison to Alternative B.

Under Alternative E, actions from the GUSG CCA, Sections 5.4 and 4.2 would be implemented. Grazing would continue to be allowed and permits would be renewed in OHMA provided that management guidelines outlined in the CCA and grazing is managed in riparian areas to improve GUSG habitat conditions. The effects of Alternative E on livestock grazing would be similar to those under Alternatives C and D but would only occur in the Gunnison Basin. Under Alternative E outside of the Gunnison Basin, potential effects would be similar to those of Alternative A.

3.10.2.5 Cumulative Effects

The cumulative effects analysis area for livestock grazing management is defined as the planning area and the timeframe for the analysis is the life of this RMP Amendment.

In general, past and present actions involving resource uses have cumulatively caused native vegetation removal, fragmentation of native vegetation communities resulting in weed invasion and spread, and degradation of the quality of livestock forage base within the decision area. Climate change in the cumulative effects analysis area could cause an increase in temperatures and variations in precipitation that could adversely affect soil conditions, vegetative health, and water availability. Such changes would alter the conditions to which vegetative communities are adapted, potentially creating conditions that favor noxious weed introduction and reducing the quality and availability of livestock forage.

Management actions proposed under the action alternatives would likely result in fewer roads or trails in OHMA. Development of trails and roads on private or other lands resulting in removal of or adverse effects on vegetation utilized for livestock grazing is likely to continue in the future. Implementation of recommendations from the RCP and from working groups would likely reduce the effects on sagebrush and other vegetation communities from new roads or

trails; however, these considerations may not be applied evenly across the planning area. Some BLM allotments are combined with other land management agencies (e.g., Colorado State Forest Service and USFS) or animals are moved between allotments regularly. As such, changes in BLM grazing management strategies may result in the need for permittees to alter operation methods.

Oil and gas development in the analysis area is limited to areas in the Dove Creek, Monticello, San Miguel Basin and Crawford population areas; the eastern portion of the Piñon Mesa population area; and the northern half and southeastern corner of the Gunnison Basin population area (Gunnison Sage-Grouse Rangewide Steering Committee 2005). The majority of these areas are considered to have low potential for oil and gas reserves. Development of oil and gas resources in the analysis area has resulted in surface disturbance and the removal of or adverse effects on sagebrush and other vegetation utilized for livestock grazing. Future development of oil and gas resources in the analysis area is likely to be limited based on surface use restrictions implemented as part of this planning process and through the CPW and ECMC 1200 series rule effective as of January 15, 2021.

Solid mineral extraction has occurred historically in the planning area, mostly associated with sand, gravel, and other hard rock mineral extraction. Mining activities at these locations has likely resulted in the loss of vegetation utilized for livestock grazing. Future mineral mining activities are likely to be limited on BLM-managed lands; however, activities on privately owned lands in the planning area may further contribute to the loss or degradation vegetation utilized for livestock grazing.

Future ROW applications would be processed and potentially authorized throughout the analysis area. Under the action alternatives, ROWs on BLM land are likely to be limited to areas outside of OHMA resulting in a potential reduction of adverse effects to livestock grazing allotments and available AUMs. Restrictions to renewable energy ROW authorizations on BLM lands would reduce livestock forage impacts from those types of activities; however, these may continue to be sited on private lands within the planning area.

3.10.3. Issue 2: How would the management actions and allowable uses in the alternatives affect livestock grazing during drought in consideration of climate change?

3.10.3.1 Analytical Methods and Assumptions

Indicators

- Active permitted AUMs

- Acres within available livestock grazing allotments

Assumptions

- The BLM will continue to adjust livestock management to be compatible with meeting the Colorado and Utah Land Health Standards.
- Structural range improvements that concentrate livestock use (e.g., water wells, troughs, catchments, and reservoirs) result in a localized loss of vegetation cover.
- The primary vegetation response to drought conditions are reduced above ground growth and reduced root development. During drought periods plants may produce fewer reproductive tiller structures (seed heads) and some plants may remain mostly vegetative.
- Severe drought periods may cause plants to enter dormancy.
- Structural range improvements providing water to livestock may require modification to continue to provide adequate water supplies for grazing activity on public lands as a result in shifting trends in precipitation timing and volumes.
- The effects of climate change, including drought, would affect the composition of native and non-native vegetation communities and therefore livestock forage within the decision area.
- The effects of climate change, including drought and aridification, would increase fire frequency and have corollary effects on vegetation community structure and species diversity.
- All classes of livestock forage on herbaceous vegetation types in a shrubland/grassland community. Some livestock also utilize shrubs, which can be an important forage component during some seasons.
- Increases in shrubs, pinyon pine, or juniper generally reduce herbaceous forage production. Increases in perennial grasses and forbs generally result in increased forage production.
- Overutilization of forage by livestock can adversely affect vegetation community composition and ground cover.
- Placement of water sources can improve livestock distribution and areas without available water will have less use than areas with water.
- Vegetation near water is often utilized at higher rates by livestock and wildlife.

3.10.3.2 Affected Environment

Climate change over the past century has altered vegetation community composition and available forage across rangelands in the western United States. In general, climate models

predict an increase in shrub cover, bare ground, and annual herbaceous cover (e.g., cheatgrass) and a decrease in sagebrush cover and perennial grass cover will occur within the decision area. Regional conditions will likely favor shrub species that are suited to drier and hotter conditions, such as greasewood (*Sarcobatus vermiculatus*) or rabbitbrush (*Chrysothamnus* sp.). Increased early and late season average temperatures are likely to inhibit or reduce the productivity of cool-season grass species within the decision area. In contrast, increased temperatures are likely to promote the growth and productivity of warm season grasses within the decision area. Cool season grasses generally provide a higher percentage of crude protein compared to warm season grasses, although the warm season grass protein is more efficiently absorbed by livestock.

A drought is defined by the Society for Range Management as prolonged dry weather when precipitation is less than 75 percent of the average amount (SRM 1989). According to this definition, drought has occurred within the southwestern United States approximately 43 percent of the time between the years of 1944 and 1984 (Holechek et al. 1998). Livestock grazing operators do have options in managing grazing operations to avoid and minimize the adverse effects of drought on production levels, including but not limited to (Howery 2016):

- Monitor and maintain range conditions;
- Monitor utilization of preferred or "key forage species" and defer utilization when these species are dormant or until after mature seed production is complete;
- Provide adequate access to quality water sources;
- Utilize emergency forage that has been set aside for drought conditions;
- Develop flexible timetables for decisions regarding stocking rates, livestock movements, range improvement practices, and forage supplementation;
- Distribute livestock more uniformly; and
- Modify herd size early so that it is in balance with forage supply during drought.

During drought periods pasture grasses and herbaceous plants can experience reduced aboveground growth and underground root development, reduction of seed production, and reduced growth of rhizomes and new buds that produce the next season's seed (Volesky 2021). Most rangeland forage grasses are resistant to the effects of drought, but they are not completely immune. Vegetative production during a drought and the following year is commonly reduced in comparison to normal precipitation years. Pastures and rangeland that are in healthier range condition would generally recover quicker after periods of drought than pastures in degraded conditions.

The timing of grazing is an important factor in grazing management. Previous research has shown that repeated annual grazing during the rapid growth stage can reduce the overall vigor of rangeland grasses (Volesky 2021). This rapid growth phase is when grass plants are transitioning from the vegetative to elongation and reproductive stages. The rapid growth phase

typically occurs in May for cool-season grasses and during June and July for warm-season species. Combining drought and grazing stress would greatly increase the likelihood of reduced forage production in the subsequent year.

Land use in conjunction with climate change can directly affect riparian areas, particularly where native plants are removed, or where heavy grazing occurs. Changes in vegetation cover due to land use, heavy grazing, or other factors can lead to excessive erosion (Neely et al. 2011). Riparian vegetation communities within the decision area have been identified as highly to moderately vulnerable to the effects of climate change depending upon the elevation range of each riparian area (Neely et al. 2011). Global climate change is projected to increase air and water temperatures, amplify hydrologic and weather extremes (e.g., droughts, floods, heat waves, storms), alter regional weather patterns, and increase wildland fire frequency and severity (Hamlet and Lettenmaier 2007; Howe et al. 2011; Ray et al. 2008).

Previous climate modeling and projections indicate vegetation community composition, function, and individual species ranges would continue to shift as a result of changes in precipitation volume and timing, changes in soil moisture regimes and evapotranspiration rates, and the occurrence and severity of drought periods (Izaurralde et al. 2011; Collins et al. 2013; Polley et al. 2013). Section 3.6, *Vegetation*, presents discussion of climate change modeling of potential landcover changes within the decision area. Recent modeling efforts indicate that under most climate GHG scenarios for the year 2050, the decision area could experience dramatic shifts in existing vegetation community composition and coverage. Modeled outputs for perennial herbaceous cover types that are utilized by livestock as forage, indicate that across population areas current land cover acreages range from 61 percent in the Cerro Summit-Cimarron-Sims Mesa area to approximately 98 percent coverage in the Dove Creek population area (Table 3.6.27). Anticipated shifts in perennial herbaceous cover types under the 2050 GHG scenarios indicate a potential for increased coverage of these cover types in the majority of population areas, while expected coverage areas may actually slightly decline in the Dove Creek and Piñon Mesa population areas. This outcome would represent a mixed set of effects on livestock grazing within the decision area. Areas that include increases in perennial herbaceous vegetation cover would likely have more available AUMs for utilization by livestock. This potential increase in herbaceous forage could be offset by shifts in precipitation patterns across the decision area.

Precipitation events are expected to become fewer in number on average but may occur with increased intensity and precipitation volume on average (Collins et al. 2013). Longer and more frequent periods of drought are anticipated to result in lower survival rates and reduced resiliency of native vegetation to the effects of extended drought. Reductions in water availability or shifts in the seasonal timing of precipitation would be anticipated to affect the functioning condition of riparian and wetland habitats within the decision area.

3.10.3.3 Environmental Consequences

Effects Common to All Alternatives

As described in Appendix P, *Technical Support Document – Air Resources and Climate*, general trends to be expected under the current pace of climate change include increased temperatures (day and night) and seasonally variations in precipitation with extended periods of drought. Increased temperatures within the planning area are anticipated to result in increased evaporation rates and a general reduction in surface water and groundwater availability, regardless of changes in annual precipitation. These global and regional changes could result in water shortages and loss of ecosystem integrity, tree death, and increased wildfires. Drought, increased temperatures, and increased frequency and intensity of wildfires would contribute to a reduction in the quantity and quality of available forage for livestock grazing. Authorization and management of livestock grazing permits are based on many factors, including available forage and water quality and quantity. These parameters would be influenced by global and regional climate change challenges. Overall, the effects of climate change and the potential for reductions in livestock forage availability and water during periods of drought are anticipated to result in adverse impacts to livestock grazing operations within the decision area.

Alternative A (No Action – Current Management)

Under Alternative A, management of livestock grazing to avoid and minimize adverse effects to areas of GUSG habitat would remain as prescribed under the existing RMPs across the decision area regardless of observed short term and long-term shifts in climate including periods of prolonged and severe drought. Within the Uncompahgre Field Office, a drought management plan is currently in place to provide guidance for all livestock grazing allotments. This plan directs BLM to notify grazing operators of drought conditions and base changes in livestock use on site-specific data on allotments affected by drought (BLM 2016). Other actions the BLM may implement during periods of drought include working with grazing operators to voluntarily reduce utilization of allotments and AUMs, and to delay turnout of livestock onto BLM allotments.

Action Alternatives

Under Alternative B1, OHMA and UHMA would be unavailable for new livestock grazing permits and would require expiring grazing permits within OHMA and UHMA to not be renewed. This process would eventually result in no active grazing permits within the decision area regardless of the effects of climate change. As discussed above in Section 3.10.2.3, *Environmental Consequences* (Issue #1), a total of 391,490 acres and 258,630 acres of existing grazing allotments in OHMA and UHMA respectively would be unavailable for grazing under Alternative B1. A total of 186,080 previously authorized AUMs would also be unavailable for grazing use under Alternative B1. During periods of drought this would result in increased

difficulty for grazing operators to maintain current production levels as private land pastures would likely experience reduced production of forage and availability of water for livestock use. Operators may need to obtain access to additional private land pasture and additional supplemental forage and water to maintain livestock production levels. The effects of drought would result in increased difficulty in the ability of grazing operators to continue operations within OHMA and UHMA and potentially within the region due to the constraints of not having public land allotments and AUMs available for grazing.

Effects upon livestock grazing within GUSG habitat under Alternative B2 would be similar to those presented under Alternative B1 with the exception of livestock grazing activity being allowed in UHMA and in OHMA between July 16 and February 28. A total of 391,490 acres of existing grazing allotments in OHMA would be unavailable for grazing under Alternative B2 between March 1 and July 15. A total of 66,945 previously authorized AUMs would also be unavailable for grazing use under Alternative B2 between March 1 and July 15. In OHMA and UHMA, development of additional livestock water sources from undisturbed springs and seeps that support mesic or riparian vegetation would not be authorized. During periods of drought this may result in inadequate access to water for livestock for existing levels of use within allotments. Operators looking to provide additional water sources to support livestock health may be required to develop other sources of livestock water (wells or pipelines) or truck in supplemental water supplies in severe conditions when natural water sources may be unavailable for use. This represents an additional potential adverse effect upon operator ability to maintain livestock production during periods of drought.

The overarching result of the management actions under Alternative B2 are anticipated to result in native vegetation communities and a livestock forage base within the decision area that are more resistant and resilient to the potential effects of climate change due to less grazing pressure on perennial herbaceous plant communities during the early grazing season when cool grass species are productive. During periods of drought, cool season grasses may not be as productive in comparison to normal precipitation years and the grazing forage base may shift toward a composition dominated by warm season grass species. Due to reduced herbaceous plant productivity during periods of drought, grazing pressure within UHMA between March 1 and July 15 may result in an increased risk of overutilization of certain areas, although grazing operators may temporarily reduce the livestock use in these areas to prevent overutilization from occurring. This potential effect would not occur in areas of OHMA closed to grazing during March 1 to July 15.

Under Alternative C, livestock grazing in OHMA and UHMA would continue to be authorized. A total of 391,490 acres of OHMA and 258,630 acres of UHMA would be available to grazing representing a minor increase allotment availability and available AUMs in comparison to Alternative A and a substantial increase in comparison to Alternative B1 and B2. During prolonged periods of drought, grazing pressure within OHMA and UHMA may result in an increased risk of adverse effects on forage community composition and productivity during the

season of use and potentially into the following season(s) depending on the level of utilization of a specific allotment. In these circumstances, individual grazing operators may temporarily reduce the livestock use in these areas to prevent overutilization from occurring.

Under Alternative D, effects upon the availability of grazing allotments, authorization of trailing permits, and how BLM addresses voluntary relinquished permits would be the same as those presented under the Alternative C (Table 3.10.4). Similar to Alternative B2, adaptive management plans that incorporate appropriate livestock management guidelines into livestock grazing permits that will address potential drought and allow progress toward meeting GUSG habitat guidelines would be required to be developed for all grazing permits. In allotments that are not meeting standards, resulting impacts may include modifications to grazing permits that adversely affect operators ability to maintain profitability.

Alternative E draws from the GUSG CCA and includes (in part) monitoring and management actions that would ensure specific vegetation characteristics (e.g., height, riparian areas, swales, wet meadows, sagebrush structure) in GUSG habitats. Under Alternative E, the effects of management actions and climate change upon the livestock grazing allotments and permitted AUMS within the Gunnison Basin population area would be similar to those described under Alternative D but limited to the Gunnison Basin.

3.10.3.4 Conclusion

Management actions and allowable uses under the action alternatives would affect livestock grazing during increased periods of climate change induced drought.

Alternative A would maintain the current management of livestock grazing in the decision area under existing RMPs. Existing management actions focused on addressing the potential effects of climate change on livestock grazing and existing forage resources would not be applied, potentially degrading the quality of vegetation and livestock forage over time.

Alternative B1 would apply the most restrictive management of livestock grazing within the decision area by removing livestock grazing as existing permits expire. Alternative B2 would also restrict livestock grazing in the decision area, where OHMA would be unavailable for livestock grazing between March 1 and July 15. Livestock operations that are able to adapt to the public land grazing limitations under this alternative would be further impacted by the effects of climate change induced periods of drought. Operators would be more reliant on private land supply of livestock water and could be forced to reduce production levels as a result of lack of adequate water supply.

Under Alternatives C and D, livestock grazing in OHMA and UHMA would continue to be authorized with the application of management actions focused on improving both grazing conditions and the quality and quantity of GUSG habitat. During prolonged periods of drought, grazing pressure within OHMA and UHMA may result in an increased risk of adverse effects on

forage community composition and productivity during the season of use and potentially into the following season(s) depending on the level of utilization of a specific allotment.

The effects of Alternative E on livestock grazing would be similar to those anticipated under Alternative C and D but would only occur in the Gunnison Basin. Under Alternative E outside of the Gunnison Basin, potential effects would be similar to those of Alternative A.

3.10.3.5 Cumulative Effects

Past and present actions involving resource uses have cumulatively caused native vegetation removal, fragmentation of native vegetation communities resulting weed invasion and spread, and degradation of the quality of livestock forage base within the decision area. Future actions may result in similar effects upon rangeland communities within the decision area. Management actions under Alternatives C and D would promote the ability of livestock grazing forage to be resilient during periods of prolonged drought. Alternatives would C and D provide the greatest benefit to enhancing livestock forage and supporting sustainable grazing operations with respect to the effects of climate change in comparison to the other alternatives considered.

Climate change within the cumulative effects analysis area could cause an increase in temperatures and variations in precipitation that could affect soil conditions, vegetative health, and water availability. Such changes would alter conditions to potentially reduce the acreage of sagebrush canopy cover and favor an increase in the coverage areas of grass/forb species alliances representing a potential increase in vegetative biomass available for utilization for livestock grazing. The effects of climate change are not well understood but modeling of potential effects indicates a high potential for dramatic shifts in vegetation community composition within the planning area. Reductions in water availability or shifts in the seasonal timing of precipitation would be anticipated to affect the functioning condition of natural water features and livestock water supply improvements. Pastures and rangeland that are in healthier range condition would generally recover quicker after periods of drought than pastures in degraded conditions.

3.10.4. Issue 3: How would the management actions and allowable uses, particularly season of use restrictions, affect livestock grazing operation?

3.10.4.1 Analytical Methods and Assumptions

Indicators

- Acres of current grazing allotments listed as active from March 1 through July 15 that would no longer be available for livestock grazing.

- Authorized AUMs on grazing allotments that would not be available for grazing from March 1 to July.

Assumptions

- The BLM will continue to adjust livestock management to be compatible with meeting the Colorado and Utah Land Health Standards.
- Implementation of more intensive livestock management, season-of-use changes, class of livestock changes, modified grazing systems, or decreased AUMs may affect permittees by increasing their operational cost.
- Overutilization of forage by livestock can adversely affect vegetation community composition and ground cover.
- Allotments can include OHMA and UHMA, and Non-habitat areas. Permitted AUMs may not be currently grazing within GUSG habitat because the allotment may not be entirely within that habitat.

3.10.4.2 Affected Environment

The affected environment for livestock grazing under Issue #3 would include the livestock grazing allotments on which the current permit authorizes use between March 1 and July 15. Information presented in Section 3.10.2.1, *Affected Environment* is applicable to Issue #3.

BLM grazing allotments within the decision area range in size from 300 acres to approximately 40,000 acres. A total of 186,080 AUMs are currently authorized across the decision area. Turnout of livestock onto BLM lands and subsequent grazing generally occurs within allotments in the decision area in the spring when average nighttime temperature rises above freezing, snow coverage of allotments melts, and livestock forage in the form of cool-season grasses begin to emerge. As the snowline moves higher in elevation and BLM lands begin to produce adequate biomass, grazing activity typically follows this elevational gradient until grazing operators move livestock on to adjacent grazing allotments located at higher elevations on USFS administered allotments. Forage quality of these higher elevation USFS grazing allotments improves as the season progresses and is considered to reach peak growing conditions in June and July. Within the decision area in Utah, most grazing allotments are located at lower elevations that experience longer growing seasons therefore grazing permits may authorize longer seasons of use and some allotments may include some winter grazing allotments.

3.10.4.3 Environmental Consequences

Effects Common to All Alternatives

The primary management actions that could impact livestock grazing operations include the availability of BLM-administered lands to grazing and allotment closures and modifications or restrictions to season of use within allotments.

Alternative A (No Action – Current Management)

Acreages of current grazing allotments and permitted AUMs per allotment would remain unchanged under Alternative A but could be modified in the future dependent upon the results of allotment monitoring and site-specific conditions. Acreages and AUMs available to grazing under Alternative A would include 375,900 acres of OHMA and 251,370 acres of UHMA (Table 3.10.4). Acreages and AUMs unavailable to grazing under Alternative A would include 2,480 acres of OHMA and 3,410 acres of UHMA (Table 3.10.4). Seasonal restrictions included in existing RMPs are limited to the following management actions:

- Gunnison Resource Area RMP (BLM1993):

  Riparian Area Management Specific to Unit 14: A 4-inch minimum stubble height will be maintained in Management Unit 14 (riparian areas that have been identified as important for sage grouse brood rearing) from June 15 through July 31, to provide for adequate brood rearing habitat.

- Monticello Field Office RMP (BLM 2008):

  GRA-24 Sage Flat, Upper East Canyon, Sage-grouse and Dry Farm allotments will not be grazed from March 20 to May 15 (GUSG nesting season).

  SSP-25 The following grazing allotments will not be grazed from March 20 to May 15: Sage Flat, Upper East Canyon, Sage-grouse, and Dry Farm.

These RMP prescriptions address grazing season of use restrictions that affect livestock grazing but are not in effect for the entire period of analysis under this Issue Statement (March 1 through July 15). Effects of these specific management actions include potential seasonal restrictions on allotment utilization and reductions of AUMs to ensure minimum stubble heights in riparian areas that provide brood-rearing habitat for GUSG. The seasonal closure of the Sage Flat, Upper East Canyon, Sage Grouse, and Dry Farm allotments results in the seasonal unavailability of 5,920 acres of allotments and 171 AUMs.

In addition to existing BLM RMP management direction, guidance from the CCA for livestock grazing within the Gunnison Resource Area has been effect since 2012 (Gunnison Basin Sage-grouse Strategic Committee 2012).

Action Alternatives

Alternative B1 would make allotments within OHMA and UHMA unavailable for the life of the RMP Amendment for livestock grazing throughout the year and the renewal and/or transfer of livestock grazing permits in these areas would not be allowed. Alternative B1 does not contain management actions that limit livestock grazing seasonally (March 1 through July 15). Over time, as expiring permits are not renewed within OHMA and UHMA, the acres available for grazing would be reduced until no acres or AUMs within OHMA or UHMA would be available for grazing. A total of 391,490 acres and 258,630 acres of existing grazing allotments in OHMA and UHMA respectively would be unavailable for grazing under Alternative B1 (Table 3.10.6). A total of 186,080 previously authorized AUMs would also be unavailable for grazing use under Alternative B1.

Restricting livestock grazing in OHMA and UHMA on a year-round basis would require grazing permittees to move livestock off BLM-administered grazing allotments and onto private land, or other jurisdictional, pasture. As a result of this restriction, grazing permittees would have to modify current grazing rotations to account for the lack of access to BLM-administered public land allotments and AUMs. Overall, the flexibility of grazing operations would be severely diminished by the closure of public land allotments within OHMA and UHMA. Furthermore, livestock may need additional supplemental forage to be provided throughout the year if private land, or other jurisdictional, pastures do not support the same or similar number of AUMs.

Livestock grazing operators with permits on neighboring USFS-administered grazing allotments would be adversely impacted as a result of the reduction of BLM allotments. The reduction of BLM-administered allotments would result in increased competition for access to non-BLM grazing allotments and private land pastures for the majority of grazing operators in the planning area and potentially regionally.

Livestock grazing operators that cannot sustain minimum levels of consistent production due to BLM-administered pastures becoming unavailable to grazing may be forced to cease operations or sell their business to other operators. Additionally, areas of OHMA and UHMA within the planning area on private land may experience increased use and risk of GUSG habitat degradation due to the likely result that grazing operators would be forced to obtain access to non-BLM pasture and forage.

Alternative B2 would not allow livestock grazing in OHMA between March 1 and July 15. Livestock grazing would continue to be authorized in UHMA with no season of use restriction. A total of 391,490 acres of existing grazing allotments in OHMA would be unavailable for grazing under Alternative B2 between March 1 and July 15. A total of 66,945 previously authorized AUMs would also be unavailable for grazing use under Alternative B2 between March 1 and July 15.

As a result of the season of use restriction on grazing in OHMA, livestock grazing operators would be required to keep livestock on private, or other jurisdictional, pasture through the

early grazing season before turning out onto BLM allotments after July 15. This would likely require operators to obtain access to additional private, or other jurisdictional, pasture until July 15 or provide additional supplemental forage throughout the early grazing season if private land pastures do not support the same or similar number of AUMs. Additionally, operators that cultivate hay on private pastures during the early gazing season would likely be unable to do so as livestock may be required to stay on those private pastures during that period representing an adverse economic effect for some operators. Similar to Alternative B1, the flexibility of grazing operations would be severely diminished by the closure of public land allotments within OHMA from March 1 to July 15. Alternative B2 would result in a substantial adverse disruption to existing permittees livestock grazing operations within the decision area but less so in comparison to Alternative B1.

Some grazing operators may be forced to discontinue operations in the event they cannot obtain access to additional private land pastures for grazing or provide supplemental forage to sustain existing grazing operations. Alternatively, grazing operators affected by restrictions on available allotments may need to transport livestock to available grazing pastures located outside of the Gunnison Basin and other population areas via heavy trucks. This would represent an additional economic burden upon grazing operators and may result in the cessation of some grazing operations within the decision area. Potential economic effects on grazing operators and the local economy are discussed further in Section 3.16, *Social and Economic Conditions*.

Livestock crossing/trailing permits through OHMA would be authorized on approved routes between July 16 and February 28. New livestock crossing/trailing permits would not be approved. This may result in reduced operational flexibility for grazing permittees and some operators may experience difficulties in moving livestock across BLM lands. This could adversely affect the ability of operators to move livestock from private pastures generally located at lower elevations within the decision area to USFS-administered grazing allotments that are located at higher elevations where forage becomes available later in the grazing season.

Table 3.10.6. Acres Available for Livestock Grazing and AUMs for which the Current Permit Authorizes Use between March 1 and July 15 Under Alternative B1 and Alternative B2

GUSG Population	Acres Available for Livestock Grazing in OHMA	Acres Unavailable for Livestock Grazing in OHMA[1]	Acres Available for Livestock Grazing in UHMA	Acres Unavailable for Livestock Grazing in UHMA[1]	Unavailable AUMs
Alternative B1					
Cerro Summit – Cimarron-Sims Mesa	0	1,270	0	7,250	2,150
Crawford	0	22,120	0	9,770	7,630
Dove Creek	0	4,090	0	52,150	68,520
Gunnison Basin	0	280,280	0	58,880	40,850
Monticello	0	2,580	0	1,110	2,340
Piñon Mesa	0	17,680	0	92,140	40,080
Poncha Pass	0	12,440	0	11,360	7,080
San Miguel Basin	0	35,440	0	21,280	17,430
Alternative B2					
Cerro Summit – Cimarron-Sims Mesa	0	1,270	7,250	0	430
Crawford	0	22,120	9,770	0	3,394
Dove Creek	0	4,090	52,150	0	2,389
Gunnison Basin	0	280,280	58,880	0	31,303
Monticello	0	2,580	1,110	0	733
Piñon Mesa	0	17,680	92,140	0	16,726
Poncha Pass	0	12,440	11,360	0	3,379
San Miguel Basin	0	35,440	21,280	0	8,591

[1] Acres unavailable for livestock grazing would be for the life of the RMP Amendment.

Alternatives C, D, and E do not contain management actions that limit livestock grazing seasonally. Effects on livestock grazing under these alternatives would be the same as described under Section 3.10.2, *Issue #1*.

3.10.4.4 Conclusion

Management actions and allowable uses, particularly season of use restrictions under Alternatives B1 and B2 would have the greatest effect on livestock grazing operations within the decision and planning areas. A total of 186,080 previously authorized AUMs would be unavailable for grazing use for the life of the RMP Amendment under Alternative B1 year-round and 66,945 previously authorized AUMs would be unavailable for grazing use under Alternative B2 between March 1 and July 15. This would adversely affect livestock grazing operations throughout the year and specifically during the spring and summer periods when current operations rely heavily upon access to public land grazing allotments for forage and water supply. These limitations would result in grazing operators being forced to discontinue operations in the event they cannot obtain access to additional private land pastures for grazing or provide supplemental forage to sustain existing grazing operations. Alternatives C and D are anticipated to benefit the long-term sustainability of livestock grazing within the decision area through the application of consistent management objectives and would not result in the adverse effects to livestock grazing operations anticipated under Alternative B.

3.10.4.5 Cumulative Effects

Past, present, and reasonably foreseeable future actions would have the same or similar effects to livestock grazing as presented under Issue #1.

3.10.5. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is implemented. Land use restrictions imposed throughout the decision area to protect Gunnison sage-grouse habitat may affect the ability of permittees and lessees who use BLM lands for livestock grazing to do so. Although attempts would be made to minimize these impacts, unavoidable adverse effects could occur under the No Action Alternative or the action alternatives.

3.10.6. Relationship of Short-Term Uses and Long-Term Productivity

Short-term effects would occur over the alternative implementation period, depending on the availability of funding. Long-term productivity is defined as the consequences of implementing the alternatives, both adverse and beneficial, that would occur. Grazing season of use restrictions placed on livestock grazing under Alternatives B1 and B2, have potential for adverse effects to short-term uses and long-term productivity on livestock grazing in GUSG habitats. Short-term adverse effects include restrictions on the season of use and AUMs during the period of March 1 to July 15. These impacts would result in a substantial adverse disruption to existing permittees livestock grazing operations within the decision area. Adverse effects to long-term productivity of livestock grazing operators may include operators being forced to discontinue operations in the event they cannot obtain access to additional private land pastures for grazing or provide supplemental forage to sustain existing grazing operations.

Long-term productivity of pastures for livestock grazing may decrease under some alternatives (e.g., Alternatives B1 and B2), as grazing pressure shifts from BLM to private land, and changes in disturbance regimes result in altered vegetation community composition. However, under Alternatives C, D, and E, long-term productivity has the potential to be improved because management actions would be implemented to improve rangeland and livestock management, while improving GUSG habitat and population viability.

3.10.7. Irreversible and Irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. None of the alternatives would result in an irreversible or irretrievable commitment of resources.

3.11. RECREATION

3.11.1. Introduction

Recreation is a popular use in much of the planning area. Recreation opportunities vary throughout the planning area and across seasons. The planning area has year-round recreation activities, which include hiking, camping, horseback riding, mountain biking, OHV use, cross-country skiing, and climbing. Recreation is an important part of local economies in the area, and community marketing efforts attract visitation from local, regional, and international locations.

Migrating and resident wildlife provide plentiful opportunities for hunting, photography, recreation touring, and observation. Renowned local rivers, streams, and lakes offer boating and cold-water fishing opportunities.

Recreation visitors to the planning area typically come from national and international locations, the Denver and Salt Lake City metropolitan areas, Colorado's Front Range and Utah's Wasatch Front, and other local communities. For both Colorado and Utah visitors, the region is an easily accessible weekend getaway with a diversity of outdoor activity offerings and recreation settings. Increased visitation to small towns and destination resorts contribute to the increased use of public lands.

3.11.1.1 Recreation Policy

Some form of recreation use and associated recreation resources are typically present on the lands and waters managed by BLM field offices, and are consequently allocated through the land use planning process. BLM recreation management focuses on three basic components of recreation opportunities on public lands: (1) types of recreation opportunities and experiences that are provided, (2) the character of recreation setting within which they occur and retaining that character, and (3) services that can be provided by the BLM and its collaborating partners. In the last several decades, there has been a growing recognition of how much outdoor recreation contributes to environmental health, social wellbeing, and economic prosperity (State Outdoor Business Alliance Network 2021).

Outcomes-focused management is defined as an approach to recreation management that focuses on the positive outcomes gained from engaging in recreation experiences. Positive recreation outcomes consist of experiences and benefits and are defined by the BLM as:

- Experiences - Immediate states of mind resulting from participation in recreation activities that result in benefits.
- Benefits - The results of a satisfying recreation experience that improve or maintain a desired condition. These accrue from recreation participation, are both short and long term, and are realized onsite and offsite. Benefits are identified in one of four categories

and are described as: Personal/Individual Benefits, Social/Community Benefits, Economic Benefits, and Environmental Benefits. The fundamental concept of outcomes-focused management is that benefits endure beyond the onsite recreation experience attained by individuals. Those experiences and onsite benefits stay with the individual when they leave the recreation area and cumulatively lead to offsite beneficial outcomes to communities, economies, and the environment. This linkage between experiences and outcomes can be viewed as a chain (BLM H-8320-1 2014).

3.11.1.2 Connecting with Communities Strategy

The BLM's national recreation strategy, known as "Connecting with Communities" provides a framework for the agency's approach to managing recreation on BLM-administered public lands. BLM public lands - once described as 'the lands nobody wanted' - are now recognized as America's Great Outdoors, a "Backyard to Backcountry" treasure. They are uniquely accessible, and their close proximity to varied stakeholders creates many opportunities for the BLM and local communities to collaboratively manage recreation to achieve desired social, economic, and environmental outcomes.

To guide implementation of the national strategy, Colorado developed a step-down strategy titled "Backyard to Backcountry." A revision of the national strategy, titled "BLM 21st Century Recreation Strategy is currently underway."

3.11.2. Issue 1: How would management actions under each alternative affect the types and levels of BLM-provided recreation opportunities?

3.11.2.1 Analytical Methods and Assumptions

The following indicators are used to inform the existing condition of recreation opportunities. These indicators will also be used to analyze the effects of the preferred alternative and other alternatives on recreation resources:

- Changes in the number and type of sites where recreational opportunities and experiences are reduced or eliminated and changes in recreation sites and activities within 4 miles of all leks
- Changes to the number or types of Special Recreation Permits (SRPs) allowed in GUSG habitat.

3.11.2.2 Affected Environment

Recreation Participation

BLM lands constitute nearly 13 percent of all lands in Colorado at just over 8 million acres, and about 42 percent of all lands in Utah at just under 23 million acres (CPW 2019; Utah Department of Natural Resources and Utah Division of Parks and Recreation 2019). In FY 2022, BLM reported 10,373,228 visits in Colorado and 11,723,280 visits in Utah (BLM 2022).

Much of the recreation participation within the planning area reflects the predominantly open and undeveloped character (also referred to as the 'dispersed' recreation setting character) of the majority of BLM lands in both States. As reflected by the 2019 Colorado Statewide Comprehensive Outdoor Recreation Plan (SCORP), 27 of the top 30 outdoor recreation activities are strongly associated with public lands, such as BLM-administered lands (CPW 2019, Appendix D3). Motorized and non-motorized trail use, water-based activities, and winter-based activities are all well-represented within the planning area. On BLM lands within the planning area, the most popular activities based on number of participants include: non-motorized travel (hiking/walking/running, mountain biking); interpretation, education, and nature study (wildlife viewing/environmental education); OHV travel; camping and picnicking; specialized sports, events, and activities (climbing, archery, photography); non-motorized boating; driving for pleasure; and hunting (BLM 2022).

Recreation priorities on BLM lands will be determined primarily by the BLM National Strategy and the Colorado Step-down Strategy. In addition, State SCORPs will continue to inform BLM of citizen desires and unmet needs in both Colorado and Utah as recreation trends continue to evolve. Customer assessments for recreation management areas will provide specific focus for recreation management for those unique allocations of BLM lands. Changing recreation patterns, interests and technologies, and BLM's ability to adapt to them will also determine priorities. Other factors over time, such as population growth or climate change will also, undoubtedly, determine priorities for recreation and other resources on BLM-managed lands in the decision area.

Tourism

Some of the fastest-growing segments of the travel and tourism industry—outdoor recreation, nature, adventure, and heritage tourism—are also key components of BLM-managed public lands. Recreation and tourism are significant economic drivers, and are identified together as one of the top three industries in the twelve western States where the vast majority of BLM public lands are located.

The BLM works with the tourism industry and gateway communities to:

- Encourage development of sustainable travel and tourism within gateway communities and support community-based conservation;

- Emphasize BLM outdoor recreation, National Conservation Lands, and heritage tourism attractions that influence the social, economic, and environmental interests of gateway communities;
- Improve BLM relationships with community, State, and individual travel and tourism partners to stimulate public involvement with the public lands; and
- Sustain social, economic, and environmental viability of rural communities, including communicating a sustainable stewardship message to those communities and their visitors.

BLM involvement with the tourism industry is important to enhancing the quality of life within communities, where there is interest in expanding outdoor recreation-based tourism, nature-based tourism, and heritage-based tourism. Working with tourism partners, in turn, can help protect natural and heritage resources on public lands, as well as provide critical economic opportunities in local communities.

Developed Recreation Facilities

Within the decision area and GUSG habitat, developed recreation sites and facilities have been constructed in order to enhance recreational opportunities, protect resources, manage activities, and reduce user conflicts. These developments range from campgrounds to trailheads with simple bulletin boards to developed river access sites. Many of these developments are located within SRMAs, where the BLM has made a commitment to the unique values, importance, and distinctiveness of the recreational opportunities in those areas.

There are a total of 66 developed recreation sites located in the decision area on BLM-administered lands (as shown in Table 3.11.1 and Map A.70 [Appendix A]).

Table 3.11.1. BLM Recreation Sites in the Decision Area

Population Area/Habitat Type/Site	Developed Site Type	Total Number of Sites
Cerro Summit – Cimarron-Sims Mesa		**0**
OHMA	N/A	0
UHMA	N/A	0
Crawford		**0**
OHMA	N/A	0
UHMA	N/A	1
Dove Creek		**1**
OHMA	N/A	0
UHMA	Interpretive Site	1
Gunnison Basin		**20**
OHMA	Access Point; Campground; Campsite-Primitive-Non Reservable-No Fee; Parking Area; Staging Area; Trailhead	14

Population Area/Habitat Type/Site	Developed Site Type	Total Number of Sites
UHMA	Access Point; Campground; Interpretive Site; Point of Interest	6
Monticello		
OHMA	N/A	0
UHMA	N/A	0
Piñon Mesa		**42**
OHMA	Trailhead	1
UHMA	Access Point; Campground; Campsite-Developed-Non Reservable-Fee; Campsite-Primitive-Non Reservable-No Fee; Parking Area; Picnic Area; Staging Area; Toilet; Trail Head	41
Poncha Pass		**3**
OHMA	Access Point; Staging Area	3
UHMA	N/A	0
San Miguel Basin		**0**
OHMA	N/A	0
UHMA	N/A	0
Adjacent Non-habitat 1 mile	Boat Launch; Boat Ramp; Campground; Campsite-Developed-Non Reservable-No Fee; Campsite-Primitive-Non Reservable-Fee; Campsite-Primitive-Non Reservable-No Fee; Interpretive Site; Parking Area; Point of Interest; Scenic Overlook; Toilet; Trail Head	36
Adjacent Non-habitat 4 mile	Access Point; Boat Launch; Boat Ramp; Cabin; Campground; Campsite-Developed-Non Reservable-No Fee; Campsite-Primitive-Non Reservable-Fee; Campsite-Primitive-Non Reservable-No Fee; Campsite-Primitive-Reservable-Fee; Interpretive site; Parking Area; Picnic Area; Point of Interest; Scenic Overlook; SRMA; Staging Area; Toilet; Trail Head	146

Source: BLM 2022
N/A=not applicable

Trends

The BLM defines a "Visit" as the entry of a person onto lands or waters, administered by the BLM for the pursuit of recreation experiences regardless of duration. The BLM defines a "Visitor Day" as a unit of measure equal to 12 visitor hours (BLM n.d.).

At a national level, recreation activities on BLM-administered public lands are steadily increasing. Since the COVID-19 pandemic was declared in March 2020, the growth of new and returning outdoor participants has increased by 26 percent. Despite reasonable expectations that the second year of the pandemic would result in decreased outdoor participation, 2021 data indicates that participation in outdoor recreation retained its momentum in 2021 (Outdoor Foundation 2022).

At the State level, one of the top reasons people choose to live in Colorado and Utah are both States' clean environment, access to public lands and outdoor recreation opportunities, and residents' ability to maintain a healthy, outdoor lifestyle. Considering population growth projections, and the likelihood of new residents sharing these same outdoor-focused priorities, land managers will face trade-offs between promoting recreational opportunities while managing natural resources to maintain their integrity (CPW 2019). According to the 2019 Utah and Colorado SCORPs, Utah citizens reported the greatest need for more trails/pathways (motorized, non-motorized, hike, bike, equestrian). In Colorado, dirt trails were identified as extremely important and a primitive setting with basic amenities was preferred over highly developed recreation areas. It is expected that priorities will continue to evolve alongside changes pertaining to populations, community needs, service provider networks, and outdoor recreation pursuits and technologies.

Locally, recreation trends have normalized some since the spike in recreation participation following the COVID-19 pandemic; however, recreation participation is still higher than before the onset of COVID-19. On the whole, visitation to the planning area is expected to continue to grow. Many local communities in the planning area are bordered by public lands, which are used as "backyard" recreation areas by local residents. Despite fluctuations in the seasons, recreation is important to the way of life across the planning area. Recreation is important to local economy and businesses as gateway communities to public lands. As urbanization increases, so too does expansion into the Wildland Urban Interface, which may pose increased threats for GUSG conservation efforts from increased outdoor recreation use and other resource concerns characteristic of the Wildland Urban Interface, such as loss of habitat and habitat fragmentation.

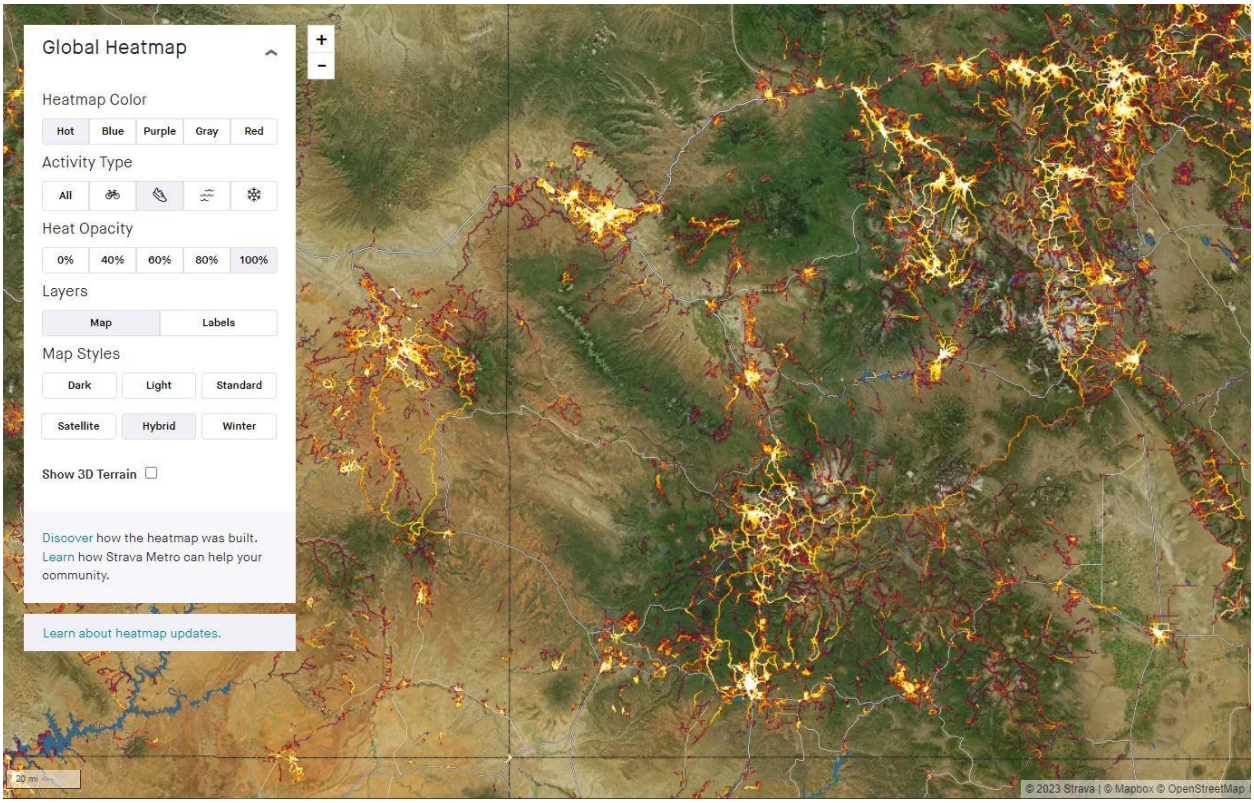
Generally, participation in outdoor recreation on public lands within the planning area will likely increase at a greater rate than national averages, due partially to higher-than-average population growth in the mountain west, and the increasingly popular outdoor lifestyle found within the planning area. On BLM-administered lands in the planning area, recreation use has steadily increased in recent years and that trend is expected to continue. Local residents, and visitors alike, will continue to seek easy access to public lands for shorter use periods (such as after-work trail runs or bike rides and weekend getaways, etc.), combined with increasing interest in lower-elevation, community-based recreation on public lands. Trends can also be seen for some of the more common recreational pursuits on BLM lands in the planning area, including:

Non-motorized Travel

According to the BLM's RMIS Report 19, which tracks participation, non-motorized travel has the highest participation rate by group on BLM-administered lands in the planning area. In FY 2022, there were nearly 65 million participants in non-motorized travel (BLM 2022) across the planning area. Trails in the planning area are a stated necessity and seeking greater connectivity between communities and associated public lands will continue for the foreseeable future.

Strava, an online engagement platform for outdoor recreation users, provides a glimpse into the geographic and density of use patterns across the planning area. Hiking/walking/running saw almost 30 million participants in FY 2022 across the planning area. The figures below (Figure 3.11.1 through Figure 3.11.3) are heat maps that represent the popularity of certain trails across different use types. Data from these figures is provided via Strava, an app that uses GIS to track physical exercise of participants. The brighter color routes are those that receive a higher number of participation for that given form of recreation.

Figure 3.11.1. Strava Heat Map - Running

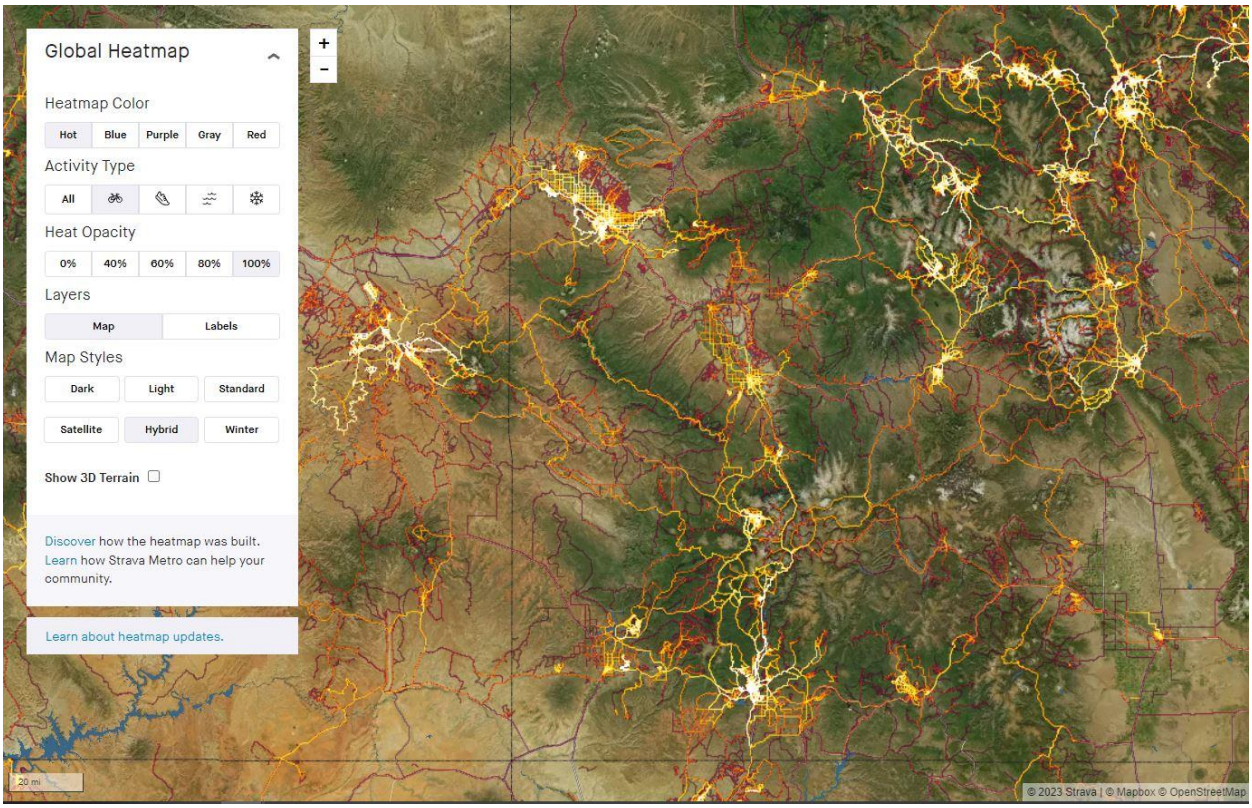


Mountain Biking

Mountain biking is another popular form of non-motorized travel within the planning area. Mountain biking ranks as the 17th most common pursuit of adults in Colorado, and is ranked 12th in terms of activities based on spending (CPW 2019). On BLM-administered lands in the planning area, mountain biking saw 25 million participants in FY 2022. Other places in the planning area, such as Moab, Utah, are international destinations for mountain biking opportunities.

E-bikes (bikes with electric motors) are becoming increasingly popular in much of the planning area. For more information on e-bikes and other changing technologies, see the "Changing Technologies" section below.

Figure 3.11.2. Strava Heat Map - Biking



OHV Riding

Another popular recreation activity on BLM-administered lands in the planning area is OHV riding, with nearly 43 million participants in the planning area alone over the last 15 years, with over 2 million participants in FY 2022 (BLM 2022). OHV use has steadily increased, especially for all-terrain vehicles (ATVs) and off-highway motorcycles. Between the years of 2000 and 2014, Colorado OHV registrations for residents increased by 219% while OHV permits for non-residents increased by over 1,607% (NOHVCC 2022). OHV permits are required across all land management agencies.

Winter Use

The planning area provides opportunities for both motorized and non-motorized winter recreation. During the winter months snowmobiling, cross-county skiing, snowshoeing, ice skating, and ice fishing are traditional activities that have remained popular (BLM 2022). Fat biking (i.e., winter biking) and ice climbing are two relatively new recreation opportunities that are becoming increasingly popular.

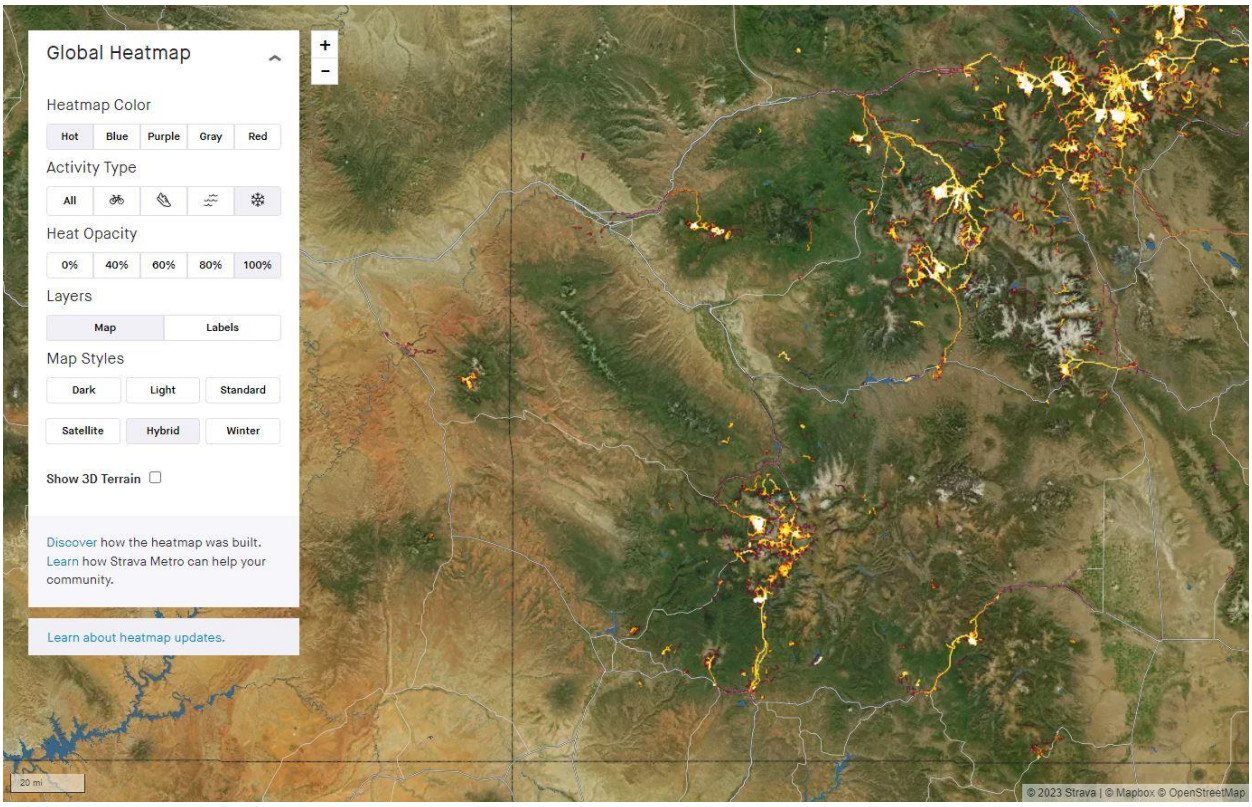
According to the 2022 RMIS Report 19, 4.4 percent of visitors take part in cross-country skiing and other nonmotorized winter activities, while 3.2 percent of visitors take part in snowmobiling and other motorized activities.

Fat biking (i.e., winter biking) is a new user group that is increasing in popularity. This new activity provides additional complications in the balancing of winter recreation settings. Fat bikers also utilize cross-country ski trails, but they do so at a faster speed and over longer distances than most snowshoe and cross-country skiing users.

Unregulated Dispersed Recreation

Dispersed travel on unregulated routes and into areas is continuing to become more common in the planning area as more recreationists are seeking new areas for travel and recreation. Typically there is no signage or communication that recreationists may be entering GUSG habitat.

Figure 3.11.3. Strava Heat Map - Winter Activities



Big Game Hunting

The majority of big game hunting in Colorado takes place within the planning area. CPW reports hunting activity by State tourism regions. Regions 1, 7, and 6 cover, but also extend beyond, the Planning Area. Approximately 53 percent of the State's big game hunting activity takes place in Regions 1 and 7, and another 24 percent occurs in region 6 of the State. A similar trend is seen with wildlife viewing (CPW 2015). In Utah, more than 1 million participants engaged in wildlife-related recreation in 2022 (Utah Department of Natural Resources and Utah Division of Parks and Recreation 2019). A significant amount of this participation occurs in the planning area. Though still very popular on BLM lands within the planning area, big game

hunting has generally declined since a high in 1998 for license holders in Colorado. The decline in big game hunting is occurring due to a reduction in available hunting licenses (i.e., there is more demand than supply available), and due to the fact that a majority of hunters are getting past the age where they are able to participate in the activity (CPW 2020).

Other Outdoor Recreation Pursuits in the Planning Area

According to the Outdoor Industry Association, the number of users participating in horseback riding has fallen slightly. Wildlife watching, viewing scenery, and experiencing the heritage/history/culture of lands associated with the planning area are expected to increase, especially with the aging US population (Outdoor Foundation 2022). Antler shed hunting is also becoming an increasingly popular springtime recreation activity within the planning area.

Changing Technologies

New recreation technologies are challenging land managers to characterize new uses and technologies through traditional definitions, such as 'motorized', 'non-motorized', 'mechanized', 'quiet use' 'solitude', etc. New recreation technologies include lighter and more capable mountain bikes, bikes with electric motors (i.e., e-bikes), fat-tire bicycles that can travel on all types of terrain (including snow), all-terrain Segway's, larger and more advanced OHVs, larger camping vehicles, advanced snowmobiles that extend the traditional range of use, zorbing (rolling down a mountainside in a giant transparent plastic ball), unmanned aircraft systems, squirrel suits, jet packs, and hikers with robotic-assisted exoskeletons.

Special Recreation Permits

SRPs are authorizations that allow specific recreational uses of public lands and related waters. SRPs are issued under the authority of the Federal Lands Recreation Enhancement Act. They are issued as a means to (1) support recreation planning goals to provide experience and beneficial outcomes to the public; (2) manage visitor use and reduce user conflicts; (3) protect natural and cultural resources; (4) provide for public health and safety; (5) educate and communicate with the public; (6) provide a mechanism to accommodate commercial recreation uses; and (7) obtain a fair value and return for the commercial use of public land.

The objective of the BLM recreation permitting system is to satisfy recreation demand within allowable use levels in an equitable, safe, and enjoyable manner while minimizing adverse resource impacts and user conflicts. By issuing SRPs, BLM authorizes permittees the use of public lands and/or related waters for specific recreation purposes; a privilege that is subject to the terms and conditions of the permit. Recreation permits are administered in a manner that is consistent with management objectives determined in RMPs, Recreation Area Management Plans, or in their absence, through recreation management objectives resulting from analysis of resources and visitor use in each area (H-2930-1, 2014). To assist in forecasting potential

demand for SRPs, NPS offers statistical data from Black Canyon of the Gunnison National Park and Curecanti National Recreation Area on the Interactive Visitor Use Statistic Site.

SRPs are issued for various commercial, competitive, and organized non-commercial activities on BLM-administered lands. Within the planning area, SRPs are issued for such things as guided hunting and fishing, off-road vehicle tours, mountain bike tours, horseback rides, races, vendors, river outfitting, and numerous other activities (see Table 3.11.2). The greatest number and variety of SRPs in GUSG habitat are in the Gunnison Field Office. Within the satellite populations, the most common type of SRP issued in GUSG habitat is for Big Game hunting. No SRPs have been issued on BLM-administered lands related to GUSG viewing (BLM 2022).

Table 3.11.2. Special Recreation Permits in the Decision Area

Activity	2018	2019	2020	2021	2022
Environmental Education	6	8	10	12	12
Interpretive Programs	5	4	6	8	10
Wilderness Therapeutic Program-Youth	1	1	1	2	1
Nature Study	N/A	2	2	2	3
Hunting – Big Game	129	126	134	123	125
Hunting - Predator	12	17	18	16	16
Hunting - Other	2	2	1	1	1
Bicycling - Mountain	112	113	120	114	126
Bicycling - Road	4	3	8	8	8
Racing - Bicycle	9	8	10	12	12
Racing - Foot	17	16	17	13	15
Racing - Motorcycle	1	1	1	1	1
Racing – Horse Endurance	1	1	1	1	2
Racing - Adventure	6	6	7	5	5
Canoeing/Kayaking	20	16	21	20	19
Climbing – Mountain/Rock	92	98	104	113	108
Ice Climbing	5	5	8	6	6
Hiking/Walking/Running	75	82	85	91	7,479
OHV - Motorcycle	10	17	26	25	25
OHV – Cars/Trucks/SUVs	59	61	85	85	89
OHV - ATV	9	9	15	18	15
OHV - Ultralight	N/A	N/A	N/A	1	1
Rock Crawling - 4WD	5	6	6	6	5
Driving For Pleasure	4	7	8	6	8
Row/Float/Raft	11,996	12,104	8,369	15,471	3,008
Boat Launching	1	1	3	3	2
Personal Watercraft	1	1	1	1	1

Activity	2018	2019	2020	2021	2022
Pack Trips	1	1	1	1	1
Power Boating	2	2	2	2	2
Viewing – Scenery/Landscapes	2	2	1	1	2
Viewing – Wild Horses	N/A	3	2	2	2
Viewing – Wildlife	1	1	1	1	2
Viewing – Interpretive Exhibit	N/A	N/A	N/A	N/A	1
Viewing - Cultural Sites	6	6	4	3	6
Archery	8	5	6	6	4
Target Practice	1	N/A	N/A	N/A	N/A
Backpacking	49	57	57	66	1,161
Camping	923	1,412	1,123	1,278	58
Horseback Riding	23	19	17	18	18
Vending/Services	17	27	32	33	29
Unspecified	6	7	7	6	7
Dog Mushing	1	1	1	1	1
Dog Trials	N/A	N/A	N/A	N/A	1
Fishing - Freshwater	11	12	7	7	10
Heliskiing	N/A	N/A	1	1	1
Skiing – Cross Country	2	2	N/A	N/A	N/A
Skiing - Downhill	2	1	1	2	2
Snowmobiling	3	2	4	2	2
Photography	18	19	21	56	75
Model Airplane/Rocket	N/A	N/A	N/A	N/A	1
Astronomy	1	2	2	2	3
Hang-Gliding/Parasailing	2	1	3	3	2
Social Gathering/Festival/Concert	1	1	2	1	2
Specialized Sport/Event (Non-Motor)	7	6	5	7	8
Therapeutic Programs	3	4	3	4	4
Re-enactment Events/Tours	2	1	1	1	1
Total SRPs	**13,674**	**14,309**	**10,371**	**17,668**	**12,509**

3.11.2.3 Environmental Consequences

Effects Common to All Alternatives

The primary actions that would impact the number of sites where recreational opportunities exist are the closure or limiting of construction in OHMA or UHMA and minimization criteria.

Impacts would occur if recreationists would be limited to experiencing existing recreation sites because of closures.

Alternative A (No Action – Current Management)

Changes in the number of sites where recreational opportunities and experiences are reduced or eliminated and changes in recreation sites and activities within 4 miles of all leks.

Alternative A would continue current BLM management direction related to the number of sites where recreational opportunities and experiences are reduced or eliminated. Allowable uses and restrictions would remain unchanged within 4 miles of all leks. Alternative A would have the least impact on changes in recreation sites and activities within 4 miles of all leks. Under Alternative A, public lands not within a SRMA would be managed for a diversity of recreation opportunities.

Changes to the number or types of Special Recreation Permits allowed in GUSG habitat.

Alternative A would maintain the current BLM management direction related to the number and types of SRPs in the 11 RMP administrative units within the planning area would remain the same. Under Alternative A, the BLM would continue to consider SRPs on a case-by-case basis, considering measures that would minimize effects to important resources or resource values. Alternative A would have the least impact on changes in SRPs allowed in GUSG habitat.

Action Alternatives

Changes in the number of sites where recreational opportunities and experiences are reduced or eliminated and changes in recreation sites and activities within 4 miles of all leks

Alternative B would result in the greatest impact on changes in recreation sites and activities within 4 miles of all leks. Alternative B would not allow for new construction of small-scale recreation-related infrastructure in UHMA and OHMA. The BLM would exclude new authorizations for placement of the following features within the specified buffer distance of all leks, including active, inactive, historic, and unknown: (1) no linear features (roads, pipelines, ROW designated trails) within 3.1 miles of leks; (2) no low structures (e.g., fences, weather stations) within 1.2 mile of leks; (3) no tall structures (e.g., communication or transmission towers, transmission lines) within 4 miles of leks; and (4) no infrastructure related to energy development within 4 miles of leks.

Under Alternative C impacts would be greater than under Alternative A but less than under Alternative B. Health and human safety concerns would be addressed within OHMA for small scale recreation-related infrastructure.

Under Alternative D, impacts on the changes in recreation sites and activities would be greater than Alternative C but less than Alternative B. Within OHMA and UHMA, Alternative D would require infrastructure to be counted toward the disturbance cap when greater than 0.25 acres. If the disturbance cap has been exceeded, then new infrastructure will be deferred until disturbance levels are back below the cap (see SSS Management Action 4.3). The BLM will apply minimization criteria to avoid new authorizations for placement of the following features within the specified buffer distance of all active, inactive, and historic leks: (1) linear features (roads, pipelines, ROW, designated trails) within 1 mile of leks; (2) low structures (e.g., fences, weather stations) within 1.2 mile of leks; tall structures (e.g., communication or transmission towers, transmission lines) within 2 miles of leks; infrastructure related to energy development within 3.1 miles of leks.

Under Alternative E, impacts on the types and level of recreation would be greater than Alternative D but less than Alternative B. Alternative E would balance sage-grouse and recreation via the concentration of use in preferred areas. Although sage-grouse conservation measures would still be observed in each of these areas, such as seasonal closures to minimize disturbance to leks and complete avoidance of new infrastructure within 0.6 mile of a lek, the off-site mitigation standards outlined in Sections 4.3, 4.4, 5.2, and 5.3 of the CCA would not be required in these areas to compensate for new route and facility development. For efficiency, route reclamation efforts will be best suited to areas at a greater distance from the urban interface.

Changes to the number or types of Special Recreation Permits allowed in GUSG habitat

Alternative B would have an identical effect on the number and type of SRPs allowed in GUSG habitat compared to Alternatives C and D. Under these alternatives, and within OHMA, all SRPs issued within OHMA would include additional educational/etiquette messaging in all use authorizations.

All SRPs that are disruptive to GUSG or their habitat would be redirected away from ERMAs/undesignated lands and into SRMAs whenever possible, except when those activities (e.g., environmental education field trip, wildlife observation or photography) are conducted during a time (i.e., seasonal timing limitations or daily times) or in a manner that is not disruptive to GUSG or GUSG habitat.

SRPs that would result in the degradation or removal of GUSG habitat or adversely affect GUSG would not be allowed in OHMA or UHMA.

Under Alternative E, impacts would be greater than Alternative D, but less than Alternative B, C, and D. Within the Gunnison Basin, SRPs would be covered if applicants comply with any existing public seasonal closures; if events and guides utilize designated open routes (vs. cross-country travel) as identified in the TMP (BLM, USFS) or MVAP (NPS); if recreation permits, including those for outfitters, are modified at renewal and issuance to allow for management flexibility in event of a severe winter; and if the permitting agency demonstrates reasonable

attempt to focus events and outfitters on/through areas outside of sage-grouse habitat, or to identified high-use, urban interface recreation areas. Nonetheless, certain activities require a specific resource, and implementing agencies recognize that not all activities can be located outside of sagebrush habitat.

3.11.2.4 Conclusion

Management of recreation-focused areas (SRMAs and ERMAs), unstructured or dispersed recreational opportunities, and the issuance of SRPs would continue as they are currently managed under Alternative A. Under Alternative B, the BLM would place the most restrictions on recreation, resulting in the greatest number of cumulative effects, such as the potential elimination of RMAs or elimination of new or reissued SRPs. Under Alternative C, BLM would have more flexibility to provide for continued or new recreational opportunities if it could be demonstrated that GUSG and their habitat would not be negatively impacted. However, the BLM would place some restrictions on recreation, which could cumulatively add to a decrease in this resource use. Under Alternative E, the BLM would manage recreation resources in accordance with the CCA developed for the protection and recovery of the GUSG within its core range and habitat.

3.11.2.5 Cumulative Effects

The area used to analyze cumulative effects on recreation resources is the planning area. Past, present, and reasonably foreseeable future actions and conditions within the cumulative effects analysis area that have affected recreation are increased visitation (especially from residents within the planning area and those from the surrounding region), urbanization of communities in the planning area, advances in outdoor recreation equipment, management in existing Recreation Management Areas, and energy development.

At the broadest level, the physical, social, and operational recreation setting character of BLM-administered lands are quickly changing from natural to more developed, from less crowded to more contacts with others, and from less restrictive to more rules and regulations. These changes are expected to impact the activity opportunities that can be offered and the recreation experience and benefit opportunities that can be produced.

There is a strong correlation between population growth, visitation, and recreation, in large part because many new residents have moved to the area specifically because of easy access to recreation opportunities on BLM and other public lands. The expanding suburban development footprint has also placed many new neighborhoods directly adjacent to BLM boundaries, resulting in increased trespass onto private property and resource impacts from private property owners accessing public lands from adjoining private land (e.g., social trailing). Advances in technology are at least partly responsible for increased recreation across the

planning area, as motorized and mechanized vehicles are more capable of accessing previously remote areas.

Reasonably foreseeable trends that would result in cumulative effects on recreation include continued growth patterns in demand for all recreation experiences, increased demand for close-to-home recreation opportunities for local residents, continued and increased visitation from a growing regional population, and increased popularity of adjacent public lands. However, restrictions on development of public lands to protect GUSG and their habitat could cumulatively result in a benefit for GUSG from managed recreation.

3.11.3. Issue 2: How would seasonal timing limitations or the designations of ACECs impact recreational opportunities?

3.11.3.1 Analytical Methods and Assumptions

The following indicators are used to inform the existing condition of recreation opportunities. These indicators will also be used to analyze the effects of the preferred alternative and other alternatives on recreation resources:

- Changes in the number of acres where recreationists are unable to achieve targeted beneficial outcomes (specific to SRMAs), and for BLM to achieve and maintain supporting setting characteristics (specific to SRMAs and ERMAs).
- Changes in the seasonal timing acres or restrictions.
- Changes in recreation access within ACECs.

3.11.3.2 Affected Environment

Recreation Management Areas

To help effectively manage Recreation and Visitor Services (R&VS), the BLM designates Recreation Management Areas (RMAs). Areas are classified as either a SRMA or an ERMA. Both types of areas are recognized as producing high quality recreation opportunities and offering beneficial outcomes for recreation participants, recreation-tourism partners, visitor service providers, and communities.

Special Recreation Management Areas

An SRMA is an administrative unit where existing or proposed recreation opportunities and Recreation Setting Characteristics (RSCs) are recognized for their unique value, importance, and/or distinctiveness, especially as compared to other areas used for recreation. An SRMA is managed to protect and enhance a targeted set of activities, experiences, benefits, and desired

RSCs. Within an RMP, an SRMA may be subdivided into recreation management zones (RMZs) to further delineate specific recreation opportunities. Within an SRMA, R&VS management is recognized as the predominant RMP focus, where specific recreation opportunities and RSCs are managed and protected on a long-term basis (H-8320-1 2014).

There are twelve SRMAs in the decision area (as shown on Map A.8 [Appendix A]). SRMAs that overlap with GUSG habitat are included in Table 3.11.3.

- Spring Creek: provides day use mountain biking, horseback riding, running, and hiking outside of Montrose, Colorado.
- North Forks: provides upland and river-focused recreational opportunities, including road access to NCA river access points (boat ramps) where boating and float fishing are less arduous and technical than wilderness trips. Other opportunities include 4X4 and ATV/UTV scenic driving, mountain biking, camping, horseback riding, and walk-wade fishing.
- Dolores River: provides water-based recreation and hiking in a canyon setting.
- Alpine Triangle Recreation Area: provides sightseeing and motorized recreation along the Alpine Loop Scenic and Historic Byway.
- Cochetopa Canyon: provides fishing and wildlife viewing opportunities in a canyon setting.
- Hartman Rocks: provides community-based recreation in Gunnison, Colorado and features a non-motorized and motorized singletrack trail system, rock climbing/bouldering, and cross-country skiing.
- McInnis Canyons National Conservation Area (MCNCA): provides paleo and historical resource viewing, mountain biking, hiking, and OHV opportunities.
- Bangs Canyon: provides motorized and non-motorized trail systems in a setting of high desert canyons and plateaus.
- Cactus Park: provides opportunities for motorized vehicle enthusiasts to experience the back country.
- Two Rivers: provides boating and camping in the popular Westwater Canyon of the Colorado River.
- San Miguel River: provides boating and fishing opportunities in Southwest Colorado.
- Cross Canyons: provides remote backpacking, camping, and exploring in the Canyons of the Ancients NM.
- Utah Rims: to be completed
- Gunnison River: to be completed
- Ridgeway Trails: to be completed
- Roubideau: to be completed
- Flat Top-Peach Valley: to be completed

Table 3.11.3. Acreage of BLM Special Recreation Management Areas by GUSG Population within GUSG Habitat

Population by SRMA	Habitat Management Area	Acres
Cerro Summit – Cimarron-Sims Mesa		
N/A	OHMA	0
Spring Creek (Zone 1)	UHMA	350
Crawford		
N/A	OHMA	0
North Forks	UHMA	40
Dove Creek		
Dolores River	OHMA	40
Dolores River, Lowry Pueblo, Mockingbird Mesa, Painted Hand Pueblo, Cross Canyons	UHMA	17,390
Gunnison Basin		
Alpine Triangle Recreation Area; Cochetopa Canyon; Hartman Rocks	OHMA	15,730
Alpine Triangle Recreation Area	UHMA	6,730
Monticello		
N/A	OHMA	0
N/A	UHMA	0
Piñon Mesa		
MCNCA	OHMA	1,708
Bangs Canyon; Cactus Park; MCNCA; Two Rivers	UHMA	34,754
Poncha Pass		
N/A	OHMA	0
N/A	UHMA	0
San Miguel Basin		
San Miguel River, Zone 2	OHMA	210
N/A	UHMA	0
	Adjacent Non-habitat 1 mile	**103,890**
	Adjacent Non-habitat 4 mile	**290,080**

Source: BLM 2023a
*Not all SRMAs within the decision area are accounted for in this table because there are some SRMAs that occur within the decision area that do not fall within Occupied or Unoccupied Habitat Management Areas.
N/A=not applicable

Extensive Recreation Management Areas

An ERMA is an administrative unit that requires specific management consideration in order to address recreation use, demand, or R&VS program investments. An ERMA is managed to support and sustain principal recreation activities and associated qualities and conditions. Recreation settings vary from Rural to Roaded Natural to Backcountry. Management of ERMAs

is commensurate with the management of other resources and resource uses. While generally unnecessary, ERMAs may be subdivided into RMZs to ensure R&VS are managed commensurate with other resources and resource uses (H-8320-1 2014). The decision area includes six ERMAs containing GUSG habitat (as shown in Table 3.11.4 and Map A.8 [Appendix A]).

Table 3.11.4. BLM Extensive Recreation Management Areas by GUSG Population

Population by ERMA	Habitat Management Area	Acres
Cerro Summit – Cimarron-Sims Mesa		
N/A	OHMA	0
N/A	UHMA	0
Crawford		
N/A	OHMA	0
N/A	UHMA	0
Dove Creek		
N/A	OHMA	0
N/A	UHMA	<10
Gunnison Basin		
Gunnison	OHMA	276,260
Gunnison	UHMA	55,500
Monticello		
Monticello	OHMA	6,070
Monticello	UHMA	3,270
Piñon Mesa		
N/A	OHMA	0
East Creek	UHMA	4,190
Poncha Pass		
San Luis Valley	OHMA	25,160
San Luis Valley	UHMA	23,330
San Miguel Basin		
N/A	OHMA	0
N/A	UHMA	0
	Adjacent Non-habitat 1-mile buffer	**193,060**
	Adjacent Non-habitat 4-mile buffer	**596,8701**

Source: BLM 2022
N/A=not applicable

Urban Interface Recreation Areas

Urban Interface Recreation Areas, as outlined in the Appendix B of the CCA, are areas within the Gunnison Basin where concentrated recreation occurs at the urban interface. These areas are not formal designations. Urban Interface Recreation Areas balance the recreation needs of a growing population with the need to maintain sage-grouse habitat via the concentration of use in preferred areas.

These areas are generally in close proximity to Gunnison, and especially in the case of Hartman Rocks, capture the vast majority of recreationists in grouse habitat in the Basin. Although sage-grouse conservation measures should still be observed in each of these areas, (e.g., seasonal closures to minimize disturbance to leks and complete avoidance of new infrastructure within .6 miles of a lek) the offsite mitigation standards outlined in Sections 4.3, 4.4, 5.2, and 5.3 of the CCA would not be required in these areas to compensate for new route and facility development. For efficiency, route reclamation efforts will be best-suited to areas at a greater distance from the urban interface.

There are two Urban Interface Recreation Areas in the decision area that overlap portions of GUSG habitat, including:

- Hartman Rocks Recreation Area is a popular urban interface recreation area about 2 to 6 miles southwest of Gunnison. Its proximity to Gunnison makes it accessible for local residents seeking a quick recreation experience. It is becoming a destination location for mountain biking, rock climbing and single-track motorized enthusiasts. It is estimated that it receives approximately 40,000 visits each year. Visitors practice a variety of recreation activities including mountain biking, motorcycling, ATV riding, 4 wheeling, rock climbing, bouldering, camping, trail running, horseback riding, cross country skiing, snowmobiling, dog sledding, hill parties, target shooting, hunting and more. Hartman Rocks is currently designated as a SRMA.
- Signal Peak is northeast of the city of Gunnison. Its proximity to Gunnison, and more specifically Western Colorado University, makes it accessible for local residents and students seeking a nearby recreation experience. Running, mountain biking, and hiking is popular in this area. In addition, motorized and equestrian use occurs on designated routes. There are several access points to this area from nearby subdivisions. For more information concerning Signal Peak, reference Appendix L, *Recreation Management Areas*.

Backcountry Conservation Areas

Backcountry Conservation Areas (BCAs) are a BLM administrative management allocation used by the agency to maintain and enhance habitat for recreationally important fish and wildlife species and to expand public access for hunting, angling, and other forms of wildlife-dependent recreation.

When applied, BCAs allow the BLM to prioritize habitat management actions such as restoring riparian areas and streams, controlling invasive species, managing vegetation, improving fish passage, reducing the risk of wildfires, and increasing forage. The application of BCAs also directs agency staff to prioritize public access through road and trail maintenance, transportation management planning, and partnerships with adjacent landowners to expand public lands access. The decision area does not currently contain any BCAs.

Public Lands not Designated as Recreation Management Areas

The final consideration relative to R&VS allocations is "Public Lands Not Designated as Recreation Management Areas." Public lands that are not designated as RMAs (undesignated lands) are managed to meet basic R&VS and resource stewardship needs. Recreation is not emphasized on these lands; however, recreation activities may occur, except on those lands closed to public use. The R&VS are managed to allow recreation uses that are not in conflict with the primary uses of these lands.

While there are currently only 1,247,850 acres of undesignated lands in the decision area, future RMPs associated with the decision area would likely decrease that number. Table 3.11.5 and Map A.71 (Appendix A) illustrate the current undesignated lands in the decision area.

Table 3.11.5. BLM-Administered Lands with GUSG Habitat not Designated as Recreation Management Areas

Population/Habitat Type	Acres
Cerro Summit – Cimarron-Sims Mesa	
OHMA	1,460
UHMA	5,520
Crawford	
OHMA	21,950
UHMA	9,870
Dove Creek	
OHMA	5,220
UHMA	30,460
Gunnison Basin	
OHMA	0
UHMA	50
Monticello	
OHMA	0
UHMA	0
Piñon Mesa	
OHMA	17,040
UHMA	57,050

Population/Habitat Type	Acres
Poncha Pass	
OHMA	0
UHMA	0
San Miguel Basin	
OHMA	35,740
UHMA	18,610
Adjacent Non-habitat 1-mile buffer	**155,584**
Adjacent Non-habitat 4-mile buffer	**454,594**

Source: BLM 2023b

Seasonal Travel Limitations

The BLM, in coordination with associated counties and the USFS, closes roads to all motor vehicles to protect Gunnison sage-grouse during their mating and nesting season and to prevent road damage during wet spring conditions. The cooperation of the public is required to successfully implement these road closures (BLM n.d.). Within the planning area, the Uncompahgre NCA, Gunnison Field Office, and Poncha Pass of the San Luis Valley Field Office all have seasonal restrictions specific to Gunnison sage-grouse. Other areas throughout the planning area have various wildlife restrictions at various different or similar time periods. See Table 3.11.6.

Table 3.11.6. Seasonal Travel Limitations specific to GUSG protection in the Decision Area

Area	Acres	Time	Reason	Common Recreation Types
Gunnison	246,036	March 15 – May 15	Closed seasonally to Protect Gunnison sage-grouse	Motorized Use
Gunnison Signal Peak	26,439	March 15 – May 15 Other	Closed seasonally to Protect Gunnison sage-grouse	Human Use
Gunnison Sage Grouse ACEC	22,190	Other	Closed seasonally to Protect Gunnison sage-grouse	Motorized and Mechanized Use

Seasonal restrictions coincide with changing seasonal recreation use. Within the planning area, the winter season primarily involves over snow travel at higher elevations. During the spring season, higher elevations become a mixture of snow and mud—prompting recreation users to turn to lower elevations for outdoor recreation opportunities, often in Gunnison sage-grouse habitat. By the time the lekking restrictions come to a close on May 15, the snow has melted at higher elevations, and these areas are more available for recreation. During this time,

recreation demand on occupied Gunnison sage-grouse habitat decreases. When the snow eventually returns to the high country in the fall, recreation use comes back to the trails system in GUSG habitat.

3.11.3.3 Environmental Consequences

Effects Common to All Alternatives

Changes in the number of acres where recreationists are unable to achieve targeted beneficial outcomes (specific to SRMAs), and for BLM to achieve and maintain supporting setting characteristics (specific to SRMAs and ERMAs).

All alternatives involve controlling major surface disturbances and disruption to GUSG and their habitat. For RMAs in GUSG habitat, this could result in a loss of recreational opportunities for people desiring more robust infrastructure and management to achieve their recreational pursuits. However, RMAs (or their RMZs) that have objectives related to 'solitude' or 'backcountry' that are essentially undeveloped, would continue to be compatible with GUSG conservation measures.

Changes in the seasonal timing acres or restrictions.

All alternatives involve no new recreation facility construction within OHMA unless needed for human health and safety from March 1 to July 15. Generally, all plans encourage vegetation treatments that will promote healthy sagebrush ecosystems and rangeland plant communities.

All alternatives involve controlling major surface disturbances and disruption to GUSG and their habitat. For RMAs in GUSG habitat, this could result in a loss of recreational opportunities for people desiring more robust infrastructure and management to achieve their recreational pursuits. However, RMAs that have objectives related to 'solitude' or 'backcountry' that are essentially undeveloped, would continue to be compatible with GUSG conservation measures.

Changes in recreational access within ACECs

All alternatives include a minimum of five ACECs within the planning area, but the number of ACECs changes across alternatives. Considering that ACECs are designated 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 ensure safety from natural hazards, some ACECs promote an increase in some recreational opportunities, while others promote a decrease in some recreational opportunities.

Alternative A (No Action – Current Management)

Changes in the number of acres where recreationists are unable to achieve targeted beneficial outcomes (specific to SRMAs), and for BLM to achieve and maintain supporting setting characteristics (specific to SRMAs and ERMAs).

Alternative A would have the least impact on changes in the number of acres where recreationists are unable to achieve targeted beneficial outcomes. Under Alternative A, public lands not within a SRMA will be managed for a diversity of recreation opportunities.

Changes in the seasonal timing acres or restrictions.

Under Alternative A, effects would be less than all other alternatives because allowable uses and restrictions would remain unchanged, resulting in no new impacts to recreation. Alternative A would result in the continuation of current BLM management direction in the 11 RMP administrative units in the planning area. The BLM would continue to initiate informal or formal consultation with the USFWS, through biological assessments and biological opinions, for individual authorizations that may directly or indirectly alter seasonal timing or restrictions.

Changes in recreational access within ACECs

Alternative A would result in the least number of changes in recreation access. Recreation access would continue as it stands under current conditions. Under Alternative A there are 8,256 acres of total ACECs that overlap with SRMAs.

Action Alternatives

Changes in the number of acres where recreationists are unable to achieve targeted beneficial outcomes (specific to SRMAs), and for BLM to achieve and maintain supporting setting characteristics (specific to SRMAs and ERMAs)

Alternative B would have the greatest impact on changes in the number of acres where recreationists are unable to achieve targeted beneficial outcomes because Alternative B would not allow for new recreation facility development in UHMA and OHMA. Alternative B would require inventory and treatment for invasive weeds within urban interface recreation areas in OHMA where humans are a vector. No new SRMAs or ERMAs would be permitted within OHMA and urban interface recreation areas (UIRA). Designated trails and routes located outside of SRMAs and UIRAs, in OHMA and UHMA, would be included within the disturbance cap (see SSS Management Action 4.3).

Under Alternative C, impacts would be greater on recreationists than Alternative A, but less than Alternative B because Alternative C includes the designation of a BCA (Map A.10 [Appendix A]). The Sugar Creek BCA provides access to support primitive recreation, wildlife observation, and hunting opportunities.

If new SRMAs are developed in OHMA, they would consider clustering near existing developments. Alternative B would also require the implementation of seasonal travel limitations to reduce use conflicts during lekking season when appropriate.

Under Alternative D, impacts would have the least impact on recreationists among alternatives because Alternative D would designate and manage new SRMAs within OHMA with an emphasis on a variety of personal, community, economic, and environmental benefits compatible with the conservation of sage-grouse habitat. Under Alternative D the Signal Peak ERMA/UIRA would be designated as an SRMA (Map A.11 [Appendix A]). Under Alternative D, offsite mitigation standards outlined in Sections 4.3, 4.4, 5.2, and 5.3 of the CCA would not be required in these areas to compensate for new route and facility development.

Alternative E would have a unique impact on recreation among alternatives because it focuses specifically on UIRAs within the Gunnison Field Office. Signal Peak ERMA/UIRA would be designated under Alternative E, and sage-grouse conservation measures would still be observed in these areas (Map A.12 [Appendix A]). These conservation measures include limiting the area to nonmotorized transportation, limiting human use of the areas from March 15 to May 15, and requiring dogs to be leashed.

Changes in the seasonal timing acres or restrictions

Alternative B has the same level of impact on changes in seasonal timing acres or restrictions compared to alternatives C and D. Under Alternative B, in OHMA, there will be no new recreation facility construction, unless needed for human health and safety, between March 1 – July 15.

Alternative B would have a greater impact than Alternative A, and the same impact as Alternatives C and D. Alternative B will seek to reduce/eliminate permitted activities on routes within OHMA. During implementation level planning, Alternative B would prescribe only Level 1 maintenance to routes within OHMA (maintain routes only to the level necessary to protect adjacent resources). Alternative B would not authorize any new recreation trails within OHMA. Alternative B would seek to relocate existing recreation trails within OHMA outside of OHMA (or seek to close existing recreation trails). Alternative B would include noxious weed interpretation and seasonal closures to motorized use. Alternative B would consider restricting mechanized use (and e-bikes) in OHMAs to designated routes year-round.

Alternative C has the same level of impact on changes in seasonal timing acres or restrictions compared to Alternatives B and D. Under Alternative C, in OHMA, there would be no new recreation facility construction, unless needed for human health and safety, between March 1 – July 15.

Under Alternative C, impacts would be the same as Alternative B, but greater than Alternative A. Alternative C would place limits on levels of permitted uses within OHMAs. It would prescribe route maintenance levels based on multiple factors during implementation level

planning. Alternative C would allow for recreation trail development, based on site specific NEPA analysis. If new recreational trail development occurs in OHMA, Alternative C would place area-wide seasonal travel limitations to reduce use conflicts during lekking season (March 1 – May 15). Alternative C would include noxious weed interpretation, and it would consider the indirect impacts of transportation decisions on adjacent sage-grouse habitat during implementation planning. Alternative C will also limit motorized and mechanized use to existing routes in OHV Limited areas in OHMA. Alternative C would maintain no action regarding restrictions on mechanized use and e-bikes.

Under Alternative D, impacts would be the same as Alternatives B and C because there would be no new recreation facility construction in OHMA unless needed for human health and safety between March 1 – July 15.

Under Alternative D, impacts on recreation would be the same as Alternative B, but greater than Alternative A. Alternative D would limit permitted use volumes on BLM managed routes within OHMA. Alternative D would emphasize reducing route maintenance levels during implementation level planning. Alternative D would place recreation trail development emphasis in SRMAs to minimize fragmentation of OHMA. If new recreation trail development occurs in OHMA, Alternative D would focus on low density trails rather than high density stacked loops. Alternative D would include noxious weed interpretation. In Adjacent Non-habitat areas, indirect effects of transportation decisions on adjacent sage-grouse habitat would be considered during implementation. In OHMA, motorized and mechanized use would be limited to existing routes in OHV Limited Areas. During implementation level planning, Alternative D would consider restrictions to mechanized use and e-bikes to designated routes in OHMA. During implementation level planning consider closing portals that access OHMA to motorized vehicles from March 1 to May 15 for lekking except for administrative uses.

Alternative E would have the least impact on changes in seasonal timing acres or restrictions across alternatives. Alternative E would place seasonal restrictions on construction and maintenance of recreation facilities and access in seasonal grouse habitat (except emergency maintenance), including public access.

Under Alternative E, if research indicates additional restrictions are necessary to sustain the sage-grouse population, seasonal restrictions in identified seasonal grouse habitat may be applied to minimize disturbance during nesting, brood-rearing, or winter periods of use by grouse. Seasonal restrictions on construction, maintenance, and access in seasonal grouse habitat (excepting emergency maintenance) from March 15 to May 15. Alternative E would use integrated weed prevention practices for all construction and maintenance.

Changes in recreation access within ACECs

Alternative B would result in the greatest number of changes in recreation access because it would result in the highest number of proposed ACECs. Under Alternative B there are 80,861 acres of total ACECs that overlap with SRMAs. Some of these proposed ACECs would result

in increased recreational opportunities for primitive forms of recreation, yet other, more developed forms of recreation opportunities may decrease (OHV riding, mountain biking, etc.).

Alternative C would result in effects similar to those of Alternatives A and E, but uniquely different considering the designation of a BCA. Considering that the designation of the Sugar Creek BCA would provide access to support primitive recreation, wildlife observation, and hunting opportunities, this intended recreation use may align well with the intention of ACEC designations. Under Alternative C there are 8,256 acres of total ACECs that overlap with SRMAs and 17,404 acres of total ACECs that overlap with BCAs.

Alternative D would result in more ACECs designated than under Alternatives A, C, and E, but fewer than Alternative B. Under Alternative D there are 8,373 acres of total ACECs that overlap with SRMAs. These newly designated ACECs would result in increased recreational opportunities for primitive forms of recreation (e.g., hunting, backpacking, foraging), yet a decrease in recreation that requires more development and ease of access (OHV riding, mountain biking, etc.).

Alternative E would result in impacts similar to those of Alternatives A and C, but uniquely different considering the designation of the Signal Peak SRMA. Under Alternative E there are 8,256 acres of total ACECs that overlap with SRMAs.

3.11.3.4 Conclusion

Management of recreation-focused areas (SRMAs and ERMAs), unstructured or dispersed recreational opportunities, and the issuance of SRPs would continue as they are currently managed under Alternative A. Under Alternative B, the BLM would place the most restrictive GUSG conservation measures available, resulting in the greatest adverse impacts on recreationists because seasonal timing restrictions would be implemented and recreation infrastructure improvements would be limited. Under Alternative C, BLM would have more flexibility to provide for continued or new recreational opportunities if it could be demonstrated that GUSG and their habitat would not be negatively impacted. However, the BLM would place some restrictions on recreation, which could cumulatively add to a decrease in recreation use and/or concentrate recreationists in other areas causing more resource impacts.

3.11.3.5 Cumulative Effects

The area used to analyze cumulative effects on recreation resources is the planning area. Cumulative effects may result from activities in adjacent communities, recreation, and visitation to nearby public lands, and resource use activities. Reasonably foreseeable trends that would result in cumulative effects include continued growth patterns in demand for all recreation experiences, increased demand for close-to-home recreation opportunities for local residents, continued and increased visitation from a growing regional population, and increased popularity

of adjacent public lands. These trends in recreation and growth will be met with restrictions on development to public lands to protect GUSG and their habitat. The planning area includes other public lands that could experience recreation impacts due to management decisions in the decision area. Boundaries between Federal and State lands are often unmarked, or the public is unaware of land manager changes when there is interconnectivity between trails and recreational uses, so restrictions on BLM lands may impact other lands where use is not restricted.

3.11.4. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is implemented. Although they are generally more evident during the implementation phase of planning, there are some unavoidable adverse effects that can be assessed through this RMP Amendment/EIS. In particular, management actions aimed at protecting a certain resource may have unavoidable adverse effects on other resources in the planning area.

There are inherent conflicts between seasonal restrictions and changing seasonal recreation use. Within the planning area, the winter season primarily involves over snow travel at higher elevations. During the spring season, higher elevations become a mixture of snow and mud—prompting recreation users to turn to lower elevations for outdoor recreation opportunities, often in Gunnison sage-grouse habitat. By the time the lekking restrictions come to a close on May 15, the snow has melted at higher elevations, and these areas are more available for recreation. During this time, recreation demand within occupied Gunnison sage-grouse habitat decreases. When the snow eventually returns to the high country in the fall, recreation use comes back to the trails system in GUSG habitat.

3.11.5. Relationship of Short-term Uses and Long-term Productivity

Section 102(2)(C)(iv) of NEPA requires a discussion of the relationship of short-term local uses of the environment and the maintenance and enhancement of long-term productivity of resources. For this RMP Amendment/EIS, "short-term" is defined as occurring only during or immediately after implementation and "long-term" as occurring for an extended period after implementation (several years or more).

Short-term local uses of the environment that affect recreation may shift to allow for a greater balance of recreation opportunities while conserving priority areas for GUSG lifecycle. Long-term productivity of recreation opportunities will continue to change as new recreation technologies and trends form.

3.11.6. Irreversible and Irretrievable Commitment of Resources

The CEQ and NEPA regulations require that the discussion of environmental consequences include a description of "any irreversible or irretrievable commitment of resources which would be involved in the proposal should it be implemented" (40 CFR 1502.16). An *irretrievable* commitment of resources in one that results in the loss of resources for a certain period of time. For example, the construction of a road will result in a loss of livestock or wildlife forage for as long as the road remains. An *irreversible* commitment of resources is one that results in the permanent loss of those resources. This can occur, for example, when the production of oil and gas depletes nonrenewable resources in the planning area. The BLM requires BMPs, reclamation, and mitigation to reduce the magnitude and scope of irretrievable and irreversible resource impacts of actions taken or authorized by the agency.

An irreversible or irretrievable commitment of resources refers to effects on or losses to resources that cannot be recovered or reversed. None of the alternatives would result in an irreversible or irretrievable commitment of resources.

3.12. TRAVEL AND TRANSPORTATION MANAGEMENT

3.12.1. Introduction

The Comprehensive Travel and Transportation Management (CTTM) system is the proactive management of public access, natural resources, and regulatory needs to ensure that all aspects of route system planning and management are considered. CTTM is integral to many activities taking place on public lands and addresses all resource aspects, accompanying modes, and conditions of travel on BLM managed lands. CTTM considers locations, system users, and other natural resource management objectives.

BLM managed land was historically undesignated for motorized travel. Over time, BLM began creating area designations for OHV use as part of RMP. OHVs include all general public motorized vehicle use including (but not limited to) passenger cars, trucks, all-terrain vehicles, utility task vehicles, and motorcycles. OHV area designations are allocation-level decisions. Areas are managed as OHV Open, OHV Closed, or OHV Limited. Travel management plans (TMP) are implementation-level plans that align with the RMP and address site-specific management actions such as new route development, route closure and rehabilitation, and route by route designations (type of allowed use, timing restrictions, etc.). TMPs are comprehensive as BLM addresses access needs for all types of resources and resource uses and considers non-motorized (through supplementary rules) as well as motorized needs.

When making route-specific designations in TMPs, the BLM uses the designation criteria found in 43 CFR 8342.1 to protect resources, promote safety, and minimize conflicts. Routes are defined as roads, primitive roads, or trails within the planning area. While the TMP process is comprehensive, CFR 8340 (definition of an OHV) does not cover non-motorized modes of travel (non-OHVs). Therefore, the designation criteria and procedures under CFR 8342 only apply to OHVs. Any restrictions to be placed on non-motorized uses (non-OHV) are implemented through supplementary rules (43 CFR 8365.1-6). These management actions that go beyond the route OHV designations of Open, Limited, or Closed are guidelines to be used for implementation level decisions in TMPs. Any implementation level management actions considered in the alternative descriptions are guidelines to be used when developing subsequent TMPs.

3.12.2. Issue 1: How would the proposed transportation related allocations (motorized) and management actions (non-motorized) under each alternative affect the ability for public land users to access BLM managed lands?

3.12.2.1 Analytical Methods and Assumptions

The following indicators are used to describe the existing condition related to travel and transportation management. These indicators will also be used to analyze the effects of the preferred alternative and other alternatives on the travel and transportation management systems:

- Change in the number of acres designated as open (to cross-country motorized travel), limited (to existing or designated routes for motorized travel), or closed (to motorized travel altogether)

3.12.2.2 Affected Environment

Travel management is integral to many activities taking place on public lands. The intent of travel management planning is to establish a comprehensive travel network, meeting both current and future access needs to the public lands in this area, while minimizing effects on sensitive resources. Each route in the travel network is assigned route type, OHV designation, mode, and objective through the travel planning process. These components are fundamental to understanding the transportation network's allowed uses, maintenance, mode, and how BLM would manage the route in the future. While BLM's planning authority extends only to BLM managed routes, the transportation system within the planning area consists of Federal and State highways, paved and unpaved county and local roads, and unpaved primitive roads. Transportation routes are primarily concentrated around communities, recreation areas, or where surface activities such as livestock grazing, energy development, or other extractive uses require access.

OHV Area Designations

Federal agencies are directed to manage motorized vehicle use on public lands through 43 CFR 8342.1 and other authorities. The BLM is directed to designate all BLM-administered lands nationally as open, closed, or limited for OHV use during the land use planning process. All of the units within the planning area have completed the task of designating travel areas (area designations), with the exception of a few small areas in the Gunnison Field Office, on the northern boundary of the Powderhorn Wilderness.

- **Open areas** are those where cross-country travel by OHV is allowed.

- **Limited areas** are those where the BLM imposes certain restrictions on motorized use, such as to existing routes, designated routes, particular types of vehicles, or specific seasons of use.
- **Closed areas** are those where OHV use is prohibited.

Table 3.12.1 summarizes the acreage of open, limited, and closed OHV area designations in GUSG OHMA and UHMA for each of the 11 BLM units, including the National Landscape Conservation System (NLCS) areas. Most BLM-administered lands in the decision area are available for OHV use under the "limited" designation, a few parcels remain 'undesignated' and the rest are managed as Closed to OHV use. There are no BLM lands in the decision area managed as OHV Open. Map A.13 (Appendix A) shows the OHV area designations within the decision area.

Table 3.12.1. Existing OHV Travel Designations in the Decision Area within GUSG Habitat by Population by Habitat Type

Population Area/Habitat Type	Acres of Open Area Designation	Acres of Limited Area Designation	Acres of Closed Area Designation
Cerro Summit – Cimarron-Sims Mesa			
Occupied Habitat Management Area (OHMA)	0	1,780	0
Unoccupied Habitat Management Area (UHMA)	0	6,760	350
Crawford			
OHMA	0	21,950	210
UHMA	0	9,850	230
Dove Creek			
OHMA	0	5,170	0
UHMA	0	42,070	5,370
Gunnison Basin			
OHMA	0	291,940	0
UHMA	0	56,360	5,910
Monticello			
OHMA	0	2,630	0
UHMA	0	1,530	0
Piñon Mesa			
OHMA	0	14,040	4,610
UHMA	0	71,110	24,290
Poncha Pass			
OHMA	0	12,580	0
UHMA	0	11,670	0
San Miguel Basin			
OHMA	0	35,880	0
UHMA	0	21,720	0

Population Area/Habitat Type	Acres of Open Area Designation	Acres of Limited Area Designation	Acres of Closed Area Designation
Adjacent Non-habitat 1 mile	0	292,320	73,560
Adjacent Non-habitat 4 mile	69	890,840	229,860

Trends

Consistent with statewide trends, the overall trend for travel and transportation management on BLM-administered lands includes an increase in general visitation, OHV use, hiking, and mountain biking use as populations increase within the planning area and within the region. as well as surface uses such as grazing and solar and energy use. Increasing population pressures could be expected to lead to off-route travel use, especially in areas where the provided route network does not meet public access demand.

Demand for construction of new routes for development (e.g., energy and ROWs) is also expected to increase. Previously constructed routes could also require upgrading, relative to ROWs. Unless gated, recreation use of these routes would also likely continue even though they are not 'purpose built' for recreation experiences.

OHV Route Designations

Route by route designations occur at the implementation planning level. The BLM assigns one of three primary route types to transportation linear features during the CTTM process; Roads, Primitive Roads, and Trails. Roads are managed for use by low clearance vehicles having four or more wheels, and are maintained for regular and continuous use. Roads make up the relative minority of the three primary route types managed by the BLM. Primitive Roads are managed for use by four-wheel drive or high-clearance vehicles and do not normally meet any BLM road design standards. Primitive routes are often inherited, user-created routes (versus engineered or designed and constructed routes). Trails are the third primary route type and are managed for human-powered, stock, or OHV forms of transportation, or for historical or heritage values. They are not generally managed for use by four-wheel drive or high-clearance (full-sized) vehicles.

If an inventoried route has not yet undergone the CTTM (a.k.a. designation) process, it is considered an 'Existing Route.' Existing routes may or may not be sustainable. Factors that contribute to the sustainability of routes include level and types of use, maintenance actions and frequency of maintenance, seasonality of use, weather events, climate.

Travel Management Plan Decisions

Within the planning area, the Field Offices and administrative units that have established TMPs are listed in Table 3.12.2. These plans limit use by vehicle type and seasonality on designated routes.

Table 3.12.2. Existing Travel Management Plan Decisions in the Planning Area

Administrative Unit	TMPs Completed	TMPs In Progress/Planned
Canyons of the Ancients NM	TMP/RMP (Montezuma and Dolores counties) (2020)	N/A
Dominguez Escalante NCA	TMP/RMP (NCA wide implementation) (2017)	N/A
Grand Junction Field Office	TMP/RMP (Field Office-wide implementation, but for Zone L) (2015)	Zone L TMP (N Desert OHV ERMA)
Gunnison Field Office	Gunnison Basin TMP (2010) Hartman Rocks RAMP (2014) Signal Peak Trail System (2019) Silverton TMP (2020)	N/A
Gunnison Gorge NCA	MP/RMP (2004) (Montrose, Delta Counties)	Smith Mountain Trails
Moab Field Office	RMP/TMP (2008) Canyon Rims (2021)	Labyrinth Rims/Gemini Bridges Dolores Triangle
Monticello Field Office	TMP/RMP (2008)	N/A
McInnis Canyon NCA	TMP/RMP (NCA-wide implementation) (2004)	N/A
San Luis Valley Field Office	RMP/TMP (Rio Grande, Saguache, Alamosa, Conejos counties) (2009)	N/A
Tres Rios Field Office	Phils World (2018) TAP1 (Archuleta/LaPlata/Montezuma County) (2020)	TAP2 (San Miguel, Montrose, and Dolores counties)
Uncompaghre Field Office	Dry Creek Travel Management Plan (2009) Ridgway Area Trails Management Plan (2013) Burn Canyon Travel Management Plan (2014) Montrose County Shavano Gateway Recreation Area (Electric Hills) (2021)	Jumbo Mountain SRMA (In Progress) Paradox Valley ERMA North Fork South Montrose North Delta San Miguel West End

N/A=not applicable

Table 3.12.3 displays data compiled by the BLM that provides a relatively coarse estimate of route mileage on BLM-administered lands within the decision area by population within the habitat types (OHMA, UHMA, and Adjacent Non-habitat areas). BLM-Administered lands are generally accessible via an extensive network of routes within these areas.

Table 3.12.3. Miles of Roads, Primitive Roads, and Trails on BLM-Administered Lands within GUSG Habitat by Population by Habitat Type

Population Area/Habitat Type	Transportation Linear Disturbance[1]	Non-BLM[2]	Not Assessed[3]	Primitive Route (WSA/LWC)[4]	Road[5]	Primitive Roads[6]	Trails[7]	Null[8]
Cerro Summit – Cimarron-Sims Mesa								
OHMA	0	<1	5	0	3	0	0	4
UHMA	0	1	57	0	0	1	3	5
Crawford								
OHMA	0	<1	0	0	0	73	0	22
UHMA	0	3	15	0	4	8	0	17
Dove Creek								
OHMA	0	3	0	0	0	0	0	0
UHMA	0	40	14	0	0	8	<1	<1
Gunnison Basin								
OHMA	0	2	0	0	111	662	73	1,168
UHMA	0	<1	0	0	27	100	2	183
Monticello								
OHMA	0	0	0	0	1	2	0	0
UHMA	0	0	0	0	<1	0	0	0
Piñon Mesa								
OHMA	4	<1	0	<1	2	44	3	<1
UHMA	60	1	<1	17	18	141	43	11
Poncha Pass								
OHMA	24	0	0	0	14	27	2	4
UHMA	9	0	0	0	15	18	0	10
San Miguel Basin								
OHMA	0	49	6	0	0	0	0	2
UHMA	0	<1	87	0	12	<1	0	22
Adjacent Non-habitat 1 mile	34	84	356	14	23	184	63	191
Adjacent Non-habitat 4 mile	92	216	1,158	41	147	664	377	618

Note: GIS data includes linear disturbance non-BLM and blank miles that are not included in this table.
[1]Transportation linear disturbance miles are human-made linear travel or transportation related disturbance that is not part of the BLM's transportation system or travel network. Transportation linear disturbances may include engineered (planned) but no longer needed features, as well as unplanned routes that have been identified for decommissioning and reclamation either passively or actively.
[2]Non-BLM miles are linear routes that are not under the authority of the BLM.
[3]Not assessed miles are linear routes that have not gone through the travel planning process.
[4]Primitive Route (WSA/LWC) miles are any 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.
[5]Road miles are linear routes declared a road by the owner, managed for use by low-clearance vehicles that have four or more wheels, and maintained for regular and continuous use.
[6]Primitive roads miles are linear routes managed for use by four-wheel-drive or high-clearance vehicles. These routes do not customarily meet any BLM road design standards. Unless specifically prohibited, primitive roads can also include other uses such as hiking, biking, and horseback riding.
[7]Trials miles are linear routes managed for human-powered, stock, or off-road vehicle forms of transportation or for historical or heritage values. The BLM does not generally manage trails for use by four-wheel-drive or high-clearance vehicles.
[8]Null miles are those that have not been assigned an asset class.

3.12.2.3 Environmental Consequences

Effects Common to All Alternatives

Under all alternatives, travel and transportation would be managed to (1) decrease habitat fragmentation and increase habitat connectivity and function, (2) reduce mortality from vehicle collisions, (3) avoid, minimize, and compensate for habitat fragmentation, (4) limit the spread of noxious weeds, and (5) limit disruptive activity associated with human access. In areas where travel management planning has not been completed, or where existing travel management plans have not addressed GUSG, TMPs are to be implemented per Handbook 8342. All alternatives (including Alternative A) reduce impacts to GUSG and their habitat, which could result in varying levels of impacts to levels and types of public access into these areas. Table 3.12.4 identifies the travel management area designations across the alternatives in the decision area.

There are management actions that are proposed under each alternative that provide direction for implementation level guidance that may result in restrictions to travel. These restrictions may be related to season, timing limitations geared towards protecting GUSG, or other forms of restrictions, and are shown in Table 3.12.4 and Table 3.12.5.

Action alternatives that propose route closures within undesignated WSAs adjacent to the Powderhorn Wilderness would not decommission any routes that are currently open or limited.

Seasonal travel limitations in the decision area are shown in Table 3.11.6.

Table 3.12.4. Acres of Area Designation Across Alternatives in the Decision Area

Stipulation, Restriction, or Protection	Alternative A (Acres)	Alternative B (Acres)	Alternative C* (Acres)	Alternative D (Acres)	Alternative E (Acres)
Undesignated Area					
OHMA	0	0	0	0	0
UHMA	0	0	0	0	80
Limited Area Designation					
OHMA	385,970	0	386,660	386,660	N/A
UHMA	221,060	0	222,350	222,350	N/A
Closed to Motorized and Mechanized Area Designation					
OHMA	4,820	391,490	4,820	4,820	N/A
UHMA	36,160	1,420	36,280	36,280	1,420

Does not include OHV designations in Canyon of the Ancients. Affects Alternative A, C and D.
*Alternative C does not show data for areas that cannot functionally support sage-grouse even though the alternative would designate these areas. BLM does not have data for these areas.
N/A=not applicable

Table 3.12.5. Miles Within Each Alternative in the Decision Area

Stipulation, Restriction, or Protection	Alternative A (Miles)	Alternative B (Miles)	Alternative C* (Miles)	Alternative D (Miles)	Alternative E (Miles)
Open Area Designation					
OHMA	0	0	0	0	0
UHMA	0	0	0	0	0
Limited Area Designation					
OHMA	2,291.7	0	2,293.2	2,302.2	1,895.7
UHMA	904.3	0	903.9	904	278.5
Closed to Motorized and Mechanized Area Designation					
OHMA	14.3	2,307.6	14.3	14.3	0
UHMA	49.2	3.1	49.3	49.3	3.1

Does not include OHV designations in Canyon of the Ancients. Affects Alternative A, C and D.
*Alternative C does not show data for areas that cannot functionally support sage-grouse even though the alternative would designate these areas. BLM does not have data for these areas.

Alternative A (No Action – Current Management)

Under Alternative A, all existing plans have allocation level travel designations with the exception of the small undesignated area north of the Powderhorn Wilderness (see Map A.13). The Gunnison Gorge NCA RMP (BLM 2004), Grand Junction RMP (BLM 2015), Moab RMP (BLM 2008a), Monticello ROD/RMP (BLM 2008b), Uncompahgre RMP, Gunnison Resource Area RMP (BLM 1993), San Luis Valley Field Office TMP, and the Canyons of the Ancients NM RMP (BLM 2010) have allocation level travel designations that are specific to GUSG. Many plans direct reduction of routes during implementation level planning and provide direction on how to reclaim and rehabilitate closed routes. Most plans have various types of disturbance limitations, such as seasonal travel closures for motorized and mechanized use, and/or surface disturbance limitations. Most plans also provide direction for where, when, and how to construct new routes. This direction is variable across plans, but generally aims to reduce fragmentation and disturbance in sagebrush habitats.

Alternative A would maintain use as it is currently managed under existing plans. No new area designations would be implemented. Allowable uses and restrictions would remain unchanged. All existing plans include OHV Open areas located only outside of GUSG OHMA, UHMA, and linkage areas and no cross county motorized travel is allowed in these habitat types. While Alternative A does not include any new management direction, the current management direction, to a large extent, already restricts OHV use in ways which are conducive to GUSG habitat protection.

Action Alternatives

Alternative B would apply the most restrictive GUSG conservation measures available within the agency's jurisdiction and authority. All OHMA would have an area designation of OHV-Closed, allowing for the exceptions to the definition of an OHV provided for in 43 CFR 8340.0-5a (see Map A.14). Access for OHV use would be most restricted under this alternative. Access within OHV-Closed areas would be restricted to non-mechanized or non-motorized use and would not be open to OHVs. Existing and designated routes that are currently available for OHV use within areas that would be closed under Alternative B and would no longer be available to the public for motorized use. These route mileages are shown in Table 3.12.5. Alternative B would also preclude any new OHV Open areas, regardless of the functionality of the landscape for habitation. Alternative B would effectively remove public motorized access within these areas.

Under Alternative C, resource uses, and other actions would be allowed if their impacts could be avoided, minimized, rectified, reduced/eliminated over time, or mitigated. Alternative C proposes managing all OHMA and UHMA as OHV-Limited except for areas already designated as OHV closed (these areas would remain closed) and OHV Open (in areas that cannot functionally support sage-grouse, these would remain Open). Alternative C is the same geospatially as Alternative D (see Map A.15). Currently, BLM does not have GIS data for areas which cannot functionally support sage-grouse. Functionally, Alternative C would be the same as the no-action since there are currently no OHV Open areas within the analyzed habitat types. The management actions that are currently in practice by the BLM to protect GUSG populations would continue under Alternative C. Public motorized access under Alternative C would be guided by the OHV area designations, which would be primarily OHV Limited. While access would continue into these areas, OHV use would be limited to designated routes (see Map A.17). The management action guidance provided for future implementation level travel planning efforts could result in route designation decisions which incorporate restrictions to reduce impacts to GUSG.

Alternative D would apply a balanced approach for allocating resource uses and conserving resource values while sustaining and enhancing ecological integrity across the planning area. Alternative D proposes managing all OHMA and UHMA as OHV-Limited except for areas already managed as OHV Closed, which would remain closed. The WSAs adjacent to the Powderhorn Wilderness would be managed as OHV Closed. Functionally, Alternative D would be the same as the no-action since there are currently no OHV Open areas within the analyzed habitat types. The management actions that are currently in practice by the BLM to protect GUSG populations would continue under Alternative D. Public motorized access under Alternative D would be guided by the OHV area designations, with would be primarily OHV Limited. While access would continue into these areas, OHV use would be limited to designated routes. The management action guidance provided for future implementation level

travel planning efforts could result in route designation decisions which incorporate restrictions to reduce impacts to GUSG.

Management direction under Alternative E only applies to GUSG habitat in the Gunnison Basin population (see Map A.16). Travel and access across BLM land within the Gunnison Basin population area would be restricted. Access throughout the remainder of the decision area would remain as is, and therefore impacts on travel and transportation would be minimal under this alternative.

3.12.2.4 Conclusion

All action alternatives explore ways to reduce impacts to GUSG and their habitat, which could result in varying levels of impacts to levels and types of public access into these areas. While the management actions for GUSG habitat would affect access on BLM managed roads, primitive roads, and trails across alternative, impacts would be greatest under Alternative B with the area designation of OHV Closed for all OHMA and UHMA allowing for the exceptions to the definition of an OHV provided for in 43 CFR 8340.0-5a. Alternatives C and D would maintain access to areas designated as OHV Limited. While access would continue into these areas, OHV use would be limited to designated routes and motorized cross-country travel would not be allowed.

3.12.2.5 Cumulative Effects

The cumulative effects analysis area for travel management is defined as the planning area and the timeframe for the analysis is the life of this RMP Amendment. For all alternatives, cumulative effects on travel management would occur primarily from actions that facilitate, limit, or preclude motorized access, including the closure of areas to certain types of travel or through the designation of routes as part of a future travel management planning process. Cumulative effects on travel management, as a result of these reductions, could include an increase in the concentration of different user groups on the existing travel route network within, and adjacent to, the decision area, particularly where routes provide access to multiple resource uses. This could require more active management (including enforcement, signage, and education) by the BLM. There could also be increased scrutiny regarding the impacts of usage or presence of roads, primitive roads, and trails on wildlife other than GUSG. The combination of the region's growing population and the bounty of desirable recreation settings have combined to greatly increase transportation use in the planning area.

3.12.3. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is

implemented. Although they are generally more evident during the implementation phase of planning, there are some unavoidable adverse effects that can be assessed through this RMP Amendment/EIS. Management actions aimed at protecting a certain resource may have unavoidable adverse effects on other resources in the planning area.

While access to and across BLM land would be affected at various levels for each alternative through implementation of OHV closed area designations and an overall project objective to reduce disruption to GUSG and their habitat, no unavoidable adverse effects to travel and transportation management are anticipated. Even under the most restrictive alternative (Alternative B), areas designated as OHV limited would be accessible to use on designated routes, and access by non-mechanized use would be maintained across the decision area.

3.12.4. Relationship of Short-term Uses and Long-term Productivity

Section 102(2)(C)(iv) of NEPA requires a discussion of the relationship of short-term local uses of the environment and the maintenance and enhancement of long-term productivity of resources. For this RMP Amendment/EIS, "short-term" is defined as occurring only during or immediately after implementation and "long-term" as occurring for an extended period after implementation (several years or more).

Short-term local uses of the environment that affect travel management would not be significantly altered. Long-term productivity of travel management may change as implementation-level plans are enacted. There are management actions that are proposed under each alternative that provide direction for implementation level guidance that may result in restrictions to travel. These restrictions may be related to season, timing limitations geared toward protecting GUSG, or other forms of restrictions.

3.12.5. Irreversible and Irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. None of the alternatives would result in an irreversible or irretrievable commitment of resources. While under Alternative B, existing and designated routes that are currently available for OHV use within areas that would be designated as OHV Closed under Alternative B would no longer be available to the public for motorized use. Access across the decision area would be maintained and while some areas may become closed to certain uses, overall access across BLM land would not be restricted.

3.13. MINERALS

3.13.1. Introduction

The BLM administers all federally owned minerals that lie beneath BLM, other Federal, and non-Federal lands within the planning area,[1] but the management actions considered for this RMP Amendment would only affect a portion of those federally owned minerals. As shown on Figure 1.3, the BLM's decision area for minerals under this RMP Amendment encompasses 2,852,460 acres, or 11 percent of the total 25,565,730 acres of federally owned minerals in the planning area. The BLM is not making decisions for Federal minerals within the decision area beneath surfaces managed by the USFS or by the Department of Energy (DOE). Of the 2,852,460 acres of Federal minerals within the decision area, 656,940 acres (or 23 percent) consist of split estate—Federal minerals that lie beneath surface land owned by a non-Federal entity, such as a State trust, local government, or private owner. Table 3.13.1 provides further breakdown of surface and mineral ownership in relation to GUSG habitat within the decision area.

Table 3.13.1. Surface Management and GUSG Habitat and Non-habitat Areas for Federal Mineral Estate within the Decision Area

Surface Management	Total Acres in Decision Area	Acres in Occupied Habitat	Acres in Unoccupied Habitat	Acres in Adjacent Non-habitat 4-Mile Buffer
BLM[1]	2,156,210	391,490	258,630	1,124,364
Other Federal Agency[2]	39,310	10,820	8,590	19,700
Split Estate (non-Federal surface)	656,940	154,460	136,220	315,389
Total Decision Area[3]	**2,852,460**	**556,760**	**403,440**	**1,459,452**

Source: BLM 2023

[1] Federal minerals beneath surfaces owned by the National Park Service (NPS) but managed by the BLM within the Curecanti National Recreation Area, are included in the decision area.

[2] Federal minerals beneath surfaces managed by the USFS or by the DOE, are excluded from the decision area.

[3] Consists of 2,702,430 acres of all minerals, 23,970 acres of coal only, 91,290 acres of oil and gas only, and 34,780 acres of other minerals.

This analysis is organized by issue statements that address each category and sets of laws and regulations within which Federal mineral resources are managed: leasable fluid, leasable solid, locatable, and salable minerals.

[1] Excepted are 31 tracts of land covering an aggregate of approximately 25,000 acres in Mesa, Montrose, and San Miguel Counties in western Colorado that are or may be leased by the DOE for uranium and vanadium development. The surface resources continue to be managed by the BLM, and the lands remain open to mineral leasing and mineral material disposal, so long as they do not interfere substantially with uranium leases and/or development (BLM 2013).

3.13.2. Issue 1: How would closures, stipulations, and limits on disturbance density affect opportunities for exploration and development of leasable fluid minerals?

Leasable fluid minerals, as defined by the Mineral Leasing Act of 1920 and 43 CFR 3000-3287, include oil, natural gas (including methane, coalbed natural gas, and carbon dioxide), and geothermal resources. Geothermal leasing is authorized in accordance with the Geothermal Steam Act of 1970.

3.13.2.1 Analytical Methods and Assumptions

This analysis evaluates the current state and anticipated trends in fluid mineral leasing and development within the decision area, then compares potential effects of each alternative on future opportunities for leasing and development. A key quantitative component to this analysis is the overlay of GIS data representing proposed fluid mineral leasing closures and stipulations with areas of potential future fluid mineral development.

The analysis of effects on leasable fluid minerals reflects the following requirements and assumptions:

- New closures and stipulations proposed under this RMP Amendment would apply only to new leases. Existing fluid mineral leases would be managed in accordance with valid existing rights, including any stipulations or other terms in effect when the leases were issued. However, for new development on existing leases, the BLM has discretion to modify surface operations to add specific mitigation measures supported by site-specific NEPA analyses undertaken during the development phase on existing leases. Fluid mineral operations on existing Federal leases, regardless of surface ownership, would be subject to conditions of approval (COA) by the BLM authorized officer at the time of application for permit to drill (APD) approval. The BLM can deny surface occupancy on portions of leases with COAs to avoid or minimize resource conflicts if this action would not eliminate reasonable opportunities to develop the lease.
- An operator or lessee would be responsible for following Colorado Energy and Carbon Management Commission (ECMC); Utah Division of Oil, Gas, and Mining (DOGM); and applicable local regulations.
- Stipulations would apply to new fluid mineral leases on all surface lands overlying Federal mineral estate in the decision area, which includes Federal mineral estate underlying BLM-administered and non-BLM-administered surface to the extent possible in coordination with the landowner.
- The BLM has the authority and is required by law to review a request from an operator and to grant, if warranted, waivers, exceptions, or modifications to oil and gas lease stipulations and associated permitting activities. However, consistent with current

practice, it is assumed that waivers, exceptions, and modifications would rarely be authorized.

- If an area is leased, it could be developed; however, it is likely that not all leases would be developed within the life of this RMP Amendment.
- In split estate situations, the mineral estate owner and lessee must show due regard for the interests of the surface estate owner and occupy only those portions of the surface that are reasonably necessary to develop the mineral estate. The lessee is required to certify that a good faith effort has been made to negotiate a surface use agreement with the surface owner. If a good faith effort by the lessee/operator cannot be reached, the lessee/operator still has the right to enter upon the lands to perform these activities. The lessee/operator can post a Surface Owner Damages Bond to protect the surface owner against reasonable and foreseeable losses or damages.
- Reclamation bonds would be required, pursuant to 43 CFR 3104, in an amount sufficient to ensure reclamation of the lease area and restoration of lands or surface waters adversely affected by lease operations. In addition, APDs, including drilling plans and surface use plans of operations, would be required under all alternatives in accordance with 43 CFR 3162 and 43 CFR 3170.
- As the demand for energy increases, so would the demand for extracting energy resources in areas with potential. However, oil and gas operations would be sensitive to costs, especially when prices are depressed.
- Technological advancements, such as directional or horizontal drilling, could lead to changes in levels of oil and gas development potential throughout the decision area as additional resources become more easily accessible.
- The analysis of effects of the various alternatives on geothermal leasing are the same as oil and gas, except for portions of the No Action Alternative; these exceptions are explained in the environmental consequences section.
- Infrastructure appurtenant to the development of oil and gas leases, such as roads, gas pipelines, and water pipelines, may require the BLM to authorize ROWs. See Section 3.14 for an overview of authorized ROWs in the decision area and the potential effects of the alternatives have on opportunities for future ROW authorizations.

3.13.2.2 Affected Environment

Oil and Gas

The BLM evaluates the potential for fluid mineral occurrence and development when making fluid minerals determinations in RMPs or RMP amendments. Oil and gas occurrence and development potential is classified and mapped as high, moderate, low, or unknown in accordance with BLM Handbook H-1624-1 (BLM 1990). Table 3.13.2 and Map A.72 present oil

and gas development potential in GUSG habitat and non-habitat within the decision area. Of the 529,780 acres with high development potential for oil and gas within the decision area, approximately 13 percent is within occupied habitat, 10 percent is within unoccupied habitat, and the remaining 77 percent is within non-habitat. Evaluations of oil and gas development potential do not take into account closures and stipulations in effect at the time the assessment was prepared. As such, areas that are identified as having high development potential on Map A.72 may or may not be available for leasing under existing management, as represented by Map A.73.

The categorization of oil and gas development potential is based on evaluations of reasonably foreseeable oil and gas development prepared by the BLM. Evaluations for oil and gas development have not been prepared for approximately 620,190 acres or 22 percent of lands within the decision area, primarily within the Gunnison Field Office and the NCAs. Neither the San Luis Valley Field Office nor the Gunnison Field Office has had a recent evaluation of oil and gas development potential. The most recent evaluations were completed in 1991 for the San Luis Valley Field Office and 1993 for the Gunnison Field Office. There are no active oil and gas leases in the portion of the San Luis Valley Field Office within the decision area. The portions of the Gunnison Field Office and NCAs within the decision area have not had any oil and gas leasing or exploration activity in the past 20 years or more. All of the NCAs are closed to fluid mineral leasing.

Table 3.13.2. Oil and Gas Development Potential in the Decision Area

Development Potential	Total Acres in Decision Area	Acres in Occupied Habitat	Acres in Unoccupied Habitat	Acres in Adjacent Non-habitat 4-Mile Buffer
High	529,780	67,590	53,760	365,920
Moderate	476,550	21,050	39,340	276,990
Low	574,230	98,590	108,970	256,070
No known	651,640	338,550	106,130	194,360
Data Unavailable[1]	620,190	30,980	95,240	366,050
Total	**2,852,390**	**556,760**	**403,440**	**1,459,390**

Sources: BLM 2023

[1] Oil and gas development potential data is not available in GIS format for some BLM administrative units in the decision area, including the Moab Field Office, Canyons of the Ancients NM, Gunnison Gorge NCA, a portion of Dominguez-Escalante NCA, Tabeguache Wilderness, and the Winter Mesa area and other BLM lands within the Uncompahgre Field Office. These areas are not represented in this table.

The BLM has decisions in place in current RMPs that allocate which areas are closed and open to leasing, and if open, under what conditions. Areas designated as open to leasing in an RMP may be leased under standard lease terms on the lease sale contract, which set general parameters for development of a lease. If additional restrictions are required to protect certain resources, lease stipulations are added to the standard lease terms. Lease stipulations include no surface occupancy (NSO), timing limitations (TL), and controlled surface use (CSU), defined as follows:

- NSO: Prohibits any occupancy or other use of the surface that results in ground-disturbing activities.
- TL: Prohibits occupancy or other use of the surface during a specified season or other period. For oil and gas, this applies to construction, drilling, intensive scheduled maintenance, completion, and reclamation activities, but does not apply to production and basic or unscheduled maintenance activities.
- CSU: Allows the BLM to apply special requirements, such as those related to location, design, reclamation, and monitoring of proposed facilities.

Table 3.13.3 and Map A.73 present acreages within the decision area that are available for oil and gas leasing subject to stipulations or standard constraints or closed to oil and gas leasing based on management direction in the current RMPs. Of the administrative units within the decision area for which data is available (66 percent of the decision area), approximately 30 percent is closed to oil and gas leasing, 23 percent is subject to NSO stipulations, 45 percent is subject to CSU/TL stipulations, and 2 percent is subject to standard stipulations only. GUSG habitat and non-habitat areas are subject to a range of leasing constraints, from closures to CSU/TL; however, no areas within occupied or unoccupied habitat are available for leasing subject only to standard stipulations. For split-estate lands, the BLM would apply any associated lease stipulations to the maximum extent permissible under existing authorities and in coordination with the landowner.

Most stipulations have circumstances, described in the RMP, for granting a waiver, exception, or modification to the stipulation. A waiver is a permanent exemption from a lease stipulation. An exception is a one-time exemption for a particular site within a lease. A modification is a change to the provisions of a stipulation, either temporarily or for the term of the lease.

Table 3.13.3. Oil and Gas Closures and Lease Stipulations in the Decision Area

Availability for Leasing	Total Acres in Decision Area	Acres in Occupied Habitat	Acres in Unoccupied Habitat	Acres in Adjacent Non-habitat 4-Mile Buffer
Standard Stipulations Only	43,780	0	0	40,060
CSU/TL	846,900	28,930	112,410	497,780
NSO	435,290	100,590	34,620	217,380
Closed	565,120	31,410	105,380	311,330
Data Unavailable[1]	961,300	395,830	151,030	392,840
Total	**2,852,390**	**556,760**	**403,440**	**1,459,390**

Source: BLM 2023

[1] Oil and gas closures and lease stipulations are not available in GIS format for some BLM administrative units in the decision area, including Gunnison Field Office, and Canyon of the Ancients NM, and various other BLM and private lands within the Uncompahgre, Grand Junction, Tres Rios, and Moab Field Offices. These areas are not represented in this table.

Oil and gas leases are issued for a 10-year period and continue for as long thereafter as oil or gas is produced in paying quantities or as extended under the Mineral Leasing Act. As presented

in Table 3.13.4 and Map A.74, there are currently 464 active oil and gas leases encompassing 222,290 acres within the decision area. Of these leases, 418 encompassing 186,580 acres or 84 percent of the total leased acres are held by production (meaning currently producing or receiving allocated production). Other leases may be extended under the Mineral Leasing Act—for example—a lease would be extended by its location in a producing agreement or by production on an associated lease. Leases held by production are located in the following five counties: Dolores, Montezuma, Montrose, and San Miguel Counties in Colorado and San Juan County in Utah. In 2022, out of 28 Colorado counties reporting oil production, Montezuma County ranked 16th, Dolores County ranked 24th, San Miguel County ranked 27th, and Montrose County had no reported production (Colorado Oil and Gas Conservation Commission 2023). Out of 36 Colorado counties reporting gas production, Montezuma County ranked 3rd, Dolores County ranked 9th, San Miguel County ranked 20th, and Montrose County had no reported production. In 2022, San Juan County ranked 3rd out of 10 Utah counties reporting oil production and 4th out of 10 counties reporting gas production (Utah Department of Natural Resources 2023).

Table 3.13.4. Oil and Gas Leasing Status in the Decision Area

Leasing Status	Total Acres in Decision Area	Acres in Occupied Habitat	Acres in Unoccupied Habitat	Acres in Adjacent Non-habitat 4-Mile Buffer
Total Leased Acres	222,290	6,720	38,460	157,510
Leased Acres Held by Production	186,580	5,680	37,980	129,520

Source: BLM 2023

Despite little anticipated growth in domestic consumption of petroleum products, the U.S. Energy Information Administration predicts that U.S. production of petroleum and natural gas products will remain historically high through 2050 to meet growing international demand (U.S. Energy Information Administration 2023). As a result, the planning area may experience continued oil and gas development to increase production from known reservoirs and explore additional reservoirs, subject to commodity pricing, availability of alternative energy sources, and other factors.

Geothermal

The BLM's 2008 Geothermal EIS included a Reasonably Foreseeable Development Scenario analysis of geothermal development in the western United States. The EIS did not identify any locations within the decision area with high potential for geothermal development (BLM 2008). Within the decision area, there is no known potential for geothermal development in the Moab or Monticello Field Offices. Colorado was identified as one of four western States with the lowest development potential for geothermal electrical generation. However, projected development for Federal geothermal resources in the State was 20 megawatts by 2015, and 50 megawatts by 2025. Ten areas with the highest potential for geothermal electrical generation in

Colorado were identified, two of which are in the decision area: Waunita and Poncha (BLM 2008). The Waunita area is in the Gunnison Field Office and the Poncha area is in the San Luis Valley Field Office.

The Waunita area identified in the 2008 Geothermal EIS was the subject of a 2010 geothermal leasing analysis and subsequent Gunnison RMP Amendment. In the Reasonably Foreseeable Development Scenario, it is anticipated that the area has the potential for development of one geothermal resource project that could culminate in a working commercial binary-cycle geothermal power plant likely sized to 5–10 megawatts. Once operational, the project as a whole would likely be limited to an area no larger than two sections, with approximately 100 dispersed acres of surface disturbance (BLM 2010).

All RMPs in the planning area contain the same allocations and stipulations for geothermal leasing and oil and gas leasing except for the Gunnison and San Luis RMPs, both of which identify separate allocation decisions specific to geothermal leasing.

The following geothermal leasing stipulations for the Waunita area were amended through the 2010 geothermal leasing analysis and subsequent Gunnison RMP Amendment:

- NSO: within a 0.6-mile radius of GUSG leks of active, inactive, historic, and unknown status.
- TL: Construction or drilling activities will not be allowed in occupied habitat between March 15 and May 15.
- TL: Routine operations, maintenance, and other activities in occupied habitat will be allowed between 9:00 a.m. and 4:00 p.m. during the period between March 15 and May 15.
- CSU: GUSG mapped summer-fall habitat CSU stipulation (G-25).

The following geothermal leasing stipulations for the Poncha area were amended through the San Luis Valley Geothermal Leasing RMP Amendment (BLM 2012a):

- NSO: GUSG leks and occupied habitat.
- TL: GUSG occupied habitat between March 1 and August 15.
- Sensitive Species Stipulation: For agency-designated sensitive species (e.g., GUSG), a lease stipulation (NSO, CSU, or TL) would be imposed for those portions of high-value/ key/crucial species habitat where other existing measures are inadequate to meet agency management objectives.

There are currently two active geothermal leases totaling 1,204 acres in the decision area, located within the Gunnison Field Office (BLM 2023), but no submitted plans for development. Although there has been more interest in geothermal development nationally, there have been limited exploration activities in the decision area. Other areas within the western U.S. have higher potential and are being actively developed. Existing geothermal development within the

decision area has been in the form of direct use applications completed on private landholdings, for purposes such as aquaculture, spa/recreation facilities, under-floor heating of businesses, domestic hot water use and space heating, and greenhouse heating (BLM 2012a). The potential for development of known or undiscovered geothermal resources on public lands within the decision area is considered low (Gault Group Inc. 2006).

3.13.2.3 Environmental Consequences

Effects Common to All Alternatives

The primary management actions that could impact the availability of fluid mineral resources are fluid mineral leasing allocations and required fluid mineral leasing stipulations (NSO, TL, and CSU). Allocations of areas open or closed to fluid mineral leasing directly impact the availability of Federal minerals for lease. For areas designated as open to leasing, NSO leasing stipulations would also impact the availability of Federal minerals for lease, particularly if lands where wells could be located are too far away to reach the oil and gas resource. Required TL and CSU leasing stipulations could also reduce APDs to drill due to increased costs and decreased efficiency of development from required limitations, such as seasonal restrictions on drilling and other surface-disturbing activities. Indirect effects include reduced production of oil and gas for public use and for the generation of lease sale revenues, Federal royalties from production, and tax revenues.

Alternative A (No Action – Current Management)

Restrictions on leasing and new disturbance for fluid mineral development vary widely by administrative area and across GUSG habitat. In general, GUSG leasing stipulations under Alternative A are focused on areas immediately surrounding GUSG lek habitat and less extensive than under the action alternatives. However, fluid mineral leasing stipulations under Alternative A also include closures and NSO, CSU, and TL stipulations for a variety of resources in addition to GUSG (see Map A.18). As described in Section 3.13.2.2, *Affected Environment*, of the administrative units within the decision area for which data are available (66 percent of the decision area), approximately 30 percent is closed to oil and gas leasing, 23 percent is subject to NSO stipulations, 45 percent is subject to CSU/TL stipulations, and 2 percent is subject to standard stipulations only. Under Alternative A, existing lease stipulations for GUSG and other stipulations necessary to comply with non-discretionary Federal laws would also be applied to split estate lands to the extent permissible. Fluid mineral leasing and development are expected to continue approximately at recent levels to increase production from known reservoirs and explore additional reservoirs, subject to commodity pricing, availability of alternative energy sources, and other factors.

Action Alternatives

Table 3.13.5 compares fluid mineral leasing allocations and stipulations in the decision area by alternative. Alternative B would have the greatest adverse impact on the availability of Federal minerals for new leasing by closing all OHMA and UHMA to fluid mineral exploration and development and applying a NSO stipulation within Adjacent Non-habitat within 1 mile of GUSG leks (see Map A.19). Under Alternative D, closure of only those areas of OHMA and UHMA that have no known or low potential for fluid mineral development would result in a less adverse impact than Alternative B; however, Alternative D also applies a NSO stipulation throughout OHMA and UHMA (see Map A.21). This could increase costs required to access fluid mineral resources through directional drilling or make fluid mineral resources unreachable, particularly in OHMA. Restrictions on new fluid mineral leasing under Alternative C are more moderate than for Alternatives B and D and consist of applying a NSO stipulation in OHMA and applying a CSU stipulation in UHMA (see Map A.20). areas Alternatives A, C, and E would close the same areas to new fluid mineral leasing; however, the potential for adverse impacts on opportunities for new fluid mineral leasing would be greatest under Alternative C because it nearly doubles the acreage subject to NSO stipulations compared to Alternatives A and E.

Surface-disturbing activities and disruptive activities would also be subject to TL stipulations in certain GUSG habitat areas under all alternatives, which would limit times of the year when operators could perform activities such as well pad construction, drilling, and intensive scheduled maintenance activities. This could increase the cost of and affect the economic feasibility of fluid mineral development. The locations and timing of TL stipulations would be similar under Alternatives B, C, and D, and would apply throughout OHMA and UHMA. TL locations and timing are variable across the existing RMPs for Alternative E, with the exception that Alternative E applies the CCA measures within the Gunnison Basin population area (see Map A.22). Noise restrictions, which would be most restrictive under Alternatives B and D and within the Uncompahgre Field Office under Alternative E, could also impose limitations that would increase the costs of fluid mineral development and complicate operations. Compensatory mitigation requirements under Alternatives B and D, and to a lesser extent under Alternatives C and E, would also increase costs of development in applicable GUSG habitats.

Table 3.13.5. Availability for New Fluid Mineral Leasing in the Decision Area by Alternative

Availability for Leasing	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Standard Stipulations Only (acres)	43,780	43,780	43,780	43,780	43,780
CSU/TL[1] (acres)	846,900	703,870	969,000	705,560	846,900
NSO (acres)	435,290	302,850	860,050	479,570	435,290
Closed (acres)	565,120	1,388,520	565,120	1,209,050	565,120
Data Unavailable (acres)[2]	961,290	413,360	414,430	414,430	961,290
Total (acres)	**2,852,390**	**2,852,390**	**2,852,390**	**2,852,390**	**2,852,390**

Source: BLM 2023

Note: In areas where existing management under Alternative A would be more restrictive than the proposed management under an action alternative, the closures or more restrictive stipulations from Alternative A would supersede the proposed management. This relationship is reflected in the calculated acreages in this table to facilitate quantitative comparison of the alternatives and to represent the net effect of each action alternative in combination with existing management more accurately. This is a different method than was used to calculate fluid mineral leasing closures and stipulation acreages presented in Chapter 2, which represent proposed management for the action alternatives only, not in combination with existing management.

[1] Areas subject to TLs are not mapped for the action alternatives.

[2] Under Alternative A, oil and gas closures and lease stipulations are not available in GIS format for some BLM administrative units in the decision area, including Gunnison Field Office, and Canyon of the Ancients NM, and various other BLM and private lands within the Uncompahgre, Grand Junction, Tres Rios, and Moab Field Offices. These areas are not represented in this table.

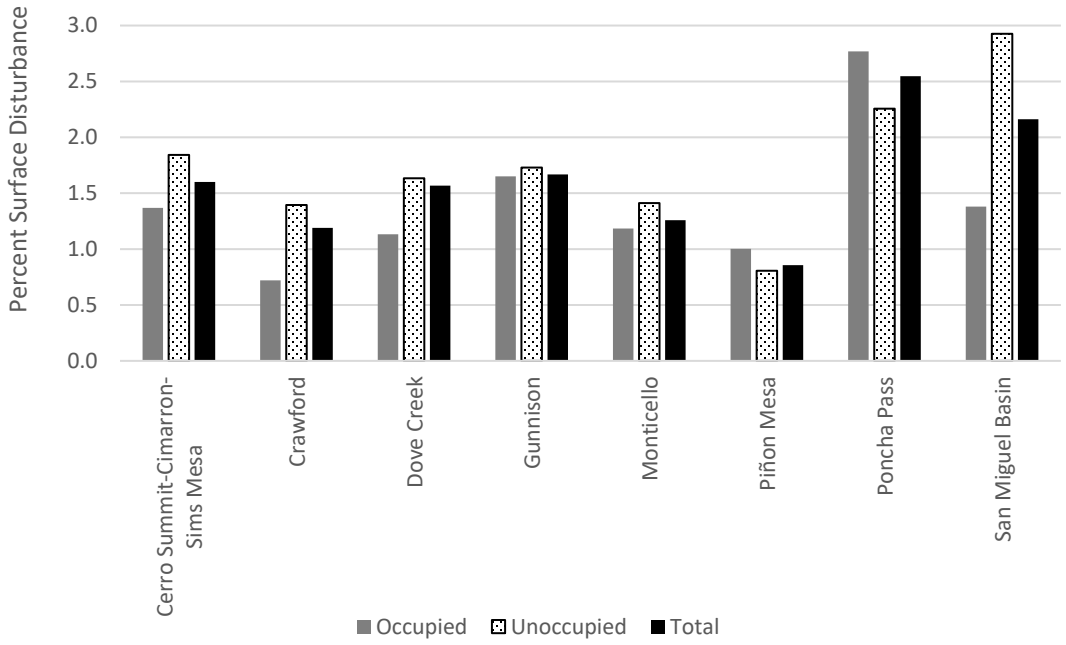
The action alternatives provide specific considerations for leased and split estate lands, which in some cases limit opportunities to apply lease stipulations, COAs, conservation measures, and other design features due to the rights of the lessee or landowner. Upon expiration or termination of existing leases under Alternative B, the BLM would prohibit reinstatement and issuance of new leases in OHMA and UHMA, which would require lessees to take proactive steps to extend the lease, such as commencing qualifying drilling operations. The BLM would consider issuance of new leases for the other alternatives subject to the allocations and stipulations presented in Table 3.13.5.

Other management actions for leased Federal mineral estate could increase the development costs, complicate or make development infeasible, and limit opportunities for further exploration of fluid mineral resources. These impacts would be most adverse under Alternative B, which, to the extent permissible in consideration of valid existing rights, precludes new surface structure or facilities, applies seasonal restrictions to disruptive activities, and prohibits siting of pipeline compressors within OHMA, UHMA, and Adjacent Non-habitat 4-mile buffer. Alternative B also prohibits geophysical exploration in OHMA and UHMA. Alternatives D, C, and E would apply progressively fewer restrictions on these development and exploration activities, apply them over a less extensive area, or establish alternative criteria to demonstrate compliance with GUSG conservation objectives.

The BLM's application of lease stipulations, COAs, conservation measures, and other design features to split estate lands would vary by alternative. The action alternatives each identify areas of GUSG habitat where lease stipulations, COAs, conservation measures, and other design features would be applied to the maximum extent permissible. Alternative B would seek to apply leasing stipulations to the largest acreage of split estate lands (656,940 acres in OHMA UHMA, LCMA, and Adjacent Non-habitat 4-mile buffer) and would therefore have the most adverse impact on the availability of Federal minerals for lease, followed by Alternative D (960,200 acres in OHMA and UHMA), Alternative C (556,760 acres in OHMA), and Alternative E (372,588 acres of OHMA in the Gunnison Basin only).

In addition to the leasing allocations and restrictions identified in Table 3.13.5, under the action alternatives, new fluid mineral leasing in the decision area would be subject to management actions that establish caps on total anthropogenic surface disturbance and, for Alternatives B and C, the average number of energy and mining facilities per acre in OHMA and UHMA, independently, within each population. These disturbance caps would also apply to existing leases provided that they would not render the recovery of fluid minerals infeasible or nonviable. The BLM applied the calculation methodology from the Greater Sage-Grouse RMP Amendment (BLM 2015b, Appendix E) to estimate existing surface disturbance within each GUSG population area from a variety of existing land uses, including oil and gas development. As shown in Figure 3.13.1, total estimated existing surface disturbance ranges from 0.86 percent (Piñon Mesa) to 2.55 percent (Poncha Pass) of the population areas (OHMA and UHMA combined). Although surface disturbance estimates may be refined during implementation-level analysis and as a result of habitat restoration, based on current estimates, only two population areas (Crawford OHMA and Piñon Mesa UHMA) have capacity for additional fluid mineral development without exceeding the disturbance cap of 1 percent under Alternative B. This would result in a major adverse impact by precluding mineral development from most locations within the decision area. Under Alternative D, which caps surface disturbance at 2 percent of OHMA and 3 percent of UHMA, independently, within each population area, all population areas except Poncha Pass OHMA have capacity for additional fluid mineral development. Alternative C caps surface disturbance at 3 percent within OHMA, which provides capacity for additional fluid mineral development in all population areas and would have less adverse impacts than Alternative B or D. Alternative E would apply the same 3 percent disturbance cap within UHMA as Alternative D within the Gunnison Basin population area but would be similar to Alternative A in other populations areas in that no surface disturbance cap would apply.

Figure 3.13.1. Estimated Percent of Occupied and Unoccupied GUSG Habitat with Existing Surface Disturbance by Population Area



Source: BLM 2023

3.13.2.4 Conclusion

Overall, Alternative B would have the greatest adverse impact on the availability of Federal minerals for new leasing due to closures and stipulations on fluid mineral leasing across OHMA, UHMA, and portions of Adjacent Non-habitat areas. Alternative B would seek to apply stipulations and other conditions to existing leases and split estate lands than any other alternative. In general, the availability of Federal minerals for new leasing and the ability to develop existing leases with fewer restrictions would be progressively greater under Alternatives D, C, E, and A. Most notably, Alternative D would apply a NSO stipulation throughout OHMA and UHMA, while restrictions on new fluid mineral leasing under Alternative C would generally apply a NSO stipulation in OHMA and a CSU stipulation in UHMA. Alternatives A and E close the same areas to new fluid mineral leasing as Alternative C, but apply NSO stipulations to smaller areas.

3.13.2.5 Cumulative Effects

The cumulative effects analysis area for leasable fluid minerals is the planning area, regardless of land ownership. In comparison to the rest of Colorado and Utah, oil and gas production in counties overlapping the planning area is relatively small. Given those factors, the cumulative effects of reduced oil and gas production in the planning area would be relatively minor on a statewide or national scale. However, closures and stipulations on oil and gas leasing across

large areas of GUSG habitat (most notably under Alternative B, followed by Alternatives D, C, E, and A) could increase the density of development on nearby lands managed by other surface agencies, States, or especially private landowners in the planning area. Any planned future developments that involve use of Federal lands within or near GUSG habitat may be infeasible due to access and cost considerations.

The planning area does not include areas with high potential for geothermal development and despite two active geothermal leases, there have been no recent applications for exploration or development activities. Anticipated growth in the demand for renewable energy may increase interest in geothermal development; however, that development is more likely to occur in areas with high development potential outside of the planning area. Given the limited potential and low level of interest expressed in geothermal energy development within the planning area to date, the potential for cumulative effects on opportunities for geothermal energy development is therefore anticipated to be minor.

3.13.3. Issue 2: How would closures, stipulations, and limits on disturbance density affect opportunities for exploration and development of leasable solid minerals?

Leasable solid minerals include most chlorides, sulfates, carbonates, borates, silicates, or nitrates of sodium or potassium (potash) and related products, phosphate and related minerals, and gilsonite (including all vein-type solid hydrocarbons). Under certain rare circumstances, hard rock minerals that would otherwise be locatable (such as gold, silver, copper, and uranium, etc.) may also be subject to leasing. Leasable solid minerals may be extracted by a broad array of methods, including surface, underground, and solution mining methods.

Although classified as leasable solid minerals, coal and oil shale and tar sands are not discussed in this EIS as they are considered beyond the scope of this RMP Amendment (see Section 1.6.).

Uranium is not a leasable mineral as defined by the Mineral Leasing Act, but can be leased under the authority of the DOE Uranium Lease Program in specific areas on public land. Because it is not a leasable mineral as defined by the Mineral Leasing Act of 1920, and the BLM does not have final authority over how it is leased and developed, uranium is not discussed as a leasable mineral in this EIS.[2] For public lands in the planning area not withdrawn under the DOE Uranium Leasing Program and for which the BLM has authority to administer exploration and development, uranium is addressed as a locatable mineral within Section 3.13.4.

[2] After World War II, the Atomic Energy Act gave the Secretary of the Interior the authority to withdraw specifically identified tracts of Federal lands from location under the 1872 Mining Law specifically for uranium leasing and development, under leases to be administered by the Atomic Energy Commission. These uranium leases are now managed by the DOE, the successor agency to the Atomic Energy Commission. The surface resources continue to be managed by the BLM, and the lands remain open to mineral leasing and mineral material sales, so long as they do not interfere substantially with uranium leases and/or development (BLM 2013).

3.13.3.1 Analytical Methods and Assumptions

This analysis evaluates the current state and anticipated trends in solid mineral leasing and development within the decision area, then compares potential effects of each alternative on future opportunities for leasing and development. A key quantitative component to this analysis is the overlay of GIS data representing proposed solid mineral leasing closures and stipulations with areas with potential for future development of sodium or potash.

The analysis of effects on leasable solid minerals reflects the following requirements and assumptions:

- Prospecting permits or exploration licenses, including exploration plans, would be required under all alternatives in accordance with 43 CFR 3505 and 43 CFR 3506.
- New closures and stipulations proposed under this RMP Amendment would apply only to new leases. Existing solid mineral leases would be managed in accordance with valid existing rights, including any stipulations or other terms in effect terms in effect when the leases were issued.
- COAs and other surface use limitations apply to solid mineral leasing on all surface operations overlying Federal mineral estate in the decision area, which includes Federal mineral estate underlying BLM-administered and non-BLM-administered surface.
- Impacts of surface-disturbing activities would be mitigated with special stipulations applied to site specific proposals in accordance with 43 CFR 3501.16.
- Reclamation bonds would be required, pursuant to 43 CFR 3504.50, in an amount sufficient to satisfy applicable BLM and State reclamation bonding requirements.

3.13.3.2 Affected Environment

The BLM identified areas with high potential for the occurrence of a variety of leasable solid minerals, primarily sodium and potash, within the Tres Rios Field Office (BLM 2013). In 2013, the Tres Rios Field Office prepared an EA in which 6 of 19 potash prospecting permit applications were analyzed. Five of the applications were authorized, four of which were in unoccupied habitat. The sixth application, located in occupied habitat, was deferred.

Under the Grand Junction RMP (2015), occupied habitat and unoccupied habitat are closed to leasing. Although there are areas with moderate occurrence potential for potash, no prospecting permit applications have been received (BLM 2015a).

Within the Monticello Field Office, no areas with solid mineral potential have been identified in the decision area. Neither of the two known potash leasing areas are within GUSG habitat. The Moab and Monticello Field Offices completed a master leasing plan for oil and gas and potash leasing in 2016. The decision area for the master leasing plan is generally west of the GUSG decision area and does not include any GUSG habitat.

There are no pending prospecting permit applications and no current exploration, leasing, or development for leasable solid minerals within the decision area.

Table 3.13.6 and Map A.75 present areas closed and available to leasing in the decision area based on management direction in the current RMPs. Large areas closed to leasing of solid minerals include the Canyons of the Ancients National Monument, the Dominguez-Escalante and McInnis Canyons NCAs, and wilderness areas and WSAs. Several RMPs do not specifically address leasable solid minerals and several others apply the same stipulations as those applicable to fluid mineral leases.

Table 3.13.6. Leasable Solid Mineral Allocations in the Decision Area

Availability for Leasing[1]	Total Acres in Decision Area	Acres in Occupied Habitat	Acres in Unoccupied Habitat	Acres in Adjacent Non-habitat 4-Mile Buffer
Open	1,193,720	82,650	98,730	720,780
Closed	548,120	24,260	105,910	323,860
Data Unavailable[2]	1,110,550	449,860	198,800	414,750
Total	**2,852,390**	**556,760**	**403,440**	**1,459,390**

Source: BLM 2023

[1] Acreages in each column may not sum to total because more than one stipulation can apply to a particular land area.

[2] Leasable solid mineral allocations are not available in GIS format for some BLM administrative units in the decision area, including the Gunnison Field Office, San Luis Field Office, some private surface lands, and some BLM lands within the Uncompahgre and Grand Junction Field Offices. These areas are not represented in this table.

Potash prices in the United States rose dramatically from an average of $750 per ton in 2018 to $1,700 per ton in 2022 (U.S. Geological Survey 2023) due to global supply shortages in part from war-induced sanctions and export restrictions associated with the Russian invasion of Ukraine. Although global demand for potash may experience a short-term decrease due to cutbacks in fertilizer application with the high market prices, long-term demand for potash for manufacture of fertilizer is anticipated to remain relatively high to meet global agricultural needs associated with global population increase. There has been exploration and prospecting for potash within the decision area but are no pending or authorized activities at this time. However, if viable deposits are proven through exploration, leasing and development could occur in the future.

3.13.3.3 Environmental Consequences

Effects Common to All Alternatives

The primary management actions that could impact the exploration and development of leasable solid mineral resources are closures and COAs. Allocations of areas open or closed to solid mineral leasing directly impact the availability of Federal minerals for lease. Application of COAs may require relocation of proposed development to less suitable locations and increase

development costs. Indirect effects include reduced production of leasable solid minerals such as sodium and potash and reduced lease sale revenues, Federal royalties from production, and tax revenues.

Alternative A (No Action – Current Management)

Alternative A manages leasable solid minerals with a mix of closures and stipulations intended to protect a variety of resources. The closures and stipulations vary across the different administrative areas, but are generally less restrictive than the action alternatives. As described in Section 3.13.3.2, *Affected Environment*, of the administrative units within the decision area for which data are available (47 percent of the decision area), approximately 151,450 acres, or 5 percent, of the decision area is closed to solid mineral leasing (see Map A.33). Under Alternative A, areas available for solid mineral leasing would remain the same and opportunities for development would be driven primarily by market conditions and technological factors.

Action Alternatives

Table 3.13.7 compares solid mineral leasing allocations in the decision area by alternative (see Maps A.32 through A.34). Alternative B would have the greatest adverse impact on the availability of Federal minerals for new leasing by closing OHMA, UHMA, and Adjacent Non-habitat 4-mile buffer to leasable solid mineral exploration and development. Only those areas within linkage-connectivity areas not open to mineral material disposal would be available for solid mineral leasing under Alternative B. Alternatives C, D, and E (within the Gunnison Basin population area only) close only OHMA to new solid mineral leases and prohibit modification of existing leases to expand surface mining, which would have a less adverse impact than Alternative B. Although lands outside of OHMA are open to solid mineral leasing under Alternatives D and E, the leases would be subject to COAs that preclude or relocate surface disturbance within 1 mile of any leks and within 2 miles of leks within OHMA. Alternative C would apply the same COAs as Alternatives D and E, but only around active leks.

Table 3.13.7. Leasable Solid Mineral Allocations in the Decision Area by Alternative

Availability for Leasing	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Open (acres)	1,193,720	310,280	1,771,770	1,771,770	98,460
Closed (acres)	548,120	2,542,110	1,080,620	1,080,620	372,590
Data Unavailable (acres)[1]	1,110,550	0	0	0	0
Total (acres)	**2,852,390**	**2,852,390**	**2,852,390**	**2,852,390**	**471,040**

Source: BLM 2023

[1] Under Alternative A, leasable solid mineral allocations are not available in GIS format for some BLM administrative units in the decision area, including the Gunnison Field Office, San Luis Field Office, some private surface lands, and some BLM lands within the Uncompahgre and Grand Junction Field Offices. These areas are not represented in this table.

Alternatives B and D would also apply COAs that preclude or relocate surface disturbance within 1 mile of any leks and within 2 miles of leks within OHMA to existing leases where feasible. Alternative B would have a greater adverse impact on opportunities for development of existing leases by also applying these COAs to existing leases within UHMA.

Effects from timing limitations, noise restrictions, compensatory mitigation requirements, and caps on surface disturbance would be the same as described for fluid minerals in Section 3.13.2.3.

3.13.3.4 Conclusion

Overall, Alternative B would have the greatest adverse impact on the availability of Federal minerals for new leasing due to closures and COAs applied to solid mineral leasing across OHMA, UHMA, and Adjacent Non-habitat 4-mile buffer. In general, the availability of Federal minerals for new leasing and the ability to develop existing leases with fewer restrictions would be progressively greater under Alternatives D, C, E, and A. Most notably, Alternatives C, D, and E (within the Gunnison Basin population area only) close only OHMA to new solid mineral leases and prohibit modification of existing leases to expand surface mining. These alternatives would make some lands within UHMA available for solid mineral leasing; however, under Alternatives D and E, the leases would be subject to COAs that preclude or relocate surface disturbance within 1 mile of any leks and within 2 miles of leks within OHMA. Alternative C would apply the same COAs as Alternatives D and E, but only around active leks. Variable closures and stipulations under Alternative A are generally less restrictive than the action alternatives.

3.13.3.5 Cumulative Effects

The cumulative effects analysis area for leasable solid minerals is the planning area, regardless of land ownership. Closures and COAs applied to solid mineral leasing across large areas of GUSG habitat (most notably under Alternative B, followed by Alternatives D, C, E, and A could increase the density of development on nearby lands managed by other surface agencies, States, or especially private landowners in the planning area. Any planned future developments that involve use of Federal lands within or near GUSG habitat may be infeasible due to access and cost considerations. Due to the lack of existing or planned potash mining operations and availability of imported potash, primarily from the Elk Point Basin in Saskatchewan, Canada, and established mining operations in Utah and New Mexico (USGS 2015), none of the alternatives are anticipated to contribute to cumulative effects on the supply of potash.

3.13.4. Issue 3: How would proposed withdrawals from mineral entry and surface use limitations affect opportunities for exploration and development of locatable minerals?

Locatable minerals include metallic minerals such as gold, silver, copper, lead, zinc, molybdenum, uranium, and non-metallic minerals such as fluorspar, asbestos, talc, and mica.

The right to explore or develop locatable minerals on Federal lands is established by the General Mining Law of 1872, as amended.

3.13.4.1 Analytical Methods and Assumptions

This analysis evaluates the current state and anticipated trends in locatable mineral claim staking and development within the decision area, then compares potential effects of each alternative on future opportunities for development.

The analysis of effects on locatable minerals reflects the following requirements and assumptions:

- Within a mining claim, the surface lands remain open to the public for other uses.
- Valid existing claims and existing approved surface management operations would be managed under the conditions in effect when the plan of operations was approved; new restrictions proposed under this RMP Amendment would apply only to new plans of operation.
- To the extent allowable by law, the BLM would work with claimants to apply seasonal restrictions or other surface use limitations to prevent unnecessary or undue degradation in GUSG habitat as the law and valid existing rights allow.
- For operations other than casual use, the claimant is required to submit a notice or a plan of operations. Casual use means activities ordinarily resulting in no or negligible disturbance of the public lands or resources, such as collection using hand tools, hand panning, or non-motorized sluicing (43 CFR 3809.5). Notices must be submitted before commencing operations causing surface disturbance of 5 acres or less of public lands on which reclamation has not been completed (43 CFR 3809.21(a)). A plan of operations would be required for new proposed operations greater than casual use in the decision area, unless currently under an approved notice, in accordance with 43 CFR 3809. BLM surface management regulations at 43 CFR 3809.11(c)(6) require that in GUSG habitat (areas with federally listed threatened species or their designated critical habitat), an operator must submit a plan of operations regardless of whether the proposed activities qualify as notice-level disturbance.

3.13.4.2 Affected Environment

The BLM prepares mineral resource assessments to inform land use planning decisions in accordance with BLM Manual 3013 (BLM 1985). The potential for occurrence of locatable minerals is typically classified and mapped as none, low, moderate, high, and not determined. Where known, assessments may also provide information about the potential for mineral development in consideration of geologic and economic factors. Within the decision area, there are some areas with moderate to high locatable mineral potential (primarily for uranium and vanadium). Pursuant to Executive Order No. 13817, "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals" (82 *FR* 60835), the U.S. Geological Survey prepared a draft list of minerals or mineral material groups considered "critical" to the economic and national security of the U.S., has a supply chain vulnerable to disruption, and serves an essential function in the manufacturing of an important product (Fortier et al. 2018). Principal occurrences of critical minerals in the decision area include aluminum, titanium, rare earth elements, uranium, vanadium, and potash (a leasable solid mineral discussed in Section 3.13.3) (Schwochow and Hornbaker 1985). There is a high potential for the occurrence of uranium and vanadium, as well as some potential for copper, along the Colorado-Utah border in the Uravan Mineral Belt (BLM 2013, 2011), which is located within portions of the Tres Rios and Uncompahgre Field Offices. There is also high potential for the occurrence of uranium and vanadium deposits in historic mining areas within the Monticello Field Office. Where the Chinle and Morrison formations are present outside of these areas, there is a moderate potential for occurrence and a low to moderate potential for occurrence of copper. The copper deposits throughout the Monticello Field Office are low-grade and sparse, making development unlikely (BLM 2005a). The Buckhorn Mesa-Scharf Mesa within the Moab Field Office has moderate development potential for uranium and vanadium and there are placer gold and copper deposits in the vicinity with low development potential (BLM 2005b). Historically within the Gunnison Field Office, metallic mineral resources have been produced from the Gunnison Gold Belt, which lies within the Colorado Mineral Belt. The Iron Hill area near Powderhorn contains mineral deposits with a "good potential" for production of rare earth metals, such as titanium (BLM 1991). The White Earth Mining District of the Iron Hill Carbonatite Complex near Powderhorn contains a massive carbonatite stock that forms the core of the Iron Hill carbonatite complex. The carbonatite stock is enriched in rare earth elements, niobium, and thorium, while the adjacent pyroxenite unit is enriched in these same elements, as well as substantial amounts of titanium (Long et al. 2010). The portion of the decision area in the San Luis Valley Field Office was identified as having low to moderate potential for locatable minerals (BLM 2022).

Lands may be closed to mineral entry through congressional Presidential Proclamations made by the President with authority under the Antiquities Act of 1906 (e.g., National Monuments), through legislative actions taken by Congress in the form of public laws (e.g., Wilderness designations, creation of National Parks, WSR designations), or through administrative

withdrawals made by the President, the Secretary of the Interior or other authorized Executive branch officers. All types of withdrawals must be posted in the Federal Register to announce that new claims cannot be staked.

The BLM may recommend closures to mineral entry (a land use planning decision) by petitioning the Secretary of the Interior to administratively withdraw areas from further location of mining claims or sites. Recommendation of areas for withdrawal under the alternatives could result in the publication of a notice of proposed withdrawal in the Federal Register. Once such a notice is published, under 43 U.S.C. 1714(b)(1), the lands would be temporarily segregated from location and entry for up to 2 years while the Secretary considers the proposed withdrawal. If the lands are ultimately withdrawn, then no new mining claims could be located for the duration of the withdrawal. During the segregation and withdrawal periods, mining-related activities would be governed by 43 CFR 3809.100. Existing claims could be subject to validity exams, and possible contest. Existing claims could potentially be validated, invalidated, or cancelled. Any claims determined to be valid would be managed according to 43 CFR 3809.

Table 3.13.8 and Map A.76 present BLM lands subject to existing mineral withdrawals, which include 609,000 acres accounting for 21 percent of the decision area. Large areas withdrawn from locatable mineral entry include the Canyons of the Ancients National Monument, the Dominguez-Escalante and McInnis Canyons NCAs, the "Three Rivers Withdrawal" in portions of the Moab Field Office, and wilderness areas.

Table 3.13.8. Existing Locatable Mineral Withdrawals in the Decision Area

Status	Total Acres in Decision Area	Acres in Occupied Habitat	Acres in Unoccupied Habitat	Acres in Adjacent Non-habitat 4-Mile Buffer
Open to Location	2,243,390	506,120	321,470	1,077,340
Withdrawn	609,000	50,630	81,970	382,050
Total	**2,852,390**	**556,760**	**403,440**	**1,459,390**

Source: BLM 2023

Areas not withdrawn are open to location and are subject to surface management regulations (43 CFR 3809).[3] The regulations require the claimant or operator to prevent unnecessary or undue degradation of the land. Exploration and mining activities in WSAs are also subject to non-impairment criteria under 43 CFR 3802. Impairment refers generally to actions that cannot be reclaimed to the point of being substantially unnoticeable and may constrain the area's suitability for preservation as wilderness (43 CFR 3802.0-5(d)). There are 4,181 active claims wholly or partially within the decision area encompassing a total of 143,680 acres. Note that the acres of active claims presented in Table 3.13.9 are actual acres reported in the BLM

[3] The BLM's surface management regulations at 43 CFR 3809 apply to operations authorized under the Mining Law on BLM-administered surface and in certain cases described in BLM Handbook H-3809-1, may apply to operations authorized on split estate lands (BLM 2012b).

Mineral and Land Records System (MLRS). However, the active claims shown on Map A.77 are mapped to the nearest quarter-section (usually about 160 acres) and so illustrate the distribution of active claims rather than actual acres.

As of May 2023, there were four active and one pending plan of operations for locatable minerals. These include the Sunday Mine Complex in the Tres Rios Field Office (80 acres active, 11 acres pending) and the Van 4 Mine in the Uncompahgre Field Office (8 acres active).

Table 3.13.9. Active Locatable Mineral Claims and Plans of Operation in the Decision Area

Status	Total Acres in Decision Area	Acres in Occupied Habitat	Acres in Unoccupied Habitat	Acres in Adjacent Non-habitat 4-Mile Buffer
Active Claim	143,680	17,290	12,030	88,050
Active Plan of Operations	88	8	0	80
Pending Plan of Operations	11	0	0	11

Source: BLM 2023

These new and pending plans would be reviewed to ensure they meet the content requirements of 43 CFR 3809.401(b), followed by an environmental analysis under NEPA, to be sure that the required performance standards (43 CFR 3809.420) would be met. Consistent with mining law, performance standards include such things as land use plan compliance, actions to protect public lands, (such as, to prevent adverse impacts on threatened or endangered species and their habitat which may be affected by operations), concurrent reclamation, and full reclamation requirements. In addition, the BLM would require a bond or financial guarantee that would cover the estimated costs of reclamation.

The demand for mineral resources is driven by price, which, in turn, is governed by improvements in technology of exploration, production, refining, transportation, manufacture, and use; changes in lifestyle; changes in regulation and availability of land and access; changes in patterns of supply and demand (both domestically and internationally); and changes in national policy areas (including military conflict, security, and strategic reserves). The planning area has reserves of precious metals used for industrial, cosmetic, and investment purposes, as well as base metals (copper, lead, zinc, molybdenum, tin, tungsten, bismuth, and tellurium) used for a variety of industrial purposes. Exploration drilling of these deposits is a distinct possibility.

The planning area contains uranium resources used for domestic power generation, medicine, and weapons, as well as vanadium used in steel production and batteries. Currently, important locatable mineral interests within the decision area are limited to uranium and vanadium. The increasing interest in nuclear power generation, as well as the need for vanadium (a byproduct of uranium development), for modern energy, air, space, power, and weapons technology could rapidly increase the demand for uranium exploration, development, and processing.

Although higher gold prices have increased the number of mining claims in the area, no substantial gold mining or exploration projects on public lands have come to fruition in the recent past, but continued high prices could spur increased exploration and development in the near future.

3.13.4.3 Environmental Consequences

Effects Common to All Alternatives

The primary management actions that could impact the availability of locatable minerals are recommended withdrawal from mineral location and entry and BMPs that may voluntarily be implemented. Areas already withdrawn preclude development of locatable minerals unless the claimant holds valid existing rights that predate the withdrawal. Areas recommended for withdrawal may eventually have the same direct effect if the withdrawal is approved by the Secretary or by Congress. Voluntary application of BMPs could result in increased costs and decreased efficiency of development. Indirect effects include reduced production of minerals for public use.

Alternative A (No Action – Current Management)

As described in Section 3.13.4.2, *Affected Environment*, there are approximately 609,000 acres or 21 percent of the decision area subject to existing withdrawals under Alternative A (see Map A.23). Alternative A does not recommend any additional withdrawals in other portions of the decision area. Therefore, areas available for locatable mineral entry would remain the same and opportunities for development would be driven primarily by market conditions and technological factors.

Action Alternatives

Table 3.13.10 and Maps A.21 through A.25 compare recommended withdrawals by alternative. Under Alternative B, all OHMA and UHMA are recommended for withdrawal from mineral location and entry, which would have the greatest adverse impact of the alternatives on the availability of locatable minerals. Alternative C would have the next greatest adverse impact through the recommended withdrawal of all OHMA. Adverse impacts from Alternative D resulting from the recommended withdrawal of eight ACECs located within GUSG habitat would generally be greater than Alternative A and E but less than Alternatives B and C based on the total acreages reported in Table 3.13.10. Alternative E applies the same recommended withdrawals within the Gunnison Basin population but, like Alternative A, does not recommend any additional withdrawals in other portions of the decision area. Table 3.13.10 also shows, by alternative, the number and total acreages of active or filed claims that could be subject to validity exams and possible contest, which could result in delay or preclusion of future development opportunities. This potential adverse effect would be greatest under Alternative

B, followed by Alternatives C, D, and E based on the decreasing acreages of active or filed claims that could be subject to validity exams under each alternative.

Table 3.13.10. Recommended Locatable Mineral Withdrawals in the Decision Area by Alternative

Status	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Open to Location (acres)	2,243,390	1,415,790	1,737,260	2,154,050	404,570
Recommended for Withdrawal (acres)	0	827,590	506,120	89,340	26,630
Withdrawn from Mineral Entry (acres)	609,000	609,000	609,000	609,000	39,990
Recommended for Withdrawal with Active or Filed Claim (number of claims)	0	1,013	584	95	0
Recommended for Withdrawal with Active or Filed Claim (acres)	0	28,080	16,590	2,060	0

Source: BLM 2023

Best management practices and mitigation measures, limitations, noise restrictions, and compensatory mitigation requirements would be similar to those described for fluid minerals in Section 3.13.2.3; however, these conditions could only be applied to plans of development for locatable minerals to prevent unnecessary or undue degradation in GUSG habitat as the law allows. Because these operations are permitted under the Mining Law of 1872, as amended, disturbance caps would not affect acreages permitted in plans of operation or development of permitted mine areas. However, surface disturbance resulting from locatable mineral development would be included when calculating disturbance for other land uses. Therefore, locatable mineral development would not be subject to the caps on surface disturbance in GUSG population areas under Alternatives B through E due to valid existing rights.

3.13.4.4 Conclusion

Overall, Alternative B would have the greatest adverse impact on the availability of locatable minerals for development due to recommended withdrawal of OHMA and UHMA to mineral location and entry. In general, the availability of locatable minerals for development and ability to develop existing claims with fewer restrictions would be progressively greater under Alternatives C, D, E, and A.

3.13.4.5 Cumulative Effects

The cumulative effects analysis area for locatable minerals is the planning area, regardless of land ownership. Although there has been minimal recent locatable mineral development within the planning area, demand for and interest in development of locatable minerals can change

rapidly in response to market conditions. Recommending large areas of GUSG habitat for withdrawal under each of the action alternatives, and particularly under Alternative B, which recommends withdrawal of the largest acreage, would likely preclude future development of known deposits of strategic minerals, particularly uranium and vanadium and multiple lithium claims recently located in the Gunnison Field Office. This would increase development pressure on adjacent lands nearby lands managed by other surface agencies, states, or especially private landowners in the planning area.

3.13.5. Issue 4: How would closures to mineral material disposal, surface use limitations, and limits on disturbance density affect opportunities for exploration and development of salable minerals?

Salable minerals (also referred to as mineral materials) include common varieties of construction materials and aggregates, such as, sand, gravel, limestone aggregate, building stone, cinders (clinker), moss-covered rock (moss rock), roadbed, decorative rock, clay, and ballast material. Mineral materials are sold or permitted under the Mineral Materials Sale Act of 1947, as amended and regulated under 43 CFR 3600.

3.13.5.1 Analytical Methods and Assumptions

This analysis evaluates the current state and anticipated trends in mineral material permits and development within the decision area, then compares potential effects of each alternative on future opportunities for development.

The analysis of effects on salable minerals reflects the following requirements and assumptions:

- Disposal of mineral materials are discretionary and surface use limitations can be applied as stipulations on the sales contract or Free Use Permit.
- Existing mineral material operations on Federal mineral estate, regardless of surface ownership, could be subject to additional mitigation measures by the BLM authorized officer. Under these circumstances, permit and contract modifications would be developed consistent with applicable laws and valid existing rights, using as many of the BMPs and conservation measures as possible while still allowing reasonable access.
- Management actions apply to mineral material activity on surface lands overlying Federal mineral estate, which includes all Federal mineral estate underlying BLM-administered and non-BLM-administered surface.
- Future demand for mineral materials will vary depending upon market conditions, which differ according to economic conditions and construction activity. Construction projects within approximately 50 miles of mineral materials deposits may lead to development of

these deposits. It is expected that mineral materials activity and demand will continue to increase for the life of the RMP Amendment.

3.13.5.2 Affected Environment

Unlike most locatable minerals, deposits of common variety mineral materials occur everywhere, by default. Common sites for natural concentrations of small to large amounts of such materials are canyon walls, stream channels, talus slopes, landslides, ancient river terraces, glacial moraines, and floodplains. Road cuts, quarries, and mineral material sites increase the amount of material available for extraction. Areas with known resources, or areas that are favorable for resources of sand and gravel, may contain materials that are ready for use or that are suitable for screening, washing, or crushing in order to meet size or fine-material requirements.

Sand and gravel, as construction aggregate, is an extremely important resource. The extraction of the resource varies directly with the amount of development nearby— road building and maintenance, and urban development—as sand and gravel is necessary for that infrastructure development. The proximity of both transportation and markets are key elements in the development of a deposit.

Mineral materials are sold at a fair market value or made available through free use permits to governmental agencies. Local government agencies and nonprofit organizations may obtain these materials free of cost for community purposes. The BLM can make mineral materials available to the public through small sales contracts and may designate areas called "community pits" or "common use areas" for these small sales.

Table 3.13.11 and Map A.78 present BLM lands closed and open to mineral material sales. Approximately 577,400 acres or 32 percent of the decision area are closed to mineral material sales, primarily within the NCAs.

Table 3.13.11. Salable Mineral Status in the Decision Area

Status	Total Acres in Decision Area	Acres in Occupied Habitat	Acres in Unoccupied Habitat	Acres in Adjacent Non-habitat 4-Mile Buffer
Open to Mineral Material Disposal	457,630	176,640	60,410	268,570
Closed to Mineral Material Disposal	577,400	10,060	62,540	390,590
Data Unavailable[1]	1,817,360	370,060	280,490	800,230
Total	**2,852,390**	**556,760**	**403,440**	**1,459,390**

Source: BLM 2023

[1] Salable mineral allocations are not available in GIS format for some BLM administrative units in the decision area, including some BLM lands within the Tres Rios, Gunnison, Grand Junction, and Uncompahgre Field Offices. These areas are not represented in this table.

As of May 2023, there were an estimated 12 mineral material sales or free use permits in the decision area (Table 3.13.12), including the McCabes and Taramarcaz Community Pits (40 acres each) and four 0.5-acre common use areas within the Gunnison Field Office; the Spring Creek free use permit/community pit (40 acres) in the Monticello Field Office; the Dry Creek quarry in the Tres Rios Field Office (32 acres); a county free use permit within the San Luis Valley Field Office; and the Grizzly Ridge pit (9.9 acres) with the Moss Rock common use area (5,360 acres)[4] and West End pit (21 acres) within the Uncompahgre Field Office.

Table 3.13.12. Existing and Pending Salable Mineral Operations in the Decision Area

Status	Total Acres in Decision Area	Acres in Occupied Habitat	Acres in Unoccupied Habitat	Acres in Adjacent Non-habitat 4-Mile Buffer
Active	5,545	124	5,381	40
Pending	0	0	0	0

Source: BLM 2023

With the continued increase in the human population in the planning area, the need for additional sand and gravel resources for road improvements and other construction related activities will likely increase. Increasing construction in all area communities will likely create a growing demand for aggregate and fill materials, as well as for decorative and landscaping stone. The building of new roads and the maintenance and improvement of existing roads may create increasing demand for aggregate for asphalt and cement and gravel for road surfaces. The competition for gravel and aggregate could spur development of quarries and mineral material sites within the decision area, on public lands as well as on adjacent private lands.

3.13.5.3 Environmental Consequences

Effects Common to All Alternatives

The primary management actions that could impact the availability of salable minerals are closure of areas to mineral materials sales; required conservation measures, such as surface disturbing restrictions and timing limitations. Areas closed to mineral sales have an obvious direct effect on the availability of mineral materials. Required surface use limitations, such as timing limitations, could result in increased costs and decreased efficiency of development. Indirect effects include reduced production of minerals for public use and for the generation of mineral sales revenues.

[4] The Moss Rock common use area is open for public, non-commercial collection of landscaping stone using hand tools only on designated routes outside of seasonal timing limitations. Use of heavy or mechanized equipment is not allowed under the permit.

Alternative A (No Action – Current Management)

Alternative A manages salable minerals with a mix of closures and stipulations, which vary across the RMPs, but are generally less restrictive than the action alternatives (see Map A.28). As described in Section 3.13.5.2, *Affected Environment*, of the administrative units within the decision area for which data are available (25 percent of the decision area), approximately 577,400 acres, or 32 percent, of the decision area are closed to mineral material sales, primarily within the NCAs. Under Alternative A, use of existing mineral material sites and common use areas would continue and new sales and permits could be authorized in areas open to mineral material sales as needed to support road improvements and other construction related activities in the region.

Action Alternatives

Table 3.13.13 compares salable mineral allocations in the decision area by alternative. Alternative B would have the greatest adverse impact on the availability of salable minerals for development by closing OHMA, UHMA, linkage-connectivity habitat, and Adjacent Non-habitat 4-mile buffer to new mineral material disposals (see Maps A.27 through A.30). Alternatives C, D, and E (within the Gunnison Basin population area only) close only OHMA to new mineral material disposals, which would have a less adverse impact than Alternative B. Alternatives D and E (in the Gunnison Basin population area only) would allow free use permits and expansion of existing active mineral material sites if specific criteria are met to avoid adverse impacts to GUSG. Alternative E would result in the same effects as Alternative A, except within the Gunnison Basin population area, where OHMA would be closed to mineral material disposal resulting in the same adverse impacts as Alternative D.

Table 3.13.13. Salable Mineral Allocations in the Decision Area by Alternative

Status	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Open to Mineral Material Disposal	457,630	289,450	1,728,430	341,050	97,880
Closed to Mineral Material Disposal	577,400	2,562,940	1,123,960	1,123,960	373,160
Data Unavailable[1]	1,817,360	0	0	1,387,380	0
Total	**2,852,390**	**2,852,390**	**2,852,390**	**2,852,390**	**471,040**

Source: BLM 2023

[1] Under Alternative A, salable mineral allocations are not available in GIS format for some BLM administrative units in the decision area, including Gunnison Gorge NCA, Canyons of the Ancients, and some BLM lands within the Tres Rios, Gunnison, Grand Junction, and Uncompahgre Field Offices. These areas are not represented in this table.

Effects from timing limitations, noise restrictions, compensatory mitigation requirements, and caps on surface disturbance would be the same as described for fluid minerals in Section 3.13.2.3.

3.13.5.4 Conclusion

Overall, Alternative B would have the greatest adverse impact on the availability of salable minerals for development due to the closure of OHMA, UHMA, linkage-connectivity areas, and Adjacent Non-habitat 4-mile buffer to new mineral material disposals. In general, the availability of salable minerals for development and ability to expand existing mineral material sites or obtain free use permits with fewer restrictions would be progressively greater under Alternatives C, D, E, and A.

3.13.5.5 Cumulative Effects

The cumulative effects analysis area for salable minerals is the planning area, regardless of land ownership. Continued population growth and associated development of roads and buildings could increase demand for salable minerals such as gravel and aggregate. Incremental effects of alternatives that prohibit or place conditions on expansion of existing mineral material sites and development of new sites could contribute to shortages of mineral material sources within a reasonable haul distance to local communities and increase development pressure on nearby lands managed by other surface agencies, states, or especially private landowners in the planning area.

3.13.6. Unavoidable Adverse Effects

The potential adverse effects on the availability of mineral resources for exploration and development, as described in the environmental consequences section for each mineral type, would generally be unavoidable unless the exploration or development activity could be relocated or modified without resulting in additional costs or inefficiencies. Another exception would be if the BLM granted a WEM to a NSO stipulation on a fluid mineral lease in applicable areas, such as within OHMA under Alternative C and UHMA under Alternative D. Although rarely granted, a WEM could avoid adverse effects on mineral development under limited circumstances as detailed in Appendix M, *Stipulations Applicable to Fluid Mineral Leasing and Land Use Authorizations*. Unavoidable adverse effects on mineral resources would generally be greatest under Alternative B, followed by Alternatives D, C, E, and A.

3.13.7. Relationship of Short-term Uses and Long-term Productivity

Certain management actions intended to promote the long-term conservation and recovery of GUSG habitat would prohibit or restrict the relatively short-term uses of lands within the decision area for mineral exploration and development activities and severely diminish long-term productivity of the mineral resources. Restrictions on mineral development and long-term conservation of GUSG habitat would generally be maximized under Alternative B, and would progressively decrease under Alternatives D, C, E, and A.

3.13.8. Irreversible and Irretrievable Commitment of Resources

The extraction of minerals for use or sale is an irreversible commitment of resources. The availability of Federal minerals and potential for irreversible impacts from extraction would generally be greatest under Alternative A, followed by Alternatives E, C, D, and B.

Management actions that promote GUSG conservation by prohibiting or restricting mineral exploration and development would result in irretrievable loss of mineral commodities for public use and any associated sale revenues, Federal royalties from production, and tax of new technologies (e.g., longer reach of directional wells into areas subject to NSO stipulations) or changes in laws, regulations, and planning decisions. Certain types of restrictions, such as mineral withdrawals, if enacted by Congress, are typically permanent and would effectively result in an irreversible commitment of mineral resources.

3.14. LANDS AND REALTY

3.14.1. Introduction

The lands and realty programs are support programs that respond to the demands of industry and utilities, the public, other government entities, and other BLM disciplines to help ensure that BLM lands and boundaries are managed to provide the greatest possible benefit to the public. The programs are responsible for management of land ownership adjustments, management of land boundaries, land use authorizations, public access, withdrawals, trespass prevention, identification and abatement, and land tenure records system and associated geospatial data. The most active part of the programs is the authorization of ROW, which are issued primarily for roads, utilities, communication sites, renewable energy, and oil and gas facilities.

3.14.2. Issue 1: How would the management actions under each alternative affect land tenure adjustments that include occupied and unoccupied habitats?

Land tenure/landownership adjustments refer to actions that result in the disposal of BLM-administered lands or interests in land, the retention of BLM-administered lands, and associated adjustments in management of land boundaries, land tenure records system and associated geospatial data.

Disposal of BLM-administered lands takes place through exchange, sale or Recreation and Public Purposes (R&PP) Act leases and patents in compliance with FLPMA, as amended. Sections 203 (Sales), 206 (Exchange), and 302 (R&PP) authorize the Secretary of the Interior to dispose of lands, and enter into land exchanges.

Land exchange involves trading lands or interest in lands with willing non-Federal landowners. Exchanges are discretionary transactions, except for those exchanges that are congressionally mandated or judicially required. The value of the lands to be exchanged must be approximately equal in value and the lands must be located within the same state. Exchanges must be in the public's interest and in conformance with the applicable land use plan(s). Land exchange is the BLM's preferred method of land ownership adjustment to bring lands and associated interests with high public resource values into public ownership; consolidate land ownership and mineral estate patterns to achieve more efficient management of resources and BLM programs; and dispose of public land parcels identified through the applicable RMP.

Acquisition of land, or interest in land, occurs through exchange, donation, or purchase when the subject land meets acquisition criteria (see Table 2.13) identified in land use planning and manual guidance. Acquisitions can be done through land exchanges, Land and Water

Conservation Fund, or donation. The BLM acquires land and or interest in lands from willing sellers.

The R&PP Act authorizes the lease or patent of BLM-administered lands to State, local, and federally recognized Indian Tribal governments and to qualified non-profit organizations for recreation and public purposes. The land disposed of must be used for the purpose it was transferred for or it reverts back to the BLM.

Retention of BLM-administered lands are lands that have not been identified for disposal or have been specifically identified for retention (e.g., lands near communities, lands which contain valuable resources, lands within or adjacent to administrative designations).

3.14.2.1 Analytical Methods and Assumptions

The analysis evaluates the lands with potential for disposal and acquisition and how that would affect habitat for the GUSG. The analysis is based on the assumption that the BLM will receive requests for the disposal of public land. Exchange is the preferred method of disposal of lands that would also result in the acquisition of land or interests in land which would increase valuable resources or better serve the public. The analysis uses the following assumptions:

- Lands will be disposed of and acquired through exchange
- Lands will be retained in federal ownership
- Lands will be disposed of through sale or R&PP

3.14.2.2 Affected Environment

The lands within the planning area and decision area consist of BLM, private, State, and other Federal agency land. See Table 1.1 and Figure 1.1 for the land ownership within the planning area. Figure 1.3 shows the land ownership in the decision area. Currently there are 30,240 acres available for disposal in the decision area, with 13,690 acres in OHMA and 16,550 acres in UHMA. There are approximately 409,340 acres of private land within OHMA and 570,637 acres of private land within UHMA that could possibly be available for acquisition.

3.14.2.3 Environmental Consequences

The acreage of land identified for disposal could affect the BLM's ability to make land tenure adjustments. The alternatives identify a variety of acres available for disposal in the decision area (Table 3.14.1).

Table 3.14.1. Lands Available for Disposal by Alternative in the Decision Area

Habitat Type	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
OHMA (acres)	13,090	0	13,090	0	240
UHMA (acres)	14,110	0	14,110	0	450

Effects Common to All Alternatives

The lands and realty program alternatives identify a broad range of actions that can directly and indirectly change existing land uses. Land disposal to private entities or local governments could result in some lands being available for future development.

Under current conditions, large-scale changes in land use are not expected to occur. Any public lands transferred out of Federal ownership are typically used for the same or similar purposes as they are currently used.

Land exchanges, sales, and purchases would help to consolidate the relatively fragmented public land ownership pattern within the decision area and allow for better management of public lands over the long term. Consolidating public land holdings improves access to public lands, reducing the number of access easements needed, miles of boundary to be managed, and helping to reduce encroachment.

Alternative A (No Action – Current Management)

Under Alternative A management of the land tenure program would not change from the existing management prescribed in the current RMPs (see Map A.42), except where necessitated by more recent law, policy, and guidance. The BLM would continue to review requests for the disposal/acquisition of land through sale, exchange or R&PP lease or sale as previously identified. The lands identified for retention would not change. There would be no effect on the lands and realty program.

Action Alternatives

For Alternative B, the effects on the lands and realty program resulting from processing land tenure/landownership adjustments would be similar to Alternative A, except all BLM-administered lands within OHMA and UHMA would be retained in public ownership unless specific criteria (see Table 2.14) are met (see Map A.43). Although this alternative removes lands identified for disposal within OHMA and UHMA, there would still be opportunities for disposal. Lands that met specific criteria (see Table 2.14) would still be eligible for R&PP leases and patents to State, local, or federally recognized Indian Tribal governments, as well as qualified non-profit organizations for recreation and public purposes. There would also be opportunities for land exchanges when the lands acquired would result in a net conservation gain for GUSG or if the disposal or exchange of lands would not cause any direct or indirect adverse effect on GUSG conservation. In areas with mixed ownership, land exchanges may be considered to facilitate additional or more contiguous Federal ownership within OHMA.

For Alternatives C, D, and E, the effects on the lands and realty program would be the same as those of Alternative A for disposal actions through land exchange, sales, and R&PP Act leases

and patents. The retention and acquisitions of lands under Alternatives C, D, and E would be the same as those actions outlined in Alternative B (see Map A.42 and Map A.44). Retention of OHMA and UHMA lands across all action alternatives would benefit GUSG as a result of more contiguous Federal management of GUSG habitat.

3.14.2.4 Conclusion

The proposed management actions would have a minimal effect on the lands and realty program. Even though Alternative B removes lands identified for disposal within OHMA and UHMA, there would still be opportunities for disposal and acquisition when specific criteria (see Table 2.14) are met.

3.14.2.5 Cumulative Effects

Past, present, and reasonably foreseeable future actions within the cumulative effects analysis area would continue to be a factor and have an effect on the lands and realty program. These actions include land exchange, sales, R&PP leases and patents, and acquisitions and are likely to occur over the life of the document.

Cumulative effects are primarily the result of implementing restrictions and management prescriptions designed to protect sensitive resources. Implementing these actions may reduce opportunities to consolidate surface ownership and improve the manageability of public lands.

3.14.3. Issue 2: How would ROW exclusion and avoidance areas under each alternative affect the lands and realty program?

Land use authorizations include granting ROWs, permits, and leases. A ROW grant is an authorization to use a specific piece of public land for a certain project, such as roads (e.g., oil and gas access roads, access to private land, access to State lands), pipelines (e.g., water pipelines, oil and gas pipelines), distribution and transmission lines, communication sites, and wind energy and solar energy monitoring projects. A ROW grant authorizes rights and privileges for a specific use of the land, for a specific location, for a specific period of time. Every ROW has a land description that describes the location of the land use authorizations. A ROW grant authorizes the construction, operation, and maintenance of the project as well as the reclamation when the project is no longer needed. Generally, a BLM ROW is granted for a term appropriate for the life of the project and typically for a maximum of 30 years. The majority of ROWs granted are authorized under Title V of FLPMA and under the Mineral Leasing Act.

Leases and permits are issued for commercial filming, advertising displays, commercial or noncommercial croplands, apiaries, livestock holding or feeding areas not related to grazing

permits and leases, harvesting native or introduced species, 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 non-irrigation facilities, and wind energy and industrial solar energy development projects. The regulations for the processing of leases and permits are found at 43 CFR 2920. Permits are short-term (generally not to exceed 3 years), revocable authorizations to use the lands for specified purposes. Leases are usually long-term authorizations requiring a significant capital investment.

3.14.3.1 Analytical Methods and Assumptions

The analysis evaluates the existing ROWs/land use authorizations and future applications and determine what effects each alternative would have on the issuance of new ROWs/land use authorizations within ROW exclusion and avoidance areas within the decision area.

The analysis uses the following assumptions:

- Existing ROWs and land use authorizations will be managed to maintain valid existing rights.
- Future utilities would be co-located with existing utilities/disturbance (i.e., West-Wide Energy Corridor) to the extent possible.
- Private property access across public lands would be limited in occupied habitat.
- Mitigation measures would be added to ROWs to decrease the effects in occupied habitat.

3.14.3.2 Affected Environment

The planning area currently has approximately 2,359 (Colorado)/1,236 (Utah) active ROWs and other land use authorizations that are protected by valid existing rights. There are approximately 277 (Colorado)/96 (Utah) pending ROW applications, leases, permits, or renewals within the planning area.

Areas identified as unsuitable for surface disturbance or occupancy are generally identified as avoidance or exclusion areas for ROWs. Restrictions and mitigation measures could be modified on a case-by-case basis for avoidance areas, depending on effects on resources, while exclusion areas are prohibited from ROW development, unless exception criteria (see Table 2.13) are met.

Table 3.14.2 provides acreages of ROW exclusion areas, avoidance areas, open areas, and currently authorized ROWs (including ROWs, leases, permits, and communication sites) in the decision area.

Table 3.14.2. ROWs Restrictions in the Decision Area

Habitat Management Area	ROW Exclusion Areas (acres)	ROW Avoidance Areas (acres)
OHMA	4,090	28,970
UHMA	44,870	73,320

The BLM authorizes a wide range of uses and facilities through ROWs, leases, and permits, (i.e., transmission lines, distribution lines, and roads to private property, energy facilities, and oil and gas development). Table 3.14.3 summarizes the majority of the current land use authorizations in the planning area.

Table 3.14.3. Types of Land Use Authorizations in the Planning Area

Habitat Management Area	Power, Phone and Fiber Optic Lines	Ditches and Canals/Water Facilities	Roads and Highways	Pipelines	Communication Sites	Renewable Energy
OHMA	79	36	49	17	13	0
UHMA	77	44	6	19	9	0

Source: BLM LR2000

It is anticipated that the demand for ROWs will continue to increase. The rate of the increased demand is tied to the rate of population growth and associated private land development, access needs, and utilities development. Demand for ROWs is also tied to oil and gas production, mineral development and renewable energy development.

3.14.3.3 Environmental Consequences

Designations of ROW exclusion and avoidance areas could affect BLM's ability to site new ROWs on public land. The alternatives would implement various restrictions on ROWs in the decision area depending on the habitat type. Table 3.14.4 identifies the acres of ROW exclusion and avoidance areas and areas open to ROW by alternative. Table 3.14.5 identifies renewable energy avoidance and exclusion areas by alternative.

Table 3.14.4. ROW Restrictions and Areas Open to ROWs by Alternative

Alternative	ROW Exclusion Areas (Acres)			ROW Avoidance Areas (Acres)		
	OHMA	UHMA	LCMA	OHMA	UHMA	LCMA
Alternative A	4,090	44,870	0	28,970	73,320	0
Alternative B	391,490	258,630	0	0	0	214,250
Alternative C	0	0	0	391,490	0	0
Alternative D	87,140	1,480	0	304,350	257,150	0
Alternative E	0	0	0	291,980	0	0

Table 3.14.5. Renewable Energy Avoidance and Exclusion Areas by Alternative (acres)

Resource Use	Alternative A (No Action)	Alternative B	Alternative C	Alternative D	Alternative E (Gunnison Basin)
Wind Avoidance – OHMA	19,540	0	0	0	0
Wind Avoidance – UHMA	62,610	0	258,630	0	62,280
Wind Exclusion – OHMA	6,340	391,490	391,490	391,490	291,980
Wind Exclusion – UHMA	35,170	258,630	0	258,630	0
Wind Exclusion – Linkage Connectivity Areas	0	214,250	0	0	0
Wind Exclusion – Adjacent Non-habitat (4-mile buffer)	0	1,124,310	0	0	0
Solar Avoidance – OHMA	0	0	0	0	0
Solar Avoidance – UHMA	0	0	258,630	0	62,280
Solar Exclusion – OHMA	390,270	391,490	391,490	391,490	291,980
Solar Exclusion – UHMA	255,910	258,630	0	258,630	0
Solar Exclusion – Linkage Connectivity Areas	0	214,250	0	0	0
Solar Exclusion – Adjacent Non-habitat (4-mile buffer)	0	1,124,310	0	0	0

Effects Common to All Alternatives

Restrictions across the alternatives vary in intensity, which would affect the program by increasing the time to process applications. The cost of processing the applications would be more time-consuming, which, in turn, would increase the cost to the applicant.

Alternative A (No Action – Current Management)

Under Alternative A, the lands in the planning area would be managed the same as the existing management prescribed in the current RMPs, except where necessitated by more recent law, policy, and guidance. Most of the decision area is currently open to ROWs as shown on Map A.37. Several plans manage the critical habitat areas for species protected under the ESA as ROW exclusion or avoidance areas for wind and solar energy (see Map A.42 and Map A.47). This would allow the lands and realty program to process requests for ROWs as needed with little effect on the program.

Action Alternatives

Under Alternative B, all OHMA and UHMA would be managed as ROW exclusion areas unless the project was proposed within an exception area, as noted in Table 2.14 and LCMA would be managed as ROW avoidance areas (see Map A.38). For wind and solar, OHMA, UHMA, LCMA,

and Adjacent Non-habitat (4-mile buffer) would be managed as ROW exclusion areas (see Map A.43 and Map A. 48). This would place additional requirements on ROW applicants and would increase management efforts and costs related to proposals submitted by ROW applicants. The effect would be further increased if these restrictions resulted in relocation 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. The BLM would recognize the valid existing rights of grant holders to continue to operate, maintain and improve, upgrade, amend, and renew facilities. The exclusion of ROWs within OHMA and UHMA would result in a decrease in the number of new ROWs granted, unless the project fell within an exception area. ROWs could be diverted to adjacent non-Federal lands.

The effects on the lands and realty program for Alternative C would be similar to those identified in Alternative A, except there would be an increase in acres managed as ROW avoidance areas. New ROWs would be allowed within avoidance areas after specific criteria and applicable minimization measures (see Table 2.14) were met. Under Alternative C, OHMA would be managed as ROW avoidance areas while UHMA would be open to ROWs (see Map A.39). For wind energy and industrial solar energy development projects, OHMA would be managed as ROW exclusion areas and UHMA would be managed as ROW avoidance areas (see Map A.44 and Map A.49). This would potentially increase the number of ROW actions processed within the decision area for non-renewable actions. There would be a minimal effect on the lands and realty program under this alternative.

Under Alternative D, areas within 1-mile of active and inactive leks would be managed as ROW exclusion areas within OHMA and UHMA. Exceptions would be considered if the criteria required, as shown in Table 2.14, was met. Areas outside 1 mile of active and inactive leks would be managed as ROW avoidance areas within OHMA and UHMA. The effects on the lands and realty program from Alternative D would be similar to those identified in Alternative C, except within OHMA and UHMA would be managed as ROW exclusion areas for wind energy and industrial solar energy development projects (see Map A.50) as well as ACECs listed in Table 2.14. ROWs would be considered within avoidance areas if the proposal demonstrated that there would be no adverse effect on GUSG or its habitat based on criteria as noted in Table 2.14 (see Map A.40). The BLM would recognize the valid existing rights of grant holders to continue to use, operate, and maintain. Any upgrades, amendments, and renewals of existing facilities could be considered. This would increase management efforts to determine if the criteria was met and it would be more difficult for BLM to grant new ROWs for wind energy and industrial solar energy development projects. ROWs that BLM cannot authorize may need to be redesigned or rerouted onto adjacent non-Federal land.

Under Alternative E, OHMA would be managed as avoidance areas for ROWs except for wind energy and industrial solar energy development projects, which would be managed as exclusion areas. ROWs within the Gunnison Basin would need to meet specific criteria (see Table 2.13) in order to be considered. See Map A.41 and Map A.50 for ROW and renewable energy

avoidance and exclusion areas under Alternative E. Alternative E would have similar effects as Alternative C, but limited to the Gunnison Basin. This alternative would have minimal effects on the lands and realty program.

3.14.3.4 Conclusion

The alternatives continue to allow for the consideration and approval of ROWs within the decision area but at different levels of intensity. The lands and realty program would have some minor effects as far as workload but also see a decrease in the revenue from cost recovery and ROW rentals due to the decrease in ROWs to be processed. Alternative A would have the least adverse effects on the lands and realty program due to most of the decision area being open to ROWs and therefore allowing the program to process ROW applications as they are received. In contrast, Alternative B would have the greatest adverse effects on the lands and realty program due to Alternative B having the highest acreage of ROW exclusion areas to include LCMA and Adjacent Non-habitat (4-mile buffer) for wind and solar energy projects. Alternatives C and E would have similar types of effects, with Alternative E effects only applying to the Gunnison Basin. Alternative D would have more adverse effects on the lands and realty program than Alternatives A, C, and E, but less than Alternative B because all OHMA and UHMA could still be considered for ROWs.

3.14.3.5 Cumulative Effects

Past, present, and reasonably foreseeable future actions within the cumulative effects analysis area would continue to be a factor and have an effect on the lands and realty program. Cumulative effects are primarily the result of implementing surface use restrictions and management prescriptions designed to protect sensitive resources. Implementing these actions would limit or restrict ROW project design and where ROWs would be permitted. The greatest effects would occur in ROW exclusion areas, as this would require proposed ROWs to be located outside of the restricted areas. Relocation of ROWs outside of GUSG habitat could result in cumulative effects on other species and their habitats (e.g., forested areas) and due to the removal of vegetation and surface disturbance. Placement of ROW in other habitats could also affect recreation and travel management in the area. Relocation of ROW facilities could also occur within avoidance areas. If avoidance of these areas is not possible, other mitigation measures could be required, such as application of height and other specifications that serve to redesign ROWs to mitigate effects on sensitive resources. Land use restrictions that result in the relocation or redesign of proposed ROWs would increase management efforts and cost related to proposals submitted by ROW applicants.

3.14.4. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is implemented. Although they are generally more evident during the implementation phase of planning, there are some unavoidable adverse effects that can be assessed through this RMP Amendment/EIS. In particular, management actions aimed at protecting a certain resource may have unavoidable adverse effects on other resources in the planning area. No unavoidable adverse effects are anticipated on the lands and realty program.

3.14.5. Relationship of Short-term Uses and Long-term Productivity

Section 102(2)(C)(iv) of NEPA requires a discussion of the relationship of short-term local uses of the environment and the maintenance and enhancement of long-term productivity of resources. For this RMP Amendment/EIS, "short-term" is defined as occurring only during or immediately after implementation and "long-term" as occurring for an extended period after implementation (several years or more). This does not apply to the lands and realty program.

3.14.6. Irreversible and Irretrievable Commitment of Resources

CEQ and NEPA regulations require that the discussion of environmental consequences include a description of "any irreversible or irretrievable commitment of resources which would be involved in the proposal should it be implemented" (40 CFR 1502.16). An irretrievable commitment of resources in one that results in the loss of resources for a certain period of time. For example, the construction of a road will result in a loss of livestock or wildlife forage for as long as the road remains. An irreversible commitment of resources is one that results in the permanent loss of those resources. This can occur, for example, when the production of oil and gas depletes nonrenewable resources in the planning area. The BLM requires BMPs, reclamation, and mitigation to reduce the magnitude and scope of irretrievable and irreversible resource effects of actions taken or authorized by the agency. No irreversible or irretrievable commitment of resources are anticipated for lands and realty.

3.15. AREAS OF CRITICAL ENVIRONMENTAL CONCERN

3.15.1. Introduction

An ACEC is defined in FLPMA, Section 103(a), as an area on BLM-administered 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 ensure safety from natural hazards. BLM regulations for implementing the ACEC provisions of FLPMA are found in 43 CFR 1610.7-2(b). Section 201 authorizes the Secretary to prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values, giving priority to ACECs, to be kept current so as to reflect changes in conditions (per 600 DM 5, H-9600-1, and see 43 U.S.C. 776 [December 29, 2022]).

Special management attention refers to management prescriptions developed expressly to protect the important and relevant values of an area from the potential effects of actions permitted by an RMP or RMP amendment, including proposed actions deemed to be in conformance with the terms, conditions, and decisions of the RMP (BLM Manual 1613, Areas of Critical Environmental Concern [BLM 1988]). Such management measures would not be necessary or prescribed if the relevant and important features were not present.

The BLM applies the ACEC designation to protect an area's significant values. To be eligible for designation as an ACEC, an area must meet relevance and importance criteria as set forth in BLM Manual Section 1613 (BLM 1988). An ACEC must possess at least one significant historic, cultural, or scenic value; significant fish or wildlife resources (including habitat, communities, or species); natural process or system; or significant natural hazard. In addition, the significance of these values and resources must be substantial enough to satisfy the importance criteria.

Designation as an ACEC does not automatically prohibit or restrict other uses in the area. The special management attention is designed specifically to address threats to the identified relevant and important values and, therefore, varies from area to area. Restrictions that arise from an ACEC designation are determined at the time the designation is made and are designed to protect the values or serve the purposes for which the designation was made. The BLM identifies goals, standards, and objectives for each nominated ACEC as well as general management practices and uses, including necessary constraints and mitigation measures. The RMP will identify a reasonable range of alternatives that will include current management for existing ACECs, as well as management for nominated ACECs. In addition, ACECs are protected by the provisions of 43 CFR 3809.11(c)(3), which requires an approved plan of operations for activities resulting in more than five acres of disturbance under the mining laws.

3.15.2. Issue 1: How would the proposed management actions affect the relevant and important values identified for existing and proposed ACECs?

3.15.2.1 Analytical Methods and Assumptions

Methods

- Focus analysis on relevance and importance values.
- Analyze RMPs for proposed/current ACECs and their management.
- Overlay data for occupied/unoccupied habitat and proposed ACECs.

Assumptions

- The relevant and important values for which an ACEC is designated are not necessarily distributed uniformly across the entire ACEC.
- Management actions designed to protect GUSG habitat by reducing surface disturbance and preventing activities would benefit those relevant and important values that also occur within sagebrush communities.
- Not all relevant and important values within an ACEC have the same level of protection due to variation in specific management decisions. Management actions designed to protect GUSG habitat by reducing surface disturbance may result in impacts on relevant and important values that occur outside sagebrush communities.
- The designation of an ACEC does not prevent appropriate land uses so long as they are not detrimental to the relevant and important values.
- Current land management prescriptions are being implemented.

3.15.2.2 Affected Environment

Existing Areas of Critical Environmental Concern

There are portions of 23 areas currently designated as ACECs totaling 183,090 acres that overlap occupied and unoccupied habitat in the decision area and are managed to protect relevance and importance values. Refer to Table 3.15.1, which summarizes acres of ACECs within GUSG habitat and the identified relevant and important values for each.

Table 3.15.1. Designated Areas of Critical Environmental Concern in Decision Area

Name	Total Acres	Relevance and Important Value
Dillon Pinnacles ACEC	540	Scenic values and managed for recreational opportunities
Native Plant Community ONA	3,790	Winterfat Shrub Steppe, Juniper-Grass Savanna, and Pinyon-Juniper Woodland native communities
South Beaver Creek ACEC	4,570	Managed to protect and enhance existing populations and habitat of skiff milkvetch
West Antelope Creek ACEC	28,280	Habitat to support wintering elk, deer, and bighorn sheep
Gunnison Sage-Grouse ACEC/IBA	22,180	Habitat for Gunnison sage-grouse and spotted bat foraging habitat
McElmo ACEC/RNA	430	Herpetological research area, resource for educational institutions, outdoor classroom
Alkali Ridge ACEC	39,200	Cultural resources
Hovenweep ACEC	2,440	Scenic, habitat, cultural resources
Gypsum Valley ACEC	6,170	Gypsum soils, Naturita milkvetch and Gypsum Valley cat-eye
Fairview North RNA	380	Clay-loving wild buckwheat and Montrose penstemon
Escalante Canyon ACEC	2,280	Sensitive plant, fish, and wildlife resources
Needle Rock ACEC/ONA	80	Scientific, interpretive, and scenic qualities of the site
River Rims ACEC	5,400	Unique and sensitive rare plants and paleontological resources
San Miguel River ACEC	21,660	Unique riparian resources, bird habitat, and scenic values
Fairview South RNA	610	Clay-loving buckwheat
Paradox Rock Art ACEC	1,080	Unique cultural resource values
Biological Soil Crust ACEC	390	Biological soil crusts
Rough Canyon ACEC	2,800	Canyon treefrog, Gunnison sage-grouse, Grand Junction milkvetch, Eastwood's desert parsley
Dolores River Riparian ACEC	7,400	Riparian obligate bird species
Unaweep Seep ACEC	90	Rare silverspot butterfly, rare plants, riparian habitat, and hydrologic values
Gibbler Mountain ACEC	1,310	Unique and sensitive paleontological and rare plant resources
Gunnison Gravels ACEC	20	Unique and sensitive geological resources
The Palisade ACEC	32,200	Rare plant populations and special status wildlife
Total	**183,090**	

RNA=Research Natural Area, ONA = Outstanding Natural Area

Of the 23 designated ACECs in the decision area, only two are currently managed to protect Gunnison sage-grouse relevant and important values, the Rough Canyon ACEC in the Grand Junction Field Office and the Gunnison Sage-Grouse ACEC/IBA in the Gunnison Gorge NCA. The South Beaver Creek ACEC and the West Antelope Creek ACEC in the Gunnison Field Office overlap with GUSG habitat and were reevaluated as part of the RMP amendment

process to determine whether current management is sufficient to protect the values (see Map A.79 [Appendix A], Currently Designated Areas of Critical Environmental Concern).

Rough Canyon ACEC

This existing ACEC totals 2,800 acres and was nominated and designated in the 2015 Grand Junction Field Office RMP to protect geologic, wildlife habitat, cultural resources, and plants, canyon treefrog, Gunnison Sage-Grouse, Grand Junction milkvetch, and Eastwood's desert parsley. Current uses/management include:

- Manage as VRM Class II.
- Classify a portion of the ACEC (2,200 acres) for motorized and mechanized travel as limited to designated routes.
- Classify a portion of the ACEC (600 acres) for motorized and mechanized travel as closed.
- Prohibit new trail development in those portions of Bangs Canyon RMZ 2 that are located within the ACEC, unless impacts on the ACEC relevance and importance criteria can be mitigated.
- Manage as a ROW exclusion area.
- Withdrawn from mineral entry.
- No Leasing: ACECs. Close to fluid mineral leasing and geophysical exploration.
- Open travel is allowed in the Tabeguage slickrock play area.

Current issues that affect the ACEC include evidence of past mining activities and developments. However, due to topography, vegetative screening and area scenery, the natural landscape is mostly retained.

Gunnison Sage-Grouse ACEC/IBA

This ACEC consists of 22,180 total acres and was nominated in the Gunnison Gorge NCA RMP in 2004 to protect a population of Gunnison sage-grouse. A conservation plan was designed in collaboration with partners in the North Fork Valley and local, State, and Federal agency representatives to help assure the long-term viability of the species in this area. This area includes 100 percent of the occupied Gunnison sage-grouse habitat in the planning area which has been determined by the USFWS as "essential for the conservation of the species." The area also includes a Colorado Natural Heritage Program potential conservation area that was designated primarily for Gunnison sage-grouse and spotted bat foraging habitat.

Current uses and management within the area aim to protect Gunnison sage-grouse (*Centrocercus minimus*), elk (*Cervus elaphus*), and mule deer (*Odocoileus hemionus*) winter concentration (Gunnison Sage-Grouse Area of Critical Environmental Concern [ACEC]/Important Bird Area [IBA]).

West Antelope Creek ACEC

This existing ACEC contains 28,280 total acres and was nominated and designated in 1993 in the Gunnison Resource Area RMP. It contains big game crucial winter range, the greatest concentration of wintering elk and deer in the Gunnison Resource Area, bald eagle habitat, the Dillon Mesa bighorn sheep herd, and the Colorado Division of Wildlife Sapinero State Wildlife Area (the first tract of land purchased under the Pittman-Robertson Act in Colorado). Current management directed in the Gunnison Resource Area RMP includes:

- Managed according to VRM Class II.
- The unit is managed to improve the capabilities of the resources in the unit to support wintering elk, deer, and bighorn sheep.
- Surface-disturbing activities on public lands are not permitted from December 1 through April 30 on crucial elk and deer winter range.
- Federal oil and gas estate totaling 130 acres under Federal surface within l/4 mile radius of sage grouse lek sites are open to leasing with a no surface occupancy stipulation to prevent disturbance to lek sites and strutting sage grouse.
- Disposal of mineral materials is not authorized on 26,110 acres of Federal mineral estate from December 1 through April 30 on crucial big game winter range to prevent disturbance to wintering deer and elk. Disposal is not permitted on nearly 20 acres of Federal mineral estate from April 16 through June 30 within elk-calving areas to prevent disturbance to calving elk. Disposal is not authorized on 130 acres of Federal mineral estate within 0.25 mile of sage grouse lek sites from April 1 through May 31 to prevent disturbance to strutting sage grouse.
- Motor vehicle use is limited to designated routes from December 1 through April 30.
- ROWs related construction activities are not permitted on crucial big game winter range from December 1 through April 30.
- Wildfires on about 20,370 acres of public lands are managed according to a conditional suppression policy and about 7,850 acres will be managed according to a full suppression policy.
- Non-conflicting soil and watershed improvement projects, such as check dams, will be permitted.
- Livestock grazing will not be authorized on public lands along North Willow Creek in the Stevens Creek Common Allotment, No. 6202, until the riparian area has recovered sufficiently to permit livestock use. Any future grazing systems approved for this section of North Willow Creek will include measures to facilitate the continued improvement of riparian conditions and resources.
- Livestock grazing will not be authorized within Allotment 6200 in this unit in order to remedy conflicts involving wildlife habitat.

Conditions within the West Antelope Creek ACEC at the time of designation included concerns that CPW long-range elk and deer herd goals had been reached or were beyond the carrying capacity in uplands and riparian areas. Attaining lower numbers within five years was considered in the best interest of the habitat. The unit receives extensive recreational hunting use and contains crucial big game winter range important in maintaining huntable populations. An elk-calving area and lands critical to early spring and summer livestock grazing occur in the area. Other concerns regarding elk and deer and their habitat were private land development within crucial winter ranges, the extent and distribution of palatable shrub browse species, vegetative/land treatments that remove winter browse, and disturbances and human activity during critical periods within crucial winter ranges.

Improper livestock grazing along North Willow Creek was a concern within that riparian area, along with the lack of administrative access into that watershed. Another concern was that the bighorn sheep herd appeared to be static and below herd goal numbers.

A 115 kV electrical transmission line is in the southern part of the unit.

South Beaver Creek ACEC

This existing ACEC contains 4,570 total acres and was nominated and designated in the Gunnison Resource Area RMP in 1993. It is managed to protect and enhance existing populations and habitat of skiff milkvetch *(Astragaulus microcymbus*), a BLM sensitive plant species. Management direction prescribed in the Gunnison Resource Area RMP includes:

- No chemical spraying on public lands within the unit.
- No vegetative treatments, or treatment maintenance will be conducted in the unit that adversely affect skiff milkvetch populations or habitat.
- Non-conflicting erosion control measures that do not alter existing skiff milkvetch habitat will be permitted.
- No additional forage allocations will be made for either wildlife habitat or livestock grazing management.
- Domestic sheep grazing will not be authorized in the unit to avoid possible destruction of skiff milkvetch populations and related habitat.
- To prevent accidental destruction of skiff milkvetch populations, and existing habitat, motorized vehicular traffic in the unit will be limited to designated routes.

Since designation, the proliferation of cheatgrass within the ACEC has become a primary management concern**.**

Proposed ACECs

During public scoping, the BLM considered additional areas proposed internally and by the public to protect GUSG. A BLM interdisciplinary team reviewed nominations to determine

which areas met the relevance and importance criteria, as defined by 43 CFR 1610.7-2(a)(1) and 43 CFR 1610.7-2(a)(2), and guidance in BLM Manual 1613, Areas of Critical Environmental Concern. A total of 13 areas were found to meet the Relevance and Importance Criteria. Details of the process and information on those areas can be found in the Gunnison Sage-Grouse Resource Management Plan Amendment and EIS Areas of Critical Environmental Concern Report.

Dry Creek Basin

This 34,7805-acre proposed ACEC located in San Miguel and Montrose counties approximately 10 miles southwest of Naturita, Colorado, was nominated during public scoping for the Tres Rios Field Office RMP, brought forward to the Tres Rios Field Office ACEC RMP Amendment (BLM 2020), and deferred pending rangewide analysis in the current BLM Gunnison sage-grouse RMP amendment process. This area was identified based on the relevance and important values as presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report.

Northdale

The proposed Northdale ACEC was originally nominated at 5,230 acres of BLM land in the Tres Rios Field Office ACEC RMP Amendment but was deferred to the Gunnison Sage-Grouse RMP Amendment process. One large parcel is located approximately 6 miles west of Dove Creek, Colorado. The nomination includes additional scattered parcels of BLM-managed land in Dolores County approximately 5 miles northeast of Dove Creek, Colorado with a small area overlapping San Miguel County.

Northdale Expansion

The proposed Northdale ACEC was originally nominated by external nomination (The Wilderness Society, San Juan Citizens Alliance, Rocky Mountain Wild, Conservation Colorado, Sheep Mountain Alliance, Audubon Rockies, National Parks Conservation Association) at 5,990-acres of BLM land in the Tres Rios Field Office ACEC RMP Amendment but was deferred to the Gunnison Sage-Grouse RMP Amendment process.

The Northdale Expansion ACEC is in Dolores County approximately 5 miles east of Dove Creek, CO and a small area in San Miguel County. The nomination is made up of 4,190 acres of BLM-managed land in unoccupied critical habitat and 1,800 acres outside of any mapped GUSG habitat. A portion of the Northdale Expansion was mapped as potential habitat by CPW before being classified as unoccupied critical habitat by the USFWS. This area was identified as not having relevance and important values presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report and therefore is not carried forward for analysis.

All Gunnison Sage-Grouse Habitat

This proposed ACEC was brought forth by the BLM Interdisciplinary Team and external nomination as Alternative B in the 2016 Gunnison Sage-Grouse Rangewide Draft RMP

Amendment/Draft EIS (BLM 2016). It contains all 650,120-acres of Gunnison sage-grouse habitat (occupied and unoccupied) and contains potential, occupied, and historic habitat for Gunnison sage-grouse across the range of the species. This area was identified based on the relevance and important values presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report.

Chance Gulch

This proposed ACEC was brought forth by external nomination as part of the Gunnison Sage-Grouse RMP Amendment/EIS. It contains 22,660 acres of occupied habitat adjacent to the southeast portion of Gunnison town limits. It is located on several parcels of BLM land close to the proposed Gunnison Rising, an area slated for high-density housing and commercial development. This area was identified based on the relevant and important values presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report.

South Parlin

This proposed ACEC was brought forth by external nomination as part of the Gunnison Sage-Grouse RMP Amendment/EIS. It contains several parcels of BLM land totaling 26,160 acres of occupied Gunnison sage-grouse habitat located south of Parlin, Colorado, and east of Highway 114. The South Parlin area provides high genetic connectivity opportunities (Zimmermann et al. 2022). This area was identified based on the relevant and important values presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report.

Sapinero Mesa

This proposed ACEC was brought forth by external nomination as part of the Gunnison Sage-Grouse RMP Amendment/EIS. It contains 17,240 acres of occupied habitat located on and around Sapinero Mesa south of Blue Mesa Reservoir and Highway 50. County Road 26 bisects the area and Cebolla Creek and the Lake Fork of the Gunnison border the eastern and western sides. The area contains extensive sagebrush and wet meadow habitat with a concentrated area of leks on the west side of County Road 26. This area was identified based on the relevant and important values presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report.

Kezar Basin

Located south of Blue Mesa Reservoir and west of Highway 149, approximately ten miles west of Gunnison, Colorado, this area was internally nominated as part of the Gunnison Sage-Grouse RMP Amendment/EIS and contains 16,270 acres of occupied habitat. Cebolla Creek borders the west side of the proposed ACEC. The area has expansive sagebrush habitat and pockets of mesic meadows. This area was identified based on the values as presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report.

Sugar Creek

This 17,296-acre area was nominated as part of the Gunnison Sage-Grouse RMP Amendment/EIS to preserve existing values and in part to promote habitat improvement. It is located southeast of Blue Mesa Reservoir and east of Highway 149 approximately eight miles southwest of Gunnison, Colorado. The area is largely roadless and contains extensive sagebrush habitat and two creeks supporting riparian brood-rearing habitat. This area was identified based on the relevance and important values as presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report.

Gunnison Sage-Grouse Satellite Population

This area was nominated as part of the Gunnison Sage-Grouse RMP Amendment/EIS and contains 295,860 acres of Gunnison sage-grouse habitat (occupied and unoccupied) and contains potential, occupied, and historic habitat for Gunnison sage-grouse across seven of the eight isolated populations in Colorado and Utah. This area was identified based on the relevance and importance values as presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report.

Ohio Creek

This area was externally nominated during public scoping of the Gunnison Sage-Grouse RMP Amendment and EIS and contains 9,250 acres of occupied Gunnison sage-grouse habitat on BLM administered land approximately one-mile northwest of Gunnison, Colorado town limits. The Ohio Creek area provides nesting and brood-rearing habitat adjacent to private and USFS lands that support numerous well-attended leks. This area was identified based on the relevance and important values as presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report.

Waunita

This area was nominated during public scoping of the Gunnison Sage-Grouse RMP Amendment and EIS and contains 8,370 acres of occupied critical Gunnison sage-grouse habitat. It is located on BLM land northeast of the town of Gunnison, Colorado and north of U.S. Highway 50. This area was developed based on the relevance and important values as presented in the Gunnison Sage-Grouse RMP Amendment and EIS ACEC Report.

North Parlin

This area was externally nominated during public scoping of the Gunnison Sage-Grouse RMP Amendment and EIS and contains 17,900 acres of occupied critical Gunnison sage-grouse habitat northwest of Parlin, Colorado and ten miles east of Gunnison, Colorado. This area is located immediately northwest of Parlin, Colorado; and approximately six miles east of Gunnison, Colorado, north of Highway 50, and accessed via Gunnison County Road 60. This

area was developed based on the relevance and important values as presented in the Gunnison Sage-Grouse RMP and EIS ACEC Report.

Trends

ACECs are an administrative designation analyzed solely through the RMP process. ACEC designation is determined by the planning schedule and does not exhibit an identifiable future trend beyond that.

3.15.2.3 Environmental Consequences

The range of alternatives varies in the ACECs that are designated and considers differing management of ACECs, as described in Section 2.2.2, Detailed Alternatives. Appendix D, *Areas of Critical Environmental Concern Report*, provides detailed information on the ACEC analysis process and the relevance and importance criteria. Maps A.50 through A.57 illustrate the proposed alternatives across the decision area.

Under Alternative A, no additional ACECs would be designated, and existing management prescriptions outlined in respective management plans would be retained (see Map A.52). Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply as applicable. Alternatives B, C, D, and E offer varying levels of additional protection to GUSG when compared to Alternative A; therefore, Alternative A would provide the least amount of protection to GUSG and their habitat.

Under Alternative B, all lands within designated ACECs would be managed as a ROW exclusion, recommended to the Secretary of the Interior for withdrawal from locatable mineral entry, and closed to nonenergy solid mineral leasing.

Withdrawal of lands from these activities would benefit the GUSG and their habitat through a reduction in disturbance and possible fragmentation. These actions are not entirely prohibited in any other Alternative; therefore, Alternative B generally provides the strongest protection for GUSG when compared to Alternatives A, C, D, and E. Some exceptions are noted below.

Specific management changes under Alternatives C, D, and E and resulting Environmental Consequences for all ACECs that met relevance and importance criteria are outlined below.

Rough Canyon ACEC

Selection of Alternatives A, B, C, D, or E would not change management within this ACEC. Management direction already provides the management as directed under Alternative B.

Gunnison Sage-Grouse ACEC/IBA ACEC

Table 3.15.2 provides a summary of restrictions in the Gunnison Sage-Grouse ACEC/IBA by alternative.

Table 3.15.2. Gunnison Sage-Grouse ACEC/IBA Alternative Comparison

Stipulation, Restriction, or Protection Acres	Current Management (Alt A) and Alt C	Alt B1 / B2	Alt D	Alt E
Acres Designated as an ACEC	**22,177**	**22,177**	**22,177**	N/A
NSO	Within 2-mile radius of leks and brood-rearing habitat	22,177	0	
Closed to fluid mineral leasing	5,666	5,666	5,666	
Closed to nonenergy solid mineral leasing	0	22,177	0	
Withdrawn from locatable mineral entry	0	0	0	
Recommend for withdrawal from locatable mineral entry	0	22,177	0	
Closed to livestock grazing	2	B1: OHMA & UHMA B2: seasonal OHMA	2	
ROW avoidance	Seasonal restrictions	0	0	
ROW exclusion	1	22,177	1	
SRMA	1	0	1	
ERMA	1	0	1	
Limited motorized and mechanized travel	Limited	Limited	Limited	

Under Alternatives A, C, and E, management for the West Antelope Creek ACEC would not change. Current management prescriptions would be retained. Additional management actions selected from Alternatives B, C, and E of this larger planning effort would apply.

While Alternative B1 includes livestock grazing closures in all OHMA and UHMA, Alternative B2 would only close OHMA for livestock grazing seasonally and would continue to authorize livestock grazing in UHMA. As livestock grazing does not protect the relevance and importance values for which this area was nominated, Alternative B1 presents a higher level of protection when compared to Alternative B2.

Alternative D would provide a higher level of protection to the relevance and importance values for which this area is nominated when compared to Alternatives A, C, and E through restrictions on surface-disturbing activities in special status species occupied locations. However, when compared to the other alternatives, Alternative B1 would offer the highest level of protection to the relevance and importance values for which the ACEC was nominated due to closures on land use activities such as nonenergy solid mineral leasing.

West Antelope Creek ACEC

Table 3.15.3 provides a summary of restrictions in the West Antelope Creek ACEC by alternative.

Table 3.15.3. West Antelope Creek ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Current Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**28,275**	**28,275**	**28,275**	**28,275**
NSO	0	28,275	0	0
Closed to fluid mineral leasing	0	0	0	0
Closed to nonenergy solid mineral leasing	0	28,275	0	0
Withdrawn from locatable mineral entry	0	0	0	0
Recommend for withdrawal from locatable mineral entry	0	28,275	0	0
Closed to livestock grazing	1,615	1,615	1,615	1,615
ROW avoidance	0	0	0	0
ROW exclusion	0	28,275	0	0
SRMA	0	0	0	0
ERMA	28,275	28,275	28,275	28,275
Limited motorized and mechanized travel	Limited	Limited	Limited	Limited

Under Alternatives A, C, D, and E, management for the West Antelope Creek ACEC would not change. Current management prescriptions outlined in the 1993 Gunnison Resource Area RMP would be retained. Additional management actions selected from Alternatives C, D, and E of this larger planning effort would apply.

Alternatives A, C, D, and E offer protection for known GUSG habitat but allow for more disturbance activities compared to Alternative B's management approach. Alternative B would offer the greatest protection to the relevance and importance values for which the ACEC was nominated.

South Beaver Creek ACEC

Table 3.15.4 provides a summary of restrictions in the South Beaver Creek ACEC by alternative.

Table 3.15.4. South Beaver Creek ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A) and Alt E	Alt B	Alt C	Alt D
Acres Designated as an ACEC	**4,570**	**4,570**	**4,570**	**4,570**
NSO	0	4,570	0	0
Closed to fluid mineral leasing	0	0	0	0
Closed to nonenergy solid mineral leasing	0	4,570	0	0
Withdrawn from locatable mineral entry	0	0	0	0
Recommend for withdrawal from locatable mineral entry	0	4,570	0	0

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A) and Alt E	Alt B	Alt C	Alt D
Closed to livestock grazing	0	0	0	0
ROW avoidance	0	0	0	0
ROW exclusion	0	4,570	0	0
SRMA	4,039	4,039	4,039	4,039
ERMA	505	505	505	505
Limited motorized and mechanized travel	Limited	Limited	Limited	Limited

Under Alternatives A, C and E, management would not change and effects to ACECs would be the same as under Alterative A.

Under Alternative D, management would mirror that under Alternatives A, C, and E except for the allowance of chemical spraying. Chemical spraying within the South Beaver Creek ACEC would allow management to address cheatgrass invasion, a known issue within the area which threatens the health of GUSG habitat. Under Alternative D, it is likely that cheatgrass would be reduced within this ACEC and GUSG habitat health would benefit when compared to the other alternatives. While fragmentation and disturbance from the allowance of ROWs and mineral entry/leasing would continue to occur, some protections would exist through general restrictions on surface-disturbing activities within the area. As cheatgrass is the primary threat within this ACEC, the greatest protection to the relevance and importance values for which the ACEC was designated would be provided under Alternative D.

All Gunnison Sage-Grouse Habitat ACEC

Table 3.15.5 provides a summary of restrictions in the All Gunnison Sage-Grouse Habitat ACEC by alternative (see Map A.54).

Table 3.15.5. All Gunnison Sage-Grouse Habitat ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**685,009**	**0**	**0**
NSO	Not Designated	685,009	Not Designated	Not Designated
Closed to fluid mineral leasing		124,570 / no new leases		
Closed to nonenergy solid mineral leasing		685,009		
Withdrawn from locatable mineral entry		1,044		
Recommend for withdrawal from locatable mineral entry		685,009		
Closed to livestock grazing		5,904		
ROW avoidance		136,132		

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
ROW exclusion		685,009		
SRMA		84,785		
ERMA		348,513		
Limited motorized and mechanized travel		Limited		

Under Alternatives A, C, D, and E, All Gunnison Sage-Grouse Habitat would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply. Alternative B would offer the greatest protection to the relevance and importance values for which the All Gunnison Sage-Grouse ACEC was nominated.

GUSG Satellite Populations Proposed ACEC

Table 3.15.6 provides a summary of restrictions in the Gunnison Sage-Grouse Satellite Populations Proposed ACEC by alternative (see Map A.55).

Table 3.15.6. Gunnison Sage-Grouse Satellite Populations Proposed ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**295,860**	**0**	**0**
NSO	Not Designated	39,750	Not Designated	Not Designated
Closed to fluid mineral leasing		124,570 / no new leases		
Closed to nonenergy solid mineral leasing		156,911		
Withdrawn from locatable mineral entry		653		
Recommend for withdrawal from locatable mineral entry		2,229		
Closed to livestock grazing		3,566		
ROW avoidance		130,760		
ROW exclusion		36,158		
SRMA		61,018		
ERMA		5,062		
Limited motorized and mechanized travel		Limited		

Under Alternatives A, C, D, and E, the GUSG Satellite Populations Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply. Alternative B would offer the greatest protection to the relevance and importance values for which the GUSG Satellite Populations Proposed ACEC was nominated.

Northdale Proposed ACEC

Table 3.15.7 provides a summary of restrictions in the Northdale Proposed ACEC by alternative (see Map A.56).

Table 3.15.7. Northdale Proposed ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**5,230**	**0**	**0**
NSO	Not Designated	5,230	Not Designated	Not Designated
Closed to fluid mineral leasing		1,330 / no new leases		
Closed to nonenergy solid mineral leasing		5,230		
Withdrawn from locatable mineral entry		0		
Recommend for withdrawal from locatable mineral entry		5,230		
Closed to livestock grazing		76		
ROW avoidance		1,330		
ROW exclusion		0		
SRMA		35		
ERMA		0		
Limited motorized and mechanized travel		Limited		

Under Alternatives A, C, D, and E, the Northdale Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply. Alternative B would offer the greatest protection to the relevance and importance values for which the Northdale ACEC was nominated.

Dry Creek Basin Proposed ACEC

Table 3.15.8 provides a summary of restrictions in the Dry Creek Basin Proposed ACEC by alternative.

Table 3.15.8. Dry Creek Basin Proposed ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**34,730**	**0**	**10,920**
NSO	34,730	34,730	34,730	10,920
Closed to fluid mineral leasing	0	No new leases	0	0
Closed to nonenergy solid mineral leasing	0	34,730	0	10,920
Withdrawn from locatable mineral entry	0	0	0	0

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Recommend for withdrawal from locatable mineral entry	0	34,730	0	10,920
Closed to livestock grazing	0	0	0	0
ROW avoidance	0	0	0	0
ROW exclusion	0	34,730	0	10,920
SRMA	0	0	0	0
ERMA	0	0	0	0
Limited motorized and mechanized travel	0	Limited	0	Limited

Under Alternatives A, C, and E, the Dry Creek Basin Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, and E of this larger planning effort would apply.

In addition to the restrictions outlined for all the designated ACECs under Alternative B, Dry Creek Basin would see additional benefits to GUSG and their habitat through a prohibition of new fluid mineral leases within OHMA. Expired or terminated existing fluid mineral leases would not be reinstated.

Under Alternative D, management would mirror that of Alternative B, but the area nominated as an ACEC would be reduced from 34,730 acres to 10,920acres. In addition, no surface occupancy for fluid mineral leasing would be allowed within occupied GUSG habitat. This offers a higher level of protection in the short-term for these 10,920acres when compared to Alternative B, but once all existing fluid mineral leases are expired or terminated, Alternative B would offer greater protection over a larger area and therefore would provide the greatest benefit to the relevance and importance criteria for which the Dry Creek Basin ACEC was nominated.

Chance Gulch Proposed ACEC

Table 3.15.9 provides a summary of restrictions in the Chance Gulch Proposed ACEC by alternative.

Table 3.15.9. Chance Gulch Proposed ACEC

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**22,660**	**0**	**13,150**
NSO	Not Designated	22,660	Not Designated	13,150
Closed to fluid mineral leasing		No new leases		13,150
Closed to nonenergy solid mineral leasing		22,660		13,150
Withdrawn from locatable mineral entry		0		0

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Recommend for withdrawal from locatable mineral entry		22,660		13,150
Closed to livestock grazing		No new leases/ permits		0
ROW avoidance		0		0
ROW exclusion		22,660		0
SRMA		0		0
ERMA		22,660		13,150
Limited motorized and mechanized travel		Limited		Limited

Under Alternatives A, C, and E, the Chance Gulch Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, and E of this larger planning effort would apply. Under Alternative B, all lands within the Chance Gulch ACEC would be managed as a ROW exclusion area. Alternative D would allow ROW authorizations under specific authorized criteria.

Alternative B would prohibit new small-scale infrastructure (including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers), which may reduce disturbance to GUSG. However, this would also limit the ability to install small signs and barricades such as those allowed under Alternative D to protect sage-grouse and their habitat.

The prohibition on new small-scale infrastructure under Alternative B would extend to the development of livestock management structures including fences, cattleguards, and stockponds. Both Alternatives B and D would continue to allow livestock grazing with UHMA; however, Alternative B would allow greater protection when compared to Alternative D as it would not allow livestock grazing in OHMA. In addition, Alternative B would phase out grazing permits and leases by not renewing expired permits or leases, thereby offering greater protection to GUSG and their habitat.

Alternative B would allow for a single closure to all human use from March 15 to July 15. This offers greater protection to the GUSG and their habitat than Alternative D, which considers shorter closures for motorized use (March 15 to June 30) and all human use (March 15 to May 15). Alternative B offers additional protection when compared to Alternative D through the closure of all OHMA to OHV use. Alternative D allows OHV use on a limited basis in OHMA and UHMA.

Kezar Basin Proposed ACEC

Table 3.15.10 provides a summary of restriction in the Kezar Basin Proposed ACEC by alternative.

Table 3.15.10. Kezar Basin Proposed ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**16,270**	**0**	**0**
NSO	Not Designated	16,270	Not Designated	Not Designated
Closed to fluid mineral leasing		No new leases		
Closed to nonenergy solid mineral leasing		16,270		
Withdrawn from locatable mineral entry		230		
Recommend for withdrawal from locatable mineral entry		16,270		
Closed to livestock grazing		0		
ROW avoidance		0		
ROW exclusion		0		
SRMA		0		
ERMA		16,270		
Limited motorized and mechanized travel		Limited		

Under Alternatives A, C, D, and E, the Kezar Basin Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply.

Alternative B would offer the greatest protection to the relevance and importance values for which the Kezar Basin ACEC was nominated when compared to the other alternatives through the implementation of the management prescriptions outlined at the beginning of this section, as well as additional management prescriptions to prohibit new surface facilities (small-scale infrastructure) and trails, seasonal closures, and phasing out fluid mineral leases.

North Parlin Proposed ACEC

Table 3.15.11 provides a summary of restrictions in the North Parlin Proposed ACEC by alternative.

Table 3.15.11. North Parlin Proposed ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**17,900**	**0**	**0**
NSO	Not Designated	17,900	Not Designated	Not Designated
Closed to fluid mineral leasing		No new leases		
Closed to nonenergy solid mineral leasing		17,900		
Withdrawn from locatable mineral entry		0		
Recommend for withdrawal from locatable mineral entry		17,900		
Closed to livestock grazing		No new permits/ leases		
ROW avoidance		0		
ROW exclusion		17,900		
SRMA		0		
ERMA		17,900		
Limited motorized and mechanized travel		Limited		

Under Alternatives A, C, D, and E, the North Parlin Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply.

Alternative B would offer the greatest protection to the relevance and importance values for which the North Parlin ACEC was nominated when compared to the other alternatives through the implementation of the management prescriptions outlined at the beginning of this section, as well as additional management prescriptions to prohibit new surface facilities (small-scale infrastructure, including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers) and trails, seasonal closures, and phasing out fluid mineral leases.

Sapinero Mesa Proposed ACEC

Table 3.15.12 provides a summary of restrictions in the Sapinero Mesa Proposed ACEC by alternative.

Table 3.15.12. Sapinero Mesa Proposed ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**16,740**	**0**	**17.242**
NSO	Not Designated	16,740	Not Designated	17,242
Closed to fluid mineral leasing		No new leases		0
Closed to nonenergy solid mineral leasing		16,740		17,242
Withdrawn from locatable mineral entry		60		62
Recommend for withdrawal from locatable mineral entry		16,740		17,242
Closed to livestock grazing		No new leases/ permits		0
ROW avoidance		833		1,238
ROW exclusion		16,740		0
SRMA		115		0
ERMA		16,615		17,242
Limited motorized and mechanized travel		Limited		Limited

Under Alternatives A, C, and E, the Sapinero Mesa Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply. Under Alternative B, all lands within the Sapinero Mesa ACEC would be managed as a ROW exclusion area. Alternative D would allow ROW authorizations under specific authorized criteria.

Alternative B would also prohibit new small-scale infrastructure (including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers), which may reduce disturbance to GUSG. However, this would also limit the ability to install small signs and barricades such as those allowed under Alternative D to protect sage-grouse and their habitat.

The prohibition on new small-scale infrastructure under Alternative B would extend to the development of livestock management structures including fences, cattleguards, and stockponds. In addition, Alternative B would phase out grazing permits and leases by not renewing expired permits or leases, thereby offering greater protection to GUSG and their habitat.

Alternative B would allow for a single closure to all human use from March 15 to July 15. This offers greater protection to GUSG and their habitat than Alternative D, which considers shorter closures for all human use (March 15 to May 15) and shorter specific closures for all motorized and mechanized travel for the area west of County Road 26 from March 15 to July 15. Alternative D provides higher protection for the relevance and importance values for which the area was nominated when compared to Alternatives A, C, and E. While impacts between Alternatives B and D are similar, Alternative D allows for more development to occur.

Generally, limitations to resource uses described above would result in fewer disturbance events, positively impacting relevance and importance criteria for which this area was nominated.

South Parlin Proposed ACEC

Table 3.15.13 provides a summary of restrictions in the South Parlin Proposed ACEC by alternative.

Table 3.15.13. South Parlin Proposed ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**26,160**	**0**	**0**
NSO	Not Designated	26,160	Not Designated	Not Designated
Closed to fluid mineral leasing		No new leases		
Closed to nonenergy solid mineral leasing		26,160		
Withdrawn from locatable mineral entry		0		
Recommend for withdrawal from locatable mineral entry		26,160		
Closed to livestock grazing		No new permits/ leases		
ROW avoidance		0		
ROW exclusion		26,160		
SRMA		0		
ERMA		26,160		
Limited motorized and mechanized travel		Limited		

Under Alternatives A, C, D, and E, the South Parlin Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply.

Alternative B would offer the greatest protection to the relevance and importance values for which the South Parlin ACEC was nominated when compared to the other alternatives through the implementation of the management prescriptions outlined at the beginning of this section, as well as additional management prescriptions such as the prohibition of new surface facilities (small-scale infrastructure) and trails, seasonal closures, and phasing out fluid mineral leases.

Sugar Creek Proposed ACEC

Table 3.15.14 provides as summary of restrictions in the Sugar Creek Proposed ACEC by alternative.

Table 3.15.14. Sugar Creek Proposed ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**17,210**	**0**	**17,210**
NSO	Not Designated	17,210	Not Designated	17,210
Closed to fluid mineral leasing		No new leases		17,210
Closed to nonenergy solid mineral leasing		17,210		17,210
Withdrawn from locatable mineral entry		0		0
Recommend for withdrawal from locatable mineral entry		17,210		17,210
Closed to livestock grazing		No new permits/ leases		0
ROW avoidance		0		0
ROW exclusion		17,210		0
SRMA		0		0
ERMA		17,210		17,210
Limited motorized and mechanized travel		Limited		Limited

Under Alternatives A, C, and E, the Sugar Creek Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply. Under Alternative B, all lands within the Sugar Creek ACEC would be managed as a ROW exclusion area. Alternative D would allow ROW authorizations under specific authorized criteria.

Alternative B would also prohibit new small-scale infrastructure (including signs, kiosks, vault toilets, concentrated parking areas, and communication or weather towers), which may reduce disturbance to GUSG. However, this would also limit the ability to install small signs and barricades such as those allowed under Alternative D to protect sage-grouse and their habitat.

The prohibition on new small-scale infrastructure under Alternative B would extend to the development of livestock management structures including fences, cattleguards, and stockponds. In addition, Alternative B would phase out grazing permits and leases by not renewing expired permits or leases, thereby offering greater protection to GUSG and their habitat.

Alternative B would allow for a single closure to all human use from March 15 to July 15. This offers greater protection to GUSG and their habitat than Alternative D, which considers shorter closures for all human use (March 15 to May 15) and closures for dispersed camping from March 15 to May 15.

Alternative D provides higher protection for the relevance and importance values for which the area was nominated when compared to Alternatives A, C, and E. While effects between

Alternatives B and D are similar, Alternative D allows for more development to occur, and Alternative B provides the greatest benefit for the identified relevance and importance values for which the area was nominated.

Ohio Creek Proposed ACEC

Table 3.15.15 provides a summary of restrictions in the Ohio Creek Proposed ACEC by alternative.

Table 3.15.15. Ohio Creek Proposed ACEC Alternative Comparison

Stipulation, Restriction, or Protection Acres	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**9,250**	**0**	**0**
NSO	Not Designated	9,250	Not Designated	Not Designated
Closed to fluid mineral leasing		No new leases		
Closed to nonenergy solid mineral leasing		9,250		
Withdrawn from locatable mineral entry		0		
Recommend for withdrawal from locatable mineral entry		9,250		
Closed to livestock grazing		No new permits/ leases		
ROW avoidance		0		
ROW exclusion		9,250		
SRMA		0		
ERMA		9,250		
Limited motorized and mechanized travel		Limited		

Under Alternatives A, C, D, and E, the Ohio Creek Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply.

Alternative B would offer the greatest protection to the relevance and importance values for which the Ohio Creek ACEC was nominated when compared to the other alternatives through the implementation of the management prescriptions outlined at the beginning of this section, as well as additional management prescriptions such as the prohibition of new surface facilities (small-scale infrastructure) and trails, seasonal closures, and phasing out of grazing permits and fluid mineral leases.

Waunita Proposed ACEC

Table 3.15.16 provides a summary of restriction in the Waunita Proposed ACEC by alternative.

Table 3.15.16. Waunita Proposed ACEC Alternative Comparison

Stipulation, Restriction, or Protection	Existing Management (Alt A)	Alt B	Alt C/E	Alt D
Acres Designated as an ACEC	**0**	**8,370**	**0**	**0**
NSO	Not Designated	8,370	Not Designated	Not Designated
Closed to fluid mineral leasing		No new permits		
Closed to nonenergy solid mineral leasing		8,370		
Withdrawn from locatable mineral entry		0		
Recommend for withdrawal from locatable mineral entry		8,370		
Closed to livestock grazing		No new permits/ leases		
ROW avoidance		0		
ROW exclusion		8,370		
SRMA		0		
ERMA		8,370		
Limited motorized and mechanized travel		Limited		

Under Alternatives A, C, D, and E the Waunita Proposed ACEC would not be designated as an ACEC and management for this area would not change. Additional management actions selected from Alternatives A, C, D, and E of this larger planning effort would apply.

Alternative B would offer the greatest protection to the relevance and importance values for which the Waunita ACEC was nominated when compared to the other alternatives through the implementation of the management prescriptions outlined at the beginning of this section, as well as additional management prescriptions such as the prohibition of new surface facilities (small-scale infrastructure) and trails, seasonal closures, and phasing out of grazing permits and fluid mineral leases.

3.15.2.4 Conclusion

Each of the proposed ACECs contains specific resource values of relevance and importance outlined in Appendix D, *Areas of Critical Environmental Concern Report*. Some nominated ACECs, such as Northdale Expansion, were determined to not meet both the relevance and importance values required for designation as an ACEC. An ACEC designation under each alternative would result in varying levels of "special management attention" under which management prescriptions developed during RMP preparation or amendment, would be applied expressly to protect the relevant and important values of an area from current and foreseeable threats. Special management actions for each ACEC are the same as those identified in the management action alternatives.

3.15.2.5 Cumulative Effects

On BLM-administered lands in the planning area, recreational use has steadily increased in recent years and that trend is expected to continue. Effects to resources would be greater in areas where recreation uses are present within or adjacent to proposed ACECs. Refer to Section 3.11, *Recreation*, for the potential cumulative effects to each under each alternative.

A review of the relevant and important values for each nominated ACEC was prepared to support the consideration of ACECs (See Appendix D, *Areas of Critical Environmental Concern Report*). Based on the results of the nominated ACEC review, critical habitat and special status species were identified as the resource issues for consideration in this document. Section 3.6 *Vegetation, Including Riparian Areas and Wetlands*, and Section 3.2, *Special Status Species*, describe the potential cumulative effects to each of these resources under each alternative.

Alternatives with restrictions on varying resource uses within each nominated ACEC would result in protection of the relevance and importance values associated with each nominated and existing ACEC.

3.15.3. Unavoidable Adverse Effects

Management actions aimed at protecting relevance and importance values for designated ACECs may have unavoidable adverse effects on other resources in the planning area. These resources include recreation, livestock, travel and transportation, and minerals. Utilization of each of these resources may be limited through designation of ACECs.

Effects on GUSG based on changes to the resources discussed above are outlined in their respective sections: Section 3.13, *Minerals*; Section 3.12, *Travel and Transportation*; Section 3.11, *Recreation*; and Section 3.10, *Livestock Grazing Management*.

3.15.4. Relationship of Short-term Uses and Long-term Productivity

Current management actions intended to promote the long-term conservation and recovery of GUSG habitat would restrict the relatively short-term uses of lands within the decision area for development activities such as minerals, travel and transportation, livestock, and recreation. Restrictions are the greatest under Alternative B, and progressively decrease under Alternatives D, C, E, and A.

3.15.5. Irreversible and Irretrievable Commitment of Resources

Restrictions on development as a result of ACEC designation would result in an irretrievable commitment of resources due to restrictions on mineral leasing, grazing, and road / route / trail

development for the duration of the ACEC designation. The commitment of resources is greatest under Alternative B, and progressively decreases under Alternatives D, C, E, and A.

Certain types of restrictions, such as mineral withdrawals, if enacted by Congress, are typically permanent and would effectively result in an irreversible commitment of mineral resources.

3.16. SOCIAL AND ECONOMIC CONDITIONS

3.16.1. Introduction

This section evaluates existing demographic, economic, and environmental justice conditions in and around GUSG habitat and assesses the economic role of activities that rely on BLM-administered resources in the region. Additional species conservation measures may affect these activities and, therefore, socioeconomic conditions. These consequences are addressed in Sections 3.16.2.3 and 3.16.3.3.

The GUSG populations are spread across nine Colorado counties and two Utah counties: Delta, Dolores, Gunnison, Hinsdale, Mesa, Montrose, Ouray, Saguache, and San Miguel Counties in Colorado and Grand and San Juan Counties in Utah. Most of the demographic and economic data are presented at the county level, with reference to statewide conditions and trends for context. While county-level data often masks variation within counties, community-level data, particularly in rural areas, is scarce and typically contains large margins of error. Therefore, county-level data is considered the best available for demographic and socioeconomic analysis. For environmental justice population identification, block-group level data is used in order to better identify specific populations that could be disproportionately and adversely affected by the management of resources in the region.

The economic contribution analysis relies on functional analysis areas—defined by GUSG habitats. The economic analysis groups the 11 counties into three areas. Area One includes Delta, Gunnison, Hinsdale, Montrose, Ouray, and Saguache Counties in Colorado, Area Two includes Mesa County, Colorado, and Area Three includes Dolores, and San Miguel Counties in Colorado and Grand and San Juan Counties in Utah. While the analysis presented in this section is consistently bounded by these analysis areas, under the environmental consequences additional context is required for the overlap with management areas (OHMA/UHMA). The quantitative environmental consequences are presented from the perspective of the analysis areas.

3.16.2. Issue 1: How would management actions under each alternative affect local economic and social conditions (specifically, resource decisions related to livestock grazing, recreation, and minerals)?

Socioeconomic conditions vary across the planning area and some communities are of special concern because they may impact management activities due to availability and reliance on specific resources. The resources considered in this section are Oil and Gas, Potash, Carbon Dioxide, Livestock Grazing, Recreation, and Nonmarket Values. While other resources such as

Lands and Realty, Other Wildlife, Wild Horses and Burros, and Cultural Resources could be affected by public land management decisions, the effects relating to socioeconomic conditions are anticipated to be very minor.

3.16.2.1 Analytical Methods and Assumptions

The following are indicators of socioeconomic effects resulting from management actions related to the protection of Gunnison sage-grouse within the decision area:

- Baseline employment, labor income, and output associated with economic activities affected by management alternatives
- Number of jobs
- Dollar value of output and labor income
- Qualitative assessment of additional costs to the use of public lands and resources
- Grazing allotment infrastructure and management costs
- Restrictions on mineral development and extraction, including fluid mineral leasing stipulations (e.g., NSO) and ROW exclusion and avoidance designations
- Recreation site access
- Interest groups and communities of place (e.g., residents and private landowners, subsistence users, livestock producers, oil and gas leaseholders, recreational visitors, individuals and groups that prioritize preservation of open space, wildlife, recreation, scenic qualities, and individuals and groups who prioritize the development and utilization of natural resources in the decision area)
- Qualitative assessment of effects to quality of life
- Qualitative assessment of non-market values

There are three areas within the region that require analysis:

- Area 1: The Gunnison Basin contains the largest population of GUSG (approximately 4,000 birds or 80 percent of the total population). The occupied portions of this Gunnison Basin area extend across portions of Gunnison and Saguache Counties. Other habitat areas include the Cerro Summit-Cimarron-Sims Mesa area (mostly in Montrose County), the Crawford area (Delta, Gunnison, and Montrose Counties), and the Poncha Pass area (mostly in Saguache County).
- Area 2: The Piñon Mesa contains the majority of the GUSG population to the southwest of Grand Junction and Fruita in Mesa County, Colorado. Grand Junction is the largest city in Mesa County and the largest city between Denver and Salt Lake City. As a regional economic center, the county is economically diverse. Other communities in the county rely on agriculture and oil and gas extraction for local employment and income. Public land amenities, including recreational opportunities and open space, attract

residents to the area. Mesa County has grown substantially over the past 50 years, but has also experienced a number of boom and bust cycles. BLM-administered public lands in the county contribute to local employment and income through energy development, recreation, and livestock grazing (Headwaters Economics 2023).

- Area 3: Most of the GUSG habitat in this area is near the communities of Dove Creek in Dolores County, Colorado and Monticello in San Juan County, Utah. This habitat area also covers a large portion of San Miguel County, Colorado.

3.16.2.2 Affected Environment

As indicated in Table 3.16.1, Area 1's population grew more slowly than the State of Colorado between 2010 and 2020. Gunnison and Ouray Counties grew the most among Area 1 counties with growth rates of 10 percent; Ouray is still the largest population in Area 1, with Gunnison being the third largest (behind Delta County). Area 2's population also did not keep pace with the growth of Colorado, with Mesa County only growing 6 percent over the period. Mesa County is still the largest county across all the analysis areas with a population of 152,962. Area 3 also grew more slowly than the respective State population growth in Colorado and Utah. Both Hinsdale and San Miguel Counties in Colorado and Utah, respectively, experienced the only population decline in the analysis area.

Table 3.16.1. Population Change in Socioeconomic Analysis Area from 2010 to 2020

County	Population (2010)	Population (2020)	Population Growth 2010–2020
Area 1			
Delta County	30,952	31,196	1%
Gunnison County	15,324	16,918	10%
Hinsdale County	843	788	-7%
Montrose County	41,276	42,679	3%
Ouray County	4,436	4,874	10%
Saguache County	6,108	6,368	4%
Area 1	96,904	102,558	6%
Area 1 Reference Area (Colorado)	5,029,196	5,773,714	15%
Area 2			
Mesa County	146,723	155,703	6%
Area 2	146,723	155,703	6%
Area 2 Reference Area (Colorado)	5,029,196	5,773,714	15%
Area 3			
Dolores County	2,064	2,326	13%
San Miguel County	7,359	8,072	10%
Grand County (UT)	9,225	9,669	5%

County	Population (2010)	Population (2020)	Population Growth 2010–2020
San Juan County (UT)	14,746	14,518	-2%
Area 3	32,612	34,999	7%
Area 3 Reference Area (Colorado)	5,029,196	5,773,714	15%
Area 3 Reference Area (Utah)	2,763,885	3,271,616	18%

Sources: U.S. Census Bureau 2010, 2020
Counties are within Colorado unless other noted.

Population growth can put pressure on existing housing stock and drive new residential development when vacancy rates are low. New residential development in these counties may result in habitat loss and fragmentation (IEc 2013). However, the counties with the largest share of habitat (Gunnison and Saguache Counties) both had growth rates below the State average. This decreases the likelihood of conflict between population growth and GUSG habitat.

In all counties except for Ouray, a minority of land is privately owned. Public land provides natural amenities, open space, recreation opportunities, and other benefits to nearby residents. High levels of public land ownership can also constrain development. Throughout the west, high shares of public lands increase the potential for land management actions to influence local economic conditions. Table 3.16.2 shows the large share of BLM-administered public lands in Delta, Gunnison, Hinsdale, Montrose, Saguache, Mesa, Dolores, San Miguel, Grand (UT), and San Juan (UT) Counties. The high percentage of BLM lands underscores the potential for changes in BLM GUSG conservation measures to affect social and economic activity.

Table 3.16.2. Land Ownership

County	Private Land	BLM
Area 1		
Delta County	323,065 (43.9%)	216,645 (29.5%)
Gunnison County	420,281 (20.1%)	375,747 (18.0%)
Hinsdale County	31,122 (4.3%)	125,886 (17.5%)
Montrose County	447,635 (31.2%)	621,831 (43.3%)
Ouray County	180,902 (52.1%)	25,912 (7.5%)
Saguache County	491,095 (24.2%)	337,271 (16.6%)
Area 1	1,894,100 (25.7%)	1,703,292 (23.1%)
Area 1 Reference Area (Colorado)	37,917,343 (56.9%)	8,350,549 (12.5%)
Area 2		
Mesa County	577,497 (27.0%)	980,382 (45.8%)
Area 2	577,497 (27.0%)	980,382 (45.8%)
Area 2 Reference Area (Colorado)	37,917,343 (56.9%)	8,350,549 (12.5%)
Area 3		
Dolores County	244,528 (35.8%)	88,653 (13.0%)
San Miguel County	297,595 (36.1%)	317,846 (38.5%)

County	Private Land	BLM
Grand County (UT)	108,597 (4.6%)	1,551,898 (65.8%)
San Juan County (UT)	400,805 (7.9%)	2,079,449 (41.0%)
Area 3	1,051,525 (11.8%)	4,037,846 (45.2%)
Area 3 Reference Area (Colorado)	37,917,343 (56.9%)	8,350,549 (12.5%)
Area 3 Reference Area (Utah)	14,144,156 (24.8%)	22,781,030 (40.0%)

Source: Headwaters Economics 2023[1]

Industry composition may influence the relationship between habitat conservation and regional economic activity. Several counties in this area have large shares of employment in the agricultural sector (Table 3.16.3). Livestock grazing in critical habitat areas may require modification to prevent conflict with the GUSG. In Delta County, natural resource employment from Agriculture, Forestry, Fishing and Hunting, and Mining is the second largest sector in the county (behind Education and Health Care Services), with 1,342 jobs (approximately 12.3 percent of all employment in the county)[2]. More than one-fifth (22.8 percent) of employment in Saguache County is in the agricultural sector[3]. While BLM allotments often provide a small portion of permittees' forage, public land forage complements ranching operations that also occur on adjacent National Forest System lands and private lands.

Mineral and energy development activities may be affected by GUSG conservation measures. Delta County has a large share of employment in the mining sector compared with other counties in the analysis area (6.4 percent; see Table 3.16.3 for more detail). Restrictions on surface occupancy and disturbance, for example, could affect the prevalence of mining activity in the region.

Habitat conservation measures may also affect outdoor recreation opportunities on public lands. More than 20 percent of employment in Dolores, Gunnison, Ouray, and Grand Counties is in tourism-related sectors (arts, entertainment, and recreation and accommodation and food services), which reflects the importance of outdoor recreation to local economic activity in the county (U.S. Census Bureau 2018). Table 3.16.3 provides details on sector-level employment for all counties in the planning area. The economic analysis discusses the economic role of grazing, recreation, mineral extraction, and energy development on BLM-administered public lands in the area.

[1] Headwaters Economics produces aggregated reports that summarize data from Federal, State, and local sources.
[2] The 646 agriculture jobs in Delta County are part of the total 1,342 jobs within the agriculture, forestry, mining, oil and gas.
[3] Within Saguache County 572 of the total 2,510 jobs within the county are attributable to agriculture, forestry, fishing and hunting which is approximately 22.8%.

Table 3.16.3. Industry Employment by County

Industry	Delta County	Dolores County	Gunnison County	Hinsdale County	Mesa County	Montrose County	Ouray County	Saguache County	Grand County	San Juan County	San Miguel County	Colorado	Utah
Agriculture, forestry, fishing and hunting	11.9%	24.9%	2.2%	6.2%	3.5%	6.9%	3.6%	15.7%	1.1%	12.0%	1.9%	1.6%	1.1%
Mining, Quarrying, Oil and Gas Extraction	0.9%	(D)	3.0%	(D)	2.0%	0.6%	(D)	(D)	(D)	4.1%	(D)	1.0%	0.5%
Construction	8.3%	(D)	10.6%	10.8%	8.1%	11.0%	9.4%	6.6%	5.8%	5.0%	8.2%	7.0%	7.0%
Manufacturing	4.7%	(D)	1.7%	(D)	3.9%	4.9%	3.6%	2.6%	1.9%	1.8%	2.0%	4.2%	7.0%
Wholesale trade	1.2%	1.3%	0.6%	(D)	2.8%	1.9%	(D)	4.0%	1.3%	(D)	0.6%	3.1%	2.8%
Retail trade	10.9%	7.8%	8.9%	7.4%	11.5%	11.6%	8.0%	6.2%	11.2%	6.7%	7.1%	8.7%	10.2%
Transportation and warehousing, and utilities:	1.5%	3.6%	1.9%	0.2%	4.3%	4.1%	2.2%	1.4%	2.8%	1.2%	1.1%	4.8%	4.6%
Information	1.0%	0.8%	0.8%	(D)	0.8%	0.8%	0.6%	(D)	0.8%	(D)	0.9%	2.3%	2.1%
Finance and insurance, and real estate and rental and leasing:	11.6%	0.0%	12.4%	0.0%	11.3%	10.7%	14.9%	4.0%	8.9%	3.1%	18.1%	12.4%	13.1%
Professional, scientific, and management, and administrative and waste management services:	8.2%	7.6%	10.9%	0.0%	9.4%	9.4%	13.0%	6.9%	4.5%	2.2%	12.6%	16.3%	14.8%

Industry	Delta County	Dolores County	Gunnison County	Hinsdale County	Mesa County	Montrose County	Ouray County	Saguache County	Grand County	San Juan County	San Miguel County	Colorado	Utah
Educational services, and health care and social assistance:	9.0%	0.0%	5.4%	1.3%	15.0%	10.6%	4.8%	6.3%	7.7%	0.0%	5.5%	11.1%	11.7%
Arts, entertainment, and recreation, and accommodation and food services:	7.4%	0.0%	18.2%	13.8%	10.0%	8.5%	18.8%	0.0%	32.3%	0.0%	25.5%	9.7%	8.2%
Other services, except public administration	6.1%	4.7%	5.3%	4.7%	5.5%	5.8%	5.0%	5.3%	3.3%	5.3%	5.8%	5.0%	4.7%
Public administration	17.2%	18.2%	17.1%	14.7%	12.0%	13.4%	10.0%	17.2%	12.3%	25.4%	9.5%	12.9%	12.1%

Source: BEA 2021
Note: (D) Not shown to avoid disclosure of confidential information; estimates are included in higher-level totals.

All counties in the analysis area have lower median household incomes than their respective States; median household income is a strong indicator of economic well-being and poverty. Hinsdale County has the lowest median household income in the area (Table 3.16.4). Low household income can increase vulnerability to social and economic change, as people have access to fewer resources. In addition to having the comparatively low household income in the area, San Juan County also has had the highest unemployment rate over the past decade.

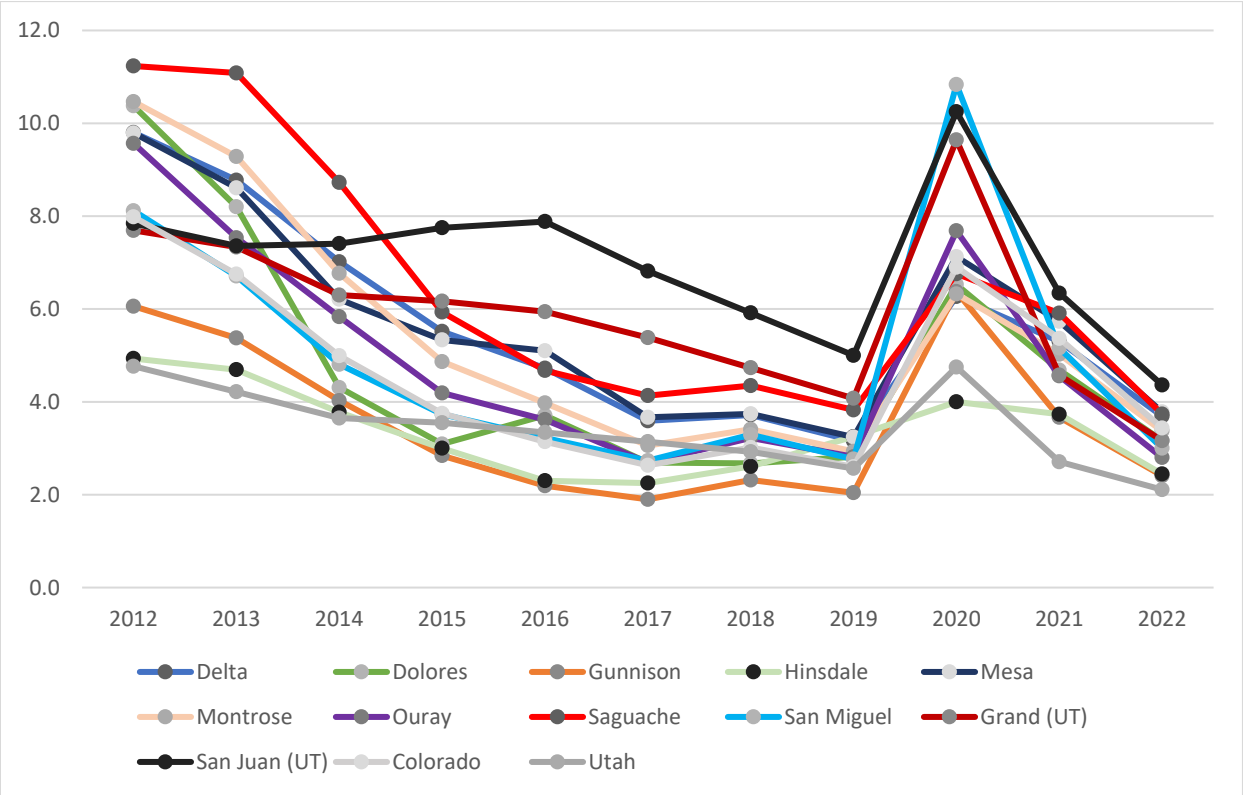
Table 3.16.4. Median Household Income

County	Median Household Income
Area 1	
Delta County	$51,803
Gunnison County	$63,341
Hinsdale County	$45,714
Montrose County	$57,225
Ouray County	$67,228
Saguache County	$48,413
Area 1 Reference Area (Colorado)	$80,184
Area 2	
Mesa County	$62,127
Area 2 Reference Area (Colorado)	$80,184
Area 3	
Dolores County	$62,500
San Miguel County	$70,965
Grand County (UT)	$51,433
San Juan County (UT)	$52,400
Area 3 Reference Area (Colorado)	$80,184
Area 3 Reference Area (Utah)	$79,133

Source: U.S. Census Bureau 2021a

Figure 3.16-1 displays the 10-year trend for unemployment in the socioeconomic analysis area. While unemployment spiked during 2020 throughout the area, all counties and states have experienced a return to pre-pandemic unemployment in the subsequent years. Apart from San Juan County, all other counties have trended near their respective State averages over the past decade.

Figure 3.16-1. Unemployment Trends (2012–2022)



Source: BLS 2022

Economic Contribution Analysis

Public land uses, including recreation, energy and mineral development, and livestock grazing contribute to economic activity across the 11 counties. GUSG conservation measures are expected to affect energy and mineral development, recreation, and livestock grazing on BLM-administered lands in the decision area. The economic contribution analysis estimates the number of jobs and amount of labor income attributable to activities on BLM-administered lands in the analysis area. While public land management contributes to economic activity in other ways—e.g., through payments-in-lieu-of-taxes—other contributions are not expected to be significantly affected by GUSG conservation measures.

The economic contribution analysis uses Impact Analysis for Planning Model (IMPLAN), with 2021 data. IMPLAN is an input-output model that estimates the economic consequences of changes in an industry, event, or policy. IMPLAN captures direct, indirect, and induced economic contributions. Direct contributions occur in the immediately affected industry. For example, public land forage directly contributes to employment, income, and output in the cattle ranching sector. Indirect contributions result from directly affected individuals and firms buying goods and services to support their business. Ranchers buying hardware to repair a fence is an example of an indirect contribution. Induced contributions result from employees of

the directly and indirectly affected sectors spending household income in the regional economy (e.g., on housing). For each analysis of quantitative impacts on socioeconomic conditions from management changes, county-level IMPLAN models were used to estimate the direct impacts for each respective county within the analysis area.

Each resource described below includes a characterization of the stakeholder groups which would be impacted by management changes of the analysis area.

Oil and Gas

While Federal oil and gas production occurs in all three socioeconomic areas, there is limited overlap with GUSG habitat. BLM-administered oil and gas wells exist in the Crawford (Area 1), Monticello, and Dove Creek (Area 3), and San Miguel Basin (Area 3) population areas. Because the only producing wells that overlap with GUSG habitat are in the Monticello, Dove Creek, and San Miguel Basin population areas, the economic contribution of BLM-administered oil and gas is analyzed only for Area 3. For context, countywide oil and gas production from all ownership is disclosed for the three socioeconomic areas. The stakeholder groups which may be impacted by BLM's management choices within the analysis area include individuals who are currently employed by oil and gas projects which would be impacted by management changes. In addition to individuals, companies and organizations which engage in oil and gas projects are also stakeholders which may be impacted by BLM's management decisions.

Area 1 has the lowest levels of oil and gas employment among the three socioeconomic areas. Table 3.16.5 displays direct the economic impact of minerals and oil and gas production from all ownerships.

Table 3.16.5. Oil and Gas Employment and Employee Compensation (2021)

County	Employment	Labor Income
Area 1		
Delta County	41	$1,182,145
Gunnison County	90	$285,927
Hinsdale County	4	$53,274
Montrose County	49	$668,961
Ouray County	33	$4,106,448
Saguache County	9	$5,395
Area 2		
Mesa County	354	$42,144,327
Area 3		
Dolores County	4	$43,510
San Miguel County	9	$28,997
Grand County (UT)	29	$1,452,880
San Juan County (UT)	45	$4,831,143

Source: IMPLAN (2021)

Within the analysis area, IMPLAN reports 227 jobs in the extraction of oil and gas in Area 1, 354 jobs in Area 2, and 86 jobs in Area 3 (IMPLAN 2021). To estimate the regional economic impact from oil and gas activity, regional production within decision area BLM-managed lands is multiplied by the prevailing prices. Energy price volatility complicates the economic contribution analysis. During the period of analysis, inflation caused the increase of many components of the consumer price index. The latest IMPLAN data available for this analysis are from 2021, a year when a barrel of crude oil sold for approximately $71. As of this writing (March 2023), a barrel of crude oil is approximately $80 (USEIA 2023a), and as a result trends in economic impacts from oil and gas sectors are anticipated to be consistent with IMPLAN results. Natural gas prices are also similar to their 2021 values. In 2021, the pipeline import price for one thousand cubic feet (Mcf) of natural gas rose from around $2 at the beginning of the year to over $4 by the end of the year, this trend has leveled off during 2022 with prices hovering over $5 (USEIA 2023b). Total production value of oil and gas activity is divided by the total employment within the Areas to produce the IMPLAN model inputs.

Table 3.16.6 shows the direct economic impact from oil and gas activity (construction of wells and production of oil and gas within the county) within both the decision and analysis areas. Within Areas 1 and 2 there were no producing wells within the analyzed area and all oil and gas production occurred outside the decision area. Area 3 contained 68 producing wells across 3 counties. Of the 68 wells within the Area 3 analysis area, only 12 wells in San Miguel County were within OHMA, and 8 wells in Dolores County were within UHMA. In addition to the constructed wells, Dolores County produced 1,329 barrels of oil and 2,727,337 million cubic feet of gas, San Miguel County produced 924 barrels of oil and 1,294,703 million cubic feet of gas (COGCC 2021a, 2021b), and San Juan County produced 3,102,593 barrels of oil and 8,555,205 million cubic feet of gas (Utah DNR 2023). Area 3 supports 1,082 job years, $49,268,983 in labor income, and $321,937,720 in economic output. These results incorporate the economic impact not only from the production value of the oil and gas but also the employment for the construction and operation of oil and gas wells. Some job years may not exist within the region such as the purchase of specialized extraction machinery or short-term employment that exports wages outside of the region.

Table 3.16.6. Direct Oil and Gas Regional Economic Impact (2021)

County	Employment	Labor Income	Output
Area 1			
Delta County	-	-	-
Gunnison County	-	-	-
Hinsdale County	-	-	-
Montrose County	-	-	-
Ouray County	-	-	-
Saguache County	-	-	-
Area 1	-	-	-

County	Employment	Labor Income	Output
Area 2			
Mesa County	-	-	-
Area 2	-	-	-
Area 3			
Dolores County	152	$11,762,750	$41,828,354
San Miguel County	228	$15,729,968	$56,347,320
Grand County (UT)	-	-	-
San Juan County (UT)	7	$828,297	$8,003,732
Area 3	387	$28,321,015	$106,179,406

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Potash

There are no existing or pending potash prospecting permits within occupied and unoccupied habitat. Prior BLM mineral reports have indicated thicknesses of three specific potash seams within this acreage ranging from 14 feet up to 28 feet. Potential potash tonnages within this acreage could be substantial. However, prospecting is needed to determine whether a valuable deposit of potash exists within the lands covered by the prospecting permit applications, and whether these lands are chiefly valuable for potash. Therefore, an estimate of potential production is not possible as of the publication of this document.

In 2022, the market price of potash increased to nearly $520 per metric ton, which is a 5-year high (World Bank 2023). Over the past 5 years, the market price was relatively stable around $200 to 2020. Because no potash production is occurring, economic contribution analysis cannot be conducted. However, GUSG conservation measures may affect the potential for future potash mining.

Carbon Dioxide

Enhanced oil recovery may increase the quantity of oil extracted from a reservoir. Enhanced oil recovery injects carbon dioxide (CO_2) to push residual oil to a production well. CO_2 injection has the potential to increase production relative to conventional extraction techniques. The price of CO_2 is tied to oil prices (Cook 2012). In late 2015, the price of a barrel of oil was approximately $36, which is low relative to recent price trends. Between 2012 and 2014, a barrel of oil was approximately $100, and in more recent years the price has returned to higher prices between $70 and $80 (USEIA 2023a). The price of third-party supplied CO_2 is approximately 2.5 percent of the oil price plus $0.50 per thousand cubic feet for transportation costs (van't Veld and Phillips 2009). At current (early 2023) oil prices, that implies a CO_2 price of $2.50 per thousand cubic feet.

In periods of low oil prices, private investment in CO_2 infrastructure and activities is less likely. There are no current CO_2 developments within GUSG habitat. Although seismic testing for CO_2 has been completed in the Doe Canyon area, which is within GUSG habitat, no proposals have been received for drilling. Since no CO_2 development is occurring, economic contribution analysis cannot be conducted. However, GUSG conservation measures may affect the potential for future CO_2 development in the analysis area.

Livestock Grazing

A number of county representatives indicated that livestock grazing is both economically and culturally important to area residents. BLM-administered public lands in the decision and analysis areas provide forage for livestock. The following analysis describes the economic contribution of livestock grazing in GUSG habitat. GUSG conservation measures may affect livestock grazing in these areas. The analysis is broken out by GUSG population for each of the three socioeconomic areas. Stakeholders for livestock grazing include local individuals as well as local and regional companies which utilize BLM-managed land for their grazing. To generate animal unit months (AUMs) by county rather than the reported allotment, proportional OHMA and UHMA composition for each allotment is aggregated to generate county metrics. These are then multiplied by the total AUMs within the county to generate an estimate of AUMs within the decision and analysis areas, OHMA, and UHMA for analysis.

Table 3.16.7 shows the number of active billed AUMs that overlap with GUSG habitat, the total number of AUMs that overlap with GUSG habitat, and the total number of active AUMs, including Poncha Pass.

Table 3.16.7. Billed AUMs within GUSG Habitat by Active Status and OHMA Overlap

County	Active OHMA AUMs	OHMA AUMs	Active AUMs
Area 1			
Delta County	2,610	2,744	5,986
Gunnison County	25,480	32,278	35,134
Hinsdale County	0	0	1,100
Montrose County	9,537	9,809	34,841
Ouray County	0	0	650
Saguache County	24,317	31,081	34,037
Area 2			
Mesa County	15,118	18,629	33,849

County	Active OHMA AUMs	OHMA AUMs	Active AUMs
Area 3			
Dolores County	2,389	2,389	8,912
San Miguel County	5,804	5,804	24,195
Grand County (UT)	6,489	9,873	13,105
San Juan County (UT)	689	719	22,306

Source: BLM (2023a)

Table 3.16.8 describes the analysis area impact for the baseline grazing allotments. Livestock grazing in occupied habitat in Area 1 supports approximately 9.3 job years and over $559,000 in labor income annually. Livestock grazing in occupied habitat in Area 2 supports approximately 12.1 job years and over $113,000 in labor income annually. Livestock grazing in occupied habitat in Area 3 supports approximately 4.8 job years and over $144,000 in labor income annually. Across the three regions, the livestock grazing in occupied habitat supports over $2.6 million, $723,000, and $735,000 in economic output, respectively.

Table 3.16.8. Direct Grazing Regional Economic Impacts for Active OHMA AUMs

County	Employment	Labor Income	Output
Area 1			
Delta County	1.5	$24,248	$125,307
Gunnison County	4.1	$68,653	$1,219,085
Hinsdale County	0	$0	$0
Montrose County	1.5	$24,248	$125,307
Ouray County	0	$0	$0
Saguache County	2.2	$442,677	$1,163,898
Area 1	9.3	$559,826	$2,633,597
Area 2			
Mesa County	12.1	$113,564	$723,601
Area 2	12.1	$113,564	$723,601
Area 3			
Dolores County	1.3	$39,573	$114,346
San Miguel County	2.3	$47,465	$277,800
Grand County (UT)	0.6	$44,953	$310,586
San Juan County (UT)	0.6	$12,845	$32,978
Area 3	4.8	$144,836	$735,710

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Table 3.16.9 describes the analysis area impact for the baseline grazing allotments. Livestock grazing in occupied habitat in Area 1 supports approximately 14.9 job years and over $736,000 in labor income annually. Livestock grazing in occupied habitat in Area 2 supports approximately 14.9 job years and over $139,000 in labor income annually. Livestock grazing in occupied habitat in Area 3 supports approximately 4.2 job years and over $100,000 in labor income annually. Across the three regions, the livestock grazing in occupied habitat supports over $3.6 million, $891,000, and $426,000 in economic output, respectively.

Table 3.16.9. Direct Grazing Regional Economic Impacts for OHMA AUMs

County	Employment	Labor Income	Output
Area 1			
Delta County	1.6	$25,415	$131,338
Gunnison County	5.2	$87,004	$1,544,940
Hinsdale County	0	$0	$0
Montrose County	5.2	$83,711	$469,694
Ouray County	0	$0	$0
Saguache County	2.9	$540,249	$1,487,647
Area 1	14.9	$736,379	$3,633,619
Area 2			
Mesa County	14.9	$139,937	$891,650
Area 2	14.9	$139,937	$891,650
Area 3			
Dolores County	1.3	$39,573	$114,346
San Miguel County	2.3	$47,465	$277,800
Grand County (UT)	0	$0	$0
San Juan County (UT)	0.6	$13,404	$34,413
Area 3	4.2	$100,442	$426,559

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Table 3.16.10 describes the analysis area impact for the baseline grazing allotments. Livestock grazing in occupied habitat in Area 1 supports approximately 31.3 job years and over $1 million in labor income annually. Livestock grazing in occupied habitat in Area 2 supports approximately 27 job years and over $252,000 in labor income annually. Livestock grazing in occupied habitat in Area 3 supports approximately 35.8 job years and over $852,000 in labor income annually. Across the three regions, the livestock grazing in occupied habitat supports over $5.3 million, $1.6 million, and $3.3 million in economic output, respectively.

Table 3.16.10. Direct Grazing Regional Economic Impacts for Active AUMs

County	Employment	Labor Income	Output
Area 1			
Delta County	3.5	$55,443	$286,511
Gunnison County	5.7	$94,702	$1,681,638
Hinsdale County	0.4	$0	$52,650
Montrose County	18.3	$297,337	$1,667,614
Ouray County	0.3	$13,565	$31,111
Saguache County	3.1	$591,630	$1,629,132
Area 1	31.3	$1,052,677	$5,348,656
Area 2			
Mesa County	27.0	$254,268	$1,620,134
Area 2	27.0	$254,268	$1,620,134
Area 3			
Dolores County	4.9	$147,624	$426,560
San Miguel County	9.8	$197,867	$1,158,059
Grand County (UT)	1.2	$90,787	$627,252
San Juan County (UT)	19.9	$415,846	$1,067,645
Area 3	35.8	$852,124	$3,279,516

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Recreation

Public lands in the decision and analysis areas are valued for a variety of recreational opportunities. Public land recreation opportunities improve quality of life and make communities attractive places to live. Additionally, recreation on BLM-administered public lands attracts visitors from outside the local area. When recreation users spend money in the local economy—on food and lodging, for example—they contribute to employment and income in the area. Recreation spending is estimated to generate $1.3 billion in economic output in Colorado and nearly $1.8 billion in economic output in Utah in 2021 (BLM 2022a). GUSG conservation measures may affect the quantity and distribution of recreation visits across the decision and analysis areas. This section assesses the economic contribution of recreation on BLM-administered public lands. Recreation visit estimates are only available by BLM field office and not by county. Stakeholders for the recreation resource include individuals who engage in recreation within the analysis area, companies that organize or benefit from recreation in the analysis area, as well as other organizations (such as non-profits, faith-based organizations, and community-based organizations) that organize and benefit from the availability of recreational activities in the analysis area. These companies include tourism and hospitality businesses which experience increased usage from individuals who are engaging in recreation.

Table 3.16.11 display the number of annual recreation visitor days in fiscal years (FY) 2021 and 2022 for each field office in the decision and analysis areas. Due to insufficient data mapping RMIS visitor days to unoccupied versus occupied habitat, a conservative estimate of total visitor day counts were used as a proxy for baseline recreator visits. Visitor days were then attributed to each of the counties within the analysis area according to a uniform distribution of the comprising counties within each of the field office/conservation area data sources. Based on visitor days, party trips were then estimated based on USFS methodology and spending patterns (White 2017, 2022) to create a map to IMPLAN industry inputs which were then modeled to estimate the regional impacts within each county in the analysis area.

Table 3.16.11. Recreation Visits by Analysis Area County

BLM Unit	Visitor Days (2021)	Visitor Days (2022)
Area 1		
Delta	331,123	366,883
Gunnison	1,212,403	1,162,918
Hinsdale	1,229,241	1,164,851
Montrose	297,163	315,465
Ouray	100,791	107,442
Saguache	150,774	147,734
Area 1	3,321,495	3,265,293
Area 2		
Mesa	456,342	513,319
Area 2	456,342	513,319
Area 3		
Dolores	174,005	156,512
San Miguel	218,419	216,807
Grand (UT)	1,192,526	1,062,547
San Juan (UT)	1,192,526	1062,547
Area 3	2,777,476	2,498,413

Source: BLM (2023b)

The Gunnison Field Office, San Luis Valley Field Office, and Gunnison Gorge NCA are primarily within Area 1. Recreation opportunities are most likely to be affected in Area 1 due to the large share of the Gunnison Field Office and Gunnison Gorge NCA with GUSG habitat. As shown disaggregated in Table 3.16.12, total estimated job years employment across the three areas are 4,722,784, and 3,371, respectively, with associated labor income of $114,674,416, $24,094,194, and $103,082,741. Output for the three analysis areas are estimated to be $413,786,251, $77,907,356, and $316,754,418, respectively.

Table 3.16.12. Total Recreation Regional Economic Impact (2021)

County	Employment	Labor Income	Output
Area 1			
Delta County	528	$11,402,706	$44,889,698
Gunnison County	1,576	$50,578,901	$158,512,372
Hinsdale County	1,745	$31,206,703	$134,463,188
Montrose County	461	$13,442,953	$44,744,522
Ouray County	154	$4,545,639	$14,385,628
Saguache County	258	$3,497,514	$16,790,843
Area 2			
Mesa County	784	$24,094,194	$77,907,356
Area 3			
Dolores County	225	$4,476,318	$17,135,373
San Miguel County	221	$11,015,421	$27,348,828
Grand County (UT)	1,417	$49,293,898	$145,676,424
San Juan County (UT)	1,508	$38,297,104	$126,593,793

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Nonmarket Values

The economic analysis above captures the contributions of public land uses to local economic activity. An economic contribution analysis considers how the money spent on public land uses cycles through an economy to support local employment and labor income. This type of analysis informs an understanding of the role of BLM management actions in supporting economic activity and contributing to local employment and income. However, an economic contribution analysis does not provide complete information relevant to understanding the importance of public lands. The stakeholders for nonmarket values include both individuals and organizations or companies which benefit from the existence of public lands and the benefits they provide. Organizations such as conservation groups, or individuals who do not engage directly with the BLM-managed lands are examples of stakeholders who may be impacted by management decision changes.

Public land has both market and non-market values. Market values include commodity uses of public land resources, such as mineral extraction. The discussion of oil and gas, above, describes the market value and oil and natural gas extracted from each county in the decision and analysis areas. Oil and natural gas are traded in markets and their prices are known. However, not all public land resources are traded in markets, making them direct use resources. These types of values are called indirect use resources (e.g., clean air, clean water) and non-market resources and may arise from direct use of the resources (e.g., hunting for personal use and subsistence

gathering) or from passive use (sometimes called non-use) both of which generate value outside a market. Passive use captures the value of knowing that the resource(s) exist, whether or not future direct use is intended. Public lands provide numerous values that are often of direct use to humans, even if they are not recognized in economic analyses. Drinking water, clean air, and the research and educational opportunities that unique ecosystems afford are a few of the many ecosystem goods and services whose values are not addressed in many economic analyses.

Many individuals—in the planning area and throughout the nation—value wildlife. More than half of visitors to national forests participate in a wildlife-related activity, with the majority of these visitors engaged in wildlife viewing (White et al. 2013). Comparable statistics are not available for the BLM, but it is reasonable to assume that visitor characteristics and preferences are similar across agencies. Furthermore, individuals may value the protection of wildlife even if they have no intention to visit public lands to view wildlife or participate in other wildlife-related activities (such as hunting and fishing). Approximately 17.3 million Americans are active members of environmental and wildlife conservation non-profit organizations, which is one measure of the population holding wildlife-related values (World Values Survey 2022). The protection of the GUSG in the decision and analysis areas may advance non-market values related to wildlife.

GUSG conservation measures could entail tradeoffs with other non-market values. Many recreation users value the opportunities on public land beyond what they pay traveling to sites. The difference between what recreation users pay (in travel costs and site fees) and what they are willing to pay is called consumer surplus. For example, motorized recreation use on public lands may conflict with GUSG conservation measures. Deisenroth et al. (2009) found that motorized recreation users have a mean consumer surplus of approximately $110 per person per day (converted from 2007 USD to 2023 USD using BLS 2023). A reduction in motorized recreation use, therefore, would have both market (loss of economic activity) and non-market (consumer surplus) implications. In a more recent study (Rosenberger et al. 2016), the authors found that mean consumer surplus per day is even larger than the values presented in Deisenroth et al. (2009). Figure 3.16-2 (with values converted from 2016 USD to 2023 USD) shows the mean consumer surplus by day for each of the primary activity types surveyed. The findings in these studies indicate that outdoor recreators often value the experiences more than they pay to access them through travel and permit costs. Activities with particularly high surplus values may indicate groups that would be more willing to support local economies during their visits.

Figure 3.16-2. Mean Consumer Surplus Per Day by Activity (2023 USD)

Source: Rosenberger et al. (2016)

Consistent with direction provided in BLM IM 2013-131, the subsequent analysis of environmental consequences will consider non-market goods and services (BLM 2013). Where appropriate, discussion of how the alternatives may affect non-market values will be presented. However, due to the qualitative nature of these discussions, direct comparisons between changes in market and non-market values are generally not possible. Furthermore, the economic impact of each alternative should not be conflated with the economic value of that alternative. These are two distinct economic measures.

3.16.2.3 Environmental Consequences

For the analysis of socioeconomic environmental consequences, quantitative estimates are provided where sufficient data or estimates are available on the potential changes in authorized uses of Federal lands under each alternative. When quantitative estimates of economic consequences are not possible, a qualitative discussion of the potential economic effects of management actions associated with specific authorized uses is presented. Therefore, the overall economic consequences are a combination of quantitative estimates and qualitative discussion.

The social analysis considers how proposed management actions may affect quality of life. This analysis incorporates non-market values—goods and services not traded in markets that

contribute to human well-being. Due to data limitations, the assessment of non-market values is primarily qualitative. The resources considered in this analysis of alternative management impacts are: grazing allotments, recreation, and oil, natural gas, and carbon dioxide leases.

For the quantitative estimates, IMPLAN was used to estimate the impacts on employment, labor income, and output in the analysis area for a given management alternative. Direct economic impacts are generated by the changes to the activity in question, such as changes to AUMs on public land, while indirect and induced impacts are caused by the changes to those direct activities.

Reasonably foreseeable oil and gas development under the alternatives was estimated using reported values from administrative areas, assumptions regarding the likelihood of development for areas within and outside of the decision area, and reduction factors relating to management activities such as closure or NSO, CSU/TL, and stipulations. Administrative area well estimates are then distributed to the county level uniformly based on the comprising counties within each administrative area (Table 3.16.13). These estimates are then used with the same IMPLAN methodology outlined in the economic contribution analysis.

Table 3.16.13. Summary of Available Annual Oil and Gas Wells under all Alternatives within the Decision Area by County

County	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Wells	*Wells*	*Wells*	*Wells*	*Wells*
Delta	2.52	1.89	2.52	1.96	2.52
Dolores	0.81	0.15	0.81	0.71	0.81
Grand	0.42	0.39	0.42	0.41	0.42
Gunnison	1.35	1.09	1.35	1.17	1.35
Hinsdale	0.22	0.15	0.22	0.20	0.22
Mesa	2.52	1.89	2.52	1.96	2.52
Montrose	1.55	1.24	1.55	1.37	1.55
Ouray	1.34	1.09	1.34	1.17	1.34
Saguache	0.00	0.00	0.00	0.00	0.00
San Juan	0.42	0.39	0.42	0.41	0.42
San Miguel	1.55	1.24	1.55	1.37	1.55
Total	**12.69**	**9.52**	**12.69**	**10.72**	**12.69**

As described in further detail in Section 3.10, Table 3.16.14 shows under each action alternative the anticipated AUMs by county. Note that while under Alternative B1, active AUMs would in reality phase to 0 based on renewal and retirement of each, the specific dates of those actions are uncertain and the modeled state for this section is once all AUMs are removed.

Table 3.16.14. Summary of Available AUMs under all Alternatives within the Decision Area by County

County	Alternative A	Alternative B1	Alternative B2	Alternative C and Alternative D	Alternative E
	AUMs	AUMs	AUMs	AUMs	AUMs
Delta	12,382	0	5,077	12,877	NA
Dolores	9,286	0	3,807	9,657	NA
Grand	10,525	0	4,315	10,946	NA
Gunnison	18,848	0	7,728	19,602	37,707
Hinsdale	1,477	0	606	1,536	767
Mesa	32,012	0	13,125	33,292	NA
Montezuma	5,516	0	2,262	5,737	NA
Montrose	37,700	0	15,457	39,208	NA
Ouray	732	0	300	761	NA
Saguache	16,289	0	6,679	16,941	26,627
San Juan	22,875	0	9,379	23,790	NA
San Miguel	18,439	0	7,560	19,176	NA
Total	**186,080**	**0**	**76,293**	**193,523**	**65,101**

Effects Common to All Alternatives

Under all alternatives, the following resource effects are anticipated to be the same.

Recreation

Under all alternatives, access to recreational activity would not increase above current levels to the extent that new facilities and infrastructure would be required to support the increased use. Reduced development of new recreation facilities and infrastructure is not anticipated to either increase or decrease regionwide recreation behavior. If recreators reduce their engagement in that region as a result of transportation closures resulting from management decisions, benefits to those recreators would be reduced if substitute sites are not available.

Alternative A (No Action – Current Management)

Under Alternative A, there would be no changes to current management practices. Therefore, management under Alternative A would be the same as the affected environment levels of each resource.

Oil, Natural Gas, and CO_2 Leases

Under Alternative A, there would be no changes to oil and gas or other natural resource extraction activity management. Therefore, management under Alternative A would be the same as the affected environment levels for oil and natural gas (Table 3.16.15).

Table 3.16.15. Direct Oil and Gas Regional Economic Impacts under Alternative A

County	Employment	Labor Income	Output
Area 1			
Delta County	41.3	$4,152,779	$10,978,393
Gunnison County	29.8	$945,822	$5,853,583
Hinsdale County	5.5	$34,916	$934,198
Montrose County	32.6	$1,370,420	$6,740,470
Ouray County	20.1	$2,486,927	$5,829,977
Saguache County	0.0	$0	$0
Area 1	129.4	$8,990,865	$30,336,621
Area 2			
Mesa County	40.3	$4,298,011	$10,978,385
Area 2	40.2	$4,282,142	$10,937,850
Area 3			
Dolores County	14.3	$1,182,500	$3,546,737
San Miguel County	28.5	$2,030,977	$6,740,461
Grand County (UT)	8.0	$182,226	$1,517,889
San Juan County (UT)	6.3	$436,453	$1,517,889
Area 3	57.2	$3,832,155	$13,322,977

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Grazing Allotments

Under Alternative A, there would be no changes to grazing access within the analysis area. Therefore, management under Alternative A would be the same as the affected environment level for grazing allotments (Table 3.16.16).

Table 3.16.16. Direct Grazing Regional Economic Impacts for Active AUMs under Alternative A

County	Employment	Labor Income	Output
Area 1			
Delta County	7.2	$114,684	$592,647
Gunnison County	3.1	$50,804	$902,132
Hinsdale County	0.5	$0	$70,694
Montrose County	19.8	$321,736	$1,804,456
Ouray County	0.4	$15,277	$35,036
Saguache County	1.5	$283,135	$779,650
Area 1	32.5	$785,636	$4,184,615

County	Employment	Labor Income	Output
Area 2			
Mesa County	25.6	$240,469	$1,532,208
Area 2	25.6	$240,469	$1,532,208
Area 3			
Dolores County	5.1	$153,819	$444,461
San Miguel County	7.4	$150,795	$882,556
Grand County (UT)	1.0	$72,913	$503,764
San Juan County (UT)	20.4	$426,453	$1,094,879
Area 3	33.9	$803,980	$2,925,660

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Non-market Values

Under Alternative A, there would be no changes to resources which impact non-market values within the analysis area. Therefore, management under Alternative A would be the same as the affected environment level for non-market values.

Action Alternatives

Under each of the action alternatives, BLM would apply varyingly restrictive conservation measures available within its jurisdiction and authority. Under alternatives B1 and B2, BLM would prioritize the removal of identified threats within occupied and unoccupied habitat and reduce impacts within the decision and analysis area including a 4-mile buffer around habitat, and potential linkage-connectivity areas to the maximum extent possible. Under Alternative C, BLM would minimize, avoid, or compensate for impacts from resource uses and activities in occupied and unoccupied habitat. Under this alternative, resource uses and other actions would be allowed if their impacts could be avoided, minimized, rectified, reduced/eliminated over time, or mitigated through compensatory mitigation. Under Alternative D, BLM would apply a balanced approach to allocate resources and conserving resource values while sustaining and enhancing ecological integrity, as well as designating ACECs. Conservation measures would focus on occupied and unoccupied habitat and could extend to linkage-connectivity areas based on the latest science, BLM specialists, and cooperating agencies as appropriate. Under Alternative E, BLM management would adopt direction from the interagency CAA. The notable goals of the CAA are to: (1) engage key stakeholders in a collaborative planning and review process to support GUSG conservation, (2) prioritize conservation measures across occupied habitat, and (3) account for cumulative effects of habitat fragmentation. Alternative E also considers management of resources not addressed in the CAA. The degree to which each of

these alternatives impact the socioeconomic conditions within the decision are discussed under each of the following resource categories.

Economic Activity Impacts

Oil, Natural Gas, and CO_2 Leases

Under Alternative B, BLM would close and apply leasing stipulations within OHMA, UHMA, LCMA, and an Adjacent Non-habitat 4-mile buffer. BLM would also seek to apply stipulations to existing leases. These NSO stipulations would increase the cost required to access fluid mineral resources. The socioeconomic impact from Alternative B (Table 3.16.17) is estimated to be 170.5 job years, $12,663,627 in labor income, and $40,870,967 in output. This corresponds to a loss of 56.2 job years, $4,441,535 in labor income, and $13,726,481 in output compared to the baseline of Alternative A.

Table 3.16.17. Direct Oil and Gas Regional Economic Impacts under Alternative B

County	Employment	Labor Income	Output
Area 1			
Delta County	30.9	$3,107,427	$8,214,876
Gunnison County	24.4	$773,135	$4,784,845
Hinsdale County	3.8	$24,161	$646,441
Montrose County	26.1	$1,096,578	$5,393,565
Ouray County	16.5	$2,033,044	$4,765,963
Saguache County	0.0	$0	$0
Area 1	101.6	$7,034,345	$23,805,689
Area 2			
Mesa County	30.2	$3,216,101	$8,214,868
Area 2	30.2	$3,216,101	$8,214,868
Area 3			
Dolores County	2.6	$214,923	$644,633
San Miguel County	22.8	$1,625,140	$5,393,557
Grand County (UT)	7.4	$168,807	$1,406,110
San Juan County (UT)	5.8	$404,312	$1,406,110
Area 3	38.7	$2,413,181	$8,850,409

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Under Alternative C, occupied and unoccupied habitat would remain open to leasing with a NSO stipulation. The impact of management under this alternative would depend on the extent to which drilling impacts are able to be avoided. If operators are able to access oil, gas, and

other mineral reserves then impacts would be similar to Alternative A. However, if operators are unable to reach reserves without generating adverse impacts to GUSG, then impacts would resemble Alternative B. The impacts of Alternative C on fluid mineral resource activity within the analysis area are likely more moderate than those for Alternative B or D. The extent to which extraction projects on BLM-managed lands would remain accessible under a NSO stipulation would require project-specific information. The socioeconomic impact from Alternative C (Table 3.16.18) is estimated to be 226.7 job years, $17,105,165 in labor income, and $54,597,469 in output. This corresponds to a loss of 0 job years, $0 in labor income, and $0 in output compared to the baseline of Alternative A.

Table 3.16.18. Direct Oil and Gas Regional Economic Impacts under Alternative C

County	Employment	Labor Income	Output
Area 1			
Delta County	41.3	$4,152,779	$10,978,393
Gunnison County	29.8	$945,824	$5,853,593
Hinsdale County	5.5	$34,916	$934,207
Montrose County	32.6	$1,370,421	$6,740,471
Ouray County	20.1	$2,486,928	$5,829,978
Saguache County	0.0	$0	$0
Area 1	129.4	$8,990,867	$30,336,642
Area 2			
Mesa County	40.3	$4,298,012	$10,978,385
Area 2	40.2	$4,282,142	$10,937,850
Area 3			
Dolores County	14.3	$1,182,500	$3,546,737
San Miguel County	28.5	$2,030,977	$6,740,462
Grand County (UT)	8.0	$182,226	$1,517,889
San Juan County (UT)	6.3	$436,453	$1,517,889
Area 3	57.2	$3,832,156	$13,322,977

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Under Alternative D, the closures would be similar to those of Alternative B; however, they would only apply to those areas of OHMA and UHMA that have no known or low potential for fluid mineral development. This would result in fewer impacted resources than under Alternative B. The socioeconomic impact from Alternative D (Table 3.16.19) is estimated to be 191.9 job years, $14,215,297 in labor income, and $46,033,487 in output. This corresponds to a loss of 34.8 job years, $2,889,865 in labor income, and $8,563,962 in output compared to the baseline of Alternative A.

Table 3.16.19. Direct Oil and Gas Regional Economic Impacts under Alternative D

County	Employment	Labor Income	Output
Area 1			
Delta County	31.7	$3,233,204	$8,547,382
Gunnison County	25.8	$819,691	$5,072,969
Hinsdale County	5.2	$33,085	$885,206
Montrose County	28.6	$1,203,722	$5,920,555
Ouray County	17.5	$2,156,000	$5,054,202
Saguache County	0.0	$0	$0
Area 1	108.9	$7,445,702	$25,480,314
Area 2			
Mesa County	31.4	$3,346,277	$8,547,374
Area 2	31.4	$3,346,277	$8,547,374
Area 3			
Dolores County	12.4	$1,027,004	$3,080,350
San Miguel County	25.1	$1,783,928	$5,920,547
Grand County (UT)	7.9	$180,373	$1,502,451
San Juan County (UT)	6.2	$432,014	$1,502,451
Area 3	51.6	$3,423,318	$12,005,799

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Under Alternative E, BLM management would seek to implement the fewest limitations compared to all the alternatives, and as a result, the impacts would be the least apart from Alternative A. While the area impacted by Alternative E would be large, the NSO stipulations would be much smaller than Alternative C. The socioeconomic impact from Alternative E (Table 3.16.20) is estimated to be 226.9 job years, $17,121,035 in labor income, and $51,106,394 in output. This corresponds to a loss of 0 job years, an increase of $15,873 in labor income, and a loss of $3,491,054 in output compared to the baseline of Alternative A.

Table 3.16.20. Direct Oil and Gas Regional Economic Impacts under Alternative E

County	Employment	Labor Income	Output
Area 1			
Delta County	41.3	$4,152,779	$10,978,393
Gunnison County	29.8	$945,825	$2,321,977
Hinsdale County	5.5	$34,917	$934,216
Montrose County	32.6	$1,370,420	$6,740,469
Ouray County	20.1	$2,486,927	$5,829,977

County	Employment	Labor Income	Output
Saguache County	0.0	$0	$0
Area 1	129.4	$8,990,869	$26,805,033
Area 2			
Mesa County	40.3	$4,298,011	$10,978,385
Area 2	40	$4,298,011	$10,978,385
Area 3			
Dolores County	14.3	$1,182,500	$3,546,737
San Miguel County	28.5	$2,030,977	$6,740,461
Grand County (UT)	8.0	$182,226	$1,517,889
San Juan County (UT)	6.3	$436,453	$1,517,889
Area 3	57.2	$3,832,155	$13,322,977

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

In addition to the estimated impact from each of the action alternatives, the marginal impact of changes to oil, natural gas, and CO2 leases was estimated using a difference of $1,000,000 of produced oil and gas as well as $600 of support activities. Based on the IMPLAN analysis, for every $1,000,000 change in production and $600 in support activities from the baseline there will be a change of 3.3 job years, $95,359 in labor income, and $1,282,994 in output. These marginal impacts would be the same for subsequent alternative impacts.

Grazing Allotments

Under Alternatives B1 and B2, BLM would apply the most restrictive conservation measures out of all the alternatives. As livestock grazing permits on BLM-administered lands are retired from use, installation of livestock fencing to keep livestock off public lands within the decision area could be required. Under Colorado Revised Statues Section 35-46-102, Colorado is a "fence out" state, meaning that it is the responsibility of a landowner, not the livestock operator, to fence out livestock from their lands. The mileage of livestock fencing required to fence out livestock is anticipated to include hundreds of miles of fencing, which, at a rate of $15,000 to $20,000 per mile, would be a significant cost to the BLM to install and maintain. Alternatively, Utah is a "fence in" state requiring livestock owners to ensure their livestock do not trespass onto adjacent parcels or onto roads and highways (Utah Code 41-6a-407). The cost of installing fencing to keep livestock on private lands and off BLM-administered grazing allotments in Utah would be the responsibility of livestock operators. It is anticipated that the cost to install and maintain fencing would represent a substantial adverse impact on operators in Utah. Under Alternative B, OHMA and UHMA threats to GUSG habitat are extended to a 4-mile buffer. Under Alternative B1, all grazing within the identified areas would be eliminated over the course of time as the renewal of permits is not allowed and no new permits would be

granted. Under Alternative B2, grazing would be limited to the period of July 16 through February 28. This management action would result in the loss of value for these grazing allotments due to the need for grazing to transition off of the permittee's hay land by the spring in order to grow hay for the coming winter. While these alternatives appear to have different impacts, they would ultimately result in similar reductions in grazing activity. There may be circumstances where individual ranchers may be able to continue to graze on their allotments due to specific characteristics, such as a lack of practical overlap between GUSG habitat and grazing land. In the best-case scenario where all remaining AUMs are economically viable, the socioeconomic impact from Alternative B2 (Table 3.16.21) is estimated to be 27.9 job years, over $750,000 in labor income, and over $3.4 million in output. This corresponds to a loss of 54 job years, $1.1 million in labor income, and $5.2 million in output compared to the baseline of Alternative A.

Table 3.16.21. Direct Grazing Regional Economic Impacts for Active AUMs under Alternative B2

County	Employment	Labor Income	Output
Area 1			
Delta County	3.0	$47,024	$243,003
Gunnison County	1.3	$20,830	$369,890
Hinsdale County	0.2	$0	$29,005
Montrose County	8.1	$141,912	$739,827
Ouray County	0.2	$6,261	$14,359
Saguache County	0.6	$116,094	$319,681
Area 1	13.4	$332,121	$1,714,765
Area 2			
Mesa County	10.5	$98,593	$628,209
Area 2	10.5	$98,593	$628,209
Area 3			
Dolores County	2.1	$63,061	$182,217
San Miguel County	3.1	$61,826	$361,849
Grand County (UT)	0.4	$29,893	$206,531
San Juan County (UT)	8.4	$174,851	$448,912
Area 3	14.0	$329,631	$1,199,509

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Under Alternative C, grazing allotments on Federal lands with GUSG habitats could be similar to Alternative A because all habitat would be kept open if impacts could be avoided, minimized, rectified, reduced/eliminated over time, or mitigated through compensatory mitigation. However, under Alternative C, decisions on livestock movement, range improvements, and

vegetation treatments may be subject to the conservation, enhancement, or restoration of GUSG habitat, potentially reducing forage available because permittees would be required to move livestock off BLM rangeland if necessary to protect GUSG. Under Alternative D, grazing would be allowed to continue on allotments if areas could progress toward meeting land health standards. As a result, the impacts of this alternative are anticipated to be similar to those under Alternative C. The socioeconomic impact from Alternatives C and D (Table 3.16.22) is estimated to be 95.9 job years, $1.9 million in labor income, and $8.8 million in output. This corresponds to an increase of 3.9 job years, roughly $100,000 in labor income, and roughly $150,000 in output compared to the baseline of Alternative A.

Table 3.16.22. Direct Grazing Regional Economic Impacts for Active AUMs under Alternatives C and D

County	Employment	Labor Income	Output
Area 1			
Delta County	7.5	$119,269	$616,339
Gunnison County	3.2	$52,836	$938,221
Hinsdale County	0.5	$0	$73,518
Montrose County	20.6	$335,605	$1,876,634
Ouray County	0.4	$15,882	$36,424
Saguache County	1.6	$294,468	$810,857
Area 1	33.8	$818,060	$4,351,993
Area 2			
Mesa County	26.6	$250,084	$1,593,474
Area 2	26.6	$250,084	$1,593,474
Area 3			
Dolores County	5.3	$159,964	$462,218
San Miguel County	8.0	$161,238	$943,678
Grand County (UT)	1.0	$75,830	$523,915
San Juan County (UT)	21.2	$443,512	$1,138,674
Area 3	35.5	$840,544	$3,068,485

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Under Alternative E, the CAA would be implemented on the Gunnison Basin, and grazing would be allowed to continue if it is managed in a way that improves GUSG habitat conditions for riparian areas. The socioeconomic impact from Alternative E (Table 3.16.23) is estimated to be 8.7 job years, $564,467 in labor income, and $3,115,965 in output. This corresponds to an increase of 3.6 job years, roughly $231,000 in labor income, and roughly $43,000 in output compared to the baseline of Alternative A.

Table 3.16.23. Direct Grazing Regional Economic Impacts for Active AUMs under Alternative E

County	Employment	Labor Income	Output
Area 1			
Delta County	-	-	-
Gunnison County	6.1	$101,637	$1,804,791
Hinsdale County	0.2	$0	$36,711
Montrose County	-	-	-
Ouray County	-	-	-
Saguache County	2.4	$462,830	$1,274,463
Area 1	8.7	$564,467	$3,115,965
Area 2			
Mesa County	-	-	-
Area 2	-	-	-
Area 3			
Dolores County	-	-	-
San Miguel County	-	-	-
Grand County (UT)	-	-	-
San Juan County (UT)	-	-	-
Area 3	-	-	-

Source: IMPLAN (2021)
Note: Economic impact results are divided into three main categories (Direct, Indirect, and Induced). Direct impacts are those caused by the specified activity (e.g., the purchase of drilling and pumping machinery). Indirect impacts are supply chain impacts from the direct impacts (e.g., the manufacturing of the oil and gas drilling and pumping machinery). Induced impacts are the economy-wide ripple effects (e.g., the local businesses supported by direct employee spending).

Beyond the estimated impacts on grazing allotments, the marginal impact of changes to grazing availability was estimated using a difference of 1,000 AUM. Based on the IMPLAN analysis, for every 1,000 AUM change from the baseline there will be a change of 0.3 job years, $7,515 in labor income, and $74,565 in output. These marginal impacts would be the same for subsequent alternative impacts.

Recreation

While specific changes to recreation-based socioeconomic impacts are not anticipated, the marginal impact of a loss of 10,000 parties from visiting recreation areas was estimated. Based on the IMPLAN analysis, for every change of 10,000 parties from the baseline there will be a change of 31 job years, $993,773 in labor income, and $3,114,446 in output. These marginal impacts would be the same for subsequent alternative impacts.

Nonmarket Values

Alternative B would allow for ecosystem restoration activities, which may benefit people who value healthy ecosystems. Unlike Alternative A, Alternative B would not support heritage-

related livestock grazing values and recreation-related consumer surplus if they were identified as threats, and could impact communities that historically engage in those activities. To the extent that transportation closures restore wilderness areas to less traveled states, individuals who value those attributes would benefit.

Alternative C would allow for ecosystem restoration activities, which may benefit people who value healthy ecosystems. However, continued livestock grazing would affect soil erosion and riparian health. Like Alternative A, Alternative C would continue to support heritage-related livestock grazing values and recreation-related consumer surplus.

Under Alternative D, BLM management would engage stakeholders to promote GUSG conservation within the analysis area. With increased ecosystem restoration activities occurring from the promotion of GUSG conservation, management may benefit people who value healthy ecosystems. However, Alternative D would also allow some continued activities which detract from non-market values.

Under Alternative E, BLM management would engage stakeholders to promote GUSG conservation within the analysis area. With increased ecosystem restoration activities occurring from the promotion of GUSG conservation, management may benefit people who value healthy ecosystems. However, Alternative E would also allow some continued activities which detract from non-market values.

3.16.2.4 Conclusion

Overall, Alternative B would have the greatest adverse impact on the economic status of the 11 counties within the analysis area due to the reduction in oil, gas, and mineral developments, and the reduction in livestock grazing. It would also have the greatest positive effect on nonmarket, social, and ecosystem service values due to the degree to environmental protection outlined under the Alternative. For communities that utilize and benefit from ecosystems that are preserved and derive value from undeveloped ecosystems. In general, the socioeconomic impact would be progressively greater under Alternatives C, D, E, and A, respectively. There are also positive social impacts associated with the management actions under these Alternatives, and while not quantifiable, they are anticipated to be relatively ranked from Alternative A with the least benefit, Alternatives C, D, and E approximately equal benefits greater than Alternative A, and Alternative B with the greatest benefit.

3.16.2.5 Cumulative Effects

The cumulative effects analysis area for socioeconomics is defined as the planning area and the timeframe for the analysis is the life of this RMP amendment.

The cumulative effects analysis addresses how past, present, and reasonably foreseeable future actions contribute to the socioeconomic consequences of GUSG conservation measures. The cumulative effects analysis considers activities on both Federal and non-Federal lands in the

decision area and vicinity. Because five BLM RMPs (Grand Junction, Gunnison Gorge NCA, Moab, Uncompahgre, and Tres Rios) already restrict surface-disturbing activities within 0.6 mile of a lek or more, GUSG conservation measures are already integrated into BLM management in much of the decision area. Ongoing BLM EIS activities in western Colorado, the Thompson Divide area, and Big Game EIS statewide plan also could have implications for the cumulative effects within the GUSG analysis area.

Activities on State, private, and other Federal lands (such as USFS lands) in the 11-county socioeconomic analysis area could interact with proposed BLM management actions to either amplify or attenuate the socioeconomic effects described above.

The socioeconomic consequences related to minerals could be affected by both private and public forces. Market fluctuations, such as the recent decline in oil prices, could affect private interest in developing Federal mineral resources. Regulatory constraints, including decisions related to pipelines and other infrastructure that depends on public lands, could affect the feasibility of developing both Federal and private mineral resources. Actions and events that cause mineral prices to fall would decrease the interest in mineral exploration and development in the decision area, while actions and events that cause mineral prices to rise would increase the interest in mineral exploration and development in the decision area.

Mineral price changes could interact with management actions to produce cumulative effects. Under No Action Alternative A, a rise in prices would increase mineral exploration and development relative to existing conditions. A decline in mineral prices would reduce activity under Alternative A, despite relatively permissive management. Under Alternative B, firms would require a higher price in order for activity to be economically feasible due to NSO stipulations. Therefore, the foregone economic opportunities would exist in the difference between the current economically viable price and whatever price would be necessary under the stipulations for economically viable activity to occur. A decline in prices would decrease the cost of foregone mining-related economic opportunities. Under Alternative C and sub-alternatives D1 and D2, a rise in mineral prices could improve the economic feasibility of exploration and development activities in areas subject to NSO and Controlled Surface Use (CSU) stipulations, while a decline in mineral prices would result in fewer economically feasible exploration and development opportunities.

The socioeconomics consequences related to public land grazing could be affected by the price of private forage, the conversion of ranch land to residential land, and management actions on adjacent public lands (such as USFS lands).

The socioeconomic consequences related to recreation could be affected by changes in motorized and non-motorized opportunities on adjacent lands and decision by adjacent landowners regarding access.

3.16.3. Issue 2: How would management actions under each alternative result in disproportionate adverse impacts on environmental justice populations?

Environmental justice conditions vary across the analysis area and some populations are of special concern because they may be affected by management activities due to availability and reliance on specific resources. As a result, these communities are identified and included in the analysis of alternatives in order to identify any impacts that may disproportionately or adversely affect them.

3.16.3.1 Analytical Methods and Assumptions

The following are indicators of environmental justice effects resulting from management actions related to the protection of GUSG within the analysis area:

- Environmental justice population presence (determined by low-income, minority, and tribal prevalence in decision area block groups)
- Qualitative assessment of disproportionately high and adverse human health and environmental impacts

3.16.3.2 Affected Environment

Environmental justice refers to the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies (CEQ 1997). Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires Federal agencies to determine if proposed actions would have disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority, low-income, and federally recognized Tribes. The CEQ issued supplemental guidance to assist agencies' compliance (CEQ 1997). The emphasis of environmental justice is on health effects and the benefits of a healthy environment. The CEQ has interpreted health effects with a broad definition: "Such effects may include ecological, cultural, human health, economic or social impacts on minority communities, low-income communities or Indian Tribes …when those impacts are interrelated to impacts on the natural or physical environment" (CEQ 1997). EO 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All, was enacted on April 21, 2023, to complement EO 12989. Until further guidance is issued on how to implement EO 14096, the BLM continues to implement EO 12898.

The BLM incorporates environmental justice efforts into the planning process by identifying potential areas where minority populations, low-income communities, and Tribes may be disproportionately affected by impacts from the proposed action(s). The BLM also incorporates

environmental justice efforts in documenting findings and recommended solutions (BLM 2005). In September 2022, BLM published IM2022-059 to update the best practices recommended for completion of environmental justice analyses (BLM 2022b). The BLM recognizes that the diversity of communities, projects, and processes requires the flexibility to adopt multiple approaches or select more sensitive or context-specific approaches. The BLM suggests the following criteria for identifying potential environmental justice populations:

- A minority community of concern is present if the percentage of the population identified as belonging to a minority group in a study area is (1) equal to or greater than 50 percent of the population or (2) meets the "meaningfully greater" threshold (CEQ 1997). Meaningfully greater is calculated by comparing the minority group population percentage with 110 percent of the reference area minority population.
- A low-income community of concern is present if the population in the study area experiencing income levels at or below 200 percent of the Federal poverty threshold is (1) equal to or greater than 50 percent of the population or (2) greater than or equal to the population in the reference area experiencing income levels at or below 200 percent of the Federal poverty threshold.

In addition, Tribal communities of concern are considered present if the percentage of the population identified as belonging to a tribal community is (1) equal to or greater than 50 percent of the population or (2) equal to or greater than 110 percent of the reference population. Federally recognized Tribes are considered environmental justice populations in and of themselves.

Table 3.16.24 displays the share of low-income, minority, and tribal populations in each of the analysis area counties (block groups level analysis is presented in Appendix R, *Environmental Justice Area Census Block Group Level Community Identification*)[4] and the respective reference areas. These conditions are used to evaluate the presence of environmental justice populations in the analysis area. In total, 144 block groups were identified as environmental justice communities due to the prevalence[5] of low-income populations, 24 due to the prevalence of minority populations, and 162 due to the prevalence of tribal populations. These translate in roughly 68.2 percent of the total block groups being flagged due to low-income, 11.4 percent due to minority, and 76.8 percent due to tribal populations. Map A.80 illustrates counties with environmental justice communities within the decision area.

[4] Block group level analysis introduces additional uncertainty due to comparatively low population sizes and higher sampling errors. Compared to county level data, block group level data offers more granular understanding of the location of environmental justice communities, and insights are analyzed in the context of their reliability.

Table 3.16.24. Environmental Justice Baseline Analysis Data

Geography	Low-Income Population (%)	Minority Population (%)	Tribal Population (%)
Delta County*	37.1%	20.0%	2.3%
Dolores County*	26.9%	19.8%	4.7%
Gunnison County*	30.6%	14.4%	1.9%
Hinsdale County	20.6%	14.1%	1.9%
Mesa County*	30.2%	19.8%	2.5%
Montrose County*	29.0%	24.8%	2.4%
Ouray County	17.7%	7.9%	1.9%
Saguache County*	42.6%	41.7%	3.0%
San Miguel County*	28.7%	14.9%	1.0%
Colorado State Reference Area (Meaningfully Greater Threshold in Parentheses)	23.6%	33.2% (36.5%)	1.9%
Grand County (UT)*	43.4%	18.8%	5.0%
San Juan County (UT)*	44.1%	56.6%	50.9%
Utah State Reference Area (Meaningfully Greater Threshold in Parentheses)	24.7%	22.7% (25.0%)	1.7%

Source: U.S. Census Bureau (2021b, 2021c)
* indicates that the county is identified as containing environmental justice communities.
Note: The environmental justice analysis area is visualized in Map A.80

The prevalence of low-income populations within the analysis area increases the likelihood that these block groups may experience disproportionately adverse consequences from economic changes due to a lower tolerance for economic instability. The environmental consequences analysis will evaluate if GUSG conservation measures disproportionately affect the environmental justice populations identified here. The BLM realizes that additional adverse impacts may be identified by local communities as management details are proposed. Therefore, the BLM would provide EJ communities of concern with opportunities to identify any perceived adverse environmental impacts at the time of site-specific analysis during the APD stage. As a result, the following discussion of environmental consequences assesses the effects for the issues identified by the BLM during scoping associated with the RMP process. The BLM would continue to work with potentially affected communities of concern to identify additional EJ issues as they arise. This would include additional environmental justice as an issue to be analyzed in detail, should concerns be identified through scoping and outreach to potentially affected communities.

3.16.3.3 Environmental Consequences

There are identified environmental justice populations throughout the analysis area. The presence of concentrations of low-income, minority, or Tribal populations in identified block groups increases the likelihood that the populations in these block groups may experience

disproportionately adverse consequences from economic changes. Therefore, environmental justice consequences are assessed for the entire analysis area.

Effects Common to All Alternatives

Under all alternatives, the following resource effects are anticipated to be the same.

Recreation

Under all alternatives, access to recreational activities would not increase above current levels to the extent that new facilities and infrastructure would be required to support the increased use. Reduced development of new recreation facilities and infrastructure is not anticipated to either increase or decrease regionwide recreation behavior.

Alternative A (No Action – Current Management)

Under Alternative A, there would be no changes to management activities. Therefore, management under Alternative A would not disproportionately and adversely affect environmental justice populations.

Action Alternatives

Under Alternative B, livestock grazing would be eliminated within occupied and unoccupied habitat. In both the Gunnison Basin and Poncha Pass populations, approximately 85 percent of AUMs overlap with GUSG habitat. Therefore, the expected effect of Alternative B is to reduce public land livestock grazing opportunities by significant portions across the analysis area. In the Monticello and Dove Creek populations, approximately 26 percent of AUMs overlap with GUSG habitat. Changes to livestock grazing management under Alternative B, without specific demographic information on impacted users are not anticipated to generate disproportionately adverse impacts. To the extent that environmental justice populations are permittees or employed by permittees, there may be some adverse and/or disproportionate impacts.

Alternative B would also close the analysis area to new mineral leasing. Federal oil and gas is extracted from wells in the Dolores, San Miguel and San Juan Counties, although its contribution is relatively small compared to liquid mineral resource extraction beyond the analysis area. Although five authorized prospecting permits would continue as valid existing rights under Alternative B, the potential for future economic activity related to potash would be curtailed. Changes to mineral management under Alternative B, without details of specific employment impacts, are not anticipated to generate disproportionately adverse impacts on environmental justice communities in the analysis area. To the extent to which environmental justice populations are permittees or employed by permittees for mineral extraction, there may be adverse and/or disproportionate impacts. A benefit of these management actions are the goal of reducing impacts from climate change, which environmental justice populations have historically experienced disproportionately adverse impacts from.

Alternative C would continue to authorize public land grazing in GUSG habitat, however, increased measures to protect the GUSG relative to Alternative A could increase some costs to the permittee. Although the potential environmental justice consequences would be muted relative to Alternative B, increased livestock operating costs would be more difficult to bear in the area due to high poverty rates if permittees or individuals employed by permittees are members of environmental justice communities.

In addition, under Alternative C, all occupied habitat would be open to leasing with a NSO stipulation. All unoccupied habitat would be open to leasing with a CSU stipulation to protect sagebrush and riparian habitat. The effect of these management actions on livelihoods in the analysis area is uncertain, but they are expected to increase operating costs for mining operations. If increased costs cause some mining operations to cease activities, employment and income in the analysis area would decrease, negatively affecting environmental justice populations to the extent that they rely on those projects for employment, economic activity, and tax revenue. Reduced mining activity could also reduce impacts from climate change, which environmental justice populations have historically experienced disproportionately adverse impacts from due to industrial siting and waste pollution and a lower ability to move away from inhospitable conditions. In addition to the global impacts on climate change, there would also be the potential for positive health impacts among environmental justice populations which historically experience higher adverse health impacts associated with industrial activity (such as increased cancer rates or deteriorated respiratory function).

Environmental justice impacts under Alternative D and E are anticipated to be the same as under Alternative C.

3.16.3.4 Cumulative Effects

The cumulative effects analysis area for environmental justice is defined as the planning area and the timeframe for the analysis is the life of this RMP amendment.

Under all alternatives, there could be cumulative effects on environmental justice populations in the surrounding area from past, present, and reasonably foreseeable future actions contribute to the environmental justice consequences of GUSG conservation measures. Cumulative effects analysis considers activities on both Federal and non-Federal lands in the analysis area and vicinity. Because five BLM RMPs (Grand Junction, Gunnison Gorge NCA, Moab, Uncompahgre, and Tres Rios) already restrict surface-disturbing activities within 0.6 mile of a lek or more, GUSG conservation measures are already integrated into BLM management in much of the analysis area.

Activities on State, private, and other Federal lands (such as USFS lands) in the 144 block-group environmental justice analysis area could interact with proposed BLM management actions to either amplify or attenuate the environmental justice effects described above. These activities

include access to recreation areas, and employment changes either as permittees or for permittees of oil and gas activities or livestock ranching.

The environmental justice consequences related to minerals could be affected by both private and public forces. Market fluctuations, such as the recent decline in oil prices, could affect private interest in developing Federal mineral resources. Regulatory constraints, including decisions related to pipelines and other infrastructure that depends on public lands, could affect the feasibility of developing both Federal and private mineral resources. Actions and events that cause mineral prices to fall would decrease the interest in mineral exploration and development in the analysis area, while actions and events that cause mineral prices to rise would increase the interest in mineral exploration and development in the analysis area.

Mineral price changes could interact with management actions to produce cumulative effects. Under No Action Alternative A, a rise in prices would increase mineral exploration and development relative to existing conditions. A decline in mineral prices would reduce activity under Alternative A, despite relatively permissive management. Under Alternative B, firms would have fewer opportunities to react to price changes due to management restrictions. Therefore, a rise in prices would increase the cost of foregone economic opportunities and reduced employment. These impacts could potentially be felt for environmental justice populations to the extent to which they are employed by these projects. A decline in prices would decrease the cost of foregone mining-related economic opportunities. Under Alternative C and sub-alternatives D1 and D2, a rise in mineral prices could improve the economic feasibility of exploration and development activities in areas subject to NSO and CSU stipulations, while a decline in mineral prices would result in fewer economically feasible exploration and development opportunities. In addition, human health impacts from increased mineral resource extraction near environmental justice populations could negatively impact not only individuals employed by the projects but every other at-risk individual in the area. And conversely, reductions to those activities could result in increased health outcomes among environmental justice communities.

The environmental justice consequences related to public land grazing could be affected by the price of private forage, the conversion of ranch land to residential land, and management actions on adjacent public lands (such as USFS lands). Impacts from public land grazing changes extend both to the permittees and the employees of the permittees when analyzing the potential environmental justice impacts.

The environmental justice consequences related to recreation could be affected by changes in access to subsistence activities, as well as motorized and non-motorized opportunities on adjacent lands and decisions by adjacent landowners regarding access.

3.16.4. Unavoidable Adverse Effects

Unavoidable adverse effects are those that remain once all mitigation measures have been implemented or for which there are no mitigation measures. NEPA (Section 102(2)(ii)) requires identifying any adverse environmental effects that cannot be avoided if the proposal is implemented. Although they are generally more evident during the implementation phase of planning, there are some unavoidable adverse effects that can be assessed through this RMP Amendment/EIS. In particular, management actions aimed at protecting a certain resource may have unavoidable adverse effects on other resources in the planning area.

3.16.5. Relationship of Short-term Uses and Long-term Productivity

Section 102(2)(C)(iv) of NEPA requires a discussion of the relationship of short-term local uses of the environment and the maintenance and enhancement of long-term productivity of resources. For this RMP Amendment/EIS, "short-term" is defined as occurring only during or immediately after implementation and "long-term" as occurring for an extended period after implementation (several years or more).

Restrictions on resource utilization and long-term conservation of GUSG habitat would generally be maximized under Alternative B, and would be progressively lower under Alternatives D, C, E, and A.

3.16.6. Irreversible and Irretrievable Commitment of Resources

CEQ and NEPA regulations require that the discussion of environmental consequences include a description of "any irreversible or irretrievable commitment of resources which would be involved in the proposal should it be implemented" (40 CFR 1502.16). An *irretrievable* commitment of resources in one that results in the loss of resources for a certain period of time. For example, the construction of a road will result in a loss of livestock or wildlife forage for as long as the road remains. An *irreversible* commitment of resources is one that results in the permanent loss of those resources. This can occur, for example, when the production of oil and gas depletes nonrenewable resources in the planning area. The BLM requires BMPs, reclamation, and mitigation to reduce the magnitude and scope of irretrievable and irreversible resource impacts of actions taken or authorized by the agency.

Management actions that promote GUSG conservation by prohibiting or restricting the usage of resources described in this chapter would result in irretrievable losses for oil and gas development, livestock grazing, and limited recreation activities.

CHAPTER 4. CONSULTATION AND COORDINATION

4.1. INTRODUCTION

This chapter describes the public outreach and participation opportunities made available throughout the development of this RMP Amendment/EIS, and consultation and coordination efforts with Native American Tribes, government agencies, and other stakeholders.

The BLM conducts land use planning activities in accordance with the requirements of NEPA, CEQ regulations, and DOI and BLM policies and procedures implementing NEPA. NEPA and associated laws, regulations, and policies require the BLM to seek public involvement early in and throughout the planning process to develop a reasonable range of alternatives to meet the purpose and need and to prepare environmental documents that disclose the potential impacts of alternatives. Public involvement and agency consultation and coordination were achieved through Federal Register notices, public and informal meetings, individual contacts, media releases, and the BLM GUSG ePlanning project website (https://eplanning.blm.gov/eplanning-ui/project/2019031/510).

4.2. PUBLIC INVOLVEMENT

Public involvement is a vital and legal component of the RMP Amendment/EIS process. Public involvement vests the public in the decision-making process and allows for full environmental disclosure. Guidance for implementing public involvement under NEPA is codified in 40 CFR Section 1506.6, thereby ensuring that Federal agencies make a diligent effort to involve the public in the NEPA process. FLPMA Section 202 directs the Secretary of the Interior to establish procedures for public involvement during land use planning actions on public lands. These procedures can be found in the BLM Land Use Planning Handbook (H-1601-1). Public involvement for the GUSG RMP Amendment/EIS involves the following:

- Public scoping before NEPA analysis begins to determine the scope of issues and alternatives to be addressed in the RMP Amendment/EIS.
- Public outreach via news releases.
- Collaboration with Federal, State, local, and Tribal governments and cooperating agencies.
- Public review of and comment on the Draft RMP Amendment/EIS, which analyzes likely environmental effects and identifies the BLM's preferred alternative.

While public scoping has been completed, public outreach and collaboration are ongoing throughout the RMP Amendment/EIS process. Information about the process can be obtained by the public at any time on the BLM GUSG ePlanning project website (https://eplanning.blm.gov/eplanning-ui/project/2019031/510). This website contains background

information about the project, a public involvement timeline and calendar, maps, and copies of public information documents released throughout the RMP Amendment/EIS process.

4.2.1. Public Scoping

The BLM initiated the public scoping period for this planning effort on July 6, 2022, with the publication of an NOI in the *Federal Register* (87 *FR* 40262-40266, July 6, 2022), and public scoping ran through August 22, 2022. The process included soliciting input from interested individuals and organizations, elected officials, and potential Federal, State, local, and Tribal governments and cooperating agencies in an effort to identify the scope of issues to be addressed in the RMP Amendment and assist in formulating reasonable alternatives.

The BLM hosted four public scoping meetings, consisting of two Zoom virtual meetings and two in-person open houses. The two in-person meetings occurred in Dove Creek and Gunnison (both rural communities which contain environmental justice populations). These meetings provided the public opportunities to learn more about the project and interact with and ask questions of BLM resource specialists and other staff. The BLM received a total of 49 unique written submissions during the public scoping period from individuals, organizations/non-profit groups, industry, and Federal, State, local, and Tribal governments. Table 4.1 lists the issue categories identified through scoping by resource. Refer to the GUSG RMP Amendment/EIS ePlanning website (https://eplanning.blm.gov/eplanning-ui/project/2019031/510) for more information about the scoping process and to view the *Final Scoping Report* (BLM 2022). The BLM translated all materials during public scoping (including the NOI) into Spanish and published them on ePlanning, allowing environmental justice communities to engage with the process.

Table 4.1. Issues Identified Through Public Scoping

Resource or Planning Issue	Number of Individual Comments
Energy and Mineral Development	51
Livestock Grazing	50
Fish and Wildlife	50
Special Management Areas	48
Planning Process	37
Recreation and Travel Management	33
Alternatives	28
Vegetation Management	26
Data/Best Available Science	19
Partnerships/Collaboration	19
Drought Management and Climate Change	13
Invasive Species	13
Lands and Realty, and ROWs	9

Resource or Planning Issue	Number of Individual Comments
Water, Soil, and Riparian Areas	5
Social, Economic, and Environmental Justice	1
Total	**402**

4.2.2. Future Public Involvement

Public participation opportunities will continue to be offered throughout the GUSG RMP Amendment planning process. A substantial contribution to this effort is the opportunity for the public to review and comment on this Draft RMP Amendment/EIS during a 90-day comment period. The BLM will consider and address substantive comments within the Proposed RMP Amendment/Final EIS. The release of the Proposed RMP Amendment/Final EIS will be followed by a 30-day protest period, as well as consistency reviews by the governors of Colorado and Utah. The resolution of legitimate protests and issues raised through the consistency reviews will culminate in the issuance of a ROD and Approved RMP Amendment by the BLM.

4.3. CONSULTATION AND COORDINATION

Federal laws require that the BLM consult with certain Federal and State agencies and entities and Native American Tribes (40 CFR 1502.25) during the NEPA decision-making process. The BLM has engaged with cooperating agencies. The BLM will continue to meet with interested agencies and organizations throughout the planning process, as appropriate, and will continue coordinating closely with cooperating partners.

4.3.1. Native American Tribal Consultation

The BLM mailed letters to the following Tribes on June 1, 2022, inviting them to participation in government-to-government consultation and to be a cooperating agency in the planning effort:

- Apache Tribe of Oklahoma
- Cheyenne & Arapaho Tribes of Oklahoma
- Cheyenne River Sioux Tribe
- Colorado River Indian Tribes
- Comanche Nation, Oklahoma
- Confederated Tribes of the Goshute
- Crow Creek Sioux Tribe
- Eastern Shoshone Tribe
- Jicarilla Apache Nation

- Kaibab Band of Paiute Indians
- Kewa Pueblo
- Kiowa Tribe
- Navajo Nation
- Northern Arapaho Tribe
- Northern Cheyenne Tribe
- Northwest Band of Shoshone Nation
- Oglala Sioux Tribe
- Ohkay Owingeh
- Paiute Indian Tribe of Utah
- Pawnee Nation
- Pueblo de Cochiti
- Pueblo of Acoma
- Pueblo of Isleta
- Pueblo of Jemez
- Pueblo of Laguna
- Pueblo of Nambe
- Pueblo of Picuris
- Pueblo of Pojoaque
- Pueblo of San Felipe
- Pueblo of San Ildefonso
- Pueblo of Sandia
- Pueblo of Santa Ana
- Pueblo of Santa Clara
- Pueblo of Taos
- Pueblo of Tesuque
- Pueblo of Zia
- Rosebud Sioux Tribe
- San Juan Southern Paiute
- Skull Valley Band of Goshute Indians
- Southern Ute Indian Tribe
- Standing Rock Sioux

- The Hopi Tribe
- Ute Indian Tribe of the Uintah and Ouray Reservation
- Ute Mountain Ute Tribe
- Ute Mountain Ute Tribe, White Mesa Community
- Ysleta del Sur Pueblo
- Zuni Pueblo

The BLM received no responses to its requests for formal participation in the planning process, from the 47 Tribes contacted. The BLM sent a follow-up letter to all 47 Tribes on March 13 2023, providing a status update on the planning effort relative to issues raised and the development of alternatives.

The BLM regularly engages in government-to-government consultation with the Southern Ute Tribe, Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah and Ouray Reservation regarding areas of interest and concern, which include the planning area. Issues raised include areas of tribal importance that are open or closed to leasing, and actions related to the Brunot Agreement. The Ute Mountain Ute Tribe has expressed interest and concern regarding livestock grazing management, as well as management decisions that may impact private lands on Pine Crest Ranch in the Gunnison Basin.

On October 11 to 14, 2022, the BLM met with the Ute Indian Tribe of the Uintah and Ouray Reservation during the Biannual Ute/BLM consultation meeting. On April 3 to 7, 2023, the BLM met with the Southern Ute Tribe, Ute Mountain Ute Tribe, and the Ute Indian Tribe of the Uintah and Ouray Reservation during the Biannual Ute/BLM consultation meeting. On August 28 to September 1, 2023, the BLM met with the Southern Ute Indian Tribe and the Ute Mountain Ute Indian Tribe during the Biannual Ute/BLM consultation meeting. The BLM will consult with Tribes for future actions related to the RMP Amendment/EIS.

4.3.2. Colorado State and Utah State Historic Preservation Office Consultation

The BLM initiated Section 106 consultation for the planning effort with the Colorado State Historic Preservation Office (SHPO), in accordance with the 2019 *State Protocol Agreement between the Colorado State Director of the Bureau of Land Management and the Colorado State Historic Preservation Officer Regarding the Manner in which the BLM will meet its Responsibilities Under the National Historic Preservation Act and the 2012 National Programmatic Agreement among the BLM, the Advisory Council on Historic Preservation (ACHP), and the National Conference of State Historic Preservation Officers* in a letter dated March 1, 2023. The SHPO responded by email on April 5, 2023, stating it had no comments on the planning effort due to its "nondestructive project planning" per 36 CFR 800.1(C), concluding the Section 106 process for Colorado.

The BLM informed the Utah SHPO that the planning effort is exempt from Section 106 consultation, in accordance with the 2020 *State Protocol Agreement between the Bureau of Land Management and the Utah State Historic Preservation Office Regarding the manner in which the Bureau of Land Management will meet its responsibilities under the National Historic Preservation Act as provided for in the National Programmatic Agreement*, after having determined the planning effort has no potential to cause effects to cultural resources.

The BLM will consult with the SHPOs, as appropriate per each state's protocol agreement, on future actions related to the RMP Amendment/EIS.

4.3.3. U.S. Fish and Wildlife Service Consultation

To comply with Section 7(c) of the ESA, the BLM consulted with the USFWS early in the planning process. The USFWS provided input on planning issues, data collection and review, and alternatives development in their role as a cooperating agency. The BLM will consult with the USFWS as appropriate. In addition, the BLM will consult with the USFWS to develop a biological assessment.

4.3.4. Cooperating Agencies

A cooperating agency is any Federal, State, or local government agency or Native American Tribe that enters into a formal agreement with the lead Federal agency to help develop an environmental analysis. More specifically, cooperating agencies "work with the BLM, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks" (BLM Land Use Planning Handbook H-1601-1).

On June 2, 2022, the BLM wrote to numerous Federal, State, and local agencies and Tribal governments, inviting them to participate as cooperating agencies for the GUSG RMP Amendment/EIS project. The BLM is engaging with 30 cooperating agencies. Cooperating agencies include 11 counties, nine State agencies, and 10 Federal agencies. Table 4.2 identifies which agencies agreed to participate in the planning process and which have signed a memorandum of understanding (MOU) with the BLM to participate as a cooperating agency in the preparation of the RMP Amendment/EIS.

Table 4.2. Cooperating Agencies

Agencies Participating as Cooperating Agencies	Agencies with Signed MOU
Counties	
Delta County, Colorado	X
Dolores County, Colorado	X
Grand County Commission, Utah	X
Gunnison County, Colorado	X
Mesa County, Colorado	X

Agencies Participating as Cooperating Agencies	Agencies with Signed MOU
Montezuma County, Colorado	X
Montrose County, Colorado	X
Ouray County, Colorado	X
Saguache County, Colorado	X
San Miguel County, Colorado	X
San Juan County, Utah	X
State Agencies	
Colorado Department of Natural Resources	X
Colorado Parks and Wildlife	X
Conservation Services Division, Colorado Department of Agriculture	X
Dove Creek Conservation District	
Upper Gunnison River Water Conservancy District	X
Colorado Department of Transportation	X
Grand Conservation District	X
San Juan Conservation District	X
Public Lands Policy Coordinating Office (includes Utah Division of Wildlife Resources)	X
Federal Agencies	
Environmental Protection Agency, Region 8	
National Park Service, DOI Intermountain Region (Regions 6,7, and 8), CURE/BLCG	X
Natural Resources Conservation Service, Colorado State Office	
U.S. Department of Agriculture Animal and Plant Health Inspection Service, Wildlife Services	X
U.S. Department of Energy, Office of Legacy Management	X
U.S. Fish and Wildlife Service, Colorado Ecological Services Field Office	X
U.S. Fish and Wildlife Service, Utah Ecological Services Field Office	X
U.S. Forest Service, Rocky Mountain Region	
Western Area Power Administration, Rocky Mountain Region	X
Natural Resources Conservation Service, Utah State Office	X

4.4. LIST OF PREPARERS

This Draft RMP Amendment/EIS was prepared by an interdisciplinary team of staff from the BLM and specialists from independent consulting firms. Table 4.3 lists the core team members and key contributors that prepared or contributed to the development of this Draft RMP Amendment/EIS. As discussed in Section 4.3, staff from numerous Federal, State, and local agencies also contributed to developing the Draft RMP Amendment/EIS.

Table 4.3. Contributors to the Draft RMP Amendment/Draft EIS

Member	Office	Project Role
BLM Team		
Leah Waldner	Colorado State Office	Sage-Grouse Coordinator/Biologist
Gina Phillips	Colorado State Office	Project Manager, NEPA Coordinator
Maggie Magee	Colorado Southwest District	Public Affairs Specialist, Planning and Project Support
Greg Goodwin	Colorado State Office	GIS Specialist
Bruce Krickbaum	Colorado State Office	Contracting Officer's Representative
Stephanie Connolly	Colorado Southwest District	Southwest District Manager
Shawn Reinhardt	Colorado Southwest District	Public Affairs Specialist
Kathy Brodhead	Gunnison Field Office	Wildlife Biologist
Nathaniel West	Tres Rios Field Office	Wildlife Biologist
Jared Reese	Utah State Office	Sage-Grouse Biologist
Rachel Miller	Gunnison Field Office	Natural Resource Specialist – Vegetation, Riparian and Wetlands
James Lovelace	Gunnison Field Office	Outdoor Recreation Planner
Jeffrey Christenson	Colorado State Office	Outdoor Recreation Planner
Dan Ben-Horin	Colorado State Office	Colorado National Conservation Lands Program Lead
Vince Beresford	Uncompahgre Field Office	Geologist – Solid Minerals
Laura Hartman	Tres Rios Field Office	Physical Scientist – Fluid Minerals
Chris Asbjorn	Uncompahgre Field Office	Lands and Realty
Michael Jensen	Tres Rios Field Office	Rangeland Management Specialist
Tara De Valois	Gunnison Field Office	Rangeland Management Specialist
Angela Losasso	Uncompahgre Field Office	Planning and Environmental Coordinator
William Stevens	Moab Field Office	Socioeconomics and Environmental Justice Specialist
Brian Stevens	Gunnison Field Office	Fire Management Specialist
Stacey Colon	Upper Colorado River District	Planning and Environmental Coordinator
Forrest Cook	Colorado State Office	Natural Resource Specialist – Air Resources
James (Jim) Miller	Colorado State Office	Natural Resource Specialist – Climate Change
Kevin Hyatt	Grand Junction Field Office	Hydrologist – Soil Resources
Ed Rumbold	Colorado State Office	Hydrologist – Soil Resources
Marlin Deras	Grand Junction Field Office	Natural Resource Specialist - Vegetation
Eduardo Duran	San Luis Valley Field Office	Natural Resource Specialist
John Ring	Colorado State Office	Forester
James Savage	SWD Fire and Aviation	Supervisory Fuels Specialist

Member	Office	Project Role
Tim Finger	Colorado State Office	Outdoor Recreation Planner
Erin Leifeld	Colorado State Office	Tribal Liaison Officer
Consultant Team		
ICF		
Logan Simpson		