FINAL Supplemental Environmental Impact Statement, Greater Sage-Grouse 2020

Three Hard Looks : 2015, 2019 and 2020

143 alternatives
considered in **18 EISs**

54
public meetings

48,734
total pages of NEPA analysis

2,313
people attended

$17.1 million
total cost

326
partners and cooperators

Public Comments

8,512 unique scoping comments

16,862 substantive comments on draft EISs

Habitat Investments

Treatment and Restoration

2013–19	**$294 million**	**2.7 million acres**
2020	**$37 million**	**584,000 acres**

Oregon

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Oregon State Office
P.O. Box 2965, Portland, Oregon 97208
www.blm.gov/or

Dear Reader:

The Oregon Greater Sage-Grouse Final Supplemental Environmental Impact Statement (FSEIS) is available for your review. The Bureau of Land Management (BLM) prepared this document in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended; the Federal Land Policy and Management Act of 1976, as amended, implementing regulations; and other applicable laws and policies. Please note when reading this document that we refer to the entire planning process that culminated in a Record of Decision in March 2019 as the 2019 Planning Process or Effort. The NEPA analysis, including the Draft Environmental Impact Statement (DEIS) and the Final Environmental Impact Statement (FEIS) were completed in 2018, so we refer to those documents as the 2018 DEIS and the 2018 FEIS.

The affected area includes the BLM Burns, Lakeview, and Vale District Offices in Oregon and encompasses approximately 60,649 surface acres in research natural areas. The BLM has prepared this FSEIS to review its previous NEPA analysis and clarify and augment it where necessary. This FSEIS addresses four specific issues: the range of alternatives, the need to take a hard look at environmental impacts, the cumulative effects analysis, and the BLM's approach to compensatory mitigation. The BLM's FSEIS will help the BLM determine whether its 2015 and 2019 land use planning and NEPA processes have sufficiently addressed Greater Sage-grouse habitat conservation or whether the BLM should initiate a new land use planning process to consider additional alternatives or new information.

Following the publishing of the Notice of Availability for the Draft Supplemental Environmental Impact Statement in the *Federal Register* on February 21, 2020, (85 FR 10186) the BLM received public comments for 90 days, through May 21, 2020. Across the Oregon Draft SEIS and five other Draft SEISs for other BLM State Offices, a total of 126,062 submissions were received; 222 of these were considered unique submissions. In addition, the BLM received 125,840 campaign letters spearheaded by two, separate organizations. In accordance with the NEPA, the BLM reviewed and considered all substantive comments received and provides responses to such comments in this FSEIS.

To address public comments raised during this supplemental analysis, the BLM convened a team of biologists and land use planners to evaluate scientific literature provided to the agency. Upon review, the BLM found that the most up-to-date Greater Sage-grouse science and other information has incrementally increased and built upon the knowledgebase of Greater Sage-grouse management evaluated by the BLM most recently in its 2019 land use plan amendments but does not change the scope or direction of the BLM's management. However, new science does suggest adaptations to management may be warranted at site-specific scales.

After reviewing public comments and completing the new science evaluation, the BLM determined that the most recent scientific information relating to Greater Sage-grouse is consistent with the BLM's environmental analysis supporting its 2019 Greater Sage-grouse land use plan amendments. You can access the FSEIS on the project website at: https://go.usa.gov/xdY8E. Hard copies are also available for public review at BLM offices within the planning area.

Thank you for your continued interest in Greater Sage-grouse management. We appreciate the information and suggestions you contributed to the NEPA process.

Sincerely,

Barry R. Bushue
State Director
Oregon/Washington

Oregon Greater Sage-Grouse
Final Supplemental Environmental Impact Statement
November 2020

Responsible Agency: United States Department of the Interior
Bureau of Land Management

Abstract: This final supplemental environmental impact statement (FSEIS) has been prepared by the United States Department of the Interior (DOI), Bureau of Land Management (BLM). The FSEIS describes and analyzes the eight alternatives considered during the 2015 and 2019 sage-grouse planning processes, BLM's consultation and coordination process with federal and state stakeholders, and the rigorous analysis completed to align BLM sage-grouse management with the State of Oregon's plans.

On October 16, 2019, the US District Court for the District of Idaho issued an order granting a motion for a preliminary injunction filed by Plaintiffs Western Watersheds Project, WildEarth Guardians, Center for Biological Diversity, and Prairie Hills Audubon Society. The court found that the Plaintiffs were likely to succeed on the merits of their claims that the BLM violated the National Environmental Policy Act (NEPA) when adopting the 2019 sage-grouse plans. The BLM has prepared this FSEIS to review its previous NEPA analysis, clarify and augment it where necessary, and provide the public with additional opportunities to review and comment. The BLM's FSEIS will help the BLM determine whether its 2015 and 2019 land use planning and NEPA processes have sufficiently addressed sage-grouse habitat conservation or whether the BLM should initiate a new land use planning process to consider additional alternatives or new information. To inform this decision that the BLM will make, it has prepared this FSEIS to address four specific issues: the range of alternatives, need to take a "hard look" at environmental impacts, cumulative effects analysis, and the BLM's approach to compensatory mitigation.

References to the CEQ regulations throughout this SEIS are to the regulations in effect prior to September 14, 2020. The revised CEQ regulations effective September 14, 2020 are not referred to in this SEIS because the NEPA process began prior to this date.

For further information, contact:

Jim Regan-Vienop, BLM Oregon
Telephone: (503) 808-6062
Bureau of Land Management, Oregon State Office
1220 S.W. 3rd Avenue
Portland, OR 97204

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ACRONYMS AND ABBREVIATIONS

	Full Phrase
ACEC	area of critical environmental concern
AIM	assessment, inventory, and monitoring
ARMPA	approved resource management plan amendment
AUM	Animal Unit Month
BLM	Bureau of Land Management
BMP	best management practice
BSU	Biologically Significant Unit
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COT	Conservation Objectives Team
CSU	controlled surface use
DOI	US Department of the Interior
DSEIS	draft supplemental environmental impact statement
EIS	environmental impact statement
ESA	Endangered Species Act of 1973
FLPMA	Federal Land Policy and Management Act
FSEIS	final supplemental environmental impact statement
GeoBOB	Geographic Observation data base
GHMA	general habitat management area
IM	Instruction Memorandum
LUPA	land use plan amendment
MOA	memorandum of agreement
MZ	management zone
NEPA	National Environmental Policy Act
NOA	notice of availability
NOI	notice of intent
NRCS	Natural Resources Conservation Service
NSO	no surface occupancy
NTT	National Technical Team
ODFW	Oregon Department of Fish and Wildlife
PAC	priority area for conservation
PHMA	priority habitat management area
RDF	required design features
RMP	resource management plan
RMPA	resource management plan amendment

RNA	research natural area
ROD	record of decision
ROW	right-of-way
SFA	Sagebrush Focal Area
SGTF	Sage-Grouse Task Force
SO	Secretarial Order
TL	timing limitation
US	United States
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
WAFWA	Western Association of Fish and Wildlife Agencies

Executive Summary

ES.1 INTRODUCTION

Greater Sage-Grouse is a state-managed species that depends on sagebrush steppe ecosystems. These ecosystems are managed in partnership across its range by federal, state, and local authorities. State agencies responsible for fish and wildlife management possess broad responsibility for protecting and managing fish, wildlife, and plants within their borders, except where preempted by federal law. Similarly, the BLM has broad responsibilities to manage public lands and resources for the public's benefit. Approximately half of Greater Sage-Grouse habitat is managed by the BLM and Forest Service. State agencies are at the forefront of efforts to maintain healthy fish and wildlife populations and to conserve at-risk species. State-led efforts to conserve the species and its habitat date back to the 1950s. For the past two decades, state wildlife agencies, federal agencies, and many others in the range of the species have been collaborating to conserve Greater Sage-Grouse and its habitats. The BLM prepared this Final Supplemental Environmental Impact Statement (FSEIS) to clarify analysis from the 2018 Final Environmental Impact Statement (2018 Final EIS) published as part of the 2019 Plan Amendment Process and subsequent Record of Decision. This FSEIS clarifies the range of alternatives analyzed, the range-wide nature of the analysis, and other aspects of the 2018 Final EIS where information was incorporated by reference from the 2015 Greater Sage-Grouse Land Use Plan Amendments.

In 2010, USFWS determined that listing the Greater Sage-Grouse under the Endangered Species Act of 1973 (ESA) was "warranted, but precluded" by other priorities. In its determination, the USFWS found there to be inadequate regulatory mechanisms to protect Greater Sage-Grouse and conserve its habitat. In response, the BLM, in coordination with the Forest Service, USFWS, and state agencies, developed a management strategy that included targeted Greater Sage-Grouse management actions. In 2015, the BLM and Forest Service adopted land use plan amendments and revisions to 98 BLM and Forest Service land use plans across ten western states. These planning decisions addressed, in part, threats to the Greater Sage-Grouse and its habitat. The amended land use plans govern the management of 67 million acres of Greater Sage-Grouse habitat on federal lands.

In September 2015, the USFWS determined that the Greater Sage-Grouse did not warrant listing under the ESA. The USFWS based its 2015 determination, in part, on the regulatory certainty provided by the conservation commitments and management actions in the federal planning decisions, as well as on other private, state, and federal conservation efforts.

The 2015 plans recommended that sagebrush focal areas (SFAs) be proposed for withdrawal from location and entry under the Mining Law of 1872. While the BLM later proposed to withdraw these areas, it canceled that proposed withdrawal on October 11, 2017. The BLM determined that the proposal to withdraw these areas was unreasonable in light of the data that showed that mining affected less than 0.1 percent of Greater Sage-Grouse across its occupied range.

On March 29, 2017, the Secretary of the Interior issued Secretary's Order 3349, *American Energy Independence*. It ordered DOI agencies to reexamine practices "to better balance conservation strategies and policies with the equally legitimate need of creating jobs for hard-working American families."

On June 7, 2017, the Secretary issued Secretary's Order 3353 with a purpose of enhancing cooperation among eleven western states and the BLM in managing and conserving Greater Sage-Grouse. Secretary's Order 3353 directed an Interior Review Team, consisting of the BLM, the US Fish and Wildlife Service (USFWS), and US Geological Survey (USGS), to coordinate with the Greater Sage-Grouse Task Force. They also were directed to review the 2015 Greater Sage-Grouse plans and associated policies to identify provisions that may require modification, including opportunities to enhance consistency with individual state plans and better balance the BLM's multiple-use mission, as directed by Secretary's Order 3349.

On August 4, 2017, the Interior Review Team submitted its Report in Response to Secretary's Order 3353. The report the team recommended modifying the Greater Sage-Grouse plans and associated policies to better align with the individual state plans. On August 4, 2017, the Secretary issued a memo to the Deputy Secretary directing the BLM to implement the recommendations found in the report.

In the *Federal Register* of October 11, 2017, the BLM published the Notice of Intent to Amend Land Use Plans Regarding Greater Sage-Grouse Conservation and Prepare Associated Environment Impact Statements or Environmental Assessments.

The BLM continues to prioritize efforts to conserve Greater Sage-Grouse and restore sagebrush habitat. From Fiscal Year 2017 to Fiscal Year 2020, the BLM has treated on average over 550,000 acres of Greater Sage-Grouse habitat every year. In Fiscal Year 2020, the BLM treated approximately 584,000 acres. These 2020 treatments included approximately 162,000 acres of conifer removal; 71,000 acres of fuel breaks; 203,000 acres with invasive species treatments; 42,000 acres of habitat protection; and restored habitat on 106,000 acres of uplands and over 700 acres of riparian habitat. In 2020, Oregon conducted habitat treatments on 90,000 acres. The BLM is committed to working directly with local communities on sagebrush conservation efforts and to emulate the successes demonstrated by the Natural Resources Conservation Service (NRCS) through the Greater Sage-Grouse Initiative on private lands. These efforts include:

- an agreement with the Intermountain West Joint Venture to work with local cattlemen associations to improve sagebrush rangeland conditions through actions such as controlling invasive species, improving mesic areas, and removing invasive conifers;
- a Memorandum of Understanding between the BLM, NRCS, and the Forest Service resulting in development of a map that identifies areas where the agencies have ongoing restoration projects and opportunities for additional collaboration across land ownerships and associated landscapes;
- promoting a locally led collaborative conservation, the BLM, the USFWS, and the Geological Survey are collaborating with the Western Association of Fish and Wildlife Agencies as they lead the development and implementation of the Sagebrush Conservation Strategy;
- working with livestock permittees and stakeholders on "targeted grazing" to utilize grazing as a tool to create and maintain fuel breaks to manage the threats of wildfire and invasive species in or next to Greater Sage-Grouse habitats; and,
- working to develop "outcome-based grazing" to provide greater flexibility for livestock permittees and land managers to meet habitat objectives as conditions on-the-ground change.

During the 2019 planning process's public scoping period, the BLM sought public comments on whether all, some, or none of the 2015 Greater Sage-Grouse plans should be amended, what issues should be

considered, and if plans should be completed at the state level rather than at the national level. In addition, the BLM recognized that the Greater Sage-Grouse is a state-managed species that depends on sagebrush steppe habitats managed in partnership by federal, state, and local authorities. Input from governors would weigh heavily when the BLM considers what management changes should be made and when ensuring consistency with the BLM's multiple-use mission.

Further, in the 2018 Draft EIS the BLM requested public comments on the BLM's approach to compensatory mitigation. In response to these comments and information supplied by the states about how to align with their compensatory mitigation laws and policies, the 2018 Final EIS clarified the BLM's approach to compensatory mitigation in its Management Alignment Alternative. Through the Draft Supplemental EIS, the BLM sought additional comment from the public on compensatory mitigation.

This FSEIS also addresses and clarifies the BLM's reliance on scientific information, including how the BLM addresses the recommendation and objectives in the National Technical Team (NTT) and Conservation Objectives Team (COT) reports. The BLM, the USFWS, states and other federal agency partners prepared the NTT (2011) and the COT (2013) reports to identify rangewide sage-grouse conservation objectives and conservation measures that would: inform the USFWS 2015 decision under the Endangered Species Act and inform partners; and provide guidance for the BLM to consider through land use planning, which the BLM did in 2015 and 2019, and again in this FSEIS.

Further, at the time that the NTT and COT reports were being developed, the BLM, USFWS, and state agencies had not completely developed or established the robust programs to conserve Greater Sage-Grouse that exist today.

In 2015, the BLM developed an action alternative around the NTT report. In the 2018 Final EIS, the BLM incorporated this analysis by reference. The BLM also coordinated with the USFWS during the process culminating in the 2019 RODs to make sure that the conservation measures from the NTT and COT informed the management alignment alternative (**Appendix C**)**.** Including the USFWS as a cooperating agency during the 2019 planning process ensured that BLM used the same materials and newest science that the USFWS uses and recommends for Greater Sage-Grouse management.

This FSEIS also clarifies how the BLM considered comments, including those of other federal agencies (including EPA) and experts, when developing its 2019 planning decisions.

In 2018, the Environmental Protection Agency (EPA) provided comments on the Draft RMPAs/EISs. Specifically, they provided six comments on the Idaho Draft RMPA/EIS, seven comments on the Nevada/Northeast California Draft RMPA/EIS, six on the Utah Draft RMPA/EIS, three on the Wyoming Draft RMPA/EIS, six on the Oregon Draft RMPA/EIS, and five on the Colorado Draft RMPA/EIS. EPA's comments include suggestions and questions regarding lek buffers, recent science, mitigation, adaptive management, and fluid minerals. BLM responded to each of EPAs comments and made corrections and/or changes in the 2018 Final EISs. The complete EPA comment analysis can be found in the decision record.

ES.2 PURPOSE OF AND NEED FOR ACTION

In the Federal Land Policy and Management Act (FLPMA), Congress provided the BLM with discretion and authority to manage public lands for multiple use and sustained yield and declared it the policy of the United States to, consistent with the laws governing the administration of the public lands,

coordinate planning activities with the land use planning and management programs of other federal, state, and local governments. Further, FLPMA specifically provides that it neither enlarges nor diminishes the authority of the states in managing fish and wildlife. As the sovereign entities with the lead role in managing game species, including Greater Sage-Grouse, states play a critical role in conserving the Greater Sage-Grouse and its habitat.

In the 2019 Planning effort the BLM modified its approach to managing Greater Sage-Grouse habitat in land use plans by (1) enhancing cooperation and coordination with the State of Oregon, (2) aligning with DOI and BLM policies issued since 2015, and (3) incorporating appropriate management flexibility and adaptation to better align with Oregon's conservation plan. The BLM achieved these goals while maintaining the vast majority of sage-grouse protections it incorporated into its land use plans in 2015. By implementing these land use plan conservation measures and continuing to exercise its discretion to approve future project proposals under appropriate terms and conditions or deny them where appropriate, the BLM can adequately protect sage-grouse and its habitat while meeting its general obligation under FLPMA to manage public lands under principles of multiple use and sustained yield.

On October 16, 2019, the US District Court for the District of Idaho issued an order granting a motion for a preliminary injunction filed by Plaintiffs Western Watersheds Project, WildEarth Guardians, Center for Biological Diversity, and Prairie Hills Audubon Society. The court found that the Plaintiffs were likely to succeed on the merits of their claims that the BLM violated the National Environmental Policy Act (NEPA) when adopting the 2019 sage-grouse plans.

The BLM has prepared this FSEIS to review its previous NEPA analysis, clarify and augment it where necessary, and provide the public with additional opportunities to review and comment. The BLM's FSEIS will help the BLM determine whether its 2015 and 2019 land use planning and NEPA processes have sufficiently addressed sage-grouse habitat conservation or whether the BLM should initiate a new land use planning process to consider additional alternatives or new information. To inform this decision that the BLM will make, it has prepared this FSEIS to address four specific issues: the range of alternatives, need to take a hard look at environmental impacts, cumulative effects analysis, and the BLM's approach to compensatory mitigation.

ES.3 ITEMS TO BE CLARIFIED IN THIS FSEIS

The items considered in this FSEIS are related to the analysis in the 2018 Final EIS. These items are:

- clarifying the range of alternatives (including how the BLM considered the full range of the 2015 alternatives in the 2019 planning process),
- taking a hard look and using the best available science (including clarified effects analysis, how the 2015 and 2019 Final EISs addressed the NTT and COT recommendations and conservation measures) (**Appendix C)**,
- clarifying that the cumulative effects analysis was done at the range wide level and organized by WAFWA Management Zone (MZs) Updated language also highlights why WAFWA MZs were used,
- an updated Reasonable Foreseeable Future Actions.

ES.4 NEW SCIENCE AND INFORMATION CONSIDERED BY THE BLM

Land use plan decision-making is a multi-faceted and collaborative process. It involves evaluating scientific information at landscape scales to anticipate the potential environmental consequences of

different policy and regulatory considerations. Science aides this process by educating policy makers on these potential consequences. Science does not and cannot tell policy makers how to weigh competing values and goals, particularly in a multiple-use environment.

The BLM has long utilized the best available science and information to facilitate informed choices among different values for policy and management decisions regarding the Greater Sage-Grouse. The agency has simultaneously sought to adapt and align its efforts with other federal and state management frameworks. Science, regulations, and policy considerations help define how the BLM can adaptively implement its multiple-use mission, including habitat management, while supporting a state's obligation to manage wildlife populations.

The BLM's decade-long land use planning process for Greater Sage-Grouse began with the best available science at that time, and the agency has consistently built upon that body of knowledge to inform its adaptive management. In 2011, the BLM assembled a "National Technical Team" (NTT), comprising state and federal land managers and scientists to review the scientific literature available at that time. On December 21, 2011, the NTT finalized a document entitled *A Report on National Greater Sage-Grouse Conservation Measures*, also known as the *National Technical Team Report* (NTT Report). The NTT Report was developed to synthesize "the latest science and best biological judgement" from the available literature (NTT Report, Introduction, page 5) and was not itself a new or original scientific product.

While the NTT Report provided a synthesis of available information regarding sage-grouse management, it did not evaluate conservation measures against other regulatory and policy requirements associated with land use planning and NEPA; nor did it provide conservation measures specific to all populations, landscapes, and site-specific condition. The NTT Report acknowledges this inherent uncertainty and clearly indicates the conservation measures are not management decisions. Rather, the NTT Report was intended "to assist [the BLM] in making management decisions." (NTT Report, Introduction, page 5.) In other words, "the conservation measures described in [the] report *are not an end point* but, rather, *a starting point* to be used in the BLM's planning processes" (ibid, page 5) (emphasis added). The BLM was not bound to the NTT Report recommendations and has subsequently built upon that body of knowledge and considered new policy and regulatory considerations to adapt its management to changing circumstances.

The BLM understood the NTT Report to be a compendium of conservation measures based on best science available and was meant to be adapted based on site-specific considerations. The BLM anticipated adjustments to the conservation measures to address local ecological site variability, regulatory frameworks, and an evolving body of science related to Greater Sage-Grouse management, and intended its management and planning process to be adaptive to changing scientific, regulatory, and policy considerations. In point of fact, the BLM issued policy in 2012 (IM 2012-044) guiding use of the NTT Report in land use planning and instructing the BLM to consider its recommended conservation measures insofar as they were consistent with applicable law.

While the BLM's Greater Sage-Grouse habitat management efforts build upon recommendations in the NTT Report, its approach has adapted as expected to new information, policy, regulation, and informed choices among competing uses of Public Lands. At regular intervals, the BLM has assessed and synthesized new science, using it to inform efforts to better aligned its management with state and local frameworks. The BLM first initiated its own assessment through the NTT as described above, followed by the USFWS efforts to develop the COT report. The BLM then commissioned a second synthesis

from USGS in 2017 prior to initiating the 2019 planning process. Finally, the BLM coordinated with USGS in 2020 to review scientific literature presented during the DSEIS comment period. The USGS has continuously evaluated science published after 2018 and has maintained an annotated bibliography of scientific research on greater sage-grouse. The BLM relied upon USGS' annotated bibliography for the 2020 review. Out of the 75 articles considered by the BLM as new science, USGS had already reviewed 67 articles. BLM biologists summarized the remaining eight papers submitted by the public for validation.

The BLM plans also call for rigorous annual reviews of adaptive management triggers and anthropogenic disturbances, that allows the plans to adapt with changing information and conditions on the ground.

This common progression of informed decision-making and adaptive management is further exemplified by the BLM application of the Conservation Objectives Team report.

In 2012 the director of the USFWS convened a Conservation Objectives Team (COT) of state and USFWS representatives. The team developed a peer-reviewed report (COT Report) that established broad conservation objectives based on the "best scientific and commercial data available at the time of its release" (COT Report, page ii). Like the NTT, the COT Report was an assessment of the best available science at the time and did not present new or original scientific research.

The COT Report, released in March 2013, identifies conservation objectives, measures, and options for each of the Greater Sage-Grouse threats assessed. The COT Report also identified Priority Areas for Conservation (PACs) which were described as "the most important areas needed for maintaining Greater Sage-Grouse representation, redundancy, and resilience across the landscape" (ibid, page 13). In contrast to the NTT Report, the COT Report identified threats to each PAC, recognizing that threats vary across the range, and therefore corresponding management should vary to address those threats. The preface to the report is clear that the COT report "is guidance only" and that the "identification of conservation objectives and measures does not create a legal obligation beyond existing legal requirements" (ibid, page ii). Further, the preface notes that the objectives "are subject to modification as dictated by new findings, changes in species' status, and the completion of conservation actions" (ibid, page ii).

Similar to the NTT Report, the BLM understood that the COT Report was a compendium of conservation objectives established to relative to identified threats to Greater Sage-Grouse conservation. The COT Report recommended objectives for the BLM to evaluate and consider but was not bound to achieving only those objectives. Further, like the NTT Report, the COT recognizes uncertainty in land management and anticipated adapting management strategies to changing scientific, regulatory, and policy considerations. In the management of natural resources such as Greater Sage-Grouse habitat, it is unlikely that a manager knows with certainty that a management action will result in precisely the expected outcome. While science and information can inform the managers decision among a variety of management options, it cannot account for all variability across landscapes, time, and conditions. The COT acknowledges that varying management strategies may be employed to achieve the recommended conservation objectives. The COT does not establish an expectation that conservation outcomes will be uniform across all BLM managed landscapes. The BLM further recognizes the challenges land managers face when selecting from among a range of management options to achieve objectives and outcomes that may be uncertain due to varying natural conditions. This recognition creates a variable management framework wherein the BLM may choose locally from among a range of

informed science, policy, and regulatory considerations. See **Appendix C** for a full discussion of the NTT and COT reports and their role in informing decisions in the 2015 and 2019 plans.

The 2015 plans took a one-size-fits-all approach. Through a decade of land use planning and implementation of Greater Sage-Grouse management decisions, the BLM has continuously collaborated in the development, synthesis, and application of new science. Throughout this planning and conservation effort, the BLM has remained well-connected to our partners. Many of these cross-agencies partnerships are facilitated by the Western Association of Fish and Wildlife Agencies (WAFWA). For example, WAFWA has convened the Sagebrush Executive Oversight Committee to coordinate sage-grouse and sagebrush conservation efforts across Federal and State agencies. The BLM is represented on this committee by the Assistant Director for Resources and Planning. WAFWA has also formed sub-committees to work on a Sagebrush Conservation Strategy and a 2020 Sage-grouse Conservation Assessment, of which the latter will rely heavily on the BLM's Five-Year Sage-grouse Monitoring Report. The BLM has also formed other partnerships, such as with the Natural Resources Conservation Service's Sage Grouse Initiative (now a component of NRCS's Working Lands for Wildlife initiative) and with the Intermountain West Joint Venture. There are also several state-level agreements related to BLM's management of sagebrush and sage-grouse.

As acknowledged by the NTT and COT reports and the growing body of scientific information, there exist site-specific variables not anticipated in either report or adopted in the 2015 approved plans. The 2019 plans thoughtfully considered the unique needs of each state's specific regulatory and policy considerations and addressed new science in that capacity. This tailored and adaptive approach accounted for more site-specific conditions, maximizing the collaborative approach between federal and state resource management, in a way that the 2015 plans failed to do.

To address science and information raised through public comments on this supplemental analysis, the BLM convened a team of biologists and land use planners to evaluate scientific literature provided to the agency. The BLM found that the most up-to-date Greater Sage-Grouse science and other information has incrementally increased, and built upon, the knowledgebase of Greater Sage-Grouse management evaluated by the BLM most recently in its 2019 land use plan amendments, but does not change the scope or direction of the BLM's management. While the NTT, the COT and this new science and information remain consistent with the scope of the 2019 planning decisions, new science does suggest adaptations to management may be warranted at site-specific scales. This is precisely the approach envisioned by the NTT and COT reports as well as the BLM's decades long planning efforts to address local actions that may affect Greater Sage-Grouse. Where appropriate, the BLM will consider this science and information through implementation-level NEPA analysis, consistent with its approved land use plans, policies, and regulatory frameworks.

ES.5 ANALYSIS CONCLUSIONS

The additional information provided in this SEIS do not change analytical conclusions from either the 2018 Proposed RMPA/Final EIS or the 2015 Proposed LUPA/Final EIS. See summary of environmental consequences from 2018 in Section ES.5 of the Proposed RMPA/Final EIS and from 2015 in Section 2.12 of the Proposed LUPA/Final EIS.

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Chapter 1. Purpose and Need for Action

1.1 INTRODUCTION

Greater Sage-Grouse is a state-managed species that depends on sagebrush steppe ecosystems. These ecosystems are managed in partnership across its range by federal, state, and local authorities. State agencies responsible for fish and wildlife management possess broad responsibility for protecting and managing fish, wildlife, and plants within their borders, except where preempted by federal law. Similarly, the Department of Interior (DOI) has broad responsibilities to manage federal lands and resources for the public's benefit. Approximately half of Greater Sage-Grouse habitat is managed by the Bureau of Land Management (BLM) and US Forest Service (Forest Service).

State agencies are at the forefront of efforts to maintain healthy fish and wildlife populations and to conserve at-risk species. State-led efforts to conserve the species and its habitat date back to the 1950s. For the past two decades, state wildlife agencies, federal agencies, and many others in the range of the species have been collaborating to conserve Greater Sage-Grouse and its habitats.

In 2010, the US Fish and Wildlife Service (USFWS) determined that listing the Greater Sage-Grouse under the Endangered Species Act of 1973 (ESA) was "warranted, but precluded" by other priorities. In response, the BLM, in coordination with the DOI and the US Department of Agriculture, developed a management strategy that included targeted Greater Sage-Grouse management actions. In 2015, the agencies adopted land use plan amendments (LUPAs) and revisions to 98 BLM and Forest Service land use plans (LUPs) across ten western states. These LUPAs addressed, in part, threats to the Greater Sage-Grouse and its habitat. The amended LUPs govern the management of 67 million acres of Greater Sage-Grouse habitat on federal lands.

In September 2015, the USFWS determined that the Greater Sage-Grouse did not warrant listing under the ESA. The USFWS attributed its 2010 "warranted, but precluded" determination primarily to "inadequate regulatory mechanisms." In its 2015 conclusion of "not warranted," the USFWS based its decision in part on regulatory certainty from the conservation commitments and management actions in the federal LUPAs and revisions, as well as on other private, state, and federal conservation efforts.

The BLM continues to prioritize efforts to conserve Greater Sage-Grouse and restore sagebrush habitat. From Fiscal Year 2017 to Fiscal Year 2020, the BLM has treated on average over 550,000 acres of Greater Sage-Grouse habitat every year. In Fiscal Year 2020, the BLM treated approximately 584,000 acres. These 2020 treatments included approximately 162,000 acres of conifer removal; 71,000 acres of fuel breaks; 203,000 acres with invasive species treatments; 42,000 acres of habitat protection; and restored habitat on 106,000 acres of uplands and over 700 acres of riparian habitat. In 2020, Oregon conducted habitat treatments on 90,000 acres. The BLM is committed to working directly with local communities on sagebrush conservation efforts and to emulate the successes demonstrated by the Natural Resources Conservation Service (NRCS) through the Greater Sage-Grouse Initiative on private lands. These efforts include:

- an agreement with the Intermountain West Joint Venture to work with local cattlemen associations to improve sagebrush rangeland conditions through actions such as controlling invasive species, improving mesic areas, and removing invasive conifers;
- a Memorandum of Understanding between the BLM, NRCS, and the Forest Service resulting in development of a map that identifies areas where the agencies have ongoing restoration projects and opportunities for additional collaboration across land ownerships and associated landscapes;
- promoting a locally led collaborative conservation, the BLM, the USFWS, and the Geological Survey are collaborating with the Western Association of Fish and Wildlife Agencies as they lead the development and implementation of the Sagebrush Conservation Strategy;
- working with livestock permittees and stakeholders on "targeted grazing" to utilize grazing as a tool to create and maintain fuel breaks to manage the threats of wildfire and invasive species in or to Greater Sage-Grouse habitats; and,
- working to develop "outcome-based grazing" to provide greater flexibility for livestock permittees and land managers to meet habitat objectives as conditions on-the-ground change.

The plans recommended that Sagebrush Focal Areas (SFAs) be proposed for withdrawal; however, a proposed withdrawal of the SFAs was cancelled on October 11, 2017.

On March 29, 2017, the Secretary of the Interior (Secretary) issued Secretarial Order (SO) 3349, *American Energy Independence*. It ordered DOI agencies to reexamine practices "to better balance conservation strategies and policies with the equally legitimate need of creating jobs for hard-working Americans families."

On June 7, 2017, the Secretary issued SO 3353 with a purpose of enhancing cooperation among 11 western states and the BLM in managing and conserving Greater Sage-Grouse. SO 3353 directed an Interior Review Team, consisting of the BLM, the USFWS, and US Geological Survey (USGS), to coordinate with the Sage-Grouse Task Force. They also were directed to review the 2015 Greater Sage-Grouse plans and associated policies to identify provisions that will maintain healthy Greater Sage-Grouse populations but may require modification to make the plans more consistent with the individual state plans and better balance the BLM's multiple-use mission as directed by SO 3349.

On August 4, 2017, the Interior Review Team submitted its Report in Response to SO 3353. In this report, the team recommended modifying the Greater Sage-Grouse plans and associated policies to better align with the individual state plans. On August 4, 2017, the Secretary issued a memo to the Deputy Secretary directing the BLM to implement the recommendations found in the report.

In the *Federal Register* of October 11, 2017, the BLM published the Notice of Intent to Amend Land Use Plans Regarding Greater Sage-Grouse Conservation and Prepare Associated Environment Impact Statements or Environmental Assessments.

During the public scoping period for the 2019 planning process, the BLM sought public comments on whether all, some, or none of the 2015 Greater Sage-Grouse plans should be amended, what issues should be considered, and if plans should be completed at the state level rather than at the national level. The BLM specifically sought public comment on SFA designations, mitigation standards, lek buffers, disturbance and density caps, habitat boundaries to reflect new information, and reversing adaptive management responses when the BLM determines that resource conditions no longer warrant those

responses. In addition, the BLM recognized that Greater Sage-Grouse is a state-managed species that depends on sagebrush steppe habitats managed in partnership by federal, state, and local authorities. Input from state governors would weigh heavily when the BLM considers what management changes should be made and when ensuring consistency with the BLM's multiple-use mission.

After reviewing comments received during the public scoping period, the BLM proposed the Draft EIS on May 4, 2018 and ultimately issued the Final EIS on December 6, 2018. Through the notice and comment process, the BLM was able to accomplish the objectives set forth in SO 3353 and remedy inconsistencies that existed in the 2015 LUPAs. Below is a summary of some of the issues raised during the Draft EIS and addressed during the Final EIS.

Further, in the 2018 Draft EIS the BLM again requested public comments on a number of issues, including the BLM's approach to compensatory mitigation. In response to these comments and information supplied by the states about how to align with their compensatory mitigation laws and policies, the 2018 Final EIS clarified the BLM's approach to compensatory mitigation in its Management Alignment Alternative. Through the Draft Supplemental EIS (DSEIS), the BLM sought additional comment from the public on compensatory mitigation.

This Final Supplemental EIS (FSEIS) also addresses and clarifies the BLM's reliance on scientific information, including how the BLM addresses the recommendation and objectives in the National Technical Team (NTT) and Conservation Objectives Team (COT) reports. The BLM, the USFWS, states and other federal agency partners prepared the NTT (2011) and the COT (2013) reports to identify rangewide sage-grouse conservation objectives and conservation measures that would: inform the USFWS 2015 decision under the Endangered Species Act and inform partners; and provide guidance for the BLM to consider through land use planning, which the BLM did in 2015 and 2019, and again in this FSEIS. The NTT and COT reports constituted starting points for the BLM to consider in at least one alternative to be considered through the NEPA and land use planning process. They are not compendiums that, standing alone, represent best available science. The NTT and COT reports do not address, or even attempt to address, how the implementation of their sage-grouse conservation measures would affect other uses of the public lands—such as recreation, fluid mineral development, mining, and livestock grazing. Moreover, the NTT and COT reports do not quantify, or even attempt to quantify, the sage-grouse conservation benefits of each respective conservation measure.

At the time that the NTT and COT reports were being developed, the BLM, USFWS, and state agencies had not completely developed or established the robust programs to conserve Greater Sage-Grouse that exist today.

In 2015, the BLM developed an action alternative around the NTT report. In the 2018 Final EIS, the BLM incorporated this analysis by reference. The BLM also coordinated with USFWS during the process culminating in the 2019 RODs to make sure that the conservation measures from the NTT and COT informed the management alignment alternative (**Appendix C**). Including the USFWS as a cooperating agency during the 2019 planning process ensured that BLM was aware of the same materials and newest science that the USFWS uses and recommends for Greater Sage-Grouse management.

In 2018, the Environmental Protection Agency (EPA) provided comments on the Draft RMPAs/EISs. Specifically, they provided six discrete comments on the Oregon Draft RMPA/EIS, six comments on the Utah Draft RMPA/EIS, six comments on the Idaho Draft RMPA/EIS, seven comments on the

Nevada/Northeast California Draft RMPA/EIS, three comments on the Wyoming Draft RMPA/EIS, and five comments on the Colorado Draft RMPA/EIS. The EPA's comments include suggestions and questions regarding lek buffers, recent science, mitigation, adaptive management, and fluid minerals. The BLM responded to each of EPA's comments and made corrections and/or changes in the 2018 Final EISs. The complete EPA comment analysis can be found in the administrative record. This FSEIS also clarifies how the BLM considered comments, including those of other federal agencies and experts, when developing its 2019 planning decisions.

1.2 PURPOSE OF AND NEED FOR ACTION

In the Federal Land Policy and Management Act (FLPMA), Congress provided the BLM with discretion and authority to manage public lands for multiple use and sustained yield and declared it the policy of the United States to, consistent with the laws governing the administration of the public lands, coordinate planning activities with the land use planning and management programs of other federal, state, and local governments. Further, FLPMA specifically provides that it neither enlarges nor diminishes the authority of the states in managing fish and wildlife. As the sovereign entities with the lead role in managing game species, including Greater Sage-Grouse, states play a critical role in conserving the Greater Sage-Grouse and its habitat.

In the 2019 Planning effort, the BLM modified its approach to managing Greater Sage-Grouse habitat in land use plans by (1) enhancing cooperation and coordination with the State of Oregon, (2) aligning with DOI and BLM policies issued since 2015, and (3) incorporating appropriate management flexibility and adaptation to better align with Oregon State's action plan. The BLM achieved these goals while maintaining the majority of sage-grouse protections it incorporated into its land use plans in 2015. By implementing these land use plan conservation measures and continuing to exercise its discretion to approve future project proposals under appropriate terms and conditions or deny them where appropriate, the BLM can adequately protect sage-grouse and its habitat while meeting its general obligation under FLPMA to manage public lands under principles of multiple use and sustained yield.

On October 16, 2019, the US District Court for the District of Idaho issued an order granting a motion for a preliminary injunction filed by Plaintiffs Western Watersheds Project, WildEarth Guardians, Center for Biological Diversity, and Prairie Hills Audubon Society. The court found that the Plaintiffs were likely to succeed on the merits of their claims that the BLM violated the National Environmental Policy Act (NEPA) when adopting the 2019 sage-grouse plans. The BLM has prepared this FSEIS to review its previous NEPA analysis, clarify and augment it where necessary, and provide the public with additional opportunities to review and comment. The BLM's FSEIS will help the BLM determine whether its 2015 and 2019 land use planning and NEPA processes have sufficiently addressed sage-grouse habitat conservation or whether the BLM should initiate a new land use planning process to consider additional alternatives or new information. To inform this decision that the BLM will make, it has prepared this FSEIS to address four specific issues: the range of alternatives, need to take a hard look at environmental impacts, cumulative effects analysis, and the BLM's approach to compensatory mitigation.

Scope of Issues and Analysis

It is important that the BLM Oregon step down this national-level purpose and need described above in terms that specifically relate to the scope of issues identified herein. In its November 30, 2017, response to the Notice of Intent (NOI), the Office of Governor Kate Brown concluded that there are important consistencies between the 2015 Record of Decision/Approved Resource Management Plan Amendment

(ROD/ARMPA) and the State of Oregon's 2015 Oregon Sage-grouse Action Plan. Further, the Office of Governor Kate Brown indicated that a major plan amendment was not needed in Oregon, that implementation of the 2015 ROD/ARMPA should continue, that additional discussion and coordination was needed to refine some plan and policy interpretations, and that those discussions and refinement efforts should occur via the ongoing SageCon partnership.

Through subsequent discussion with the Governor's Office, the BLM Oregon State Director has determined that the scope of the BLM Oregon proposed action for the 2019 planning process was to evaluate whether the 2015 ROD/ARMPA decision to make portions of the key research natural areas (RNAs) unavailable to livestock grazing is a necessary component of Greater Sage-Grouse conservation. The 2018 RMPA/EIS, and thus this SEIS, assessed:

1. Whether and how making areas unavailable to livestock grazing addresses specific threats to Greater Sage-Grouse and Greater Sage-Grouse habitat as identified in the USFWS's Conservation Objectives Team Final Report (2013).
2. Whether the vegetation communities of interest in the key RNAs can be protected and studied with smaller areas of grazing exclusion and still meet the stated 2015 ROD/ARMPA purposes to:
    a. Serve as areas for comparison of managed areas in the rest of the Greater Sage-Grouse habitat in the 2015 ROD/ARMPA
    b. Function as areas for baseline vegetation monitoring for those specific plant communities with no management activities (i.e., succession is allowed to proceed).
3. Whether having the key RNAs available to grazing and managed under the previous district management plan provisions will preclude the BLM from achieving the research (or scientific study) purposes of the 2015 ROD/ARMPA.

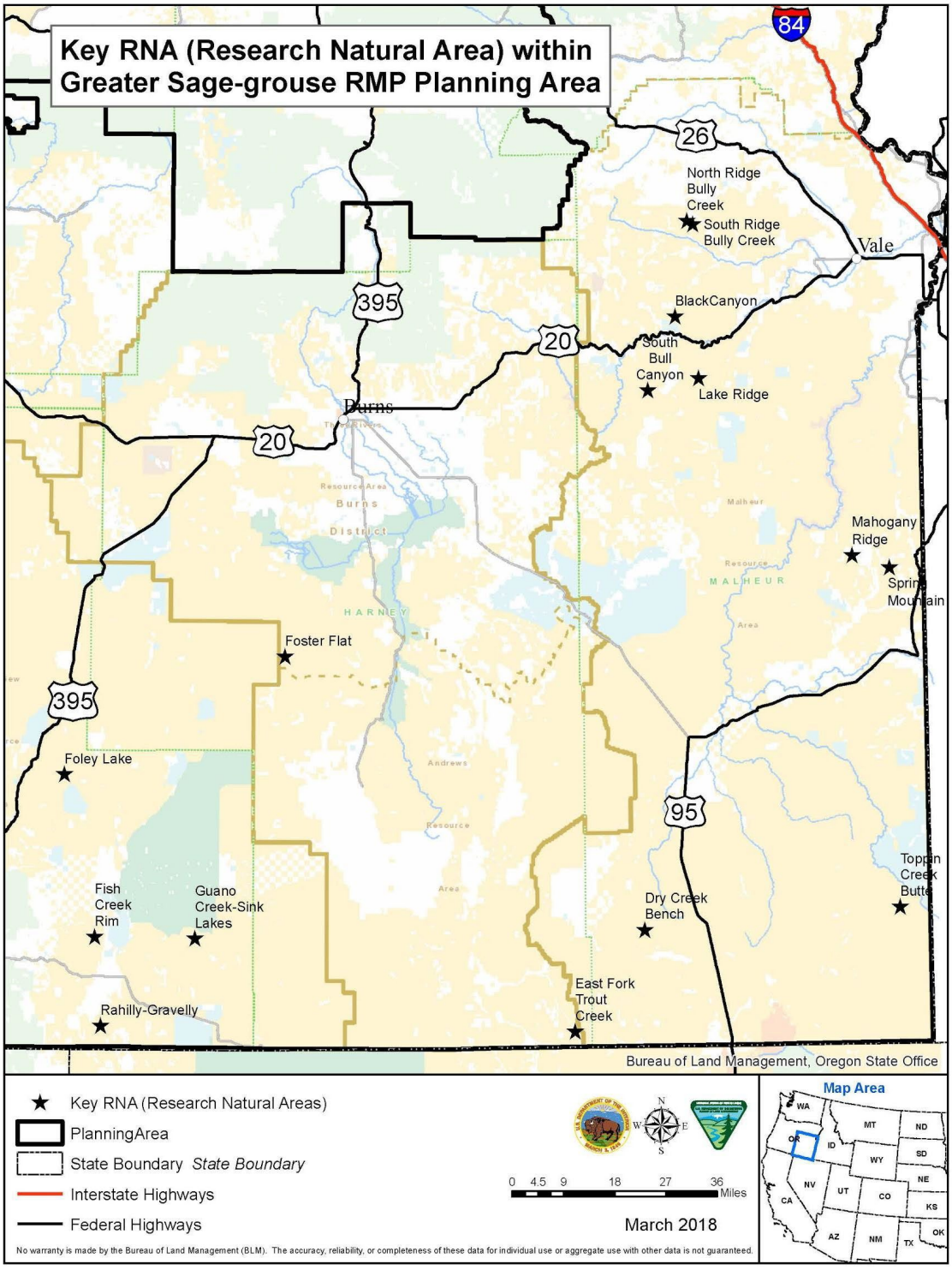
1.3 PLANNING AREA AND CURRENT MANAGEMENT

The planning area is the geographic area within which the BLM will make decisions during this planning effort. The planning area boundary includes all lands regardless of jurisdiction. For this FSEIS, the planning area includes 15 RNAs administered by the BLM, identified as key RNAs in the 2015 ROD/ARMPA and covering approximately 60,649 acres total. Two of the RNAs discussed in this FSEIS—Foster Flat and Guano Creek–Sink Lakes—were closed to livestock grazing by the 1992 Three Rivers RMP/ROD and the 2003 Lakeview RMP/ROD, respectively. The 2015 ROD/ARMPA left these RNAs closed to livestock grazing. These RNAs are discussed in this FSEIS solely to provide context relative to the BLM's ability to meet the objectives identified in **Section 1.2** (e.g., 2.a and 2.b.), above.

The decision area for this FSEIS includes the 13 key RNAs that made livestock grazing unavailable on 21,959 acres through the 2015 ROD/ARMPA.

See Figure 1-1 of the 2015 ROD/ARMPA for a map of the entire Oregon Greater Sage-Grouse planning area. **Figure 1-1**, below, shows approximate locations of the 15 key RNAs in the larger 2015 ROD/ARMPA planning area. Points are used on the map to show the approximate locations of the key RNAs, as the acreage involved across the larger planning area would not be visible at the map scale. The planning area for this FSEIS covers portions of three counties in Oregon: Malheur, Harney, and Lake Counties. The Burns, Lakeview, and Vale Districts manage, maintain, and implement the RMPs covering BLM-administered lands in these counties.

Figure 1-1
Key Research Natural Areas in the Planning Area



Under the 2015 ROD/ARMPA, management decision MD LG 1 stated that all or portions of the 13 key RNAs would be made unavailable for grazing, and fences, corrals, and water storage facilities would be removed as necessary. This management direction affected approximately 21,959 acres and 1,772 animal unit months[1] (AUMs). Table 2-6 of the 2015 ROD/ARMPA has been updated in this analysis to reflect changes in recalculated acreage and AUMs. RNAs are a special kind of area of critical environmental concern (ACEC) where certain elements[2] or values are protected or managed for scientific purposes, and natural processes are allowed to dominate. The objectives for establishing RNAs are to maintain a wide spectrum of high-quality areas that represent the major forms of variability found in forest, shrubland, grassland, alpine, and natural situations that have scientific interest and importance that, in combination, form a national network of ecological areas on federal lands managed by the Forest Service, National Park Service, and BLM dedicated for research, education, and maintenance of biological diversity. RNAs serve to:

- Preserve and maintain genetic diversity, including threatened, endangered, and sensitive species
- Protect against human-caused environmental disruptions
- Serve as reference areas for the study of natural ecological processes, including disturbance
- Provide onsite and extension educational activities
- Serve as baseline areas for measuring long-term ecological changes
- Serve as control areas for comparing results from manipulative research
- Monitor effects of resource management techniques and practices

All key RNAs in the 2015 ROD/ARMPA were identified within priority habitat management areas (PHMA), since the intent of removing grazing was to better understand what impacts grazing may or may not be having on Greater Sage-Grouse habitat elements and successional rates and pathways following disturbance. All key RNAs contain a high proportion of PHMA, are within an Oregon Priority Area for Conservation (PAC), either contain leks currently used by Greater Sage-Grouse or are within 4 miles of a lek currently used by Greater Sage-Grouse, and contain an array of plant communities believed to be important to Greater Sage-Grouse. Although there are RNAs on the Prineville District closed to grazing, none of those RNAs fall within PHMA; therefore, their utility in understanding grazing effects on Greater Sage-Grouse habitat elements was considered minimal. Leslie Gulch RNA on Vale District is closed to grazing, but Leslie Gulch does not provide Greater Sage-Grouse habitat. Steens Mountain Wilderness is closed to grazing, and although portions do not provide quality habitat due to rugged terrain or vegetation types (e.g., juniper and aspen), there is Greater Sage-Grouse habitat suitable for study (Lee Foster, personal communication September 7, 2018). A closer look at the Steens Mountain Wilderness shows that it includes two leks and approximately 9,233 acres of Steens PAC at the lower elevation of the wilderness; however, the vegetation types are not mapped. There is one Assessment, Inventory, and Monitoring (AIM) plot within this area; data obtained from the plot indicate

[1] The amount of forage needed by a cow-calf pair for 1 month.

[2] Elements are the basic units to be represented in a natural area system. An element may be an ecosystem, community, habitat, or organism. Taken from Dyrness, C. T, J. F. Franklin, C. Maser, S. A. Cook, J. D. Hall, and G. Faxon. 1975. Research Natural Area Needs in the Pacific Northwest: A Contribution to Land-Use Planning. Gen. Tech. Rep. PNW-38. Portland, Oregon: US Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. P. 231.

the presence of a low sagebrush/Sandberg's bluegrass plant community. Aerial photos suggest that portions of this area could be used as a no-grazing control.

The only other public land area in Oregon with both Greater Sage-Grouse habitat and a long-term closure to grazing is Hart Mountain Antelope Refuge, which was closed in the mid-1990s; all feral horses were removed as well. The BLM contacted the management staff of Sheldon National Wildlife Refuge on the Oregon-Nevada border and Hart Mountain Antelope Refuge for copies of published research that may be of value to this planning effort. The refuge provided six papers: Earnst et al. 2012; Davies et al. 2014; Zeigenfuss et al. 2014; Batchelor et al. 2015; Boyd et al. 2017; and Gooch et al. 2017. However, none of these papers concerned the livestock grazing responses of forbs and insects important to Greater Sage-Grouse. The BLM has no authority over the management and research direction in USFWS national wildlife refuges. The BLM collaborated in installing Assessment, Inventory, and Monitoring plots with USFWS on the Hart-Sheldon National Wildlife Refuge in 2019.

1.4 2019 DEVELOPMENT

1.4.1 Issues and Related Resource Topics Identified Through Scoping as Part of the 2019 Planning Process

When deciding which issues to address related to the purpose and need, the BLM considers points of disagreement, debate, or dispute regarding an anticipated outcome from a proposed action. Issues are based on anticipated environmental effects; as such, issues can help shape the proposal and alternatives.

The BLM used internal, agency, and public scoping to identify issues to consider in the environmental analysis of this FSEIS. A summary of the scoping process from the 2018 Draft EIS is presented in a report titled "Potential Amendments to Land Use Plans Regarding Greater Sage-Grouse Conservation Scoping Report" (https://goo.gl/FopNgW).

When determining whether to retain an issue for more detailed analysis in this FSEIS, the interdisciplinary team considered, among other things, the following:

- The environmental impacts associated with the issue and the threats to species and habitat associated with the issue are central to developing a Greater Sage-Grouse management plan or of critical importance.
- A detailed analysis of environmental impacts related to the issue is necessary to make a reasoned choice between alternatives.
- The environmental impacts associated with the issue are a substantial point of contention among the public or other agencies.
- Whether there are potentially significant impacts on resources associated with the issue.

Ultimately, it is important for decision-makers and the public to understand the impacts that each of the alternatives would have on specific resources; therefore, the BLM uses resource topics as a heading to indicate which resources would be affected by a management change. Importantly, resource topics will help organize the discussions of the affected environment (**Chapter 3**) and environmental consequences (**Chapter 4**).

The sections below lay out how issues raised during scoping for the 2018 Draft EIS, as well as related resource topics, are considered in this FSEIS. Generally, they fall into the following categories:

- Issues and related resource topics retained for further consideration in this FSEIS—These were issues raised during scoping for the 2018 Draft EIS that are retained in this FSEIS and for which alternatives were developed to address the issues. In some cases, the resolution in the alternatives were previously analyzed in the 2015 Final EIS. In other cases, additional analysis is needed in this FSEIS. Because the issues were analyzed under resource topics in 2015, the resource topics corresponding with those retained for further analysis are also considered in this FSEIS. Just like issues, they may have been analyzed in the 2015 Final EIS for those decisions being included in this FSEIS.
- Clarification of decisions in the 2015 ROD/ARMPA—These are decisions or frameworks in the 2015 ROD/ARMPA that require clarification as to their application or implementation. No new analysis is required, as the effects behind the decisions were analyzed in the 2015 Final EIS.
- Issues and resource topics not carried forward for additional consideration or analysis—These are issues brought up during scoping for the 2018 Draft EIS that are not carried forward in this FSEIS. While some of these issues are considered in this FSEIS, they do not require additional analysis because they were analyzed in the 2015 Final EIS. Others are not carried forward in this FSEIS because they do not further the purpose of aligning with the State's conservation plan. Similar to issues, there are resource topics that are not retained for further analysis in this FSEIS. This is because either they are not affected by the changes proposed in **Chapter 2** (Alternatives) or because the effect was analyzed in the 2015 Final EIS.

Issues and Related Resource Topics Retained for Further Consideration in this FSEIS

Table 1-1 summarizes those issues identified through scoping and that have been retained for consideration and additional discussion in **Chapters 3** and **4**.

Based on the issues identified in **Table 1-1** that have not been previously analyzed, the resource topics that have the potential to be significantly affected are: Greater Sage-Grouse, vegetation (including invasive plants, riparian areas and wetlands, and special status plants), fish and wildlife (including other special status species), socioeconomics, and livestock grazing. Therefore, these resource topics are carried forward for detailed analysis.

Table 1-1 identifies the corresponding resource topics to which the issues relate. The level of detail in the description of each resource topic and the effects from implementing any of the alternatives also are described in **Chapters 3** and **4**.

Table 1-1
Issues and Related Resource Topics

Issues	Resource Topics Related to the Issues
Modifying Livestock Grazing Decisions within Research Natural Areas ● What opportunities would be available to study the impacts of grazing on the presence and abundance of forb species and insects important to pre-laying hens and chicks? ● What are the impacts of allowing or removing grazing within key RNAs on overall wildfire risks? ● What are the economic impacts to grazing permittees due to reductions in AUMs? Is there a threshold where no impacts would occur?	Greater Sage-Grouse, vegetation (including riparian), wildlife, livestock grazing (including permittee socioeconomics)

Clarification of Planning Decisions in the 2015 ROD/ARMPA

The following issues with existing planning decisions were raised during scoping for the 2018 Draft EIS. These issues require clarification of language in the 2015 ROD/ARMPA but do not require new analysis. The clarifying language for these 2015 planning decisions is displayed in this planning document to communicate that these issues are being addressed outside of this amendment process.

A variety of national IMs have been issued since 2016 to clarify interpretations and implementation considerations and are applicable to the 2015 ROD/ARMPA. Several of the 2016 IMs were updated in 2018, including one on how to use the Habitat Objectives table. That IM (BLM IM 2015-24) clarifies the flexibility in the Habitat Objectives Table in the 2015 ROD/ARMPA. Consistent with that table, habitat will be managed towards objectives appropriate for its ecological condition and potential based on site-specific information. The Table is not, nor should it be taken as, providing for fixed requirements at the allotment level.

Subsequent to release of the 2018 Draft RMPA/EIS, departmental guidance was issued on compensatory mitigation. The 2018 Draft RMPA/EIS did not propose a change to the net conservation gain standard for compensatory mitigation actions required to offset residual impacts to Greater Sage-Grouse on public lands. To align this planning effort with the BLM's compensatory mitigation policy (IM 2018-093), the 2018 Proposed Plan Amendment clarifies that the BLM will consider compensatory mitigation only as a component of compliance with a state mitigation plan, program, or authority, or when offered voluntarily by a project proponent. In accordance with the State's goals for managing Greater Sage-Grouse, the 2018 Proposed Plan Amendment modifies the net conservation gain standard for compensatory mitigation to clarify that the BLM will pursue a net conservation gain as a broader planning goal and objective.

The BLM would continue to apply the mitigation hierarchy as described in the CEQ regulations at 40 CFR 1508.20; however, the BLM would focus on avoiding, minimizing, rectifying, and reducing impacts over time. Compensation, which involves replacing or providing substitute resources for the impacts (including through payments to fund such work), would be considered only when: voluntarily offered by a proponent; or, when the appropriate state agency, through coordination with the BLM, determines a state regulation, policy, or program requires or recommends compensatory mitigation. The BLM commits to cooperating with the State to analyze applicant-proposed or state-required or recommended compensatory mitigation to offset residual impacts.

This means that the BLM will continue to require avoidance, minimization, and other onsite mitigation to adequately conserve Greater Sage-Grouse and its habitat, while remaining committed to implementing beneficial habitat management actions to reduce the threats of fire and invasive species. In fiscal year 2018, the BLM funded approximately $29 million in sage-grouse management actions resulting in approximately 500,000 acres of treated Greater Sage-Grouse habitat and expects to invest another $17 million of habitat management projects in fiscal year 2019.

Because this clarification simply aligns the 2018 Proposed Plan Amendment with BLM policy and the scope of compensatory mitigation authority expressly provided by FLPMA, and because any analysis of compensatory mitigation relating to future projects is speculative at this level of land use planning, analysis of compensatory mitigation is more appropriate for future project-specific NEPA. The BLM

remains committed to achieving the planning-level management goals and objectives identified in this FSEIS by ensuring Greater Sage-Grouse habitat impacts are addressed through implementing mitigating actions consistent with the 2018 Proposed Plan Amendment.

BLM Oregon will continue to work with the State, SageCon partnership, and other stakeholders and the various BLM districts to communicate and clarify the contents and implementation requirements of the revised IMs. BLM Oregon-specific guidance will be developed, through an IM, on implementing IM No. 2018-093, Compensatory Mitigation, July 24, 2018, under the BLM Oregon 2015 ROD/ARMPA as amended in the 2018 RMPA.

BLM Oregon also identified a variety of needed plan maintenance actions. Plan maintenance needs include:

- Update and clarify use and implementation of the habitat objectives contained in Table 2-2 of the 2015 ROD/ARMPA (maintenance action has been completed)
- Update 2015 ROD/ARMPA language to clarify that the recommendation to withdraw locatable mineral entry from SFAs has been analyzed and cancelled (maintenance action has been completed)
- Resolve and clarify discrepancy in noise restrictions in different places of the 2015 ROD/ARMPA
- Clarify use of lek buffers in analysis and implementation actions
- Clarify Appendix J language on longevity of trigger responses
- Clarify reclamation language in required design features (RDFs)

Similarly, a variety of local BLM Oregon policy, guidance, or training and education needs and opportunities have been identified. These topics are best addressed outside of plan amendment or maintenance, as they do not reflect planning decisions. Topics identified for discussions with partners and stakeholders outside of this amendment process include:

- Reserve common allotments (grass banks) to promote resilience and viability for livestock economies and habitat restoration priorities
- Waivers, exceptions, and modifications for development actions within priority habitat.

Issues and Resource Topics Not Carried Forward for Additional Analysis (Scoping Issues Outside the Scope and Scoping Issues Previously Analyzed)

Issues and Related Resource Topics Not Carried Forward for Additional Analysis

The following issues were raised during scoping for the 2018 Draft EIS and are not carried forward for a variety of reasons. For example, population-based management is not carried forward for detailed analysis because the BLM does not manage species populations; that authority falls under the jurisdiction of the Oregon Department of Fish and Wildlife.

Because the following issues were analyzed in the 2015 Final EIS, and no significant new information related to these issues has emerged, they do not require additional analysis in this FSEIS. These issues were analyzed under resource topics in the 2015 Final EIS, and these types of impacts on these resources are described in the range of alternatives in the 2015 Final EIS. The impacts of implementing the alternatives in this FSEIS are within the range of alternatives previously analyzed.

- Restrictions on rights-of-way (ROWs) and infrastructure
- Wind energy development in PHMA
- ROW avoidance in PHMA and general habitat management areas (GHMA)
- Retention of lands as identified as PHMA or GHMA in federal ownership
- Varying stipulations applied to oil, gas, and geothermal development
- Effects of no surface occupancy (NSO) stipulations on Greater Sage-Grouse habitat on non-BLM-administered land
- Mitigation for oil and gas development
- Prioritization of fluid mineral leases outside of PHMA and GHMA
- Numerical noise limitations within PHMA
- Contribution of disturbance caps toward Greater Sage-Grouse conservation objectives
- Required design features
- Habitat objectives and ability to achieve rangeland health standards (see **Section 1.5.2**)
- Vegetation treatments and wildfire response
- Adaptive management
- Habitat assessment framework
- Soils
- Wild horses and burros

Grazing to Manage Wildfire Risks: In addition to the above issues not carried forward for additional analysis, using grazing to manage wildfire risks is not addressed in further detail in this FSEIS. The key RNAs are too small in acreage to have any impact or effect on this large-scale issue. Svejcar et al. (2014) argue that grazing is necessary to manage wildfire risks in sagebrush ecosystems, and this concern was raised during scoping for the 2018 Draft EIS. BLM agrees that wildfire is a risk in sagebrush ecosystems and to Greater Sage-Grouse habitat, particularly as it pertains to dominance by annual grasses and establishment of the annual grass-fire cycle; this is well established (e.g., Brooks et al. 2015; Coates et al. 2015; Coates et al. 2016).

Recent research indicates that grazing can decrease the risk, size, and severity of wildfires (Davies et al. 2011; Strand et al. 2014; Davies et al. 2016b; Davies et al. 2017), although extreme burning conditions usually override the impacts grazing has on fire spread rates (Strand et al. 2014). Winter and early spring grazing seem to have the greatest effect (Strand et al. 2014; Davies et al. 2016b; Davies et al. 2017), although care must be taken during spring grazing of native perennial bunchgrasses to avoid successive years of impacts on plant leaf and basal area, production potential, and reproduction (Davies et al. 2014). Grazing areas dominated by annual grasses at the right times and repeatedly serves to reduce annual grass biomass and height, affecting potential fire behavior (Diamond et al. 2009; Davies et al. 2014; Schmelzer et al. 2014; Strand et al. 2014), although supplements may be needed to maintain livestock weight (Schmelzer et al. 2014).

However, plant responses are mixed, with some studies showing increases in cheatgrass following wildfire in grazed landscapes (e.g., Condon and Pyke 2018) and others indicating resistance to cheatgrass following wildfire with grazing (e.g., Davies et al. 2009; Davies et al. 2016a). Effects from long-term grazing removal are also mixed, with some studies indicating that it can lead to annual grass expansion

following fire (Davies et al. 2009; Davies et al. 2014; Davies et al. 2016a) and other studies indicating that it will not (Davis and Crawford 2015; Ellsworth et al. 2016). The interactions between grazing and fire with respect to annual grass response depend on preburn vegetation condition, site characteristics, post-fire weather, grazing practices, and the impacts of other disturbances such as insect outbreaks, pathogens, and herbivory by native ungulates, wild horses, and rodents (Davies et al. 2014; Strand et al. 2014; Svejcar et al. 2014).

Fires greater than 2,265 acres tend to reduce Greater Sage-Grouse population growth rates when they burn near lek sites (Brooks et al. 2015). Additionally, significant erosion can occur when fires exceed 10,000 acres (Brooks et al. 2015). Experience in the Great Basin shows that fire suppression efforts are usually ineffective when 20-foot wind speeds exceed 10 mph, maximum temperature exceeds 90°F, and relative humidity is less than 10 percent with nighttime humidity recovery of less than 15 percent. Under moderate burning conditions, active fire spread typically lasts only one burning period, whereas under extreme conditions active fire spread typically lasts for several days with spread occurring over all 24 hours in a day.

Experience and modeling in forest ecosystems indicate that fuels treatments on landscapes need to be strategically placed with respect to expected fire spread direction and topography in order to affect potential fire size and fire behavior, particularly since most large wildfires are larger than individual treatment areas (Finney 2001, 2007; Schmidt et al. 2008; Chung 2015). When fuels treatments are randomly placed, a larger proportion of the landscape must be treated to have the same effect on fire size and fire behavior as strategically placed treatments (Finney 2001, 2007).

Livestock do not evenly distribute themselves across allotments and pastures, tending to concentrate in areas near water and shade and in gentler terrain, resulting in grazing effects on fine fuel loading that are not strategically placed, but more haphazard. The establishment reports for the key RNAs mention that most of these areas are lightly grazed due to the lack of available water (see **Chapter 3**, **Section 3.7**). Without extensive fencing, herding, and provision of supplemental water at a minimum, it is unlikely that grazing would reduce wildfire risks within key RNAs. As evidenced by the recent wildfires in several key RNAs (see **Chapter 3**, **Section 3.3.1**), they are too small and isolated to affect landscape-scale wildfire size and behavior for fires originating outside key RNAs.

Other issues were evaluated as part of the 2015 ROD/ARMPA. For the same reasons they were dismissed in the 2015 ROD/ARMPA, they are not carried forward for detailed analysis in this FSEIS (Section 1.6.4 on pages 1-20 to 1-22 in the 2015 Final EIS):

- Hunting Greater Sage-Grouse
- Predator control

Resource Topics Not Carried Forward for Additional Analysis

The resource topics below were dismissed from detailed analysis. While these resource topics may be impacted by Greater Sage-Grouse conservation, these impacts were analyzed in the 2015 Final EIS. These resource topics are dismissed from detailed analysis in this FSEIS because actions proposed in this FSEIS will not impact them.

- Air
- Soils
- Water
- Wild horses and burros
- Geology
- Cultural resources
- Paleontological resources
- Visual resources
- Wildland fire management
- Lands with wilderness characteristics
- Forestry
- Recreation and visitor services
- Comprehensive trails and travel management
- Lands and realty
- Energy and minerals
- Special designations
- Indian Trust resources
- Noise

1.5 ITEMS TO BE CLARIFIED IN THIS FSEIS

The items considered in this FSEIS are related to the analysis in the 2018 Final EIS. These items are:

- clarifying the range of alternatives (including how the BLM considered the full range of the 2015 alternatives in the 2019 planning process);
- taking a hard look and using the best available science (including clarified effects analysis, how the 2015 and 2019 Final EISs addressed the NTT and COT recommendations and conservation measures) (**Appendix C**);
- clarifying that the cumulative effects analysis was done at the range wide level and organized by WAFWA Management Zone (MZs) Updated language also highlights why WAFWA MZs were used; and
- an updated Reasonably Foreseeable Future Actions.

1.6 RELATIONSHIP TO OTHER POLICIES, PLANS, AND PROGRAMS

The BLM recognizes the importance of state and local plans. The BLM will work to be consistent with or complementary to the management actions in these plans whenever possible.

1.6.1 State Plans

State plans considered during this planning effort are the following:

- Sage-Grouse Conservation Partnership. 2015. The Oregon Greater Sage-Grouse Action Plan. Oregon Governor's Natural Resources Office, Salem, Oregon, USA
- State of Oregon Natural Areas Plan 2015

1.6.2 Local Plans

One new local land use plan was completed after the 2015 ROD/ARMPA was signed. In 2016, the Harney Soil and Water Conservation District adopted a land use plan.

1.7 CHANGES BETWEEN DRAFT AND FINAL SEIS

Based on comments received on the DSEIS, the BLM has updated the list of past, present, and reasonably foreseeable projects considered for cumulative impacts in **Appendix B**. Responses to substantive public comments received on the DSEIS are included in **Appendix D**.

Chapter 2. Alternatives

2.1 INTRODUCTION

This chapter describes the eight alternatives considered during the 2019 planning processes. The 2018 Draft RMPA/Draft EIS and Proposed RMPA/Final EIS analyzed in detail the No-Action Alternative and one action alternative, the Management Alignment Alternative, while incorporating by reference the full range of alternatives evaluated in detail by the BLM in its 2015 EISs. The 2019 Record of Decision also explains how the BLM considered the alternatives evaluated in the BLM's 2015 and 2018 EISs. This FSEIS likewise considers this full range of reasonable alternatives, while adding a greater level of detail about each alternative and giving the public an additional opportunity to review and comment on these eight alternatives. The full range of alternatives considered in the 2018 Final EIS is both summarized and provided in detail in the three tables in **Section 2.4**. NEPA's implementing regulations require materials to be incorporated by reference when the effect will be to cut down on bulk without impeding agency and public review of the action (40 CFR 1502. 21).

Components of Alternatives

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 may include stipulations or restrictions. Allowable uses also identify lands where specific uses are excluded to protect resource values, or where certain lands are open or closed in response to legislative, regulatory, or policy requirements. Implementation decisions are site-specific actions and are typically not addressed in RMPs.

2.2 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

2.2.1 Varying Constraints on Land Uses and Development Activities

During scoping, some commenters asked for increased or additional constraints on land uses and ground-disturbing activities to protect Greater Sage-Grouse habitat. These constraints are beyond those in the current management plan.[1] Other commenters, in contrast, asked the BLM to consider eliminating or reducing constraints on land uses, or incorporating other flexibilities into the BLM's implementation of RMPs, in addition to those issues that are already evaluated in the Management Alignment Alternative. The BLM considered every scoping comment and, where appropriate, incorporated these issues into the Management Alignment Alternative following coordination with the State. Because the purpose and need for the BLM's action, building off of the 2015 ROD/ARMPA, is to enhance cooperation with the states by seeking to better align the BLM's RMP with the Oregon State

[1] For example, the 2019 planning process, built upon the 2015 planning process, will continue to ensure that the BLM complies with its special status species policy, including the commitment to "implement measures to conserve [Special Status] species and their habitats… and promote their conservation and reduce the likelihood and need for such species to be listed pursuant to the ESA." (BLM Manual 6840, Special Status Species Management)

Plan and/or conservation measures, the BLM gave great weight to the State's identification of issues that warrant consideration in this planning effort.

The 2018 planning process did not revisit every issue that the BLM evaluated in 2015. Instead, the BLM addressed refinements to the 2015 ROD/ARMPA decisions, consistent with the BLM's purpose and need for action, including the BLM Oregon-specific scope of issues and analysis. Accordingly, this FSEIS has as its foundation the comprehensive 2015 and 2019 Final EISs, and incorporates those documents by reference—including the entire range of alternatives evaluated through the 2015 planning process:

- Alternative A would have retained the management goals, objectives, and direction specified in the BLM RMPs and the Forest Service land and resource management plans effective prior to the 2015 ROD/ARMPA.
- Alternative B was based on the conservation measures developed by the National Technical Team planning effort in accordance with Washington Office IM 2012-044. As directed in the IM, the conservation measures developed by the National Technical Team must be considered and analyzed, as appropriate, through the land use planning process and NEPA by all BLM state and field offices that contain occupied Greater Sage-Grouse habitat. Most management actions included in Alternative B would have been applied to PHMA.
- Alternative C was based on a citizen group's recommended alternative. This alternative emphasized improvement and protection of habitat for Greater Sage-Grouse and was applied to all occupied Greater Sage-Grouse habitat. Alternative C would have limited commodity development in areas of occupied Greater Sage-Grouse habitat and would have closed or designated portions of the planning area to some land uses.
- Alternative D, which was identified as the Preferred Alternative in the Draft 2018 RMPA/EIS, balanced opportunities to use and develop the planning area and protected Greater Sage-Grouse habitat based on scoping comments and input from Cooperating Agencies involved in the alternatives development process. Protective measures would have been applied to Greater Sage-Grouse habitat. This alternative included making all or portions of 22 key RNAs (98,446 acres) unavailable to livestock grazing.
- Alternative E was the alternative provided by the State or Governor's offices for inclusion and analysis in the EISs. It incorporated guidance from specific State Conservation strategies and emphasized management of Greater Sage-Grouse seasonal habitats and maintaining habitat connectivity to support population objectives.
- Alternative F was also based on a citizen group's recommended alternative. This alternative emphasized improvement and protection of habitat for Greater Sage-Grouse and defined different restrictions for PHMA and GHMA. Alternative F would have limited commodity development in areas of occupied Greater Sage-Grouse habitat and would have closed or designated portions of the planning area to some land uses.
- The Proposed LUPA incorporated guidance from specific State Conservation strategies, as well as additional management based on the National Technical Team recommendations. This alternative emphasized management of Greater Sage-Grouse seasonal habitats and maintaining habitat connectivity to support population objectives. This alternative included making all or portions of 13 key RNAs (21,959 acres) unavailable to livestock grazing.

The BLM considered the entire range of alternatives from the 2015 Final EIS to identify issues meriting reconsideration, given the BLM's goal of enhancing alignment with state plans. In this manner, the BLM will continue to appropriately manage Greater Sage-Grouse and its habitat through this planning effort in tandem with the 2015 ROD/ARMPA.

Further, additional constraints on land uses or development without a documented need would not meet the purpose of SO 3353. The BLM did not discover new information that would indicate the agency should increase the level of conservation, management, and protection to achieve its land use plan objective. As part of the consideration of whether to amend the 2015 Greater Sage-Grouse LUPAs, the BLM partnered with the USGS to review the best available information published since January 2015, develop an annotated bibliography of that Greater Sage-Grouse science (Carter et al. 2018; see **Section 3.1**), and incorporate the information into this EIS. In addition, SO 3353 directs the BLM to promote habitat conservation, while contributing to economic growth and energy independence. As analyzed in the 2015 Final EIS (see Sections 4.4.6, pages 4-112 and 113; Section 4.5.6, pages 4-132 and 133; Section 4.8.6, Alternative C, page 4-193; Section 4.16.6, page 4-278; Section 4.20.3, page 4-330; Section 4.20.4, pages 4-351 to 4-355) and hereby incorporated by reference, all of the previously analyzed alternatives, including one proposing constraints stricter than the current management plan, were predicted to result in a loss of development opportunities on public lands.

2.2.2 Additional Alternatives for Key RNAs Considered but Eliminated from Detailed Analysis

Comments received on the 2018 Draft RMPA/EIS suggested using Hart Mountain, Sheldon, and Malheur National Wildlife Refuges and Steens Mountain Wilderness instead of the key RNAs for research purposes. The BLM has no operational control over national wildlife refuges so cannot substitute them for BLM-administered lands. Further, Sheldon National Wildlife Refuge is in Nevada, where Oregon-Washington BLM has no jurisdiction. In addition, Malheur National Wildlife Refuge, established for waterfowl, allows some grazing, does not fall within the boundaries of an Oregon PAC, and does not contain priority habitat for Greater Sage-Grouse.

Hart Mountain National Antelope Refuge (Hart Mountain Refuge) does contain suitable Greater Sage-Grouse habitat and appears to contain plant communities suitable for inclusion in a potential study design. However, the BLM can neither direct management of a national wildlife refuge nor require the methods USFWS would use in any study, such as BLM's AIM plot design and protocols. Hart Mountain Refuge management currently has no management direction allowing BLM to conduct research within the refuge boundaries.

The BLM took a closer look at the Steens Mountain Wilderness, which eliminated grazing at establishment in 2000 under Public Law 106-399. Approximately 9,233 acres fall within the Steens Mountain PAC. This area contains one known pending lek (it is unclear if the lek is occupied or unoccupied due to lack of sufficient data) and one AIM plot, both of which indicate this portion of the wilderness provides Greater Sage-Grouse habitat. The BLM lacks detailed vegetation maps, but remote sensing imagery suggests that plant communities in the Shallow-Dry, Warm-Dry, and Cool-Moist sagebrush types are likely present. Adding Steens Mountain Wilderness to a potential study design would also have the benefit of providing additional data from the Burns District. The BLM could include portions, specifically the Steens PAC within the Steens Mountain Wilderness area, in a potential study design without a plan amendment.

Several comments suggested reopening two of the RNAs that were closed to livestock grazing prior to the 2015 ROD/ARMPA (see Section 1.3). Additional information regarding these closures is provided below.

On October 30, 1998, the 105th Congress passed Public Law 105-321 "Oregon Public Lands Transfer and Protection Act of 1998." Section 4 of the Act, titled "Hart Mountain Jurisdictional Transfer," transferred lands BLM administered in the Guano Creek pasture, located in the Beaty Butte Allotment, to the USFWS. These lands (Guano Creek-Sink Lakes RNA) would be managed under their Comprehensive Management Plan, where livestock grazing is excluded.

The Foster Flat RNA/ACEC was closed to grazing in the Three Rivers RMP (September 1991). In 1994, the Burns District constructed an exclosure fence to exclude grazing by domestic livestock and wild horse and burros from the South Steens Herd Management Area.

Three other potential alternatives for the key RNAs were suggested and are discussed below.

Reduce the Size (Acreage) of 13 Key RNAs Unavailable to Livestock Grazing. Under this alternative, the BLM considered reducing the closure size (acreage) of all 13 key RNAs covered by this amendment to reduce the socioeconomic impacts on counties and permittees and adding approximately 9,233 acres of the Steens Mountain Wilderness to the potential study design area. As part of this amendment process, the BLM Districts completed specific reviews of the key RNA acres and AUMs identified for reduction in the 2015 ROD/ARMPA. **Table 2-2** shows an update of the 2015 ROD/ARMPA data for acres and AUMs, and **Chapter 4**, **Table 4-6** shows the percentage of active AUM use change.

As early as November 2015, District and Field Offices indicated that there were errors in Table 2-6 on page 2-18 in the 2015 ARMPA. In June 2016, the BLM Oregon State Office requested the District and Field Offices review the table to validate or amend the acres and active use AUMs. Through this process the District and Field Offices concluded that a reduction of less than 5 percent of active use AUMs would not substantially affect the carrying capacity, forage use levels, or distribution patterns in the pastures both within and outside the key RNAs. A reduction of less than 5 percent would have little or no impact on permittee operations or county economies. The BLM also determined that no further AUM reductions were needed in the 8 key RNAs that already had AUM reductions of less than 5 percent. Between the Draft and Final EIS in 2015, the BLM had already reduced the number of key RNAs by 7 and the total acres included by 95,751. The BLM considered the remaining 15 key RNAs and acres identified in the 2015 ROD/ARMPA the minimum size and placement needed to provide a sufficient land base and mix of vegetation types to meet the research need and retain the statistical power and scope of inference that could be extrapolated over the planning area as a whole and into adjoining states.

An important consideration in determining the size of the closures in the 2015 ROD/ARMPA was to minimize the amount of additional fencing needing to be constructed (2015 Proposed RMPA/Final EIS, pages 2-44 and 2-45). The reduction proposed in this alternative, however, would increase the amount of fencing in order to partition off sections of pasture. While BLM would install anti-strike markers on the fences, these markers are not 100 percent effective and the risk of Greater Sage-Grouse mortality from fence collisions would increase. Since one criterion for the selection of the key RNAs in the 2015 ROD/ARMPA was inclusion or proximity to occupied or pending Greater Sage-Grouse leks, the risks of collisions would likely be moderate to high (2015 Proposed RMPA/Final EIS, pages 2-44 and 2-45). The

amount of additional fencing needed would depend on the size of the RNA reduction. Lastly, the environmental and socioeconomic effects of this alternative would be substantially similar to the No-Action Alternative analyzed in the 2015 Proposed RMPA/Final EIS because livestock grazing would likely continue on most of the 21,959 acres in the key RNAs. The BLM did not analyze this alternative in detail, because the reduced number and size of RNAs would be less than the minimum needed to meet research needs, the effects of the increased amount of fencing needed compared to the No-Action Alternative are similar to those effects analyzed under the Proposed Plan Amendment Alternative in the 2015 Proposed RMPA/Final EIS, and lastly, there is no substantial difference in environmental and socioeconomic effects from those of the No-Action Alternative of the 2015 Proposed RMPA/Final EIS.

Allow Grazing on Five Key RNAs. Under this alternative, the BLM considered allowing grazing on the five key RNAs with the greatest socioeconomic impacts (having more than a 5 percent reduction in active use AUMs) and adding approximately 9,233 acres of the Steens Mountain Wilderness to the potential study area. These RNAs included Black Canyon, Fish Creek Rim, Rahilly-Gravelly, Spring Mountain, and Toppin Creek Butte. Allowing grazing to continue on these five key RNAs would avoid reducing AUMs and the associated socioeconomic impacts to five permittees and the economies of two counties. These key RNAs included fourteen plant communities not replicated in other key RNAs, of which two (aspen types) did not provide Greater Sage-Grouse habitat and three likely did not provide Greater Sage-Grouse habitat (two juniper savanna types and one mountain shrub type). Comparing the resulting matrix to the list of plant communities in **Chapter 4**, **Table 4-4**, the number of plant communities represented would be reduced to 39, including the sole representative of the mountain big sagebrush-antelope bitterbrush/Idaho fescue plant association in Fish Creek Rim RNA. Whether including Steens Mountain Wilderness would restore nine missing plant communities is not known in the absence of a more detailed vegetation map. Under this alternative the five key RNAs encompass 75 percent of the active use AUMs (1,325 out of 1,772 AUMs). Making the other 8 key RNAs unavailable to livestock grazing would have minimal to no impact to the active use AUMs of the livestock grazing operators (see **Table 4-6**; many of the AUMs could be moved into other pastures with no actual reduction in Active Use or economic impact). As a result, the socioeconomic impacts would be substantially similar to as the 2018 Proposed Plan Amendment and therefore the BLM did not analyze this alternative in detail.

Reduce the Size of Five Key RNAs. Under this alternative, the BLM considered reducing the size of five key RNAs—Black Canyon, Fish Creek Rim, Rahilly-Gravelly, Spring Mountain, and Toppin Creek Butte—to the level where less than 5 percent of active use AUMs would be affected and include a portion of Steens Mountain Wilderness in the potential study area. Based on a preliminary assessment done by the BLM after public comments on the Draft EIS, a reduction of less than 5 percent of active use AUMs would not substantially affect the carrying capacity, forage use levels, or distribution patterns in the pastures within the key RNAs, with little or no impact on permittee operations or county economies.

An important consideration in determining the size of the closures in the 2015 ROD/ARMPA was to minimize the amount of additional fencing needing to be constructed (2015 Proposed RMPA/Final EIS, pages 2-44 and 2-45). The reduction proposed in this alternative, however, would increase the amount of needed fencing. While BLM would install anti-striker markers on the fences, these markers are not 100 percent effective. The risk of Greater Sage-Grouse mortality from fence collisions would increase. Since one criterion for the selection of the key RNAs in the 2015 ROD/ARMPA was inclusion or

proximity to occupied or pending Greater Sage-Grouse leks (2015 Final EIS, pages 2-44 and 2-45), the risks of collisions would likely be moderate to high if additional fencing was constructed within the five key RNAs. The amount of additional fencing needed would depend on the size of the RNA reduction.

For this alternative BLM developed two different methods to estimate the number of acres that would need to be reduced in order keep the reductions of AUMs below the 5 percent threshold identified in the preliminary assessment described above. Both methods indicated problems with either the methodologies or information in BLM's grazing database or both. However, regardless of which method was used, the outcome would result in socioeconomic effects similar to the 2018 Proposed Plan Amendment, because the reduction in acres and AUMs affected would be below the threshold of an economic impact. The environmental effects would be substantially similar to or the same as those analyzed under the No-Action Alternative in the 2015 Proposed RMPA/Final EIS because the reduced number and size of RNAs would be less than the minimum needed to meet research needs, the effects of the increased amount of fencing needed compared to the No-Action Alternative are similar to those effects analyzed under the Proposed Plan Amendment Alternative in the 2015 Proposed RMPA/Final EIS, and lastly, there is no substantial difference in environmental and socioeconomic effects from those of the No-Action Alternative of the 2015 Proposed RMPA/Final EIS. Therefore, the BLM did not analyze this alternative in detail.

2.3 DESCRIPTION OF ALTERNATIVES FROM 2018

2.3.1 No-Action Alternative

Under the No-Action Alternative, the BLM would not have amended the RMPs amended by the Oregon Greater Sage-Grouse Resource Management Plan Amendment (–2015 ROD/ARMPA). Greater Sage-Grouse habitat would have continued to be managed under the 2015 ROD/ARMPA management direction. Goals and objectives for BLM-administered lands and federal mineral estate would not have changed. Allowable uses and restrictions pertaining to activities such as mineral leasing and development, recreation, lands and realty, and livestock grazing would also have remained the same. All or portions of the 13 key RNAs would not have been available for livestock grazing as described in the 2015 Oregon ROD/ARMPA. Foster Flat and Guano Creek–Sink Lakes RNAs would have remained unavailable for livestock grazing.

2.3.2 Management Alignment Alternative

This alternative is derived through coordination with the State of Oregon and cooperating agencies to align with the state action plan and to support conservation outcomes for Greater Sage-Grouse. The BLM continues to build upon the 2015 planning effort as envisioned in SO 3353 by collaborating with states and stakeholders to improve alignment between federal management plans and other plans and programs at the state level, while ensuring consistency with the BLM's multiple-use mission. This enhanced cooperation between the BLM and the Governor's office is intended to lead to improved management and coordination with states across the range of Greater Sage-Grouse, including in Oregon. It will also provide additional flexibility for the BLM to work with the State of Oregon on landscape-scale decisions, which will provide protections for Greater Sage-Grouse habitat, while allowing reasonable development of other resources in support of local communities and economies.

The State action plan supports proper livestock grazing and recognizes the BLM's authority to manage grazing on public lands. Livestock grazing would be available in all or portions of the 13 key RNAs in keeping with the District RMP decisions that were amended by the 2015 ROD/ARMPA in order to

support local communities and economies. This alternative would not change terms and conditions of existing grazing permits. Foster Flat and Guano Creek–Sink Lakes key RNAs would remain unavailable for livestock grazing, in keeping with those prior district decisions and RMPs.

When authorizing third-party actions in designated Greater Sage-Grouse habitat, the BLM will seek to achieve the planning-level Greater Sage-Grouse management goals and objectives through implementation of mitigation and management actions, consistent with valid existing rights and applicable law. Under the 2018 Proposed Plan Amendment, management would be consistent with the Greater Sage-Grouse goals and objectives, and in conformance with BLM Manual 6840, Special Status Species Management. In accordance with BLM Manual 6840, the BLM will undertake planning decisions, actions and authorizations "to minimize or eliminate threats affecting the status of [Greater Sage-Grouse] or to improve the condition of [Greater Sage-Grouse] habitat" across the planning area.

The BLM has determined that compensatory mitigation must be voluntary unless required by applicable law other than FLPMA, while recognizing that State authorities may also require compensatory mitigation (IM 2018-093, *Compensatory Mitigation*, July 24, 2018). Therefore, consistent with valid existing rights and applicable law, when authorizing third-party actions that result in habitat loss and degradation, the BLM will consider voluntary compensatory mitigation actions only as a component of compliance with a State mitigation plan, program, or authority, or when offered voluntarily by a project proponent.

When considering third-party actions on BLM managed lands, the BLM will coordinate with the State of Oregon to identify any adverse impacts that may affect sage-grouse and their habitats. The BLM will complete the following steps, in alignment with the Governor of Oregon's Executive Order 15-18 (September 16, 2015) to comply with the Oregon Sage-Grouse Action Plan and Oregon Administrative Rule (OAR) 635-140-0000 thru 635-140-0025:

1. Conduct preliminary meetings with the project proponent to assist them with using the Oregon Development Siting Tool and other existing tools to identify potential project impacts to sage-grouse and alternative siting or design approaches that could avoid or help reduce the impact to sage-grouse and potentially, the need to provide compensatory mitigation.
2. Conduct pre-application meetings with the Oregon Department of Fish and Wildlife (ODFW) and the project proponent to discuss project details and coordinate BLM and State required or recommended avoidance and minimization measures (OAR 635-140-0025) to further reduce project impacts to sage-grouse.
3. Request that ODFW utilize the State's Habitat Quantification Tool (HQT) to determine unavoidable residual impacts on Greater Sage-Grouse or its habitat.
4. If compensatory mitigation is required as a part of State policy or authorization, or if a proponent voluntarily offers mitigation, the BLM will incorporate that mitigation into the BLM's NEPA and decision-making process.
5. The BLM will evaluate that compensatory mitigation:
    a. achieves net conservation benefit for sage-grouse by replacing the lost functionality of the impacted habitat to a level capable of supporting greater sage-grouse numbers than that of the habitat which was impacted as determined using the Oregon HQT
    b. provides benefits that are in place for at least the duration of the impacts
    c. accounts for a level of risk that the mitigation action may fail or not persist for the full duration of the impact
6. The BLM will recommend to the project proponent that it coordinate with the State of Oregon to ensure it complies with all applicable State requirements relating to its proposal.

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. When the BLM is considering compensatory mitigation as a component of the project proponent's submission or based on a requirement or recommendation from the State, the BLM's NEPA analysis would evaluate the need to avoid or minimize impacts of the proposed project and achieve the goals and objectives of this FSEIS. The BLM will defer to the appropriate State authority to quantify habitat offsets, durability, and other aspects used to determine the recommended compensatory mitigation action

The BLM will not deny a proposed authorization in Greater Sage-Grouse habitat solely on the grounds that the proponent has not proposed or agreed to undertake voluntary compensatory mitigation. In cases where waivers, exceptions, or modification may be granted for projects with a residual impact, voluntary compensatory mitigation consistent with the State's management goals can be one mechanism by which a proponent achieves the RMPA goals, objectives, and waiver, exception, or modification criteria. When a proponent volunteers compensatory mitigation as their chosen approach to address residual impacts, the BLM can incorporate those actions into the rationale used to grant a waiver, exception, or modification. The final decision to grant a waiver, exception, or modification will be based, in part, on criteria consistent with the State's Greater Sage-Grouse management plans and policies.

2.4 COMPARISON OF ALTERNATIVES

The 2018 Final EIS expressly incorporated by reference the full range of 2015 alternatives as stated on pages 2-1 and 2-2 of the November 2018 Final EIS. Through this SEIS, the BLM provided the public with an additional opportunity to review and comment on the full range of eight alternatives evaluated in the 2018 Final EIS. The full range of alternatives considered in the 2018 Final EIS is both summarized and provided in detail in the three tables that follow. BLM incorporates the 2015 alternatives into the current process and hereby incorporates by reference the entirety of Chapter 2 of the 2015 ARMPA Final EIS.

2.4.1 Detailed Description of Alternatives Considered during the 2019 Planning Process

BLM considered a range of reasonable alternatives when responding to Secretary's Order 3353 to enhance cooperation with Western States in the management and conservation of sage-grouse and its habitat. The BLM reconsidered the six alternatives it analyzed in detail during the 2015 planning process and two new alternatives during the 2019 planning process. BLM incorporated the 2015 alternatives by reference into the 2018 Final EISs, for a total of eight alternatives evaluated in detail.

The following 3 tables illustrate the alternatives that the BLM considered during the 2019 land use planning effort. **Table 2-1** summarizes the alternatives that the BLM evaluated in detail during the 2019 planning effort, as well as alternatives that the BLM considered but did not analyze in detail.

Table 2-2 describes in detail the new alternatives developed during the 2019 planning effort to address the issues raised during scoping. Because the 2019 effort was focused on aligning BLM sage-grouse management with State plans, BLM focused on a narrower set of issues and therefore only two additional alternatives were analyzed in detail. However, that did not limit the BLM which incorporated analysis from 2015 to consider all the alternatives considered in 2015 as well.

Table 2-1
Alternatives considered during the 2019 planning process

Oregon Planning Document	Document Date	Alternative Title	Analysis Level	Alternative Description (see **Table 2-3** below for comparison of ACEC/RNA alternative differences)
Alternatives Considered During the 2015 and 2019 Planning Processes				
Harney Soil and Water Conservation District	March 2014	Rural Community Alternative	Considered; Not Analyzed in Detail	Summary: After the November 2013 draft EIS was released for public review and comment, and prior to the June 2015 final EIS, the Harney Soil and Water Conservation District (SWCD) a cooperating agency in the planning process proposed a new alternative for consideration. The Harney SWCD provided a Rural Community Alternative (RCA) to the BLM in early 2014 that addressed their concerns for Greater Sage-Grouse conservation and priority issues, including impacts on the rural communities of eastern Oregon. BLM met with the cooperating agencies including Harney SWCD on March 24, 2014 and April 10, 2014 to discuss the RCA. After considering the RCA, the BLM Oregon/Washington State Director, in a July 18, 2014 response letter to the SWCD explained that the BLM would not to analyze the alternative as a separate alternative in the Final EIS. The letter indicated that a variety of the components of the RCA would be incorporated into the proposed plan and Final EIS chapters. The letter also identified where BLM had included and analyzed many of the other RCA elements in the other alternatives.
Oregon Greater Sage-Grouse Proposed Resource Management Plan Amendment/Final Environmental Impact Statement (RMPA/Final EIS)	June 2015	Alternative A (No Action)	Fully Analyzed	Verbatim from 2015 Final EIS (Executive Summary): Under Alternative A, the BLM would not develop new management actions to protect [Greater Sage-Grouse] habitat. Management of existing threats to [Greater Sage-Grouse] populations and habitat, such as infrastructure, invasive species, grazing, mineral development, and wildfire, would continue in accordance with existing land use planning documents. Alternative A would have retained the management goals, objectives and direction specified in the BLM RMPs effective prior to the 2015 ROD/ARMPA.

Oregon Planning Document	**Document Date**	**Alternative Title**	**Analysis Level**	**Alternative Description** (see **Table 2-3** below for comparison of ACEC/RNA alternative differences)
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS	June 2015	Alternative B	Fully Analyzed	Verbatim from 2015 Final EIS (Executive Summary): Alternative B is based on the conservation measures developed by the BLM National Technical Team (NTT) planning effort described in Instruction Memorandum No. WO-2012-044. As directed in the memorandum, the conservation measures developed by the NTT must be considered and analyzed, as appropriate, through the land use planning and NEPA processes by all BLM state and field offices that contain occupied [Greater Sage-Grouse] habitat. Alternative B would apply management actions to PHMA and GHMA, including actions that would exclude ROW development in PHMA and avoid development in GHMA, close PHMA to fluid mineral leasing, mineral material sales, and nonenergy leasable minerals, and recommend proposed withdrawal from locatable mineral entry in PHMA. These management actions would reduce surface disturbance in PHMA and would minimize disturbance in GHMA, thereby maintaining [Greater Sage-Grouse] habitat. Management actions for wildfire would focus on suppression in PHMA and GHMA, while limiting certain types of fuels treatments. Vegetation management would emphasize sagebrush restoration. Collectively, vegetation and wildfire management would conserve [Greater Sage-Grouse] habitat. Grazing would continue with similar impacts under Alternative B as Alternative A.

Oregon Planning Document	Document Date	Alternative Title	Analysis Level	Alternative Description (see **Table 2-3** below for comparison of ACEC/RNA alternative differences)
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS	June 2015	Alternative C	Fully Analyzed	Verbatim from 2015 Final EIS (Executive Summary): Alternative C is the most restrictive approach to [Greater Sage-Grouse] conservation. Alternative C would eliminate all future ROWs, fluid mineral leasing, nonenergy leasable mineral development, and mineral material sales on [Greater Sage-Grouse] habitat. Alternative C would also recommend proposed withdrawal from locatable mineral entry for all [Greater Sage-Grouse] habitat. Alternative C would manage all [Greater Sage-Grouse] habitat as PHMA This alternative would substantially reduce surface disturbance in all [Greater Sage-Grouse] habitat. Under Alternative C, the BLM would take a passive management approach to vegetation management and fuels treatments. Additionally, all [Greater Sage-Grouse] habitat would be unavailable for livestock grazing.
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS	June 2015	Alternative D	Fully Analyzed	Verbatim from 2015 Final EIS (Executive Summary): Alternative D, the agencies' preferred alternative from the Draft RMPA/EIS, presents a balanced approach to maintaining and enhancing [Greater Sage-Grouse] populations and habitat. Alternative D would limit disturbance in [Greater Sage-Grouse] habitat by excluding wind and solar energy development, avoiding all other ROW development, applying no surface occupancy stipulations to fluid mineral development in PHMA, and closing PHMA and GHMA to nonenergy leasable mineral development and mineral material sales. These management actions would protect [Greater Sage-Grouse] habitat while allowing other activities, subject to conditions. Under Alternative D, the BLM management would support sagebrush/perennial grass ecosystems enhancements, would increase fire suppression in PHMA and GHMA, and would manage livestock grazing to maintain or enhance sagebrush and perennial grass ecosystems.

Oregon Planning Document	**Document Date**	**Alternative Title**	**Analysis Level**	**Alternative Description** (see **Table 2-3** below for comparison of ACEC/RNA alternative differences)
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS	June 2015	Alternative E	Fully Analyzed	Verbatim from 2015 Final EIS (Executive Summary): Alternative E contains [Greater Sage-Grouse] conservation guidelines from Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat (the state plan; Hagen 2011). The state plan describes the Oregon Department of Fish and Wildlife's proposed management of [Greater Sage-Grouse]. It also provides guidance for public land management agencies and land managers for [Greater Sage-Grouse] conservation. [Greater Sage-Grouse] conservation guidelines in the state plan are designed to maintain (at a minimum) or enhance the quality (the optimum) of current habitats. The guidelines would also assist resource managers in achieving the population and habitat objectives of the state plan.
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS	June 2015	Alternative F	Fully Analyzed	Verbatim from 2015 Final EIS (Executive Summary): Alternative F would restrict development in ways similar to those proposed under Alternative C. Alternative F would limit surface disturbance in PHMA and GHMA. The BLM, under Alternative F, would prioritize wildfire suppression in PHMA, while limiting certain types of fuels treatments necessary to protect [Greater Sage-Grouse] habitat. Concurrent vegetation management would emphasize sagebrush restoration and enhancement. Alternative F would reduce livestock utilization by 25 percent within PHMA and GHMA.

Oregon Planning Document	**Document Date**	**Alternative Title**	**Analysis Level**	**Alternative Description** (see **Table 2-3** below for comparison of ACEC/RNA alternative differences)
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS	June 2015	Proposed Plan Amendment	Fully Analyzed	Verbatim from 2015 Final EIS (Executive Summary): The BLM Proposed Plan addresses threats to [Greater Sage-Grouse] and its habitat identified by the USFWS in the March 2010 listing decision that apply to the Oregon planning area as well as threats described in the COT report. The Proposed Plans seek to provide greater regulatory certainty for management actions intended to conserve the [Greater Sage-Grouse] (Table ES-2, Key Components of the Oregon Proposed Plan Addressing COT Report Threats). In making its determination of whether the [Greater Sage-Grouse] is warranted to be listed as threatened or endangered under the ESA, the USFWS will evaluate the degree to which the land use planning decisions proposed in this RMPA/EIS address threats to [Greater Sage-Grouse] and its habitat. The Proposed Plan would maintain and enhance [Greater Sage-Grouse] populations and habitat. The Proposed Plan would apply management actions, subject to valid existing rights, to other uses and resources, such as the following: • Providing a framework for prioritizing areas in PHMA and GHMA for wildfire, invasive annual grass, and conifer treatments • Managing areas as ROW avoidance or exclusion for certain types of lands and realty uses, requiring specific design features, and limiting new development where a disturbance cap has been reached • Adjust grazing practices as necessary, based on [Greater Sage-Grouse] habitat objectives, Land Health Standards, and ecological site potential • Applying no surface occupancy stipulations, with limited exceptions, to fluid mineral development in PHMA and closing PHMA to nonenergy leasable development and mineral material sales

Oregon Planning Document	**Document Date**	**Alternative Title**	**Analysis Level**	**Alternative Description** (see **Table 2-3** below for comparison of ACEC/RNA alternative differences)
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS (*continued*)	*(see above)*	*(see above)*	*(see above)*	The Proposed Plan would also establish screening criteria and conditions for new human activities in PHMA and GHMA to ensure a net conservation gain to [Greater Sage-Grouse]. The Proposed Plan would reduce habitat disturbance and fragmentation through limitations on surface-disturbing activities, while addressing changes in resource condition and use through monitoring and adaptive management. The Proposed Plan adopts key elements of the Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitat (Hagen 2011) by establishing conservation measures and focusing restoration efforts in the same key areas most valuable to the [Greater Sage-Grouse].
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS	June 2015	USFWS-Listing Alternative	Considered; Not Analyzed in Detail	Summary: Comments provided through scoping requested analysis of an alternative based on the assumption that Greater Sage-Grouse become listed under the ESA. This was outside the scope; the purpose and need of this plan amendment was to address inadequacy of regulatory mechanisms that were identified as one of the listing factors for Greater Sage-Grouse in the USFWS finding on the petition to list Greater Sage-Grouse. Although this alternative would also include conservation measures identified by the USFWS, those conservation measures were not known at the time. Therefore, an alternative that included USFWS-listing with associated conservation measures for Greater Sage-Grouse was not analyzed in detail.

Oregon Planning Document	Document Date	Alternative Title	Analysis Level	Alternative Description (see **Table 2-3** below for comparison of ACEC/RNA alternative differences)
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS	June 2015	Elimination of Livestock Grazing from all BLM managed lands	Considered; Not Analyzed in Detail	Summary: Alternative C of the 2015 Final EIS analyzed eliminating grazing from BLM-administered lands containing PHMA and GHMA. An alternative that would eliminate livestock grazing from all lands (an additional approximately 2.4 million acres) administered by the BLM was not analyzed in detail because no issues or conflicts were identified during planning that would be resolved by completely eliminating grazing in the planning area.
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS	June 2015	Increase Livestock Grazing in Greater Sage-Grouse habitat	Considered; Not Analyzed in Detail	Summary: This publicly recommended alternative was based on empirical evidence suggesting there could be a correlation between declines in Greater Sage-Grouse and declines in the level of livestock grazing on BLM-administered lands. The alternative was not analyzed in detail for several reasons, including that it would not meet the purpose and need for science-based conservation measures.
Oregon Greater Sage-Grouse Proposed RMPA/Final EIS	June 2015	Close All or Portions of PHMA or GHMA to Off-Highway Vehicle Use	Considered; Not Analyzed in Detail	Summary: Through this RMPA/EIS, the BLM has identified, but had not studied in detail, an alternative to designate new area closures for OHV use within PHMA and GHMA. The BLM analyzed alternatives to designate all areas within PHMAs and GHMAs as "limited" to existing roads and trails for OHV use, if not already closed by existing planning efforts. Subsequent Travel Management Plans will be developed to identify specific routes within limited areas that were closed in order to protect and conserve Greater Sage-Grouse and its habitat. The BLM has analyzed existing OHV area closures within PHMAs and GHMAs as part of the No Action alternative and as a decision common to all alternatives.

Oregon Planning Document	**Document Date**	**Alternative Title**	**Analysis Level**	**Alternative Description** (see **Table 2-3** below for comparison of ACEC/RNA alternative differences)
Oregon Greater Sage-Grouse Draft Resource Management Plan and Environmental Impact Statement	May 2018	No Action Alternative	Fully Analyzed	Verbatim from 2018 Draft and Final EIS (Executive Summary): Under the No-Action Alternative, the BLM would not amend the current Greater Sage-Grouse management plan (Oregon Greater Sage-Grouse Approved Resource Management Plan Amendment - ARMPA). Greater Sage-Grouse habitat would continue to be managed under current management direction. Goals and objectives for BLM-administered lands and federal mineral estate would not change. Allowable uses and restrictions pertaining to activities such as mineral leasing and development, recreation, lands and realty, and livestock grazing would also remain the same. All or portions of the 13 key RNAs would not be available for livestock grazing as described in the 2015 ROD/ARMPA. Foster Flat and Guano Creek–Sink Lakes RNAs would remain unavailable for livestock grazing.
Oregon Greater Sage-Grouse Proposed Resource Management Plan and Final Environmental Impact Statement	November 2018			
Oregon Greater Sage-Grouse Draft Resource Management Plan and Environmental Impact Statement	May 2018	Management Alignment Alternative	Fully Analyzed	Verbatim from 2018 Draft and Final EIS (Executive Summary): The state action plan supports proper livestock grazing and recognizes the BLM's authority to manage grazing on public lands. Livestock grazing would be available in all or portions of the 13 key RNAs in keeping with the district RMPs' decisions that were amended by the 2015 ROD/ARMPA in order to support local communities and economies. This alternative would not change terms and conditions of existing grazing permits. Foster Flat and Guano Creek–Sink Lakes key RNAs would remain unavailable for livestock grazing in keeping with those prior district decisions and RMPs. Table 2-2 (Chapter 2) further specifies the proposed changes needed to address consistency between state and federal plans.
Oregon Greater Sage-Grouse Proposed Resource Management Plan and Final Environmental Impact Statement	November 2018	Proposed Plan Alternative (alternative did not change from the draft)		

Oregon Planning Document	Document Date	Alternative Title	Analysis Level	Alternative Description (see **Table 2-3** below for comparison of ACEC/RNA alternative differences)
Oregon Greater Sage-Grouse Proposed Resource Management Plan and Final Environmental Impact Statement	November 2018	Reduce the Size (Acreage) of 13 Key RNAs Unavailable to Livestock Grazing	Considered; Not Analyzed in Detail	Summary: Based on public comments on the draft EIS, BLM Oregon considered an alternative that would have reduced the size (acreage) of the 13 key RNAs unavailable to livestock grazing and added an additional 9,233 acres of the Steens Mountain Wilderness to the potential study area. The BLM determined that the acreage contained in the key RNAs identified in the 2015 Approved Resource Management Plan Amendment was the minimum size and placement needed to provide a sufficient land base and mix of vegetation types to meet the research needs and retain the statistical power and scope of inference necessary to extrapolate study results over the entire planning area and into adjoining states. In addition, reducing the acreage would have increased the amount of fencing needed to exclude livestock, which would have increased the risk of mortality for Greater Sage-Grouse. BLM Oregon determined that the environmental and socioeconomic impacts would be substantially similar to those of the No-Action Alternative analyzed in the 2015 Proposed RMPA/Final EIS (Section 2.2.2 of the 2018 Final EIS, pg 2-4).
Oregon Greater Sage-Grouse Proposed Resource Management Plan and Final Environmental Impact Statement	November 2018	Allow Grazing on Five Key RNAs	Considered; Not Analyzed in Detail	Summary: Based on public comments on the draft EIS, BLM Oregon considered an alternative that would have allowed grazing on five of the thirteen key RNAs to reduce the economic impacts to those permitees whose permitted active use Animal Unit Months (AUMs) would have been reduced greater than five percent. The alternative would also have added 9,233 acres of the Steens Mountain Wilderness to the potential study area. BLM determined that allowing grazing on the five named key RNAs would encompass 75 percent of the active use AUMs and would substantially reduce the number of plant communities important to Greater Sage-Grouse represented in the key RNAs. BLM determined that this alternative would have had substantially the same economic impact as the proposed plan alternative. This alternative would also have reduced the number and geographic placement of plant communities within key RNAs to below what was considered the minimum identified in the 2015 plan. This impact was considered substantially similar to the proposed plan alternative (Section 2.2.2 of the 2018 Final EIS, pg 2-5).

Oregon Planning Document	**Document Date**	**Alternative Title**	**Analysis Level**	**Alternative Description** (see **Table 2-3** below for comparison of ACEC/RNA alternative differences)
Oregon Greater Sage-Grouse Proposed Resource Management Plan and Final Environmental Impact Statement	November 2018	Reduce the Size of Five Key RNAs	Considered; Not Analyzed in Detail	Summary: Based on public comments on the draft EIS, BLM considered an alternative that would have reduced the size of five key RNAs to the point that less than five percent of active use AUMs would be affected and included a portion of Steens Mountain Wilderness in the potential study area. Based on a preliminary assessment, BLM determined that a reduction of less than five percent of active use AUMs would not substantially affect the carrying capacity, forage use levels, or distribution patterns in the pastures within the key RNAs, and with little or no impact on permittee operations or county economies. Reducing the acreage would have increased the amount of fencing needed to exclude livestock, which would have increased the risk of mortality for Greater Sage-Grouse. A preliminary assessment indicated that the outcome of reducing the size of the five named key RNAs would have socioeconomic impacts substantially similar to the Proposed Plan Amendment alternative and to those of the No-Action Alternative of the 2015 Proposed RMPA/Final EIS.

Table 2-2
Detailed Comparison of 2019 EIS Alternatives

2015 ARMPA Decision	No-Action Alternative	Proposed Plan Amendment Management Alignment Alternative
Modifying Livestock Grazing Decisions within Research Natural Areas		
Objective Livestock Grazing 2 (Obj. LG-2)	On BLM-administered lands, 12,083,622 acres will continue to be available for livestock grazing in Greater Sage-Grouse habitat. In 13 key RNAs, 21,959 acres will be unavailable for livestock grazing. Foster Flat and Guano Creek–Sink Lakes RNAs will remain closed to livestock grazing per district RMP decisions made prior to the 2015 ARMPA.	On BLM-administered lands, an additional 21,959 acres will be available for livestock grazing; livestock grazing would be permitted in the 13 key RNAs. This objective would be deleted. Foster Flat and Guano Creek–Sink Lakes RNAs will remain closed to livestock grazing per district RMP decisions made prior to the 2015 ARMPA.
Management Direction Livestock Grazing 1 (MD LG-1)	All or portions of 13 key RNAs will be unavailable for grazing (Table 2-6). Determine whether to remove fences, corrals, or water storage facilities (e.g., reservoirs, catchments, and ponds) from these 13 key RNAs. Foster Flat and Guano Creek–Sink Lakes RNAs will remain closed to livestock grazing per district RMP decisions made prior to the 2015 ARMPA.	This management direction would be deleted. Management would be governed by pre-2015 ARMPA district decisions and RMPs and other appropriate 2015 ARMPA goals, objectives, and management decisions. Foster Flat and Guano Creek–Sink Lakes RNAs will remain closed to livestock grazing per district RMP decisions made prior to the 2015 ARMPA.
Objective Special Designation 4 (Obj. SD-4)	Manage key RNAs, or large areas within the RNAs, as undisturbed baseline reference areas for the sagebrush plant communities they represent that are important for Greater Sage-Grouse. Manage key RNAs for minimum human disturbance, allowing natural succession to proceed.	Manage the Foster Flat and Guano Creek–Sink Lakes RNAs as undisturbed baseline reference areas for the sagebrush plant communities they represent that are important for Greater Sage-Grouse. Minimize human disturbance in 15 key RNAs, allowing natural ecological processes to proceed.
Objectives SD-1, SD-2, SD-3	No change from the 2015 ARMPA decision.	No change from the 2015 ARMPA decision.

Note: The Management Alignment Alternative of the Draft EIS became the Proposed Plan Amendment in the Final EIS with no changes to the two objectives (LG-2 and SD-4) and one management direction (LG-1).

Table 2-3 describes in detail the alternatives developed during the 2015 planning effort that were also considered in the most recent Greater Sage-Grouse land use planning process. **Table 2-3** is considerably longer than **Table 2-2** because the 2015 process addressed many more issues than the focused 2019 planning effort.

Table 2-3 shows the Alternatives analyzed in detail during the 2015 planning effort and incorporated by reference into the 2019 process. **Table 2-3** includes land use plan Goals, Objectives, and Management Directions by Alternative analyzed in 2015 related to livestock grazing in Research Natural Areas.

Table 2-3
Goals, Objectives, and Management Direction by 2015 Final EIS Alternative

Alternative A (No Action, 2015 Final EIS)	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan Amendment
Objectives LG-2 and SD-4 of the 2015 ARMPA*						
Alternative A is composed of decisions established in the current RODs for the following RMPs: Andrews, Brothers/La Pine, Baker, Lakeview, Southeastern Oregon, the Steens Mountain Cooperative Management and Protection Area, Three Rivers, and Upper Deschutes (p 2-63). Goals and objectives for BLM-administered lands and mineral estate would not change (p 2-63).	Obj. B-SD 1: —	Obj. C-SD 1: Alternative C would designate all PHMA as new ACECs. Manage ACECs for Greater Sage-Grouse conservation (p 2-108). Manage existing ACECs for the values for which they were designated, per district RMPs, following existing management actions described in the plans (p 2-108).	Obj. D-SD 1: Manage RNAs, a special type of ACEC, as undisturbed vegetative reference areas for the plant community cells they represent that are important for Greater Sage-Grouse. Use RNAs as part of a national interagency network of natural areas that contain important ecological and scientific values and manage them for minimum human disturbance. Manage to preserve examples of all	Objective E-SD 1: —	Objective F-SD 1: Designate 17 new ACECs within high-quality Greater Sage-Grouse habitat to maintain and increase current Greater Sage-Grouse abundance and to conserve or enhance the sagebrush ecosystem. Manage existing ACECs for the values for which they were designated, per district RMPs following existing management actions described in the plans. p. 2-108.	Obj. LG/RM 2: On BLM-managed lands, 12,083,622 acres would continue to be available for livestock grazing in Greater Sage-Grouse habitat. In 13 key RNAs, 22,765 acres are unavailable to livestock grazing, representing an anticipated reduction of 2,388 AUMs (p 2-16 and p 2-45). Obj. SD 4: Manage key RNAs, or large areas within the RNAs, as undisturbed baseline

Alternative A (No Action, 2015 Final EIS)	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan Amendment
The BLM would not modify existing or establish additional criteria to identify site-specific use levels for implementation (p 2-63). RNAs would continue to be managed for the relevant and important values for which the ACECs/ RNAs were designated in the various District RMP RODs.	(*see above)*	(*see above)*	significant natural ecosystems and plant communities important for Greater Sage-Grouse, for comparison with those influenced by human and BLM actions, to provide educational and research areas for ecological and environmental studies, and to preserve gene pools of typical and rare plants and animals (p 2-108). In 22 RNAs, 98,446 acres will be unavailable for livestock grazing, representing a reduction of 7,948 AUMs (Table 2-9, page 2-67). Foster Flat and Guano Creek–Sink Lakes RNAs will remain closed to livestock grazing per district RMP decisions made prior to the 2015 ARMPA.**	(*see above)*	(*see above)*	reference areas for the sagebrush plant communities they represent that are important for Greater Sage-Grouse. Manage key RNAs for minimum human disturbance allowing natural succession to proceed (p 2-18). Foster Flat and Guano Creek–Sink Lakes RNAs will remain closed to livestock grazing per district RMP decisions made prior to the 2015 ARMPA.**

Alternative A (No Action, 2015 Final EIS)	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan Amendment
Management Direction LG-1 (from the 2015 ARMPA) as analyzed in the June 2015 Final EIS						
The number of AUMs would remain the same as exists currently (771,773 AUMs).	Action B-LG/RM 1: The number of AUMs would be the same as Alternative A. There would be 771,773 AUMs on Greater Sage-Grouse habitat in the planning area (p 2-133).	Action C-LG/RM 1: Prohibit grazing in occupied Greater Sage-Grouse habitat. There would be 0 AUMs on Greater Sage-Grouse habitat in the planning area (p 2-133).	Action D-LG/RM 1: Close all RNAs that contain over 20% PHMA acres and/or 50% GHMA that are not meeting rangeland health standards due to current livestock grazing management and do not have a suitable habitat rating consistent with the HAF or with values adjusted for regional conditions to maintain native plant community cells in relatively undisturbed condition to serve as a baseline for understanding the impacts of grazing and not grazing Greater Sage-Grouse habitat. Maintain closed RNAs as closed until attainment of rangeland health standards can be documented and a	Action E-LG/RM 1: The number of AUMs would be the same as Alternative A. There would be 771,773 AUMs on Greater Sage-Grouse habitat in the planning area (p 2-133).	Action F-LG/RM 1: Reduce by 25% the area grazed. There would be 289,414 AUMs on Greater Sage-Grouse habitat in the planning area (p 2-133).	Action LG/RM-1: All or portions of key RNAs will be unavailable to grazing (Table 2-6, p 2-45). Determine whether to remove fences, corrals, or water storage facilities (e.g. reservoirs, catchments, ponds). (p 2-25). (Note: There would be 769,385 AUMs on Greater Sage-Grouse habitat in the planning area; from the reduction of 2,388 AUMs in key RNAs (p 2-45).)

Alternative A (No Action, 2015 Final EIS)	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan Amendment
(see above)	*(see above)*	*(see above)*	suitable habitat rating that is consistent with the HAF or with values adjusted for regional conditions is achieved. There would be 763,825 AUMs on Greater Sage-Grouse habitat in the planning area (p 2-133).	*(see above)*	*(see above)*	*(see above)*

Notes:
*The goals, objectives, and management action nomenclature and numbering sequences changed between the 2015 final EIS and the 2015 Approved Resource Management Plan Amendment (ARMPA). The 2019 amendment deleted or changed two objectives and one management decision from the 2015 ARMPA. This table displays the objectives and management actions of the 2015 Final EIS equivalent to the objectives and management directions of the 2015 ARMPA that were amended in 2019.

In some cells, there is a "—" as a placeholder to indicate that there is no similar goal or objective to the other alternatives, or that the similar goal or objective is reflected in another portion of the alternative.

**As described in the November 2018 Final EIS, Section 1.3, page 1-4, two of the RNAs discussed—Foster Flat and Guano Creek–Sink Lakes—were closed to livestock grazing by the 1992 Three Rivers RMP/ROD and the 2003 Lakeview RMP/ROD, respectively. Both the 2015 ROD/ARMPA and the 2019 ROD/RMPA left these RNAs closed to livestock grazing.

Table 2-4
Key Research Natural Areas–Summary of Acres and AUMs by 2019 Alternative

RNA Name	District	Total Acres of the RNA**	No-Action Alternative		Proposed Plan Amendment	
			Acres Available for Livestock Grazing	Acres / AUMs Unavailable for Livestock Grazing	Acres / AUMs Available for Livestock Grazing	Acres Unavailable for Livestock Grazing
Black Canyon	Vale	2,639	0	2,639/260	2,639/260	0
Dry Creek Bench	Vale	1,637	1,015	622/52	1,637/52	0
East Fork Trout Creek	Burns	361	57	304/47	361/47	0
Fish Creek Rim	Lakeview	8,716	5,966	2,750/110	8,716/110	0
Foley Lake	Lakeview	2,228	959	1,269/51	2,228/51	0
Foster Flat	Burns	2,687	0	2,687	0	2,687
Guano Creek–Sink Lakes	Lakeview	11,185	0	11,185	0	11,185
Lake Ridge	Vale	3,860	3,091	769/74	3,860/74	0
Mahogany Ridge	Vale	682	527	155/27	682/27	0
North Ridge Bully Creek	Vale	1,569	1,405	164/19	1,569/19	0
Rahilly-Gravelly	Lakeview	18,678	10,396	8,282/586	18,678/586	0
South Bull Canyon	Vale	790	43	747/116	790/116	0
South Ridge Bully Creek	Vale	621	224	397/61	621/61	0
Spring Mountain	Vale	996	0	996/153	996/153	0
Toppin Creek Butte	Vale	3,998	1,313	2,685/216	3,998/216	0

** The table has been updated from the 2015 ARMPA ROD to more accurately reflect acreage and AUM changes

2.5 DEVELOPMENT OF THE 2018 PROPOSED PLAN AMENDMENT

BLM regulations require the agency to identify a preferred alternative in the 2018 Draft RMPA/EIS (43 Code of Federal Regulations [CFR] 1610.4-7). The preferred alternative represents those goals, objectives, and actions determined to be most effective at resolving planning issues and balancing resource use at this stage of the process. While collaboration is critical in developing and evaluating alternatives, the final designation of a preferred alternative remains the responsibility of the lead agency, which is the BLM for this project. The agency identified the Management Alignment Alternative, in collaboration with the Governor's office, as the preferred alternative.

It is important to note that the identification of a preferred alternative does not constitute a final decision, and there is no requirement that the preferred alternative identified in the 2018 Draft RMPA/EIS be selected as the agencies' decision in the ROD. Various parts of separate alternatives that are analyzed in this FSEIS can be "mixed and matched" to develop a Proposed Plan Amendment. BLM Oregon has reviewed public comments on the 2018 Draft RMPA/EIS and made appropriate adjustments to clarify and update information, including consideration of three additional alternatives, in developing the 2018 Proposed Plan Amendment as described in **Sections 2.2.2**, **2.3**, and **2.4**, above. In addition, comments and responses to comments are addressed in.

To align this planning effort with the BLM's compensatory mitigation policy (IM 2018-093), the 2018 Proposed Plan Amendment clarifies that the BLM will consider compensatory mitigation only as a component of compliance with a state mitigation plan, program, or authority, or when offered voluntarily by a project proponent. In accordance with the State's goals for managing Greater Sage-Grouse, the 2018 Proposed Plan Amendment modifies the net conservation gain standard for compensatory mitigation to clarify that the BLM will pursue a net conservation gain as a broader planning goal and objective.

The BLM recognizes that Greater Sage-Grouse is a State-managed species, and, in accordance with 43 CFR 24.3(a), that State authority regarding fish and resident wildlife guides how the BLM cooperates with the State in the absence of specific, overriding federal law. Further, the BLM recognizes that state governments have established fish and wildlife agencies that are charged with the responsibility and mandate to implement state statutes for effective, appropriate, and efficient conservation and management of fish and resident wildlife species. Accordingly, the BLM has coordinated with the State to develop a memorandum of agreement (MOA) to guide the application of the mitigation hierarchy and compensatory mitigation actions for future project authorizations in Greater Sage-Grouse habitat on BLM-administered lands.

The MOA describes the State's policies, authorities, and programs for Greater Sage-Grouse conservation and the process regarding how the BLM will incorporate avoidance, minimization, and other recommendations from the State necessary to improve the condition of Greater Sage-Grouse habitat consistent with RMPA goals and objectives, in one or more of the NEPA analysis alternatives. The MOA will be implemented to provide an improvement to Greater Sage-Grouse habitat at a State level (as opposed to a WAFWA Management Zone or a Field Office), in collaboration with applicable partners (e.g., federal, tribal, and state agencies). Generally, and as described in the MOA, when the BLM receives applications for projects in Greater Sage-Grouse habitat, the BLM will ensure project design is aligned with State requirements and will ensure the proponent coordinates with the State to develop any additional mitigation—including compensatory mitigation—that the State may require in order to comply with State policies and programs for the conservation of Greater Sage-Grouse.

2.6 Plan Evaluation, Monitoring, and Adaptive Management–Common to All Alternatives

Plan evaluation is the process by which the plan and monitoring data are reviewed to determine if management goals and objectives are being met and if management direction is sound. RMP evaluations determine if decisions are being implemented, if mitigation measures are satisfactory, if there are significant changes in the related plans of other entities, if there are new data of significance to the plan, and if decisions should be amended or revised.

Monitoring data gathered over time are examined and used to draw conclusions on whether management actions are meeting stated objectives, and if not, why not. Conclusions are then used to make recommendations on whether to continue current management or to identify what changes need to be made in management practices to meet objectives. The BLM will use RMP evaluations to determine if the decisions in the 2015 ROD/ARMPA, supported by the accompanying NEPA analysis, are still valid in light of new information and monitoring data. Evaluations will follow the protocols established by the BLM Land Use Planning Handbook (H-1601-1) or other appropriate guidance in effect at the time the evaluation is initiated.

The 2015 ARMPA also includes an adaptive management strategy that includes soft and hard triggers and responses for Oregon PACs. These triggers are not specific to any particular project but identify habitat and population thresholds. Triggers are based on the two key metrics that are being monitored during the life of the ARMPA: habitat loss and population declines. Soft triggers represent an intermediate threshold indicating that management changes are needed at the implementation level to address habitat or population losses. If a soft trigger were tripped during the life of the plans, the BLM's response would be to apply more conservative or restrictive conservation measures to mitigate for the specific cause in the decline of populations or habitats, with consideration of local knowledge and conditions. These adjustments will be made to preclude tripping a hard trigger (which signals more severe habitat loss or population declines).

Hard triggers represent a threshold indicating that immediate action within the affected Oregon PAC or PACs is necessary to stop a severe deviation from Greater Sage-Grouse conservation objectives set forth in the 2015 ARMPA. In the event that new scientific information becomes available demonstrating that the response to the hard trigger would be insufficient to stop a severe deviation from Greater Sage-Grouse conservation objectives set forth in the 2015 ARMPA, the BLM would implement interim management direction to ensure that conservation options are not foreclosed. The BLM would also undertake any appropriate plan amendments or revision if necessary. More information regarding the 2015 ARMPA's adaptive management strategy can be found in Appendix J of the 2015 ARMPA. The 2018 Proposed Plan Amendment will not make any changes to the Oregon 2015 ARMPA monitoring and adaptive management strategy. All immediate hard trigger responses remain in place until a plan amendment is completed to remove them or when the relevant conditions listed in the 2015 ROD/ARMPA Appendix J page 11 are met.

Chapter 3. Affected Environment

3.1 INTRODUCTION

The purpose of this chapter is to describe the existing biological, physical, and socioeconomic characteristics of the planning area, including human uses that could be affected by implementing the alternatives described in **Chapter 2**. The affected environment provides the context for assessing potential impacts described in **Chapter 4**. The resource topics in this chapter reflect those that are identified in **Table 1-1** as corresponding to an issue carried forward for detailed analysis in the 2015 (Table 3-1) and the 2019 planning processes.

The geographic extent of this environmental analysis is approximately 60,649 acres in 15 key RNAs identified in the 2015 Oregon Greater Sage-Grouse Proposed LUPA/Final EIS. The two key RNAs closed to grazing prior to the 2015 ARMPA will remain closed, but they are discussed here to provide context to the vegetation communities analysis in **Chapter 4**. All Oregon PACs are PHMA for Greater Sage-Grouse, and all key RNAs are within Oregon PACs.

The BLM analyzed the management situation in full compliance with its regulations and policies. The BLM evaluated inventory and other data and information, partnering with USGS and coordinating extensively with States, to help provide a basis for formulating reasonable alternatives. The BLM described this process in its Report to the Secretary in response to SO 3353 (Aug. 4, 2017). Among other things, the Report describes how the BLM coordinated "with each State to gather information related to the [Secretary's] Order, including State-specific issues and potential options for actions with respect to the 2015 Greater Sage-Grouse Plans and Instruction Memorandums (IMs) to identify opportunities to promote consistency with State plans." (Report to the Secretary at 3.) This process overlapped to some degree with the BLM's scoping process, which also assisted the BLM in identifying the scope of issues to be addressed and significant issues, and with coordination with the States occurring after the Report.

While the BLM acknowledges that there have been changes to the landscape since 2015, due to the scale of this FSEIS analysis covering 60,649 acres of BLM-administered lands, data collected consistently across the range indicate that the extent of these changes to the rangewide landscape are relatively minimal. For example, BLM monitoring data collected and analyzed annually at the Biologically Significant Unit (BSU) Oregon PAC scale, as outlined in the Greater Sage-Grouse Monitoring Framework (Appendix D of the 2015 ROD/ARMPA), indicates that there has been a minimal overall increase in estimated disturbance (less than 1 percent rangewide from 2015 through 2017) and an overall decrease in sagebrush availability (less than 1 percent rangewide from 2012 through 2015) within PHMA.

Rangewide estimates of habitat management areas burned for 2016 and 2017 indicate a sharp increase in the loss of potential habitat availability during 2017, compared with previous fire seasons. In Oregon, the 2017 fire season was quite mild and below the 10-year average in terms of acres burned; however, the acres lost do not necessarily impact monitored PHMA within the rangewide BSUs (including Oregon PACs) at the rangewide scale. Wildfires in Oregon PACs are discussed in more detail later in this chapter.

Based on available information, including the USGS reports described below, the BLM has concluded that the existing condition is not substantially different from that in 2015; therefore, for those resource topics discussed in detail in this FSEIS, the data and information presented in the 2015 Final EIS regarding the affected environment is hereby incorporated by reference into this FSEIS. Specific section and page number references for this incorporation by reference are provided in **Section 3.2**, Resources Affected, below. Where notable changes to the baseline condition have occurred since 2015, a discussion is included in this FSEIS.

Each resource topic listed below includes the following:

- A reference to the location of the affected environment discussion of that resource topic in the 2015 Final EIS, incorporating by reference the cited information
- A brief description of new data or information, if that data or information would substantially alter the description of the existing condition of that resource topic from the description that was presented in the 2015 Final EIS
- A description of changes to the existing condition of the resource topic that have occurred since the 2015 Final EIS (e.g., a large wildfire), if applicable to the resource topic

Actions that have been authorized since the 2015 ARMPA were authorized consistent with the 2015 Final EIS. The BLM will continue to implement the decisions in the 2015 ARMPA, unless and until those decisions are amended.

Acreage figures and other numbers are approximated using geographic information systems (GIS) technology and do not reflect exact measurements or precise calculations. These GIS-derived acreages are reasonable approximations for planning purposes.

3.1.1 USGS Reports

As part of the consideration of whether to amend some, all, or none of the 2015 Greater Sage-Grouse LUPs, the BLM requested the USGS to develop an annotated bibliography of Greater Sage-Grouse science published since January 2015 (Carter et al. 2018)[1] and a report that synthesizes and outlines the potential management implications of this new science (Hanser et al. 2018).[2]

Following the 2015 plans, the scientific community has continued to improve the knowledge available to inform management actions and an overall understanding of Greater Sage-Grouse populations, habitat requirements, and their response to human activity.

The review discussed the science on six major topics identified by USGS and BLM, as follows:

- Multiscale habitat suitability and mapping tools
- Discrete human activities
- Diffuse activities
- Fire and invasive species

[1] Internet website: https://doi.org/10.3133/ofr20181008
[2] Internet website: https://doi.org/10.3133/ofr20181017

- Restoration effectiveness
- Population estimation and genetics

Multiscale Habitat Suitability and Mapping Tools

The science developed since 2015 corroborates previous knowledge about Greater Sage-Grouse habitat selection. Advances in modeling and mapping techniques at the landscape scale can help inform allocations and targeting of land management resources to benefit Greater Sage-Grouse conservation. Similar improvements at the site scale facilitate a better understanding of the importance of grass height to nest success, which indicates the potential need for a reevaluation of the existing habitat objectives (Hanser et al. 2018, p. 2).

The BLM has completed a plan maintenance action, whereby the agency has clarified its ability to modify the habitat objective for seasonal habitat indicator values, based upon local data and best available science for Greater Sage-Grouse site selection.

Discrete Human Activities

The science developed since 2015 corroborates prior knowledge about the impact of discrete human activities on Greater Sage-Grouse. New science suggests that strategies to limit surface disturbance may be successful at limiting rangewide population declines; however, it is not expected to reverse the declines, particularly in areas of active oil and gas operations (Hanser et al. 2018, p. 2). This information may have relevance when considering the impact of changes to management actions designed to limit discrete disturbances.

Diffuse Activities

The science developed since 2015 does not appreciably change prior knowledge about diffuse activities, such as livestock grazing, predation, hunting, wild horses and burros, fences, recreation, and noise; however, some study authors questioned current assumptions, provided refinements, or corroborated existing understanding.

Studies have shown that the impacts of livestock grazing vary with grazing intensity and season. Predation from ravens can limit Greater Sage-Grouse populations in areas with overabundant predator numbers or degraded habitats. Applying predator control has potential short-term benefits in small, declining populations; however, reducing human subsidies may be necessary to generate long-term changes in raven numbers. This is because raven control has produced only short-term declines in local raven populations.

Refinements to the current hunting seasons used by state wildlife agencies may minimize potential impacts on Greater Sage-Grouse populations; however, none of the studies singled out current application of hunting seasons and timings as a plausible cause for Greater Sage-Grouse declines.

Finally, no new insights into the impacts of wild horses and burros, fence collision, recreation, or noise on Greater Sage-Grouse have been developed (Hanser et al. 2018, p. 2).

This information was considered when determining the scoping issues addressed in **Chapter 1**, **Section 1.5**.

Fire and Invasive Species

Science since 2015 indicates that wildfire will continue to threaten Greater Sage-Grouse through loss of available habitat, reductions in multiple vital rates, and declining population trends, especially in the western part of its range. The concepts of resilience after wildfire and resistance to invasion by nonnative annual grasses have been mapped across the sagebrush ecosystem. These concepts inform restoration and management strategies and help prioritize application of Greater Sage-Grouse management resources (Hanser et al. 2018, p. 2).

Restoration Effectiveness

Since 2015, tools have been developed to help managers strategically place and design restoration treatments where they will have the greatest benefit for Greater Sage-Grouse. Studies (Hanser et al. 2018, p. 3) indicate that Greater Sage-Grouse populations did not benefit from, or were negatively affected by, prescribed fire and mechanical sagebrush removal.

Restoration activities occur mainly at the implementation level (project or site-specific implementation), and the BLM maintains the flexibility to incorporate new tools into its project planning for restoration actions.

Population Estimation and Genetics

The accuracy of estimating Greater Sage-Grouse populations has increased. This is because of improved sampling procedures used to complete count surveys at leks and the development of correction factors for potential bias in lek count data. In addition, techniques have been improved to map Greater Sage-Grouse genetic structure at multiple spatial scales. These genetic data are used in statistical models to increase understanding of how landscape features and configuration affect gene flow. This understanding emphasizes the importance of maintaining connectivity between populations to ensure genetic diversity and distribution (Hanser et al. 2018, p. 3).

A number of public comments on the 2018 Draft EIS suggested additional studies the BLM should consider in the amendment process. BLM Oregon reviewed the many studies mentioned and updated information in **Chapters 4** and **6** to address new information relevant to Oregon. New information continues to reaffirm the BLM's understanding that Greater Sage-Grouse is a species that selects for large, intact landscapes and habitat patches.

New Science and Information Considered by the BLM

After reviewing comments on the DSEISs, the BLM identified that best available science and the role of the NTT and COT reports in planning were reoccurring comment themes from the public. This heightened interest from commenters prompted the BLM to conduct a thorough review of new science and other information received during the DSEIS comment period. These articles and professional scientific papers were published subsequent to the USGS report that reviewed the new science published between January 1, 2015 and January 25, 2018.

The objective of the BLM's review effort was to assess whether any information and scientific literature identified by the public during the DSEIS comment period and any new scientific papers that were not included in the previous USGS science review would change the scope (i.e., issues, alternatives, and effects) of the 2019 planning process or conflict with the sage-grouse conservation measures in the NTT and COT Reports.

At regular intervals, the BLM has assessed and synthesized new science, using it to inform efforts to better aligned its management with state and local frameworks. The BLM first initiated its own assessment through the NTT as described above, followed by the USFWS efforts to develop the COT report. The BLM then commissioned a second synthesis from USGS in 2017 prior to initiating the 2019 planning process. Finally, the BLM coordinated with USGS in 2020 to review scientific literature presented during the DSEIS comment period. The USGS has continuously evaluated science published after 2018 and has maintained an annotated bibliography of scientific research on greater sage-grouse. The BLM relied upon USGS' annotated bibliography for the 2020 review. Out of the 75 articles considered by the BLM as new science, USGS had already reviewed 67 articles. BLM biologists summarized the remaining eight papers submitted by the public for validation. The BLM also accepted and reviewed comments that provided background information. These comments did not provide management recommendations or rigorous science-based information.

After the documents were reviewed and summarized, a team of BLM biologists and land use planners reviewed each summary to determine if the findings provided management recommendations that: 1) conflicted with the NTT and COT report recommendations; or 2) changed the scope (i.e., issues, alternatives, effects) of the 2019 plans resulting in a need for a new planning effort.

The BLM found that the most up-to-date Greater Sage-Grouse science and other information has incrementally increased, and built upon, the knowledgebase of Greater Sage-Grouse management evaluated by the BLM most recently in its 2019 land use plan amendments, but does not change the scope or direction of the BLM's management. While the NTT, the COT and this new science and information remain thus consistent with the scope of the 2019 planning decisions, new science does suggest adaptations to management may be warranted at site-specific scales.

The scientists and managers that authored the COT and NTT reports could not have anticipated all the variables that would affect sage grouse into the future when they provided their recommendations. Varying topographic factors, ecological site potential, changes in methodologies, technological advances, variation in vegetation types, and anthropogenic disturbance, to name a few, make it difficult to adequately address all factors that affect sage grouse populations and habitat. Therefore, where appropriate, the BLM will consider this science and information through implementation-level NEPA analysis, consistent with its approved land use plans, policies, and regulatory frameworks. This is precisely the approach envisioned by the NTT and COT reports as well as the BLM's decades long planning efforts to address local actions that may affect Greater Sage-Grouse.

3.2 RESOURCES AFFECTED

In accordance with **Chapter 1**, **Section 1.5**, the following resources could have potentially significant impacts based on the actions considered in **Chapter 2**.

Table 3-1, below, provides the location of baseline information in the 2015 Final EIS and hereby incorporates it by reference.

Table 3-1
Affected Environment Incorporated by Reference

Resource Topic	Location of Baseline Information
Greater Sage-Grouse	Chapter 3, Section 3.3 (Greater Sage-Grouse and Greater Sage-Grouse Habitat), pgs. 3-3 to 3-26 (BLM 2015) Additional information regarding population trends, including the status of adaptive management triggers since 2015, is provided in **Section 3.3** of this chapter.
Vegetation, including invasive plants, riparian areas, and wetlands	Chapter 3, Section 3.4 (Vegetation), pgs. 3-26 to 3-52 (BLM 2015) Additional information regarding specific RNA vegetation communities is provided in **Section 3.4** of this chapter.
Fish and Wildlife	Chapter 3, Section 3.5 (Fish and Wildlife), pgs. 3-52 to 3-74 (BLM 2015) Additional information regarding changes to wildlife habitat is provided in **Section 3.5** and **3.6** of this chapter.
Livestock Grazing	Chapter 3, Section 3.8 (Livestock Grazing/Range Management), pgs. 3-87 to 3-97 (BLM 2015) Additional information regarding current livestock grazing conditions and changes with the RNAs since the 2015 ROD/ARMPA is provided in **Section 3.7** of this chapter.
Socioeconomics	Chapter 3, Section 3.21 (Socioeconomics), pgs. 3-164 to 3-194 (BLM 2015) and 2015 Final EIS Appendix R Additional information regarding general economic conditions involving RNA pastures is provided in **Section 3.8** of this chapter.

3.3 GREATER SAGE-GROUSE

The population trends of Greater Sage-Grouse in the planning area are described in the 2015 Final EIS in Section 3.3.2. Greater Sage-Grouse populations exhibit density-dependent fluctuations over time (Garton et al. 2011). The fluctuation in the annual population size noted in the 2015 Final EIS since at least 1980 continued through 2018.

The spring breeding population of Greater Sage-Grouse in Oregon increased 14.0 percent in 2016 and decreased 7.7 percent in 2017, 10.2 percent in 2018, and 24.9 percent in 2019, based on counts of a large proportion of known lek sites (66 percent in 2016, 58 percent in 2017, 70 percent in 2018, and 64 percent in 2019) (Foster 2016, 2017, 2018, 2019). The population increase in 2016 was the third consecutive year of population growth, while the decline in 2017 was the first statewide decline since 2012. In 2019, the state-wide population declined to the lowest level in any year since 1980, and is currently more than 50 percent below the 2003 statewide baseline population of approximately 29,000 individuals.

In addition to interannual variation, population trends varied across the state. In 2016, the Baker Resource Area was the only BLM-administered unit to experience a decline. In 2017, population trends ranged from a 17.1 percent decline in the Burns District to a 1.1 percent increase in the Vale District. In 2018, the magnitude of population trend ranged from a 13.8% decline in the Vale District to a 5.9% increase in the Prineville District. In 2019, population declines occurred in the Burns, Lakeview, Prineville, and Vale BLM Districts. Populations declines 2019 ranged from 17.1% (in Vale) to 35.4% (in Burns). The population trend in the Baker Field Office area appeared stable in 2019. Despite periods of population growth over the past 16 years, the Oregon population estimate has remained below the Oregon Department of Fish and Wildlife (ODFW) statewide population goal of 29,237; however, it has not reached levels that are outside the range of natural variation (Foster 2019).

The adaptive management strategy outlined in Appendix J of the 2015 ROD/ARMPA requires the BLM to annually calculate the hard and soft triggers for habitat and populations within each Oregon PAC. Tripping a soft trigger indicates that management changes may be needed at the implementation level to reduce the likelihood of tripping a hard trigger. Tripping a hard trigger requires the BLM to take immediate and more restrictive plan-level action to address Greater Sage-Grouse conservation objectives.

Results from the calculations of the 2016, 2017, and 2018 triggers are presented in Information Bulletins OR-2017-040, OR-2018-039, OR-2019-035, and OR-2020-021 (dated March 5, 2020). Population triggers were tripped in 8 PACs in 2016, 7 PACs in 2017 and 2018, and 11 PACs in 2019 (**Table 3-2**, below; **Figure 3-1**, Key RNAs with Soft and Hard Trigger Status). Key RNAs occur in six of the PACs with tripped triggers in 2019. Foster Flat RNA is located in a PAC that tripped a hard population trigger in 2017-2019. The Cow Lakes PAC tripped a hard trigger in 2016,-2019, because both the population and habitat soft triggers were tripped (when a PAC trips both the habitat and population soft triggers a combined hard trigger results). Beatys PAC tripped a soft population trigger in 2019 due to a greater than 40% decline in a single year.

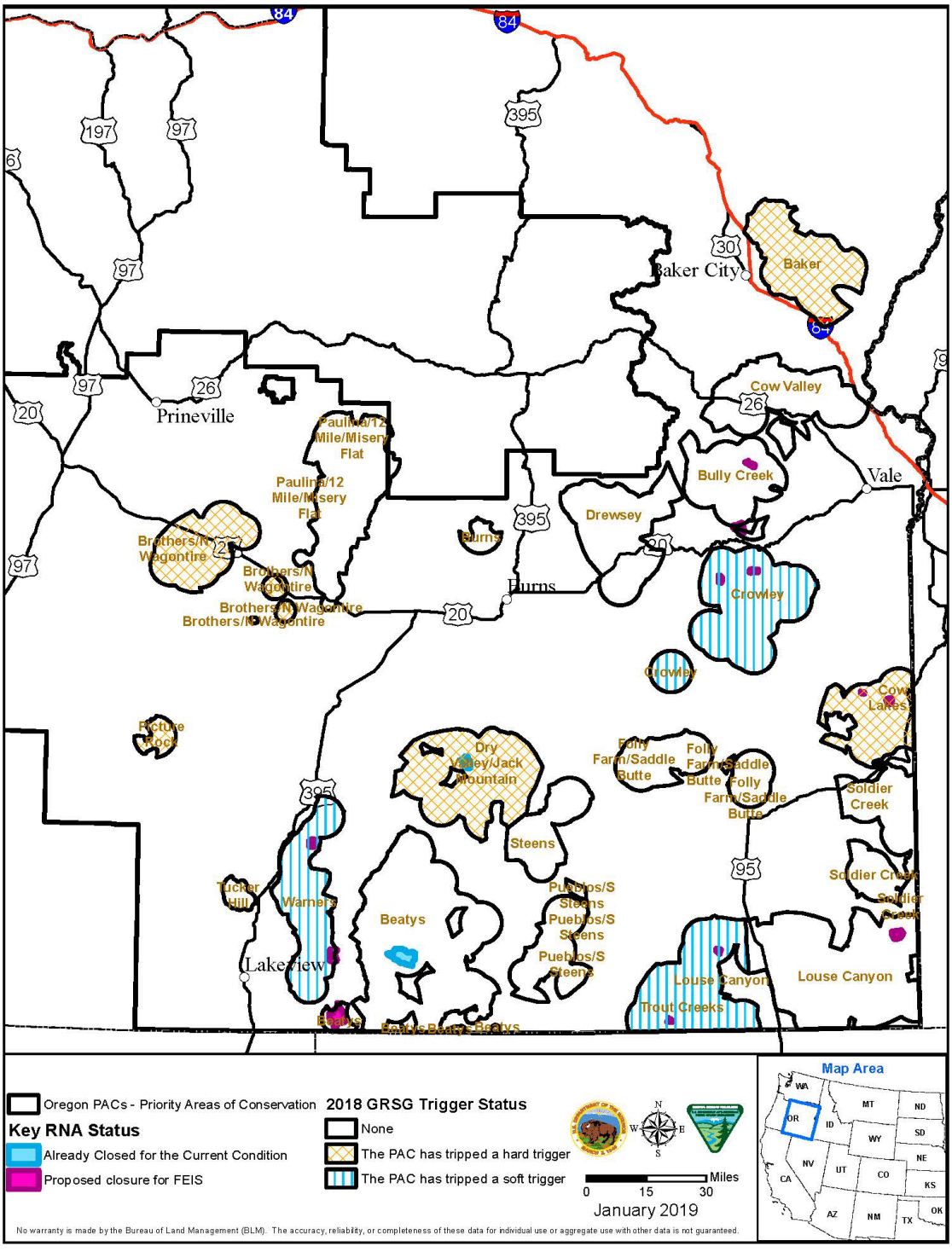
Table 3-2
RNAs within PACs with Tripped Triggers

Key RNA Name	PAC Name	Trigger Status
Mahogany Ridge	Cow Lakes	Soft population and habitat (hard trigger)
Spring Mountain	Cow Lakes	Soft population and habitat (hard trigger)
Lake Ridge	Crowley	Soft population
South Bull Canyon	Crowley	Soft population
Foster Flat	Dry Valley/Jack Mountain	Hard population
Dry Creek Bench	Trout Creeks	Soft habitat
East Fork Trout Creek	Trout Creeks	Soft habitat
Fish Creek Rim	Warners	Soft population
Foley Lake	Warners	Soft population
Guano Creek-Sink Lakes	Beatys	Soft population
Rahilly-Gravelly	Beatys	Soft population

When an adaptive management trigger is tripped in Oregon, the 2015 ARMPA requires the BLM to conduct a causal factor analysis (CFA) to identify possible causes for crossing the population and/or habitat threshold. The BLM, in cooperation with the ODFW and USFWS, has prepared CFA reports and annual reviews for five PACs that contain key RNAs and will prepare a CFA report for Beatys PAC in 2020. Common and widespread causes identified include fire, invasive annual grasses, degraded native understory vegetation, and fence collision risk. Factors with a possibly significant role are human infrastructure (mostly roads and power lines) and recurring drought.

It is unclear how much the West Nile virus has caused Greater Sage-Grouse population declines or prevented an increase during favorable environmental conditions. The role of geographic and genetic isolation in causing population declines is also unclear.

Figure 3-1
Key RNAs with Soft and Hard Trigger Status (Not Updated with 2019 Data)



Of the Oregon PACs with completed CFAs, the interdisciplinary teams for the Cow Lakes PAC and Trout Creeks PAC lacked sufficient information to determine what role, if any, current grazing practices and the condition of allotments may be playing in the loss of sagebrush cover and Greater Sage-Grouse population declines. Available information on vegetation condition suggests that grazing may play a role, especially as it relates to understory forbs that are important to hens and chicks; however, without more information such as recent land health assessments, the team could not be certain that grazing is a causal factor in any part of these two PACs.

For the other three PACs with completed CFA reports, livestock grazing was not identified as a causal factor in tripping an adaptive management trigger (**Table 3-2**, RNAs within PACs with Tripped Triggers).

BLM Oregon continues to implement the 2015 Adaptive Management Strategy as the foundation for addressing recent population declines. The 2015 Decision anticipated possible declining habitat and populations and included a strategy for BLM and partners to: identify declines, determine the cause, and take action to address the causal factors. This process was carried forward into the 2019 Decision and is working as anticipated.

3.3.1 Changes Based on Threats

Wildland Fire

The wildland fire threat was discussed in the 2015 Final EIS (Section 3.7, pgs. 3-79 to 3-87) and is hereby incorporated by reference. From 2013 to 2017 there have been a variety of wildfires and habitat treatments intended to improve Greater Sage-Grouse habitat across the West. Since the 2015 rangewide plan decisions, there has been more habitat lost to wildfire than has been gained through treatment; however, the BLM nationally intends to implement more habitat improvements per decisions in the 2015 plans. Projects such as the Great Basin Ecosystem Strategy, under which two programmatic EISs will be prepared for fuel breaks and fuels reduction and rangeland restoration, will further define the tools and priorities for these activities.

This analysis discusses wildfire on the three Oregon districts with key RNAs. RNAs are not subject to vegetation treatments, with the exception of invasive plants; however, none of the invasive plant treatments since the 2015 Final EIS was prepared have occurred in any of the key RNAs.

Over the last ten years (2008–2017), 2,271,740 acres have burned in 1,250 wildfires within the district boundaries. Seventy percent of this acreage occurred in only 2 years: 2012 (1,057,018 acres) and 2014 (533,897 acres). In contrast, the fewest acres in the 10-year period burned in 2010 (1,456 acres). Three years (2012, 2014, and 2015) were above the 10-year average for the three districts, at 227,174 acres burned.

Since 2000, 8 of the 15 key RNAs have been affected by wildfires, although the degree of impact varied (**Table 3-3**). Of particular concern are North Ridge Bully Creek and South Ridge Bully Creek, both of which were affected in 2012 and 2015, as well as in the mid-1990s.

Table 3-3
Key Research Natural Areas Affected by Wildfires from 2000 through 2017

Research Natural Area	Fire Year	Fire Name	Approximate Area within Fire Perimeter	Oregon PAC
Dry Creek Bench	2012	Holloway	100%	Trout Creek
East Fork Trout Creek	2012	Holloway	100%	Trout Creek
Foley Lake	2000	Abert	Approx. 10%	Warners
North Ridge Bully Creek	2012	Iron	100%	Bully Creek
	2015	Pole Gulch[1]	100%	
South Bull Canyon	2016	Sheep Rock	Approx. 25%	Crowley
South Ridge Bully Creek	2012	Iron	Approx. 90%	Bully Creek
	2015	Pole Gulch[1]	100%	
Spring Mountain	2007	Old Maid	100%	Cow Lakes
Toppin Creek Butte	2013	Sharon Creek	Approx. 30%	Louse Canyon

[1] Part of the Bendire Complex

The BLM does not know the specifics of how wildfire affected each RNA or which specific vegetation communities actually burned and at what severity; however, recent plot data indicate that North Ridge Bully Creek and South Ridge Bully Creek are now dominated by invasive annual grasses, suggesting some level of interaction between frequent wildfires, drought, and grazing. In fall 2015 following the last fire, aerial herbicide treatments were done to reduce invasive annual grass to maintain values of the two Bully Creek RNAs.

Most of the large fires in eastern Oregon are wind driven, which often creates a complex mosaic of fire effects, ranging from unburned to all vegetation burned. Monitoring trends in burn severity analyses (https://mtbs.gov/viewer/index.html) indicate that most of the RNAs experienced low severity to unburned, although data are not yet available for the 2016 and 2017 fires.

The Old Maid fire produced areas of high and moderate severity on the eastern portion of Spring Mountain RNA. The Iron fire was classified as having areas of moderate severity that likely affected both North Ridge Bully Creek and South Ridge Bully Creek RNAs. Although less certain, the Holloway fire appears to have burned with low to moderate severity in Dry Creek Bench RNA but with low to unburned severity in East Fork Trout Creek RNA. These estimates of fire severity have not been ground-truthed. Observations of the Holloway fire indicate the monitoring trends in burn severity underestimates fire severity.

3.4 VEGETATION, INCLUDING NOXIOUS WEEDS, RIPARIAN AREAS, AND WETLANDS

The existing conditions of vegetation and noxious weeds in the planning area are described in the 2015 Final EIS in Sections 3.4 (pgs. 3-26 to 3-52), 3.5 (pgs. 3-52 to 3-74), and 3.8 (pgs. 3-87 to 3-93); they are hereby incorporated by reference.

Since 2013, 404,118 acres of vegetation have been treated or are planned for treatment in Greater Sage-Grouse habitat: conifer removal (227,149 acres), invasive plant control (56,547 acres), habitat protection (89,075 acres), habitat restoration (5,642 acres), and fuel breaks (25,705 acres). None of these treatments occurred or will occur in key RNAs.

Due to the scale of analysis involved, vegetation descriptions were not specific for the key RNAs in the 2015 ARMPA. More detailed descriptions of the vegetation within each key RNA follows, based on establishment reports for each RNA, descriptions in the Final EISs for the applicable RMPs, and any available plot data. The description includes an assessment of which general vegetation type described in the ARMPA (BLM 2015, pp. 3-32 through 3-38) occurs in each key RNA; most often more than one general vegetation type is present. See **Appendix A** for additional information about other features of the key RNAs.

Also present are vegetation types that are ecotonal, including a mix of warm and cool sites and moist and dry site indicator species. These types were classified as Cool-Moist Sagebrush bordering on Warm-Dry Sagebrush, if more cool-moist indicator species were present in the community than warm-dry indicators. Alternatively, they were classified as Warm-Dry Sagebrush bordering on Cool-Moist Sagebrush, if more warm-dry indicator species were present. For example, Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and Thurber's needlegrass (*Achnatherum thurberianum*) are warm-dry site indicators, while mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), antelope bitterbrush (*Purshia tridentata*), and Idaho fescue (*Festuca idahoensis*) are cool, moist indicators.

Bluebunch wheatgrass (*Pseudoroegneria spicata*) is found on both warm-dry sites and cool-moist sites, while threetip sagebrush (*Artemisia tripartita*) grows on sites that are cooler and moister than typical Wyoming big sagebrush sites but warmer and drier than typical mountain big sagebrush sites.

Low sagebrush (*Artemisia arbuscula*), black sagebrush (*A. nova*), and stiff sagebrush (*A. rigida*) all indicate shallow soils, with black sagebrush also indicating calcareous soils and stiff sagebrush indicating high amounts of surface rock. Silver sagebrush (*A. cana*) indicates alkaline soils and playas.

Whether sites are cool and moist, warm and dry, shallow, calcareous, or alkaline has implications for the types and abundance of forbs and insects important to Greater Sage-Grouse. These conditions also indicate what times of the year and types of year (dry, average, wet) forbs are likely to be green and growing.

Ecological site descriptions provide information useful for assessing probable plant community composition and responses to disturbance, including grazing. The Natural Resources Conservation Service (NRCS) has the primary responsibility for developing and finalizing ecological site descriptions, which are usually developed at the same time as more detailed soil mapping.

Soil mapping is incomplete for Malheur County, so ecological sites have not been described for Dry Creek Bench, Lake Ridge, Mahogany Ridge, South Bull Canyon, and Spring Mountain RNAs; mapping is incomplete for North Ridge Bully Creek and South Ridge Bully Creek RNAs.

Because Foster Flat and Guano Creek-Sink Lakes would remain closed to grazing under both alternatives (in accordance with pre-2015 ROD/ARMPA decisions), ecological site descriptions are not included below. All RNAs include multiple ecological sites.

In the ecological site name, PZ means precipitation zone, which is an estimate of the average annual precipitation and an indicator of the probable resistance to invasion by annual grasses and resilience from disturbance (resistance and resilience). The lower the precipitation, the lower the resistance and resilience (Chambers et al. 2014a, 2014b).

Sites with less than 12 inches average annual precipitation are usually considered to have low resistance and resilience. Sites with average annual precipitation of 12 to 16 inches are usually considered moderately resistant and resilient, and sites with greater than 16 inches average annual precipitation are usually considered to have high resistance and resilience. These rough guidelines are further modified by temperature and aspect (Chambers et al. 2014a, 2014b). Generally, the warmer the site, the lower the resistance and resilience.

Black Canyon RNA. The Oregon Natural Heritage Plan (ONHP 2015) cells included in this RNA are stiff sagebrush/Sandberg bluegrass (*Poa secunda*) (Shallow-Dry Sagebrush), and western juniper/big sagebrush/bluebunch wheatgrass (*Juniperus occidentalis*/Arte*misia tridentata*) (Western Juniper) (BLM 2002). Stiff sagebrush communities cover large areas of the more level upland plateau, and some large areas have so little soil that only Sandberg bluegrass and early-blooming forbs are present.

North aspects also support Wyoming big sagebrush/Idaho fescue (Warm-Dry Sagebrush bordering on Cool-Moist) and bluebunch wheatgrass canyon grasslands. Alluvial deposits in the canyon bottom support small patches of basin big sagebrush/Nevada bluegrass (*Artemisia tridentata* ssp. *tridentata*/*Poa nevadensis*) (Warm-Dry Sagebrush) (BLM 1996). Although once considered a separate species, Nevada bluegrass is now considered Sandberg bluegrass by NRCS and *Poa secunda* ssp. *juncifolia* in the Flora of Oregon (Halvorson 2011).

The RNA also includes an intermittent stream that carries water long enough in the year to support a riparian wetland, dominated by coyote willow (*Salix exigua*) and Pacific willow (*S. lucida* ssp. *lasiandra*) (BLM 2002). Alder also is present (RNA observation record 2006).

Other species associated with the riparian areas and seeps include aspen (*Populus tremuloide*s), serviceberry (*Amelanchier alnifolia*), mock orange (*Philadelphus lewsii*), gooseberry (*Ribes* spp.), and hairy snowberry (*Symphoricarpos mollis*) in the headwaters area. Willows are located farther down in the canyon, along with bitter cherry (*Prunus emarginata*) (BLM 1996a). There also is a small stand of black cottonwood lower down in the riparian drainage. Small areas of the invasive whitetop (*Cardaria draba*) and scotch thistle (*Onopordum acanthium*) are documented at Antelope Spring (RNA observation records 2004, 2007).

The three most common ecological sites are JD Clayey 12- to 16-inch PZ (approximately 31 percent), JD Mahogany Rockland 9- to 12-inch PZ (approximately 35 percent), and JD North 12- to 16-inch PZ (approximately 8 percent). The coyote willow riparian ecological site, which is potentially important for Greater Sage-Grouse late brood-rearing habitat, comprises only 0.3 percent.

Other ecological sites in the 9- to 12-inch PZ include Droughty Fan, JD Droughty Shallow South, JD Droughty South, JD North, JD Shallow, JD Shallow North, and JD Shallow South. Other ecological sites in the 12- to 16-inch PZ include JD Mahogany Rockland, JD Mountain North, and JD Shallow South.

Recently completed AIM plots indicate a high proportion (over 50 percent cover) of annual grasses dominated by cheatgrass are now present in the RNA. Wyoming big sagebrush cover is 7.3 percent and native perennial grass is 27.33 percent. Perennial and annual forb cover, including species that have value for Greater Sage-Grouse hens and chicks, is 4 percent.

Dry Creek Bench RNA. This RNA contains the ONHP cells mountain mahogany-mountain snowberry/Idaho fescue (*Cercocarpus ledifolius-Symphoricarpos oreophilus/Festuca occidentalis*) (Mountain Brush) and mountain mahogany-big sagebrush/Idaho fescue (Mountain Brush) (BLM 2002). Low sagebrush flats with Idaho fescue, Thurber's needlegrass, bottlebrush squirreltail (*Elymus elymoides*), Sandberg bluegrass, and several buckwheat species (*Eriogonum* spp.) (Shallow-Dry and Warm-Dry Sagebrush) surround the mountain mahogany stands (BLM 1996b).

Low sagebrush cover was documented in recent plots at 4.9 percent and Mountain big sagebrush was 3.1 percent cover. Mountain mahogany has 47.6 percent cover and snowberry is at 20 percent. The area has a diverse understory, with 49 forb species and 11 native perennial grass species.

Invasive annual grasses had fairly low cover of 9.3 percent, and bulbous bluegrass (*Poa bulbosa*) is present (RNA observation records 2008). Over 70 percent of the forb species documented are ones that have value as food and substrate for insects for Greater Sage-Grouse hens and chicks.

East Fork Trout Creek RNA. The ONHP cells included are a riparian community dominated by quaking aspen (*Populus tremuloides*) intermixed with Scouler's willow (*Salix scouleriana*) (Aspen or Riparian-Wetland) and a high elevation wet meadow (Riparian-Wetland) (BLM 2004). Quaking aspen covers about one-third of the RNA, with a dense canopy and little vegetation in the understory. The wet meadows occur in areas with several springs that keep the ground saturated. Sedges and rushes dominate with occasional willow patches and several wetland-associated forbs (BLM 2007).

Much of the RNA consists of mountain big sagebrush, with needlegrasses (*Achnatherum* spp.), mountain brome (*Bromus carinatus*) and Idaho fescue (Cool-Moist Sagebrush). Other shrubs present include wax currant (*Ribes cereum*), serviceberry, and roundleaf snowberry (*Symphoricarpos rotundifolius*); depending on the extent of these other shrubs, the plant community type may be Mountain Brush. Snow accumulation areas that melt late in the year support little to no sagebrush. Numerous forbs are also present (BLM 2007).

Four ecological sites are present in East Fork Trout Creek RNA. The most common is Aspen 16- to 35-inch PZ at nearly 62 percent of the area. Shallow Loam 16- to 25-inch PZ comprises about 27 percent of the RNA and Loamy 12- to 16-inch PZ about 12 percent. The remaining 1 percent is Deep North 12- to 18-inch PZ.

Fish Creek Rim RNA. The ONHP cells present include mountain big sagebrush-antelope bitterbrush/Idaho fescue (Cool-Moist Sagebrush), low sagebrush/Idaho fescue scabland (Cool-Moist Sagebrush), mountain mahogany-mountain big sagebrush (Mountain Brush), and the snowberry-bittercherry (*Symphoricarpos* spp.-*Prunus emarginata*) complex (Mountain Brush) (BLM 2003).

Low sagebrush plant communities dominate, with intermingled patches of big sagebrush, and an isolated grove of aspen, white fir (*Abies concolor*), and ponderosa pine (*Pinus ponderosa*) (The Nature Conservancy 1992; BLM 2000). Mountain mahogany forms extensive stands in the rimrock area, with bittercherry and snowbrush ceanothus (*Ceanothus velutinus*) (The Nature Conservancy 1992).

Western juniper is scattered across the site, especially in the eastern rimrock area (BLM 2000), with an average of 4 percent cover. Recent vegetation plots in the RNA list low sage cover at 11.8 percent and Mountain Big Sagebrush at 8.7 percent.

Within the sagebrush communities there is a rich understory of 37 forb species, 29 of which have high and moderate value as food for Greater Sage-Grouse hens and chicks.

Perennial grass cover is 18.67 percent, and there are no annual grasses documented in recent plots, although National Invasive Species Management Information System (2018) documents less than 1 acre of cheatgrass (*Bromus tectorum*) in the RNA, with 30 percent cover. There are some areas along a road with 5 percent cover of an invasive mustard, whitetop (*Lepidium draba*) (National Invasive Species Management Information System 2018). In 2014 and 2017, there were some roadside weed treatments in the RNA for whitetop.

The most common ecological site in the Fish Creek Rim RNA is Claypan 12- to 16-inch PZ, comprising about 67 percent of the area. South Slopes of 12- to 16-inch PZ covers around 16 percent and Loamy 12- to 16-inch PZ about 10 percent. The remaining ecological sites present include Loamy 10- to 12-inch PZ, North Slopes 10- to 12-inch PZ, and South Slopes 10- to 12-inch PZ.

Foley Lake RNA. This RNA contains the ONHP cell black sagebrush/bunchgrass (Shallow-Dry Sagebrush) (BLM 2003). Foley Lake is a seasonally dry playa; in wet years it holds some water until August. Black sagebrush has 13.54 percent cover and is intermingled with a diverse mosaic of Wyoming big sagebrush/bunchgrass (6.1 percent cover) and low sagebrush/bunchgrass communities with bud sage (*Picrothamnus desertorum*) in the area (Warm-Dry Sagebrush).

Bottlebrush squirreltail with scattered Idaho fescue occur within the Black Sagebrush community, while the Wyoming big sagebrush community contains nearly equal proportions of Idaho fescue and bottlebrush squirreltail.

Western wheatgrass (*Pascopyrum smithii*) and tufted hairgrass (*Deschampsia caespitosa*) are present along the margins of the playa. Cheatgrass is at 3.8 percent cover. Native perennial grass cover in the RNA averages about 9 percent.

Silver sagebrush dominates the southern edge of the playa (BLM 2000), with 18.1 percent cover. The RNA understory is not very diverse, with only 11 forb species documented in recent plots, and most of the cover is spike rush (*Elocharis* sp., 25 percent cover) and ruderal species, like Tansyleaved evening primrose (*Camissonia tanacetifolia*; 6.4 percent cover) and the nonnative hoarycress (*Lepidium draba*; 11 percent cover). The invasive plant spiny cocklebur is present in a small area (0.003 acres), with 10 percent cover. Six forb species with value for Greater Sage-Grouse as food for hens and chicks collectively have cover of 4.5 percent.

Six ecological sites are found within the Foley Lake RNA, with Loamy 10- to 12-inch PZ the majority type, at nearly 73 percent of the area. Claypan 10- to 12-inch PZ is the next most common ecological site, at 17 percent of the RNA. Ponded Clay comprises about 2 percent of the area. The remaining ecological sites include Droughty Loam 11- to 13-inch PZ and North Slopes 10- to 12-inch PZ.

Foster Flat RNA. This RNA contains the ONHP cell silver sagebrush/Nevada bluegrass (*Poa nevadensis*) and a silver sagebrush/spike rush (*Eleocharis* sp.) (Playa). Silver sagebrush cover averages about 35 percent. Areas within the heart of the playa are dominated (55 percent cover) with tansyleaved evening primrose. Areas outside the playa contain low sagebrush/Sandberg bluegrass communities, with low sage cover of 44 percent and a rich understory of forbs.

The playa area also contains areas with basin wildrye (*Leymus cinereus*), creeping wildrye (*L. triticoides*), and silver sagebrush/green rabbitbrush (*Chrysothamnus viscidiflorus*), with greasewood (*Sarcobatus vermiculatus*) and a Wyoming big sagebrush/Thurber's needlegrass community (27 percent sagebrush cover) occurs around the rim (BLM 1991; Taylor 2004).

Forb species (annuals and perennials) collectively have an average cover of about 10.4 percent. Species that are important for Greater Sage-Grouse hens and chicks for food make up nearly 45 percent of all the forb species in the RNA.

Guano Creek-Sink Lakes RNA. This RNA contains ONHP cells for Wyoming big sagebrush/needle-and-thread grass (*Artemisia tridentata* ssp. *wyomingensis*/*Hesperostipa comata*) (Warm-Dry Sagebrush), low sagebrush/Sandberg's bluegrass (Shallow-Dry Sagebrush), and silver sagebrush/basin wildrye (Playa), along with a riparian-wetland type vernal pool and a riparian community dominated by willow (*Salix* spp.) (BLM 2003).

The Sink Lakes portion contains low sagebrush/Sandberg bluegrass scabland (Shallow-Dry Sagebrush) on the uplands and two vernal lakes surrounded by silver sagebrush plant community types with silver sagebrush/Nevada bluegrass in the middle on the northwestern lake (Playa). In wetter years, the playas support a number of forbs and alkaline-tolerant grasses and rushes (BLM 2000). The Guano Creek portion contains the Wyoming big sagebrush/needle-and-thread plant community, along with a willow-dominated riparian area in the lower creek bed and a rich community of basin wildrye and forbs in the upper creek bed. Some invasive plants are present although the nomination report does not state which species (BLM 2000). Sagebrush cover in the RNA is documented at 18.32 percent, and perennial grass cover is at 13.6 percent; no invasive annual grass cover was documented.

Lake Ridge RNA. The ONHP cells present include low sagebrush (*Artemisia arbuscula*)/bluebunch wheatgrass (Warm-Dry Sagebrush) and low sagebrush/Idaho fescue (Cool-Moist Sagebrush), along with a natural pond that provides a perennial source of water (Riparian-Wetland) (BLM 2002). The bluebunch wheatgrass type is more extensive than the Idaho fescue type. Low sagebrush cover averages 19.2 percent.

Some small areas with rigid sage are present, and Wyoming big sagebrush also exists in the southwestern edge of the RNA That same portion also includes a patch of Mountain Brush, dominated by mountain big sagebrush, mountain snowberry, golden currant (*Ribes aureum*) and serviceberry, with Idaho fescue, rough bluegrass (formerly *Poa scabrella*, now part of the *P. secunda* complex), and blue wildrye (*Elymus glaucus*), along with numerous forbs (BLM 1996c).

Vegetation plots document 24 forb species in the understory, with 17 (70.8 percent) of the species having value for Greater Sage-Grouse hens and chicks. Invasive annual grass is present in some areas, showing up in about 25 percent of the vegetation plots.

Lake Ridge RNA includes several small playas dominated by silver sagebrush (*Artemisia cana*)/Nevada bluegrass (Playa), with bottlebrush squirreltail and Idaho fescue present in small amounts (BLM 1996c).

Mahogany Ridge RNA. The ONHP cells have mountain mahogany-big sagebrush and mountain mahogany-Oregon grape (*Mahonia aquifolium*) complexes (Mountain Shrub) and mountain big sagebrush-

mountain mahogany/slender wheatgrass (*Elymus trachycaulus*)-bluebunch wheatgrass community (Cool-Moist Sagebrush) (BLM 2002).

Mountain mahogany and mountain big sagebrush have cover of 31.56 percent and 6.99 percent, respectively. The original RNA contained the mountain mahogany plant communities, with the addition of mountain big sagebrush-mountain mahogany/slender wheatgrass-big bluegrass.

Understory forb species are diverse, with 46 species being documented in plots, and 31 species having value for Greater Sage-Grouse forbs and chicks. The addition also includes considerable area in mountain big sagebrush/bluebunch wheatgrass (Cool-Moist Sagebrush bordering on Warm-Dry Sagebrush). This RNA has the most extensive stand of mountain mahogany in Oregon (BLM 1996d).

North Ridge Bully Creek RNA. The ONHP cells in this RNA include Wyoming big sagebrush-Thurber's needlegrass (Warm-Dry Sagebrush) and Wyoming big sagebrush-threetip sagebrush/Idaho fescue (Warm-Dry Sagebrush bordering on Cool-Moist Sagebrush) (BLM 1996e, 2002). Sagebrush cover is low, about 4 percent, and perennial grass cover is 21.33 percent.

Invasive annual grasses, especially cheatgrass, is present, with over 90 percent of recent plots having some cheatgrass present; The BLM weed database lists cheatgrass cover at 5 percent. Medusahead (*Taeniatherum caput-medusae*) is also documented, with cover estimated at 5 percent.

Additional plant communities present include Wyoming big sagebrush-wild crab apple (*Peraphyllum ramosissium*)/Idaho fescue, Wyoming big sagebrush-threetip sagebrush/bluebunch wheatgrass, threetip sagebrush/bluebunch wheatgrass (all Warm-Dry Sagebrush bordering on Cool-Moist Sagebrush), threetip sagebrush/Idaho fescue, and threetip sagebrush-wild crab apple/Idaho fescue (both Cool-Moist Sagebrush bordering on Warm-Dry Sagebrush).

The RNA also has small inclusions of stiff sagebrush/Sandberg bluegrass (Shallow-Dry Sagebrush).

Several species of tall, deep-rooted bunchgrasses are present, along with Sandberg bluegrass and small amounts of cheatgrass (BLM 1996e). Twenty-one understory forb species are documented in vegetation plots, with about half of them having value for Greater Sage-Grouse hens and chicks.

While the RNA includes several headwaters areas, flow is ephemeral and a distinctive riparian community is not present.

The most common ecological site in North Ridge Bully Creek RNA is SR Very Shallow 9- to 12-inch PZ at 55 percent of the area. SR Shallow South 9- to 12-inch PZ comprises 10 percent and SR South 9- to 12-inch PZ 6 percent of the RNA. Twenty-nine percent of the RNA has not been classified.

Following wildfire, the RNA was aerially sprayed in 2015 with Imazapic herbicide, targeting invasive annual grasses to help maintain the values (NISMIS treatment database 2015). The District Botanist in 2017 stated the treatment was effective, but longer-term effectiveness data are not available (Fritts 2018).

Rahilly-Gravelly RNA. This RNA contains ONHP cells western juniper/big sagebrush-antelope bitterbrush (Western Juniper), mountain big sagebrush-mountain snowberry-wild crab apple (Mountain

Brush), and antelope bitterbrush-big sagebrush-mountain snowberry/Thurber's needlegrass mosaic (Cool-Moist Sagebrush bordering on Warm-Dry Sagebrush). It also contains large areas of low sagebrush on lithic soil flats (Shallow-Dry Sagebrush) (BLM 2000).

Recent vegetation monitoring documented Wyoming big sagebrush at 19.7 percent cover and low sage at 34.3 percent cover on the flats. Perennial grasses are diverse, with 11 species documented and cover was between 9 and 13 percent. Invasive annual grass cover averaged 15.1 percent, dominated by cheatgrass and soft chess (*Bromus hordeaceus*). Several areas of other noxious weeds are documented, with populations of Mediterranean sage (*Salvia aethiopis*), Spiny cocklebur (*Xanthium spinosum*), bull and Canada thistle (*Cirsium vulgare*, *C. arvense*) present in small areas (NISMIS 2018).

The RNA is diverse in forb species, with 45 species documented and 29 species (64 percent of all forbs) that are important to Greater Sage-Grouse hens and chicks as food or substrate for insects.

Western juniper occurs across the site as open stands of older trees (Juniper Savanna) and occasional dense clumps of younger trees in small pockets on side slopes. Wyoming big sagebrush is common at the lower elevations and mountain big sagebrush is common at the upper elevations of the RNA.

Idaho fescue is the dominant grass species, with bluebunch wheatgrass, Sandberg bluegrass, and Thurber's needlegrass. Big sagebrush, low sagebrush, antelope bitterbrush, and wild crab apple have nearly equal cover across the RNA (BLM 2000).

Rahilly-Gravelly RNA includes 11 ecological sites. The most widespread ecological site is Thin Surface Claypan 10- to 16-inch PZ at 53 percent of the area, followed by Clayey 10- to 12-inch PZ (17 percent) and Loamy 8- to 10-inch PZ (16 percent). Ecological sites in the 6- to 10-inch PZ are Desert Loam, Loamy Slopes, Low Sodic Terrace, and Sodic Meadow. Ecological sites in the 12- to 16-inch PZ are Claypan, Deep Loamy, and South Slopes. The only other site in the 10- to 12-inch PZ is South Slopes.

South Bull Canyon RNA. The ONHP cell in this RNA consists of Wyoming big sagebrush-antelope bitterbrush/Idaho fescue (Cool-Moist Sagebrush) (BLM 2002). Several phases of this plant community are present, including Wyoming big sagebrush-antelope bitterbrush/bluebunch wheatgrass (Warm-Dry Sagebrush bordering on Cool-Moist Sagebrush), Wyoming big sagebrush/Idaho fescue (Cool-Moist-Sagebrush bordering on Warm-Dry Sagebrush), Wyoming big sagebrush/Thurber's needlegrass (Warm-Dry Sagebrush), and basin big sagebrush-Wyoming big sagebrush/bluebunch wheatgrass (Warm-Dry Sagebrush).

A low sagebrush/bluebunch wheatgrass community is located on a flat at the south end of the RNA near Prava Peak Reservoir No. 3 (BLM 1996f). Low sagebrush cover averages 4.15 percent and Wyoming big sagebrush averages 5.55 percent cover in the RNA. The understory forb layer is fairly diverse, with 20 of the 32 herbaceous forb species having value for Greater Sage-Grouse hens and chicks. The frequency of invasive annual grasses was 88 percent in recent plots, but there is no information on cover percent associated with these plots.

Additional information from the BLM noxious weed layer (NISMIS 2018) lists medusahead rye at 1 percent cover on 13 acres in 2017. In 2007 RNA observation reports documented heavy tent caterpillar infestation on bitterbrush, and Aroga moth was documented on sagebrush in the west side of the RNA

in 2005. In a wildfire burn area in the southern part of the RNA, aerial spraying of Imazapic targeting annual grasses was done in 2017 to help maintain the values of the RNA (NISMIS 2018).

South Ridge Bully Creek RNA. The ONHP cells are Wyoming big sagebrush/Thurber's needlegrass (Warm-Dry Sagebrush) and Wyoming big sagebrush-wild crab apple/Idaho fescue (Warm-Dry Sagebrush bordering on Cool-Moist Sagebrush) (BLM 1996g, 2002). Wyoming big sagebrush has a cover of 4.6 percent and rabbitbrush (*Chrysothamnus* and *Ericameria* spp.) averages 4.1 percent.

Other plant communities present include Wyoming big sagebrush-threetip sagebrush/Idaho fescue, Wyoming big sagebrush-threetip sagebrush/bluebunch wheatgrass, threetip sagebrush/bluebunch wheatgrass (all Warm-Dry Sagebrush bordering on Cool-Moist Sagebrush), threetip sagebrush/Idaho fescue, threetip sagebrush-wild crab apple/Idaho fescue (both Cool-Moist Sagebrush bordering on Warm-Dry Sagebrush), and antelope bitterbrush-wild crab apple/Indian ricegrass (*Achnatherum hymenoides*).

Several species of tall, deep-rooted bunchgrasses are present, with most species typical of the Warm-Dry Sagebrush type. Cheatgrass is present in small amounts (BLM 1996g); however, recent plots documented cheatgrass in 79.8 percent frequency in plots; the level of cover is not known.

The invasive species white top (*Cardaria draba*) has been documented along the main road in the RNA (RNA observation report 2008), and small patches of scotch thistle (*Onopordum acanthium*) exist (RNA observation report 2005).

As with the North Ridge Bully Creek RNA, several headwater areas are present, but flow is ephemeral, with no distinct riparian community present (BLM 1996g). Some Aroga moth damage to sagebrush was documented in 2005 and 2008.

Following a recent wildfire, the RNA was aerially sprayed with Imazapic herbicide, targeting invasive annual grasses to help maintain the values (NISMIS treatment database 2015). The District Botanist in 2017 stated that the treatment was effective, but longer-term effectiveness data are not available (Fritts 2018).

Only a small portion of South Ridge Bully Creek RNA has not been classified. The most common ecological site is SR Loamy 9- to 12-inch PZ at 82 percent of the area, followed by SR Shallow South 9- to 12-inch PZ (9 percent) and SR South 9- to 12-inch PZ (7 percent). The remaining ecological site is SR Very Shallow 9- to 12-inch PZ.

Spring Mountain RNA. This RNA includes ONHP cells for mountain big sagebrush/Idaho fescue (Cool-Moist Sagebrush), low sagebrush/bluebunch wheatgrass (Warm-Dry Sagebrush), and Riparian-Wetland communities dominated by peachleaf willow (*Salix amygdaloides*) and coyote willow, with the quaking aspen/mountain snowberry (Aspen) cell present (BLM 2002). Sagebrush cover is 14.6 percent.

The northern portion of the RNA consists of steep scree, with chokecherry (*Prunus virginiana*), mountain snowberry, aspen, and mock orange (*Philadelphus lewisii*). Low sagebrush/bluebunch wheatgrass occurs on the northwestern portion of the tableland above the scree, with low sagebrush/Idaho fescue (Cool-Moist Sagebrush) and low sagebrush/Thurber's needlegrass (Warm-Dry Sagebrush) along the eastern edge.

Mountain big sagebrush plant communities dominate the higher peaks, ridges, and slopes, with mountain big sagebrush/Idaho fescue (Cool-Moist Sagebrush) being the most widespread, mixing with mountain big sagebrush-mountain snowberry/Idaho fescue (Cool-Moist Sagebrush) on steeper north and east aspects (BLM 1996h).

Understory forb species diversity is not high—only 19 species are documented—but 10 species (52.6 percent) have value for Greater Sage-Grouse hens and chicks for food. The documented perennial grass cover is very high (88 percent), perhaps due to recent fire wildfires or to data entry errors. Cheatgrass cover was documented at 12.6 percent.

This RNA includes several springs, usually supporting small stands of aspen. A willow stand with several different species of willow occurs below a spring on the north end (BLM 1996h).

Toppin Creek Butte RNA. The ONHP cells included in this RNA are low sagebrush/Idaho fescue (Cool-Moist Sagebrush) and low sagebrush/bluebunch wheatgrass (Warm-Dry Sagebrush) (BLM 2002). A large playa named Bull Flat Lake lies at the lowest elevations and is a source for Bull Creek, which flows through the southeast part of the RNA.

The silver sagebrush/Nevada bluegrass (Playa) plant community type encircles Bull Flat Lake. The low sagebrush/Idaho fescue plant community dominates Toppin Creek Butte. Low sagebrush cover is between 14 and 17.8 percent. Sandberg bluegrass dominates on shallower soils, while bluebunch wheatgrass dominates on deeper soils.

Perennial grass cover is documented at between 35 and 48 percent. The area supports a variety of forbs and one lone western juniper tree. Thirty-six forb species are documented in recent plots, with twenty-four species (66.6 percent) having important value for Greater Sage-Grouse hens and chicks.

Invasive plants are present in disturbed areas and along the road that bisects the RNA (BLM 1996i). Cheatgrass is present, occurring in 70 percent of all plots, but a recent site evaluation listed cheatgrass as present in trace amounts and patchy. The exact cover percent is not known.

Cattle use in most of the RNA is low (little water), with most of the spring use at Bull Flat Playa (RNA observation records 2011). An occurrence of *Pogogyne floribunda* (profuse-flowered pogogyne), a BLM sensitive plant, occurs at Bull Flat Playa under the silver sage.

Toppin Creek Butte contains five ecological sites, with nearly equal presence of Ashy Plateau 11- to 13-inch PZ (29 percent), Shallow Claypan 11- to 13-inch PZ (29 percent), and Loamy 11- to 13-inch PZ (28 percent). Loamy 8- to 11-inch PZ covers 12 percent of the RNA and the remaining 2 percent consists of Ponded Clay.

The existing conditions of riparian/wetland areas are described in Section 3.5, pgs. 3-35 through 3-36, in the 2015 Final EIS; they are hereby incorporated by reference. Prior to 2012, 8 of the 13 key RNAs had land health assessments completed (see Appendix N in the 2015 Final EIS).

Standard 2 (Watershed Function-Riparian/Wetlands) was not met, due to livestock grazing in one allotment within the Black Canyon RNA and one allotment within the Foley Lake RNA. Management changes were implemented to make progress toward attainment of the standard. Since 2013 (results

post-2013 were not included in Appendix N in the 2015 ARMPA), land health assessments were completed in allotments in East Fork of Trout RNA (2015), Fish Creek Rim RNA (2013), and Rahilly Gravelly RNA (2013). All rangeland health standards were met, indicating that no adjustments to current grazing management is needed.

3.5 FISH AND WILDLIFE

The existing conditions of fish and wildlife in the planning area are described in the 2015 Final EIS in Section 3.5.1 (pgs. 3-56 to 3-70) and trends are described in Section 3.5.2 (pgs. 3-71 to 3-74); they are hereby incorporated by reference.

Since 2015, the BLM has obtained no new monitoring data or other information that would indicate a change in the status and trends of fish and wildlife occurring in the key RNAs. Wildfires likely altered vegetation components of wildlife habitat in some key RNAs since 2015, although the effects have not been monitored. As noted above, wildfires burned all or a portion of three key RNAs in 2015–2016. Two of the RNAs (North Ridge Bully Creek and South Ridge Bully Creek) burned in 2012 and 2015. These wildfires are too closely spaced in time for substantial changes to the habitat to occur since the 2012 fire. The third RNA (South Bull Canyon) was partially burned in 2016. The BLM did not monitor wildlife use of burned areas of the South Bull Canyon RNA, so it does not know what impacts if any occurred on other wildlife.

Wildlife is identified in the RNA establishment reports as a relevant and important value for six RNAs: Black Canyon, Lake Ridge, Mahogany Ridge, North Ridge Bully Creek, South Ridge Bully Creek, and Toppin Creek Butte.

Mule deer, bighorn sheep, and pronghorn antelope are specifically mentioned in the RNA establishment reports for four RNAs on the Lakeview District (Fish Creek Rim, Foley Lake, Guano Creek–Sink Lakes, and Rahilly-Gravelly) and two RNAs on the Burns District (East Fork Trout Creek and Foster Flat); however, none of the establishment reports for these six RNAs in Lakeview and Burns identified wildlife as meeting the RNA establishment criterion for relevance and importance. This was due to the absence of crucial habitat.

3.6 SPECIAL STATUS SPECIES

The existing conditions of special status species in the planning area are described in the 2015 Final EIS in Section 3.5.1 (pgs. 3-56 to 3-70), and trends are described in Section 3.5.2 (pgs. 3-71 to 3-74). They are hereby incorporated by reference.

The BLM updated its special status species list on July 29, 2015 (see IM No. OR-2015-028). Since 2015, the agency has obtained no new monitoring data or other information that would indicate a change in the status and trends of special status species identified in the 2015 list occurring in the key RNAs. A few key RNAs contain current or former BLM special status species.

No critical habitat has been designated within the key RNAs. Most information comes from the BLM Geographic Observation data base (GeoBOB), and observation data from the Oregon Biodiversity Information Center (ORBIC). These databases and the Forest Service's Region 6 Wildlife Database were queried for wildlife records that intersect with the key RNAs (GeoBOB 2018; ORBIC 2018). There are no known populations of any federally listed endangered plants in any of the key RNAs.

Foley Lake RNA contains a candidate for Oregon state listing, *Rorpipa columbiae* (Columbia cress), a playa "edge" species that is in decline rangewide (*Roripp*a *columbiae* Conservation Strategy 2016). This species has a NatureServe rank of global and state vulnerable (G3 S3) and is listed in the State of Washington. This rare plant is known from about 15 occurrences in Northern California, 13 in southern Oregon, and at the Hanford Reach in Washington. At Foley Lake, 85 stems were last documented in 2016.

In southern Oregon approximately 11,380 plants are documented at 13 sites, but 8 sites have fewer than 85 plants. Also occurring is profuse-flowered pogogyne (*Pogogyne floribunda*), a state-imperiled (G4 S1) species in the silver sage community. This tiny annual member of the mint family occurs in the intermediate moisture zone of the playa edge, outside the habitat occupied by Columbia cress. Three Greater Sage-Grouse leks are documented within 1 to 2 miles of the RNA (BLM 2015, Key RNA descriptions).

Rahilly-Gravelly RNA contains five occurrences of Cooper's goldflower (*Hymenoxys cooperii* var. *canescens*). This rare aster has a global and state rank of G4 S1 (state critically imperiled), with fewer than 400 plants total in the RNA (BLM GeoBOB 2014), mostly in the Sucker Creek pasture. Only one other location is known in Oregon, in the Trout Creek Mountains in southeastern Oregon. Other populations occur across the California border in Modoc County, in the Sierra Nevada, and scattered populations in the Great Basin in Nevada, Utah, and Arizona. Eight Greater Sage-Grouse leks are documented in the RNA and two additional leks occur within 1 to 2 miles of the RNA.

The East Fork of Trout Creek RNA contains the grass, rock melic (*Melica stricta*), an Oregon Biodiversity Information Center G4 S3 (state vulnerable), Oregon List 2 species (threatened in Oregon but secure elsewhere), and a former BLM sensitive species. Large populations of Rock melic are documented throughout this area, both in the RNA and outside the RNA in the surrounding landscape. Columbia spotted frog is identified in the RNA establishment report. One Greater Sage-Grouse lek is documented 0.8 miles east of the RNA, and Greater Sage-Grouse have been recorded within the RNA.

Mahogany ridge RNA contains three occurrences of Owyhee clover (*Trifolium owyheeense*), out of 81 sites documented on the Vale District and in the state. The species is listed by the State of Oregon as endangered. All sites are small, and the total known occupied area is 254 acres (GeoBOB 2014), or about 3 acres per site. This endemic clover has a NatureServe rank of G2 S2 (globally and state imperiled). Last documented in 2001, the three sites were estimated to have about 2,000 plants (GeoBOB 2018). The species was in the RNA, outside the area designated as unavailable to grazing in the 2015 AMRPA. The species occurs in Wyoming big sagebrush communities. Two Greater Sage-Grouse leks occur 3 to 4 miles from the RNA, to the northeast and southeast.

The North Ridge of Bully Creek has a documented occurrence of thyme-leaved buckwheat (*Eriogonum thymoides*). This former BLM sensitive species is still tracked by ORBIC as a list 3 species (still some concern), but it has been found to be more abundant elsewhere in the state. No population level information is available other than presence. Greater Sage-Grouse were also observed in 2008 (RNA Observation Reports 2008). In 2007, the invasive species whitetop was documented close to an active Greater Sage-Grouse lek. Five Greater Sage-Grouse leks are within the RNA, and eight leks are known within 2 to 4 miles of the RNA, including one lek in the adjacent South Ridge Bully Creek RNA.

South Ridge of Bully Creek RNA has documented occurrences of Greater Sage-Grouse, with one lek documented inside the RNA. Pygmy rabbits have also been documented.

Toppin Creek RNA has an occurrence of profuse-flowered pogogyne, a BLM sensitive plant, on the playa. This G4 S1 (state imperiled) species occurs at Bull Flat Playa with silver sage plants. This population was last documented to have 4,000 plants in 2005.

Toppin Creek Butte is identified as a particularly important area for neotropical migratory birds, possibly including special status species. Greater Sage-Grouse are documented in the RNA, with one lek within the RNA and two more within 1.6 to 2.6 miles of the RNA boundary.

Black Canyon RNA contains Columbia spotted frog and Redband trout (species of concern), as identified in the RNA establishment report, dated April 12, 1996. Greater Sage-Grouse have been observed in the RNA (RNA Observation Report 2002, 2004, 2005). Two Greater Sage-Grouse leks occur 2 to 3 miles to the north and east of the RNA.

Foster Flat RNA contains pygmy rabbit, as identified in the RNA establishment report. Two Greater Sage-Grouse leks occur 2 to 3 miles east of the RNA. Greater Sage-Grouse have been documented within the RNA, and this area has long been used for hunting Greater Sage-Grouse (Taylor 2004).

South Bull Canyon RNA: RNA Observation Reports (2003) mention Greater Sage-Grouse use and nesting habitat and concern for level of grazing utilization. There are 10 Greater Sage-Grouse leks occurring within 1.4 to 2.4 miles of the RNA.

Dry Creek Bench RNA is within a block of land that the BLM is managing for Lahontan cutthroat trout, but there are no records of the species occurring within in the RNA. Three Greater Sage-Grouse leks occur between 1.5 and 2.5 miles north and west of the RNA.

Lake Ridge RNA has documented use by Greater Sage-Grouse; one female was observed in 2005 (RNA Observation Reports 2005). In 2004, RNA Observation Reports documented some use by domestic sheep potentially affecting forbs that are used by Greater Sage-Grouse. One Greater Sage-Grouse lek occurs in the RNA and 4 leks occur 0.1 to 1 mile north of the RNA boundary.

Spring Mountain RNA has 15 Greater Sage-Grouse leks occurring within 1.8 to 3.8 miles of the RNA to the east, south, and west.

Guano Creek - Sink Lakes RNA has documented occurrences of Greater Sage-Grouse and contains two more leks 1 to 2 miles to the north and southwest in the High Lakes ACEC. This currently ungrazed RNA has one occurrence of a BLM sensitive species, grimy ivesia (*Ivesia rhypara* var. *rhypara*), a G2 S1 state critically imperiled species, and another endemic, Crosby's buckwheat (*Eriogonum crosbyae*), a G3 S2 species (state imperiled) species.

The ivesia occupies 0.2 acres and contains 39 plants from observations in 2012. The Crosby's buckwheat occurs in 3 patches on 12 acres and had an estimated 1,990 plants in 2012.

Pallid bat, Sheldon tui chub, and Greater Sage-Grouse have been reported in the RNA. Another plant, Fassett's water starwort (*Callitiche fassettii*), a very uncommon submerged aquatic plant, has been

documented in Guano Creek. This species has a NatureServe rank of G1Q SNR (Globally imperiled but not ranked in the state). Not enough is known about its taxonomy and relation to other water starworts to be able to list it as a BLM sensitive species.

Fish Creek Rim RNA has six Greater Sage-Grouse leks occurring within 2 to 3 miles to the west. Radio telemetry has documented Greater Sage-Grouse in the northern and southern portion of the RNA, in low sage habitats (Fish Creek RIM telemetry map 2014 [BLM internal document]).

Wildfires likely altered vegetation components of wildlife habitat in some key RNAs since 2015, although the effects have not been monitored. The amount of habitat that was burned in these RNAs is so minor as to be undetectable using standard wildlife monitoring techniques.

3.7 LIVESTOCK GRAZING

The existing conditions and trends of livestock grazing in the planning area are described in the 2015 Final EIS in Section 3.8 (pgs. 3-87 to 3-93), hereby incorporated by reference. Preliminary work and collaborative discussions among the BLM State, District, and Field Offices have been ongoing to meet the 5-year implementation time frame identified in the 2015 ARMPA (see page 2-46, 2015 Final EIS) for making all or portions of 13 of the 15 key RNAs unavailable to livestock grazing. Authorized livestock grazing has continued in these key RNAs consistent with District RMPs and the 2015 ROD/ARMPA. The grazing regulations at 43 CFR 4110, 4130, or 4180 provide District and Field Offices the authority to modify grazing use, if warranted.

In addition, since the issuance of the 2015 ROD/ARMPA in September 2015, Table 2-6 has been updated to more accurately reflect District-verified calculations of acreage and AUMs made unavailable in all or portions of the 13 RNAs (see **Table 2-2** in **Chapter 2** of this RMPA/EIS). The acres unavailable for livestock grazing remain at 21,959, and the estimated unavailable AUM numbers changed from 2,388 to 1,772.

Prior to 2011, 8 of the 13 key RNAs had land health assessments completed (see Appendix N in the 2015 ARMPA). Standard 2 (Wetlands-Riparian/Wetlands) was not met due to livestock grazing in one allotment within the Black Canyon RNA and one allotment within the Foley Lake RNA. BLM implemented management changes to make progress toward attainment of the standard in both allotments. The results of these land health assessments from 2013 were not included in Appendix N of the November 2013 Draft EIS because they were completed after the planning process data cut-off date. Land health assessments were completed in the allotments in East Fork of Trout RNA (2015), Fish Creek Rim RNA (2013), and Rahilly Gravelly RNA (2013). All rangeland health standards were met in these RNA allotments. The land health assessments showed that upland watershed and ecological processes were functioning appropriately. Similarly, the vegetative communities for which these RNAs were designated in the District RMPs (pre-2015 ARMPA) were healthy. Because district and field offices have not modified grazing use under the grazing regulations at 43 CFR 4110, 4130, or 4180, the key RNA values were therefore being maintained, indicating that adjustments to current grazing management are not needed.

3.8 SOCIOECONOMICS

The existing socioeconomic conditions and trends within the planning area are described in the 2015 Final EIS in Section 3.21 (pgs. 3-164 through 3-194) and are hereby incorporated by reference. The

scope of the economic analysis covered seven counties in eastern Oregon, which contain 12,083,622 acres of public land that are available for grazing and 771,773 AUMs of active use. The 2015 Final EIS noted the importance of livestock grazing to the three counties where the key RNAs occur; this is because the greatest amount of Greater Sage-Grouse habitat is concentrated in those counties.

Two of the key RNAs were closed to livestock grazing before the 2015 ARMPA via decisions in the prior, underlying land use plans. On October 30, 1998, the 105th Congress passed Public Law 105-321 "Oregon Public Lands Transfer and Protection Act of 1998." Section 4 of the act, Hart Mountain Jurisdictional Transfer, transferred lands that the BLM administered in the Guano Creek pasture located in the Beaty Butte Allotment to the USFWS. These lands (Guano Creek-Sink Lakes RNA) would be managed under USFWS's Comprehensive Management Plan, under which livestock grazing is excluded. The Foster Flat RNA/ACEC was closed to grazing in the Three Rivers Resource Management Plan (September 1992). In 1994, the Burns District constructed an exclosure to exclude grazing by domestic livestock and wild horse and burros from the South Steens Herd Management Area.

The 2015 ARMPA identified that 21,959 acres of public land would be unavailable to livestock grazing, resulting in a loss of 1,772 AUMs of active use.

At the statewide scale the loss of 1,772 AUMs (out of 771,773, or less than 1 percent) was found to be negligible; however, the economic impact on individual permittees, through expected loss of AUMs, varied based on the percent of active use AUMs reduced. Preliminary work and collaborative discussions among the BLM State, District, and Field Offices have been ongoing to meet the 5-year implementation time frame identified in the 2015 ARMPA (see page 2-46, 2015 Final EIS) for making all or portions of 13 of the 15 key RNAs unavailable to livestock grazing. Authorized livestock grazing has continued in these key RNAs consistent with District RMPs and the 2015 ARMPA/ROD.

Chapter 4. Environmental Impacts

4.1 Introduction

This chapter presents the direct, indirect, and cumulative impacts on the human and natural environment anticipated to occur from implementing the alternatives presented in **Chapter 2**. The purpose of this chapter is to describe to the decision-maker and the public the differences between the entire range of alternatives considered in 2018, including the 2018 Draft Plan (Management Alignment Alternative), the 2018 Proposed Plan Amendment, as well as the range of alternatives incorporated by reference from the 2015 plan amendments. It is meant to clarify that Greater Sage-Grouse management was comprehensively analyzed in 2018 through multiple NEPA and planning processes.

This chapter is organized by topic based on the resources affected, as identified in **Chapters 1** and **3**. Only those issues in **Chapter 1**, **Table 1-1** are carried forward for analysis.

Impact analysis is a cause-and-effect process. The detailed impact analyses and conclusions are based on the following:

- The BLM planning team's knowledge of resources and the planning area
- Reviews of existing literature
- Information provided by experts in the BLM, other agencies, cooperating agencies, interest groups, and concerned citizens

The baseline used for the impact analysis is the current condition or situation, as described in **Chapter 3**. Impacts on resources and resource uses are analyzed and discussed in detail, commensurate with resource issues and concerns identified through the process. At times, impacts are described using ranges of potential impacts or in qualitative terms.

This FSEIS describes more explicitly the full range of alternatives that the BLM has evaluated, summarizing each action alternative contained in the 2015 and 2018 EISs.

4.2 Analytical Assumptions

Several overarching assumptions have been made in order to facilitate the analysis of the project impacts. These assumptions set guidelines and provide reasonably foreseeable levels of livestock grazing based on existing permits that would occur in the planning 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 general assumptions apply to all resource categories. Any specific resource assumptions are provided in the methods of analysis section for that resource.

- Sufficient funding and personnel would be available for implementing the final decision.
- Implementation-level actions necessary to execute any activity-level decisions in this RMPA would be subject to further environmental review, including that under NEPA.

- Direct and indirect impacts of implementing the RMPA would primarily occur on the public lands administered by the BLM in the planning area.
- The BLM would carry out appropriate maintenance for the functional capability of all developments.
- The discussion of impacts is based on best available data. Knowledge of the planning area and decision area and professional judgment, based on observation and analysis of conditions and responses in similar areas, 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.
- Acreage figures and other numbers are approximate for comparison and analysis only; readers should not infer that they reflect exact measurements or precise calculations. In the absence of quantitative data, best professional judgment was used. Impacts were sometimes described using ranges of potential impacts or qualitatively, when appropriate.
- Achieving or maintaining Standards for Rangeland Health and Guidelines for Livestock Grazing Management (described in Section 3.8 of the 2015 Final EIS, Livestock Grazing and Range Management) generally are effective in managing the effects on soils from livestock grazing when properly implemented and monitored. Grazing authorizations will be adjusted on a case-by-case basis when site-specific studies indicate changes in management are needed. Analysis of Soil Resources in the 2015 Final EIS, Section 4-17 (pages 4-281 to 4-300) is hereby incorporated by reference.

The BLM would continue to manage all RNAs for the values they were designated for, per District RMPs, following existing management guidance and consistent with direction for PHMA.

The following information is the most current information available on conditions in the RNAs and is therefore used as the basis for the analysis in this chapter. As described in the 2015 Final EIS (pages 3-134 and 135), and hereby incorporated by reference, one of the guiding principles in managing RNAs is to prevent unnatural encroachment or activities that directly threaten or indirectly modify ecological processes or conditions. Permitted actions that could impair scientific or educational values of the RNA (including grazing) are generally limited, restricted, or not allowed so as to provide areas in the RNA that have intact ecological processes and conditions.

BLM Oregon Manual 1623, Section 37C, says livestock grazing should be managed to promote maintenance of the key characteristics for which the area is recognized. These are areas that can serve as long-term baseline areas for plant community monitoring and as controls for BLM treatments and activities outside the RNA, including grazing treatments.

4.3 General Method for Analyzing Impacts

Potential impacts are described in terms of type, context, duration, and intensity, which are generally defined below.

Type of impact—Impacts are characterized using the indicators described at the beginning of each resource impact section. The presentation of impacts for key planning issues is intended to provide the

BLM decision-maker and reader with an understanding of the multiple use trade-offs associated with each alternative.

Context—This describes the area or location (site-specific, local, planning area-wide, or regional) in which the impact would occur. Site-specific impacts would occur at the location of the action; local impacts would occur within the general vicinity of the action area; planning area-wide impacts would affect a greater portion of decision area lands in southeast Oregon; and regional impacts would extend beyond the planning area boundaries.

Duration—This describes the duration of an effect, either short term or long term. Unless otherwise noted, short term is defined as anticipated to begin and end within the first 5 years after the action is implemented; long term is defined as lasting beyond 5 years to the end of or beyond the life of this RMPA.

Intensity—Rather than categorize impacts by intensity (e.g., major, moderate, or minor), this analysis discusses impacts using quantitative data wherever possible.

Direct and indirect impacts—Direct impacts are caused by an action or implementation of an alternative and occur at the same time and place; indirect impacts result from implementing an action or alternative but usually occur later in time or are removed in distance and are reasonably certain to occur.

For ease of reading, the impacts of the management actions for a particular alternative on a specific resource are generally compared to the status quo or baseline for that resource; however, in order to properly and meaningfully evaluate the impacts, those expected under the Proposed Plan Amendment should be measured against the impacts projected to occur under the No-Action Alternative. The No-Action Alternative is the baseline, as it represents what is anticipated to occur should the RMPA not take place.

Irreversible and irretrievable commitment of resources is discussed in **Section 4.12**. Irreversible commitments of resources result from actions in which resources are considered permanently changed; irretrievable commitments of resources result from actions in which resources are considered permanently lost.

Impacts from the No-Action Alternative

The effects of the No-Action Alternative, or current management, of this RMPA/EIS were analyzed as the Proposed Plan (Section 4.4.10) in the 2015 Final EIS, and they are hereby incorporated by reference. The BLM has also reviewed new information to verify that the analysis in the 2015 Final EIS remains sound; therefore, impacts from implementing the No-Action Alternative are substantially the same as those analyzed in the 2015 Final EIS, except as updated or made more specific in this RMPA/EIS.

Table 4-1 shows where information related to the impacts of the No-Action Alternative can be found in the 2015 Final EIS. The impact analysis and discussion in this chapter are more detailed than was possible in the 2015 Final EIS, due to the scale of analysis for that document.

The impacts of removing grazing from key RNAs was analyzed in the 2015 ARMPA, Section 4.4.10, page 4-121. Removing grazing would aid in the recovery of the limited riparian areas, playas, and mesic areas within the 13 key RNAs where grazing has been allowed. This is because these areas have been more

heavily grazed than other areas within the key RNAs (TNC 1992; BLM 1996a, 1996c, 1996d, 1996f). Because little to no research has been conducted on the impacts of grazing on forbs and insects used by Greater Sage-Grouse and on special status plants, the BLM is uncertain how these resources would respond to not being grazed. Ungrazed comparison areas representing the seasonal needs of Greater Sage-Grouse are lacking (Beck and Mitchell 2000; Hockett 2002).

Table 4-1
Environmental Consequences for the No-Action Alternative Incorporated by Reference

Decision Topic	Related Resource Topic	Location in 2015 Final EIS
Modifying livestock grazing decisions within 13 RNAs	Greater Sage-Grouse	Chapter 4, Section 4.3 (GRSG and GRSG Habitat), pages 4-7 to 4-93
	Vegetation, including Invasive Plants, Riparian Areas and Wetlands	Chapter 4, Section 4.4 (Vegetation), pages 4-94 to 4-122
	Fish and Wildlife	Chapter 4, Section 4.5 (Fish and Wildlife), pages 4-122 to 4-144
	Livestock Grazing	Chapter 4, Section 4.8 (Livestock Grazing and Range Management), pages 4-179 to 4-204
	Socioeconomics	Chapter 4, Section 4.20 (Social and Economic Impacts, Including Environmental Justice), pages 4-324 to 4-357

The assumption is that, by allowing natural succession to proceed without any livestock grazing and in the absence of invasive plants, the 13 key RNAs would have an increased native forb species richness and cover, especially for forb species that are palatable or preferred by livestock. Managing as unavailable for grazing those areas that contain any BLM sensitive plants would increase the protection for those species (2015 Final EIS, page 4-100). Removing improper livestock grazing in the key RNAs that support special status species of fish and wildlife could reduce competition for forage and potentially increase Greater Sage-Grouse cover and nesting habitat, while protecting riparian areas that support riparian-dependent, aquatic, and fish species (2015 Final EIS, page 4-126). Impacts would vary depending on the extent of vegetation removal, type of habitat grazed, and timing of the grazing period.

Whether removal of grazing would reduce the risk of invasive plant spread into the key RNAs is uncertain, as there are many vectors for invasive plants besides livestock, but reducing the physical disturbance from grazing is likely to reduce one of those vectors. Implementation-level actions necessary to close and eliminate grazing would be subject to further environmental review, including that under NEPA (2015 Final EIS, Section 4.2).

Impacts from Proposed Plan Amendment

Table 4-2 summarizes how the potential decision of choosing the Proposed Plan Amendment of this RMPA was previously considered in the 2015 Final EIS as Alternative A (No Action), and it is hereby incorporated by reference. Issues needing updates or more specific analysis are discussed under the resource headings in this chapter.

Table 4-2
Consideration of Proposed Plan Amendment Components in the 2015 Final EIS

Plan Amendment Issue	Considered in 2015 Final EIS?
Modifying livestock grazing decisions within RNAs	Livestock grazing decisions in the key RNAs were considered and analyzed in the 2015 Final EIS as approved in the 2015 Greater Sage-Grouse ARMPA (for Oregon) and ROD. The decision to make livestock grazing unavailable in 13 key RNAs is subject to change in this RMPA/EIS, which considers the key RNAs and the livestock grazing availability decision in more detail. The No-Action Alternative of the 2015 Final EIS (Chapter 2, Section 2.8.2; Appendix B; and Chapter 4, Section 4.4.4) considered that the livestock grazing decisions in the RNAs subject to change would continue to be available for livestock grazing. The Proposed Plan of the 2015 Final EIS (Chapter 2, Sections 2.6, 2.8, and 2.9; Appendix B; and Chapter 4, Section 4.8.10) described the impacts of making the key RNAs, subject to change in this RMPA/EIS, unavailable for livestock grazing.

The impacts of retaining grazing in the 13 key RNAs is discussed in the 2015 ARMPA in Section 4.4.4 (Alternative A) on page 4-106. Special status species in key RNAs open to grazing would remain vulnerable to grazing due to scattered and limited distribution and small populations (2015 Final EIS, page 4-100). Livestock grazing would continue to have a greater impact on the limited riparian areas, playas, and mesic areas within these key RNAs similar to what has been observed in the past. This is largely due to the limited availability of surface water in these areas. Because little to no research has been conducted on the impacts of grazing on forbs and insects used by Greater Sage-Grouse and special status plants, the BLM is uncertain how these species would respond. Whether continued grazing would increase the risk of invasive plant spread into the key RNAs is uncertain, as there are many vectors for invasive plants besides livestock.

This table is a summary of the environmental consequences of the 2015 alternatives that were incorporated by reference into the 2019 planning effort and considered throughout the process. **Table 4-3**, presents a comparison summary of impacts from management actions proposed for the alternatives considered in 2015.

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Table 4-3
Summary of Environmental Consequences (excerpts from the June 2015 Final EIS, Table 2-14)

Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Draft EIS Preferred Alt.)	Alternative E	Alternative F	Proposed Plan
Special Designations						
Under Alternative A, 200,399 acres of ACECs overlap PPH and 251,233 acres of ACECs overlap PGH. These overlapping acres are likely to experience additional protection from the restrictions placed on Greater Sage-Grouse habitat. More acres (9,982,126) are open to livestock grazing under Alternatives A and B than under any of the other alternatives. Therefore, ACECs under Alternatives A and B would experience fewer incidental protections that result from closing acres to livestock grazing than would ACECs under the other alternatives.	Under Alternative B the same number of acres of ACECs would overlap PHMA and GHMA as would overlap under Alternative A. More acres (9,982,126) are open to livestock grazing under Alternatives B and A than under the other alternatives. Impacts on ACECs are the same as those described under Alternative A.	Under Alternative C, the same number of acres of existing ACECs would overlap PHMA and GHMA as would under Alternative A. However, an additional 4,346,223 acres of PHMA (all PHMA) would be designated as ACECs for Greater Sage-Grouse conservation. No additional acres of GHMA would be designated as ACECs. Under Alternative C, the smallest number of acres (0) of PHMA and GHMA are open to livestock grazing. This would protect ACECs that overlap PHMA and GHMA from livestock grazing impacts.	Under Alternative D the same number of acres of ACECs would overlap PHMA and GHMA as would under Alternative A. In ACECs and RNAs containing 20 percent PHMA or 50 percent GHMA, ACECs would be managed for Greater Sage-Grouse conservation in addition to existing values. Management would change to provide additional protections to the Greater Sage-Grouse. This would likely provide additional protection to the values of the ACECs. Additionally there would be more restrictive management for RNAs under this alternative. Under Alternative D, 9,923,018 acres of PHMA and GHMA would be open to livestock grazing.	Under Alternative E, the same number of acres of ACECs would overlap low-density and core area habitat as would under Alternative A. Under Alternative E, 8,296,814 acres of low-density and core area habitat would be open to livestock grazing. This is 1,685,312 fewer acres than under Alternative A and would result in fewer impacts from livestock grazing on ACECs than under Alternative A.	Under Alternative F the same number of acres of existing ACECs would overlap PHMA and GHMA as would under Alternative A. An additional 2,560,384 acres of PHMA and 1,241,571 acres of GHMA would be designated as ACECs compared with Alternative A. Under Alternative F, 7,506,632 acres of PHMA and GHMA would be open to livestock grazing. This is 2,475,494 fewer acres than under Alternative A. It would result in fewer impacts from livestock grazing on ACECs than under Alternative A.	Under the Proposed Plan the same number of acres of existing ACECs would overlap PHMA and GHMA as would under Alternative A. However, under the Proposed Plan, 3 ACECs and 15 RNAs would be identified, and some would receive additional protection. More acres (25,838 acres) would be closed to livestock grazing under the Proposed Plan than under Alternative A.

Note: Research Natural Areas (RNAs) are a special type of Area of Critical Environmental Concern (ACEC).

Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Draft EIS Preferred Alt.)	Alternative E	Alternative F	Proposed Plan
Greater Sage-Grouse and Sage-Grouse Habitat						
Alternative A (current management) protects Greater Sage-Grouse habitat in the planning area through existing land use plans, which vary in their levels of protection for sagebrush, allowing for differing interpretations over time and creating uncertainty about reducing the threats to habitat. Current management controls invasive plants in Greater Sage-Grouse habitat using integrated vegetation management. This policy would remain in place for all alternatives. Alternative existing regulatory mechanisms, including the fundamentals for rangeland health, would continue to provide the basis for managing grazing in Greater Sage-Grouse habitat.	Alternative B applies guidance from the NTT report for protecting Greater Sage-Grouse habitat, but it lacks specificity for sub-regional conditions. It would apply a three percent disturbance cap on all surface disturbance in PHMA. Alternative B improves focus on rangeland health in Greater Sage-Grouse habitat areas for managing grazing in Greater Sage-Grouse habitat.	Alternative C also protects Greater Sage-Grouse habitat, using guidance derived from the NTT report but applied across all occupied habitat. Alternative C includes a zero percent surface disturbance limit in PHMA. Alternative C would bar grazing in occupied habitat in order to protect Greater Sage-Grouse nesting and foraging habitat. It also focuses on passive restoration techniques. These approaches may increase weed spread and fuel buildup, resulting in habitat degradation for Greater Sage-Grouse over time.	Alternative D increases the consistency of approach by providing more specific guidance, with stronger measures and more management flexibility compared to other actions alternatives to achieve the most protection for Greater Sage-Grouse habitat. It would also apply a 3% disturbance cap to all surface disturbance in PHMA. Alternative D provides clear guidance on grazing management in Greater Sage-Grouse habitat, resulting in high likelihood of adjusting grazing management where needed to meet Greater Sage-Grouse habitat needs.	Alternative E provides more specific management direction than Alternatives B, C, and F, but with more limited conservation measures than Alternative D. Alternative E is less likely to adjust grazing management to meet Greater Sage-Grouse habitat needs, largely because assessments are not prioritized.	Alternative F protects Greater Sage-Grouse habitat similarly to Alternatives B and C, using nonspecific guidance, which could make Alternative F difficult to apply consistently across plans. Alternative F would also apply a three percent disturbance cap on all surface disturbance in PHMA but would include fire within the three percent limit. Alternative F would further limit annually but would not bar grazing in Greater Sage-Grouse habitat. This approach would reduce harm to Greater Sage-Grouse habitat.	Impacts from the Proposed Plan would be similar to those described for Alternative D. The Proposed Plan would incorporate flexibility with the use of active management tools, regional mitigation, and monitoring and adaptive management applied to resource uses to account for changes in conditions. The BLM would require a cap of three percent disturbance in PHMA, from human disturbances, not including wildfire, and would implement numerous conservation measures to reduce impacts from human activities in PHMA. This would reduce the likelihood for habitat loss, degradation, or fragmentation. It prioritizes review of grazing permits in SFAs and provides clear guidance on grazing management in Greater Sage-Grouse habitat. This would result in the highest

Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Draft EIS Preferred Alt.)	Alternative E	Alternative F	Proposed Plan
(see *above)*	(see *above)*	(see *above)*	(see *above)*	(see *above)*	(see *above)*	likelihood of adjusting grazing management where needed to meet Greater Sage-Grouse habitat needs.
Vegetation*						
Alternative A provides the least protection for vegetation communities in the planning area…. This could reduce the acreage and condition of native vegetation, increase the spread or cover of noxious weeds and invasive species, and reduce special status plant populations. Impacts from current allocations and resource uses would continue. This would continue to decrease the acreage and condition of native vegetation communities, would reduce the acreage and condition of riparian and wetland areas, and would reduce the number and size of special status plant populations.	Alternative B provides more protection for vegetation than Alternative A, but it would provide less protection than Alternatives C and F. Alternative B would also provide guidance and prioritization for vegetation treatments and Greater Sage-Grouse habitat restoration, thereby improving the condition and extent of native vegetation and habitat conditions for some species status plants.	Alternative C would focus on removing livestock grazing from occupied habitats…, with most other management being similar to Alternative A. As such, impacts from livestock grazing would be removed and impacts from surface-disturbing activities would be greatly reduced.	Alternative D would provide more protection for vegetation than Alternative A, but it would provide less protection than Alternatives B, C, and F. Impacts from Alternative D are similar to those described for Alternative B, but with increased flexibility in decision-making and slightly reduced restrictions on uses. As a result, impacts would be reduced, compared to Alternative A, but not to the same extent as Alternative B.	Impacts from Alternative E are similar to those for Alternative D. In addition, Alternative E would require no net loss of sagebrush; as a result, it would provide more protection to vegetation than Alternative D.	Impacts from Alternative F would be similar to those described for Alternative B.	Impacts from the Proposed Plan would be similar to those described for Alternative D. The Proposed Plan would include specific restoration targets for sagebrush thinning, conifer removal, invasive plant control, and crested wheatgrass restoration within four miles of occupied and pending leks. The Proposed Plan is the only alternative that would provide a target for crested wheatgrass. The Proposed Plan would close all or parts of key RNAs to livestock grazing.

*Note: The analysis of impacts to vegetation in the May 2015 Final EIS covered millions of acres of Greater Sage-Grouse habitat within the planning and decision areas, which included the RNAs.

Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Draft EIS Preferred Alt.)	Alternative E	Alternative F	Proposed Plan
Fish and Wildlife						
Impacts on special status wildlife species would continue and likely would decrease habitat quality, quantity, and protection in the long term. Implementing management for general fish and wildlife, big game, and migratory birds discussed in Section 3.4, Fish and Wildlife, would have negligible or no impacts on those resources and are not addressed in the fish and wildlife analysis.	Impacts on special status wildlife species would be reduced, compared to Alternative A. Alternative B PHMA and GHMA would increase quality and protection for special status wildlife species habitat. This would affect habitat that overlaps occupied Greater Sage-Grouse habitat by designating PHMA and GHMA….	Impacts on special status wildlife species are similar to those described under Alternative B. Grazing would be removed from occupied Greater Sage-Grouse habitat, which could increase the potential for wildfire, as fuel loads increase in the absence of managed grazing. In addition, this action would require structural range improvements, including fences to exclude grazing from Greater Sage-Grouse habitat. This could increase habitat fragmentation and associated impacts on special status wildlife species.	Alternative D would provide greater protection for special status wildlife species habitats than Alternative A but less protection than Alternatives B, C, and F. Alternative D provides more specific guidance, with stronger measures and more management flexibility compared to other action alternatives to achieve the most protection for Greater Sage-Grouse habitat. Impacts from Alternative D are similar to those described for Alternative B but with increased flexibility in decision-making and slightly reduced restrictions on uses. As a result, impacts would be reduced, compared to Alternative A, but not to the same extent as Alternative B.	Impacts from Alternative E would be similar to those for Alternative D. However, Alternative E would require no net loss of sagebrush, which may shift impacts on non-sagebrush habitats and associated special status wildlife species that do not rely on sagebrush. Managing occupied Greater Sage-Grouse habitat as core areas would increase quality and protection for special status wildlife species' habitats that overlap occupied Greater Sage-Grouse habitat. Greater Sage-Grouse management of low-density habitat would provide less protection for special status wildlife habitat in those areas than the No Action Alternative.	Impacts from Alternative F on special status wildlife species would be similar to those described for Alternative B. Livestock grazing management would close 25 percent of PHMA and GHMA to grazing, potentially reducing impacts from grazing management on special status wildlife. However, additional necessary fencing and infrastructure would increase habitat fragmentation and associated impacts on special status wildlife species.	Impacts from the Proposed Plan are similar to those under Alternative D. Management of both livestock grazing and off-road motorized travel would provide similar protection to special status wildlife species as Alternative D and would increase protection over Alternative A.

Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Draft EIS Preferred Alt.)	Alternative E	Alternative F	Proposed Plan
Livestock Grazing						
Approximately 771,773 AUMs would be permitted and 9,982,126 acres would be available for grazing in PPH and PGH on BLM-administered lands. No PMPH or PMGH would be designated for Greater Sage-Grouse under Alternative A. Individual RMPs may provide some measures to protect PPH or PGH, but management would vary across the planning area. In general, Alternative A would be the least restrictive on alternative resource uses, including livestock grazing. As a result, permittees and lessees would have a range of management options to support livestock grazing operations.	Acres available to grazing and permitted AUMs would be the same as Alternative A. Occupied Greater Sage-Grouse habitat would be classified into PHMA and GHMA. When fine- and site-scale Greater Sage-Grouse habitat assessment and monitoring is needed or required (e.g., as a component of a rangeland health assessment), the Greater Sage-Grouse habitat suitability indicators for seasonal habitats identified in the HAF would be measured. In the long term, livestock grazing in PHMA would be reduced, compared to Alternative A, should current grazing practices in a given allotment fail to meet Greater Sage-Grouse habitat objectives; however, impacts would be site	No livestock grazing would be authorized in occupied Greater Sage-Grouse habitat in the planning area. A total of 787,139 acres in non-Greater Sage-Grouse habitat would be available to grazing. As a result, permittees and lessees would be required to locate alternative sources of forage or to close or reduce livestock grazing operations, with impacts on individual operators as well as the community at large.	Approximately 9,923,018 acres would be available for grazing and 763,825 AUMs would be permitted in Greater Sage-Grouse habitat (one percent reduction from Alternative A), due to the closure of specific areas of key RNAs in PHMA to grazing. In the specific allotments closed, permittees and lessees would need to locate alternative forage sources and may face financial impacts, as described under Alternative C. Under Alternative D, permit renewal and associated land health assessment would be prioritized first in PHMA for those assessment categories requiring modification. As a result, changes to permitted livestock grazing level and grazing systems are more likely to occur in these areas. In the long term, this action could improve rangeland habitat conditions for livestock and wildlife by focusing management on	Acres available to grazing would be the same as under Alternative A. Management actions would be focused on changes to livestock grazing strategies or permitted use levels. This would be the case only where allotments are not meeting standards or where the level of use is not consistent with existing management direction (existing RMPs). As a result, impacts on livestock grazing management would occur only when these standards are not met. Management for other resources would generally restrict activities that are near leks or other sensitive seasonal habitat. Activities that could disturb livestock in these areas may be reduced. Limitations to structural range improvements and	A 25 percent reduction in Greater Sage-Grouse habitat available for livestock grazing would be implemented, with approximately 7,486,594 acres available to livestock grazing and 289,414 permitted AUMs. Impacts from closures would be as described for Alternative C but at a reduced scale. In addition, restrictions would be applied to construction of new water developments and range improvements, and existing improvements may require modifications. As a result, the ability of permittees and lessees to efficiently distribute livestock and manage for permitted level of use would likely be impacted.	Approximately 9,956,587 acres would be available for grazing and 769,385 AUMs would be permitted in Greater Sage-Grouse habitat, a one percent [sic] less than .5 percent reduction from Alternative A. This would be due to the full or partial closure of some RNAs in PHMA to grazing. In the specific allotments closed, permittees and lessees would need to locate alternative forage sources and may face financial impacts, as described under Alternatives C and D, but with a reduced intensity of impacts. Permit renewal and associated land health assessment would be prioritized in Greater Sage-Grouse habitat, with a focus on areas not currently meeting standards for rangeland health. The emphasis is on allotments in Greater Sage-Grouse habitat, with priorities for review for land health assessments as allotments in SFAs followed by allotments in PHMA

Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Draft EIS Preferred Alt.)	Alternative E	Alternative F	Proposed Plan
(*see above)*	specific and likely would occur gradually. Impacts, including the potential modification of livestock grazing strategies and related increase in time and cost for permittees, would primarily occur on range management in PHMA, due to restrictions on resource uses in this area. Overall, water improvements and fences are likely to be removed or modified to some extent under Alternative B, thereby increasing management costs and potentially decreasing grazing or shifting grazing use patterns in the long term.	(*see above)*	those lands that are most in need of improvement. Rangeland health assessment would measure the Greater Sage-Grouse habitat suitability indicators for seasonal habitats; following HAF indicators. Modifications to grazing systems could be required to meet seasonal habitat objectives, increasing costs to lessees and permittees. Under Alternative D, new and existing range improvements would be allowed and modified in order to enhance functionality when livestock are absent. The improvements would be modified to prevent wildlife entrapment. As a result, some developments may be modified; however, the ability to distribute livestock should generally be maintained, and impacts on permittees and lessees would be limited.	the ability to distribute livestock are also most likely to occur in these areas.	(*see above)*	outside of SFAs. Precedence would be given to existing permits and leases in these areas not meeting rangeland health standards. There would be a focus on riparian areas, including wet meadows, with impacts likely to follow. In the long term, this action could improve rangeland habitat conditions for livestock. A rangeland health assessment would measure the Greater Sage-Grouse habitat suitability indicators for seasonal habitats; specific indicators for habitat are identified in Table 2-4. A site-specific review of seasonal habitat type would be required as part of the land assessment process. Modifications to grazing systems could be required to meet seasonal habitat objectives, increasing costs to lessees and permittees. Additional site-specific changes may be required to grazing management if adaptive management "soft triggers" are to be met.

Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Draft EIS Preferred Alt.)	Alternative E	Alternative F	Proposed Plan
(see *above)*	(see *above)*	(see *above)*	(see *above)*	(see *above)*	(see *above)*	Modifications may be required to structural range improvements, and new improvements would be limited. The actions represent potential costs for permittees and lessees, Indirect disturbance of livestock grazing or livestock forage from other development would be reduced by the following: including a cap on human-caused disturbance, mitigating disturbance to ensure a net conservation gain to Greater Sage-Grouse, and implementing conservation measures in PHMA and GHMA, such as adaptive management and defined monitoring protocols, RDFs, and lek buffers.

Alternative A (No Action)	Alternative B	Alternative C	Alternative D (Draft EIS Preferred Alt.)	Alternative E	Alternative F	Proposed Plan
Economic Conditions						
Under Alternative A, there would be the most AUMs available for livestock grazing, with the fewest costs related to infrastructure improvements and vegetation treatments.	Relative to Alternative A, Alternative B has added costs to livestock permittees/lessees imposed by restrictions on infrastructure improvement and vegetation treatments.	Alternative F would result in an annual loss of between $56.3 million and $136.8 million in grazing-related output, between $19.6 million and $47.7 million in grazing-related earnings, and between 621 and 1,503 grazing-related jobs in the primary study area.	Alternative D would result in an annual loss of up to $600,000 in grazing-related output, $200,000 in grazing-related earnings, and up to six grazing-related jobs in the primary study area.	Same as Alternative B.	Alternative F would result in an annual loss of between $17.6 million and $50.9 million in grazing-related output, between $6.1 million and $17.7 million in grazing-related earnings, and between 194 and 560 grazing-related jobs in the primary study area.	Under Alternative A, there would be the most AUMs available for livestock grazing, with the fewest costs related to infrastructure improvements and vegetation treatments.
Alternative A would have the fewest long-term restrictions on future output, employment, and earnings.	Under Alternative B, long-term restrictions on future output, employment, and earnings would increase, when compared to Alternative A. There would be fewer restrictions than under Alternatives C and F.	Alternative C would have the greatest long-term restrictions on output, employment, and earnings.	Long-term restrictions on future output, employment, and earnings would increase, when compared to Alternative A, but would be less than under all other Alternatives except Alternative A.	Same as Alternative B.	Alternative F would have the second-most long-term restrictions on future output, employment, and earnings, after Alternative C.	Same as Alternatives B and E.
Alternative A would have the no impacts on state or local fiscal revenues.	Same as Alternative A.	There would be adverse impacts on local fiscal revenues of grazing related communities in Malheur, Harney, and Lake Counties under Alternative C.	Adverse impacts on local fiscal revenues of grazing related communities in Malheur, Harney, and Lake Counties, when compared to Alternative A but less than Alternatives C or F.	Same as Alternative A.	There would be adverse impacts on local fiscal revenues of grazing-related communities in Malheur, Harney, and Lake Counties but to a lesser extent than under Alternative C.	Same as Alternative D

4.4 INCOMPLETE OR UNAVAILABLE INFORMATION

The Council on Environmental Quality (CEQ) established implementing regulations for NEPA, requiring that a federal agency identify relevant information that may be incomplete or unavailable for evaluating reasonably foreseeable significant adverse impacts in an EIS (40 CFR, Subpart 1502.22). If the information is essential to a reasoned choice among alternatives, it must be included or addressed in an EIS, unless the cost of obtaining such information is exorbitant. Knowledge and information is, and would always be, incomplete, particularly with infinitely complex ecosystems considered at various scales.

The best available information pertinent to the decisions to be made was used in developing both the 2015 ARMPA and this RMPA/EIS. The BLM made a considerable effort to acquire and convert resource data into digital format for use in the 2015 ARMPA planning process, from the BLM and from outside sources. That information has been considered in this RMPA/EIS and has been updated and supplemented as needed and appropriate.

Under the FLPMA, the inventory of public land resources is ongoing and continuously updated; however, certain information was unavailable for use in developing this RMPA/EIS because inventories either have not been conducted or are not complete.

Some of the major types of data that are incomplete or unavailable are the following:

- Comprehensive planning area-wide inventory of wildlife and special status species occurrence and condition
- GIS data used for disturbance calculations on private lands
- Site-specific surveys of cultural and paleontological resources
- The exact extent, location, and fine-scale condition of Greater Sage-Grouse habitat for the key RNAs
- Effects of grazing on the elements and values for which the RNAs were designated in the district plans (prior to the 2015 ROD/ARMPA)

For these resources, estimates were made concerning the number, type, and significance of these resources based on previous surveys and existing knowledge. In addition, some impacts cannot be quantified, given the proposed management actions. Where this gap occurs, impacts are projected in qualitative terms or, in some instances, are described as unknown.

Subsequent site-specific project-level analyses would provide the opportunity to collect and examine site-specific inventory data to determine appropriate application and implementation of LUP-level guidance. In addition, the BLM and other agencies in the planning area continue to update and refine information used to implement this plan.

4.5 IMPACTS ON GREATER SAGE-GROUSE

The key RNAs are all within Greater Sage-Grouse habitat, identified primarily as PHMA in the 2015 ARMPA; therefore, the goals, objectives, and management directions of the 2015 AMRPA overlay the various district plans and apply to both the No-Action Alternative and Proposed Plan Amendment of this EIS. Under the No-Action Alternative, the key RNAs would remain unavailable to livestock grazing. Under the Proposed Plan Amendment, grazing management would be governed by the livestock grazing provisions in the 2015 ARMPA. The exception is Livestock Grazing Objective 2 and MD 1, which would

be amended to make the key RNAs available for livestock grazing. In addition, under both alternatives the key RNAs would be required to meet rangeland health standards and other applicable BLM regulations and policies. The BLM would continue to prioritize assessing rangeland health standards in PHMA within Oregon's PACs in accordance with the 2015 ROD/ARMPA Livestock Grazing Objective 3 and policy in WO IM 2018-024.

Grazing impacts would vary within and among the key 13 RNAs under the Proposed Plan Amendment, depending on site productivity, timing of grazing, stocking intensity, and duration of grazing within each RNA. General impacts from grazing on Greater Sage-Grouse are described in the 2015 Final EIS, Section 4.3, pages 4-7 to 4-94, and are hereby incorporated by reference. More specifically, pages 4-16 to 4-20 describe the impacts on Greater Sage-Grouse and its habitat from improper livestock grazing, an identified threat in the Conservation Objectives Team (COT) Report (USFWS 2013). Improper grazing, defined as grazing practices that are inconsistent with local ecological conditions and result in degradation of habitat for local wildlife species, can have adverse effects on Greater Sage-Grouse and its habitat, and may work synergistically with other potential threats, such as invasive plants and wildfire, to increase impacts (USFWS 2015). In its 2015 decision to not list Greater Sage-Grouse, the USFWS concluded that "although livestock grazing is widespread in the sagebrush ecosystem, and we expect some continued impacts from improper grazing at local scales, existing Federal regulations with full implementation, in combination with voluntary efforts on non-Federal rangelands are reducing the prevalence of improper grazing and its impacts to sage-grouse" (50 CFR Part 17 page 59911). Properly managed livestock grazing is compatible with managing for Greater Sage-Grouse conservation outcomes and can be used to reduce fuel loads (Davies et al. 2010; Davies et al. 2011), to protect intact sagebrush habitat, and to increase habitat extent and continuity (Connelly et al. 2004).

While large, long-term ungrazed comparison areas, based on seasonal needs of Greater Sage-Grouse, are lacking (Beck and Mitchell 2000; Hockett 2002), current information suggests that impacts from improperly managed grazing in the past would be reduced or eliminated within areas closed to grazing under the No-Action Alternative; however, some impacts of historical overuse would persist for months or years (Davies et al. 2014). Degraded sagebrush communities may demonstrate little to no recovery with intermediate term (five and six years) rest from grazing, as compared with well-managed, moderate grazing (Davies et al. 2016). Current ecological and vegetative trends and conditions within the 13 RNAs would likely continue. The BLM would require changes to livestock grazing/management in the 13 RNAs if a rangeland health assessment identifies livestock grazing as a causal factor in the failure to meet rangeland health standards. BLM may also require changes to livestock grazing/management for various reasons in accordance with its grazing regulations (43 CFR 4100 [2005]).

Three studies of how grazing may affect Greater Sage-Grouse populations have been published since 2015 (Carter et al. 2018; Hanser et al. 2018). In Wyoming, Monroe et al. (2017) found grazing effects depended on the timing and level of grazing. At high grazing levels, Greater Sage-Grouse populations declined when grazing occurred before the peak in vegetation productivity and increased when grazing occurred later. At low grazing levels, the effects of grazing were minimal and did not vary with the timing of when grazing occurred; however, the effects of grazing can depend on local vegetation productivity. One study in Montana found no evidence that rotational grazing systems or rest from grazing (12 months) increased nest success in the study area (Smith et al. 2017). The Montana study authors urged caution in extrapolating results to other areas because of different precipitation regimes. In another study, Dahlgren et al. (2015) hypothesized that sagebrush treatments, coupled with

restoration grazing, increased the amount of grass and created additional forb availability and subsequent Greater Sage-Grouse population increases, relative to surrounding populations.

The Proposed Plan Amendment would result in 21,959 fewer undisturbed acres within Oregon available for additional research in plant communities important to Greater Sage-Grouse to further determine the impact of livestock grazing on Greater Sage-Grouse and their habitats. Beck and Mitchell (2000) indicated there is a lack of ungrazed comparison areas for evaluating livestock impacts on seasonal needs of Greater Sage- Grouse. Hockett (2002) noted the lack of large representative tracts of ungrazed habitat makes it nearly impossible to determine and monitor the actual consequences of livestock grazing. Although the USFWS (2015) has determined improper livestock grazing can have adverse effects on Greater Sage-Grouse habitat, properly-managed grazing may benefit the species. Here, the RNAs would remain subject to management, to promote the key characteristics of the RNAs, including regulation of grazing, to maintain and promote the key characteristics of the RNAs. Moreover, the RNAs are so small in size relative to the size of the species' range that any impacts of livestock grazing on Greater Sage-Grouse populations using these areas are minimal and undetectable. Moreover, closing the key RNAs to livestock grazing would not address any threats to Greater Sage-Grouse habitat identified in the COT report (USFWS 2013) that may exist within the boundaries of the RNAs.

Closing these areas to grazing, however, would enhance research opportunities relating to the effects of grazing on Greater Sage-Grouse habitat, including the threat posed by "improper grazing" (USFWS 2013). "Comparisons to areas without livestock grazing are important so that grazing treatments [including no grazing] can be compared to baseline conditions" (Berg et al. 2016, page 74). The BLM determined in the 2015 ARMPA that the 13 RNAs identified for closure along with the 2 RNAs already closed to livestock grazing were likely the minimum number of sites and areas necessary to provide sufficient replication and support a coherent research plan that would provide data with the statistical power and sufficient scope of inference to extrapolate the results across all Greater Sage-Grouse habitat in eastern Oregon and potentially into western Idaho and northern Nevada. The primary research purpose for BLM's closure would be to study whether livestock grazing has adverse, beneficial, or no impact on the availability of forbs and insects important to prelaying hens and Greater Sage-Grouse chicks. BLM intended the closed areas to serve as controls for studying grazing impacts on the same plant communities outside of the closed areas.

Published after the ROD for the 2015 ARMPA, the Actionable Science Plan (Berg et al. 2016) was intended to support the Integrated Rangeland Fire Management Strategy (DOI 2015) developed under the direction of SO 3336. Closure of the 13 RNAs to serve as ungrazed baselines for research supports Sagebrush and Greater Sage-Grouse Science Need #2: Conduct a series of large-scale, replicated grazing studies that address how different livestock species, grazing systems, disturbance histories, and other environmental conditions affect Greater Sage-Grouse habitat (Berg et al. 2016, page 74).

While the RNAs are not large enough to assess differences in Greater Sage-Grouse demographic vital rates (e.g., nest and brood success, and survival) that may arise from different grazing regimes as opposed to no grazing, they would allow better understanding of how different grazing regimes alter plant community composition, insect species and populations, and vegetation structure and allow the BLM to draw inferences about how the differences may affect Greater Sage-Grouse demographic vital rates.

Based on determinations in the 2015 ARMPA that the 13 RNAs identified for closure along with the 2 RNAs already closed to livestock grazing were likely the minimum number of sites needed, the BLM assumes that retaining livestock grazing in the 13 key RNAs would not provide sufficient variability of sites needed to meet the research purposes identified in the 2015 ARMPA or provide the same level of support to Sagebrush and Greater Sage-Grouse Science Need #2. Although likely not at the same scale as the RNAs and therefore potentially of less statistical value, Districts would retain the ability to work with permittees to provide ungrazed controls for the identified research and to close RNAs through RMP amendments or revisions. However, the Bureau would remain free to explore similar studies outside of the planning area. Whether any closures would occur, the timing and duration of any closures, and the size of any closures would be subject to the discretion of each District. Given that the 13 key RNAs were not closed to livestock grazing under the existing RMPs, it is uncertain whether any closures would occur to support such a research project. Moreover, an approach that closes some but not all of the key RNAs over many years would diminish the utility of study results. The BLM AIM Strategy for Integrated Renewable Resources Management provides a framework for the BLM to quantitatively assess the condition, trend, amount, location, and spatial pattern of natural resources on the nation's public lands. Monitoring information collected following the AIM Strategy can be used many times, for many reasons, across many programs, and in conjunction with other jurisdictions, stakeholders, and agencies. BLM Oregon is coordinating with the USFWS to demonstrate AIM on the Hart Mountain National Antelope Refuge, an ungrazed refuge that supports some of the same or similar plant communities as found in the key RNAs. If the refuge chooses to implement AIM fully, the data collected over many years using a standardized process will contribute to the rangewide data set for further study and analysis of grazing effects to Greater Sage-Grouse habitat. However, the USFWS would have operational control over any research conducted on a National Wildlife Refuge.

Finally, the 2015 Final EIS also addressed the effects of fire, stating that Alternative A (Proposed Plan Amendment in this RMPA/EIS) "allows for potentially less effective" fire and fuels management for habitat restoration (page 4-82).

4.6 Impacts on Vegetation, including Invasive Plants, Riparian Areas, and Wetlands

Many studies have demonstrated the importance of forbs to Greater Sage-Grouse, providing food both directly and indirectly by supporting insects and providing cover (e.g., Connelly et al. 2011; Dumroese et al. 2015; Pennington et al. 2016). BLM Oregon wildlife biologists have a list of high and moderate value species important to Greater Sage-Grouse that has been refined since the 2015 Final EIS (BLM Sage-Grouse Forb List, August 2017).

Forb richness and abundance are controlled by site characteristics and climate, with drought a particularly important driver (Blomberg et al. 2014; Pennington et al. 2016; Blomberg et al. 2017; Gibson et al. 2017; Pennington et al. 2017). Only a few studies have examined forb response to disturbance, such as fire, and even fewer have attempted to correlate forb response to drought status, changes in temperature and precipitation regimes, and soil water availability whether in the absence or presence of grazing (Davies et al. 2012a; Davis and Crawford 2015; Ellsworth et al. 2016; Pennington et al. 2016). A global literature review of the impacts of grazing on grouse species found too few studies that had enough detail concerning animal type, animal distribution, stocking rates, grazing timing, duration, frequency, and similar factors to develop best management practices (BMPs) for grazing in Greater Sage-Grouse habitat (Dettenmaier et al. 2017).

Most of the recent studies in Oregon that include forb responses, and the responses of forbs consumed by Greater Sage-Grouse, involve juniper reduction with and without fire (e.g., Bates et al. 2014a, 2014b; Miller et al. 2014; Bates et al. 2017). One recent study examined the different impacts of mowing and burning sagebrush (Davies et al. 2012a, 2012b). The Miller et al. (2014) study excluded grazing for the duration of the study (4 years). The Bates et al. (2014b) study noted that post-treatment grazing occurred but did not include it as a variable. All other studies were unclear on whether grazing occurred post-treatment or not and did not include it as a variable.

None of the recent studies included weather/climate information beyond precipitation amount over the study period or soil water availability as a variable. All were inconsistent in noting whether any portion of the study period was in drought. Only Miller et al. (2014) provided any correlation on forb response, based on soil variables, such as soil temperature and moisture regime. Most recent studies in Oregon have been restricted to Cool-Moist Sagebrush sites (Davies et al. 2012b, 2012a; Bates et al. 2013, 2014a; Miller et al. 2014; Bates and Davies 2016; Bates et al. 2017), with only one study on a Warm-Dry Sagebrush site (Ellsworth et al. 2016).

Understanding what role, if any, livestock grazing may be playing in the responses of important forbs and insects to disturbance events, changing climate, and soil water availability requires that the BLM have access to long-term ungrazed control sites that cover a variety of ecological settings and habitats. Understanding which forb responses are due to changes in climate and which are due to the interaction between changing climate and grazing becomes ever more important for informing subsequent management direction. This is given the potential impacts of changing climate (e.g. drought and wildfire frequency changes) on Greater Sage-Grouse habitat (Bradley 2009, 2010; Bradley et al. 2010; Polley et al. 2013; Germino et al. 2014; Creutzburg et al. 2015; Bradley et al. 2016; Palmquist et al. 2016a, 2016b; Mankin et al. 2017).

General impacts of grazing on riparian/wetland habitat (including playas) are described in the 2015 Final EIS, Section 4.3, pages 4-16 through 4-20, and they are hereby incorporated by reference. The analytical assumptions stated in the 2015 Final EIS on page 4-94 would remain the same, and they are also hereby incorporated by reference. These types of impacts would continue to occur in the 13 RNAs if and where livestock grazing is allowed.

New infestations of invasive plants remain possible, whether grazing is present or absent, due to the number of alternative vectors (e.g., wind, wildlife, and recreation users). Impacts would increase or decrease depending on the time and/or the season of use, grazing intensity, and duration. In drier years, where water availability is reduced, there would be a greater impact on riparian/wetland areas, due to the concentration of livestock.

Additional changes to grazing systems that could occur as a result of nonattainment of land health standards include, but are not limited to, change in season of use, temporary and/or permanent reduction of livestock numbers or AUMs, and implementation of range improvements that exclude livestock. Maintaining and improving riparian and wetland plant communities indirectly benefits livestock grazing and sagebrush obligate species by improving forage availability/quantity and water quality.

The No-Action Alternative would retain the decision to make livestock grazing unavailable in all or parts of 13 RNAs, per the 2015 ARMPA. All 15 key RNAs, including the two that were previously closed to grazing, would cover seven major vegetation types (**Table 4-4**) and 48 vegetation communities

(**Table 4-5**), thereby representing both the geographic and climatic variability of conditions in Oregon's Greater Sage-Grouse habitat.

All vegetation types include multiple plant communities, averaging six to seven community types per major vegetation type. This level of variation would allow the BLM to understand how grazing may or may not be impacting a wide array of forbs and insects used by pre-laying hens and chicks in different ecological settings and in different types of years (wet, average, or dry).

Mesic habitats are particularly important for pre-laying hens and chicks (Donnelly et al. 2016; Freese et al. 2016; Pennington et al. 2016; Pennington et al. 2017) with late brood-rearing habitat. This is a shortage category in eastern Oregon due to the lack of surface water. Both the Wetland-Riparian and Playa major vegetation types provide late brood-rearing habitat, but the Playa type does so only in wet years; in dry years, it is typically dry and does not reliably provide late brood-rearing habitat and may not provide early brood-rearing or pre-laying habitat.

Table 4-4
Vegetation Types Found in Different Key RNAs Made Unavailable to Grazing under the 2015 ARMPA and the Two Key RNAs Already Closed to Grazing

Vegetation Type	Research Natural Area
Cool-Moist Sagebrush	East Fork Trout Creek, Fish Creek Rim, Lake Ridge, Mahogany Ridge, Rahilly-Gravelly, South Bull Canyon, Spring Mountain, Toppin Creek Butte
Ecotone between Cool-Moist and Warm-Dry Sagebrush	Black Canyon, Mahogany Ridge, North Ridge Bully Creek, South Bull Canyon, South Ridge Bully Creek,
Warm-Dry Sagebrush	Black Canyon, Dry Creek Bench, Foley Lake, Foster Flat, Guano Creek-Sink Lakes, Lake Ridge, North Ridge Bully Creek, Rahilly-Gravelly, South Bull Canyon, South Ridge Bully Creek, Spring Mountain, Toppin Creek Butte
Shallow-Dry Sagebrush	Black Canyon, Dry Creek Bench, Fish Creek Rim, Foley Lake, Foster Flat, Guano Creek-Sink Lakes, Rahilly-Gravelly, Spring Mountain
Mountain Brush	Dry Creek Bench, East Fork Trout Creek, Fish Creek Rim, Lake Ridge, Mahogany Ridge, Rahilly-Gravelly, Spring Mountain
Riparian-Wetland	Black Canyon, East Fork Trout Creek, Fish Creek Rim, Guano Creek-Sink Lakes, Lake Ridge, Spring Mountain
Playa	Foley Lake, Foster Flat, Guano Creek-Sink Lakes, Lake Ridge, Toppin Creek Butte

Table 4-5
Vegetation Types Found in Key RNAs Made Unavailable to Grazing under the 2015 ARMPA That Are Important Habitats to Greater Sage-Grouse at Some Point in Their Life Cycle (e.g. Nesting and Brood Rearing)

Vegetation Type	Plant Communities
Cool-Moist Sagebrush	Mountain big sagebrush/Idaho fescue
	Mountain big sagebrush-antelope bitterbrush/Idaho fescue
	Mountain big sagebrush-mountain mahogany/slender wheatgrass-bluebunch wheatgrass
	Mountain big sagebrush-antelope bitterbrush-mountain snowberry/Thurber's needlegrass
	Mountain big sagebrush-mountain snowberry/Idaho fescue
	Low sagebrush/Idaho fescue
	Wyoming big sagebrush-antelope bitterbrush/Idaho fescue
Ecotone between Cool-Moist and Warm-Dry Sagebrush	Mountain big sagebrush/bluebunch wheatgrass
	Wyoming big sagebrush/Idaho fescue
	Wyoming big sagebrush-antelope bitterbrush/bluebunch wheatgrass
	Wyoming big sagebrush-threetip sagebrush/Idaho fescue
	Wyoming big sagebrush-wild crab apple/Idaho fescue
	Wyoming big sagebrush-threetip sagebrush/bluebunch wheatgrass
	Threetip sagebrush/Idaho fescue
	Threetip sagebrush-wild crab apple/Idaho fescue
	Threetip sagebrush/bluebunch wheatgrass
Warm-Dry Sagebrush	Basin big sagebrush/Nevada bluegrass
	Basin big sagebrush/bluebunch wheatgrass
	Basin big sagebrush-Wyoming big sagebrush/bluebunch wheatgrass
	Wyoming big sagebrush/Idaho fescue-bottlebrush squirreltail
	Wyoming big sagebrush/needle-and-thread
	Wyoming big sagebrush/Thurber's needlegrass
	Low sagebrush/bottlebrush squirreltail-Idaho fescue
	Low sagebrush/bluebunch wheatgrass
	Low sagebrush/Idaho fescue-Thurber's needlegrass
	Low sagebrush/Thurber's needlegrass
Shallow-Dry Sagebrush	Low sagebrush/Sandberg bluegrass
	Stiff sagebrush/Sandberg bluegrass
	Black sagebrush/Sandberg bluegrass
Mountain Brush	Mountain mahogany-mountain snowberry/Idaho fescue
	Mountain mahogany-mountain big sagebrush/Idaho fescue
	Serviceberry-snowberry-mountain big sagebrush
	Snowberry-bittercherry complex
	Mountain big sagebrush-mountain snowberry/Idaho fescue
	Mountain mahogany-Oregon grape
	Mountain big sagebrush-mountain snowberry-wild crab apple
	Mountain mahogany-chokecherry scrub
Riparian-Wetland	Willow-mixed shrub
	Scouler's willow-aspen
	Wet meadow
	Aspen-white fir-ponderosa pine
	Willow
	Pond
Playa	Silver sagebrush/Sandberg bluegrass
	Silver sagebrush/Nevada bluegrass
	Sliver sagebrush-green rabbitbrush
	Silver sagebrush/Baltic rush
	Silver sagebrush-basin wildrye

The Proposed Plan Amendment would reverse the 2015 ARMPA decision to make grazing unavailable in 13 of the 15 key RNAs. These 13 RNAs would, therefore, be available to livestock grazing. Foster Flat and Guano Creek-Sink Lakes RNAs will remain closed to grazing. They were closed to grazing in the Three Rivers (1991) and Lakeview (2003) RMPs, respectively, and subsequent closure actions. These two RNAs include four major vegetation types and nine plant communities (**Table 4-6**), thereby providing a limited representation of the geographic and climatic variability in Oregon's Greater Sage-Grouse habitat.

Table 4-6
Vegetation Types and Plant Communities Available for Study in Foster Flat and Guano Creek-Sink Lakes RNAs

Vegetation Type	Research Natural Area	Vegetation Communities
Warm-Dry Sagebrush	Foster Flat, Guano Creek-Sink Lakes	Basin big sagebrush/bluebunch wheatgrass Wyoming big sagebrush/needle-and-thread
Shallow-Dry Sagebrush	Foster Flat, Guano Creek-Sink Lakes	Low sagebrush/Sandberg bluegrass
Riparian-Wetland	Guano Creek-Sink Lakes	Willow
Playa	Foster Flat, Guano Creek-Sink Lakes	Silver sagebrush/Nevada bluegrass Silver sagebrush-green rabbitbrush Silver sagebrush/Baltic rush Silver sagebrush/basin wildrye Silver sagebrush/Sandberg bluegrass

Conditions in Malheur County, which is generally lower in elevation and drier overall, would not be represented. This lower level of variation would reduce the BLM's ability to understand how grazing may or may not be impacting a more complete array of forbs and insects used by Greater Sage-Grouse in different seasons and different ecological settings.

Findings based solely on Foster Flat and Guano Creek-Sink Lakes RNAs could not be extrapolated to other vegetation types and plant communities or to the eastern portion of Oregon's Greater Sage-Grouse habitat. This is due to differences in climate and site conditions. Only one Riparian-Wetland vegetation community and only one Shallow-Dry Sagebrush vegetation community would be included in the potential study sites. The greatest number of vegetation communities would occur in the Playa major vegetation type, largely because playas are a dominant feature in both RNAs.

Although playas could be considered a riparian-wetland type, they serve this function only in wet years. During drought periods, these playas are dry and not used by Greater Sage-Grouse for late brood-rearing and may not be wet enough to provide forbs for pre-laying hens and insects for early brood-rearing.

4.7 IMPACTS ON FISH AND WILDLIFE

General impacts of livestock grazing on wildlife are described in the 2015 Final EIS, Section 4.5, pages 4-122 to 4-141, and are hereby incorporated by reference. Under the No-Action Alternative, grazing would be closed in part or all of 13 key RNAs. Implementation-level actions necessary to close and eliminate grazing would be subject to further environmental review, including that under NEPA (2015 Final EIS, Section 4.2). Since 2015, the types of impacts described in the 2015 Final EIS have continued to occur in the key RNAs that are open to grazing.

Fish and wildlife that use rangelands can benefit from the proper management of livestock. These benefits include providing a sustainable, diverse, and vigorous mixtures of native vegetation for forage and habitat. If grazing results in overutilization of forage by livestock, it could lead to increased competition with wildlife for forage and potentially reduced hiding cover and nesting habitat for other species.

Livestock could also spread invasive plants, which would degrade habitats; however, BLM grazing policy requires that all wildlife habitat achieve or make significant progress toward achieving land health standards, including the standard for wildlife and special status species. For allotments not meeting the BLM's Standards for Rangeland Health and where livestock grazing is determined to be a significant factor, BLM would implement appropriate changes in grazing management prior to the start of the next grazing year. The BLM may also require changes to livestock grazing or management for various reasons in accordance with its grazing regulations (43 CFR 4100 [2005]).

4.8 SPECIAL STATUS SPECIES

Under the No-Action Alternative, livestock grazing within part or all of 13 key RNAs is unavailable. Implementation-level actions necessary to close and eliminate grazing would be subject to further environmental review, including that under NEPA (2015 Final EIS, Section 4.2). All federal actions also must comply with ESA consultation requirements, and all implementation actions would be subject to further review before site-specific projects are authorized or implemented. If adverse impacts are identified, mitigation measures, including avoidance, would be implemented to minimize or eliminate the impacts.

Impacts of grazing on special status species of fish and wildlife are described in the 2015 Final EIS, Section 4.5, pages 4-122 to 4-144, and are hereby incorporated by reference. Special status species that use the key RNAs can benefit from proper management of livestock (2015 Final EIS, page 4-126). Benefits include providing sustainable, diverse, and vigorous mixtures of native vegetation for forage.

Also, proper management of grazing livestock can control invasive plants and reduce fuel accumulations, protect intact sagebrush habitat, and increase habitat extent and continuity. Conversely, improper grazing can result in overutilization of forage by livestock, leading to increased competition with wildlife for forage and potentially reduced cover and nesting habitat. Livestock can spread invasive plants, which degrade habitats. Special status wildlife could be displaced from their habitats, which could increase competition for resources in adjacent habitats. Impacts would vary, depending on the extent of vegetation removal, type of habitat impacted, and length of the grazing period.

Some special status species are riparian dependent. Livestock often use riparian and wetland areas for water and shade. Improper livestock grazing of riparian areas can degrade habitat condition for riparian-dependent, aquatic, and fish species. Elimination of livestock in riparian systems at Hart Mountain National Antelope Refuge in southeastern Oregon resulted in decreased channel widths and eroding banks and the amount of bare soil and increased the herbaceous cover (Batchelor et al. 2015).

In another study on the Hart Mountain National Antelope Refuge, Earnst et al. (2012) recorded substantial regeneration of aspen shoots, increased densities of riparian forbs and shrubs, and increased avian abundances in riparian and quaking aspen woodland 12 years after grazing had been eliminated.

Removal of livestock grazing from riparian areas of the key RNAs over the long term would likely produce similar benefits to habitat for riparian-dependent special status species.

BLM sensitive plant species are known to occur in 7 of the 15 key RNAs (see **Chapter 3** of this RMPA/EIS). Complete botanical inventories of the RNAs are lacking, so additional BLM sensitive plants could occur and be undocumented. There are no known federally listed plants in the 13 key RNAs. As stated on page 4-100 in the 2015 Final EIS, managing areas as unavailable to livestock grazing increases protection of any special status species in the closed area.

Two species adapted to playas occur at Foley Lake and Toppin Butte RNAs. Columbia cress (*Rorippa columbiae*) and profuse flowered pogogyne (*Pogogyne floribunda*) occur around the margin of Foley lake. A small enclosure protects most of the Columbia cress, but the pogogyne is within the grazed pasture. Under the No-Action Alternative the enclosure would likely be removed once it is replaced by a larger exclosure under a separate NEPA environmental assessment.

At Toppin Creek Butte RNA, profuse-flowered pogogyne, which is a former candidate for listing and a USFWS species of concern, occurs at Bull Flat, which is also grazed. Bull Flat playa is one of the only places for water in the RNA. The last observation of profuse-flowered pogogyne was in 2005, and an estimated 4,000 plants were documented under the silver sage (GeoBOB 2018).

These tiny, diminutive annual plants in the mint family are prolific seed producers, and seed can remain viable for many years, an evolutionary advantage for drought years in playas and vernal systems. In wet years the annual plants germinate in the fall and winter and reproduce and then die back in the spring; in drought years they remain dormant. The assumption is that the plant still occurs at the site; however, there is no recent information on the effects of grazing on that species at the playa; however, in a conservation status report, Dr. Robert Meinke (2006) documented concern about the grazing impact at Bull Flat and on the population at the Foley Lake RNA. The concern was physical grazing impacts could lead to introduction of invasive species adapted to the playa, which could outcompete the pogogyne. The removal of grazing from these key RNAs would remove these potential threats.

The Rahilly Gravelly RNA has several occurrences of Cooper's goldflower (*Hymenoxys cooperii*), a type of aster, in the Sucker Creek pasture. With only 400 plants documented in 2014 at five sites (GeoBOB 2018), this is a small population and small populations are inherently vulnerable; the removal of grazing may benefit the species. In a recent rangeland health assessment for Rahilly Gravelly allotment, however, it met all standards for rangeland health. Recent vegetation plots, specifically in the RNA and in the Sucker Creek pasture, which was to be closed, documented functioning plant communities rich in forbs, good cover for Greater Sage-Grouse, and low cover of invasive species. The level of grazing appears light and to be maintaining the RNA elements. Grazing in this pasture is on a rest and rotation system, with alternating years being rested from grazing.

Cooper's goldflower is likely a moderately important species for Greater Sage-Grouse as food and substrate for insects for hens and chicks. It occurs close to a Greater Sage-Grouse lek and near nesting/brood-rearing areas. At the northern edge of its range in the Great Basin (this is the most northerly documented location), the exact effect of grazing on Cooper's goldflower is unknown. It flowers later in the summer and early fall, so depending on the season of use it may or may not be grazed by cattle. Many aster species are browsed, but whether this is a preferred species by cattle is not known, so the effect of grazing is unknown.

In the East Fork of Trout Creek RNA, large areas contain rock melic (*Melica stricta*), a former BLM sensitive species and a perennial grass. Since large populations of rock melic are known in the Trout Creek Mountains, outside the RNA, the removal of grazing in the small RNA would have little effect on the species.

Mahogany Ridge RNA has three small occurrences of the BLM sensitive plant Owyhee clover (*Trifolium owyheense*). Legumes and clover species are favored by cattle, so the removal of grazing would likely benefit this BLM sensitive species. The current impact on the population is not known. The population was last visited in 2001, when 2,000 plants were documented at the three sites (GeoBOB 2018). Native clovers are also high value forb species for Greater Sage-Grouse hens and chicks, but utilization by Greater Sage-Grouse at these sites is not known.

The North Ridge of Bully Creek has a population of thyme-leaved buckwheat (*Eriogonum thymoides*), a former BLM sensitive species that is still tracked by the Oregon Biodiversity Information Center as a List 3 species (a review species). There is no information on the status of this occurrence or any effects from current grazing. Buckwheat species are favored by Greater Sage-Grouse hens and chicks for food and substrate for insects, but utilization by Greater Sage-Grouse at this site is not known.

Several BLM sensitive plants occur in Guano Creek-Sink Lakes RNA. As this RNA is already closed to grazing and would continue to be closed to livestock grazing under both alternatives, there would be no change in effects on special status species.

Under the Proposed Plan Amendment, the decision from the 2015 ROD/ARMPA to remove grazing from 13 of the 15 RNAs would be reversed. Grazing can have direct and indirect effects on BLM sensitive plants. Direct effects would occur from direct consumption (if the plant is palatable), reduction in reproductive capacity (fewer flowers), and direct physical disturbance from being trampled or crushed by loafing cattle. Indirect effects tend to occur from grazing that modifies the environment, which later affects the plants. For instance, improper, repeated, or long-duration grazing can reduce vegetation cover of selected plants (Davies et al. 2014) and can increase the percentage of bare ground and loss of biological crusts (Anderson et al. 1982; Jones and Carter 2016). This could open niches to be invaded by exotic or invasive species, including exotic annual forbs and annual grasses (Hayes et al. 2003; Beschta et al. 2014). The grasses and forbs could then compete with sensitive plants for water, space, and nutrients.

As stated in Davies (2014), the shifts in vegetation and other effects depend on the grazing system, the timing, intensity, duration of grazing, the plant community composition, the kind and class of grazing animals, the site characteristics, and interactions between grazing and other disturbances, such as fire. Compared with the No-Action Alternative, there would be an increased risk of loss of BLM sensitive plant individuals from direct and indirect effects, potentially decreasing population size and resulting in an increased potential for extirpation at the site scale.

The Columbia cress population would likely be maintained in the existing enclosure at Foley Lake RNA. In a species conservation strategy prepared for the BLM (*Rorippa columbiae* Conservation Strategy 2017), grazing was identified as one of the major threats to this species. At Foley Lake, a long-term exclosure has documented an increase in Columbia cress in the enclosure and a decrease outside of it.

Profuse-flowered pogogyne would still be subject to direct and indirect effects from grazing in the playas at Foley Lake and Toppin Creek RNA. As most of the sensitive plant populations in the key RNAs have

small areas of occupied habitat, and many with small population size, they are inherently vulnerable to disturbance (Kaye et al. 1997), including grazing, and other random events that could extirpate populations.

4.9 IMPACTS ON LIVESTOCK GRAZING MANAGEMENT

General impacts on grazing are described in the 2015 Final EIS, Section 4.8, pages 4-179 to 4-204, and are hereby incorporated by reference. The analytical assumptions stated in the 2015 Final EIS on page 4-180 would remain the same.

The 2015 ROD/ARMPA made the key RNAs unavailable for livestock grazing. Collaborative discussions among the BLM State, District, and Field Offices have been ongoing to meet the 5-year implementation time frame identified in the 2015 ARMPA (see page 2-46, 2015 Final EIS) for making all or portions of 13 of the 15 key RNAs unavailable to livestock grazing. Authorized livestock grazing has continued in these key RNAs consistent with District RMPs and the 2015 ROD/ARMPA.

The No-Action Alternative would retain management direction to remove grazing from key RNAs as identified in the 2015 ROD/ARMPA. The impacts of this action as identified in the 2015 Final EIS have not yet been realized, given that action has not been taken under the federal grazing regulations. However, the long-term impacts of properly managed livestock grazing, identified in the 2015 Final EIS (Proposed Plan Alternative), would remain the same. The Proposed Plan Amendment would represent a change in land use allocation; however, no actual management change or impact would occur on the ground since permitted grazing has not been formally removed from the key RNAs. The impact of properly managed livestock grazing on Greater Sage-Grouse habitat in the key RNAs would be the same in the short term (within 3 years) under both the No-Action Alternative and the Proposed Plan Amendment.

The contrasting impacts of proper and improper livestock grazing on Greater Sage-Grouse, Vegetation, Fish and Wildlife, and Special Status Species are discussed in detail in this RMPA/EIS in **Sections 4.5**, **4.6**, **4.7**, and **4.8** respectively. As noted in other sections of this EIS, all activities and uses within Greater Sage-Grouse habitats will follow existing and current land health standards (Standards for Rangeland Health and Guidelines for Livestock Grazing Management, 1997).

Impacts of improper livestock grazing on Greater Sage-Grouse and its habitat were discussed in detail in the 2015 Final EIS in Section 4.3 (pages 4-7 to 4-94, and specifically pages 4-16 to 4-20), Section 4.4 (page 4-112), Section 4.5 (page 4-133), and Section 4.7 (4-170), and are hereby incorporated by reference. Pages 4-16 to 4-20 describe the impacts of improper livestock grazing on Greater Sage-Grouse as an identified threat in the COT Report (USFWS 2013). The 2015 Final EIS noted that improper grazing could result in overutilization of forage by livestock, leading to increased competition with wildlife for forage, and potentially reduced cover and nesting habitat for other species. Livestock could also spread invasive plants, which would degrade habitats. Special status wildlife could be displaced from their habitats, which could increase competition for resources in adjacent habitats. Impacts would vary depending on the extent of vegetation removal, type of habitat impacted, and season of use and duration of the grazing period. Livestock could degrade riparian areas, which could impact riparian-dependent, aquatic, and fish species.

The 2015 Final EIS also discussed the beneficial impact proper livestock grazing can have on Greater Sage-Grouse and its habitat (Sections 4.3, 4.4, 4.5 and 4.8). **Sections 4.5, 4.6, 4.7, and 4.8** of this EIS similarly discuss the beneficial impact of properly managed grazing on habitat conditions for Greater Sage-Grouse. When properly grazed, beneficial impacts can include sustainable, diverse, and vigorous mixtures of native vegetation for Greater Sage-Grouse forage and habitat. In addition, proper management of grazing livestock can control invasive plants and reduce fuel accumulations, protect intact sagebrush habitat, and increase habitat extent and continuity.

Under the No-Action Alternative there would be additional range improvements constructed (e.g., additional fencing to exclude livestock), some existing range improvements could be removed or modified, and salt and mineral blocks would be removed. Range improvements are not considered a surface-disturbing activity subject to the 3 percent cap.

The 2015 Final EIS describes the nature and types of impacts from new and renewed permits and leases, range improvements, construction and maintenance of range improvements, and the continued importance of livestock grazing to local economies (pages 4-201 to 4-204); these impacts are hereby incorporated by reference.

In addition, Section 4.8.10 of the 2015 Final EIS addresses the direct impacts on livestock grazing management from making areas unavailable to grazing, limiting available AUMs, and changing or modifying grazing strategies, such as changing season of use, rotation systems, or intensity and duration of use (pages 4-201 to 4-204); these impacts are hereby incorporated by reference. Similarly, the section discusses direct and indirect impacts on permittees if management systems change, AUMs are reduced, or areas are unavailable to livestock grazing (pages 4-201 to 4-204); these impacts are hereby incorporated by reference.

The impacts of implementing the No-Action Alternative are the same as described in the 2015 Final EIS. Implementation of this alternative would require construction of approximately 39 miles of fence (see pages 4-203 and 4-280). Placement and construction of fencing would require site-specific, project-level NEPA analysis and appropriate surveys. There would be impacts on the operators and their livestock grazing management through changes to grazing practices (see **Section 4.9** of this RMPA/EIS).

The analytical assumptions stated in the 2015 Final EIS on page 4-180 would remain the same: under the Proposed Plan Amendment, the RNAs would have to meet or make significant progress toward meeting rangeland health standards.

In addition, livestock grazing would need to support the purposes of the RNAs, as described in **Section 1.3** of this RMPA/EIS.

The fencing needed to implement the No-Action Alternative would not need to be constructed under the Proposed Plan Amendment. There would be no impacts on the operators and their livestock grazing management through changes to grazing practices or authorized use (see **Section 4.9** of this RMPA/EIS).

4.10 IMPACTS ON SOCIOECONOMICS

The general socioeconomic impacts described in the 2015 Final EIS, Section 4.20, pages 4-324 through 4-333 and pages 4-348 to 4-355, remain valid and are hereby incorporated by reference. The analytical

assumptions stated in the 2015 Final EIS on page 4-325 remain the same for this analysis. In the 2015 Final EIS, the IMPLAN model was used for the economic analysis. That quantitative analysis remains valid, but the impact of making the key RNAs unavailable to livestock grazing was at the scale of the 2015 planning area (more than 12 million acres). The analysis in this RMPA/EIS is limited to the key RNAs and is more qualitative, based on a lack of financial information about the individual operators. The 2018 private land lease rate per AUM in Oregon is $16.50 (WO IM 2018-043). **Table 4-7** displays the reduction in AUMs and Active Use.

Table 4-7
Key Research Natural Areas

RNA Name	District	RNA Acres	Unavailable RNA Acres	Number of AUMs Affected	Percent of Active Use Affected
Black Canyon	Vale	2,639	2,639	*260	5%
Dry Creek Bench	Vale	1,637	622	**52	<1%
East Fork Trout Creek	Burns	361	304	**47	<1%
Fish Creek Rim	Lakeview	8,718	2,750	*110	12%
Foley Lake	Lakeview	2,228	1,269	**51	<1%
Lake Ridge	Vale	3,860	769	**74	2%
Mahogany Ridge	Vale	682	155	**27	<1%
North Ridge Bully Creek	Vale	1,569	164	**19	<1%
Rahilly-Gravelly	Lakeview	18,678	8,282	*586	35%
South Bull Canyon	Vale	790	747	**116	4%
South Ridge Bully Creek	Vale	621	39	**61	2%
Spring Mountain	Vale	996	996	*153	2%
Toppin Creek Butte	Vale	3,998	2,685	*216	8%
Totals		**46,777**	**21,421**	**1,772**	--

* AUMs would be removed (decreased) from Active Use because they cannot be moved to other pastures, without adverse impacts.
** AUMs could be moved into other pastures with no actual reduction in Active Use or economic impact.
Revision of Table 2-6, page 2-18, in the 2015 ROD/ARMPA

No-Action Alternative

The BLM assumes that a loss of AUMs will result in a socioeconomic impact on permittees. Construction and maintenance of fences are an economic cost to the operator, the government, or both and are costs in both the short term and long term. This alternative requires an estimated 39 miles of fence construction at $10,000 per mile (materials and labor) for an estimated cost of $390,000.

Under the No-Action Alternative, all or parts of the key RNAs would be unavailable to livestock grazing. Actual closure and reduction of AUMs would be determined by the BLM Authorized Officer. Minor loss of acreage available to grazing that does not affect an allotment's livestock carrying capacity, forage use levels, or distribution patterns may not require permitted use reductions.

If the magnitude of the decrease in available public land acreage for grazing and associated forage loss cannot be absorbed into the remaining permit area (by moving AUMs to other pastures), then the direct impact would be a reduction in AUMs. This would result in a direct economic impact on the permittee,

because they would need to reduce herd size, find alternative pasture, increase the time when they provide feed and water on the base property, or some combination of the three.

Preliminary analysis indicates that in at least 5 of the 13 key RNAs (Black Canyon, Fish Creek Rim, Rahilly-Gravelly, Spring Mountain, and Toppin Creek Butte) permittees would be directly impacted due to the loss of AUMs. In these cases, the reduction of AUMs would exceed 5 percent (see **Section 2.2.2**) of the current active use AUMs, a level that permittees cannot absorb into the rest of their operations or other allotments where they have grazing permits, which are fully stocked/allocated, without disrupting the grazing management strategy applied to the allotment. All permittees would likely experience management changes (e.g., rotation or season of use) due to new fencing and loss of acres available to grazing. The BLM would not collect grazing fees on approximately 1,325 AUMs. At the current rate of $1.41 per AUM, that loss would total an estimated $1,868.25 per year of which $700.59 would have gone to the US Treasury, $233.53 to the affected counties, and $934.13 to the affected BLM Districts. These losses would be shared almost equally between Vale District/Malheur County (629 AUMs for $554.31 to the District and County) and Lakeview District/Lake County (696 AUMs for $613.35 to the District and County). Over a ten-year period, these losses would amount to $7,000.59 to the US Treasury, $2,333.50 to the Malheur and Lake counties, and $9,341.30 to Vale and Lakeview Districts.

Comments received on the Draft EIS indicated concern about loss of Rangeland Fire Protection Associations (RFPAs) as a result of these closures. The primary concern was that permittees would be unable to stay in business and leave the area, resulting in the loss of critical mass in RFPAs and their consequent dissolution. Since only a small number of permittees would be adversely affected by the loss of AUMs, dissolution of any RFPA seems unlikely. The BLM cannot assess whether the economic impacts would result in any affected permittee leaving the area and does not have records of the membership in individual RFPAs. The State of Oregon is responsible for managing the RFPAs, and such records would reside with it. Given the scattered nature of the five RNAs, any given RFPA would need to be largely or wholly dependent on an affected permittee (with no replacements) to lose critical mass and dissolve.

Proposed Plan Amendment

There would be no impact on the livestock operators from continuing grazing in the key 13 RNAs. No additional fencing would need to be constructed or maintained along with the associated cost impacts. There would be no loss of grazing fees, and no RFPAs would be potentially threatened by any given permittee leaving the area as a result of closing RNAs to livestock grazing.

4.11 CUMULATIVE EFFECTS ANALYSIS

This section presents the anticipated cumulative impacts on the environment that could occur from implementing the alternatives presented in **Chapter 2**. A cumulative impact is the impact on the environment that results from the incremental impact of the action, when added to other past, present, and reasonably foreseeable actions, regardless of what agency (federal or nonfederal) or person undertakes such actions.

Cumulative impacts can result from individually minor, but collectively significant actions taking place over time. The cumulative impacts resulting from the implementation of the alternatives in this RMPA/EIS may be influenced by other actions, as well as activities and conditions on other public and

private lands, including those beyond the planning area boundary. These include the concurrent Forest Service planning effort to amend land management plans for National Forests in Idaho, Montana, Nevada, Utah, Colorado, and Wyoming, which were previously amended in September 2015 to incorporate conservation measures to support the continued existence of the Greater Sage-Grouse. As a result, the sum of the effects of these incremental impacts involves determinations that often are complex, limited by the availability of information, and, to some degree, subjective.

This RMPA/EIS incorporates by reference the analysis in the 2015 Final EISs and the 2016 SFA Withdrawal Draft EIS, which comprehensively analyzed the cumulative impacts associated with these planning decisions under consideration in that process. The 2015 EISs, and to some degree the 2016 SFA EIS evaluated the cumulative impacts associated with the No Action Alternative in this RMPA/EIS. The Proposed Plan Amendment's effects are effectively within the range of effects analyzed by the 2015 and 2016 EISs. The 2015 Final EISs are quite recent, and the BLM has determined that conditions in the Great Basin have not changed significantly based, in part, on the USGS science review (see **Chapter 3**), as well as the BLM's review of additional past, present, and reasonably foreseeable actions in 2018. Conditions on public land have changed little since the 2015 Final EISs, and to the extent that there have been new actions or developments, the impacts associated with those actions or developments are in line with the projections in the 2015 Final EISs regarding reasonably foreseeable actions and effects. Additionally, changes that have occurred on a smaller level, like wildfires, received prompt responses. Since the nature and context of the cumulative effects scenario has not appreciably changed since 2015, and the 2015 analysis covered the entire range of the Greater Sage-Grouse, the BLM's consideration of cumulative effects in the 2015 Final EISs adequately addresses most, if not all, of the planning decisions to be made through this planning effort.

While the cumulative impacts analysis in the 2015 Final EIS thus offers a comprehensive foundation for this planning effort, the BLM is improving upon that analysis by integrating additional quantitative analysis specific to the rangewide planning effort. The purpose of this additional analysis is to facilitate a comparison of allocation decisions between the No Action and Proposed Plan Amendments at scales beyond the individual planning areas associated with the 2018 amendment process. The BLM's rangewide analysis focuses on the relevant changes in habitat management area delineations and allocation and allowable use decisions each BLM state office is proposing and how those changes may impact our understanding of cumulative effects at the MZ scale.

Conservation and management partners sought to work in advance of the 2015 USFWS listing decision to develop conservation objectives for the Greater Sage-Grouse that could help direct conservation and management actions for the species. Upon further review of the best available science and commercial information, the USFWS concluded in 2010 that the Greater Sage-Grouse warranted protection under the ESA. Two factors leading to the decision to list the species as "warranted but precluded" were threats to habitat and the inadequacy of existing regulatory mechanisms. In 2012, at the request of the Greater Sage-Grouse Task Force (SGTF), state and federal representatives produced a report that identified the most significant areas for Greater Sage-Grouse conservation, the principal threats within those areas, and the degree to which such threats need to be reduced or ameliorated to conserve the Greater Sage-Grouse so that it would not be in danger of extinction or likely to become so in the foreseeable future.

The BLM has determined that FLPMA does not require the BLM to mandate public land users to provide compensatory mitigation as a condition of obtaining authorization for the use of the public lands. The BLM further determined that FLPMA does not limit the ability of public land users to voluntarily offer to provide compensatory mitigation, for public land users to provide compensatory mitigation to satisfy state recommendations or standards, or for the BLM to take such voluntary or state-focused efforts into account when assessing the overall environmental impact of a proposed action. Consistent with that determination and with BLM IM 2018-093, *Compensatory Mitigation*, the Proposed Plan Amendment clarifies how voluntary compensatory mitigation or a state recommended mitigation should be considered in the management of Greater Sage-Grouse habitat. This clarification aligns the Proposed Plan Amendment with BLM policy and the scope of compensatory mitigation authority expressly provided by FLPMA.

Compensatory mitigation is meant to be an additional tool that, in the best circumstances, can attempt to offset residual impacts remaining after applying other mitigation actions. It does not supplant other tools under the mitigation hierarchy, including avoiding and minimizing on-site impacts.

Further, it is impossible to predict the amount of compensatory mitigation that might voluntarily occur in the future and the environmental consequences of that compensatory mitigation. Therefore, analysis of the environmental impact of compensatory mitigation is more appropriate for future project-specific NEPA, where it is possible to assess any project-specific compensatory mitigation that is offered voluntarily or to satisfy state recommendations or standards, in addition to the benefits already gained through other forms of mitigation, including avoidance, minimization, and rectification measures applicable to the specific project and site.

Thus, the effects of these changes to the BLM's approach to compensatory mitigation are speculative and nominal at most. The BLM will continue to ensure consistency of its actions and authorizations with the land use planning level goals and objectives of the Proposed Plans. The implementation of compensatory mitigation actions will be directed by MOAs that describe how the BLM will align with State authorities and incorporated in the appropriate NEPA analysis subsequent to the Proposed Plan Amendment. While the conservation benefit of compensatory mitigation may be limited when weighed against the threats to Greater Sage-Grouse, particularly in the Great Basin region where wildland fire remains a key threat, the BLM is committed to implementing state-imposed mitigation requirements to help minimize the impacts of anthropogenic disturbance and habitat fragmentation throughout the range of Greater Sage-Grouse.

Further, the BLM is committed to implementing beneficial habitat management actions to reduce the threats of fire and invasive species to Greater Sage-Grouse. The BLM has committed resources to habitat restoration and has treated 2.6 million acres of Greater Sage-Grouse habitat range-wide over the past 5 years. In fiscal year 2019, the BLM funded approximately $38 million in Greater Sage-Grouse management actions resulting in approximately 632,000 acres of treated habitat. In Fiscal Year 2020, the BLM invested approximately $37 million in the implementation of habitat management projects resulting in approximately 584,000 acres of treated habitat.

In 2015, the USFWS determined Greater Sage-Grouse was "not warranted" for listing under the ESA. The USFWS found that BLM's 2015 land use plans were adequate regulatory mechanisms and that the species no longer warranted listing under the ESA. At the time of that decision, USFWS acknowledged the RMP requirements that compensatory mitigation achieve a net gain standard. The BLM is not

proposing any action that would preclude proponents from offering compensatory mitigation; it is clarifying the BLM's reliance on voluntary compensatory mitigation consistent with federal law.

While the BLM has more than 90 RMPs, 9 strategies, and 45 agreements in active use that contain or address compensatory mitigation, the BLM has identified only limited implementation of compensatory mitigation consistent with the 2015 Greater Sage-Grouse Plans. Using data gathered in 2017, the BLM identified 13 Greater Sage-Grouse projects across 5 BLM states with a mandatory compensatory mitigation component or net gain standard implemented between October 2008 and June 2017. The most common compensatory actions used by the BLM in those cases were habitat restoration, habitat improvements, rangeland improvements, and invasive species control – actions consistent with the BLM's own investment in management action described previously. It many cases, it is still too soon in the implementation of these mitigation actions to measure the effectiveness or degree of benefit each action provides.

Anecdotally, the existing conservation credit systems, banks, and exchanges designed to offset impacts to Greater Sage-Grouse or its habitat have had mixed success. The BLM is aware of three mitigation banks (one commercial bank agreement in Wyoming and two single-user bank agreements with mining companies in Nevada) and one exchange system in Colorado specific to Greater Sage-Grouse currently in operation. However, the BLM does not have access to data or information that would further assess the relative benefit provided by these systems.

In all designated Greater Sage-Grouse habitat, the BLM will ensure both mitigation and management actions that achieve the planning-level management goals and objectives identified in this RMPA. The BLM has a variety of tools available to effective achieve those management goals such as restoration projects and habitat improvements.

The BLM will continue plan effectiveness monitoring to provide the data needed to evaluate BLM actions toward reaching the goals and objectives set forth in the RMPAs. Effectiveness monitoring methods will encompass multiple larger scales, from areas as large as the WAFWA MZ to the scale of this RMPA. Effectiveness data used for these larger-scale evaluations will include all lands in the area of interest, regardless of surface management, and will help inform where finer-scale evaluations are needed.

Currently BLM has six state-specific RMPA efforts that are all aligning mitigation with their relevant State authorities. All of the Proposed Plan Amendments modify the existing standard for compensatory mitigation, but maintain that the BLM will pursue conservation efforts as a broader planning goal and objective. Cumulatively, if the BLM is implementing planning decisions across the broader range, such actions would preclude any cumulative impacts from modifying the net conservation gain standard at the project level.

The BLM has updated certain data that it collected and evaluated in the 2015 Final EIS concerning the 2015 plan allocation and allowable use decisions. These updates reflect maintenance-related changes, adaptive management responses, and refined or corrected source data (**Appendix B**, **Table B-1**). The BLM used these data to represent the No Action alternative for this analysis. The BLM also identified 2015 data which are not subject to change in any alternatives associated with the 2018 planning process. These data were carried forward as the alternative allocation and allowable use decision data. The BLM was also able to provide allocation and allowable use decision data representing changes included in the 2018 Draft EIS alternatives, which were then used in the comparative analysis. Decision data are

summarized by habitat management area type within each MZ (see **Figure 4-1**) and are presented in **Appendix B** in both approximate acreage of BLM managed lands within each habitat management area designation as well as percent of BLM lands within a habitat management area designation to which an allocation decision applies.

The BLM analyzed cumulative effects at two levels in the 2019 planning process. Each state analyzed cumulative effects across the sage-grouse range by considering, across each state, reasonably foreseeable future actions and their effects in every WAFWA management zone (excluding WAFWA Zone VI). Each state further analyzed cumulative effects at the WAFWA management zone level for their state. See **Sections 4.11.1** and **Table 1** in **Appendix B** for the range-wide analysis, which addresses the cumulative effects from reasonably foreseeable future actions across all WAFWA management zones, including those that do not connect directly to Oregon. See Oregon's WAFWA management zone analysis in Sections 4.11.5 and 4.11.6 below. Both analyses use WAFWA Management Zones. Oregon's WAFWA Zone analysis included Zones IV and V. Zone IV encompasses portions of Idaho, Nevada, Montana, Oregon, Utah, and a small portion of Wyoming (**Figure 4-1**). Zone V encompasses portions of Oregon, California, and Nevada.

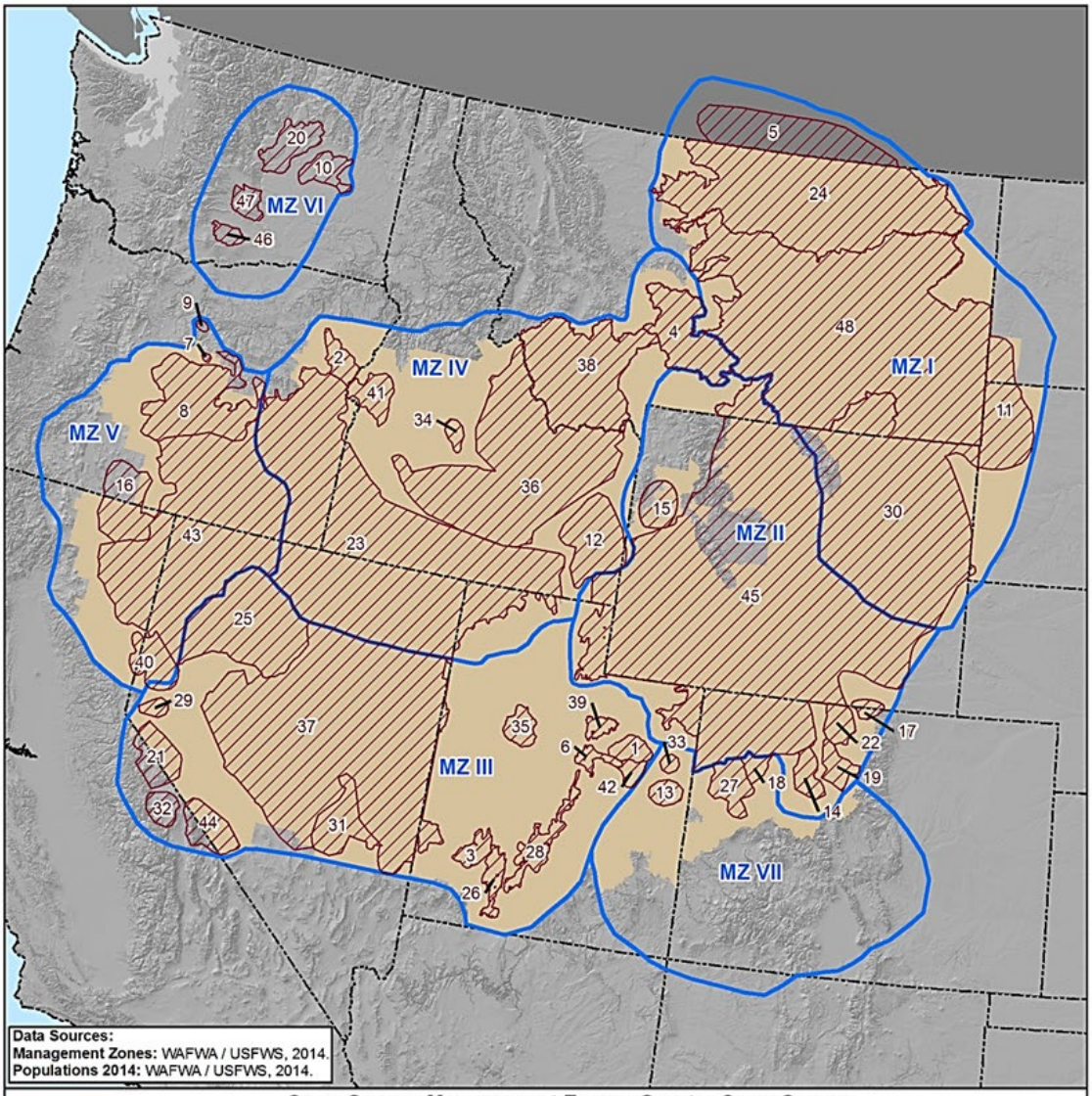
4.11.1 Rangewide Cumulative Effects Analysis – Greater Sage-Grouse

The 2015 ARMPA is the No-Action Alternative in this RMPA/EIS and was part of the cumulative impact analysis for Greater Sage-Grouse at the WAFWA zone scale in the 2015 Final EIS. Additionally, the cumulative impacts anticipated from the Management Alignment Alternative and the Proposed Plan presented in this RMPA/EIS are entirely within the range of effects analyzed by the 2015 Final EIS. While the analysis for the 2015 Final EIS is quite recent, the BLM has reviewed conditions in Oregon to verify that they have not changed significantly. Conditions on BLM-administered lands have changed little since the 2015 Final EIS, and to the extent that there have been new actions or developments, the impacts associated with those actions or developments are in line with the projections in the 2015 Final EIS regarding reasonably foreseeable future actions and effects.

The BLM's assessment that conditions and cumulative impacts have not changed significantly is based, in part, on the USGS science review (see **Chapter 3**) and the BLM's review of additional past, present, and reasonably foreseeable actions in 2018. Since the nature and context of the cumulative effects scenario have not appreciably changed since 2015, and the 2015 plans included analysis by WAFWA MZ across the entire range of the Greater Sage-Grouse, the cumulative effects analysis in the 2015 Final EIS applies to this planning effort and provides a foundation for the BLM to identify any additional cumulative impacts.

The remainder of this chapter and related appendices includes additional quantitative analysis using the existing cumulative impacts across the range and integrating additional quantitative analysis specific to this planning effort to provide a comprehensive rangewide view of cumulative impacts. The purpose of this additional analysis is to facilitate a comparison of allocation decisions between the No-Action and Management Alignment (Proposed Plan Amendment) Alternatives at scales beyond the individual planning areas associated with the 2018 amendment process. The analysis focuses on the relevant changes in habitat delineations and allocation decisions each BLM state office is proposing and how those changes may affect the understanding of cumulative effects at the WAFWA MZ scale across the range of Greater Sage-Grouse.

Figure 4-1
Cumulative Effects Analysis Extent, Sage-Grouse Management Zones and Populations



Under the Management Alignment Alternative, the recommendation to withdraw sagebrush focal areas (SFA) from location and entry under the Mining Law of 1872 would be removed, as the EIS process considering the proposed withdrawal was canceled on October 11, 2017. In its 2016 SFA Withdrawal EIS, the BLM quantified the possible adverse effects from locatable mineral exploration and mining on the approximately 10 million acres of SFAs proposed for withdrawal, finding that they would be limited to approximately 9,000 acres rangewide of surface disturbance over 20 years, with approximately 0.58 percent of Greater Sage-Grouse male birds possibly affected per year. The other action alternatives evaluated in the 2016 SFA Withdrawal Draft EIS similarly demonstrated negligible benefit of the proposed withdrawal to Greater Sage-Grouse and its habitat.[1]

The cumulative effects of implementing the Management Alignment Alternative are as described in the 2016 SFA Withdrawal Draft EIS, under the No-Action Alternative, in which SFAs are not carried forward for withdrawal. Greater Sage-Grouse would not be affected as a result of the removal of the recommendation to withdraw SFAs from location and entry under the Mining Law of 1872, as the recommendation itself does not have any on-the-ground effects. Conservation benefits of a future withdrawal would be minimal, as documented in the 2016 SFA Withdrawal Draft EIS and as explained above; therefore, there would be negligible cumulative impacts associated with the decision to remove the SFA designation. The direct and indirect impact analysis specifically enumerates how each BLM allocation decision to apply NSO stipulations and waivers, exceptions, or modifications overlaps with the SFA designation.

Why use WAFWA Management Zones?

The WAFWA represents state and provincial fish and wildlife agencies and supports sound resource management and building partnerships to conserve wildlife for the use and benefit of all citizens, now and in the future. The BLM is analyzing habitats and allocation decisions at the scale of the six WAFWA delineated Greater Sage-Grouse MZs (MZ; **Figure 4-1**) within which the plan amendments occur to enable the decision maker to understand the impacts on Greater Sage-Grouse at a biologically meaningful scale. The MZs are based on floristic provinces (e.g. as identified by Connelly et al. 2004) within which the vegetative communities comprising Greater Sage-Grouse habitat as well as the Greater Sage-Grouse populations respond similarly to environmental factors and management decisions (Stiver et.al. 2006). The cumulative effects analysis area for Greater Sage-Grouse extends beyond a state, political, or planning area boundary to reflect the WAFWA MZs because they encompass areas with similar issues, threats, and vegetative conditions important to Greater Sage-Grouse habitat management. Each suite of threats to specific Greater Sage-Grouse populations have been identified in [COT Report, 2015 Regional RODs, Listing Decision]. The 2015 Regional RODs identify how planning level allocation decisions address the identified threats to populations, which are aggregated in this analysis by MZs. The threats vary geographically and may have more or less impact on Greater Sage-Grouse and its habitat in some MZs or parts of the MZs, depending on such factors as climate, land use patterns, and topography.

[1] Importantly, mining operations that do occur are subject to regulation under the BLM's surface management regulations at 43 CFR 3809. These regulations ensure that operators comply with environmental standards in conducting exploration, mining, and reclamation. For example, the BLM must approve a plan of operations for locatable mining operations on public lands, which includes compliance with the NEPA, National Historic Preservation Act, and ESA. Plans of operation must also include those measures to meet specific performance standards and to prevent unnecessary or undue degradation of the lands (43 CFR 3809.411).

Reasonably foreseeable future actions in MZs V and IV are identified in the Oregon 2015 Final EIS in Tables 5-21 and 5-22, respectively. Unless otherwise addressed in this chapter, the cumulative effects of the alternatives analyzed in this RMPA/EIS are covered by the 2015 Final EIS and the 2016 SFA Withdrawal Draft EIS. This includes the incremental impacts across the range of BLM- and Forest Service-administered lands being amended in concurrent efforts. See the 2015 Final EIS for additional information.

The sum of past, present, and reasonably foreseeable actions listed in **Appendix B**, **Table B-1** represent cumulative effects across the range of Greater Sage-Grouse habitat and management areas. These effects are important to consider for future management of the species as a whole and are not analyzed solely at the local or state level.

Other management actions contained in the proposed plan amendments are described in more detail in **Chapter 2**. This section also briefly describes the threats to Greater Sage-Grouse and its habitat. The magnitude of change between the No-Action Alternative and Proposed Plan Amendment, by decision, is represented in pie charts and tables within **Appendix B**. Those effects, in addition to synthesizing the plan decisions and comparing the current condition to the condition that will be in effect when the Proposed Plan Amendments are finalized, allow for a comparison of the change in management direction within MZs and across planning regions.

Under the Proposed Plan Amendment, the recommendation to withdraw SFAs from location and entry under the Mining Law of 1872 would be removed, except in Oregon where the recommendation was removed through plan maintenance in May 2018. In its 2016 SFA Withdrawal EIS, the BLM quantified the possible adverse effects from locatable mineral exploration and mining on the approximately 10 million acres of SFAs proposed for withdrawal, finding that they would be limited to approximately 9,000 acres of surface disturbance over 20 years, with approximately 0.58 percent of Greater Sage-Grouse male birds affected per year. The other action alternatives evaluated in the 2016 SFA Withdrawal EIS similarly demonstrated negligible benefit of the proposed withdrawal to Greater Sage-Grouse and its habitat[2]. The cumulative effects of implementing the Proposed Plan Amendment are as described in the 2016 SFA Withdrawal EIS, under the No-Action Alternative, in which SFAs are not carried forward for withdrawal. Greater Sage-Grouse across all of the MZs would not be affected as a result of the removal of the recommendation to withdrawal SFAs from location and entry under the Mining Law of 1872, as the recommendation itself does not have any on-the-ground effects, and the conservation benefits of a future withdrawal would be minimal, as documented in the 2016 SFA Withdrawal Draft EIS and as explained above. Therefore, there would be negligible cumulative impacts associated with the decision to remove the SFA designation. The direct and indirect impact analysis specifically enumerates how each BLM allocation decision to apply NSO and waivers, exceptions or modifications overlap with the SFA designation.

[2] Importantly, mining operations that do occur are subject to regulation under the BLM's surface management regulations at 43 CFR Part 3809. These regulations ensure that operators comply with environmental standards in conducting exploration, mining, and reclamation. For example, the BLM must approve a plan of operations for locatable mining operations on public lands, which includes compliance with the NEPA, National Historic Preservation Act, and ESA. Plans of operation must also include those measures to meet specific performance standards and to prevent unnecessary or undue degradation of the lands (43 CFR 3809.411).

Disturbance from energy development, mining, and infrastructure, as well as the resulting habitat fragmentation, remain the greatest threat to Greater Sage-Grouse in the Rocky Mountain region. Wildfire threat remains a concern in the area as well and is the greatest threat to Greater Sage-Grouse in the Great Basin region. Between 2008 and 2018, wildfires burned an average of 900,000 acres per year in Greater Sage-Grouse habitat management areas rangewide[3]; this is within the range of projected wildland fire analyzed in the 2015 Final EIS. The BLM has committed resources to habitat restoration and has treated 1.4 million acres of Greater Sage-Grouse habitat rangewide over the past 5 years. The interagency (including BLM) WAFWA-led Wildfire and Invasive Species Working Group reviewed recent information for their May 2018 Gap Report Update to the Wildfire and Invasive Plant Species in the Sagebrush Biome: Challenges that hinder current and future management and protection report. They found that all of the original challenges related to control and reduction of the invasive annual grass/fire cycle were still relevant (policy, fiscal and science challenges) as well as pointing to three new gaps involving program capacity, resource specialists, and developing guidelines on drought and climate adaption to manage sagebrush ecosystems.

The increased flexibility proposed in these amendments can allow for responsible development of other uses in Greater Sage-Grouse habitat and may reduce costs to proponents but is not expected to result in a large increase in development proposals on public land. Similarly, the increased protections from the 2015 Final EIS have not resulted in a large decrease in ROW applications or an increase in rejected applications; therefore, the changes proposed under the Proposed Plan Amendment are not expected to result in large changes to the rate of development across the range, or in the economy.

Some 350 species of plants and wildlife rely on sagebrush steppe ecosystems and coexist with Greater Sage-Grouse and may be similarly affected by development or disturbance; however, nothing in the considered alternatives would lessen the BLM's authority or responsibility to provide for the needs of special status species, as described in BLM RMPs, policies, and laws, including Manual 6840, the Endangered Species Act, and FLPMA. Increased flexibility for other uses within Greater Sage-Grouse habitat does not necessarily increase potential impacts on other wildlife or plant species. Site-specific NEPA analysis including an evaluation of impacts on special status species is required for on-the-ground projects within the planning area.

4.11.2 Cumulative Effects on Greater Sage-Grouse: Management Zone I

In addition to the analysis in the 2015 Final EIS, other anticipated incremental impacts are discussed below in association with planning issues being analyzed in the rangewide RMPA/EISs.

MZ I (Figure 4-1) encompasses portions of Wyoming, Montana, North Dakota, and South Dakota. Montana is currently not undergoing a plan amendment process; therefore, none of the proposed changes described in this section apply to Greater Sage-Grouse in Montana. Under the Proposed Plan Amendments in WAFWA MZ I, PHMA and GHMA designations would not change from those identified in the No Action Alternative. In addition, no changes in allocations are proposed in either of the planning areas in this MZ. Approximately 16 percent of the planning area across MZ I is designated as PHMA, and 38 percent is GHMA. Future adjustments to PHMA and GHMA in MZ I would be based on

[3]Removing 2012 and 2017, which were above-average wildland fire years, the 8-year average is approximately 500,000 acres burned per year.

best available science and to align with the respective states' delineations for Greater Sage-Grouse habitat.

Wyoming's current planning effort, and Montana's existing plans, incorporate management flexibility to allow for site specific adjustments to RMP authorizations for adaptive management strategies, livestock grazing management, and other proposed land uses. The use and application of compensatory mitigation in the planning area would follow the respective State plans, resulting in greater consistency across the MZ. For these actions, cumulative impacts to Greater Sage-Grouse habitat and populations across MZ I would be consistent with those impacts described in the 2015 Final EISs for the then Proposed Plan Amendments. The currently Proposed Plan Amendment changes from the No Action are minor, and still maintain prescriptive management for Greater Sage-Grouse habitat across the MZ for surface disturbing activities. Disturbance from energy development, mining, and infrastructure, as well as the resulting habitat fragmentation, remain the greatest threat to Greater Sage-Grouse in the Rocky Mountain Region. Because the land use prescriptions and allocations are not proposed for change in Wyoming's Proposed Plan Amendment, there would be no additional cumulative impact to Greater Sage-Grouse populations or habitat within MZ I.

A summary of potential cumulative impacts by proposed management action is presented below.

Impacts on Greater Sage-Grouse as a result of surface disturbance would likely be greater where development and disturbance is more intense and in areas where development overlaps sensitive habitats. The degree of impact would depend on the timing of development activities and whether the amount of development activity and disruption outpaces successful reclamation and revegetation efforts in disturbed areas. Increased flexibility for updating habitat management areas across MZ I would not result in any additive impacts on Greater Sage-Grouse and could result in beneficial impacts as a result of consistent management across the zone. Any future modifications of habitat management areas would be documented using the appropriate level of NEPA that would, as applicable, provide analysis regarding any potential impacts. However, because the underlying habitat management area allocations and the respective restrictions on those allocations put in place to conserve Greater Sage-Grouse would not change, and any proposed updates would reflect the most recent knowledge concerning Greater Sage-Grouse habitat use and distribution, there would be no appreciable additive impact from the implementation of this aspect on Greater Sage-Grouse habitat or population.

Approximately 99 percent of GHMA and PHMA habitat in MZ I is open to livestock grazing, and this is not proposed for change in Wyoming's Proposed Plan Amendment; Montana is also not proposing any changes to livestock management at this time. Therefore, no additional cumulative impacts beyond those identified in the 2015 Final EISs are anticipated. In general, livestock can influence habitat by modifying plant biomass, plant height and cover, and plant species composition. As a result, livestock grazing could cause changes in habitat; changes in plant composition could occur in varying degrees and could change vegetative structure, affecting cover for nesting birds. However, grazing can be used to reduce fuel loads and reduce the risk of wildfire and can also be managed to reduce the spread of invasive grasses. Much of the landscape in MZ I is adapted to withstand grazing disturbance, having been grazed by bison before the West was settled. In addition, the BLM has applied Standards for Rangeland Health since 1997 in order to enhance sustainable livestock grazing and wildlife habitat while protecting watersheds and riparian ecosystems. Under proposed management in MZ I, the BLM would be able to adjust forage

levels to meet rangeland health standards based on site-specific information that would inform livestock management decisions. While the Proposed Plan Amendment in Wyoming would remove the Greater Sage-Grouse specific language Management Action 4 (please see the Wyoming Proposed RMPA/Final EIS, Table 2-1, Permit Renewals), the wildlife/special status species standards are emphasized. As Greater Sage-Grouse would continue to be considered at the implementation level with site-specific analysis, following management prescriptions analyzed in the 2014 and 2015 Final EISs, no additive impact of this change is anticipated.

Adaptive Management, Mitigation, and Prioritization of Leasing

Similarly, no appreciable additive impacts are anticipated from Wyoming establishing a process whereby adaptive management actions are reviewed and reversed once the identified causal factor is resolved. This process would ensure that the BLM is utilizing the best available science and decision support tools to guide management at the appropriate spatial scale, thus improving the BLM's assessment and response to ever-changing conditions that could affect Greater Sage-Grouse populations and/or habitat, as well as ensuring that once causal factors are resolved, management reverts to pre-adaptive management actions. Because any specific response to tripping a hard or soft trigger would be based on the causal factors responsible, presuming a specific response to unknown future conditions would be speculative at best and not reasonably foreseeable. As Montana is not proposing to change any part of its adaptive management process, and Wyoming did not identify any additional direct or indirect impacts as a result of this proposed change, there are no additional cumulative impacts associated with the proposed changes to adaptive management implementation.

Under the Proposed Plan Amendment in Wyoming, language would be added to clarify how implementation-level decisions would be guided regarding mitigation and prioritization of fluid mineral leasing to better align with state conservation plans and management strategies. As identified in the direct and indirect effects section of this Final EIS, impacts on Greater Sage-Grouse would be minor as a result of these changes and could include localized detrimental impacts in some areas and beneficial impacts in others, but would not affect Greater Sage-Grouse conservation. As a result, there would be no appreciable additive impact from the implementation of these clarifications on Greater Sage-Grouse habitat or population across MZ I.

BLM's Proposed Plan Amendments in MZ I are also unlikely to preclude the reasonably foreseeable actions listed in **Appendix B** from proceeding. Some small, localized populations may be at continued risk due to reasonably foreseeable infrastructure and energy development projects over the next 20 years, when combined with unplanned events such as wildfires, drought, and associated decline in Greater Sage-Grouse habitat quality. However, the proposed plan amendments retain conservation measures that would be applied consistent with State management plans and continued proactive habitat restoration efforts being completed by private, local, state, and federal partners across the MZ, to adequately conserve and manage Greater Sage-Grouse habitat.

4.11.3 Cumulative Effects on Greater Sage-Grouse: Management Zone II/VII

In addition to the analysis in the 2015 Final EIS, other anticipated incremental impacts are discussed below in association with planning issues being analyzed in the rangewide RMPA/EISs.

MZs II/VII encompass portions of Wyoming, Colorado, Utah, Montana, and Idaho (Figure 4-1). Under the Proposed Plan Amendments in this MZ, PHMA would decrease by 1 percent and GHMA would

decrease by 1 percent, compared to the acreage values in the No Action Alternative. The proposed change in habitat management area acres reflects changes in Utah, where PHMA would be reduced by approximately 35,000 acres and GHMA (826,000 acres) would be removed in an effort to align with the Greater Sage-Grouse Management Areas identified by the State of Utah. In Idaho, approximately 50,000 acres would change from PHMA to Important Habitat Management Area (IHMA) for population monitoring purposes as a result of a tripped adaptive management trigger. However, the habitat would continue to be managed as PHMA, which results in no net change to overall acreages included in the habitat management areas. Across this MZ, no other modifications to habitat management areas are currently proposed. Montana is currently not undergoing a plan amendment process; therefore, none of the proposed changes described in this section apply to Greater Sage-Grouse in Montana.

In Colorado, in the no action alternative, PHMA within one mile of active leks is closed to leasing. The proposed action would open one mile of active leks to leasing, subject to NSO with restrictive criteria for waivers, exceptions, and modifications. Although that allocation change would make additional acres available to leasing, the impact on Greater Sage-Grouse is likely to be minimal because surface disturbance, fragmentation, and indirect habitat loss would not be expected to increase due to restrictions on surface disturbance. Additionally, better coordination with the State provides more of an all-lands approach that, due to multiple jurisdictions with regulatory authority over land and mineral ownership, may result in better landscape-scale protections for Greater Sage-Grouse and Greater Sage-Grouse habitat.

For the remainder of the planning areas within MZ II/VII, RMP allocations tied to habitat management areas did not change between the No Action and the Proposed Plan Amendment.

The decrease in PHMA and GHMA as a result of better alignment with the State of Utah's Greater Sage-Grouse management plan between the No Action and the Proposed Plan Amendment would have negligible to minimal impacts on Greater Sage-Grouse and its habitat in the context of the entire MZ. The reduction of PHMA was associated with timbered mountains that do not include Greater Sage-Grouse habitat. The removal of GHMA in MZ II/VII effects populations where the BLM has very little decision space (surface or mineral estates) or areas with very small populations that are already heavily impacted by existing oil and gas development resulting in infrastructure at a density above what science has indicated Greater Sage-Grouse will persist. Additionally, the relevant distribution of RMP allocations associated with these habitat management area changes would not significantly change (0-3 percent, see **Appendix B**).

The planning efforts being undertaken in this MZ would incorporate management flexibility in Colorado, Utah, and Idaho plans that would allow exceptions to allocation decisions similar to flexibility already in the Wyoming and Montana plans. These changes would allow for site-specific adjustments for land use authorizations based on site conditions. In addition, there would be adjustments to existing adaptive management strategies for all plans in this MZ. Within this MZ, all plans would remove the recommendation to withdraw SFAs from location and entry under the 1872 Mining Law, would make slight adjustments to habitat objectives, and Colorado and Idaho plans would identify new exceptions to seasonal timing restrictions to provide for consideration of site-specific conditions already present in the Utah, Wyoming and Montana plans. Despite these actions, cumulative impacts on Greater Sage-Grouse populations and habitat across MZ II/VII would be consistent with those impacts identified in the 2015 Final EISs for the then proposed plan amendments. The currently Proposed Plan Amendments changes

from the No Action would be minor. Disturbance from energy development, mining, and infrastructure, as well as the resulting habitat fragmentation, remain the greatest threat to Greater Sage-Grouse in the Rocky Mountain Region. Because the land use prescriptions within designated habitat management areas and the allocations associated with those habitat management areas are not being proposed for change in any plan in MZ II/VII, there would be no additional cumulative impacts on Greater Sage-Grouse across this MZ.

A summary of potential cumulative impacts by proposed management action is presented below.

Impacts on Greater Sage-Grouse as a result of surface disturbance would likely be greater where development and disturbance is more intense and in areas where development overlaps sensitive habitats. The degree of impact would depend on the timing of development activities and whether the amount of development activity and disruption outpaces successful reclamation and revegetation efforts in disturbed areas. Increased flexibility for updating habitat management areas across MZs II/VII would not result in any additive impacts on Greater Sage-Grouse and could result in beneficial impacts as a result of consistent management across the zone. Future modifications of habitat management areas would be documented using the appropriate level of NEPA that would, as applicable, provide analysis regarding any potential impacts. However, because the underlying habitat management area allocations and the respective restrictions on those allocations put in place to conserve Greater Sage-Grouse would not change, and any proposed updates would reflect the most recent knowledge concerning Greater Sage-Grouse habitat use and distribution, there would be no appreciable additive impact from the implementation of this aspect on Greater Sage-Grouse habitat or population.

The allocation exception process would be updated in Colorado, Utah, and Idaho to simplify the various exemptions contained in the 2015 Final EIS. While the availability of exceptions to RMP allocations attached to PHMA and GHMA could increase the possibility of leasing, permitting, or ground-disturbing activities within a given habitat management area, the established criteria would ensure that projects are either in unsuitable Greater Sage-Grouse habitat; do not result in direct, indirect, or cumulative impacts on Greater Sage-Grouse; benefit Greater Sage-Grouse or its habitat; or can be offset, with the exception of those needed for public health and safety. Therefore, there would be no appreciable additive impact from the implementation of this action on Greater Sage-Grouse or the resources/uses analyzed herein, as compared with the No-Action Alternative.

Approximately 99 percent of GHMA and PHMA in MZ II/VII is open to livestock grazing; this is not proposed for change in any states' Proposed Plan Amendments. Therefore, no additional cumulative impacts beyond those identified in the 2015 Final EISs are anticipated. In general, livestock can influence habitat by modifying plant biomass, plant height and cover, and plant species composition. Improper livestock grazing could cause changes in habitat; changes in plant composition could occur in varying degrees and could change vegetative structure, affecting cover for nesting birds. However, proper grazing can be used to reduce fuel loads and reduce the risk of wildfire and can also be managed to reduce the spread of invasive grasses. Specific impacts on Greater Sage-Grouse habitat from livestock grazing are incorporated by reference from the 2015 Final EIS. All ongoing planning efforts in MZ II/VII would make slight adjustments to habitat objectives, and, in Wyoming and Utah, would provide for more flexibility for making site-specific adjustments to livestock grazing management if the site-specific monitoring indicated adjustments were necessary.

Under the Proposed Plan Amendments, language would be added to clarify how some implementation level decisions, including mitigation, prioritization of fluid mineral leasing, disturbance caps, and clarification of RDFs would be guided to better align with state conservation plans and management strategies. As identified in the direct and indirect effects section of this Final EIS, impacts on Greater Sage-Grouse would be minor as a result of these changes and could include localized detrimental impacts in some areas and beneficial impacts in others, but would not cumulatively compromise Greater Sage-Grouse conservation efforts throughout the individual states. As a result, there would be no appreciable additive impact from the implementation of these clarifications on Greater Sage-Grouse habitat or population across this MZ.

Similarly, no appreciable additive impacts are anticipated from updating the adaptive management process as described in the Proposed Plan Amendments. In Wyoming and Utah, this process would be updated at the implementation level to ensure that adaptive management actions are reviewed and reversed once the identified causal factor is resolved. In all states in this MZ, this update would ensure that the BLM is using the best available science and decision support tools to guide management at the appropriate spatial scale, thus improving the BLM's assessment and response to ever-changing conditions that could affect Greater Sage-Grouse populations and/or habitat. Because any specific response to tripping a hard or soft trigger would be based on the causal factors responsible, presuming a specific response to unknown future conditions would be speculative and not reasonably foreseeable.

In Idaho, removal of the project disturbance cap would not result in any changes to allocation decisions; rather, it would allow the BLM to cluster development in PHMA and IHMA only after meeting the anthropogenic disturbance screening criteria and the disturbance development criteria. Lek buffer modifications would also not result in any allocation changes. Some lek buffers would be increased as a result of the Proposed Plan Amendment, but, in some cases, the lek buffers may be smaller than those identified in the No Action. However, the existing disturbance screening criteria and the disturbance development criteria would highly restrict development activities in both PHMA and IHMA; therefore, the changes in lek buffers sizes would have no additive effect.

BLM's Proposed Plan Amendments in MZ II/VII are also unlikely to preclude the reasonably foreseeable actions listed in **Appendix B** from proceeding. Some small, localized populations may be at continued risk due to reasonably foreseeable infrastructure and energy development projects over the next 20 years, when combined with unplanned events such as wildfires, drought, and associated decline in Greater Sage-Grouse habitat quality. However, the proposed plan amendments retain conservation measures that would be applied consistent with State management plans and continued proactive habitat restoration efforts being completed by private, local, state, and federal partners across the MZ, to adequately conserve and maintain Greater Sage-Grouse habitat.

4.11.4 Cumulative Effects on Greater Sage-Grouse: Management Zone III

In addition to the analysis in the 2015 Final EIS, other anticipated incremental impacts are discussed below in association with planning issues being analyzed in the rangewide RMPA/EISs.

This area encompasses portions of California, Nevada, and Utah (Figure 4-1: Cumulative Effects Analysis Extent, Sage-Grouse Management Zones and Populations). Under the Proposed Plan Amendments in Nevada and Northeastern California and Utah, PHMA would decrease by 1 percent, GHMA would decrease by 2 percent, and for Nevada and Northeastern California only, Occupied Habitat Management

Area (OHMA) would decrease by 2 percent, as compared to the acreages identified in the No Action Alternative. The proposed change in habitat management area acres between the No Action and the Proposed Plan Amendment in Nevada and Northeastern California is based on adjustments made to habitat modeling used to delineate habitat management areas and improve alignment with the State of Nevada's delineations for habitat management areas, which the State of Nevada adopted by in December 2015. In Utah, GHMA (approximately 860,000 acres) was removed in the Proposed Plan Amendment in an effort to align with the habitat management areas identified by the State of Utah. Following this habitat management area modification, planning-level allocation decisions have also been adjusted in the Proposed Plan Amendments to reflect the distribution of habitat in Nevada/Northeastern California.

In both planning areas within this MZ, RMP allocations tied to habitat management areas did not change between the alternatives. The decrease in PHMA, GHMA, and OHMA within WAFWA MZ III between the No Action Alternative and the Proposed Plan Amendment would therefore have negligible-to-minimal impacts on Greater Sage-Grouse and its habitat in the context of the entire MZ, as the relevant distribution of RMP allocations associated with these habitat management areas is not significantly changing (only an overall 0-3 percent decrease, see **Appendix B**).

Both planning efforts' Proposed Plan Amendments in MZ III incorporate management flexibility that would allow exceptions to allocation decisions within PHMA, GHMA, OHMA in Nevada and Northeastern California, and in both planning areas, would allow for site specific adjustments for land use authorizations and adjustments to existing adaptive management strategies. Under both sets of Proposed Plan Amendments, the BLM would remove the recommendation to withdraw SFAs from location and entry under the Mining Law of 1872, make slight adjustments to habitat objectives, and identify new exceptions to seasonal timing restrictions. The cumulative impacts of these proposed changes to Greater Sage-Grouse populations across MZ III would be consistent with the cumulative impacts analyzed and disclosed in the 2015 Final EISs. Moreover, these proposed changes, which focus on anthropogenic disturbances, would have only a minor or limited effect on efforts to manage and conserve Greater Sage-Grouse in this MZ, where wildfire, invasive plants, and conifer encroachment are the greater threats to the Greater Sage-Grouse and its habitat.

BLM's Proposed Plan Amendments in the MZ are also unlikely to preclude the reasonably foreseeable actions listed in **Appendix B** from proceeding. Some small, localized populations may be at continued risk due to the reasonably foreseeable future infrastructure and energy development projects over the next 20 years, when combined with unplanned events such as wildfires, drought, and associated decline in Greater Sage-Grouse habitat quality. However, the Proposed Plan Amendments retain conservation measures in combination with continued proactive habitat restoration efforts being completed by private, local, state, and federal partners across the MZ to adequately conserve and maintain Greater Sage-Grouse habitat.

A summary of potential cumulative impacts by proposed management action is presented below.

Under the Proposed Plan Amendment, habitat management area boundaries in Nevada would be adopted or revised to incorporate the best available science (Coates et al. 2016). Because the underlying habitat management area allocations put in place to conserve Greater Sage-Grouse would not change, and these updates reflect the most recent knowledge concerning Greater Sage-Grouse habitat use and

distribution, there would be no appreciable additive impact from the implementation of this aspect on Greater Sage-Grouse or the resources/uses analyzed herein.

Similarly, no appreciable additive impacts are anticipated from updating the adaptive management process as described in the Proposed Plan Amendment. This update would ensure that the BLM is utilizing the best available science and decision support tools to guide management at the appropriate spatial scale, thus improving the BLM's assessment and response to ever-changing conditions that could affect Greater Sage-Grouse populations and/or habitat. Because any specific response to tripping a hard or soft trigger would be based on the causal factors responsible, presuming a specific response to unknown future conditions would be speculative at best and not reasonably foreseeable.

Under the Proposed Plan Amendment, the allocation exception process would be updated to simplify the various exemptions contained in the 2015 Final EIS. While the availability of exceptions to RMP allocations attached to PHMA and GHMA could increase the possibility of leasing, permitting, or ground-disturbing activities within a given habitat management area, the established criteria would ensure that projects are either in unsuitable Greater Sage-Grouse habitat; do not result in direct, indirect, or cumulative impacts on Greater Sage-Grouse; or can be offset, with the exception of those needed for public health and safety. Therefore, there would be no appreciable additive impact from the implementation of this action on Greater Sage-Grouse or the resources/uses analyzed herein, as compared with the No-Action Alternative.

Under the Proposed Plan Amendment, language would be added to clarify how implementation-level decisions would be guided regarding mitigation, seasonal timing restrictions, and modifying habitat objectives to better align with state conservation plans and management strategies. As these updates did not result in any new identifiable direct or indirect impacts, there would be no appreciable additive impact from the implementation of this aspect on Greater Sage-Grouse or the resources/uses analyzed herein, as compared with the No Action Alternative.

4.11.5 Cumulative Effects on Greater Sage-Grouse: Management Zone IV

In addition to the analysis in the 2015 Final EIS, other anticipated incremental impacts are discussed below in association with planning issues being analyzed in the rangewide RMPA/EISs.

MZ IV encompasses portions of Idaho, Nevada, Montana, Oregon, Utah, and a small portion of Wyoming (Figure 4-1: Cumulative Effects Analysis Extent, Sage-Grouse MZs and Populations). Under the Proposed Plan Amendment PHMA would decrease by 2 percent, IHMA and GHMA would not change, and OHMA would decrease by 1 percent. The proposed changes in habitat management area acres between the No Action and the Proposed Plan Amendment in Nevada are based on adjustments made to habitat modeling used to delineate habitat management areas (Coates et al. 2016) and to improve alignment with the State of Nevada's delineations. In Idaho, minor proposed changes in habitat management areas are based on cleaning up mapping errors, removing non-Greater Sage-Grouse habitat managed as PHMA as a result of SFA designation in the 2015 Decision, and reallocating an area of PHMA to IHMA because there were no historical lek routes in the PHMA polygon. The lack of historical lek routes in a portion of the affected polygon made it impossible to apply the adaptive management framework in that polygon. Habitat management areas would not change in all other planning areas within MZ IV.

The decrease in PHMA, GHMA, and OHMA within WAFWA MZ IV between the No Action Alternative and the Proposed Plan Amendment would have negligible to minimal impacts on Greater Sage-Grouse and its habitat in the context of the entire MZ, as the relevant distribution of RMP allocations associated with these habitat management areas is decreasing between 1 and 2 percent (**Appendix B**).

The direct and indirect effects of proposed management changes in the Wyoming, Idaho, Utah, Nevada, and Oregon are disclosed in each state's Final EIS. Change in allocation decisions is a better indicator to determine how changes across a MZ will affect Greater Sage-Grouse populations. Therefore, this cumulative effects analysis relies on changes in planning allocations as the metric to measure cumulative effects this MZ.

In **Table 4-8**, acres and percentages reflect all lands. Percentages may not total to 100 percent due to rounding. All figures and tables are intended for MZ summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Table 4-8
Approximate Acres of Habitat Management Areas in MZ IV

No Action					Management Alignment				
PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**PHMA**	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**
17,170,000	4,449,000	11,447,000	1,261,000	41,395,000	16,147,000	4,519,000	11,297,000	990,000	42,769,022

Approximate Percent of MZ IV that are Habitat Management Areas									
No Action					**Management Alignment**				
PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**PHMA**	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**
23%	6%	15%	2%	55%	21%	6%	15%	1%	56%

Nevada, Idaho, and Utah's Proposed Plan Amendments would incorporate greater management flexibility that would allow exceptions to management direction within habitat management areas and would allow for site specific adjustments for land use authorizations and adjustments to existing adaptive management strategies. The cumulative impacts of these proposed changes on Greater Sage-Grouse populations across

MZ IV would be consistent with cumulative impacts described in the 2015 Final EIS. Moreover, these proposed changes, which focus on anthropogenic disturbances, would have only a minor or limited effect on efforts to manage and conserve Greater Sage-Grouse in these MZs, where wildfire, invasive plants, and conifer encroachment are greater threats to the grouse and its habitats.

Some small, localized populations may be at continued risk due to reasonably foreseeable future infrastructure and energy development projects (**Appendix B**) over the next 20 years, when combined with unplanned events such as wildfires, drought, and associated decline in Greater Sage-Grouse habitat quality. However, the Proposed Plan Amendments retain conservation measures and in combination with continued proactive habitat restoration efforts underway by private, local, state, and federal partners across the MZ are expected adequately conserve and manage Greater Sage-Grouse habitats.

A summary of potential cumulative impacts by proposed management action is presented below.

The Proposed Plan Amendments vary from state to state as does each state contribution to MZ IV. Montana is not amending their current plan therefore their contribution to cumulative effects does not differ from those disclosed in their 2015 Final EIS. Wyoming only has approximately 4,000 acres of PHMA and approximately 20,000 acres of GHMA within MZ IV making their potential contribution to cumulative effects within the approximately 80 million-acre MZ IV negligible.

The portion of Utah within MZ IV is an isolated area with little or no development potential for fluid minerals and remains a ROW avoidance area and closed to wind energy development. The dominant use is livestock grazing. Grazing management would continue to follow the Standards for Rangeland Health and Guidelines for Grazing Management. Changes to Utah's Table 2-2 incorporate local science expected to benefit Greater Sage-Grouse by better ensuring proper grazing management. The reasonably foreseeable development scenario for the area predicts zero wells so the change to limited exceptions waivers and modifications are likely moot. The changes proposed in Utah's Proposed Plan Amendment would not add measurably to other actions occurring within the approximately 76 million-acre MZ IV.

Oregon's Proposed Plan Amendment would increase the number of acres available for grazing in MZ IV by 9,366 acres. Approximately 86 percent of those acres are in PHMA and 14 percent in GHMA. No other States within MZ IV are proposing changes to the number of acres available to livestock grazing. This change would affect 0.01 percent of the approximately 75.7 million-acre MZ and would be undetectable.

Nevada's Proposed Plan Amendment would not change the management direction and allowable land uses associated with each habitat management area. Nevada would also update their adaptive management process to ensure that the BLM is utilizing the best available science and decision support tools to guide management at the appropriate spatial scale. These changes would not measurably add to other actions occurring in MZ IV.

In Idaho, removal of the project disturbance cap would not result in any changes to management direction or land use decisions; rather, it would allow the BLM to cluster development in PHMA and IHMA only after meeting the anthropogenic disturbance screening criteria and the disturbance development criteria described in the Idaho plans. Lek buffer modifications would also not result in any allocation/use changes. Some lek buffers would be increased as a result of the Proposed Plan Amendment, but, in some cases, the lek buffers may be smaller than those identified in the No Action. However, the existing disturbance screening criteria and the disturbance development criteria would ensure that impacts from development activities in both PHMA and IHMA would not result in a net loss to Greater Sage-Grouse habitat.

Under the Proposed Plan Amendment in Idaho and Nevada the NSO without waivers, exceptions, or modifications would change to NSO with limited exceptions. The exception criteria are intended to ensure that projects are in unsuitable Greater Sage-Grouse habitat; do not result in direct, indirect, or cumulative impacts on Greater Sage-Grouse; or can be offset, with the exception of those needed for public health and safety. Therefore, there would be no appreciable additive impact from the

implementation of this action on Greater Sage-Grouse or the resources/uses analyzed, as compared with the No-Action Alternative.

Under the Proposed Plan Amendment, language would be added to Idaho, Nevada, Montana, Utah, and Wyoming to clarify how implementation-level decisions would be guided regarding mitigation, seasonal timing restrictions, and modifying habitat objectives to better align with state conservation plans and management strategies. As these updates did not result in any new identifiable direct or indirect impacts, there would be no appreciable additive impact from the implementation of this aspect on Greater Sage-Grouse or the resources/uses analyzed therein, as compared with the No-Action Alternative.

4.11.6 Cumulative Effects on Greater Sage-Grouse: Management Zone V

In addition to the analysis in the 2015 Final EIS, other anticipated incremental impacts are discussed below in association with planning issues being analyzed in the rangewide RMPA/EISs.

All changes in the extent of PHMA and GHMA and areas recommended for withdrawal within MZ V (Figure 4-1: Cumulative Effects Analysis Extent, Sage-Grouse Management Zones and Populations) occur under the Nevada/Northeastern California amendment.

Under the Proposed Plan Amendments, the percent of MZ V within Nevada and Northeastern California that is PHMA would increase by less than 1 percent, GHMA would decrease by 1 percent, and OHMA would decrease by 2 percent, as compared to the acreages identified in the No Action Alternative (**Appendix B**, **Table 50**, Habitat Management Areas within MZ V). The proposed change in habitat management area acres is based on adjustments made to the habitat model used to delineate habitat management areas and better alignment with the habitat management area delineations the State of Nevada adopted in December 2015. Following this habitat management area modification, planning level allocation decisions have also been adjusted to reflect the distribution of habitat in Nevada/Northeastern California. Future adjustments to habitat management areas in MZ V would be based on best available science and to align with the respective states' delineations for Greater Sage-Grouse habitat. These changes to habitat management areas with the Proposed Plan Amendment would have little to no cumulative effect on Greater Sage-Grouse populations and their habitat in the context of the entire MZ because the underlying habitat management area allocations designed to conserve Greater Sage-Grouse would not change.

In **Table 4-9**, acres and percentages reflect all lands. Percentages may not total to 100 percent due to rounding. All figures and tables are intended for MZ summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

In Oregon, the Proposed Plan Amendment would retain livestock grazing within key RNAs. Livestock grazing would be allowed on an additional 13,357 acres within the MZ. Under the Proposed Plan Amendment and No Action Alternative, 99 percent of PHMA, 98 percent of GHMA, and 100 percent of OHMA are available for livestock grazing. In the context of the 31,282,000-acre MZ, any effects to Greater Sage-Grouse populations from the proposed 0.04 percent increase in acres available to grazing

Table 4-9
Approximate Acres of Habitat Management Areas in MZ V

No Action				Management Alignment			
PHMA	**GHMA**	**OHMA**	**Non-HMA**	**PHMA**	**GHMA**	**OHMA**	**Non-HMA**
6,510,000	7,323,000	1,932,000	15,519,000	6,567,000	6,846,000	1,142,000	16,727,000

Approximate Percent of MZ V that are Habitat Management Areas							
No Action				**Management Alignment**			
PHMA	**GHMA**	**OHMA**	**Non-HMA**	**PHMA**	**GHMA**	**OHMA**	**Non-HMA**
21%	23%	6%	50%	21%	22%	4%	53%

would be undetectable. Well-managed grazing practices are compatible with sagebrush ecosystems and Greater Sage-Grouse persistence. However, Greater Sage-Grouse population response to grazing varies with local vegetation productivity, underscoring the need for long-term replicated grazing studies across the sagebrush ecosystem and within different ecological sites across the range of Greater Sage-Grouse to better understand the different effects of grazing on Greater Sage-Grouse habitat selection, vital rates, and population trends (DOI 2016). The Proposed Plan Amendment would reduce the opportunities within MZ V for studying grazing effects to Greater Sage-Grouse habitat.

A summary of potential cumulative impacts by proposed management action is presented below.

Cumulative impacts on Greater Sage-Grouse populations across MZ V resulting from the Proposed Plan Amendment would be consistent with those impacts described in the 2015 Final EIS for the then Proposed Plan Amendments because the Management Alignment Alternatives (Proposed Plan Amendments) changes from the No Action Alternative are minor and deal largely with anthropogenic disturbances. The greatest threats to populations in this MZ remain wildfire, invasive plants, and conifer encroachment.

BLM's Proposed Plan Amendments in MZ V are unlikely to preclude the reasonably foreseeable actions listed in **Appendix B** from proceeding. Overall, the Proposed Plan Amendments retain conservation measures in combination with continued proactive habitat restoration efforts being completed by private, local, state, and federal partners across the MZ. However, smaller populations, particularly those at the edge of the species range, would remain at highest risk of extirpation (Aldridge et al. 2008; Garton et al. 2011.), which the reasonably foreseeable actions may exacerbate as unplanned events such as wildfires, drought, and other natural disturbances lead to declines in Greater Sage-Grouse habitat quality.

No appreciable additive impacts are anticipated from updating the adaptive management process as described in the Proposed Plan Amendment. This update would ensure that the BLM is utilizing the best available science and decision support tools to guide management at the appropriate spatial scale, thus improving the BLM's assessment and response to ever-changing conditions that could affect Greater Sage-Grouse populations and/or habitat. Because any specific response to tripping a hard or soft trigger would be based on the causal factors responsible, presuming a specific response to unknown future conditions would be speculative at best and not reasonably foreseeable.

Under the Proposed Plan Amendment, the allocation exception process would be updated to simplify the various exemptions contained in the 2015 Final EIS. While the availability of exceptions to RMP allocations attached to PHMA and GHMA could increase the possibility of leasing, permitting, or ground-disturbing activities within a given habitat management area, the established criteria would ensure that projects are either in unsuitable Greater Sage-Grouse habitat; do not result in direct, indirect, or cumulative impacts on Greater Sage-Grouse; or can be offset, with the exception of those needed for public health and safety. Therefore, there would be no appreciable additive impact from the implementation of this action on Greater Sage-Grouse or the resources/uses analyzed herein, as compared with the No-Action Alternative.

Under the Proposed Plan Amendment, language would be added to Idaho, Nevada, Montana, Utah, and Wyoming to clarify how implementation-level decisions would be guided regarding mitigation, seasonal timing restrictions, and modifying habitat objectives to better align with state conservation plans and management strategies. As these updates did not result in any new identifiable direct or indirect impacts, there would be no appreciable additive impact from the implementation of this aspect on Greater Sage-Grouse or the resources/uses analyzed herein, as compared with the No-Action Alternative.

4.12 Irreversible and Irretrievable Commitment of Resources

Section 102(2)(C) of NEPA requires a discussion of any irreversible or irretrievable commitments of resources from an alternative, should it be implemented. An irreversible commitment of a resource is one that cannot be reversed, such as the extinction of a species or loss of a cultural resource site without proper documentation. An irretrievable commitment of a resource is one in which the resource or its use is lost for a period of time, such as extraction of oil and gas.

Should oil and gas deposits underlying Greater Sage-Grouse habitat be extracted, that oil and gas resource would be lost.

4.13 Unavoidable Adverse Impacts

Section 102(C) of the NEPA requires disclosure of any adverse environmental impacts that could not be avoided should the proposal be implemented. Unavoidable adverse impacts are those that remain following the implementation of mitigation measures, or impacts for which there are no mitigation measures. Some unavoidable adverse impacts happen from implementing the RMPA/EIS; others are a result of public use of BLM-administered lands in the planning area.

This section summarizes major unavoidable impacts discussions of the impacts of each management action (in the discussion of alternatives) and provides greater information on specific unavoidable impacts.

Surface-disturbing activities would result in unavoidable adverse impacts. Although these impacts would be mitigated to the extent possible, unavoidable damage would be inevitable under both the No-Action Alternative and the Proposed Plan Amendment.

Impacts from permanent conversion of areas to other uses, such as transportation and mineral and energy development or off-highway vehicle use, would be greater under the Proposed Plan Amendment, but overall minimal for both alternatives. Both the No-Action Alternative and the Proposed Plan

Amendment would place restrictions on many types of development, which would most likely result in fewer visual intrusions and fewer instances of unavoidable wildlife habitat loss.

Wildlife, livestock, wild horses and burros, and other herbivores consume vegetation and affect soils through hoof action and possible compaction. When these impacts are kept at appropriate levels, natural processes such as plant growth and recovery, freeze-thaw periods, and microbial activity in the soil surface result in recovery from these impacts and maintain site stability and health. Vegetation treatments promoting recovery of Greater Sage-Grouse habitats would result in the destruction of the target species, be it annual grass, noxious weed, or encroachment of juniper. Some level of competition for forage between wildlife, livestock, and wild horses would occur. Instances of displacement, harassment, and injury to these species could also occur. Both the No-Action Alternative and the Proposed Plan Amendment would place restrictions on development and surface-disturbing activities, which would minimize the likelihood of displacement, harassment, and/or injury.

Development of mineral resources and general use of the decision area would introduce additional ignition sources into the planning area, which would increase the probability of wildland fire and the need for its suppression. These activities, combined with continued fire suppression, would also affect the overall composition and structure of vegetation communities; this could increase the potential for high-intensity wildland fires. Restrictions on development under both alternatives would be expected to decrease the potential for ignitions in the decision area; however, impacts would be greater under the No-Action Alternative.

Numerous land use restrictions imposed throughout the decision area to protect Greater Sage-Grouse habitat and other important values, by their nature, affect the ability of operators, individuals, and groups who use the public lands to do so without limitations. Although attempts would be made to minimize these impacts, unavoidable adverse impacts could occur under the No-Action Alternative or the Proposed Plan Amendment.

4.14 Relationship Between Local Short-Term Uses and Long-Term Productivity

Section 102(C) of NEPA requires a discussion of the relationship between local, short-term uses of human environment and the maintenance and enhancement of long-term productivity of resources. As described in the introduction to this chapter, short term is defined as anticipated to occur within the first 5 years of implementation of the activity and long term as lasting beyond 5 years to the end of or beyond the life of this RMPA/EIS.

Surface-disturbing activities, including transportation and utility corridor construction, and mineral resource development would result in the greatest potential for impacts on long-term productivity. Management prescriptions and RDFs are intended to minimize the effect of short-term commitments and to reverse change over the long term. These prescriptions and the associated reduction of impacts would be greater under the No-Action Alternative for resources such as vegetation and wildlife habitat; however, some impacts on long-term productivity might occur, despite the prescriptions intended to reduce impacts on Greater Sage-Grouse and its habitat.

ROWs and short-term use of an area to foster energy and mineral development would result in long-term loss of soil productivity and vegetation diversity. Impacts would persist as long as surface

disturbance and vegetation loss continue. In general, the loss of soil productivity would be directly at the point of disturbance; even so, long-term vegetation diversity and habitat value could be reduced due to fragmentation and the increased potential for invasive species to spread from the developments or disturbances. Both the No-Action Alternative and the Proposed Plan Amendment would provide for long-term productivity through restrictive allocations that limit development in many areas and through the application of other restrictions on development, such as disturbance caps, RDFs, and other management prescriptions.

ROWs and the short-term use of Greater Sage-Grouse habitat for energy and mineral development could impair the long-term productivity of Greater Sage-Grouse and its habitat and that of other species. This would occur by displacing species from primary habitats and removing components of these habitats that might not be restored for 20 years or longer. These short-term uses could also affect the long-term sustainability of some special status species. The potential for these impacts, however, would be minimal under both the No-Action Alternative and the Proposed Plan Amendment. The short-term resource uses associated with mineral development (oil and gas seismic exploration, natural gas test well drilling, and the noise associated with these activities) would have adverse impacts on the long-term productivity of Greater Sage-Grouse and its habitat. This would be the case if these resource uses were to infringe on Greater Sage-Grouse seasonal habitats such as nesting, brood-rearing, and winter habitats. These activities, though short-term individually, could have collective long-term impacts on Greater Sage-Grouse and its habitat if they were to increase in the long term.

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Chapter 5. Consultation and Coordination

5.1 Public Involvement During the 2020 NEPA Process

5.1.1 Public Comments on the DSEIS

The BLM accepted comments on the DSEIS for 90 days after the NOA publishes in the *Federal Register*.

5.2 American Indian Tribal Consultation

Various federal laws require the BLM to consult with American Indian tribes during the NEPA process. This section documents the specific consultation and coordination undertaken throughout the process of developing the 2018 Final EIS. No new consultation is being initiated because no new decisions are being considered as the FSEIS solely updates NEPA analysis to clarify the approach taken in the 2018 Final EIS.

Shortly after the October 2017 NOI, the Oregon BLM invited the following tribes to consult on the potential plan amendment:

- Burns Paiute Tribe
- Confederated Tribes of the Warm Springs
- Modoc Tribe of Oklahoma
- Confederated Tribes of the Colville Reservation
- Shoshone-Bannock Tribes of Fort Hall
- Fort McDermitt Paiute Tribe
- Nez Perce Tribe
- Shoshone-Paiute Tribes of Duck Valley
- Confederated Tribes of the Umatilla Indian Reservation
- Fort Bidwell Indian Community
- Klamath Tribes

On November 6, 2017, two tribes met (in person or via phone) with the Oregon BLM at the Burns Paiute Tribe Community Center in Burns, Oregon, to provide additional information about the potential amendment process. On March 8, 2018, the Oregon BLM invited the same 11 tribes to become NEPA cooperating agencies and hosted a teleconference to provide additional information on March 30, 2018. One tribe called in to the teleconference and asked for additional information, but did not request to become a cooperating agency.

5.3 List of Preparers

An interdisciplinary team of staff from the BLM, in collaboration with Environmental Management and Planning Solutions, Inc. prepared the SEIS.

Name	Role/Responsibility
Jonathan Beck	Team Lead
Ryan Hathaway	Team Lead *(former)*
Glenn Frederick	BLM Oregon State Office Greater Sage-Grouse Biologist

Name	Role/Responsibility
Molly Anthony	Greater Sage-Grouse State Implementation Lead
Robert Hopper	Livestock Grazing
Jim Regan-Vienop	BLM Oregon Planning and Environmental Coordinator

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Glossary

Adaptive management. A type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices.

Amendment. The process for considering or making changes in the terms, conditions, and decisions of approved Resource Management Plans or management framework plans. Usually only one or two issues are considered that involve only a portion of the planning area.

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

Cooperating agency. Assists the lead federal agency in developing an environmental assessment or environmental impact statement. These can be any agency with jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any tribe or Federal, State, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

Council on Environmental Quality (CEQ). An advisory council to the President of the US established by the National Environmental Policy Act of 1969. It reviews federal programs to analyze and interpret environmental trends and information.

Cumulative effects. The direct and indirect effects of a proposed project alternative's incremental impacts when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action.

Decision area. Public lands and mineral estate managed by the US Department of Interior, Bureau of Land Management that are within the planning area and are encompassed by all designated habitat.

Direct impacts. Direct impacts are caused by an action or implementation of an alternative and occur at the same time and place.

Environmental impact statement (EIS). A detailed statement prepared by the responsible official in which a major federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action are provided, and effects are analyzed.

General Habitat Management Area (GHMA). Areas of seasonal or year-round Greater Sage-Grouse habitat outside of priority habitat.

Geographic Information System (GIS). A system of computer hardware, software, data, people, and applications that capture, store, edit, analyze, and display a potentially wide array of geospatial information.

Habitat. An environment that meets a specific set of physical, biological, temporal, or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycle.

Impact. The effect, influence, alteration, or imprint caused by an action.

Indirect impacts. Indirect impacts result from implementing an action or alternative but usually occur later in time or are removed in distance and are reasonably certain to occur.

Lek. An arena where male sage-grouse display for the purpose of gaining breeding territories and attracting females. These arenas are usually open areas with short vegetation within sagebrush habitats, usually on broad ridges, benches, or valley floors where visibility and hearing acuity are excellent.

Long-term effect. The effect could occur for an extended period after implementation of the alternative. The effect could last several years or more.

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

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

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

Modification. A change to the provisions of a lease stipulation, either temporarily or for the term of the lease. Depending on the specific modification, the stipulation may or may not apply to all sites within the leasehold to which the restrictive criteria are applied.

Planning area. The geographical area for which resource management plans are developed and maintained regardless of jurisdiction.

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

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

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

Priority Habitat Management Areas (PHMA). Areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations; they include breeding, late brood-rearing, and winter concentration areas.

Resource management plan (RMP). A land use plan as prescribed by the Federal Land Policy and Management Act that establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, objectives, and actions to be achieved.

Short-term effect. The effect occurs only during or immediately after implementation of the alternative.

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Appendix A

Additional RNA Information

Appendix A. Additional RNA Information

The following consists of additional information about the 15 key RNAs other than vegetation information. Information about wildlife species other than Bureau sensitive species is not included. This information is contained in establishment reports, final environmental impact statements for district RMPs, and management plans concerning each RNA. Each report or plan varies in its level of detail, and some information may be outdated. Although an establishment report identifies the values, opportunities, and threats related to establishing an RNA, it is the District RMP that sets the land use allocation and management directions for the RNA. The following information summarizes the original establishment reports. Changes to management within the RNAs, including livestock grazing under BLM 4100 regulations (2005), have occurred and current conditions are described in **Chapter 3**.

Black Canyon RNA is located in Allotment #4 of the Malheur Resource Area. It includes redband trout and Columbia spotted frogs in the stream and was nominated for inclusion in the wild and scenic river system. Livestock tend to be concentrated near Antelope Spring, where water is provided. Potential trampling and overgrazing by livestock were identified as a threat to the condition of the vegetation community (BLM 1996a).

Dry Creek Bench RNA is located within the Twelvemile Creek Wilderness Study Area (WSA) and 15 Mile Community Allotment of the Malheur Resource Area. The BLM is managing portions of the RNA for Lahontan cutthroat trout habitat (BLM 1996b).

East Fork Trout Creek RNA is located in the Andrews Resource Area in the headwaters of the East Fork of Trout Creek and within the Mahogany Ridge WSA. Special status species present include Greater Sage-Grouse, ferruginous hawk, northern goshawk, and Columbia spotted frog. The RNA lies within the Trout Creek Mountain Allotment, with limited grazing in August and September. The 2007 East Fork of Trout Creek RNA management plan states "Livestock grazing is currently allowed within a small portion of the RNA from August 1- August 31, and the remaining portion for 5 days in September. Grazing is not compatible with the preservation of the key plant communities within the natural area so it is controlled to protect the most vulnerable plant communities. The current situation [i.e., limited grazing] is adequate to protect the values of the RNA plan." (BLM 2007).

Fish Creek Rim RNA in located within the Fish Creek Rim WSA in the Lakeview Resource Area. Livestock grazing is permitted in the several allotments that the RNA straddles, although lack of water tends to limit use except near two waterholes and along the small intermittent stream (TNC 1992). The RNA includes archaeological sites and culturally significant plants, such as *Lomatium* spp., *Calochortus* spp., onions, and bitterroot (BLM 2000), along with the rare cryptantha owl's-clover (*Orthocarpus cuspidatus* ssp. *Cryptanthus*; TNC 1992).

Foley Lake RNA is located in the Lakeview Resource Area. Livestock grazing is permitted, although an exclosure in the seasonally wet lake protects a population of the sensitive plant Columbia rockcress (*Rorippa columbiana*). The RNA also contains several archaeological sites (BLM 2000).

Foster Flat RNA is located in the Warm Springs Herd Management Area in the Three Rivers Resource Area and closed to grazing for both livestock and wild horses. The playa is the dominant feature, and the

RNA includes the sensitive species desert combleaf (*Polyctenium fremontii* var. *confertum*) and pygmy rabbit (Taylor 2004).

Guano Creek-Sink Lakes RNA is located in the Guano Creek WSA in the Lakeview Resource Area adjacent to Hart Mountain Antelope Refuge and to Billy Burr Lake, which is owned by The Nature Conservancy. It includes cultural resources and two sensitive plant species: grimy ivesia (*Ivesia rhypara* var. *rhypara*) and Crosby's buckwheat (*Eriogonum crosbyae*; BLM 2000).

Lake Ridge RNA is located in the Camp Creek WSA and Jonesboro Allotment in the Malheur Resource Area. Greater Sage-Grouse use the area. Areas near water sources have been overgrazed and trampled, but otherwise grazing use appears to be light. Restricting livestock and off-highway vehicle use was recommended in the establishment report (BLM 1996c).

Mahogany Ridge RNA is located in the Malheur Resource Area and in the Mahogany Mountain Allotment. Cattle use was deemed light and to not have affected the vegetation, although changes in livestock use were identified as a possible threat. The RNA provides summer habitat for broad-tailed hummingbird and other neotropical migratory birds. An addition in 1996 added considerable acreage of mountain big sagebrush/bluebunch wheatgrass plant community (BLM 1996d).

North Ridge Bully Creek RNA is located in the Ritchie Flat Allotment in the Malheur Resource Area. Livestock use was considered restricted due to limited availability of water, although the establishment report recommended restricting off-highway vehicle and livestock use. A central portion burned in a wildfire prior to 1996, but the year and name of the wildfire were not identified. Bunchgrasses were reported as thriving after the fire (BLM 1996e).

Rahilly-Gravelly RNA encompasses the Rahilly-Gravelly Allotment in the Lakeview Resource Area near the Nevada-Oregon state line. Livestock grazing has been light on the upper slopes due to lack of water but much heavier around Cahill Reservoir (TNC 1992). It contains several archaeological sites and all four Oregon populations of Cooper's goldflower (*Hymenoxys cooperi* var. *canescens*; BLM 2000).

South Bull Canyon RNA is located in the Boney Basin Allotment in the Malheur Resource Area. The establishment report identifies livestock grazing as a threat to specific plant communities within the RNA as well as off-road vehicle travel (BLM 1996f).

South Ridge Bully Creek RNA is located in the Malheur Resource Area in an unidentified allotment, but likely the same allotment as North Ridge Bully Creek since these two RNAs are adjacent. Limited water availability appears to limit use by livestock. The area also supports loggerhead shrike and apparently burned in the same fire prior to 1996 that affected North Ridge Bully Creek (BLM 1996 g).

Spring Mountain RNA in located in the Spring Mountain Allotment in the Malheur Resource Area. The area may support spotted frogs (BLM 1996h).

Toppin Creek Butte RNA is located in the Anderson Allotment in the Malheur Resource Area, straddles Lookout Butte and Owyhee Canyon WSAs, and is between two wild and scenic river corridors. Breeding bird surveys indicate this RNA may contain one of the most complete Great Basin avian communities, including Greater Sage-Grouse (BLM 1996i).

Appendix B

Cumulative Effects Supporting Information

Appendix B. Cumulative Effects Supporting Information

B.1 Rangewide Impacts from Past, Present, and Reasonably Foreseeable Actions

Table 1 represents the past, present, and reasonably foreseeable actions across the entire range for Greater Sage-Grouse, which are separated by state. When assessing the cumulative impact of the RMPA/EIS on Greater Sage-Grouse and its habitat, there are multiple geographic scales that the BLM has considered, including the appropriate WAFWA MZ. WAFWA MZs have biological significance to Greater Sage-Grouse. Established and delineated in 2004 in the *Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats* (Connelly et al. 2004), the WAFWA MZs are based on floristic provinces that reflect ecological and biological issues and similarities, not political boundaries.

Table 1
Rangewide Impacts from Past, Present, and Reasonably Foreseeable Actions

Action	Type	Effects
Great Basin		
Habitat Restoration Programmatic EIS	Great Basin-wide programmatic habitat restoration project	Programmatic document effects will be realized when the field implements projects. This action will provide opportunities to improve and enhance habitat through vegetation treatments.
Fuel Breaks Programmatic EIS	Great Basin-wide programmatic habitat fuel break project	Programmatic document effects will be realized when the field implements projects. This action will help to reduce the loss of habitat due to catastrophic fires.
Forest Service Greater Sage-Grouse Plan Amendments	Programmatic LUP amendments for Greater Sage-Grouse on Forest Service Lands in ID, UT, NV, CO, and WY	Programmatic document effects will be realized when the field undertakes projects to implement the LUP amendment. The FS is resolving protests. They have not made a decision.
Northwest Colorado		
Integrated program of work	Habitat restoration and improvement projects	Potential localized, short-term, adverse impacts on Greater Sage-Grouse habitat, with beneficial long-term impacts. Actions are consistent with those foreseen in the 2015 Final EIS and are therefore within the range of cumulative effects analyzed in the 2015 Final EIS.
Travel management	White River Field Office: Area-wide travel designations being considered through an ongoing plan amendment Little Snake Field Office: Travel Management plan, identifying route designations consistent with criteria in the 2015 LUPA	These actions represent implementation of objectives from 2015 ARMPA to prioritize travel management in Greater Sage-Grouse habitat. Impacts are covered in the cumulative impacts of the 2015 Final EIS as reasonably foreseeable.

Action	Type	Effects
Continued oil and gas development (60 parcels sold, but under review, September 2019; Deferral of 6 parcels December 2019 lease sale; Deferral of 39 parcels in March 2020 lease sale; Potential lease of 1 parcel September 2020; Potential lease of 18 parcels December 2020).	Disturbance and fragmentation	Development is consistent with the reasonably foreseeable development scenarios analyzed as part of the 2015 Final EIS and the associated field office RMPs. Additional impacts are expected to be within the range analyzed in 2015 Final EIS cumulative impacts analysis.
Plans		
Northwest Colorado Programmatic Vegetation Treatment Environmental Assessment (DOI-BLM-CO-N000-2017-0001-EA) decision	Programmatic NEPA document for streamlining habitat treatments in sagebrush	-
Idaho		
Wildland fires 2015–2017	BLM: Past acres burned on BLM-administered land	534,744 acres of HMA burned since the ROD was signed in 2015. Post-fire rehabilitation was implemented. Too soon to determine the effectiveness of rehabilitation.
Habitat treatments 2015–2017	BLM: Past habitat improvement projects	431,295 acres treated to restore or improve potential Greater Sage-Grouse habitat. Too soon to determine the effectiveness of treatment.
ROWs issued 2015–2017	BLM: Past ROWs issued on BLM-administered land	97 ROWs were issued in the planning area but fewer than 10 were in Greater Sage-Grouse habitat and resulted in new habitat loss. The effects were mitigated, using the mitigation hierarchy.
Soda Fire restoration	BLM: Present habitat restoration and fuel break construction	Restoration of previously burned Greater Sage-Grouse habitat. Results in a net benefit to Greater Sage-Grouse habitat.
Twin Falls Vegetation Project	BLM: Present habitat treatment project that improves Greater Sage-Grouse habitat district-wide	Restoration of Greater Sage-Grouse habitat and improved rangeland conditions. Results in a net benefit to Greater Sage-Grouse habitat.
Idaho Falls Vegetation Project	BLM: Present habitat treatment project that improves Greater Sage-Grouse habitat district-wide	Restoration of Greater Sage-Grouse habitat and improved rangeland conditions. Results in a net benefit to Greater Sage-Grouse habitat.
Natural gas-producing well near Weiser, Idaho	Private: Present active gas well on private land	Well is not in Greater Sage-Grouse habitat.
Conifer removal	NRCS: Present (2018) 1,862 acres of conifer removal on private land to improve Greater Sage-Grouse habitat	Conifer removal would improve Greater Sage-Grouse habitat and open areas to Greater Sage-Grouse that were previously unavailable because of juniper encroachment.

Action	Type	Effects
Weed treatments	NRCS: Present (2018) 95 acres of weed treatments on private land to reduce noxious weeds in Greater Sage-Grouse habitat	Weed treatments allow the native vegetation to outcompete weeds on treated acres.
Water development	NRCS: Present (2018) 21,308 feet of pipeline and 40 watering tanks installed on private land	Water development to move livestock out of natural springs and wet meadows.
Pending ROWs 2015–2017	BLM: Future ROW under analysis on BLM-administered land. For example, ROWs include existing distribution lines, gravel pits, roads, canal diversions, etc.	123 ROW applications have been submitted and are pending review and analysis.
Boise District Vegetation Project	BLM: Future habitat treatment project that improves Greater Sage-Grouse habitat district-wide	Restoration of Greater Sage-Grouse habitat and improved rangeland conditions result in a net benefit to Greater Sage-Grouse habitat.
Tristate Fuel Breaks Project	BLM: Future Greater Sage-Grouse habitat protection	Fuel breaks would protect habitat from wildfires. Some sagebrush may be lost during fuel break construction. Results in a net benefit to Greater Sage-Grouse habitat.
Bruneau-Owyhee Sage-Grouse Habitat Project	BLM: Ongoing removal of juniper encroaching into Greater Sage-Grouse habitat	Bruneau-Owyhee Sage-Grouse Habitat Project would remove encroaching juniper from Greater Sage-Grouse habitat and render the habitat usable for Greater Sage-Grouse. Results in a net benefit to Greater Sage-Grouse habitat.
Conifer removal	NRCS: Future (2019–2023) 5,541 acres of conifer removal on private land to improve Greater Sage-Grouse habitat	Conifer removal would improve Greater Sage-Grouse habitat and open areas to Greater Sage-Grouse that were previously unavailable because of juniper encroachment.
Weed treatments	NRCS: Future (2019–2023) 357 acres of weed treatments on private land to reduce noxious weeds in Greater Sage-Grouse habitat	Weed treatments allow the native vegetation to outcompete weeds on treated acres.
Water development	NRCS: Present (2019–2023) 82,502 feet of pipeline and 46 watering tanks installed on private land	Water development to move livestock out of natural springs and wet meadows.
Nevada and Northeast California		
Wildland Fires 2015-2017	BLM: Past – Acres burned on BLM administered land	Approximately 1.3 million acres of HMA burned between 2015-2017. Post-fire restoration is being implemented as described below.
Fire Restoration (Emergency Stabilization and Rehabilitation)	BLM: Past and Present – Habitat restoration following wildland fires	1.8 million acres of habitat are either currently being treated or scheduled to be treated according to specific prescriptions outlined in Emergency Stabilization and Burned Area Rehabilitation plans following wildfire.

Action	Type	Effects
Habitat Treatments	BLM: Past – Habitat improvement projects	Over 176,000 acres of Greater Sage-Grouse habitat was treated between 2015-2017 to maintain or improve conditions for Greater Sage-Grouse. Treatments included conifer removal, fuel breaks, invasive species removal and habitat protection/restoration.
Land Use and Realty (issued and pending) 2015-2018	BLM: Past ROWs issued on BLM land	227 ROWs were issued in the planning area between 2015-2017. This includes amendments and reauthorizations, which may not have resulted in new disturbance. For ROWs occurring in Greater Sage-Grouse habitat, effects were offset using the mitigation hierarchy.
	BLM: Future pending	90 ROW applications are pending review and analysis. New ROWs would be held to the compensatory mitigation process described in this Proposed RMPA/Final EIS. However, no additional impacts from those described in the Draft EIS and 2015 Final EIS are expected. In addition, BLM Nevada is also currently evaluating a proposed withdrawal for expansion of the Fallon Naval Air Station, Fallon Range Training Complex for defense purposes.
Oil and Gas	BLM: Past	BLM has offered for lease 425,711 acres in HMAs; 407,478 of that total was leased. Lease stipulations apply as described in the leases according to HMA category.
	BLM: Past and Future	BLM's scheduled lease sale on June 12, 2018 included offering a total 110,556 acres of HMAs for lease. After the sale, 30,591 acres in HMA were sold. On September 11, 2018, BLM held another lease sale, where 13,163 acres in HMA were sold. The final lease sale of 2018 for BLM Nevada is scheduled for December 11, 2018 and this sale will not include any parcels within HMA for lease. 165 parcels have been moved from the November 12, 2019 O&G lease sale, New sale date TBD. These parcels are all located in the Ely District. 220 parcels within Greater Sage-Grouse habitat have been moved to April 2020 lease sale.

Action	Type	Effects
Geothermal	BLM: Past and Present	Between 2015 and 2017, the BLM has offered for lease 24,468 acres within HMAs. Lease stipulations apply as described in the leases as analyzed in the 2015 Final EIS. Six geothermal development permits have been approved and drilled on existing pads on existing leases. McGinness Hills Phase 3 Environmental Assessment authorized up to 42 acres of disturbance on existing leases, which will be offset according to the mitigation hierarchy. Juniper Geothermal Project: Proposed activity – still waiting for baseline data to begin the EA. Analysis has not yet started but EA will analyze the 2015 and 2019 habitat types under separate alternatives. North Valley (San Emidio II) Geothermal Development Project. Analysis has not yet started but EA will analyze the 2015 and 2019 habitat types under separate alternatives. Baltazor Geothermal Project Pre NEPA. Analysis has not yet started but EA will analyze the 2015 and 2019 habitat types under separate alternatives. North Valley (San Emidio II) Geothermal Development Project
Geothermal	Forest Service: Future Pending	6,901 acres of HMA pending Forest Service concurrence to lease, no pending geothermal development permits. If in HMAs, stipulations would be as described in 2015.
Locatable Mineral Projects	BLM: Past and Present	Between 2015 and 2017, the BLM has approved 18 new mines and/or expansions in the planning area, which is within the reasonably foreseeable development scenario outlined in the 2015 Final EIS (Section 5.1.16).
	BLM: Future Pending	The BLM is currently reviewing 20 plans of development for new mines or expansions, which is within the reasonably foreseeable development scenario outlined in the 2015 Final EIS (Section 5.1.16).
Fuel Breaks Programmatic EIS	BLM: Future – Great Basin-wide programmatic habitat fuel break project	Programmatic document effects will be realized when the field implements projects.

Action	Type	Effects
Greater Sage-Grouse Conservation	Forest Service- Future	Forest Service has indicated they will also be amending their land use plans. Specific details of their proposed changes are not yet known, but it is anticipated they propose alignment with state management plans and strategies.
Tri-State-Calico Complex Wild Horse and Burro Gather	BLM: Future	Removing wild horses will protect the rangelands from overgrazing and provide better habitat conditions for sage-grouse.
Thomas Creek Range Improvement Project (CA)	BLM: Future	Vegetation improvement project to improve the range for sage-grouse and other sage obligate species.
Juniper and Fuel Break Maintenance (CA)	BLM: Future	Juniper removal and fuelbreak project to remove encroaching juniper and protect the treatments with from wildfire.
Twin Peaks Horse Gather (CA)	BLM: Future	Removing wild horses will protect the rangelands from overgrazing and provide better habitat conditions for sage-grouse.
Oregon		
Emergency Stabilization and Rehabilitation in South Bull Ridge RNA	Aerial herbicide application	Preliminary results indicate success in treating annual grasses (2017).
Emergency Stabilization and Rehabilitation in South Ridge Bully Creek RNA	Aerial herbicide application	Preliminary results indicate success in treating annual grasses (2015).
Emergency Stabilization and Rehabilitation in North Ridge Bully Creek RNA	Aerial herbicide application	Preliminary results indicate success in treating annual grasses (2015).
Trout Creek Mountain	Grazing permit renewal	Grazing permit renewal allotment includes the East Fork Trout Creek Research Natural Area (2016).
Louse Creek Canyon Grazing Permit EIS	Grazing permit on 550,000 acres	Notice of Intent to prepare an EIS on grazing permit for 550,000 acres in Vale District (NOI September 2019)
Southeastern OR RMP Amendment	Wilderness, Wilderness characteristics	Draft EIS released for public review May 2019.
Lakeview RMP Amendment	Wilderness, Wilderness characteristics	Draft EIS anticipated August 2020.
Tristate Fuel Breaks Project	See Idaho description.	OR ROD to be completed/signed after Southeastern OR RMP amendment is completed.
Lakeview Resource Area Vegetation Management EA	Comprehensive vegetation management plan for the Lakeview Resource Area.	In development.

Action	Type	Effects
Utah		
Fire and Fuels		
Wildland Fires 2015-2017	Acres burned on BLM administered land	Approximately 181,159 acres of PHMA/GHMA burned between 2015-2019. Post-fire restoration is being implemented across all population areas that are affected. Effects: Potential loss of habitat value due to the removal of vegetation by fire.
Fire Restoration (Emergency Stabilization and Rehabilitation)	Acres of habitat restoration following wildland fires	Approximately 380,704 acres of HMA were treated/restored between 2015-2019. All of these acres are being restored in according to specific prescriptions outlined in Emergency Stabilization and Burned Area Rehabilitation plans following wildfire across all population areas that are affected. Effect: Potentially improve or increase habitat due to vegetative restoration activities.
Vegetation		
Habitat Treatments	Acres of habitat improvement projects	Past: Over 270,000 acres of Greater Sage-Grouse habitat was treated between 2015-2019 to maintain or improve conditions for Greater Sage-Grouse across all populations. Treatments included conifer removal, fuel breaks, invasive species removal and habitat protection/restoration. Effect: Potentially improve or increase habitat due to vegetative restoration activities. Future: Over 524,702 acres of Greater Sage-Grouse habitat is being proposed for treatment over the next 5 years. Treatments will include conifer removal, fuel breaks, invasive species removal and habitat protection/restoration across all populations. Effect: Potentially improve or increase habitat due to vegetative restoration activities.

Action	Type	Effects
Lands and Realty		
Land Use and Realty (issued and pending) 2015-2019	ROWs issued or pending on BLM land	Past: Throughout the planning area (all BLM field offices in Utah except Saint George and Monticello) regardless of Greater Sage-Grouse habitat, 1,092 ROWs were issued between 2015 and 2019. However, only 109 of these were within PHMA. Effect: These numbers include amendments and reauthorizations, which would likely not have resulted in any new disturbance. For ROWs occurring in Greater Sage-Grouse habitat, effects were offset using the mitigation hierarchy. Future: Throughout the entire planning area, 225 ROW applications are pending review and analysis. Of these, only 30 are within PHMA. Effect: New ROWs would be held to the compensatory mitigation process described in this Proposed RMPA/Final EIS. However, no additional impacts from those described in the Draft EIS and 2015 Final EIS are expected.
Zephyr Transmission Line	500 kV transmission line	Application received – could impact the Bald Hills, Uintah, Carbon, Strawberry, Emery, and Sheeprocks populations. Effects: May remove vegetation due to construction activities. Towers may provide perching opportunities for avian predators. However, most of these impacts should be removed by management standards identified in the selected alternative.
Enefit Utility Project	Five rights-of-way across public lands for infrastructure (a road, 3 pipelines, and 2 powerlines) to support development of a mine on private lands. Estimated 1,037 acres of disturbance for the rights-of-way (7,000-9,000 acre mine and 320-acre processing plant).	ROD issued in September 2018. Issuance and constructions of ROWs still pending – could impact a portion of the Uintah population (Dead Man Bench GHMA). Effects: May remove vegetation due to construction activities. Increased maintenance activities could lead to an increase in collision mortalities. Any associated tall structures may provide perching opportunities for avian predators. However, most of these impacts should be removed by management standards identified in the selected alternative.

Action	Type	Effects
Congressionally Directed Land Tenure Adjustments	Land Tenure Adjustments from the BLM to the State of Utah	Table 1-2 in Chapter 1 shows the acres of public land with mapped PHMA and GHMA, establishing the summary of all past lands actions. In the National Defense Authorization Act for Fiscal Year 2017 Congress directed a land exchange between the BLM and State Institution and Trust Lands Administration (SITLA). This includes, approximately 2,400 acres of GHMA in the Sheeprocks area being studied for transfer to the State of Utah. In March 2019 Congress provided for land transfers in the John D. Dingell, Jr. Conservation, Management, and Recreation Act. This could include the BLM acquiring 2,065 acres of PHMA and 1,360 acres of GHMA in the Uinta population. It could also include the transfer of SITLA land in Congressional designations outside of Greater Sage-Grouse habitat for BLM lands throughout the state. While the list of involved lands has not been finalized, preliminary potential parcels include approximately 51,400 acres of PHMA and 1,870 acres of GHMA in the Rich, Carbon, Emery, Uinta, and Sheeprocks populations. Effects: Since compliance with the state's 2019 sage-grouse plan and the Governor's Executive Order on sage-grouse is voluntary for SITLA, transfers of PHMA from BLM would decrease the level of certainty for sage-grouse protection. However, since the lands involved in these Congressionally directed transfers has not been finalized at this time, the specific lands involved and, if transferred, their potential future uses are not known. It would be speculative to analyze beyond the above statement.

Action	Type	Effects
Leasable Minerals (Oil and Gas, Non-energy Leasable Minerals, Coal, and Oil Shale and Tar Sands)		
Oil and Gas Leases	Acres of BLM land leased for Oil and Gas development	Past: There are approximately 411,000 acres of PHMA and GHMA currently leased for fluid minerals. Approximately 195,000 acres of those leases are held by production. Effects: The act of leasing would have no direct effect, as no specific disturbance is taken as a result of purchasing a lease. Future: The BLM is required to conduct quarterly lease sales which could include parcels in HMA. Effect: The act of leasing would have no direct effect, as no specific disturbance is taken as a result of purchasing a lease. Leasing could occur in any of the populations, but would be most likely to impact the Uintah, Carbon, Emery, and Rich populations due to mineral potential.
Oil and Gas Wells	Oil and Gas exploration and development	Based upon the reasonable and foreseeable development assumptions in **Chapter 4**, it is anticipated that 2,968 oil and gas wells will be drilled within occupied Greater Sage-Grouse habitat within the population areas, of which 2,289 wells are anticipated to be producing wells. Exploration wells expected in all populations. Development wells anticipated in Uintah, Carbon, Emery, and Rich populations. This estimate would be inclusive of all related mineral development activities, including leasing, full-field development analyses, and APD analyses. Development associated with such actions is the actualization of the reasonably foreseeable development scenario estimate. Effect: The development of wells within these areas could lead to fragmentation and loss of habitat due to construction activities. Increased noise levels associated with traffic and compressors may impact lek attendance. Increased traffic associated with day-to-day operations may also increase the potential for collision mortality. However, most of these impacts should be removed by management standards identified in the selected alternative.

Action	Type	Effects
Asphalt Ridge Tar Sands Development	Lease approximately 6,000 acres of Tar Sands Lands described in the Asphalt Ridge Tract, which is directly adjacent to existing approximately 16,000 acres of State leases	Still in planning and NEPA stages – could impact a small portion of the Halfway Hollow portion of the Uintah population near Vernal and Highway 40. Effect: As a largely underground operation on BLM-administered lands, this would disturb a small amount of land associated with ancillary features. On the portions of the mine that would be mined through surface means, habitat would be lost and noise, dust, and light would affect adjacent areas.
Flat Canyon Coal Lease by application	The Flat Canyon Coal Lease Tract is approximately 2, 692 acres of federal coal reserves	Forest Service completed the consent to BLM. Approximately 23 acres out of the 2,692 acres are within the Emery Population Area. Effect: The act of leasing would have no direct effect. However, the activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.
Alton Coal Tract Lease-by-Application	Add 3,576 acres of federal surface or mineral estate to existing 300-acre mine on private land.	ROD issued in August 2018. The lease sale and issuance was completed in February 2019, and as such was developed to be in conformance with the 2015 Utah Greater Sage-Grouse ARMPA. As described in the July 2018 Alton Final EIS, development of the mine could impact a part of the southern habitat in the Panguitch population. Effect: Activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative, or offset by habitat improvements.
Williams Draw Coal Lease by Application	The proposed action includes 4,200 acres of federal surface and mineral estate; the proposal may have several vents, drilling exploration holes on the surface and underground, and load-out facilities	Still in planning and NEPA stages; could impact the Carbon population. Effect: The act of leasing would have no direct effect. However, the activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.

Action	Type	Effects
Greens Hollow Coal Lease by Application	Proposal includes 6,700 acres; a vent is proposed off site; minimal surface disturbances with the exception for exploration drilling	The area has been leased, but development is on hold due to litigation. Would affect the Emery population. Effect: This is an expansion of an existing underground mine. Activities associated with development of the lease could result in the loss of a small amount of habitat from development of ancillary features (vent fan). Most mining activity (portal, truck traffic, etc.) occurs down the cliff face, far removed from the habitat. Most of these impacts would be removed by management standards identified in the selected alternative.
Flat Canyon Coal Lease by Application	Lease by Application 3,792 acres; and Exploration License, 595 acres	Leased and under production in the Carbon population. Effect: The act of leasing would have no direct effect. However, the activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.
Gilsonite Leasing	16,810 acres that are currently under prospecting permit application; the permits would either be issued or a Known Gilsonite Leasing Area would be established, thus allowing competitive leasing	The prospecting permit applications have been in place since the late 1980s; Known Gilsonite Leasing Area report ongoing, after which NEPA will begin to address backlogs for these areas in the Uintah population. Effect: Activities associated with development or prospecting of the permit / lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.
Phosphate Fringe Acreage Lease	1,627 acres of fringe acreage lease on BLM-administered lands	NEPA has started and awaiting a Development Scenario to complete the NEPA for this expansion of an existing phosphate mine in the Diamond Mountain portion of PHMA in the Uintah population. Effect: The act of leasing would have no direct effect. However, the activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.

Action	Type	Effects
Phosphate Competitive Lease Application	1,186 acres on National Forest System lands	NEPA has started and awaiting a Development Scenario to complete the NEPA for this area in the Uintah population. Effect: Activities associated with development of the lease could result in loss of habitat and vehicle mortality due to increased traffic. Most of these impacts should be removed by management standards identified in the selected alternative.
Other Items		
Hard Rock Prospecting Permits being considered on Bankhead Jones	Hard rock exploration permits	Pending consideration for this area in the Sheeprocks population. Effect: Activities associated with development of the lease could result in loss of habitat, vehicle mortality due to increased traffic and disruption of seasonal use areas. Most of these impacts should be removed by management standards identified in the selected alternative.
Gooseberry Narrows Reservoir	Bureau of Reclamation project on Forest Service and private land; project is approximately 1,200 acres	EIS is complete, pending EPA review and approval for this portion of the Carbon population. Effect: Activities associated with construction and operation of the reservoir would result in loss of habitat within the project area and a potential increase for vehicle mortality due to increased traffic. However, the habitat lost within the project area may be supplemented by improving the quality and seasonal functionality of the adjacent habitat. Most of the impacts should be removed by management standards identified in the selected alternative.

Action	Type	Effects
Uinta Basin Railway	Development of a railway that begins in the Uinta Basin, and terminates at a location that connects to the national rail system.	The project is in the early stages of consideration. Scoping was conducted by the Surface Transportation Board in June-August, 2019. The EIS is currently being developed. There is not a preferred alternative, but based on the early alternatives, one alternative alignment could affect GHMA in the Uinta Population, and others could affect PHMA in the Emma Park portion of the Carbon Population. Effect: Construction of the railway could result in a direct loss of habitat. Use of the railway could result in noise that would displace birds from preferred habitats. The occurrence and magnitude of these impacts would vary based on alternative alignment and mitigation measures applied.
Motorized Travel Plan Implementation	Implementation of motorized route designation plans across the planning region	Implementation actions underway statewide, with travel planning reasonably foreseeable in the Sheeprocks, Uintah, Carbon and Panguitch populations. Effect: The development of a motorized travel plan would potential help to reduce fragmentation of habitat and centralizing disturbance into areas of lesser importance.
Forest Service Greater Sage-Grouse Planning	Forest Service and Utah Division of Wildlife Resources	Forest Service is in the process of amending their land use plans. Their proposed changes are similar with those considered in this EIS, and would increase alignment with state management plans and strategies. Applicable to all Greater Sage-Grouse populations with National Forest System Lands. Effect: This effort will help to align the Forest Service's plan to be more consistent with the State of Utah's plan and provide the adequate management actions necessary to protect and conserve the Greater Sage-Grouse.

Action	Type	Effects
State of Utah Greater Sage-Grouse Management	Update of the State's Conservation Plan for Greater Sage-Grouse in Utah, as well as implementation of the State's compensatory mitigation rule	Past: The State updated their Greater Sage-Grouse plan in January 2019, incorporating the compensatory mitigation rule that provides a process to develop a banking system to apply the state's 4:1 mitigation ratio that is designed to improve habitat for Greater Sage-Grouse. Effect: This new plan refines and identifies areas to improve management actions and allow for the incorporation of new and local science to better balance Greater Sage-Grouse management across the state. It provides management to maintain and improve Greater Sage-Grouse populations, as well as a framework for managing habitat on state and private land. It also provides an opportunity for economic development to occur while offsetting the impacts to habitat quality.
Wyoming		
Wildland Fires 2015-2020	BLM: Past – Acres burned on BLM administered land	Approximately 301,000 acres of HMA burned between 2015 and 2020. Post-fire restoration and habitat treatments are being implemented, as described below, to diminish impacts of habitat lost to wildland fire.
Fire Restoration (Emergency Stabilization and Rehabilitation)	BLM: Past and Present – Habitat restoration following wildland fires	Approximately 5,443 acres of BLM-administered habitat are either currently being treated or scheduled to be treated according to specific prescriptions outlined in Emergency Stabilization and Burned Area Rehabilitation plans following wildfire.
Habitat Treatments	BLM: Past – Habitat improvement projects	More than 96,000 acres of Greater Sage-Grouse habitat were treated between 2015 and 2020 to maintain or improve conditions for Greater Sage-Grouse. Treatments included conifer removal, fuel breaks, invasive species removal and habitat protection/ restoration.

Action	Type	Effects
Land Use and Realty (issued and pending) 2015-2018	BLM: Past ROWs issued on BLM land	BLM Wyoming issued approximately 3,720 ROWs in the planning area between 2015-2020. This includes amendments and reauthorizations, which may not have resulted in new disturbance. For ROWs occurring in Greater Sage-Grouse habitat, effects were offset by the management prescriptions in the RMPs and ARMPA.
	BLM: Future pending	There are approximately 653 ROW applications pending review and analysis. New ROWs under the 2018 Proposed Plan would align with the management prescriptions of the Core Area Strategy and State of Wyoming Mitigation Framework. No additional cumulative impacts are anticipated, beyond those described. Miller Mountain Land Exchange would resolve public access issues and improve landscape scale management of resources by consolidating BLM lands in the area. Chokecherry and Sierra Madre Wind Energy Development Project, Phase II Turbine Development (EA3)
Oil and Gas	BLM: Past	BLM Wyoming has offered for lease 5,052,795.01 acres; 2,621,838.82 acres of that total was leased. Leases followed management prescriptions in the RMPs and ARMPA and stipulations apply as described in the leases according to HMA category.
	BLM: Future pending	BLM Wyoming has a scheduled lease sale in September 2020 that will offer 351,680.945 acres for lease. The actions in the 2018 Proposed Plan do not propose to change stipulations analyzed in the 2014 and 2015 plans.

Action	Type	Effects
Locatable Mineral Projects	BLM: Past and Present	Between 2015-2020[1], the BLM has approved 24 new mines and/or expansions within the planning area (including non-habitat). The 2018 Proposed Plan does not propose changes to any decisions associated with locatable minerals, which were sufficiently analyzed on the existing plans. [1] *This covers all authorized operations through first quarter 2020, it does not include the pending operations that are currently under review.*
	BLM: Future pending	The BLM is currently reviewing 4 plans of operation for new mines, mine expansions and 5 notice-level activities. This number does not include the 10 pending mine patents, which are in the process of being patented into private ownership. The 2018 Proposed Plan does not propose changes to any decisions associated with locatable minerals, and future impacts would be analyzed in future EISs, adhering to existing requirements of the RMPs and ARMPA.
Leasable Mineral Projects (Coal)	BLM: Past and Present	Two coal lease modifications were issued in 2018, totaling 1,306.61 acres. For lease modifications occurring in Greater Sage-Grouse habitat, effects were offset by the management prescriptions in the RMPs and ARMPA.
	BLM: Future pending	BLM Wyoming is currently reviewing 3 coal lease applications/modifications totaling 10,344.21 acres, however these applications are currently on hold. No management decisions for leasable minerals are proposed for change under the 2018 Proposed Plan.

Action	Type	Effects
Other items		
Buffalo RMP Coal Supplemental EIS and Amendment	BLM: Past - Planning	Final EIS published November 4, 2019. Record of Decision signed November 22, 2019 The Buffalo Field Office addressed deficiencies through the preparation of a Draft Supplemental EIS that considered climate change and downstream combustion, and analyzed alternatives that reduce the amount of coal available for leasing. Effect: Since no alternative proposed different management for Greater Sage-Grouse from the sage-grouse planning process, there are no cumulative effects not already address in the impact analysis above.
Alkali Creek Reservoir Project EIS	BLM: Past - The Wyoming Water Development Commission (WWDC) proposed to construct a 294-acre reservoir on Alkali Creek and ancillary facilities across public and private land near Hyattville, Wyoming. The reservoir will impound approximately 7,994 acre-feet of water under normal conditions, and 9,872 acre-feet when under flood conditions.	Final EIS published May 2019. Record of Decision issued on November 18, 2019. The reservoir will provide late-season irrigation water for portions of the Nowood River Watershed. The irrigation pool (currently modeled at 5,996 acre-feet) will be available either directly or through exchange for irrigation water. Effect: Since no alternative proposed different management for Greater Sage-Grouse from the sage-grouse planning process, there will be no cumulative effects not already address in the impact analysis above.
Leavitt Reservoir Expansion Project EIS	BLM: Past - The WWDC proposed to expand the existing Leavitt Reservoir near Shell, Wyoming, from a pool of 643 acre-feet to 6,404 acre-feet.	The purpose of the project is to provide late season irrigation for agriculture in the Shell Valley. Effect: Since no alternative proposed different management for Greater Sage-Grouse from the sage-grouse planning process, there will be no cumulative effects not already address in the impact analysis above.

Action	Type	Effects
Rock Springs RMP Revision EIS	BLM: Future pending - Development of a resource management plan revision	The planning area includes lands within the Rock Springs Field Office administrative boundary in Sweetwater, Lincoln, Uinta, Sublette, and Fremont counties in southwestern Wyoming. The decision area consists of 3.6 million acres of BLM-administered surface and 3.7 million acres of federal mineral estate. The revised RMP will replace the 1997 Green River RMP. A Comprehensive Travel and Transportation Plan for the entire field office, as well as an additional socioeconomic modeling effort coordinated with cooperating agencies are being incorporated into the RMP Revision. Effect: Since no alternative proposes different management for Greater Sage-Grouse from the sage-grouse planning process, there will be no cumulative effects not already address in the impact analysis above.
Wild Horse Management for the BLM Rock Springs and Rawlins Field Offices Plan Amendment EIS	BLM: Future pending - Development of a resource management plan amendment	In April 2013, the Department of the Interior, the BLM and the Rock Springs Grazing Association signed a consent decree requiring the BLM to initiate NEPA analysis to consider the environmental effects of modifying management levels of wild horses in specified herd management areas. An NOI was issued, initiating public scoping to amend the 2008 Rawlins RMP in conjunction with the Rock Springs RMP revision. Prior to Spring 2019, the wild horse management decisions were being evaluated through the ongoing Rock Springs Resource Management Plan revision, with included amendment to the Rawlins RMP for the Adobe Town HMA. However, due to delays in the ongoing RMP revision related to expansion of energy development opportunities, the decision was made to expedite a separate EIS document specific to wild horse management actions. Effect: Since no alternative proposes different management for Greater Sage-Grouse from the sage-grouse planning process, there will be no cumulative effects not already address in the impact analysis above.

Action	Type	Effects
Converse County Oil and Gas Project EIS	BLM: Future pending – Proposed action includes development of 5,000 new oil and gas wells on 1,500 well pads.	The project area encompasses roughly 1.5 million acres of split estate mixed surface ownership lands. The operators propose to develop the wells over 10 years, with the life of the project anticipated to be 20 to 30 years. Effect: Since no alternative proposes different management for Greater Sage-Grouse from the sage-grouse planning process, there will be no cumulative effects not already address in the impact analysis above.
Moneta Divide Natural Gas and Oil Development Project EIS	BLM: Future pending – Proposed action includes development of 4,250 natural gas wells and associated infrastructure.	The project area is located in Fremont and Natrona counties and encompasses approximately 265,000 acres of land. The life of the proposed project is estimated to be 40 years. Additional potential development, which would require additional NEPA analysis, include pipelines to transport treated, produced water from the production areas west to Boysen Reservoir and a pipeline transporting natural gas from the production areas to Wamsutter, Wyoming, in the Rawlins Field Office. Effect: Since no alternative proposes different management for Greater Sage-Grouse from the sage-grouse planning process, there will be no cumulative effects not already address in the impact analysis above.

Action	Type	Effects
Wyoming Pipeline Corridor Initiative (WPCI)	BLM: Future pending - The Wyoming Pipeline Corridor Initiative is a proposal from the State of Wyoming to designate almost 2,000 miles of pipeline corridors across private, state and BLM-managed lands in Wyoming. Approximately 1,150 miles of the proposed corridors are located on BLM managed lands.	The project would designate a statewide pipeline corridor network for future development of pipelines associated with carbon capture, utilization and storage, as well as pipelines and facilities associated with enhanced oil recovery. The project will not authorize any new pipelines or construction but will amend several BLM Resource Management Plans across the state to make future analysis of project specific proposals more efficient. One of the primary purposes of the pipeline corridor network is to connect existing oil fields suitable for enhanced oil recovery (EOR) with anthropogenic and natural carbon dioxide (CO2) sources. The CO2 will be injected into existing, often "played-out" oil fields, thereby increasing oil production beyond conventional recovery methods with little additional surface disturbance. Effect: Since no alternative proposes different management for Greater Sage-Grouse from the sage-grouse planning process, there will be no cumulative effects not already address in the impact analysis above.
Greater Sage-Grouse Conservation	Forest Service: Future	Forest Service has indicated they will also be amending their land use plans. Specific details of their proposed changes are not yet known, but it is anticipated they will propose alignment with state management plans and strategies.

B.2 Cumulative Effects Analysis – Habitat and Allocation Decision Summaries for the No-Action and Proposed Plan Amendment Alternatives by Management Zone

Data representing the final plan allocation decisions and habitat delineations collected by the BLM upon the completion of the 2015 planning process have been updated or corrected relative to the final allocation decisions from the 2015 plans to reflect maintenance-related changes, adaptive management responses, or refined source data. The BLM used these data to represent the No-Action Alternative for the current plan analysis. The BLM then identified 2015 data which are not subject to change in any alternatives associated with the 2018 planning process. These data were carried forward as the alternative allocation decision data. The BLM was also able to provide allocation decision data representing changes included in the 2018 Proposed RMPAs/Final EISs, which were then used in the comparative analysis. Decision data are summarized by habitat type within each Management Zone (MZ) (see **Figure 1**) and are presented in this appendix in both approximate acreage of BLM-administered lands within each habitat designation as well as percent of BLM-administered lands within a habitat designation to which an allocation decision applies. For programs where allocation decisions change, information is presented separately. In cases where no change has occurred, both alternatives are presented together. The BLM Montana is currently not undergoing a plan amendment process; however, data were included in this cumulative effects summary. A summary of data submitted for this analysis can be found in **Table 1**, detailing which areas did not provide data for analysis. In these cases, summaries reflect submitted data only. All figures and tables are intended for MZ summary purposes only. They represent data available at the time of consolidation and may be revised as plans are finalized. Consult each individual EIS for final/official acreages.

Table 2
Data Submission Summary for Cumulative Effects Analysis. Y = Data submitted, N = No data submitted, followed by which area within the State that did not provide data.

Program Area	Colorado	Idaho	Montana & The Dakotas	Nevada/NE California	Oregon	Utah	Wyoming
Geothermal Energy	Y	Y	N – Miles City, Lewistown, Billings, UMRBNM	Y	N	Y	N – Bighorn Basin
Land Tenure	Y	Y	Y	Y	N	Y	Y
Livestock Grazing	Y	Y	Y	Y	Y	Y	Y
Locatable Minerals	Y	Y	Y	Y	Y	Y	Y
Non-Energy Leasable Minerals	Y	Y	N – Miles City, Billings	Y	N	Y	N – Bighorn Basin, Buffalo, Wyoming (9-Plan)
Fluid Mineral Leasing (Oil & Gas)	Y	Y	N - Lewistown	Y	N	Y	Y
Rights-of-Ways	Y	Y	Y	Y	N	Y	Y
Salable-Mineral Materials Disposals	Y	Y	Y	Y	N	Y	Y
Solar Energy	Y	Y	Y	Y	N	Y	N – Bighorn Basin, Buffalo, Lander, Wyoming (9-Plan)
Trails and Travel Management	Y	Y	Y	Y	N	Y	Y
Wind Energy	Y	Y	Y	Y	N	Y	Y

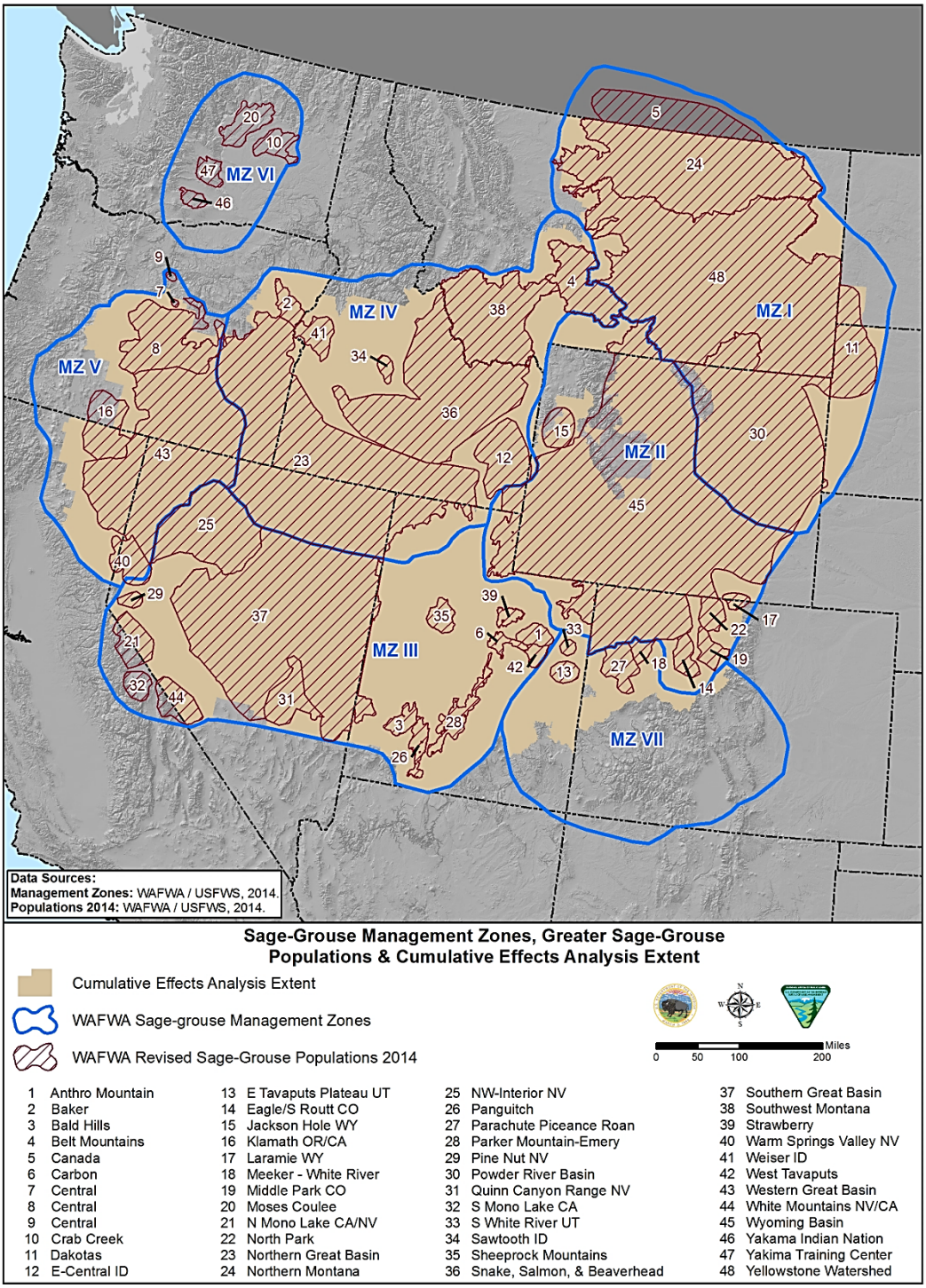


Figure 1 – Cumulative Effects Analysis Extent, Sage-Grouse Management Zones and Populations

B.2.1 Management Zone I – Wyoming, Montana, North Dakota, South Dakota

I. Habitat Management

Table 3 – Habitat Management Areas within MZ I

Acres and percentages reflect all lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of HMA in MZ I							
No Action				Management Alignment			
PHMA	GHMA	RHMA[1]	Non-HMA	PHMA	GHMA	RHMA	Non-HMA
12,122,000	28,339,000	437,000	33,467,000	12,122,000	28,339,000	437,000	33,467,000

Approximate Percent of MZ I that is HMA							
No Action				Management Alignment			
PHMA	GHMA	RHMA	Non-HMA	PHMA	GHMA	RHMA	Non-HMA
16%	38%	1%	45%	16%	38%	1%	45%

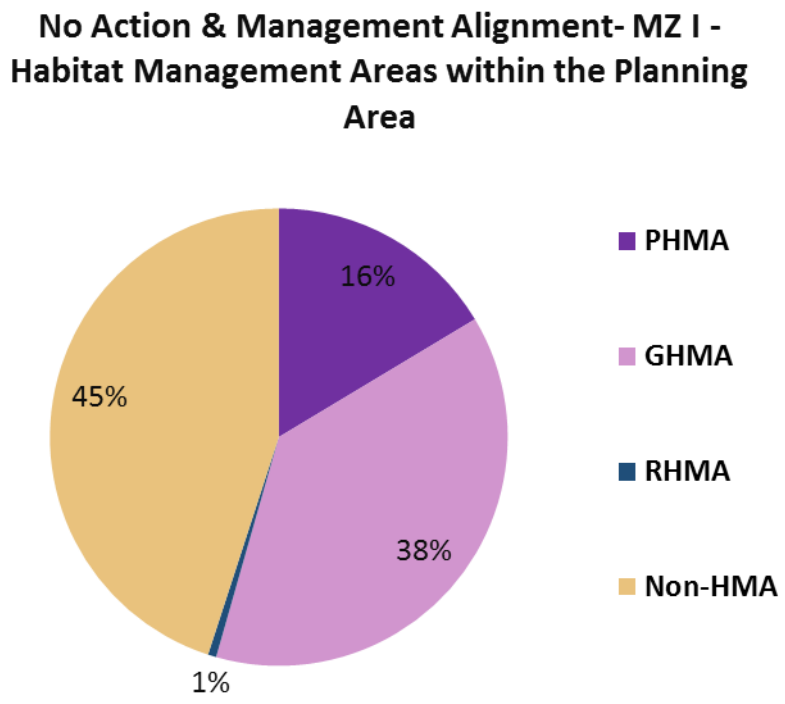


Figure 2 - Habitat Management Areas within MZ I

Percentages reflect all lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

[1] Restoration Habitat Management Area (RHMA)

II. Geothermal Energy

Table 4 – Geothermal Energy Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding.
[1] Data not available for portions of MT and WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Geothermal Decisions[1] in MZ I by Habitat Management Area Type					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	86,000	0	NA	86,000	**172,000**
Open NSO	1,988,000	130,000	NA	230,000	**2,349,000**
Open CSU/TL	0	443,000	NA	1,071,000	**1,514,000**
Open Standard Stipulations	0	141,000	NA	372,000	**514,000**
Total	**2,074,000**	**714,000**	**NA**	**1,760,000**	**4,548,000**

Approximate % of Habitat Management Area by Geothermal Decision[1] within Habitat in MZ I					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	4%	0%	NA	5%	**4%**
Open NSO	96%	18%	NA	13%	**52%**
Open CSU/TL	0%	62%	NA	61%	**33%**
Open Standard Stipulations	0%	20%	NA	21%	**11%**
Total	**100%**	**100%**	**NA**	**100%**	**100%**

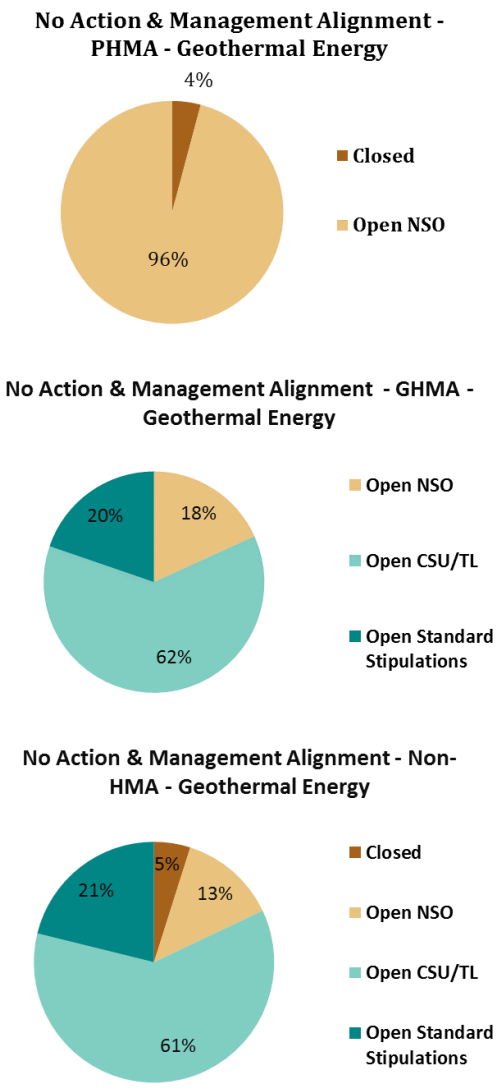


Figure 3 – Geothermal Energy Decisions within MZ I

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [1] Data not available for portions of MT and WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

III. Land Tenure

Table 5 – Land Tenure Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Land Tenure Decisions in MZ I by Habitat Management Area Type					
Land Tenure	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Disposal	49,000	167,000	0	143,000	**359,000**
Retention	3,259,000	2,997,000	159,000	1,538,000	**7,953,000**
Total	**3,308,000**	**3,164,000**	**159,000**	**1,681,000**	**8,312,000**

Approximate % of Habitat Management Area by Land Tenure Decision within Habitat in MZ I					
Land Tenure	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Disposal	1%	5%	0%	9%	**4%**
Retention	99%	95%	100%	91%	**96%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

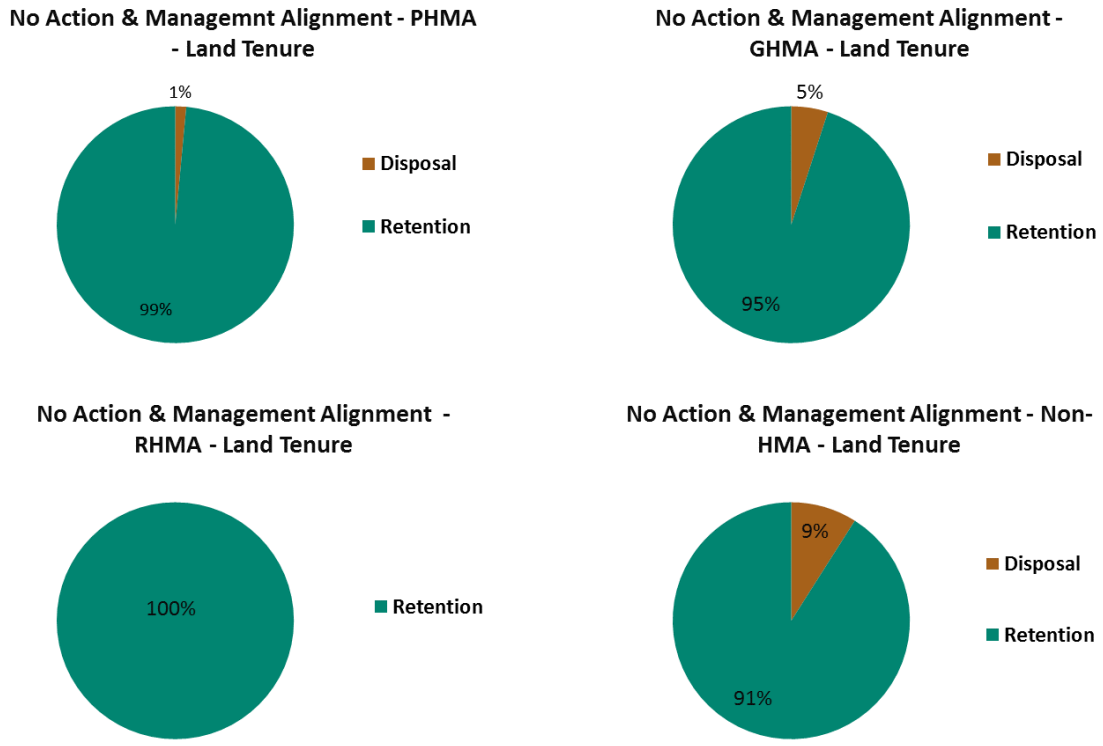


Figure 4 – Land Tenure Decisions within MZ I

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

IV. Livestock Grazing

Table 6 – Livestock Grazing Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Livestock Grazing Decisions in MZ I by Habitat Management Area Type					
Livestock Grazing	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Unavailable	3,000	8,000	0	12,000	**23,000**
Available	3,303,000	3,186,000	158,000	1,632,000	**8,279,000**
Total	**3,306,000**	**3,194,000**	**158,000**	**1,644,000**	**8,302,000**

Approximate % of Habitat Management Area by Livestock Grazing Decision within Habitat in MZ I					
Livestock Grazing	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Unavailable	<1%	<1%	0%	<1%	**<1%**
Available	100%	100%	100%	100%	**100%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

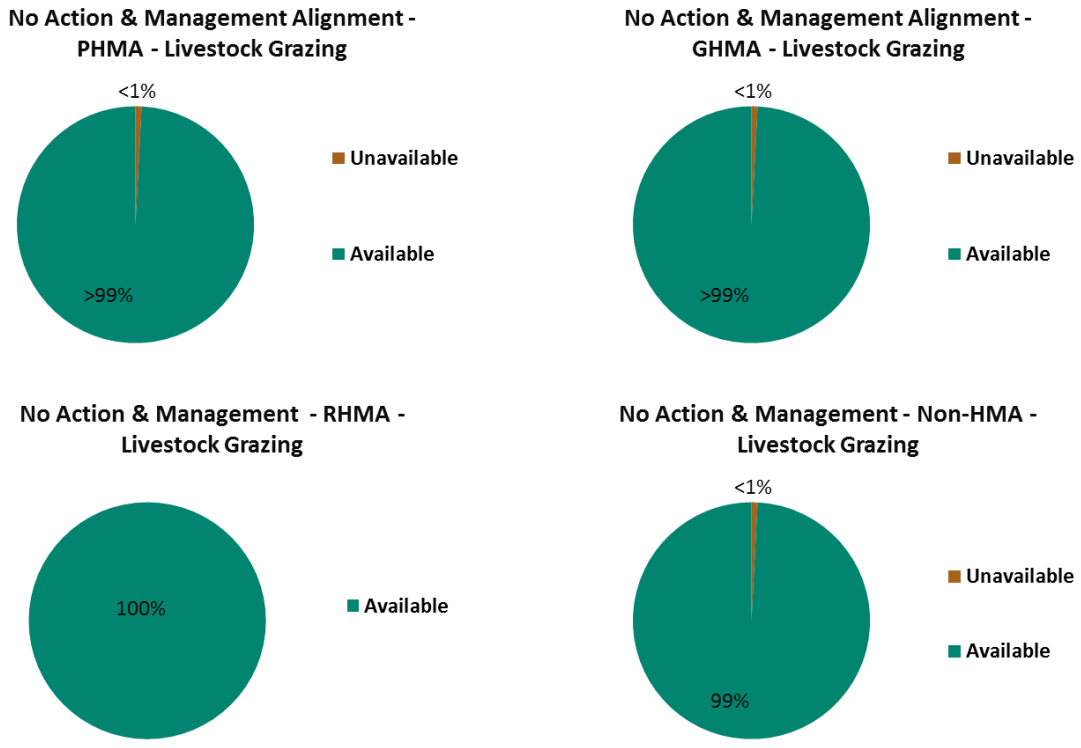


Figure 5 – Livestock Grazing Decisions within MZ I

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

V. Locatable Minerals

Table 7 – Locatable Minerals Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages. [2] MT Recommended Withdrawals Decisions in PHMA will be removed via plan maintenance.

Approximate Acres of Locatable Minerals Decisions[2] in MZ I by Habitat Management Area Type					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Existing Withdrawals	22,000	203,000	0	240,000	**465,000**
Recommended Withdrawals	1,094,000	166,000	0	46,000	**1,306,000**
Open	4,053,000	7,132,000	164,000	2,688,000	**14,037,000**
Total	**5,169,000**	**7,501,000**	**165,000**	**2,974,000**	**15,808,000**

Approximate % of Habitat Management Area by Locatable Minerals Decisions[2] within Habitat in MZ I					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Existing Withdrawals	<1%	3%	<1%	8%	**3%**
Recommended Withdrawals	21%	2%	0%	2%	**8%**
Open	79%	95%	100%	90%	**89%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

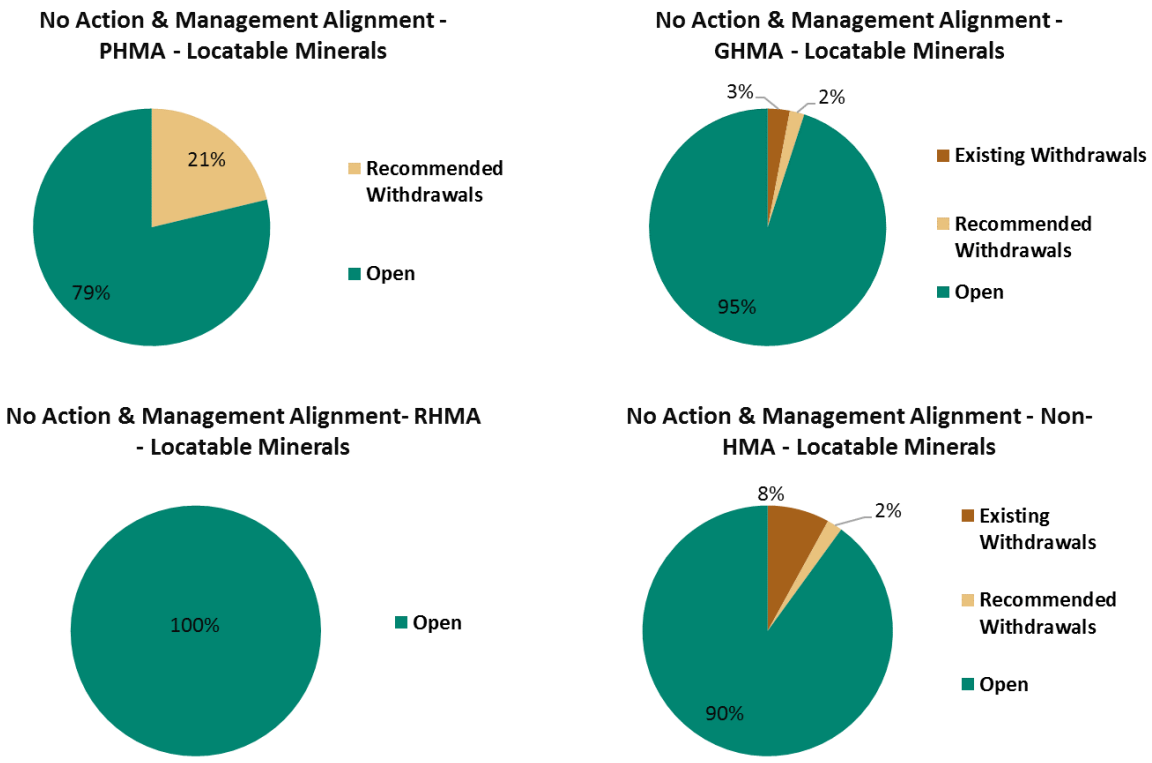


Figure 6 – Locatable Mineral Decisions within MZ I

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages. [2] MT Recommended Withdrawals Decisions in PHMA will be removed via plan maintenance.

VI. Non-Energy Leasable Minerals

Table 8 – Non-Energy Leasable Minerals Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding.
[3] Data not available for portions of MT and WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Non-Energy Leasable Minerals[3] Decisions in MZ I by Habitat Management Area Type					
Livestock Grazing	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	2,432,000	296,000	NA	355,000	**3,083,000**
Open	1,900,000	6,205,000	NA	2,463,000	**10,568,000**
Total	**4,332,000**	**6,501,000**	NA	**2,818,000**	**13,651,000**

Approximate % of Habitat Management Area by Non-Energy Leasable Minerals[3] Decision within Habitat in MZ I					
Livestock Grazing	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	56%	5%	NA	13%	**23%**
Open	44%	95%	NA	87%	**77%**
Total	**100%**	**100%**	**NA**	**100%**	**100%**

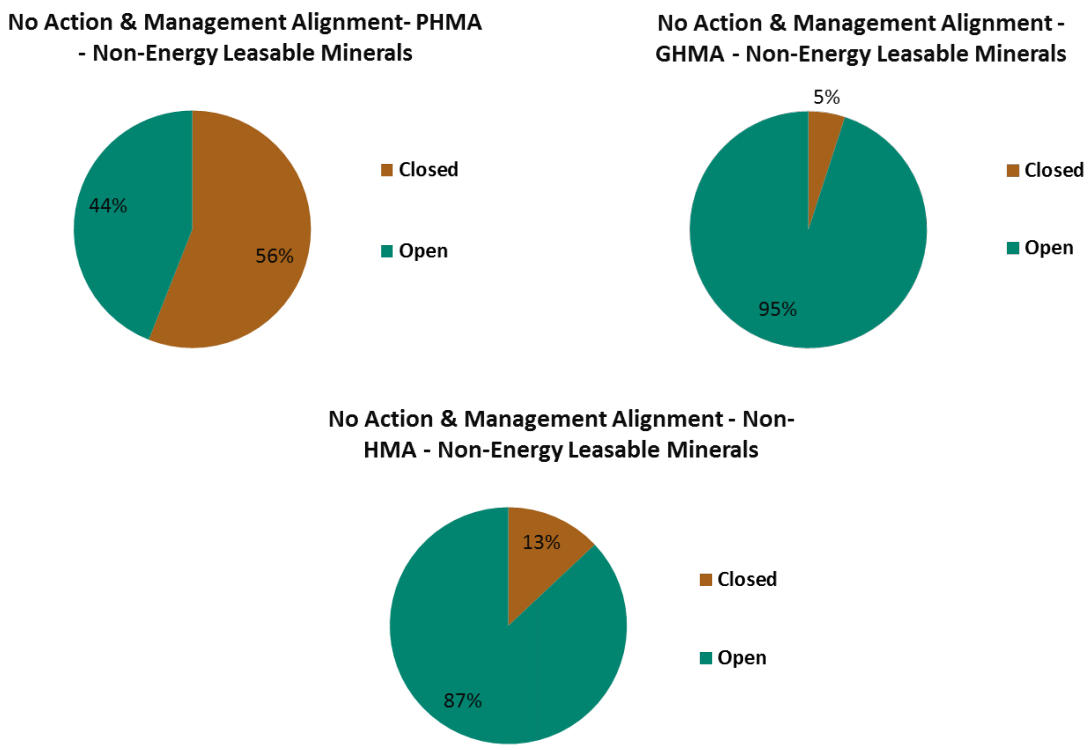


Figure 7 – Non-Energy Leasable Minerals Decisions within MZ I

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [3] Data not available for portions of MT and WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VII. Fluid Minerals (Oil & Gas)

Table 9 – Fluid Minerals (Oil & Gas) Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [4]Data not available for portions of MT. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Fluid Minerals (Oil a& Gas) Decisions[4] in MZ I by Habitat Management Area Type					
Fluid Minerals (Oil and Gas)	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	196,000	328,000	0	346,000	**870,000**
Open NSO	3,730,000	1,485,000	228,000	406,000	**5,849,000**
Open CSU/TL	1,582,000	5,280,000	64,000	2,155,000	**9,082,000**
Open Standard Stipulations	0	2,223,000	0	744,000	**2,967,000**
Total	**5,508,000**	**9,316,000**	**292,000**	**3,651,000**	**18,768,000**

Approximate % of Habitat Management Area by Fluid Minerals (Oil a& Gas) Decision[4] within Habitat in MZ I					
Fluid Minerals (Oil and Gas)	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	3%	4%	0%	9%	**5%**
Open NSO	68%	16%	78%	11%	**31%**
Open CSU/TL	29%	57%	22%	59%	**48%**
Open Standard Stipulations	0%	24%	0%	20%	**16%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

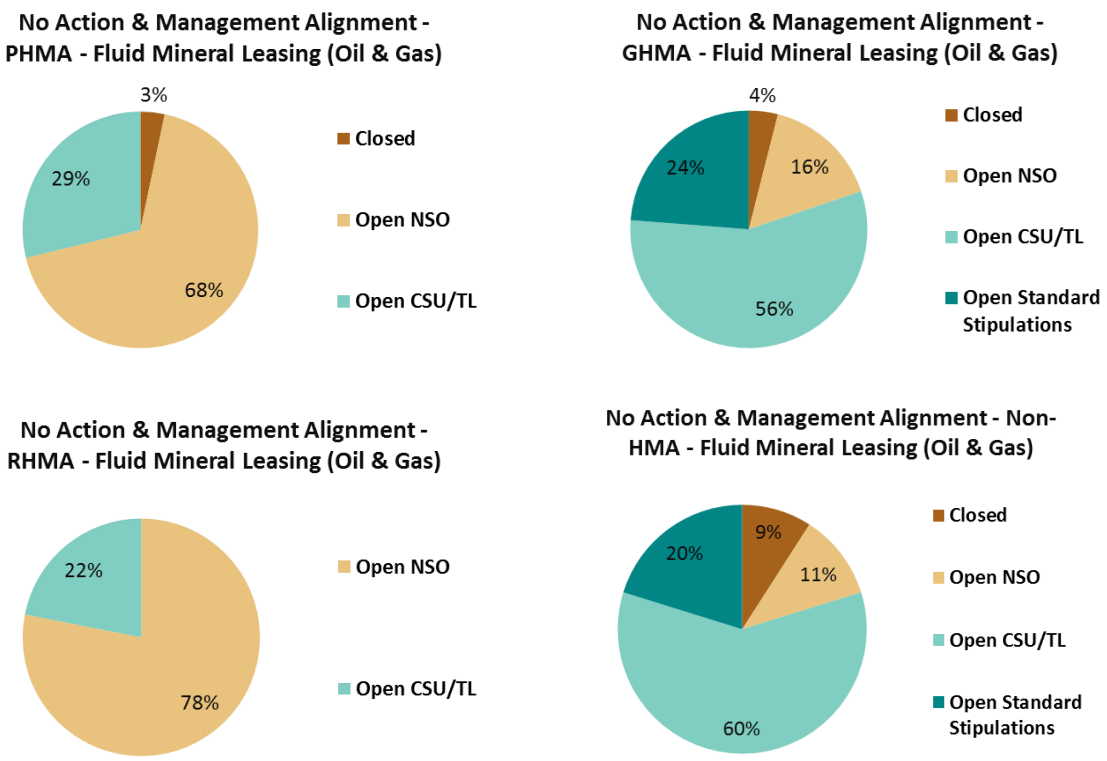


Figure 8 – Fluid Minerals (Oil & Gas) Decisions within MZ I

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [4]Data not available for a portion of MT. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VIII. Rights-of-Ways

Table 10 – Rights-of-Ways Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Rights-of-Ways Decisions in MZ I by Habitat Management Area Type					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	110,000	240,000	0	86,000	**436,000**
Avoidance	3,163,000	1,819,000	72,000	282,478	**5,336,478**
Open	5,000	1,067,000	87,000	1,206,000	**2,364,000**
Total	**3,278,000**	**3,126,000**	**159,000**	**1,574,478**	**8,136,478**

Approximate % of Habitat Management Area by Rights-of-Ways Decision within Habitat in MZ I					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	3%	8%	0%	5%	**5%**
Avoidance	97%	58%	45%	18%	**66%**
Open	0%	34%	55%	77%	**29%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

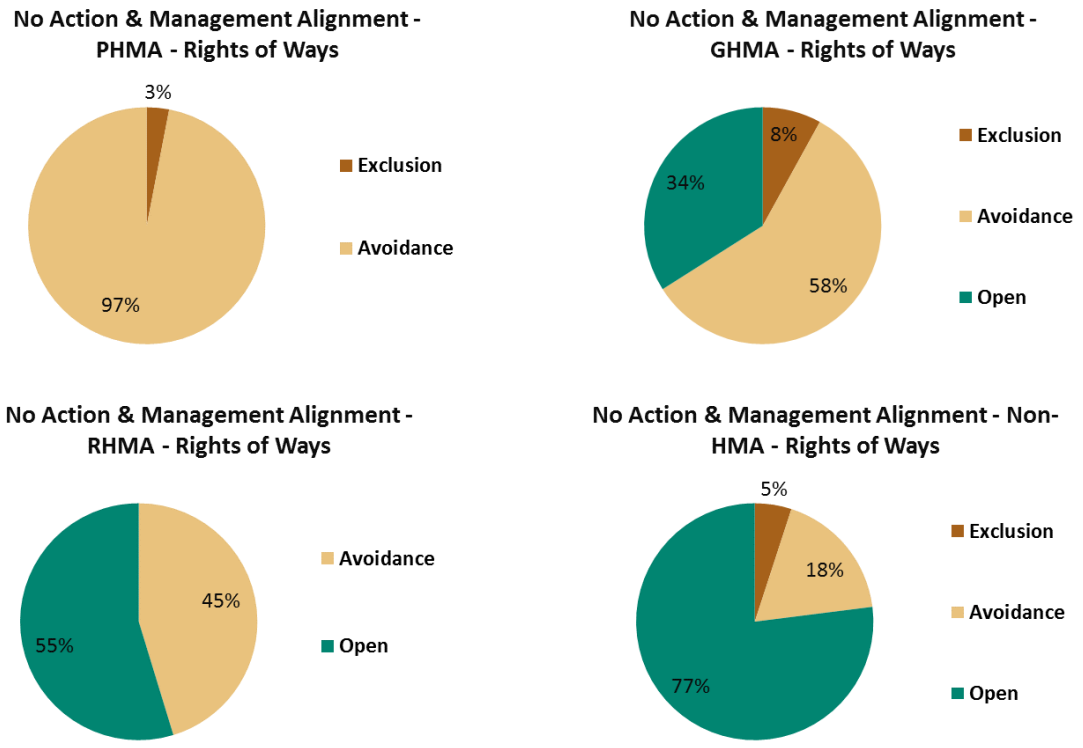


Figure 9 – Rights-of-Ways Decisions within MZ I

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

IX. Salable Minerals Materials

Table 11 – Salable Minerals Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Salable Minerals Materials Decisions in MZ I by Habitat Management Area Type					
Livestock Grazing	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	3,870,000	402,000	9,000	424,000	**4,705,000**
Open	1,882,000	8,787,000	267,000	2,990,000	**13,926,000**
Total	**5,752,000**	**9,189,000**	**276,000**	**3,414,000**	**18,631,000**

Approximate % of Habitat Management Area by Salable Minerals Materials Decision within Habitat in MZ I					
Livestock Grazing	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	67%	4%	3%	12%	**25%**
Open	33%	96%	97%	88%	**75%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

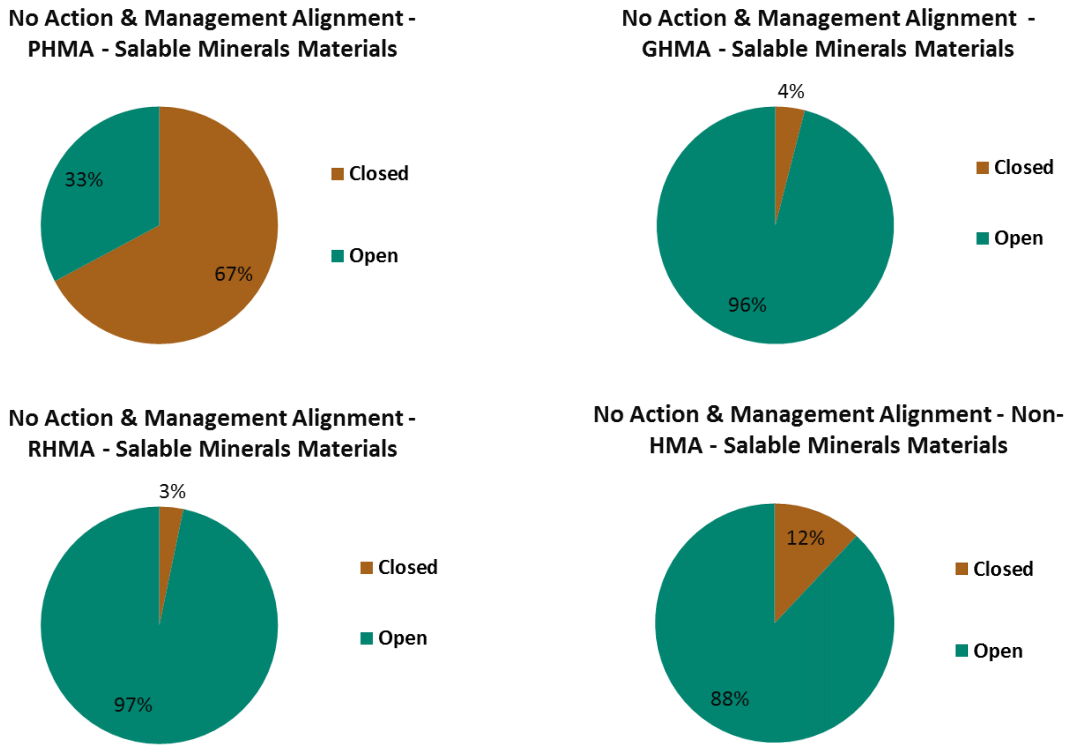


Figure 10 – Salable Minerals Materials Decisions within MZ I

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

X. Solar Energy

Table 12 – Solar Energy Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding.
[5] Data not available for Wyoming. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Solar Energy Decisions[5] in MZ I by Habitat Management Area Type					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	2,709,000	249,000	93,000	239,000	**3,290,000**
Avoidance	0	1,844,000	55,000	172,000	**2,071,000**
Open	0	0	0	1,144,000	**1,145,000**
Total	**2,709,000**	**2,093,000**	**148,000**	**1,555,000**	**6,506,000**

Approximate % of Habitat Management Area by Solar Energy Decision[5] within Habitat in MZ I					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	100%	12%	63%	11%	**51%**
Avoidance	0%	88%	37%	15%	**32%**
Open	0%	0%	0%	74%	**18%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

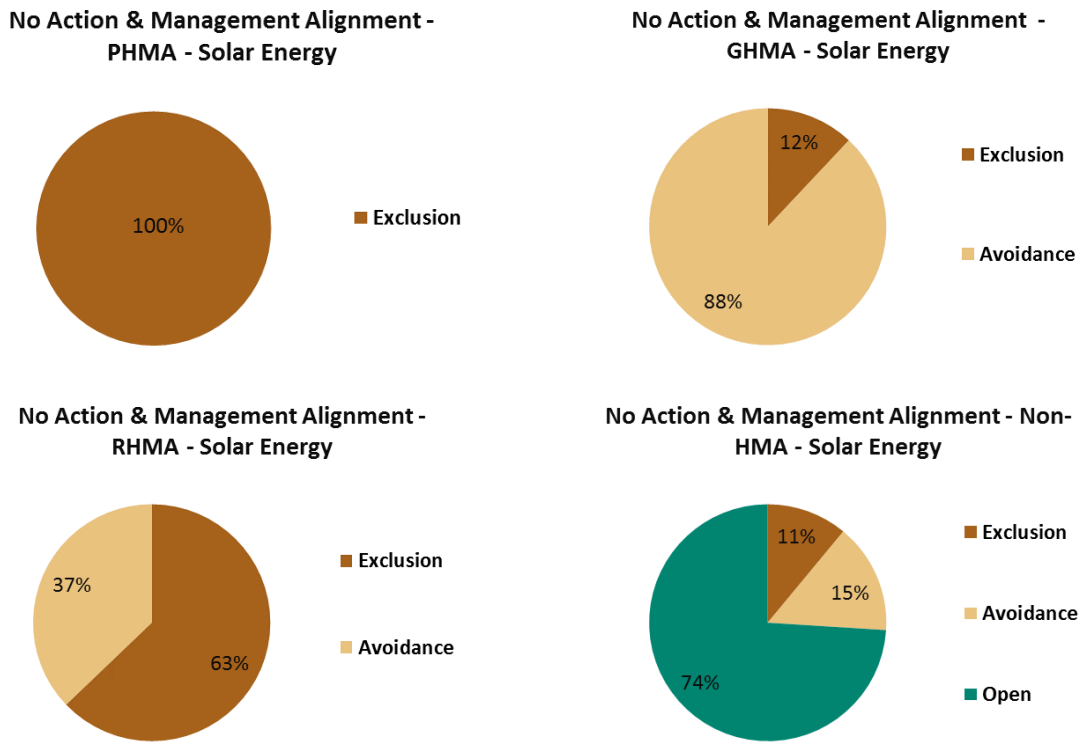


Figure 11 - Solar Energy Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [5] Data not available for Wyoming. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

XI. Trails and Travel Management

Table 13 – Trails and Travel Management Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Trails and Travel Management Decisions in MZ I by Habitat Management Area Type					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	2,000	39,000	0	11,000	**52,000**
Limited	3,306,000	3,125,000	159,000	1,655,000	**8,245,000**
Open	0	0	0	0	**0**
Total	**3,308,000**	**3,164,000**	**159,000**	**1,666,000**	**8,297,000**

Approximate % of Habitat Management Area by Trails and Travel Management Decision within Habitat in MZ I					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	0%	1%	0%	1%	**1%**
Limited	100%	99%	100%	99%	**99%**
Open	0%	0%	0%	0%	**0%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

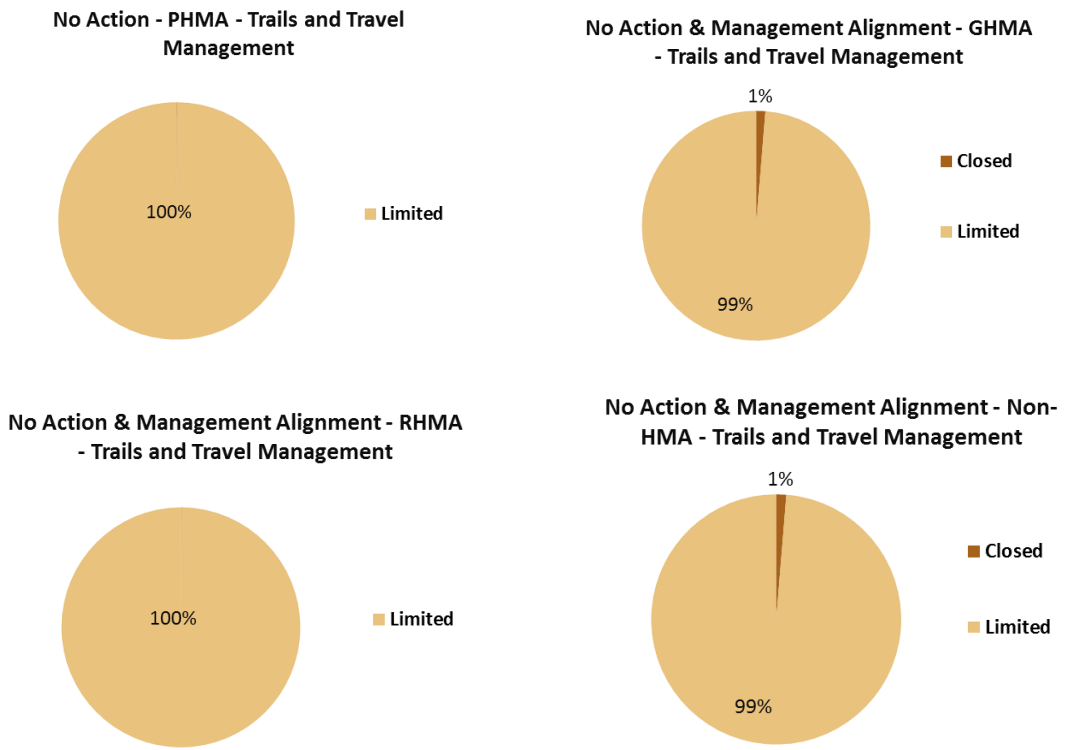


Figure 12 – Trails and Travel Management Decisions within MZ I

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

XII. Wind Energy

Table 14 – Wind Energy Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Wind Energy Decisions in MZ I by Habitat Management Area Type					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	2,966,000	384,000	93,000	419,000	**3,862,000**
Avoidance	493,000	2,090,000	55,000	594,000	**3,232,000**
Open	0	513,000	0	655,000	**1,168,000**
Total	**3,459,000**	**2,987,000**	**148,000**	**1,668,000**	**8,262,000**

Approximate % of Habitat Management Area by Wind Energy Decision within Habitat in MZ I					
Geothermal Energy	**No Action & Management Alignment**				
	PHMA	**GHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	86%	13%	63%	25%	**47%**
Avoidance	14%	70%	37%	36%	**39%**
Open	0%	17%	0%	39%	**14%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

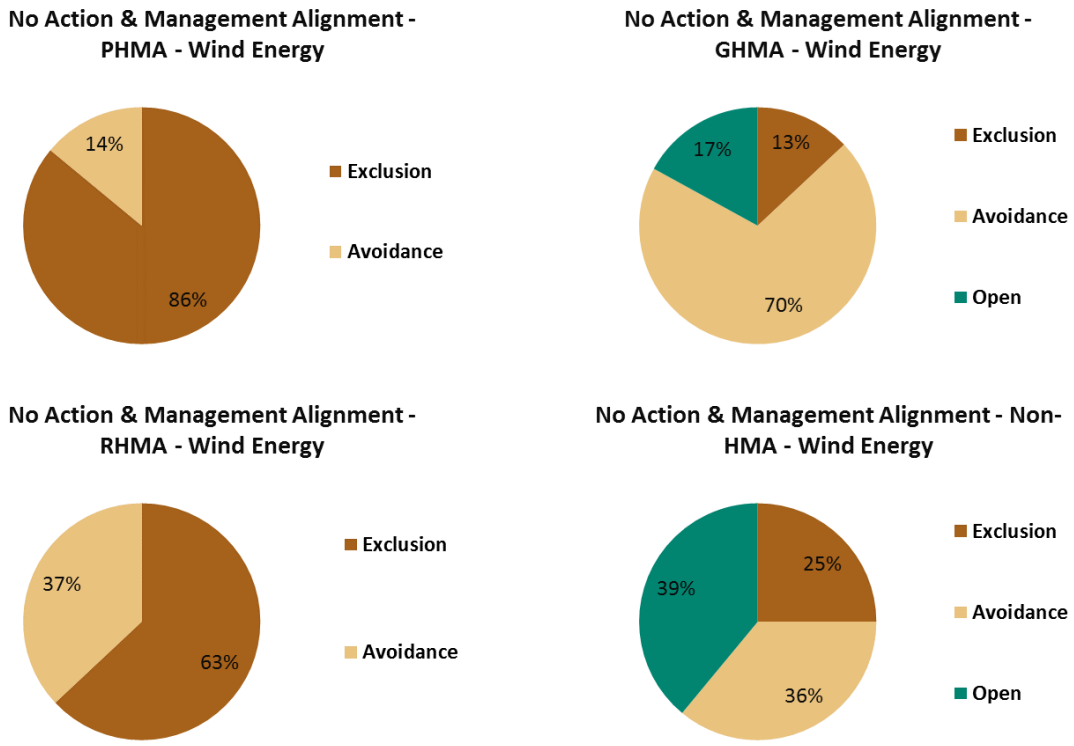


Figure 13 – Wind Energy Decisions within MZ I

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

B.2.2 Management Zones II/VII – Wyoming, Colorado, Utah, Idaho

I. Habitat Management

Table 15 – Habitat Management Areas within MZs II/VII

Acres and percentages reflect all lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of HMA in MZs II/VII					
No Action					
PHMA	**IHMA**	**GHMA**	**LCHMA**[2]	**RHMA**	**Non-HMA**
16,699,000	69,000	18,220,000	295,000	8,000	28,409,000
Management Alignment					
PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**
16,664,000	69,000	17,394,000	295,000	8,000	29,270,000

Approximate Percent of MZs II/VII that is HMA					
No Action					
PHMA	IHMA	GHMA	LCHMA	RHMA	Non-HMA
26%	<1%	29%	<1%	<1%	45%
Management Alignment					
PHMA	IHMA	GHMA	LCHMA	RHMA	Non-HMA
26%	<1%	27%	<1%	<1%	46%

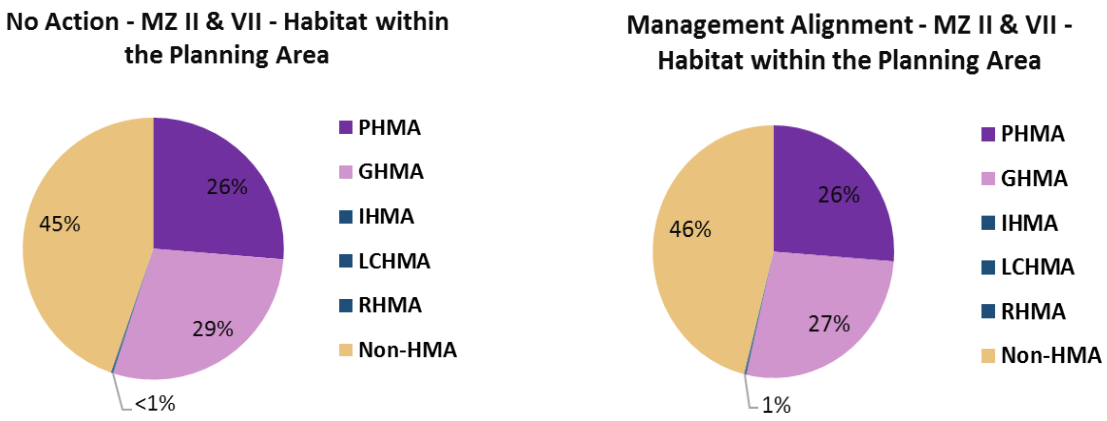


Figure 14 – Habitat Management Areas within MZs II/VII

Percentages reflect all lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

[2] Linkage Connectivity Habitat Management Area (LCHMA)

II. Geothermal Energy

Table 16 – Geothermal Energy Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [6] Data not available for portions of MT and WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Geothermal Energy Decisions[6] in MZ II/VII by Habitat Management Area Type							
Geothermal Energy	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	781,000	1,000	285,000	1,000	NA	2,342,000	**3,409,000**
Open NSO	2,271,000	29,000	342,000	54,000	NA	1,917,000	**4,615,000**
Open CSU/TL	983,000	0	1,316,000	81,000	NA	3,511,000	**5,891,000**
Open Standard Stipulations	0	0	245,000	8,000	NA	2,407,000	**2,660,000**
Total	**4,037,000**	**29,000**	**2,187,000**	**144,000**	**NA**	**10,179,000**	**16,575,000**

Geothermal Energy	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	565,000	1,000	260,000	1,000	NA	2,355,000	**3,181,000**
Open NSO	2,451,000	29,000	348,000	54,000	NA	1,923,000	**4,804,000**
Open CSU/TL	983,000	0	1,109,000	81,000	NA	3,719,000	**5,891,000**
Open Standard Stipulations	0	0	140,000	8,000	NA	2,512,000	**2,660,000**
Total	**4,000,000**	**29,000**	**1,857,000**	**144,000**	**NA**	**10,509,000**	**16,538,000**

Approximate % of Habitat Management Area by Geothermal Energy Decision[6] in MZ II/VII							
Geothermal Energy	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	19%	<1%	13%	1%	NA	23%	**21%**
Open NSO	56%	100%	16%	38%	NA	19%	**28%**
Open CSU/TL	24%	0%	60%	56%	NA	34%	**36%**
Open Standard Stipulations	0%	0%	11%	6%	NA	24%	**16%**
Total	**100%**	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

Geothermal Energy	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	14%	<1%	14%	1%	NA	22%	**19%**
Open NSO	61%	100%	19%	38%	NA	18%	**29%**
Open CSU/TL	25%	0%	60%	56%	NA	35%	**36%**
Open Standard Stipulations	0%	0%	8%	6%	NA	24%	**16%**
Total	**100%**	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

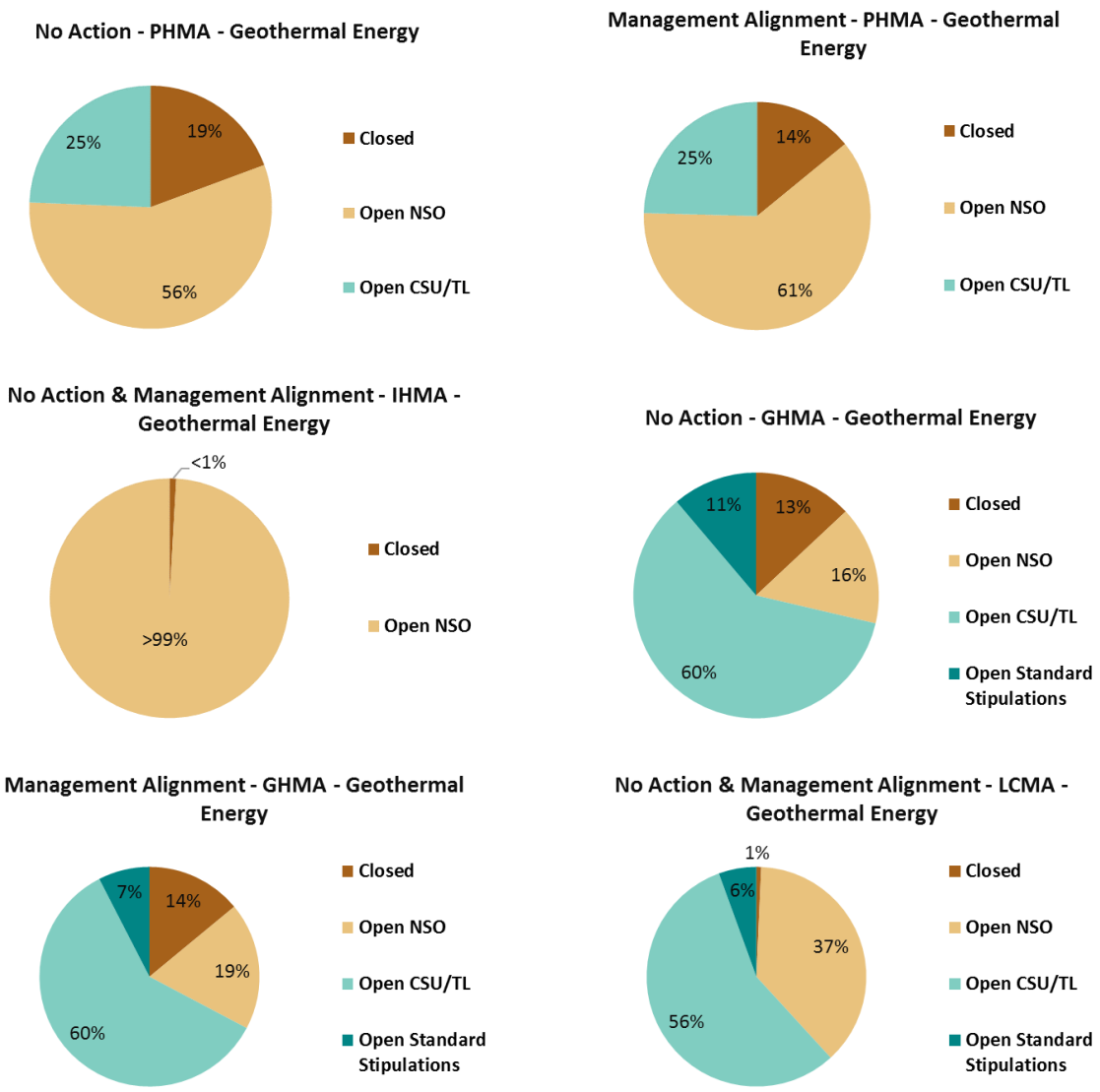
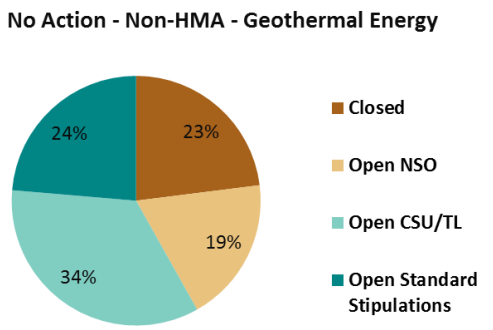


Figure 15 – Geothermal Energy Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [6] Data not available for portions of MT and WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.



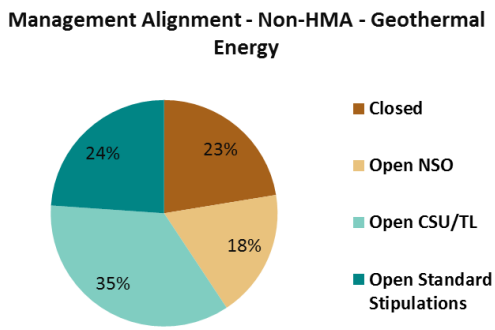


Figure 15 (cont'd) - Geothermal Energy Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [6] Data not available for portions of MT and WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

III. Land Tenure

Table 17 – Land Tenure Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Land Tenure Decisions in MZ II/VII by Habitat Management Area Type							
Land Tenure	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Disposal	57,000	0	154,000	0	0	115,000	**325,000**
Retention	8,894,000	18,000	8,972,000	82,000	7,000	11,837,000	**29,811,000**
Total	**8,951,000**	**18,000**	**9,126,000**	**82,000**	**7,000**	**11,952,000**	**30,136,000**

Land Tenure	Management Alignment						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Disposal	57,000	0	154,000	0	0	115,000	**325,000**
Retention	8,894,000	18,000	8,685,000	82,000	7,000	12,125,000	**29,811,000**
Total	**8,951,000**	**18,000**	**8,839,000**	**82,000**	**7,000**	**12,239,000**	**30,136,000**

Approximate % of Habitat Management Area by Land Tenure Decision in MZ II/VII							
Land Tenure	**No Action & Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Disposal	1%	0%	2%	0%	0%	1%	**1%**
Retention	99%	100%	98%	100%	100%	99%	**99%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

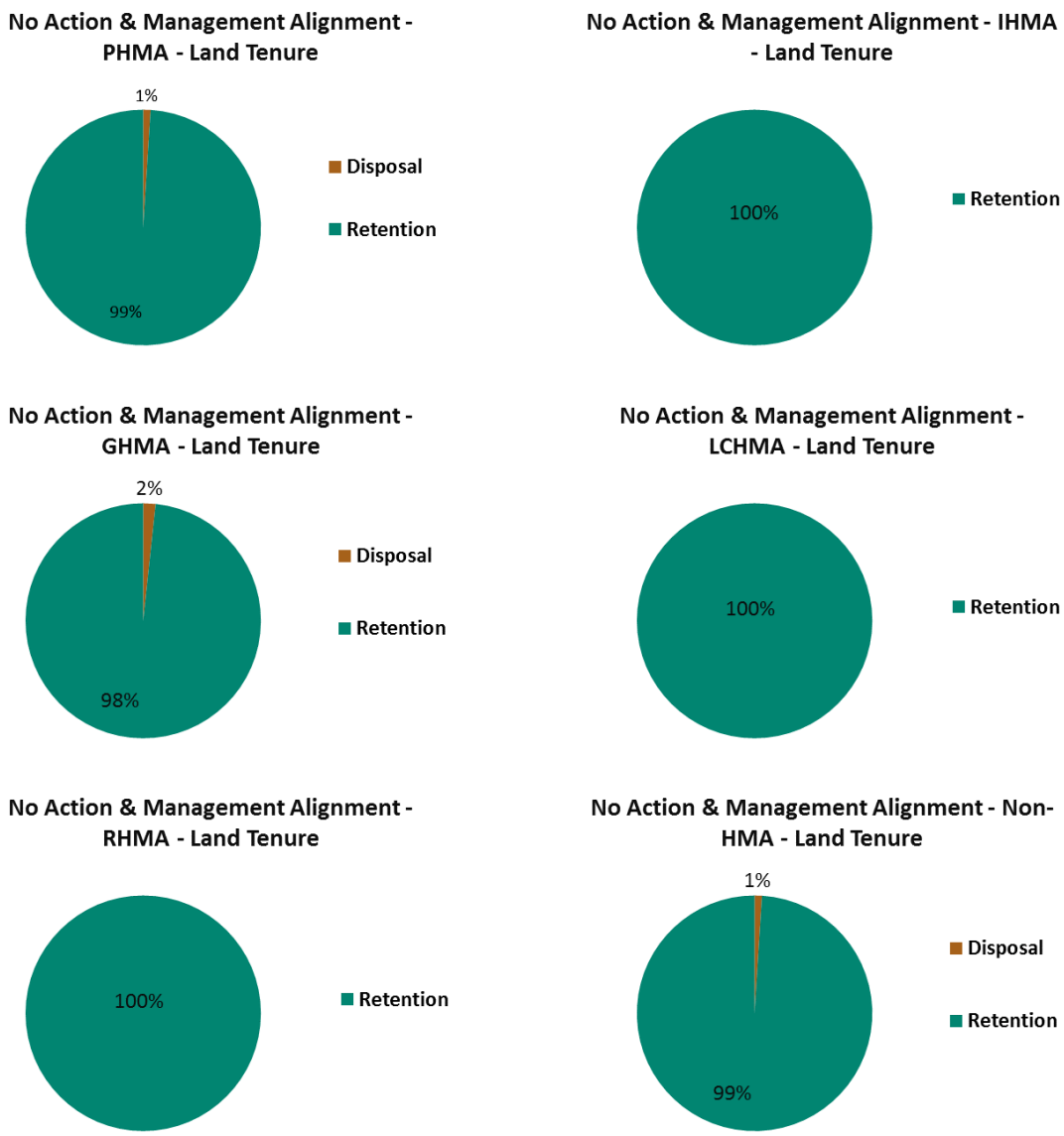


Figure 16 – Land Tenure Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

IV. Livestock Grazing

Table 18 – Livestock Grazing Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Livestock Grazing Decisions in MZ II/VII by Habitat Management Area Type							
Livestock Grazing	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Unavailable	40,000	0	40,000	0	0	316,000	**395,000**
Available	8,872,000	18,000	9,069,000	81,000	7,000	8,193,000	**26,241,000**
Total	**8,912,000**	**18,000**	**9,109,000**	**81,000**	**7,000**	**8,508,000**	**26,635,000**

Livestock Grazing	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Unavailable	40,000	0	40,000	0	0	316,000	**395,000**
Available	8,872,000	18,000	8,784,000	81,000	7,000	8,479,000	**26,241,000**
Total	**8,912,000**	**18,000**	**8,824,000**	**81,000**	**7,000**	**8,794,000**	**26,635,000**

Approximate % of Habitat Management Area by Livestock Grazing Decision in MZ II/VII							
Livestock Grazing	**No Action & Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Unavailable	<1%	0%	<1%	0%	0%	4%	**1%**
Available	100%	100%	100%	100%	100%	96%	**99%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Figure 17 – Livestock Grazing Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

V. Locatable Minerals

Table 19 – Locatable Minerals Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Locatable Minerals Decisions in MZ II/VII by Habitat Management Area Type							
Locatable Minerals	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Existing Withdrawals	1,863,000	7,000	2,394,000	1,000	0	4,804,000	**9,068,000**
Recommended Withdrawals	998,000	0	320,000	0	0	302,000	**1,620,000**
Open	8,323,000	27,000	8,529,000	137,000	7,000	10,250,000	**27,273,000**
Total	**11,185,000**	**33,000**	**11,243,000**	**137,000**	**7,000**	**15,357,000**	**37,962,000**

Locatable Minerals	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Existing Withdrawals	1,863,000	7,000	2,125,000	1,000	0	5,072,000	**9,068,000**
Recommended Withdrawals	618,000	0	318,000	0	0	302,000	**1,238,000**
Open	8,703,000	27,000	8,420,000	137,000	7,000	10,361,000	**27,656,000**
Total	**11,185,000**	**33,000**	**10,863,000**	**137,000**	**7,000**	**15,736,000**	**37,962,000**

Approximate % of Habitat Management Area by Locatable Minerals Decision in MZ II/VII							
Locatable Minerals	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Existing Withdrawals	17%	20%	21%	<1%	0%	31%	**24%**
Recommended Withdrawals	9%	0%	3%	0%	0%	2%	**4%**
Open	74%	80%	76%	100%	100%	67%	**72%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Locatable Minerals	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Existing Withdrawals	17%	20%	20%	<1%	0%	32%	**24%**
Recommended Withdrawals	6%	0%	3%	0%	0%	2%	**3%**
Open	78%	80%	78%	100%	100%	66%	**73%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

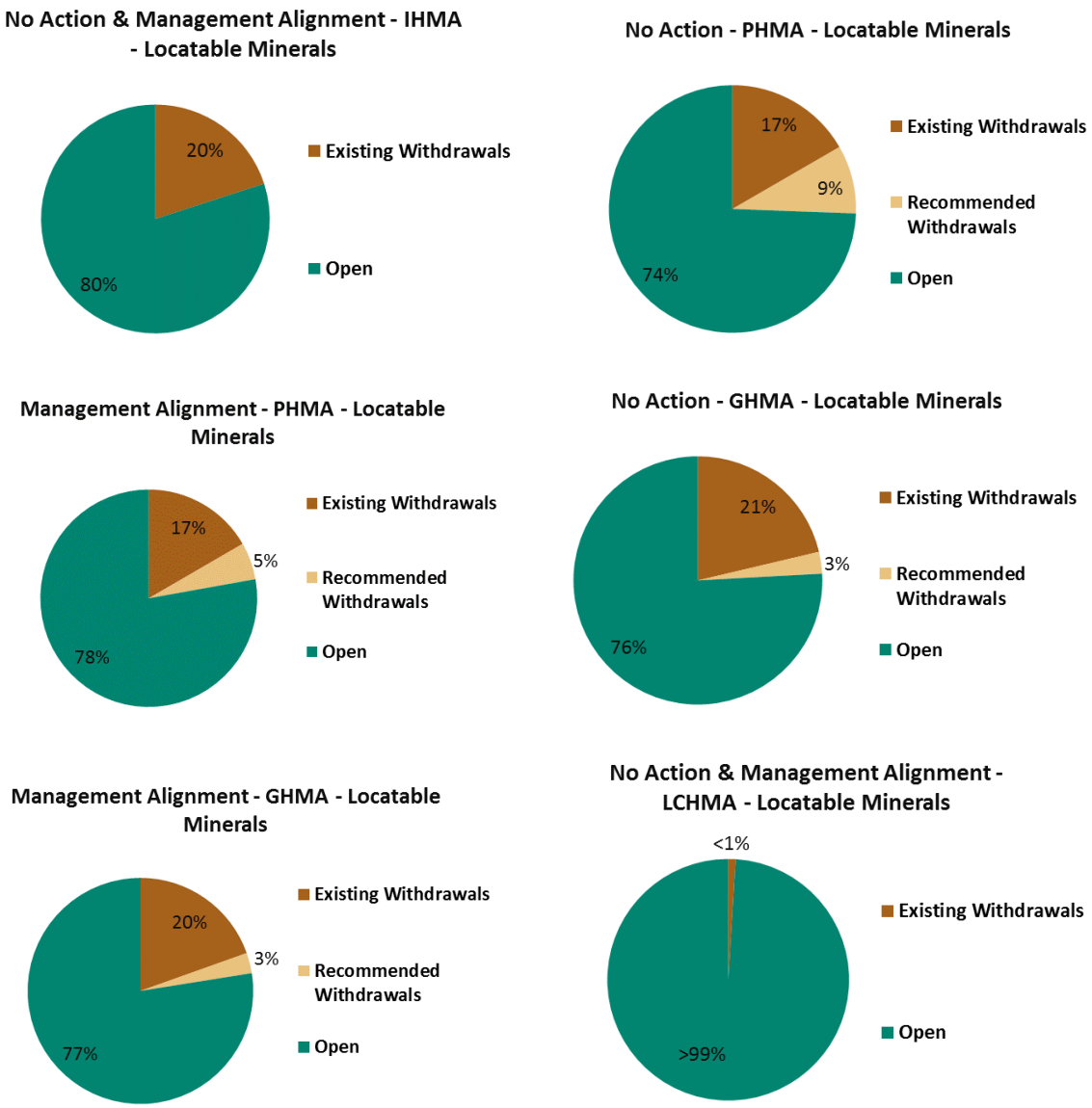


Figure 18 – Locatable Minerals Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

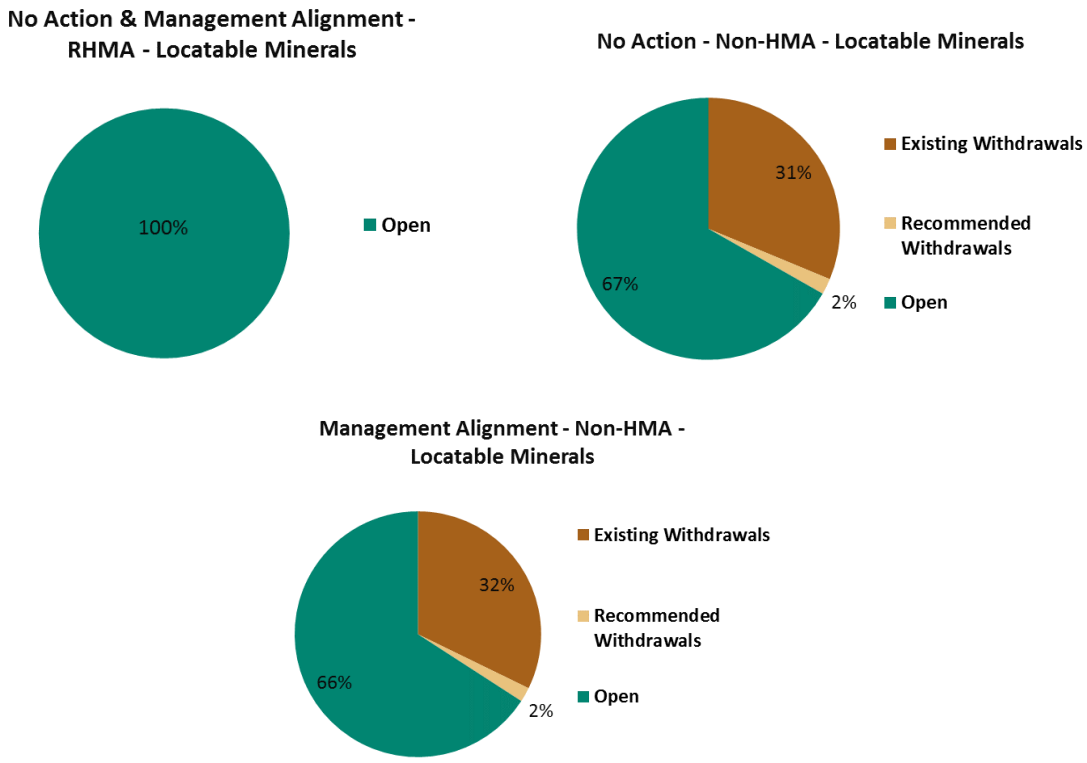


Figure 18 (cont'd) – Locatable Minerals Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VI. Non-Energy Leasable Minerals

Table 20 – Non-Energy Leasable Minerals Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding.[7] Data not available for portions of MT and WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Non-Energy Leasable Minerals Decisions[7] in MZ II/VII by Habitat Management Area Type							
Non-Energy Leasable Minerals	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	3,617,000	7,000	1,256,000	1,000	NA	4,591,000	**9,471,000**
Open	6,052,000	23,000	7,330,000	137,000	NA	10,221,000	**23,763,000**
Total	**9,669,000**	**30,000**	**8,586,000**	**137,000**	**NA**	**14,812,000**	**33,233,000**

Non-Energy Leasable Minerals	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	3,581,000	7,000	1,244,000	1,000	NA	4,603,000	**9,436,000**
Open	6,052,000	23,000	6,972,000	137,000	NA	10,614,000	**23,799,000**
Total	**9,633,000**	**30,000**	**8,216,000**	**137,000**	**NA**	**15,217,000**	**33,233,000**

Approximate % of Habitat Management Area by Non-Energy Leasable Minerals Decision[7] in MZ II/VII							
Non-Energy Leasable Minerals	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	37%	23%	15%	<1%	NA	31%	**28%**
Open	63%	77%	85%	100%	NA	69%	**72%**
Total	**100%**	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

Non-Energy Leasable Minerals	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	37%	23%	15%	<1%	NA	30%	**28%**
Open	63%	77%	85%	100%	NA	70%	**72%**
Total	**100%**	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

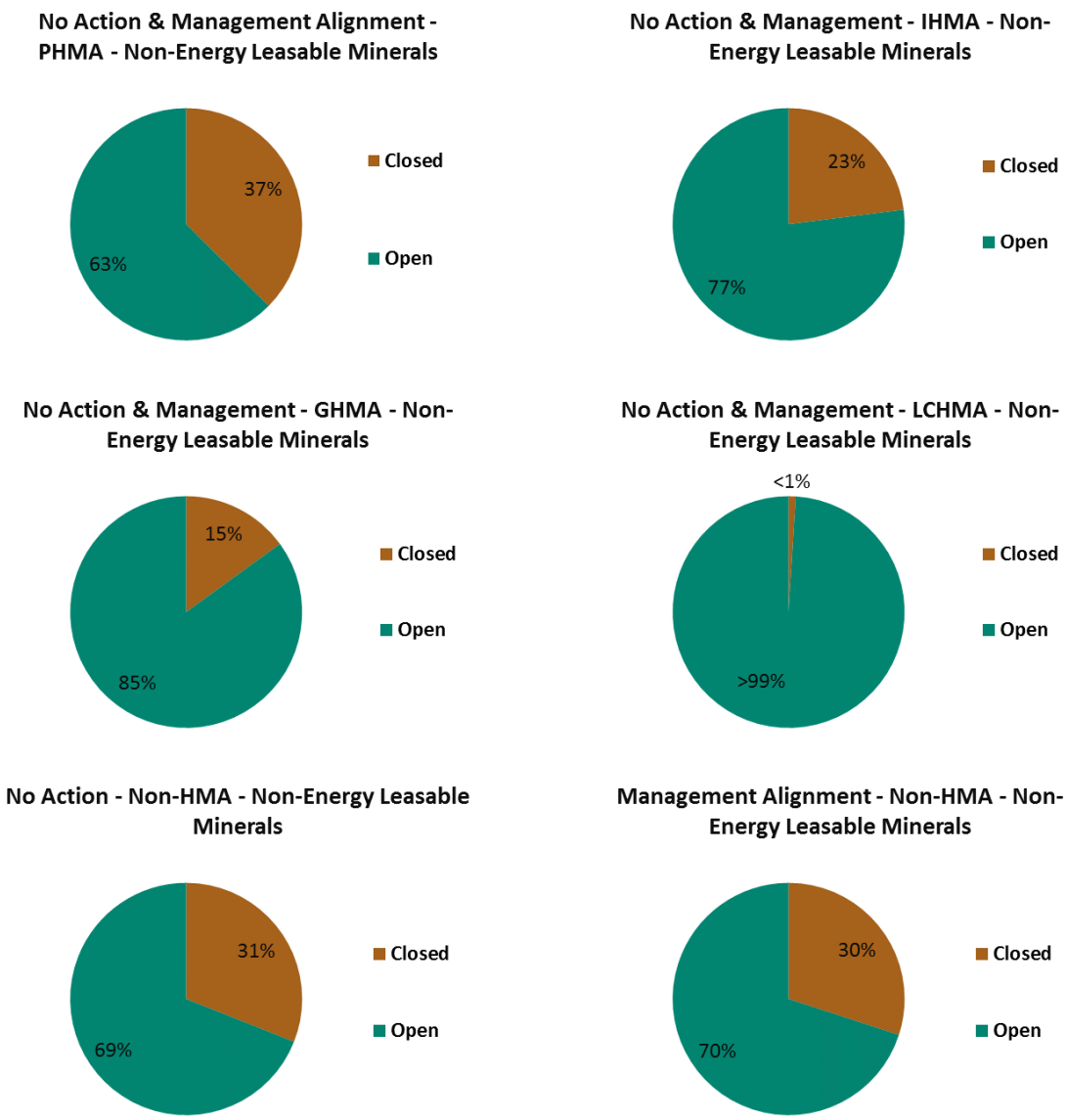


Figure 19 - Non-Energy Leasable Minerals Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding.[7] Data not available for portions of MT and WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VII. Fluid Minerals (Oil & Gas)

Table 21 – Fluid Minerals (Oil & Gas) Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages

Approximate Acres of Fluid Minerals (Oil & Gas) Decisions in MZ II/VII by Habitat Management Area Type							
Fluid Minerals (Oil & Gas)	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	1,294,000	7,000	1,178,000	1,000	0	4,773,000	**7,252,000**
Open NSO	4,399,000	23,000	1,425,000	54,000	5,000	2,628,000	**8,535,000**
Open CSU/TL	5,689,000	0	6,517,000	81,000	2,000	4,748,000	**17,036,000**
Open Standard Stipulations	0	0	2,297,000	8,000	0	2,895,000	**5,200,000**
Total	**11,382,000**	**29,000**	**11,416,000**	**144,000**	**8,000**	**15,046,000**	**38,024,000**

Fluid Minerals (Oil & Gas)	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	1,078,000	7,000	1,153,000	1,000	0	4,787,000	**7,024,000**
Open NSO	4,578,000	23,000	1,430,000	54,000	5,000	2,634,000	**8,725,000**
Open CSU/TL	5,689,000	0	6,310,000	81,000	2,000	4,956,000	**17,036,000**
Open Standard Stipulations	0	0	2,193,000	8,000	0	3,000,000	**5,200,000**
Total	**11,345,000**	**29,000**	**11,086,000**	**144,000**	**8,000**	**15,376,000**	**37,988,000**

Approximate % of Habitat Management Area by Fluid Minerals (Oil & Gas) Decision in MZ II/VII							
Fluid Minerals (Oil & Gas)	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	11%	21%	10%	<1%	0%	32%	**19%**
Open NSO	39%	79%	12%	38%	63%	17%	**22%**
Open CSU/TL	50%	0%	57%	56%	37%	32%	**45%**
Open Standard Stipulations	0%	0%	20%	6%	0%	19%	**14%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Fluid Minerals (Oil & Gas)	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	10%	21%	10%	<1%	0%	31%	**18%**
Open NSO	40%	79%	13%	38%	63%	17%	**23%**
Open CSU/TL	50%	0%	57%	56%	37%	32%	**45%**
Open Standard Stipulations	0%	0%	20%	6%	0%	20%	**14%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

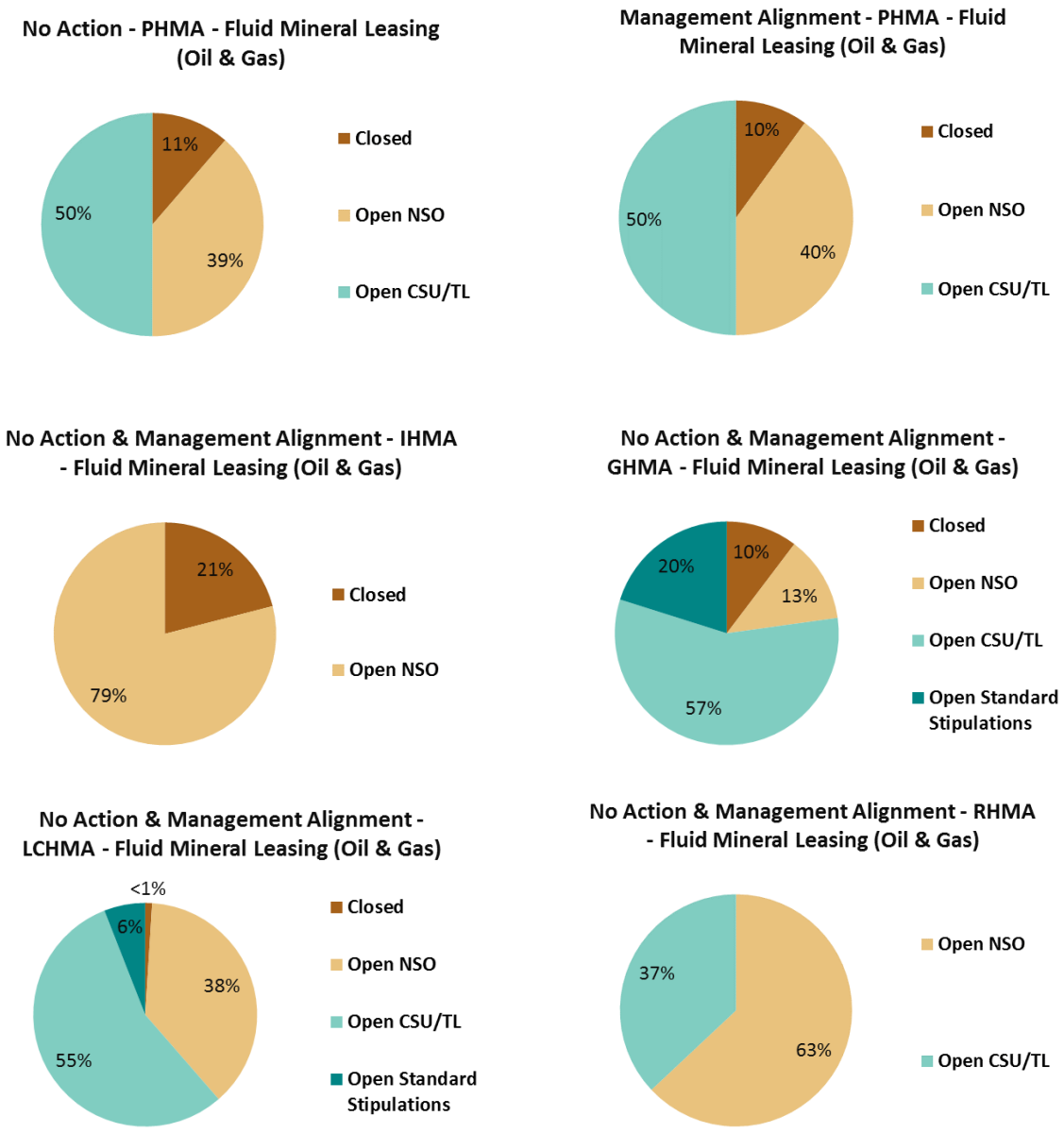


Figure 20 – Fluid Minerals (Oil & Gas) Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

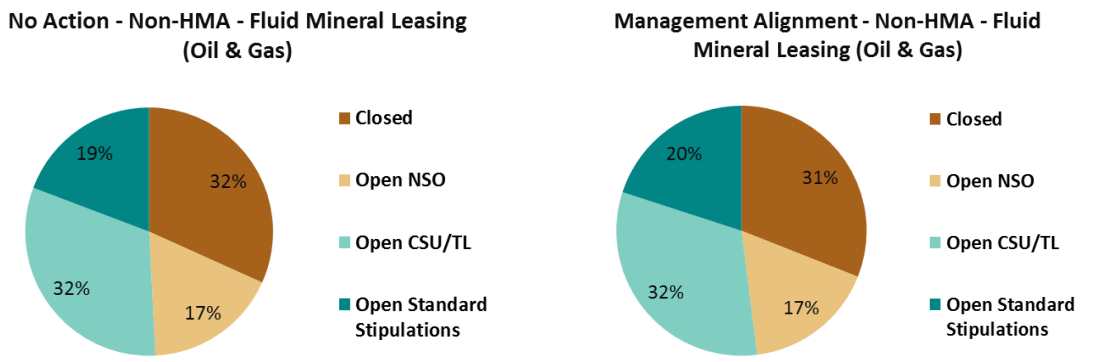


Figure 20 (cont'd) – Fluid Minerals (Oil & Gas) Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VIII. Rights-of-Ways

Table 22 – Rights-of-Ways Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Rights-of-Ways Decisions in MZ II/VII by Habitat Management Area Type							
Rights-of-Ways	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	561,000	0	654,000	0	0	1,255,000	**2,471,000**
Avoidance	8,119,000	18,000	3,132,000	16,000	7,000	1,172,000	**12,465,000**
Open	71,000	16,000	5,256,000	51,000	0	5,067,000	**10,460,000**
Total	**8,752,000**	**34,000**	**9,041,000**	**67,000**	**7,000**	**7,494,000**	**25,395,000**
Rights-of-Ways	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	561,000	0	651,000	0	0	1,258,000	**2,471,000**
Avoidance	8,119,000	18,000	3,132,000	16,000	7,000	1,172,000	**12,465,000**
Open	71,000	16,000	4,971,000	51,000	0	5,351,000	**10,460,000**
Total	**8,752,000**	**34,000**	**8,754,000**	**67,000**	**7,000**	**7,781,000**	**25,395,000**

Approximate % of Habitat Management Area by Rights-of-Ways Decision in MZ II/VII							
Rights-of-Ways	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	6%	0%	7%	0%	0%	17%	**10%**
Avoidance	93%	53%	35%	24%	100%	16%	**49%**
Open	1%	47%	58%	76%	0%	68%	**41%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Rights-of-Ways	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	6%	0%	7%	0%	0%	16%	**10%**
Avoidance	93%	53%	36%	24%	100%	15%	**49%**
Open	1%	47%	57%	76%	0%	69%	**41%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

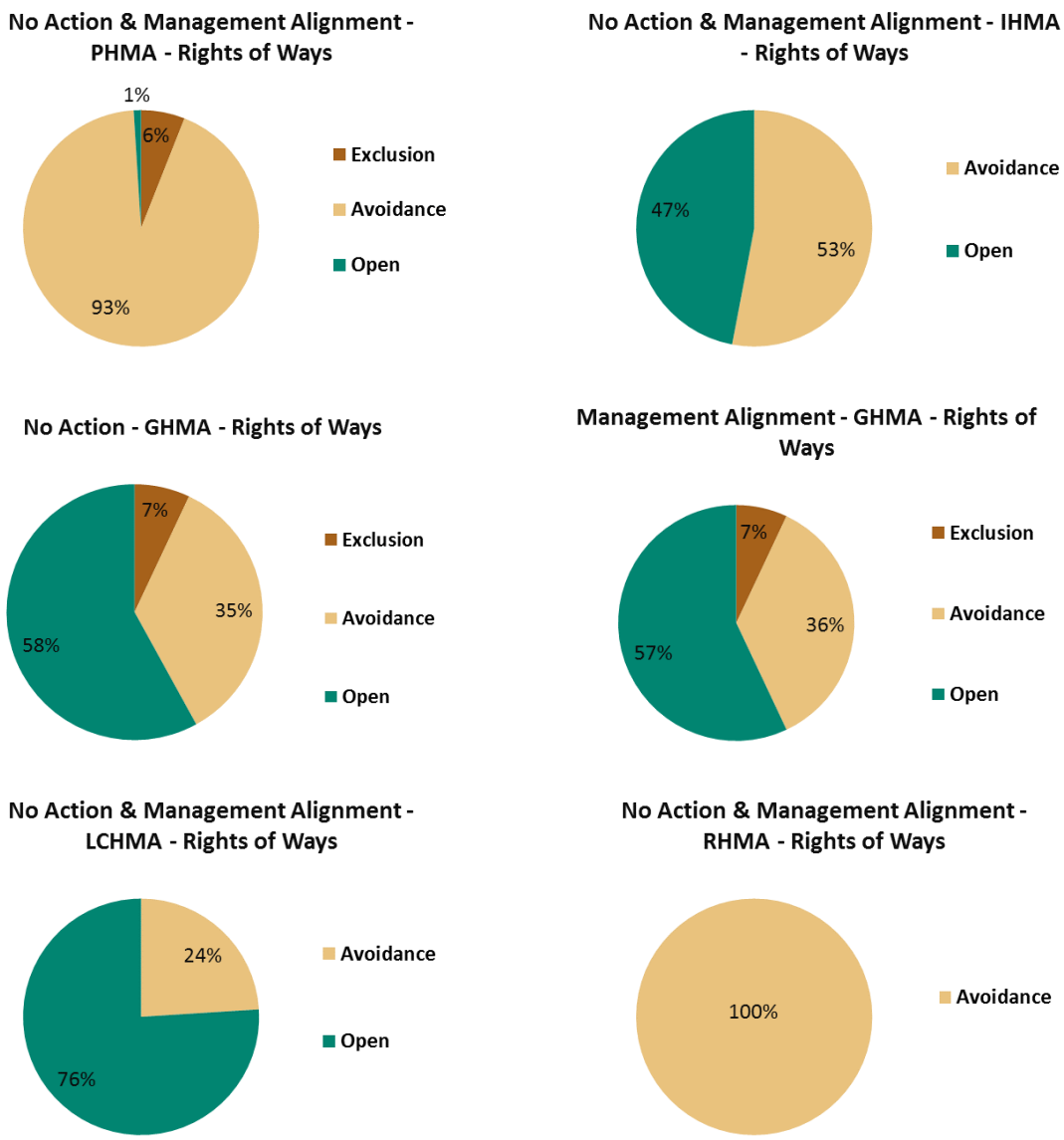


Figure 21 – Rights-of-Ways Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

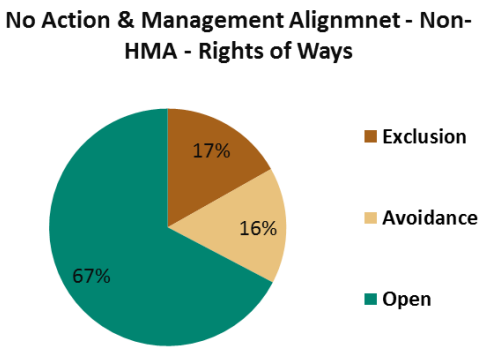


Figure 21 (cont'd) – Rights-of-Ways Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

IX. Salable Minerals Materials

Table 23 – Salable Minerals Materials Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Salable Minerals Materials Decisions in MZ II/VII by Habitat Management Area Type							
Salable Minerals Materials	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	3,241,000	0	1,401,000	27,000	0	3,592,000	**8,263,000**
Open	7,671,000	28,000	9,745,000	115,000	7,000	9,675,000	**27,239,000**
Total	**10,912,000**	**28,000**	**11,145,000**	**142,000**	**7,000**	**13,268,000**	**35,502,000**
Salable Minerals Materials	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	3,241,000	0	1,399,000	27,000	0	3,594,000	**8,263,000**
Open	7,671,000	28,000	9,413,000	115,000	7,000	10,006,000	**27,239,000**
Total	**10,912,000**	**28,000**	**10,813,000**	**142,000**	**7,000**	**13,600,000**	**35,502,000**

Approximate % of Habitat Management Area by Salable Minerals Materials Decision in MZ II/VII							
Salable Minerals Materials	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	30%	0%	13%	19%	0%	26%	**23%**
Open	70%	100%	87%	81%	100%	74%	**77%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Salable Minerals Materials	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	30%	0%	13%	19%	0%	27%	**23%**
Open	70%	100%	87%	81%	100%	73%	**77%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

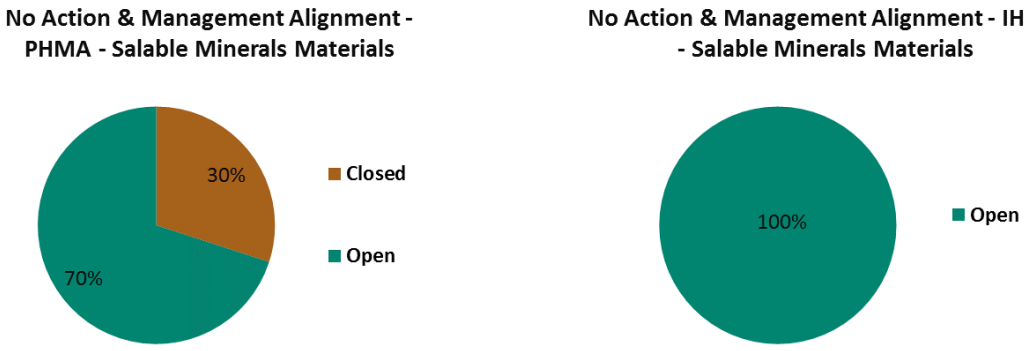


Figure 22 – Salable Minerals Materials Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

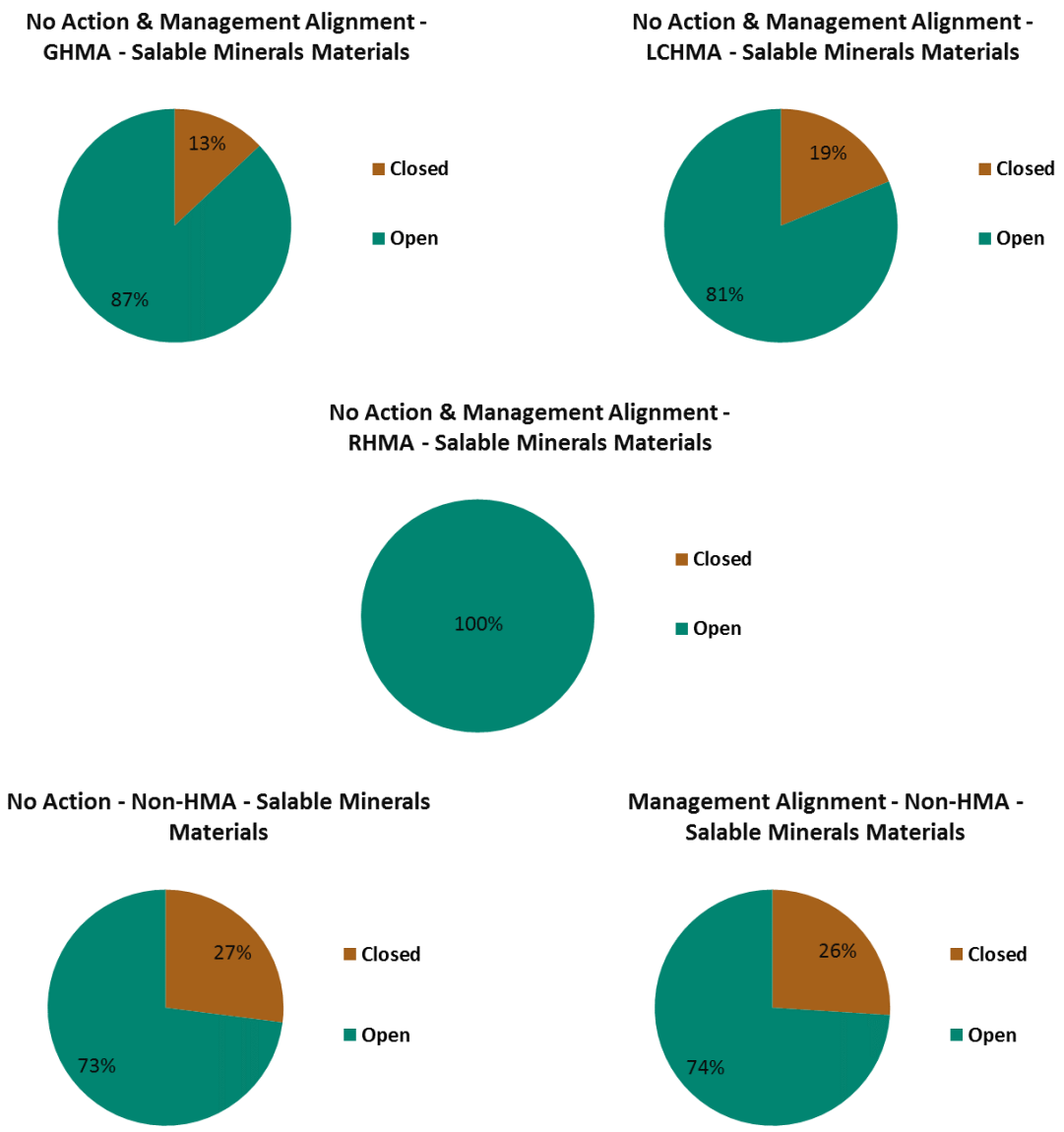


Figure 22 (cont'd) – Salable Minerals Materials Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

X. Solar Energy

Table 24 – Solar Energy Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [8] Data not available for WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Solar Energy Decisions[8] in MZ II/VII by Habitat Management Area Type							
Solar Energy	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	1,494,000	0	317,000	0	7,000	4,352,000	**6,169,000**
Avoidance	2,000	18,000	764,000	83,000	0	742,000	**1,610,000**
Open	0	0	1,000	0	0	2,170,000	**2,171,000**
Total	**1,496,000**	**18,000**	**1,082,000**	**83,000**	**7,000**	**7,265,000**	**9,950,000**
Solar Energy	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	1,494,000	0	30,000	0	7,000	4,639,000	**6,169,000**
Avoidance	2,000	18,000	764,000	83,000	0	742,000	**1,610,000**
Open	0	0	1,000	0	0	2,170,000	**2,171,000**
Total	**1,496,000**	**18,000**	**795,000**	**83,000**	**7,000**	**7,551,000**	**9,950,000**

Approximate % of Habitat Management Area by Solar Energy Decision[8] in MZ II/VII							
Solar Energy	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	100%	0%	29%	0%	100%	60%	**62%**
Avoidance	0%	100%	71%	100%	0%	10%	**16%**
Open	0%	0%	<1%	0%	0%	30%	**22%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Solar Energy	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	100%	0%	4%	0%	100%	61%	**62%**
Avoidance	0%	100%	96%	100%	0%	10%	**16%**
Open	0%	0%	<1%	0%	0%	29%	**22%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

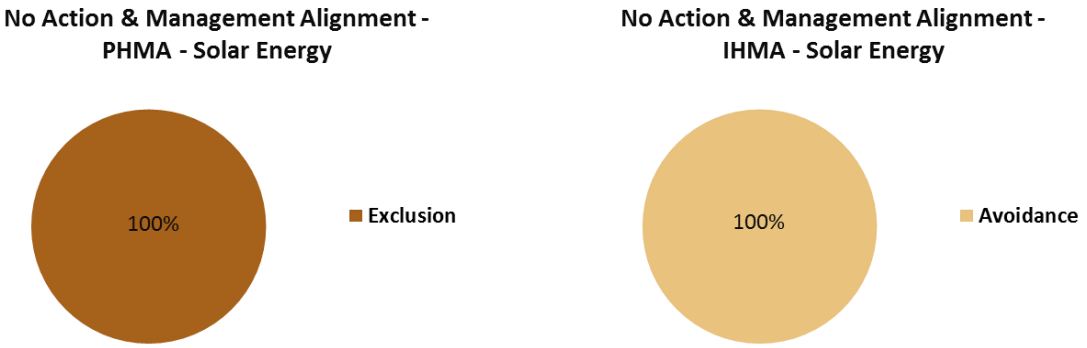


Figure 23 – Solar Energy Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [8] Data not available for WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

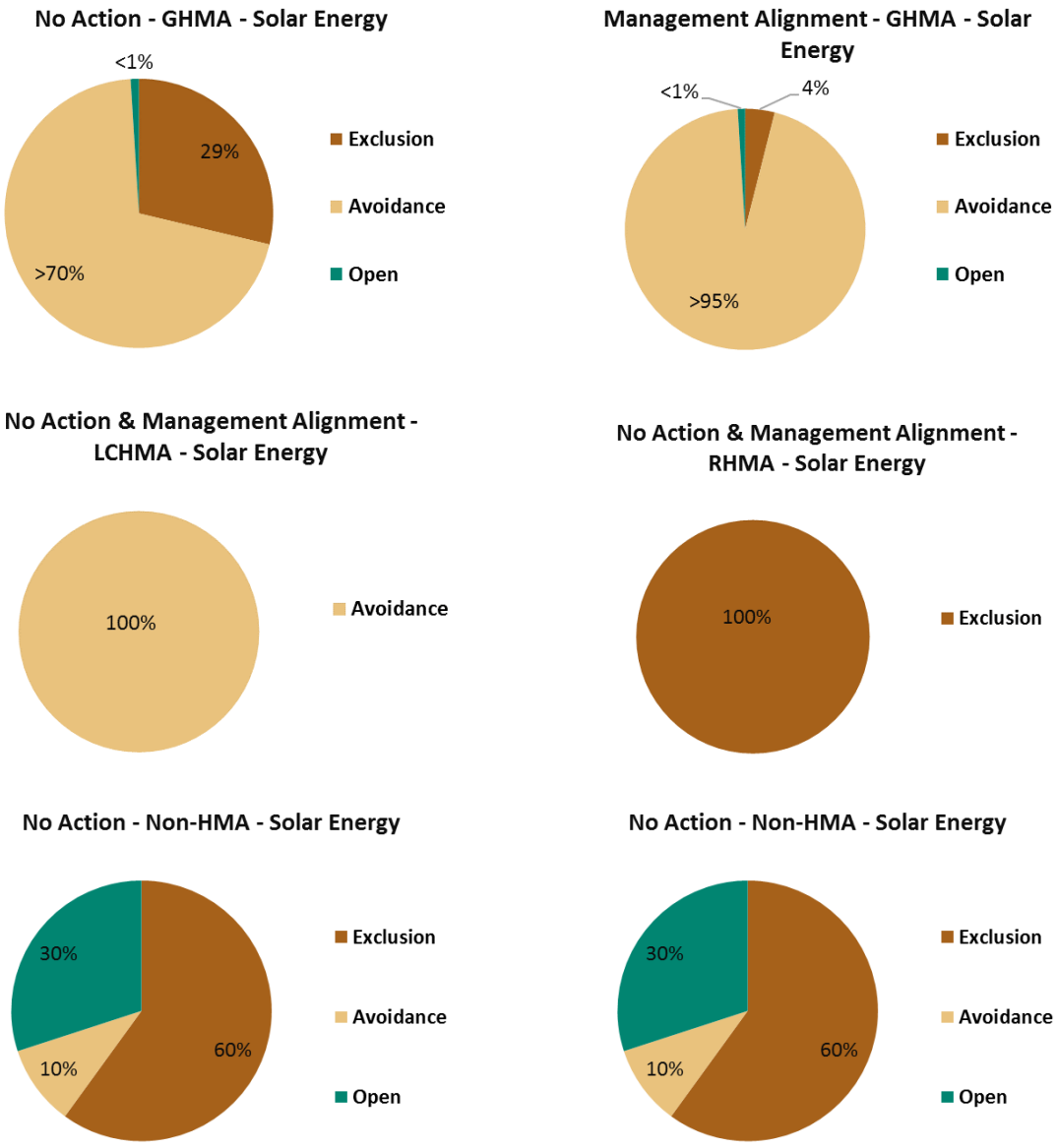


Figure 23 (cont'd) – Solar Energy Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. [8] Data not available for WY. Calculations reflect only the portions of the MZ where data was available. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

XI. Trails and Travel Management

Table 25 – Trails and Travel Management Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Trails and Travel Management Decisions in MZ II/VII by Habitat Management Area Type							
Trails and Travel Management	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	103,000	0	369,000	11,000	0	1,304,000	**1,787,000**
Limited	8,840,000	18,000	8,696,000	69,000	7,000	6,337,000	**23,966,000**
Open	4,000	0	54,000	3,000	0	891,000	**953,000**
Total	**8,947,000**	**18,000**	**9,121,000**	**82,000**	**7,000**	**8,531,000**	**26,706,000**
Trails and Travel Management	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	103,000	0	366,000	11,000	0	1,307,000	**1,787,000**
Limited	8,840,000	18,000	8,413,000	69,000	7,000	6,620,000	**23,966,000**
Open	4,000	0	54,000	3,000	0	891,000	**953,000**
Total	**8,947,000**	**18,000**	**8,834,000**	**82,000**	**7,000**	**8,819,000**	**26,706,000**

Approximate % of Habitat Management Area by Trails and Travel Management Decision in MZ II/VII							
Trails and Travel Management	**No Action & Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Closed	1%	0%	4%	13%	0%	15%	**7%**
Limited	99%	100%	95%	84%	100%	74%	**90%**
Open	0%	0%	1%	4%	0%	10%	**4%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Figure 24 – Trails and Travel Management Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

XII. Wind Energy

Table 26 – Wind Energy Decisions within MZ II/VII

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Wind Energy Decisions in MZ II/VII by Habitat Management Area Type							
Wind Energy	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	3,660,000	0	1,041,000	0	7,000	1,327,000	**6,035,000**
Avoidance	5,294,000	18,000	2,805,000	83,000	0	1,103,000	**9,304,000**
Open	0	0	5,272,000	0	0	5,045,000	**10,317,000**
Total	**8,953,000**	**18,000**	**9,119,000**	**83,000**	**7,000**	**7,476,000**	**25,656,000**
Wind Energy	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	3,660,000	0	1,038,000	0	7,000	1,330,000	**6,035,000**
Avoidance	5,294,000	18,000	2,805,000	83,000	0	1,103,000	**9,304,000**
Open	0	0	4,988,000	0	0	5,329,000	**10,317,000**
Total	**8,953,000**	**18,000**	**8,831,000**	**83,000**	**7,000**	**7,763,000**	**25,656,000**

Approximate % of Habitat Management Area by Wind Energy Decision in MZ II/VII							
Wind Energy	**No Action**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	41%	0%	11%	0%	100%	18%	**24%**
Avoidance	59%	100%	31%	100%	0%	15%	**36%**
Open	0%	0%	58%	0%	0%	67%	**40%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Wind Energy	**Management Alignment**						
	PHMA	**IHMA**	**GHMA**	**LCHMA**	**RHMA**	**Non-HMA**	**Total**
Exclusion	41%	0%	12%	0%	100%	17%	**24%**
Avoidance	59%	100%	32%	100%	0%	14%	**36%**
Open	0%	0%	56%	0%	0%	69%	**40%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

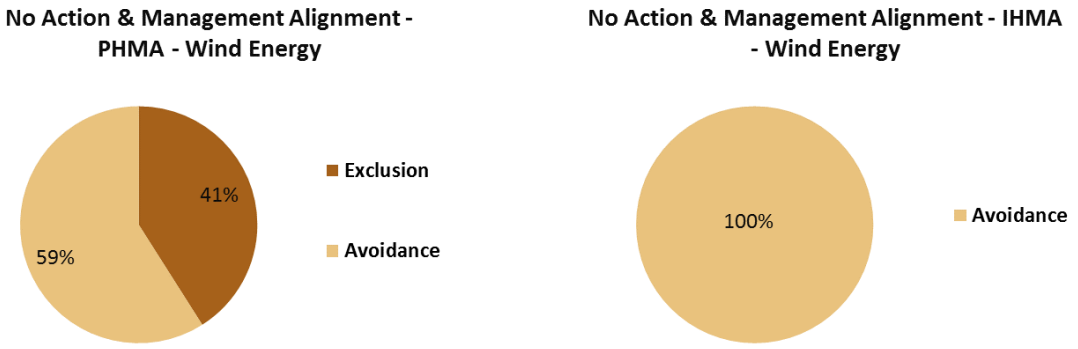


Figure 25 – Wind Energy Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

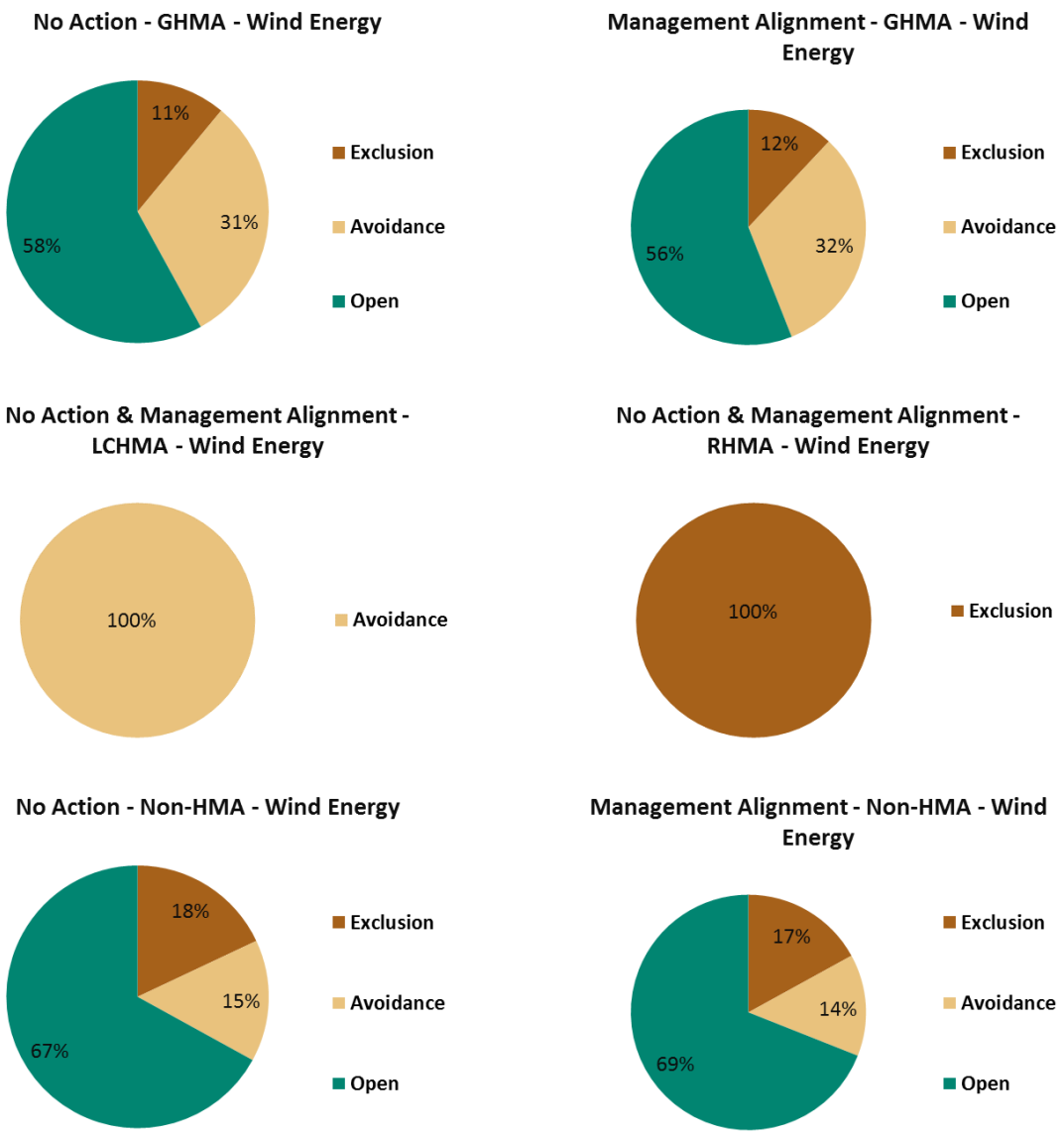


Figure 25 (cont'd) – Wind Energy Decisions within MZ II/VII

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

B.2.3 Management Zone III – Utah, Nevada

I. Habitat Management

Table 27 – Habitat Management Areas within MZ III

Acres and percentages reflect all lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of HMA in MZ III									
No Action					Management Alignment				
PHMA	GHMA	OHMA	Anthro Mtn	Non-HMA	PHMA	GHMA	OHMA	Anthro Mtn	Non-HMA
7,093,000	5,953,000	5,651,000	42,000	54,928,000	6,974,000	4,474,000	4,253,000	42,000	57,925,000

Approximate Percent of MZ III that is HMA									
No Action					Management Alignment				
PHMA	GHMA	OHMA	Anthro Mtn	Non-HMA	PHMA	GHMA	OHMA	Anthro Mtn	Non-HMA
10%	8%	8%	<1%	75%	**9%**	**6%**	**6%**	**<1%**	**79%**

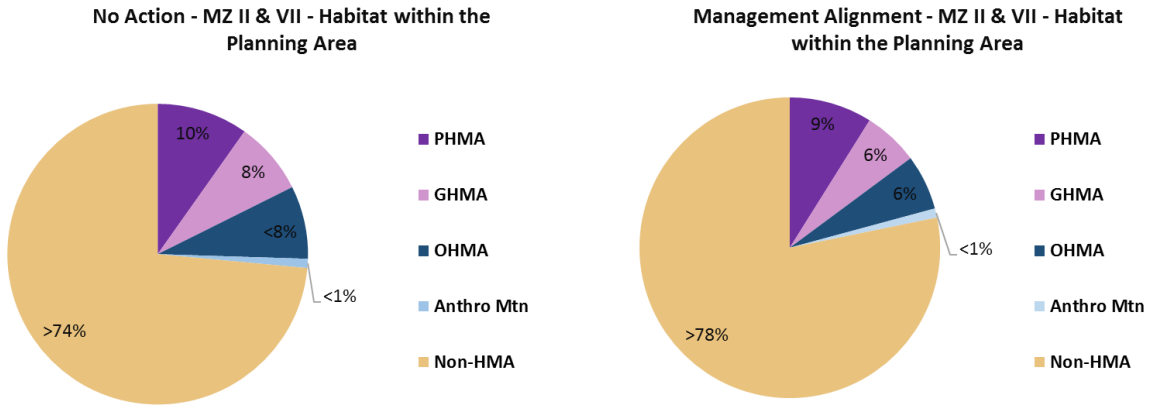


Figure 26 – Habitat Management Areas within MZ III

Percentages reflect all lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

II. Geothermal Energy

Table 28 – Geothermal Energy Decisions within MZ III

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Geothermal Energy Decisions in MZ III by Habitat Management Area Type						
Geothermal Energy	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	126,000	165,000	230,000	7,000	4,948,000	**5,476,000**
Open NSO	5,358,000	23,000	0	35,000	3,939,000	**9,354,000**
Open CSU/TL	0	3,628,000	0	0	2,135,000	**5,763,000**
Open Standard Stipulations	0	86,000	4,042,000	0	26,065,000	**30,193,000**
Total	**5,484,000**	**3,902,000**	**4,272,000**	**42,000**	**37,087,000**	**50,787,000**
Geothermal Energy	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	124,000	176,000	159,000	7,000	4,990,000	**5,457,000**
Open NSO	5,483,000	0	0	35,000	3,961,000	**9,479,000**
Open CSU/TL	0	3,565,000	0	0	2,191,000	**5,756,000**
Open Standard Stipulations	0	0	3,534,000	0	26,554,000	**30,088,000**
Total	**5,607,000**	**3,741,000**	**3,693,000**	**42,000**	**37,696,000**	**50,780,000**

Approximate % of Habitat Management Area by Geothermal Energy Decision in MZ III						
Geothermal Energy	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	2%	4%	5%	17%	13%	**11%**
Open NSO	98%	1%	0%	83%	11%	**18%**
Open CSU/TL	0%	93%	0%	0%	6%	**11%**
Open Standard Stipulations	0%	2%	95%	0%	70%	**59%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Geothermal Energy	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	2%	5%	4%	17%	13%	**11%**
Open NSO	98%	0%	0%	83%	11%	**19%**
Open CSU/TL	0%	95%	0%	0%	6%	**11%**
Open Standard Stipulations	0%	0%	96%	0%	70%	**59%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Figure 27 – Geothermal Energy Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

III. Land Tenure

Table 29 – Land Tenure Decisions within MZ III

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Land Tenure Decisions in MZ III by Habitat Management Area Type						
Land Tenure	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Disposal	0	0	280,000	NA	2,178,000	**2,458,000**
Retention	4,722,000	3,875,000	3,992,000	NA	30,234,000	**42,824,000**
Total	**4,722,000**	**3,875,000**	**4,272,000**	**NA**	**32,413,000**	**45,283,000**
Land Tenure	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Disposal	3,000	62,000	304,000	NA	2,214,000	**2,583,000**
Retention	4,844,000	3,679,000	3,389,000	NA	30,782,000	**42,694,000**
Total	**4,847,000**	**3,741,000**	**3,693,000**	**NA**	**32,996,000**	**45,277,000**

Approximate % of Habitat Management Area by Land Tenure Decision in MZ III						
Land Tenure	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Disposal	0%	0%	7%	NA	7%	**5%**
Retention	100%	100%	93%	NA	93%	**95%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**
Land Tenure	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Disposal	0%	2%	8%	NA	7%	**6%**
Retention	100%	98%	92%	NA	93%	**94%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

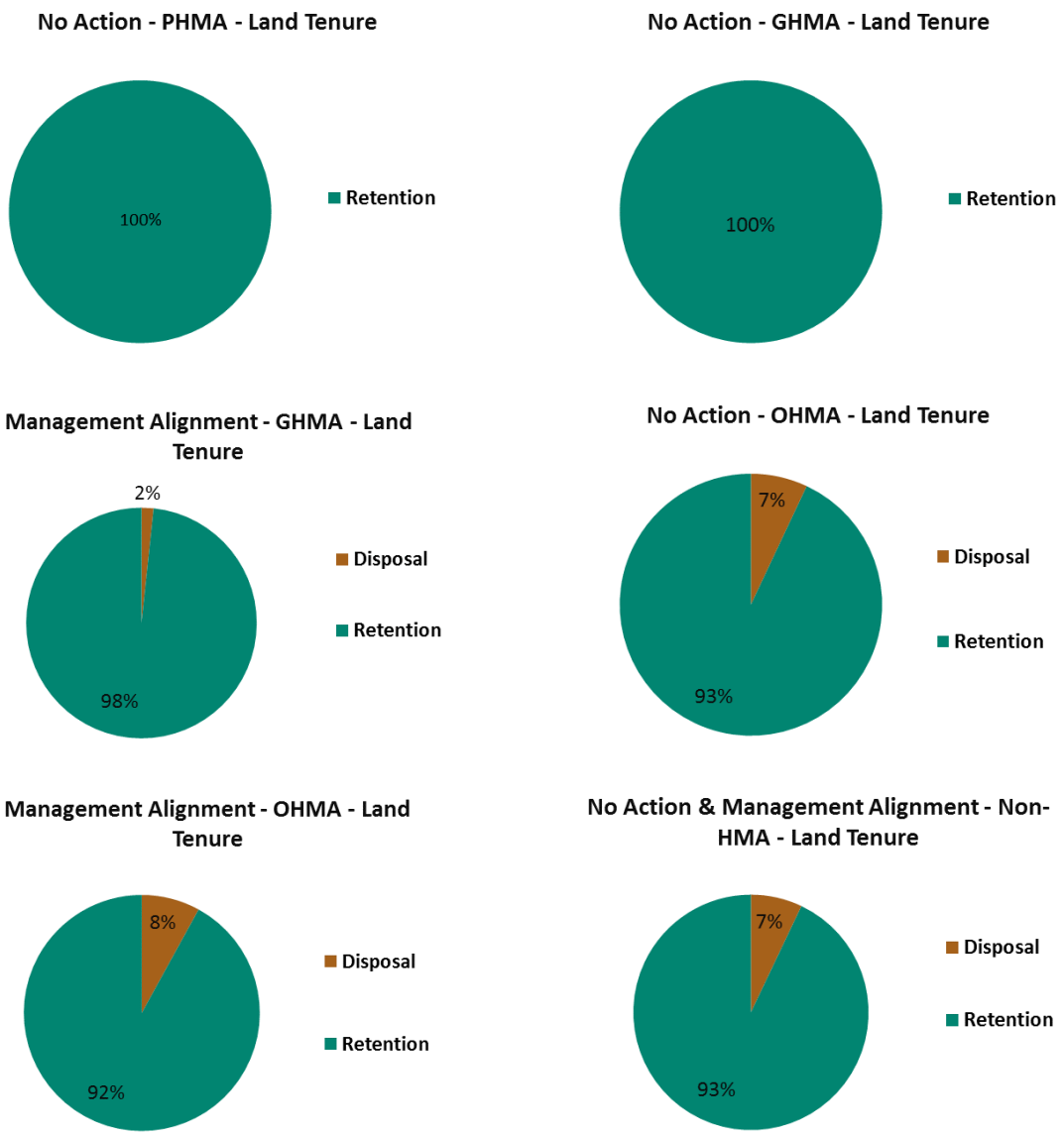


Figure 28 – Land Tenure Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

IV. Livestock Grazing

Table 30 – Livestock Grazing Decisions within MZ III

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Livestock Grazing Decisions in MZ III by Habitat Management Area Type						
Livestock Grazing	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Unavailable	0	0	0	NA	129,000	**129,000**
Available	4,722,000	3,868,000	4,265,000	NA	31,559,000	**44,415,000**
Total	**4,722,000**	**3,868,000**	**4,265,000**	**NA**	**31,688,000**	**44,544,000**

Livestock Grazing	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Unavailable	0	0	0	NA	129,000	**129,000**
Available	4,845,000	3,741,000	3,690,000	NA	32,135,000	**44,410,000**
Total	**4,845,000**	**3,741,000**	**3,690,000**	**NA**	**32,264,000**	**44,539,000**

Approximate % of Habitat Management Area by Livestock Grazing Decision in MZ III						
Livestock Grazing	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Unavailable	0%	0%	0%	NA	<1%	**<1%**
Available	100%	100%	100%	NA	100%	**100%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

Livestock Grazing	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Unavailable	0%	0%	0%	NA	<1%	**<1%**
Available	100%	100%	100%	NA	100%	**100%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

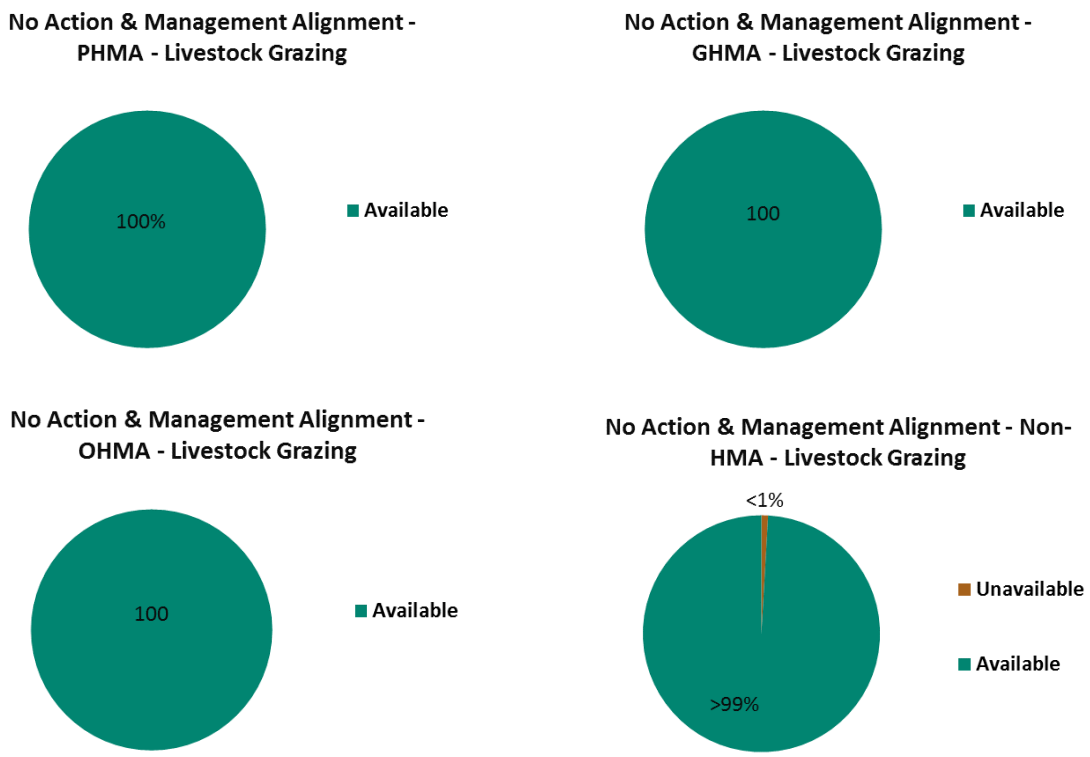


Figure 29 – Livestock Grazing Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

V. Locatable Minerals

Table 31 – Locatable Minerals Decisions within MZ III

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Locatable Minerals Decisions in MZ III by Habitat Management Area Type						
Locatable Minerals	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Existing Withdrawals	56,000	143,000	52,000	0	3,350,000	**3,602,000**
Recommended Withdrawals	4,000	0	0	0	49,000	**53,000**
Open	5,429,000	3,788,000	4,219,000	42,000	34,853,000	**48,332,000**
Total	**5,489,000**	**3,931,000**	**4,272,000**	**42,000**	**38,253,000**	**51,987,000**
Locatable Minerals	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Existing Withdrawals	61,000	100,000	42,000	0	3,398,000	**3,601,000**
Recommended Withdrawals	4,000	0	0	0	50,000	**53,000**
Open	5,552,000	3,641,000	3,650,000	42,000	35,444,000	**48,330,000**
Total	**5,617,000**	**3,741,000**	**3,693,000**	**42,000**	**38,892,000**	**51,985,000**

Approximate % of Habitat Management Area by Geothermal Energy Decision in MZ III						
Locatable Minerals	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Existing Withdrawals	1%	4%	1%	0	9%	**7%**
Recommended Withdrawals	<1%	0%	0%	0%	<1%	**<1%**
Open	99%	96%	99%	100%	91%	**93%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Locatable Minerals	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Existing Withdrawals	**1%**	**3%**	**1%**	**0%**	**9%**	**7%**
Recommended Withdrawals	**<1%**	**0%**	**0%**	**0%**	**0%**	**<1%**
Open	**99%**	**97%**	**99%**	**100%**	**91%**	**93%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

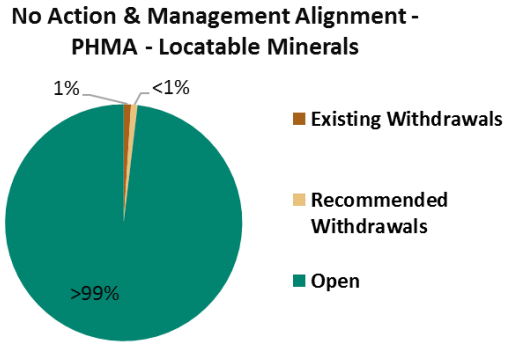


Figure 30 – Locatable Minerals Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

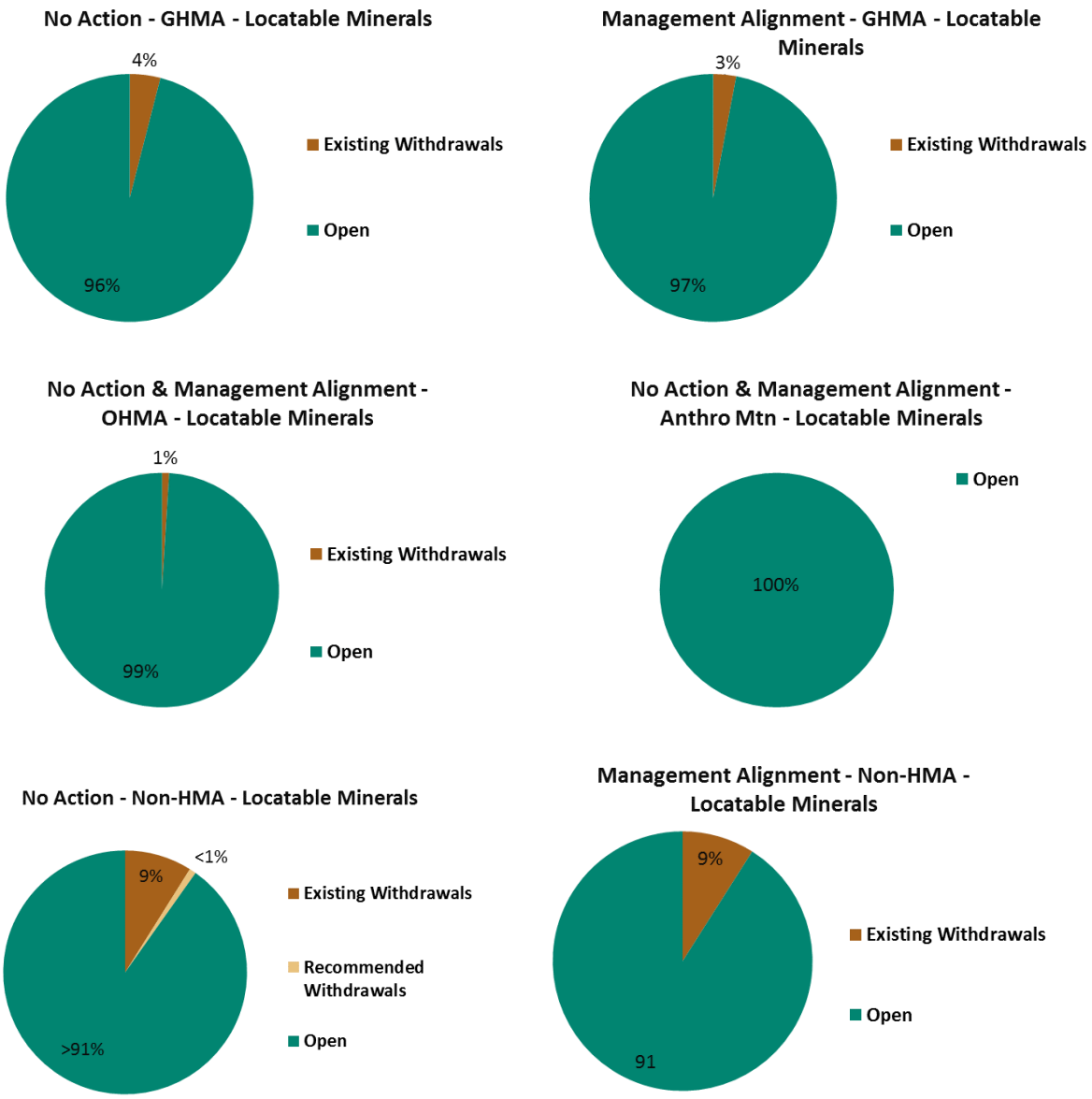


Figure 30 (cont'd) – Locatable Minerals Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VI. Non-Energy Leasable Minerals

Table 32 – Non-Energy Leasable Minerals Decisions within MZ III

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Non-Energy Leasable Minerals Decisions in MZ III by Habitat Management Area Type						
Non-Energy Leasable Minerals	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	5,486,000	165,000	230,000	42,000	4,948,000	**10,871,000**
Open	0	3,766,000	4,042,000	0	33,308,000	**41,116,000**
Total	**5,486,000**	**3,931,000**	**4,272,000**	**42,000**	**38,256,000**	**51,987,000**
Non-Energy Leasable Minerals	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	5,611,000	176,000	159,000	42,000	4,990,000	**10,978,000**
Open	0	3,565,000	3,534,000	0	33,904,000	**41,004,000**
Total	**5,611,000**	**3,741,000**	**3,693,000**	**42,000**	**38,894,000**	**51,981,000**

Approximate % of Habitat Management Area by Non-Energy Leasable Minerals Decision in MZ III						
Non-Energy Leasable Minerals	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	100%	4%	5%	100%	13%	**21%**
Open	0%	96%	95%	0%	87%	**79%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Non-Energy Leasable Minerals	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	100%	5%	4%	100%	13%	**21%**
Open	0%	95%	96%	0%	87%	**79%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

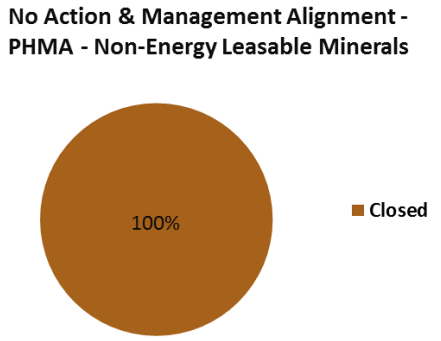


Figure 31 – Non-Energy Leasable Minerals Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

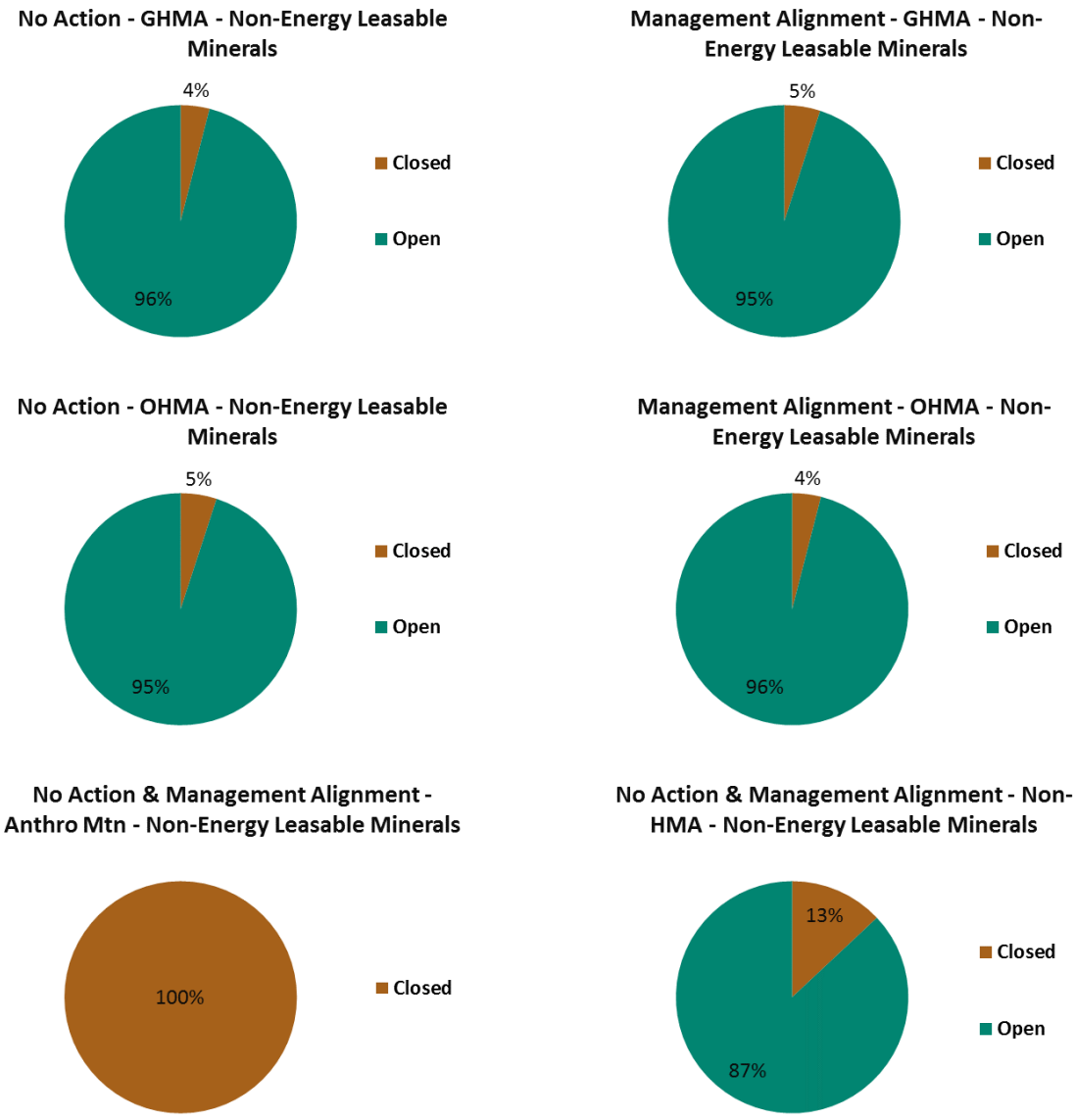


Figure 31 (cont'd) – Non-Energy Leasable Minerals Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VII. Fluid Minerals (Oil & Gas)

Table 33 – Fluid Mineral (Oil & Gas) Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Fluid Mineral (Oil & Gas) Decisions in MZ III by Habitat Management Area Type						
Fluid Mineral (Oil & Gas) Decisions	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	126,000	165,000	230,000	7,000	4,948,000	**5,476,000**
Open NSO	5,358,000	23,000	0	35,000	3,431,000	**8,847,000**
Open CSU/TL	0	3,628,000	0	0	2,135,000	**5,763,000**
Open Standard Stipulations	0	86,000	4,042,000	0	26,502,000	**30,630,000**
Total	**5,484,000**	**3,902,000**	**4,272,000**	**42,000**	**37,016,000**	**50,716,000**
Fluid Mineral (Oil & Gas) Decisions	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	144,000	176,000	159,000	7,000	4,990,000	**5,476,000**
Open NSO	5,464,000	0	0	35,000	3,454,000	**8,952,000**
Open CSU/TL	0	3,565,000	0	0	2,191,000	**5,756,000**
Open Standard Stipulations	0	0	3,534,000	0	26,991,000	**30,525,000**
Total	**5,607,000**	**3,741,000**	**3,693,000**	**42,000**	**37,626,000**	**50,710,000**

Approximate % of Habitat Management Area by Fluid Mineral (Oil & Gas) Decision in MZ III						
Fluid Mineral (Oil & Gas) Decisions	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	2%	4%	5%	17%	13%	**11%**
Open NSO	98%	1%	0%	83%	9%	**17%**
Open CSU/TL	0%	93%	0%	0%	6%	**11%**
Open Standard Stipulations	0%	2%	95%	0%	72%	**60%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Fluid Mineral (Oil & Gas) Decisions	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	3%	5%	4%	17%	13%	**11%**
Open NSO	97%	0%	0%	83%	9%	**18%**
Open CSU/TL	0%	95%	0%	0%	6%	**11%**
Open Standard Stipulations	0%	0%	96%	0%	72%	**60%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

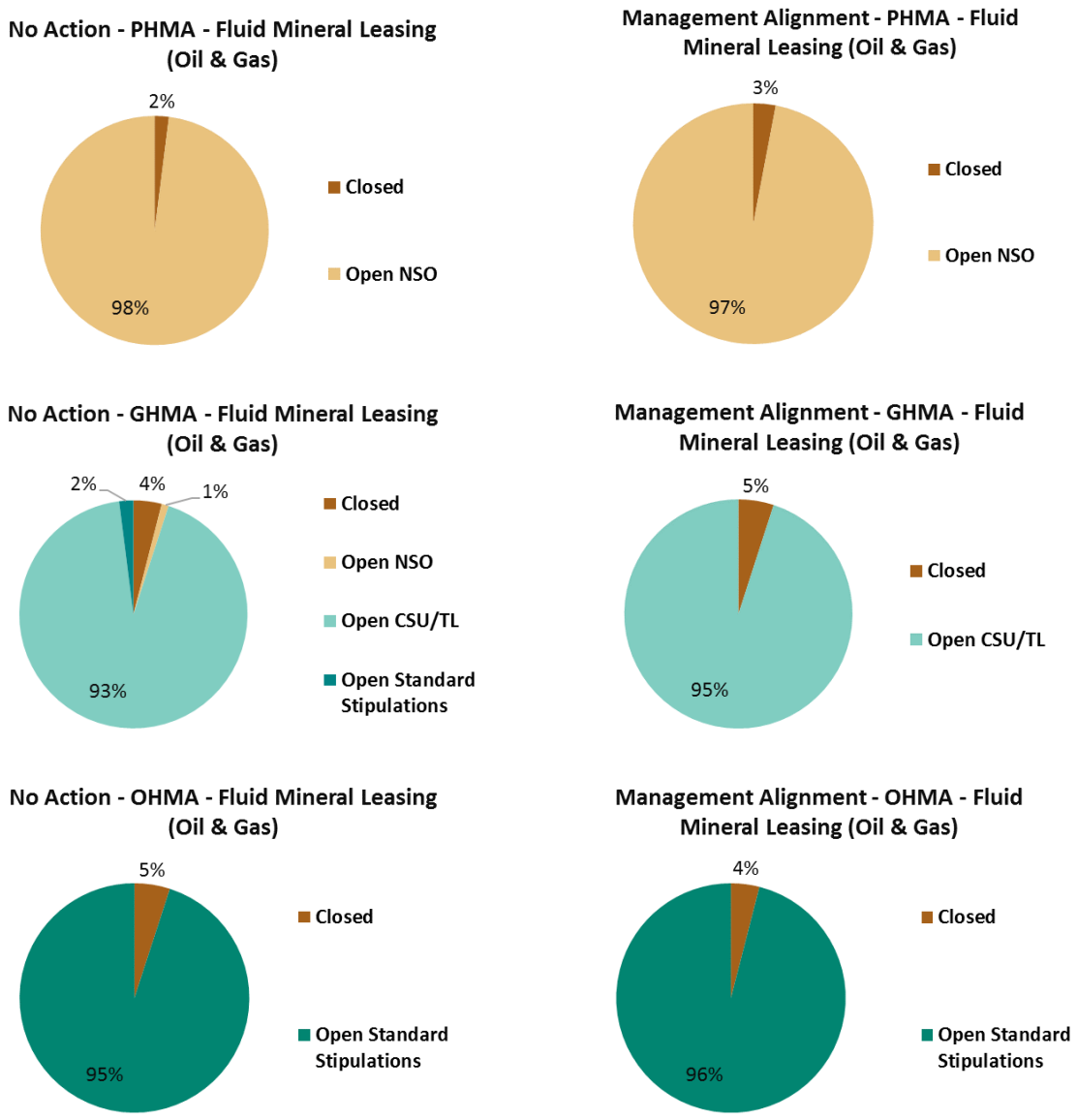


Figure 32 – Fluid Mineral (Oil & Gas) Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

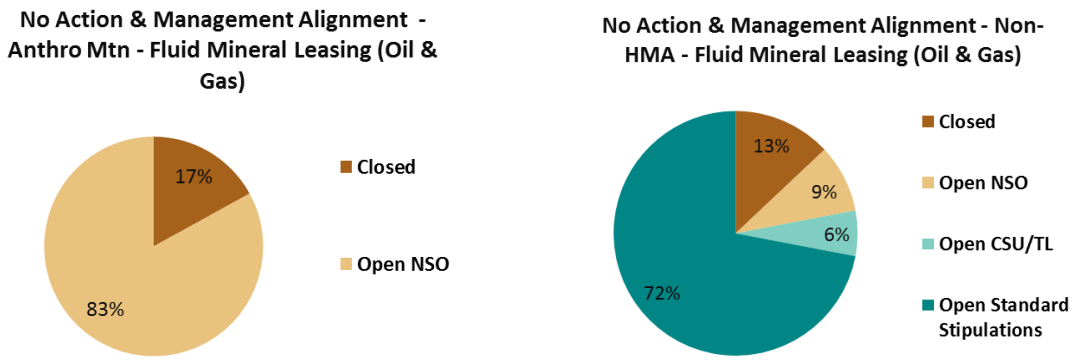


Figure 32 (cont'd) – Fluid Mineral (Oil & Gas) Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VIII. Rights-of-Ways

Table 34 – Rights-of-Ways Decisions within MZ III

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Rights-of-Ways Decisions in MZ III by Habitat Management Area Type						
Rights-of-Ways	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	86,000	164,000	230,000	NA	3,794,000	**4,274,000**
Avoidance	4,591,000	3,495,000	0	NA	799,000	**8,884,000**
Open	46,000	216,000	4,043,000	NA	27,890,000	**32,195,000**
Total	**4,722,000**	**3,875,000**	**4,272,000**	**NA**	**32,483,000**	**45,353,000**

Rights-of-Ways	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	104,000	176,000	159,000	NA	3,837,000	**4,275,000**
Avoidance	4,726,000	3,565,000	0	NA	373,000	**8,664,000**
Open	17,000	0	3,534,000	NA	28,857,000	**32,408,000**
Total	**4,847,000**	**3,741,000**	**3,693,000**	**NA**	**33,066,000**	**45,348,000**

Approximate % of Habitat Management Area by Rights-of-Ways Decision in MZ III						
Rights-of-Ways	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	2%	4%	5%	NA	12%	**9%**
Avoidance	97%	90%	0%	NA	2%	**20%**
Open	1%	6%	95%	NA	86%	**71%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

Rights-of-Ways	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	2%	5%	4%	NA	12%	**9%**
Avoidance	98%	95%	0%	NA	1%	**19%**
Open	<1%	0%	96%	NA	87%	**71%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

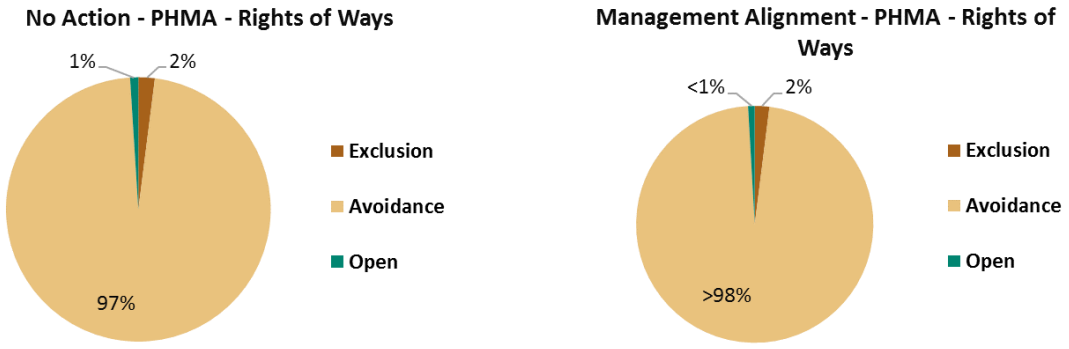


Figure 33 – Rights-of-Ways Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

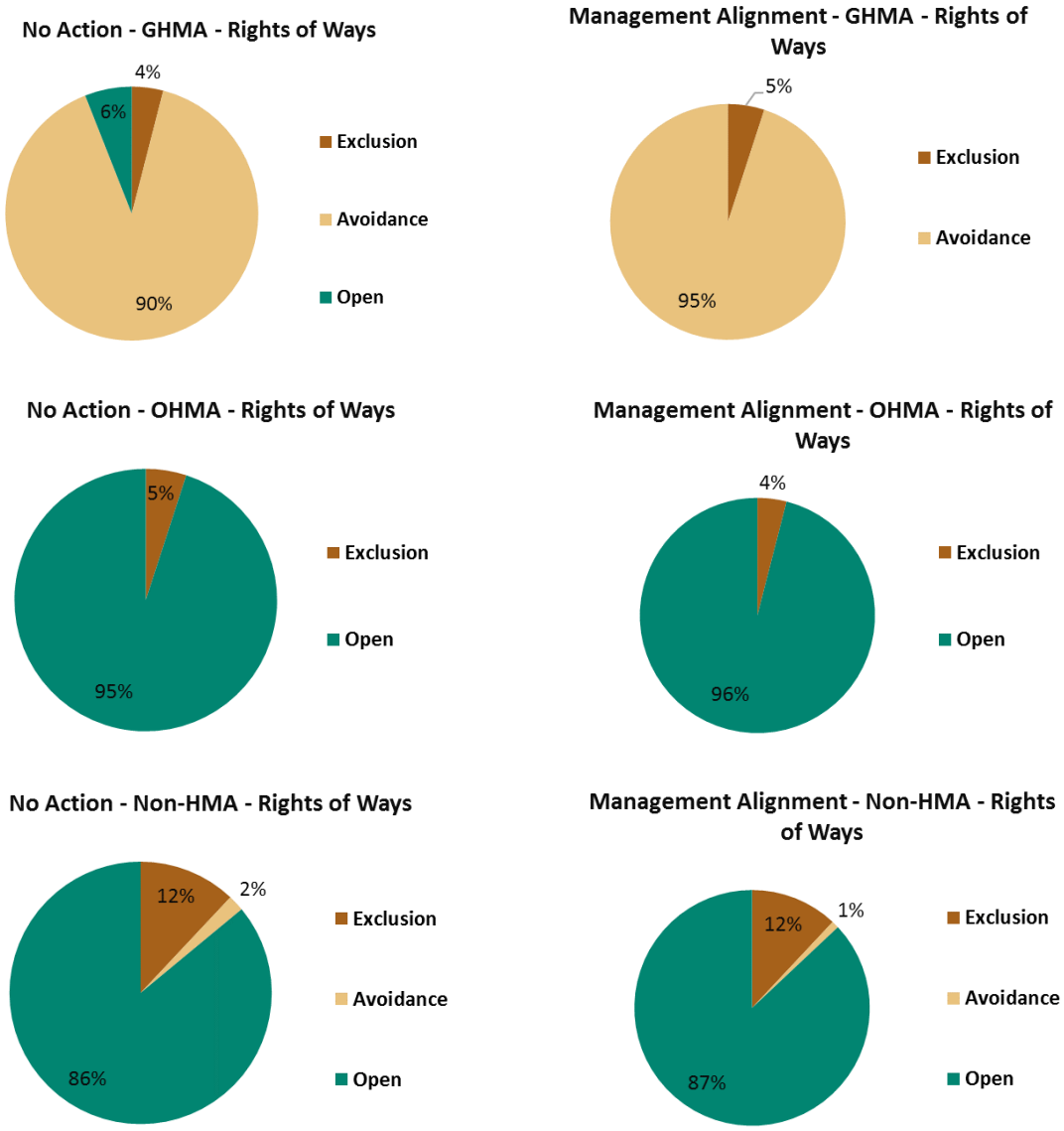


Figure 33 (cont'd) – Rights-of-Ways Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

IX. Salable Minerals Materials

Table 35 – Salable Minerals Materials Decisions within MZ III

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Salable Minerals Materials Decisions in MZ III by Habitat Management Area Type						
Salable Minerals Materials	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	4,722,000	172,000	230,000	NA	4,646,000	**9,770,000**
Open	0	3,707,000	4,042,000	NA	27,834,000	**35,583,000**
Total	**4,723,000**	**3,878,000**	**4,272,000**	**NA**	**32,479,000**	**45,353,000**
Salable Minerals Materials	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	4,847,000	176,000	159,000	NA	4,694,000	**9,876,000**
Open	0	3,565,000	3,534,000	NA	28,372,000	**35,471,000**
Total	**4,847,000**	**3,741,000**	**3,693,000**	**NA**	**33,066,000**	**45,347,000**
Approximate % of Habitat Management Area by Non-Energy Leasable Minerals Decision in MZ III						
Salable Minerals Materials	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	100%	4%	5%	NA	14%	**22%**
Open	0%	96%	95%	NA	86%	**78%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**
Salable Minerals Materials	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	100%	5%	4%	NA	14%	**22%**
Open	0%	95%	96%	NA	86%	**78%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

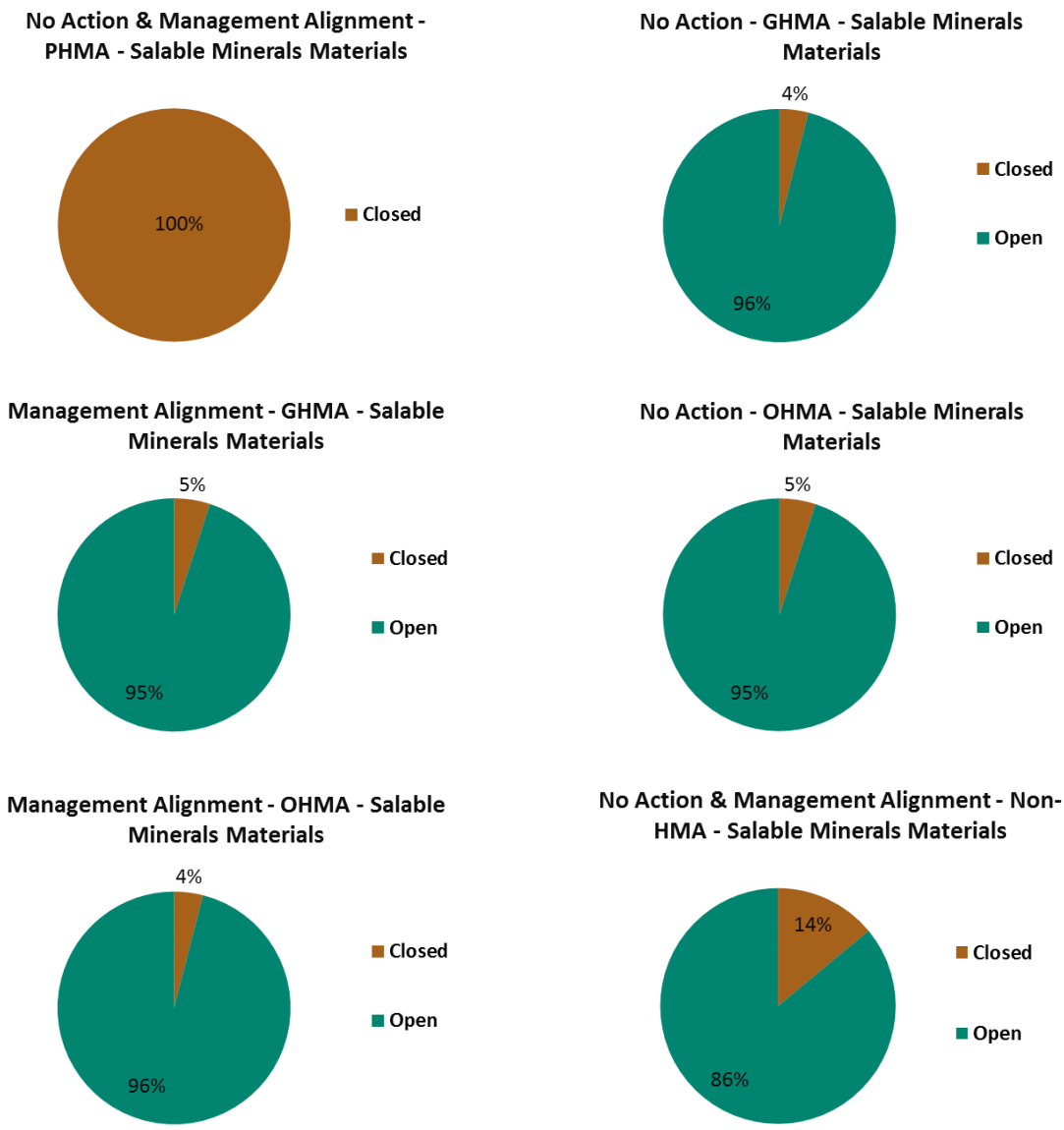


Figure 34 – Salable Minerals Materials Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

X. Solar Energy

Table 36 – Solar Energy Decisions within MZ III

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Solar Energy Decisions in MZ III by Habitat Management Area Type						
Solar Energy	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	4,731,000	3,886,000	3,417,000	NA	24,421,000	**36,454,000**
Avoidance	2,000	4,000	857,000	NA	7,637,000	**8,499,000**
Open	0	0	1,000	NA	340,000	**341,000**
Total	**4,732,000**	**3,889,000**	**4,274,000**	**NA**	**32,398,000**	**45,294,000**
Solar Energy	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	4,858,000	3,748,000	3,699,000	NA	24,867,000	**37,172,000**
Avoidance	0	0	0	NA	7,770,000	**7,770,000**
Open	0	0	0	NA	346,000	**346,000**
Total	**4,858,000**	**3,748,000**	**3,699,000**	**NA**	**32,983,000**	**45,288,000**

Approximate % of Habitat Management Area by Solar Energy Decision in MZ III						
Solar Energy	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	100%	100%	80%	NA	75%	**80%**
Avoidance	<1%	<1%	20%	NA	24%	**19%**
Open	0%	0%	<1%	NA	1%	**1%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**
Solar Energy	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	100%	100%	100%	NA	75%	**82%**
Avoidance	0%	0%	0%	NA	24%	**17%**
Open	0%	0%	0%	NA	1%	**1%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

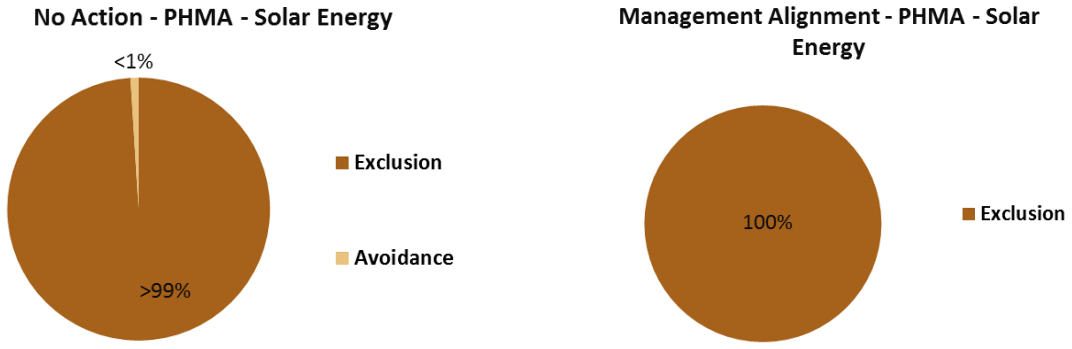


Figure 35 – Solar Energy Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

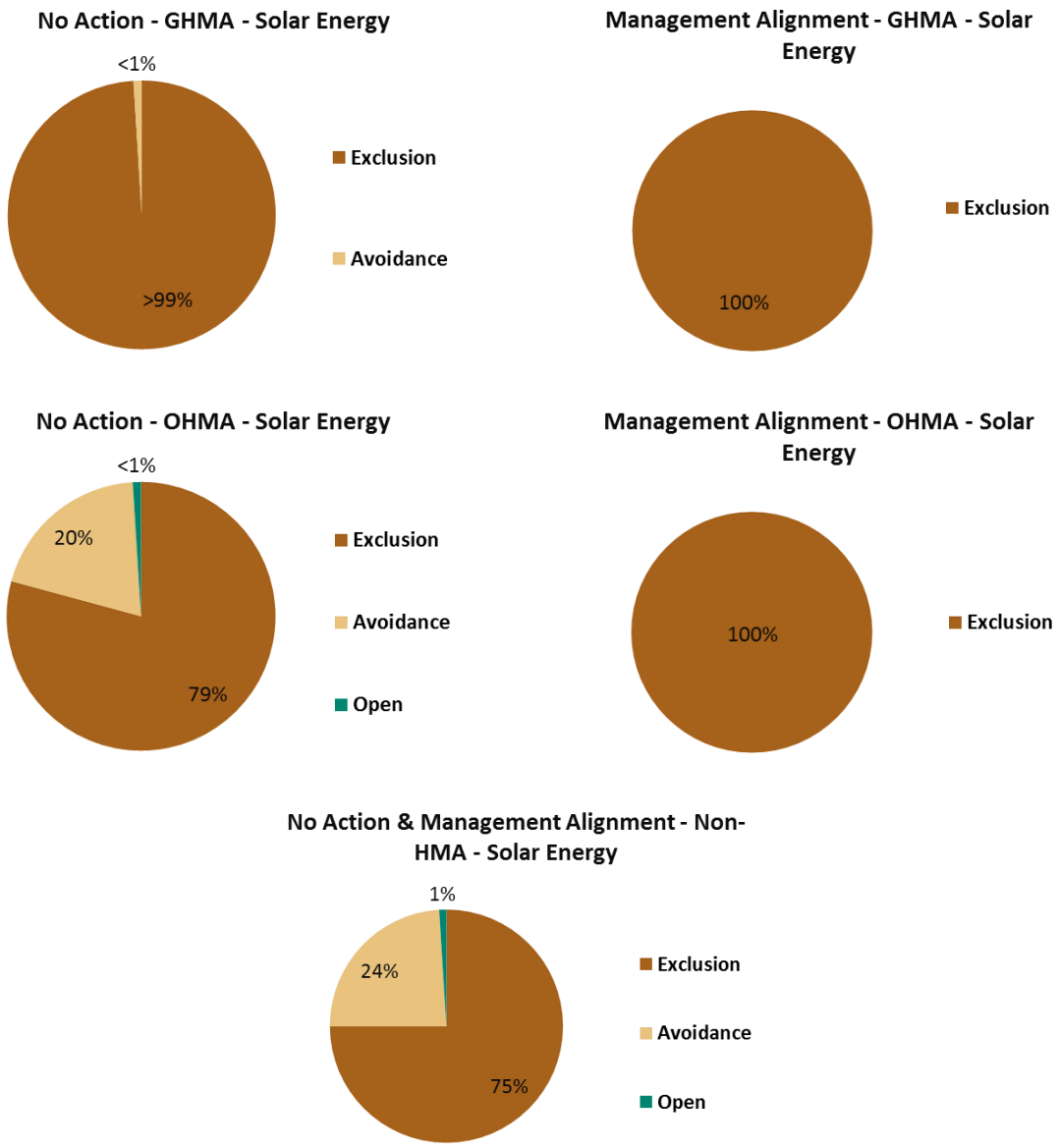


Figure 35 (cont'd) – Solar Energy Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

XI. Trails and Travel Management

Table 37 – Trails and Travel Management Decisions within MZ III

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Trails and Travel Management Decisions in MZ III by Habitat Management Area Type						
Trails and Travel Management Decisions	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	16,000	84,000	52,000	NA	2,517,000	**2,669,000**
Limited	4,702,000	3,791,000	1,000	NA	5,791,000	**14,285,000**
Open	0	0	4,219,000	NA	24,153,000	**28,372,000**
Total	**4,718,000**	**3,875,000**	**4,273,000**	**NA**	**32,461,000**	**45,326,000**
Trails and Travel Management Decisions	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	21,000	100,000	42,000	NA	2,505,000	**2,668,000**
Limited	4,821,000	3,642,000	14,000	NA	6,095,000	**14,572,000**
Open	0	0	3,637,000	NA	24,429,000	**28,066,000**
Total	**4,842,000**	**3,741,000**	**3,693,000**	**NA**	**33,030,000**	**45,307,000**

Approximate % of Habitat Management Area by Trails and Travel Management Decisions Decision in MZ III						
Trails and Travel Management Decisions	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	<1%	2%	1%	NA	8%	**6%**
Limited	100%	98%	0%	NA	18%	**32%**
Open	0%	0%	99%	NA	74%	**63%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**
Trails and Travel Management Decisions	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Closed	<1%	3%	1%	NA	8%	**6%**
Limited	100%	97%	0%	NA	18%	**32%**
Open	0%	0%	98%	NA	74%	**62%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

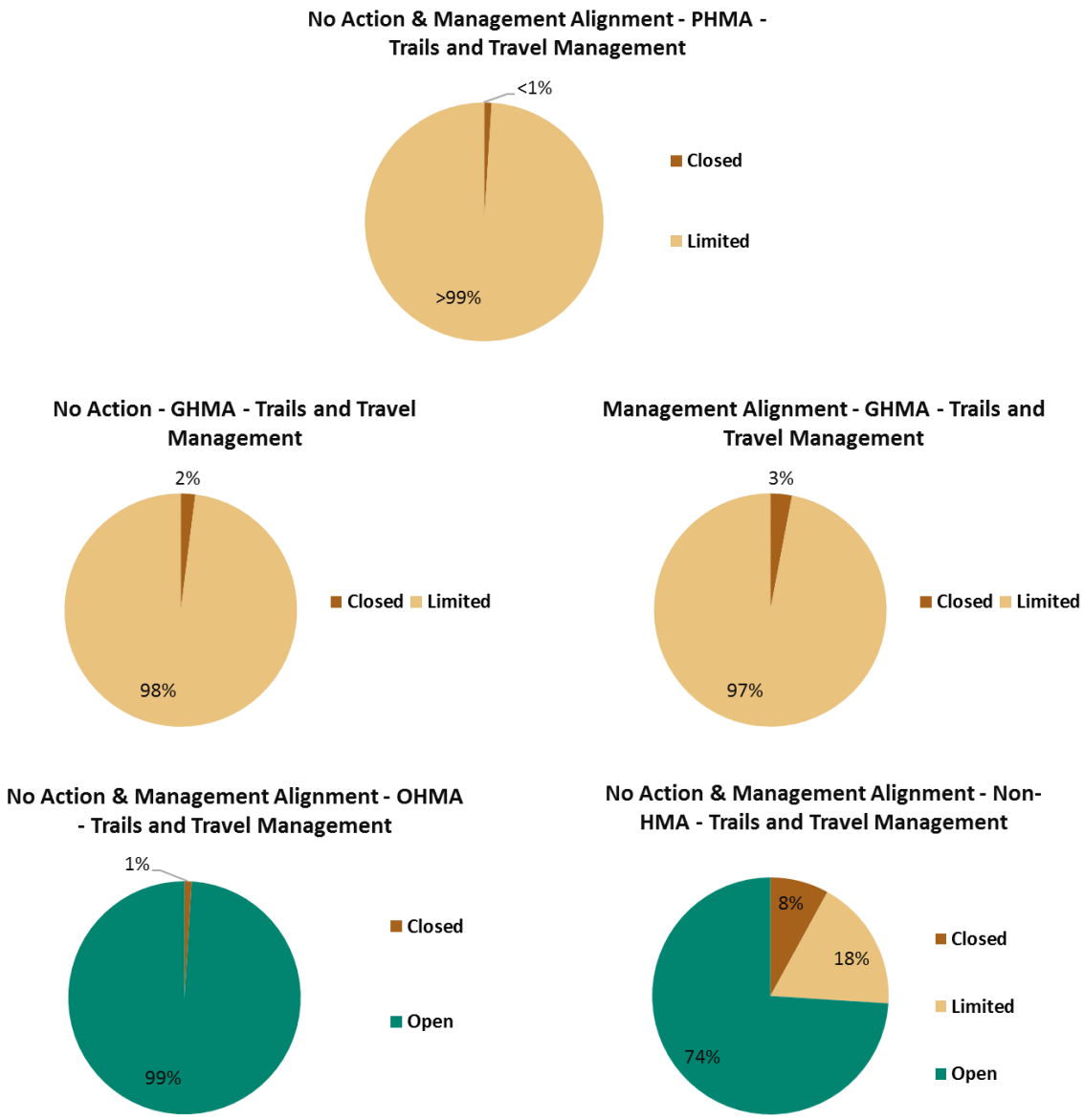


Figure 36 – Trails and Travel Management Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

XII. Wind Energy

Table 38 – Wind Energy Decisions within MZ III

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Wind Energy Decisions in MZ III by Habitat Management Area Type						
Wind Energy	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	4,669,000	166,000	230,000	NA	3,939,000	**9,004,000**
Avoidance	0	3,572,000	0	NA	212,000	**3,784,000**
Open	54,000	137,000	4,042,000	NA	28,265,000	**32,498,000**
Total	**4,723,000**	**3,876,000**	**4,272,000**	**NA**	**32,415,000**	**45,286,000**
Wind Energy	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	4,793,000	176,000	159,000	NA	3,982,000	**9,110,000**
Avoidance	0	3,565,000	0	NA	212,000	**3,777,000**
Open	54,000	0	3,534,000	NA	28,805,000	**32,393,000**
Total	**4,847,000**	**3,741,000**	**3,693,000**	**NA**	**32,999,000**	**45,280,000**

Approximate % of Habitat Management Area by Wind Energy Decision in MZ III						
Wind Energy	**No Action**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	0%	92%	0%	NA	1%	**8%**
Avoidance	99%	4%	5%	NA	12%	**20%**
Open	1%	4%	95%	NA	87%	**72%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**
Wind Energy	**Management Alignment**					
	PHMA	**GHMA**	**OHMA**	**Anthro Mtn**	**Non-HMA**	**Total**
Exclusion	0%	95%	0%	NA	1%	**8%**
Avoidance	99%	5%	4%	NA	12%	**20%**
Open	1%	0%	96%	NA	87%	**72%**
Total	**100%**	**100%**	**100%**	**NA**	**100%**	**100%**

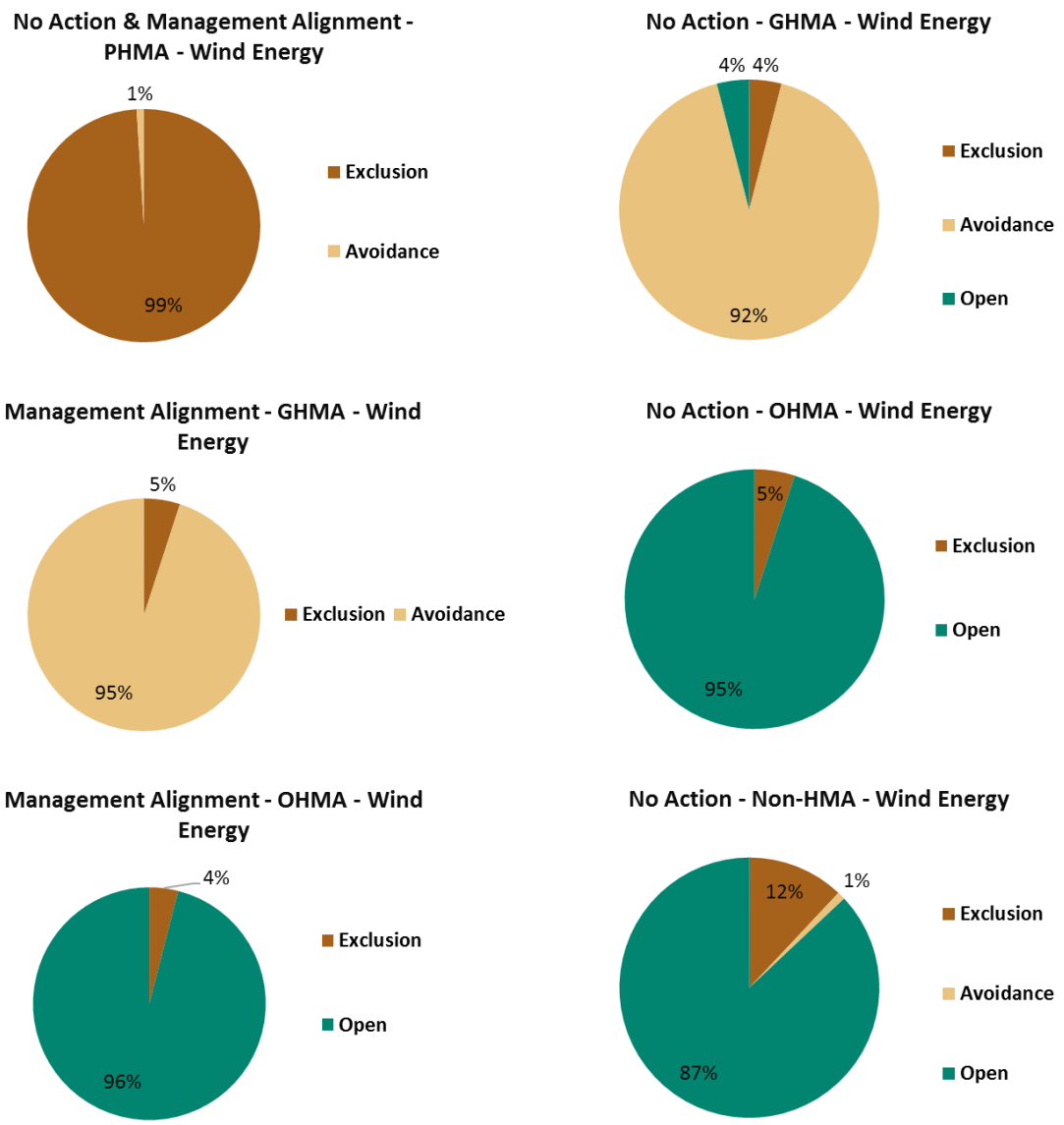


Figure 37 – Wind Energy Decisions within MZ III

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

B.2.4 Management Zone IV – Idaho, Utah, Nevada, Oregon

I. Habitat Management

Table 39 – Habitat Management Areas within MZ IV

Acres and percentages reflect all lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of HMA in MZ IV									
No Action					Management Alignment				
PHMA	IHMA	GHMA	OHMA	Non-HMA	PHMA	IHMA	GHMA	OHMA	Non-HMA
17,170,000	4,449,000	11,447,00	1,261,000	41,395,000	16,147,000	4,519,000	11,297,000	990,000	42,769,022

Approximate Percent of MZ IV that is HMA									
No Action					Management Alignment				
PHMA	IHMA	GHMA	OHMA	Non-HMA	PHMA	IHMA	GHMA	OHMA	Non-HMA
23%	6%	15%	2%	55%	21%	6%	15%	1%	56%

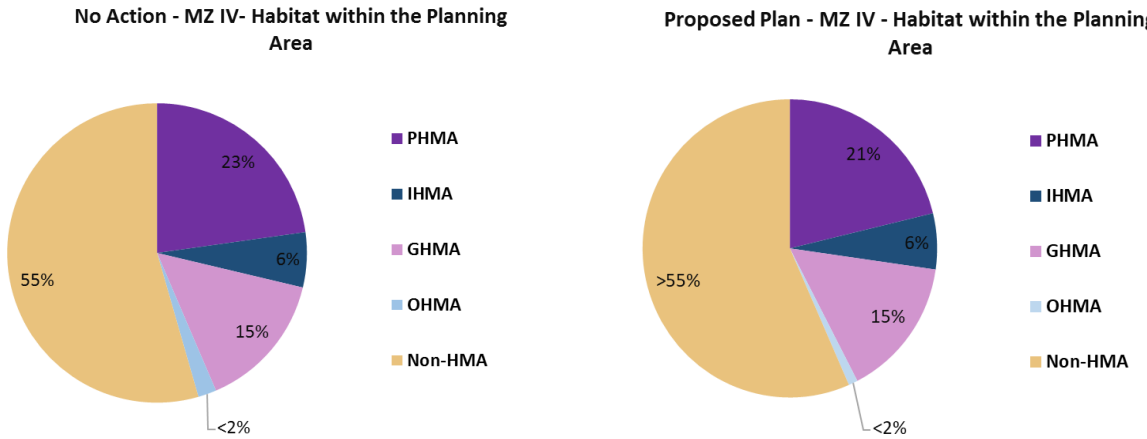


Figure 38 – Habitat Management Areas within MZ IV

Percentages reflect all lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

II. Geothermal Energy

Table 40 – Geothermal Energy Decisions within MZ IV

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Geothermal Energy Decisions in MZ IV by Habitat Management Area Type						
Geothermal Energy	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	1,923,000	918,000	1,130,000	4,000	9,440,000	**13,415,000**
Open NSO	10,256,000	2,638,000	424,000	0	1,125,000	**14,443,000**
Open CSU/TL	0	0	4,881,000	0	2,196,000	**7,077,000**
Open Standard Stipulations	0	3,000	20,000	704,000	4,529,000	**5,257,000**
Total	**12,178,000**	**3,560,000**	**6,455,000**	**708,000**	**17,290,000**	**40,191,000**
Geothermal Energy	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	1,913,000	918,000	1,133,000	6,000	9,439,000	**13,410,000**
Open NSO	9,848,000	2,702,000	424,000	0	1,125,000	**14,099,000**
Open CSU/TL	0	0	4,974,000	0	2,196,000	**7,169,000**
Open Standard Stipulations	0	3,000	20,000	616,000	4,855,000	**5,494,000**
Total	**11,762,000**	**3,624,000**	**6,550,000**	**622,000**	**17,615,000**	**40,173,000**

Approximate % of Habitat Management Area by Geothermal Energy Decision in MZ IV						
Geothermal Energy	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	16%	26%	18%	1%	55%	**33%**
Open NSO	84%	74%	7%	0%	7%	**36%**
Open CSU/TL	0%	0%	76%	0%	13%	**18%**
Open Standard Stipulations	0%	0%	0%	99%	26%	**13%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Geothermal Energy	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	16%	25%	17%	1%	54%	**33%**
Open NSO	84%	75%	6%	0%	6%	**35%**
Open CSU/TL	0%	0%	76%	0%	12%	**18%**
Open Standard Stipulations	0%	0%	0%	99%	28%	**14%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

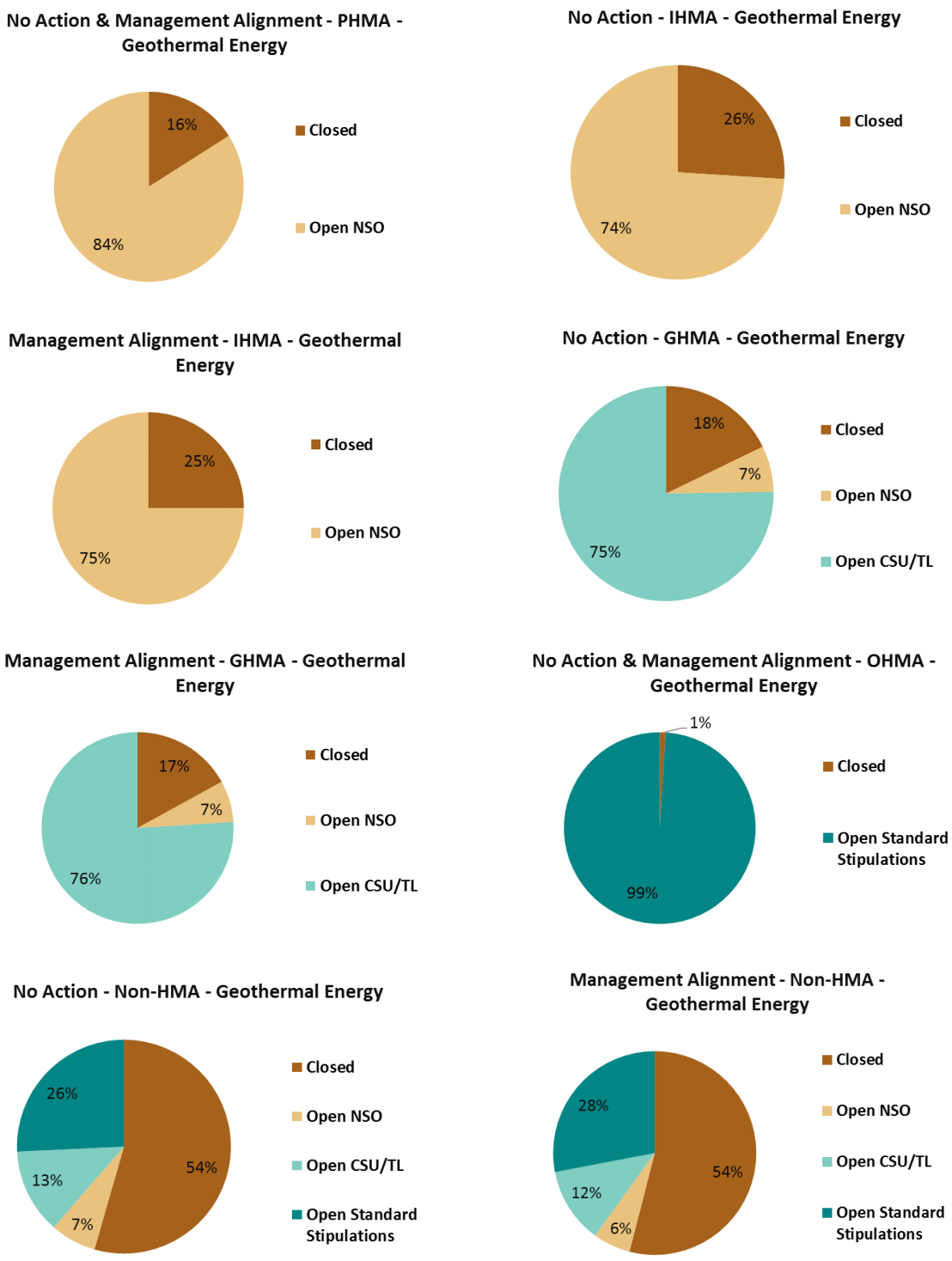


Figure 39 – Geothermal Energy Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

III. Land Tenure

Table 41 – Land Tenure Decisions within MZ IV

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Land Tenure Decisions in MZ IV by Habitat Management Area Type						
Land Tenure	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Disposal	0	0	1,000	146,000	659,000	**805,000**
Retention	10,726,000	2,719,000	4,948,000	562,000	4,277,000	**23,232,000**
Total	**10,727,000**	**2,719,000**	**4,949,000**	**708,000**	**4,935,000**	**24,038,000**
Land Tenure	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Disposal	6,000	0	25,000	85,000	799,000	**914,000**
Retention	10,319,000	2,780,000	5,019,000	537,000	4,462,000	**23,117,000**
Total	**10,325,000**	**2,780,000**	**5,043,000**	**622,000**	**5,261,000**	**24,032,000**

Approximate % of Habitat Management Area by Land Tenure Decision in MZ III						
Land Tenure	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Disposal	0%	0%	<1%	21%	13%	**3%**
Retention	100%	100%	100%	79%	87%	**97%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Land Tenure	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Disposal	<1%	0%	<1%	14%	15%	**4%**
Retention	100%	100%	100%	86%	85%	**96%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

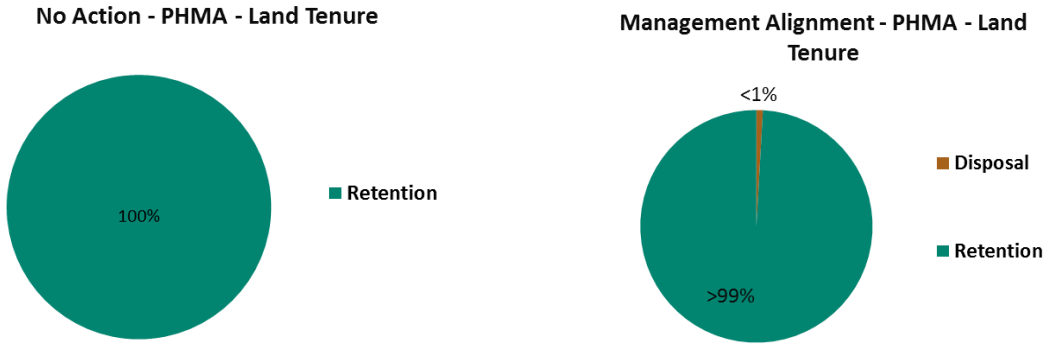


Figure 40 – Land Tenure Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

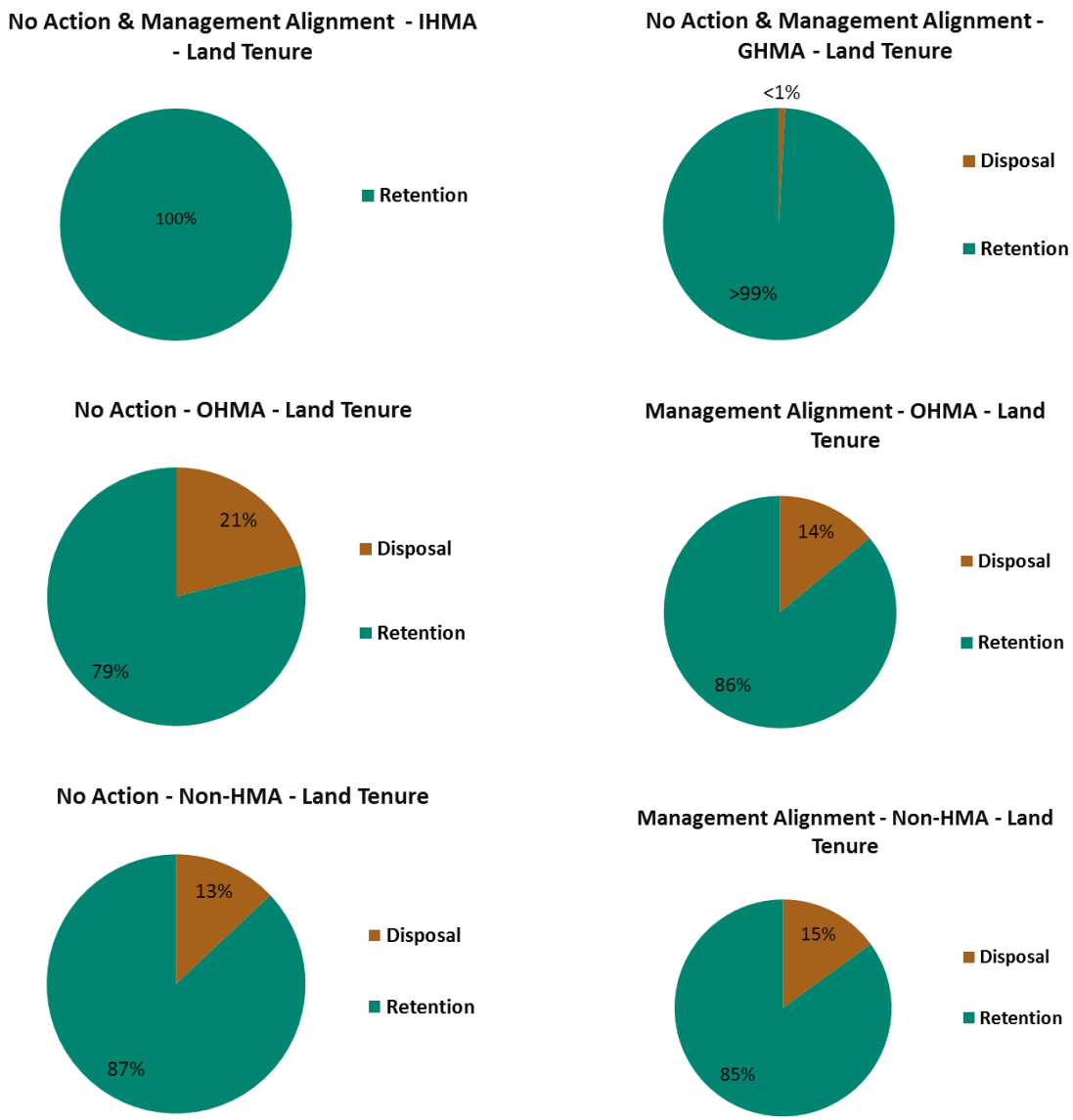


Figure 40 (cont'd) – Land Tenure Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

IV. Livestock Grazing

Table 42 – Livestock Grazing Decisions within MZ IV

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Livestock Grazing Decisions in MZ IV by Habitat Management Area Type						
Livestock Grazing	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Unavailable	182,000	18,000	43,000	0	92,000	**335,000**
Available	10,515,000	2,701,000	4,923,000	709,000	4,562,000	**23,411,000**
Total	**10,697,000**	**2,719,000**	**4,966,000**	**709,000**	**4,655,000**	**23,746,000**
Livestock Grazing	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Unavailable	182,000	18,000	43,000	0	92,000	**335,000**
Available	10,112,000	2,762,000	5,029,000	620,000	4,883,000	**23,406,000**
Total	**10,294,000**	**2,780,000**	**5,072,000**	**620,000**	**4,975,000**	**23,740,000**

Approximate % of Habitat Management Area by Livestock Grazing Decision in MZ IV						
Livestock Grazing	**No Action & Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Unavailable	2%	1%	1%	0%	2%	**1%**
Available	98%	99%	99%	100%	98%	**99%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Figure 41 – Livestock Grazing Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

V. Locatable Minerals

Table 43 – Locatable Minerals Decisions within MZ IV

Acreages and Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Locatable Minerals Decisions in MZ IV by Habitat Management Area Type						
Locatable Minerals	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Existing Withdrawals	1,079,000	442,000	432,000	0	3,606,000	**5,560,000**
Recommended Withdrawals	4,836,000	0	2,000	0	0	**4,838,000**
Open	6,074,000	2,858,000	6,055,000	708,000	13,798,000	**29,492,000**
Total	**11,990,000**	**3,300,000**	**6,489,000**	**708,000**	**17,404,000**	**39,891,000**
Locatable Minerals	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Existing Withdrawals	1,078,000	442,000	431,000	0	3,605,000	**5,556,000**
Recommended Withdrawals	0	0	2,000	0	0	**2,000**
Open	10,518,000	2,923,000	6,151,000	622,000	14,113,000	**34,327,000**
Total	**11,597,000**	**3,364,000**	**6,584,000**	**622,000**	**17,718,000**	**39,885,000**

Approximate % of Habitat Management Area by Geothermal Energy Decision in MZ IV						
Locatable Minerals	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Existing Withdrawals	9%	13%	7%	0%	21%	**14%**
Recommended Withdrawals	40%	0%	0%	0%	0%	**12%**
Open	51%	87%	93%	100%	79%	**74%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Locatable Minerals	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Existing Withdrawals	9%	13%	9%	0%	20%	**14%**
Recommended Withdrawals	0%	0%	<1%	0%	0%	**0%**
Open	91%	87%	91%	100%	80%	**86%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Figure 42 – Locatable Minerals Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VI. Non-Energy Leasable Minerals

Table 44 – Non-Energy Leasable Minerals Decisions within MZ IV

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Non-Energy Leasable Minerals Decisions in MZ IV by Habitat Management Area Type						
Non-Energy Leasable Minerals	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	12,180,000	682,000	1,059,000	4,000	9,139,000	**23,064,000**
Open	0	2,877,000	5,413,000	704,000	8,375,000	**17,369,000**
Total	**12,180,000**	**3,559,000**	**6,472,000**	**708,000**	**17,514,000**	**40,433,000**
Non-Energy Leasable Minerals	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	11,775,000	682,000	1,062,000	6,000	9,138,000	**22,663,000**
Open	0	2,941,000	5,505,000	616,000	8,701,000	**17,763,000**
Total	**11,775,000**	**3,624,000**	**6,567,000**	**622,000**	**17,839,000**	**40,426,000**

Approximate % of Habitat Management Area by Non-Energy Leasable Minerals Decision in MZ IV						
Non-Energy Leasable Minerals	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	100%	19%	16%	1%	52%	**57%**
Open	0%	81%	84%	99%	48%	**43%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Non-Energy Leasable Minerals	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	100%	19%	16%	1%	51%	**56%**
Open	0%	81%	84%	99%	49%	**44%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Figure 43 – Non-Energy Leasable Minerals Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VII. Fluid Minerals (Oil & Gas)

Table 45 – Fluid Mineral (Oil & Gas) Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Fluid Mineral (Oil & Gas) Decisions in MZ IV by Habitat Management Area Type						
Fluid Mineral (Oil & Gas) Decisions	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	1,924,000	1,136,000	1,136,000	4,000	9,542,000	**13,523,000**
Open NSO	10,245,000	436,000	436,000	0	1,164,000	**14,493,000**
Open CSU/TL	18,000	4,947,000	4,947,000	0	2,266,000	**7,230,000**
Open Standard Stipulations	1,000	3,000	3,000	704,000	4,729,000	**5,437,000**
Total	**12,187,000**	**6,522,000**	**6,522,000**	**708,000**	**17,701,000**	**40,683,000**
Fluid Mineral (Oil & Gas) Decisions	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	1,917,000	917,000	1,138,000	6,000	9,541,000	**13,520,000**
Open NSO	9,846,000	2,712,000	436,000	0	1,176,000	**14,171,000**
Open CSU/TL	17,000	0	5,039,000	0	2,266,000	**7,322,000**
Open Standard Stipulations	1,000	0	3,000	616,000	5,043,000	**5,663,000**
Total	**11,782,000**	**3,629,000**	**6,616,000**	**622,000**	**18,027,000**	**40,676,000**

Approximate % of Habitat Management Area by Fluid Mineral (Oil & Gas) Decision in MZ IV						
Fluid Mineral (Oil & Gas) Decisions	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	16%	26%	17%	1%	54%	**33%**
Open NSO	84%	74%	7%	0%	7%	**36%**
Open CSU/TL	<1%	0%	76%	0%	13%	**18%**
Open Standard Stipulations	<1%	0%	<1%	99%	27%	**13%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Fluid Mineral (Oil & Gas) Decisions	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	16%	25%	17%	1%	53%	**33%**
Open NSO	84%	75%	7%	0%	7%	**35%**
Open CSU/TL	<1%	0%	76%	0%	13%	**18%**
Open Standard Stipulations	<1%	0%	<1%	99%	28%	**14%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

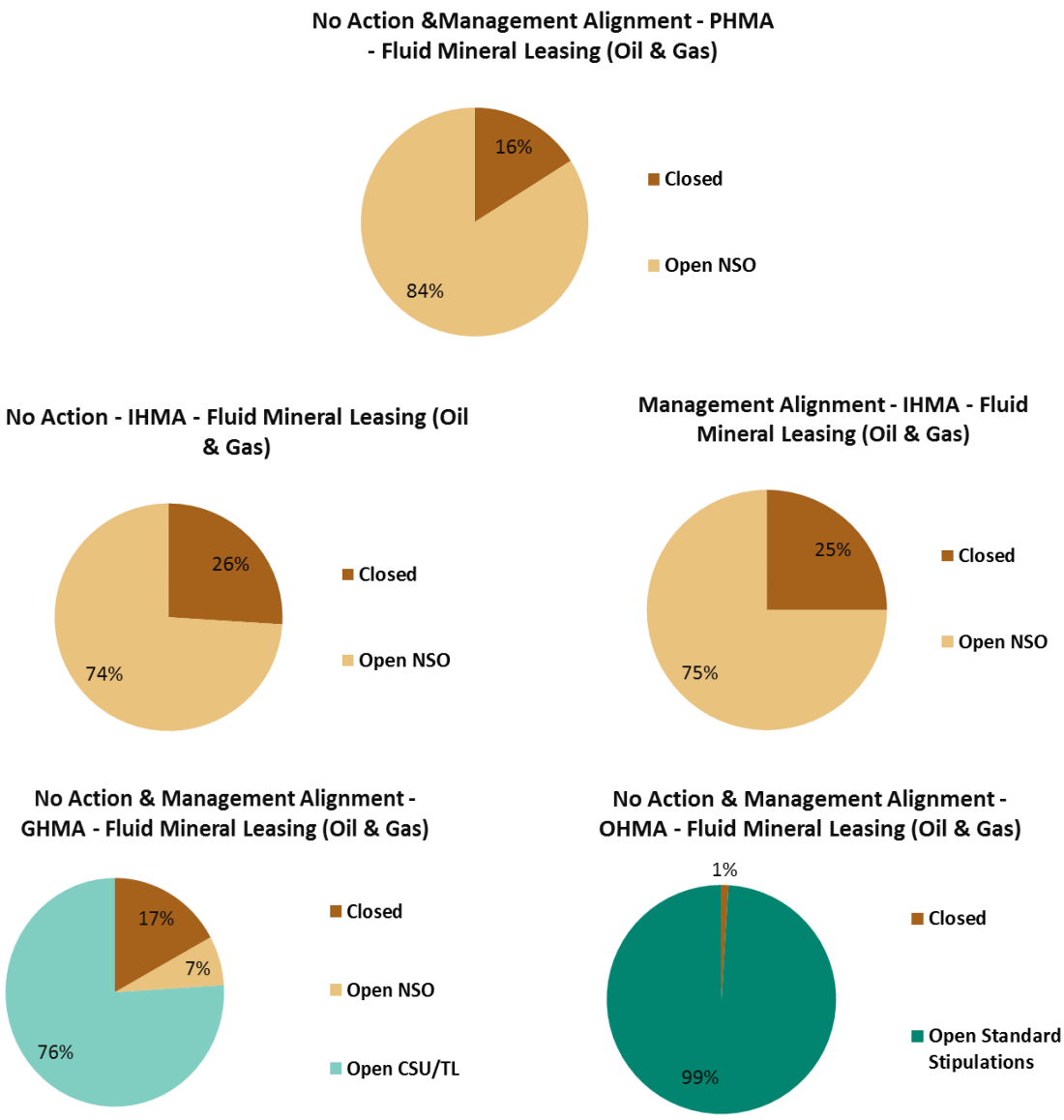


Figure 44 – Fluid Mineral (Oil & Gas) Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

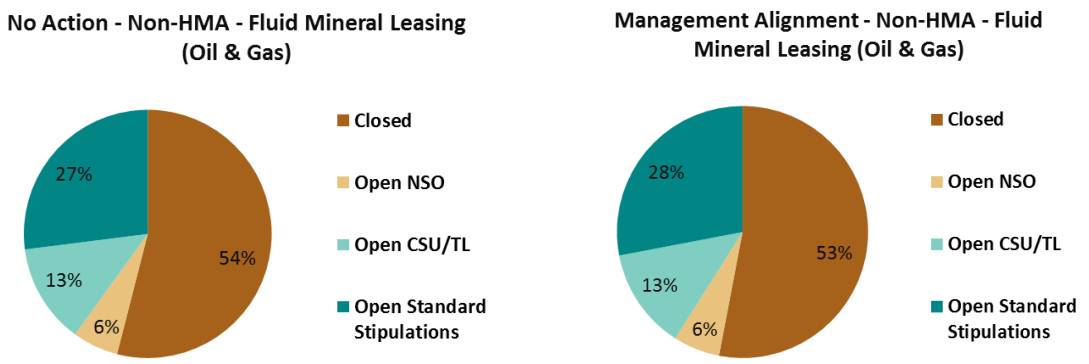


Figure 44 (cont'd) – Fluid Mineral (Oil & Gas) Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VIII. Rights-of-Ways

Table 46 – Rights-of-Ways Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Rights-of-Ways Decisions in MZ IV by Habitat Management Area Type						
Rights-of-Ways	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	637,000	131,000	269,000	3,000	244,000	**1,283,000**
Avoidance	9,993,000	2,565,000	3,095,000	0	463,000	**16,117,000**
Open	98,000	24,000	1,827,000	705,000	4,381,000	**7,035,000**
Total	**10,728,000**	**2,719,000**	**5,192,000**	**708,000**	**5,088,000**	**24,435,000**
Rights-of-Ways	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	631,000	131,000	272,000	6,000	245,000	**1,285,000**
Avoidance	9,623,000	2,626,000	3,204,000	0	475,000	**15,928,000**
Open	68,000	24,000	1,810,000	615,000	4,700,000	**7,217,000**
Total	**10,322,000**	**2,780,000**	**5,286,000**	**621,000**	**5,420,000**	**24,429,000**

Approximate % of Habitat Management Area by Rights-of-Ways Decision in MZ IV						
Rights-of-Ways	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	6%	5%	5%	0%	5%	**5%**
Avoidance	93%	94%	60%	0%	9%	**65%**
Open	1%	1%	35%	100%	86%	**29%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Rights-of-Ways	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	6%	5%	5%	1%	4%	**5%**
Avoidance	93%	94%	61%	0%	9%	**65%**
Open	1%	1%	34%	99%	87%	**30%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

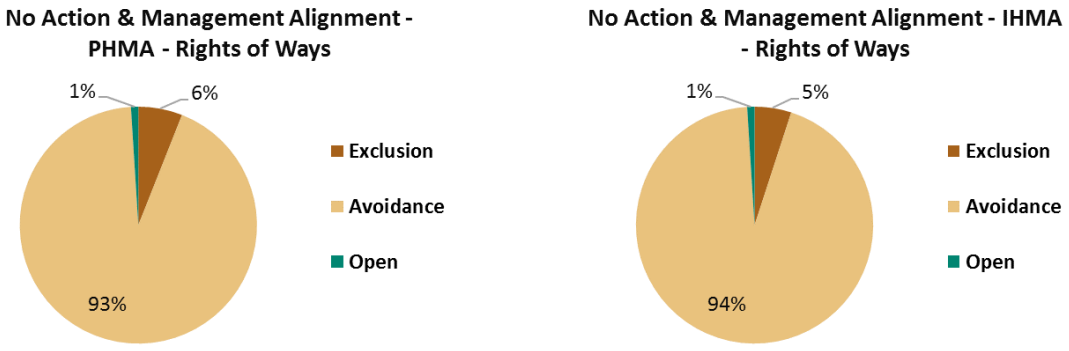


Figure 45 – Rights-of-Ways Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

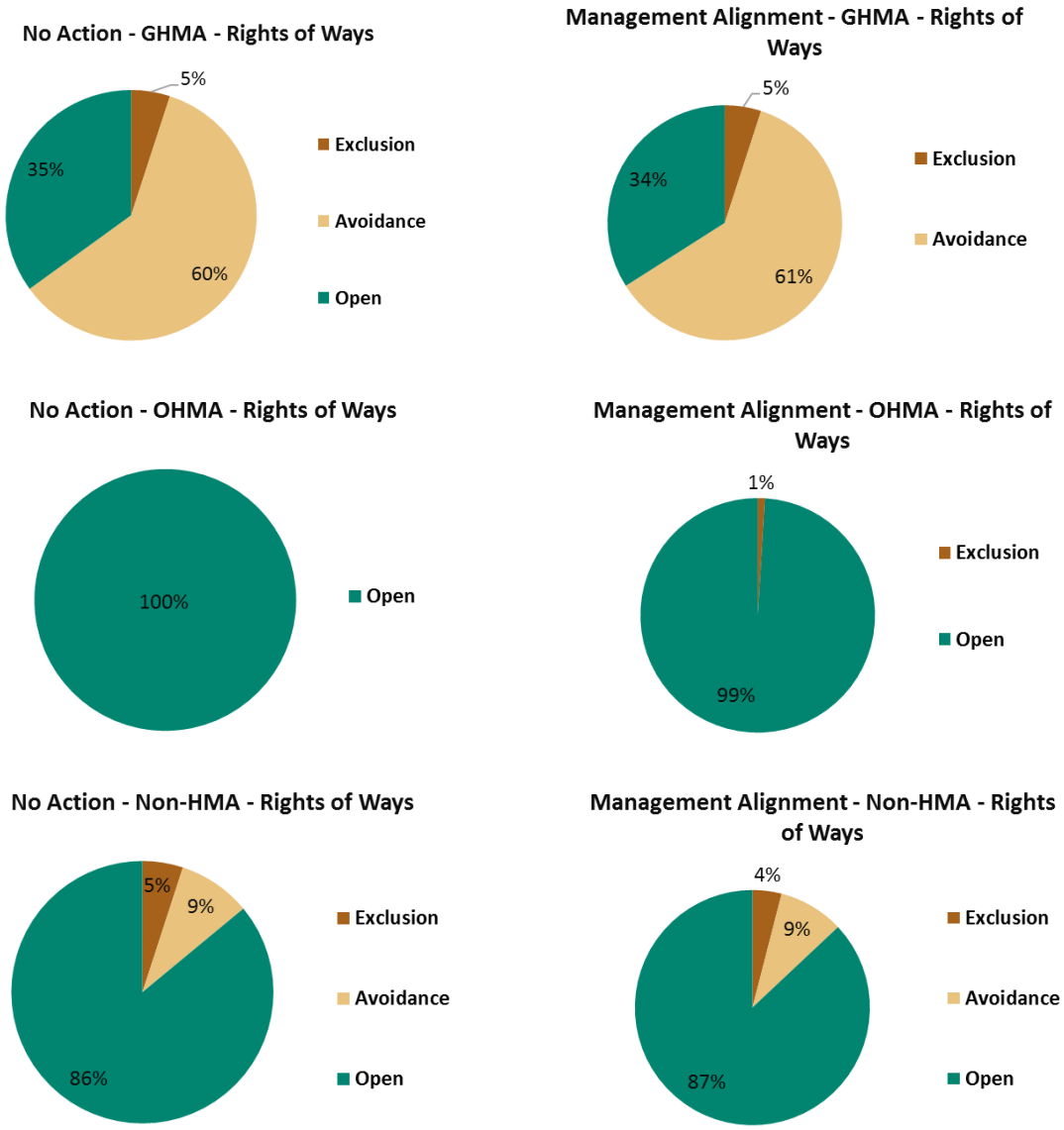


Figure 45 (cont'd) – Rights-of-Ways Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

IX. Salable Minerals Materials

Table 47 – Salable Minerals Materials Decisions within MZ IV

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Salable Minerals Materials Decisions in MZ IV by Habitat Management Area Type						
Salable Minerals Materials	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	11,494,000	313,000	682,000	4,000	830,000	**13,323,000**
Open	4,000	2,878,000	5,250,000	704,000	5,504,000	**14,339,000**
Total	**11,497,000**	**3,191,000**	**5,932,000**	**708,000**	**6,334,000**	**27,662,000**
Salable Minerals Materials	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	11,089,000	313,000	684,000	6,000	829,000	**12,922,000**
Open	4,000	2,942,000	5,343,000	616,000	5,830,000	**14,734,000**
Total	**11,093,000**	**3,255,000**	**6,027,000**	**622,000**	**6,659,000**	**27,656,000**

Approximate % of Habitat Management Area by Non-Energy Leasable Minerals Decision in MZ IV						
Salable Minerals Materials	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	100%	10%	11%	1%	13%	**48%**
Open	<1%	90%	89%	99%	87%	**52%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Salable Minerals Materials	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	100%	10%	11%	1%	12%	**47%**
Open	<1%	90%	89%	99%	88%	**53%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

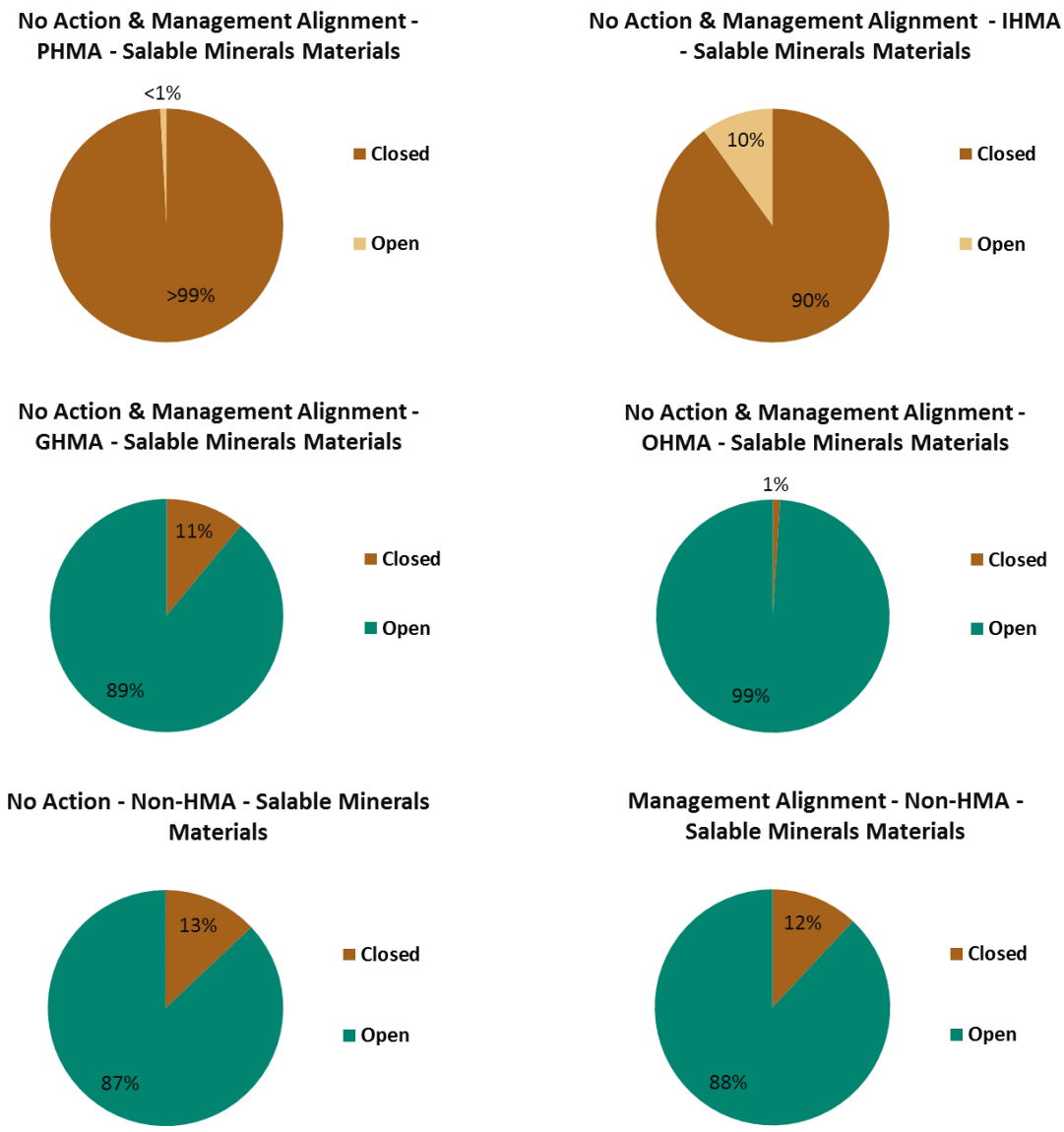


Figure 46 – Salable Minerals Materials Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

X. Solar Energy

Table 48 – Solar Energy Decisions within MZ IV

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Solar Energy Decisions in MZ IV by Habitat Management Area Type						
Solar Energy	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	9,341,000	363,000	1,210,000	706,000	2,275,000	**13,895,000**
Avoidance	1,390,000	2,357,000	2,235,000	0	123,000	**6,105,000**
Open	0	0	1,500,000	1,000	2,521,000	**4,022,000**
Total	**10,731,000**	**2,719,000**	**4,945,000**	**707,000**	**4,919,000**	**24,021,000**
Solar Energy	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	8,937,000	363,000	1,304,000	622,000	2,605,000	**13,831,000**
Avoidance	1,390,000	2,417,000	2,235,000	0	123,000	**6,165,000**
Open	0	0	1,500,000	0	2,520,000	**4,020,000**
Total	**10,326,000**	**2,780,000**	**5,039,000**	**622,000**	**5,248,000**	**24,015,000**

Approximate % of Habitat Management Area by Solar Energy Decision in MZ IV						
Solar Energy	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	87%	13%	24%	100%	46%	**58%**
Avoidance	13%	87%	45%	0%	3%	**25%**
Open	0%	0%	30%	0%	51%	**17%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Solar Energy	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	87%	13%	26%	100%	50%	**58%**
Avoidance	13%	87%	44%	0%	2%	**26%**
Open	0%	0%	30%	0%	48%	**17%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

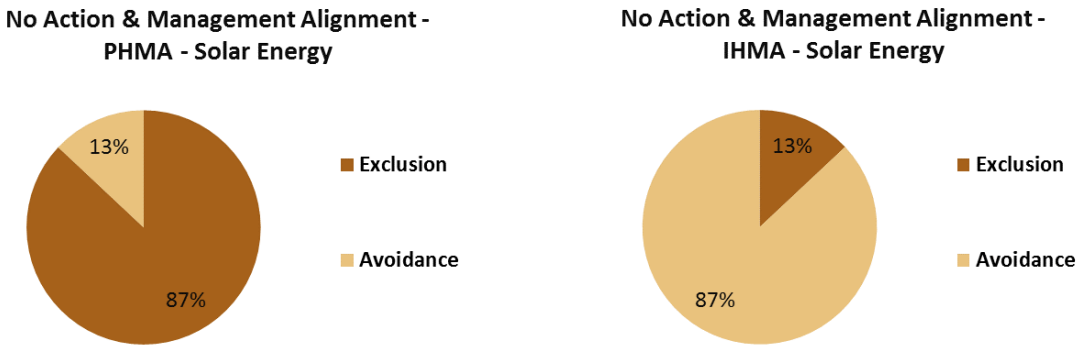


Figure 47 – Solar Energy Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

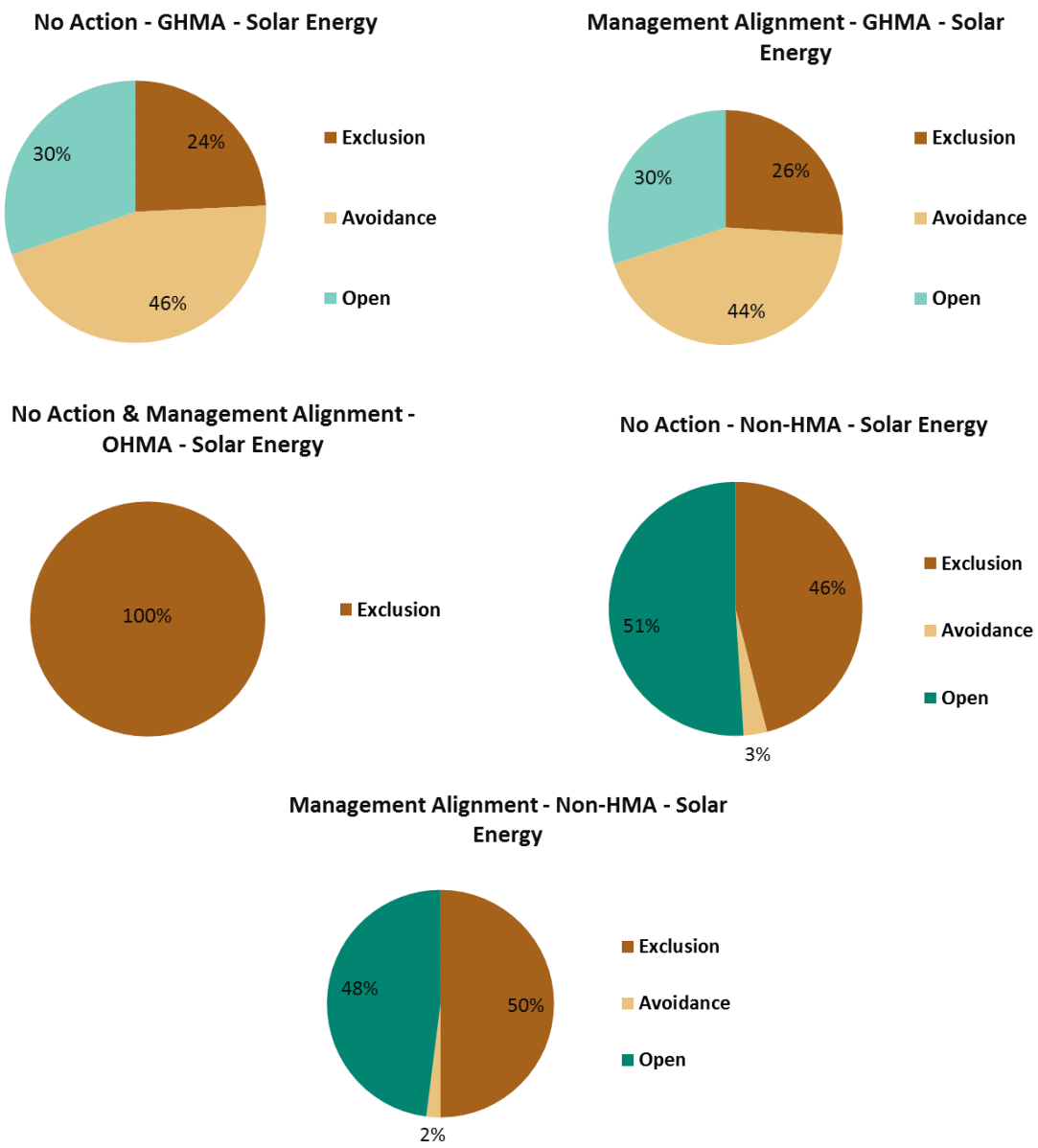


Figure 47 (cont'd) – Solar Energy Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

XI. Trails and Travel Management

Table 49 -– Trails and Travel Management Decisions within MZ IV

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Trails and Travel Management Decisions in MZ IV by Habitat Management Area Type						
Trails and Travel Management Decisions	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	560,000	83,000	85,000	1,000	215,000	**943,000**
Limited	10,169,000	2,633,000	4,866,000	1,000	3,101,000	**20,770,000**
Open	0	3,000	0	707,000	1,619,000	**2,329,000**
Total	**10,729,000**	**2,719,000**	**4,951,000**	**708,000**	**4,935,000**	**24,042,000**
Trails and Travel Management Decisions	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	559,000	83,000	84,000	0	214,000	**940,000**
Limited	9,768,000	2,694,000	4,961,000	5,000	3,188,000	**20,617,000**
Open	0	3,000	0	617,000	1,859,000	**2,479,000**
Total	**10,327,000**	**2,780,000**	**5,046,000**	**622,000**	**5,261,000**	**24,036,000**

Approximate % of Habitat Management Area by Trails and Travel Management Decisions Decision in MZ IV						
Trails and Travel Management Decisions	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	5%	3%	2%	<1%	4%	**4%**
Limited	95%	97%	98%	<1%	63%	**86%**
Open	0%	<1%	0%	100%	33%	**10%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Trails and Travel Management Decisions	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	5%	3%	2%	0%	4%	**4%**
Limited	95%	97%	98%	1%	61%	**86%**
Open	0%	0%	0%	99%	35%	**10%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

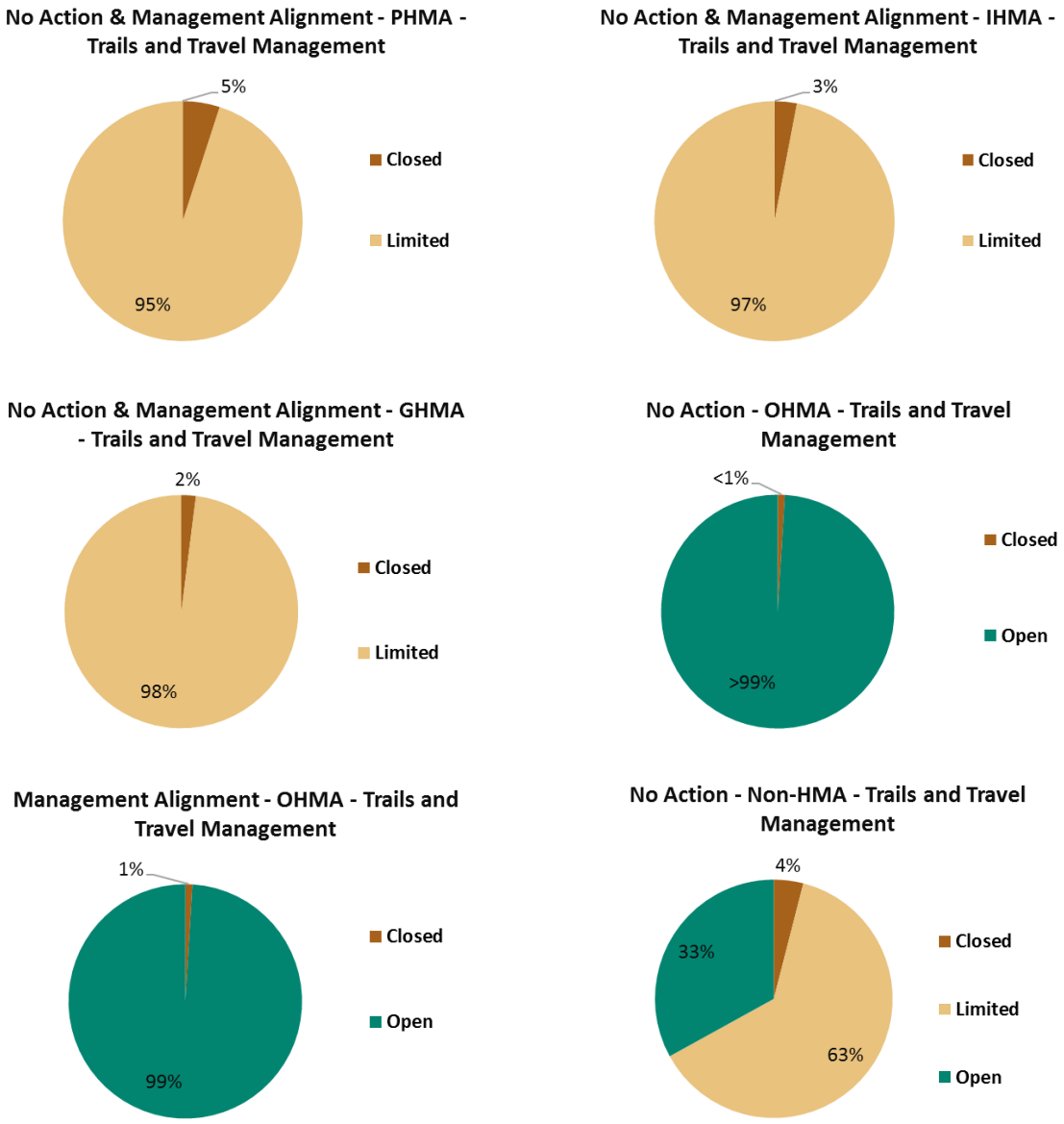


Figure 48 – Trails and Travel Management Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

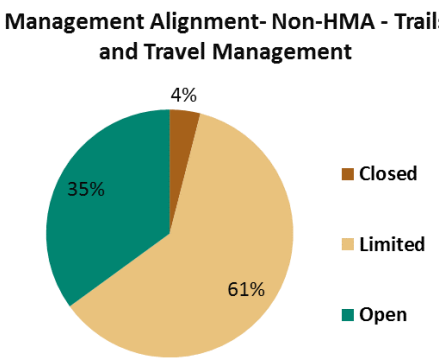


Figure 48 (cont'd) – Trails and Travel Management Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

XII. Wind Energy

Table 50 – Wind Energy Decisions within MZ IV

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Wind Energy Decisions in MZ IV by Habitat Management Area Type						
Wind Energy	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	9,339,000	363,000	392,000	4,000	1,035,000	**11,133,000**
Avoidance	1,390,000	2,357,000	3,051,000	0	123,000	**6,920,000**
Open	0	0	1,501,000	704,000	3,769,000	**5,973,000**
Total	**10,728,000**	**2,719,000**	**4,944,000**	**708,000**	**4,926,000**	**24,026,000**
Wind Energy	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	8,938,000	363,000	395,000	6,000	1,046,000	**10,748,000**
Avoidance	1,390,000	2,417,000	3,144,000	0	123,000	**7,073,000**
Open	0	0	1,501,000	616,000	4,083,000	**6,199,000**
Total	**10,327,000**	**2,780,000**	**5,039,000**	**622,000**	**5,252,000**	**24,020,000**

Approximate % of Habitat Management Area by Wind Energy Decision in MZ IV						
Wind Energy	**No Action**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	87%	13%	8%	1%	21%	**46%**
Avoidance	13%	87%	62%	0%	2%	**29%**
Open	0%	0%	30%	99%	77%	**25%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Wind Energy	**Management Alignment**					
	PHMA	**IHMA**	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	87%	13%	8%	1%	20%	**45%**
Avoidance	13%	87%	62%	0%	2%	**29%**
Open	0%	0%	30%	99%	78%	**26%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

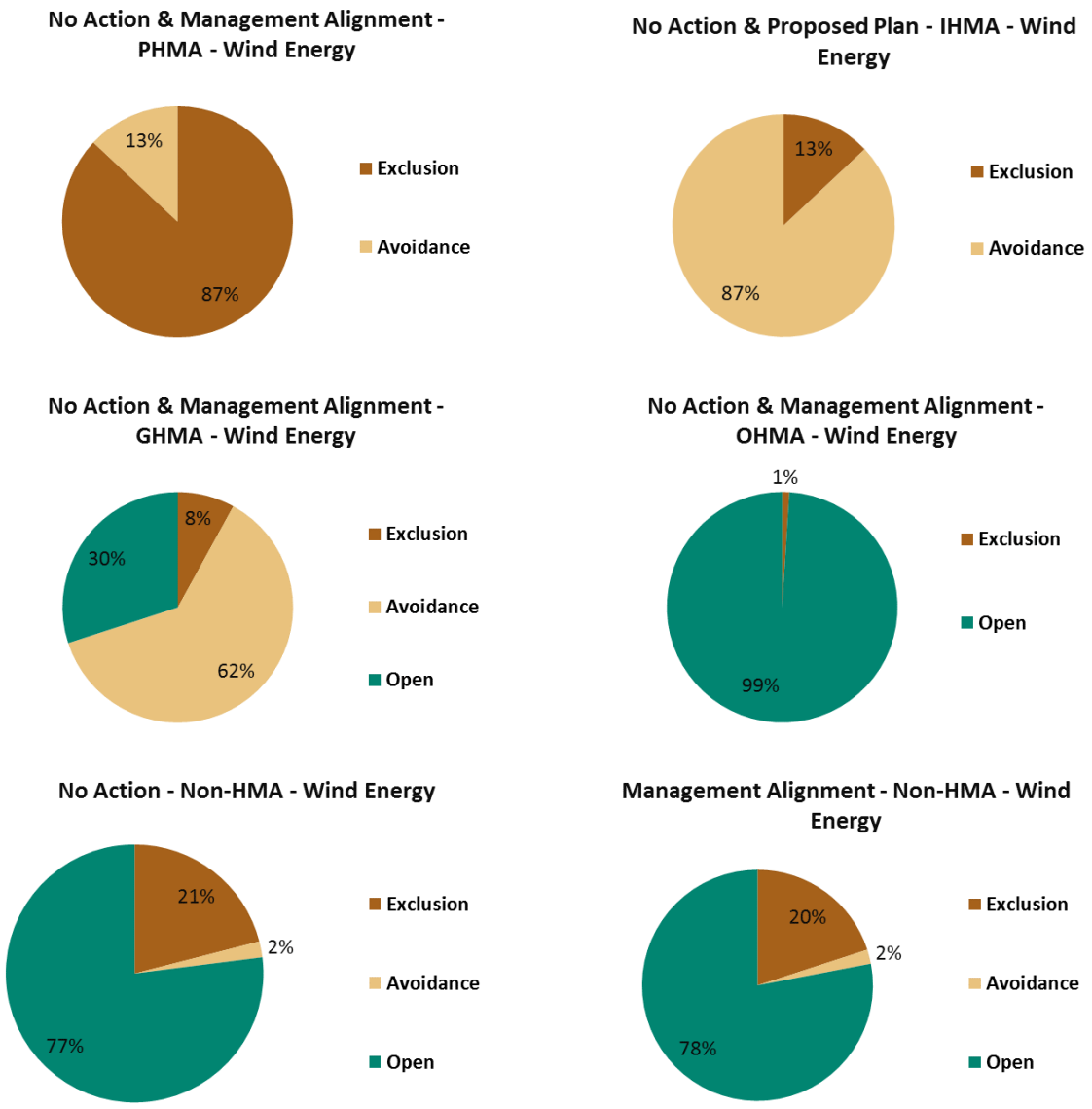


Figure 49 – Wind Energy Decisions within MZ IV

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

B.2.5 Management Zone V – Oregon, Nevada, California

I. Habitat Management

Table 51 – Habitat Management Areas within MZ V

Acres and percentages reflect all lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of HMA in MZ V							
No Action				Management Alignment			
PHMA	GHMA	OHMA	Non-HMA	PHMA	GHMA	OHMA	Non-HMA
6,510,000	7,323,000	1,932,000	15,519,000	6,567,000	6,846,000	1,142,000	16,727,000

Approximate Percent of MZ I that is HMA							
No Action				Management Alignment			
PHMA	GHMA	OHMA	Non-HMA	PHMA	GHMA	OHMA	Non-HMA
21%	23%	6%	50%	21%	22%	4%	53%

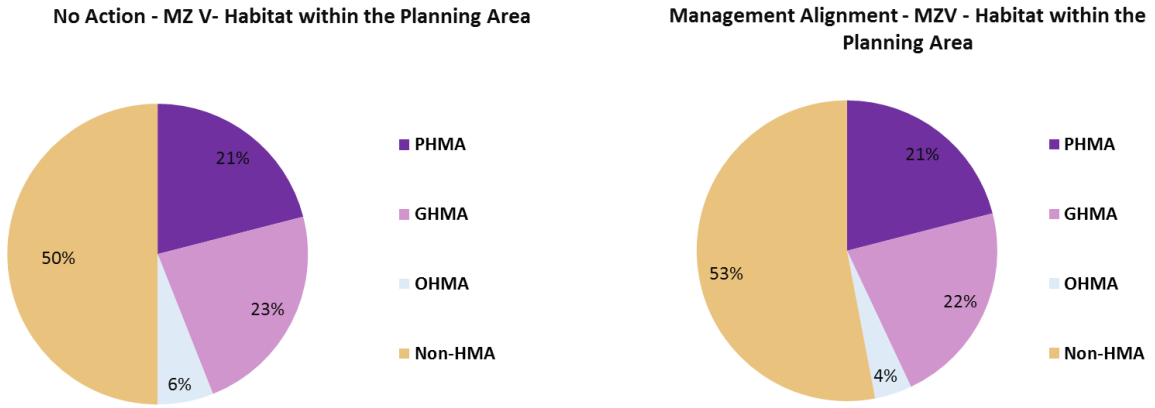


Figure 50 – Habitat Management Areas within MZ V

Percentages reflect all lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

II. Geothermal Energy

Table 52 – Geothermal Energy Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Geothermal Energy Decisions in MZ V by Habitat Management Area Type					
Geothermal Energy	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	1,626,000	1,359,000	158,000	898,000	**4,042,000**
Open NSO	3,350,000	379,000	0	164,000	**3,893,000**
Open CSU/TL	0	3,287,000	0	335,000	**3,622,000**
Open Standard Stipulations	5,000	0	744,000	2,367,000	**3,117,000**
Total	**4,982,000**	**5,026,000**	**903,000**	**3,764,000**	**14,674,000**
Geothermal Energy	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	1,569,000	1,373,000	141,000	935,000	**4,018,000**
Open NSO	3,566,000	379,000	0	164,000	**4,110,000**
Open CSU/TL	0	3,185,000	0	335,000	**3,520,000**
Open Standard Stipulations	0	0	423,000	2,598,000	**3,021,000**
Total	**5,136,000**	**4,937,000**	**564,000**	**4,032,000**	**14,668,000**

Approximate % of Habitat Management Area by Geothermal Energy Decision in MZ V					
Geothermal Energy	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	33%	27%	17%	24%	**28%**
Open NSO	67%	8%	0%	4%	**27%**
Open CSU/TL	0%	65%	0%	9%	**25%**
Open Standard Stipulations	<1%	0%	82%	63%	**21%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Geothermal Energy	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	31%	28%	25%	23%	**27%**
Open NSO	69%	8%	0%	4%	**28%**
Open CSU/TL	0%	65%	0%	8%	**24%**
Open Standard Stipulations	0%	0%	75%	64%	**21%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

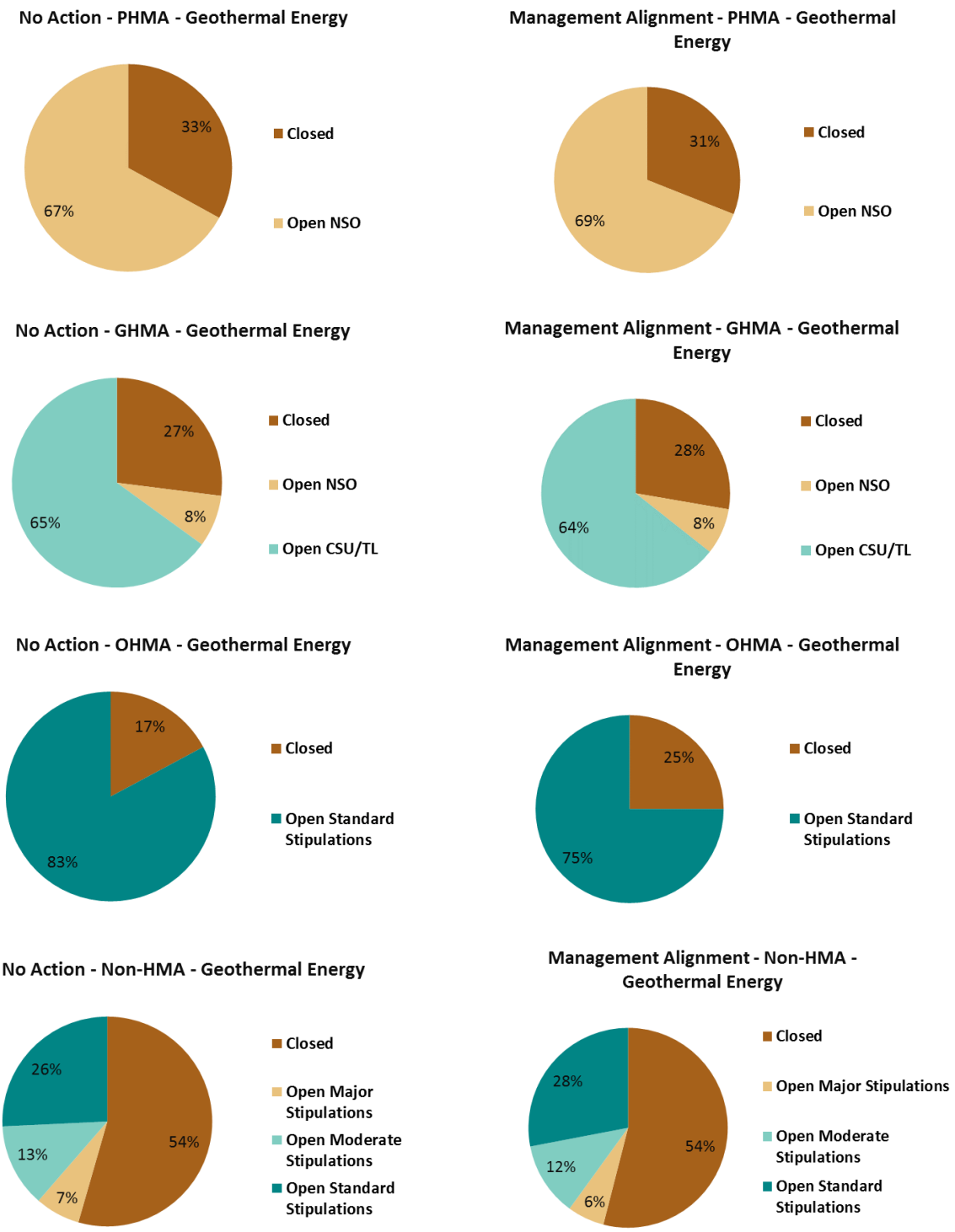


Figure 51 – Geothermal Energy Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

III. Land Tenure

Table 53 – Land Tenure Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Land Tenure Decisions in MZ V by Habitat Management Area Type					
Land Tenure	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Disposal	0	0	79,000	521,000	**600,000**
Retention	4,649,000	4,896,000	822,000	3,044,000	**13,410,000**
Total	**4,649,000**	**4,896,000**	**901,000**	**3,565,000**	**14,011,000**
Land Tenure	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Disposal	2,000	19,000	32,000	592,000	**644,000**
Retention	4,802,000	4,787,000	530,000	3,241,000	**13,360,000**
Total	**4,804,000**	**4,806,000**	**562,000**	**3,833,000**	**14,005,000**

Approximate % of Habitat Management Area by Land Tenure Decision in MZ III					
Land Tenure	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Disposal	0%	0%	9%	15%	**4%**
Retention	100%	100%	91%	85%	**96%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Land Tenure	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Disposal	<1%	<1%	6%	15%	**5%**
Retention	100%	100%	94%	85%	**95%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

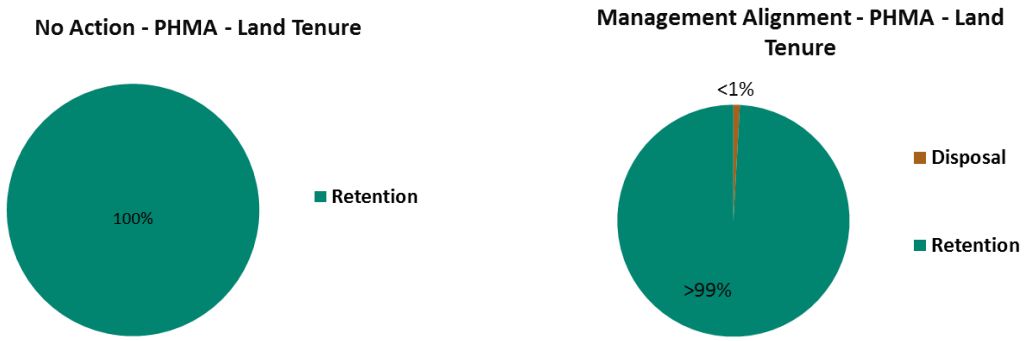


Figure 52 – Land Tenure Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

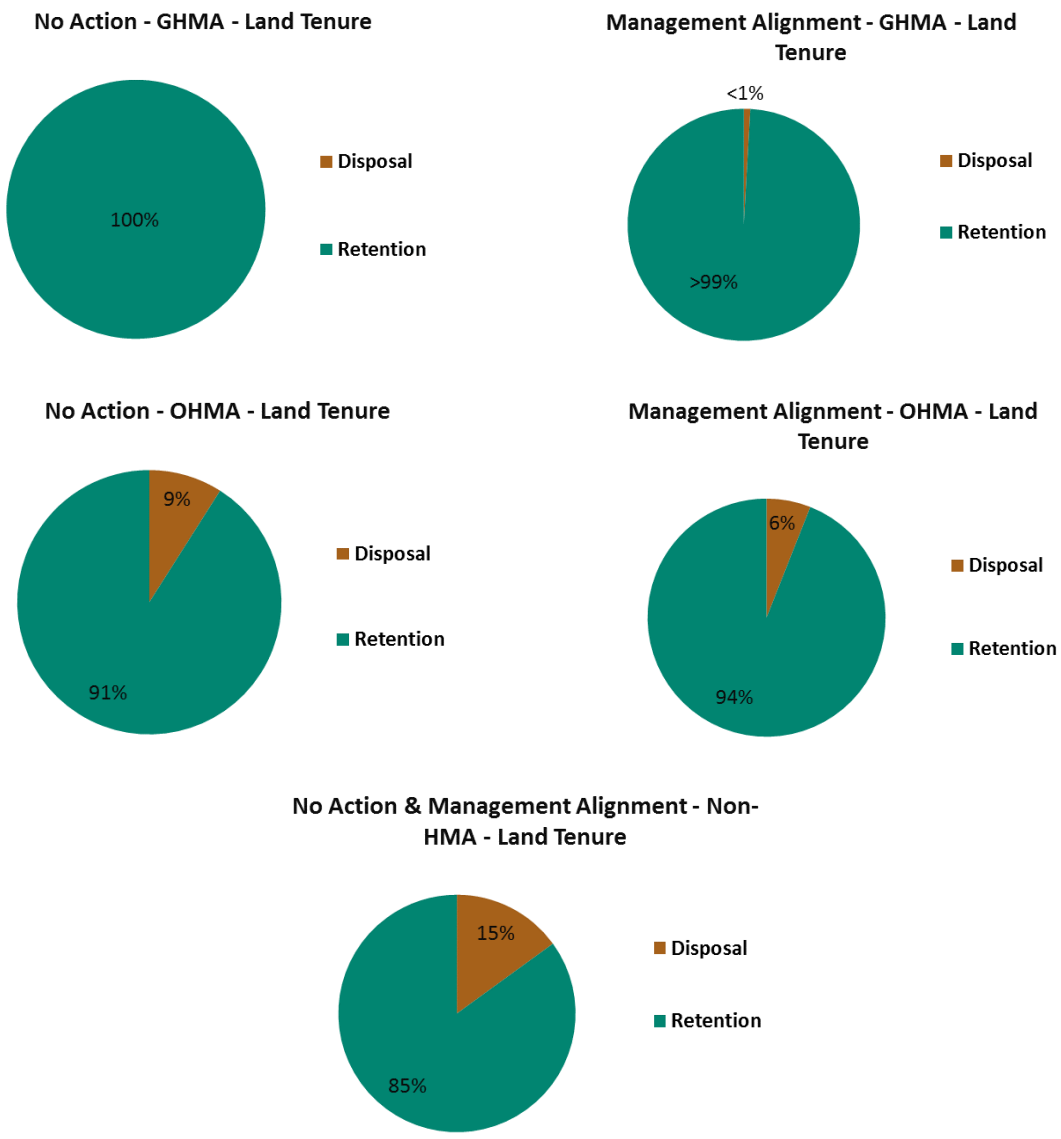


Figure 52 (cont'd) – Land Tenure Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

IV. Livestock Grazing

Table 54 – Livestock Grazing Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Livestock Grazing Decisions in MZ V by Habitat Management Area Type					
Livestock Grazing	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Unavailable	47,000	102,000	0	84,000	**232,000**
Available	4,582,000	4,762,000	883,000	3,233,000	**13,461,000**
Total	**4,629,000**	**4,864,000**	**883,000**	**3,317,000**	**13,694,000**
Livestock Grazing	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Unavailable	47,000	102,000	0	84,000	**232,000**
Available	4,736,000	4,671,000	550,000	3,493,000	**13,450,000**
Total	**4,783,000**	**4,772,000**	**550,000**	**3,577,000**	**13,682,000**

Approximate % of Habitat Management Area by Livestock Grazing Decision in MZ V					
Livestock Grazing	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Unavailable	1%	2%	0%	3%	**2%**
Available	99%	98%	100%	97%	**98%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Livestock Grazing	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Unavailable	1%	2%	0%	2%	**2%**
Available	99%	98%	100%	98%	**98%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Figure 53 – Livestock Grazing Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

V. Locatable Minerals

Table 55 – Locatable Minerals Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Locatable Minerals Decisions in MZ V by Habitat Management Area Type					
Locatable Minerals	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Existing Withdrawals	631,000	687,000	59,000	486,000	**1,864,000**
Recommended Withdrawals	435,000	5,000	0	0	**440,000**
Open	3,885,000	4,329,000	842,000	3,048,000	**12,104,000**
Total	**4,951,000**	**5,022,000**	**901,000**	**3,534,000**	**14,408,000**

Locatable Minerals	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Existing Withdrawals	626,000	687,000	64,000	487,000	**1,864,000**
Recommended Withdrawals	12,000	5,000	0	0	**17,000**
Open	4,469,000	4,240,000	499,000	3,314,000	**12,522,000**
Total	**5,106,000**	**4,932,000**	**562,000**	**3,801,000**	**14,403,000**

Approximate % of Habitat Management Area by Geothermal Energy Decision in MZ V					
Locatable Minerals	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Existing Withdrawals	13%	14%	7%	14%	**13%**
Recommended Withdrawals	9%	0%	0%	0%	**3%**
Open	78%	86%	93%	86%	**84%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Locatable Minerals	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Existing Withdrawals	12%	14%	11%	13%	**13%**
Recommended Withdrawals	0%	0%	0%	0%	**0%**
Open	88%	86%	89%	87%	**87%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

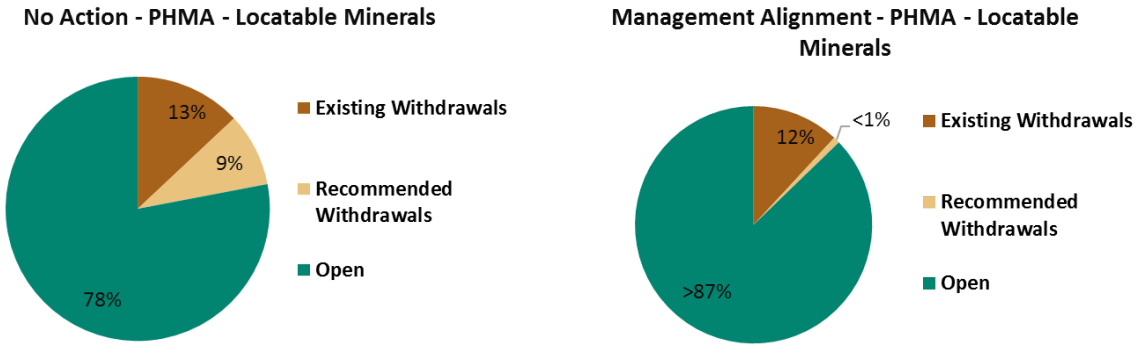


Figure 54 – Locatable Minerals Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Figure 54 (cont'd) – Locatable Minerals Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VI. Non-Energy Leasable Minerals

Table 56 – Non-Energy Leasable Minerals Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Non-Energy Leasable Minerals Decisions in MZ V by Habitat Management Area Type					
Non-Energy Leasable Minerals	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	4,980,000	1,388,000	158,000	898,000	**7,423,000**
Open	0	3,635,000	744,000	2,866,000	**7,247,000**
Total	**4,980,000**	**5,024,000**	**903,000**	**3,764,000**	**14,671,000**
Non-Energy Leasable Minerals	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	5,135,000	1,402,000	141,000	935,000	**7,613,000**
Open	0	3,532,000	423,000	3,097,000	**7,052,000**
Total	**5,135,000**	**4,934,000**	**564,000**	**4,032,000**	**14,665,000**

Approximate % of Habitat Management Area by Non-Energy Leasable Minerals Decision in MZ V					
Non-Energy Leasable Minerals	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	100%	28%	17%	24%	**51%**
Open	0%	72%	82%	76%	**49%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Non-Energy Leasable Minerals	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	100%	28%	25%	23%	**52%**
Open	0%	72%	75%	77%	**48%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Figure 55 – Non-Energy Leasable Minerals Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VII. Fluid Minerals (Oil & Gas)

Table 57 – Fluid Mineral (Oil & Gas) Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Fluid Mineral (Oil & Gas) Decisions in MZ V by Habitat Management Area Type					
Fluid Mineral (Oil & Gas) Decisions	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	1,590,000	1,373,000	141,000	935,000	**4,039,000**
Open NSO	3,542,000	379,000	0	164,000	**4,085,000**
Open CSU/TL	0	3,184,000	0	335,000	**3,519,000**
Open Standard Stipulations	0	0	423,000	2,598,000	**3,021,000**
Total	**5,133,000**	**4,936,000**	**564,000**	**4,032,000**	**14,664,000**
Fluid Mineral (Oil & Gas) Decisions	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	1,626,000	1,359,000	158,000	898,000	**4,042,000**
Open NSO	3,354,000	379,000	0	164,000	**3,898,000**
Open CSU/TL	0	3,287,000	0	335,000	**3,622,000**
Open Standard Stipulations	0	0	743,000	2,365,000	**3,108,000**
Total	**4,981,000**	**5,026,000**	**902,000**	**3,762,000**	**14,670,000**

Approximate % of Habitat Management Area by Fluid Mineral (Oil & Gas) Decision in MZ V					
Fluid Mineral (Oil & Gas) Decisions	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	33%	27%	18%	24%	**28%**
Open NSO	67%	8%	0%	4%	**27%**
Open CSU/TL	0%	65%	0%	9%	**25%**
Open Standard Stipulations	0%	0%	82%	63%	**21%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Fluid Mineral (Oil & Gas) Decisions	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	31%	28%	25%	23%	**28%**
Open NSO	69%	8%	0%	4%	**28%**
Open CSU/TL	0%	65%	0%	8%	**24%**
Open Standard Stipulations	0%	0%	75%	64%	**21%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

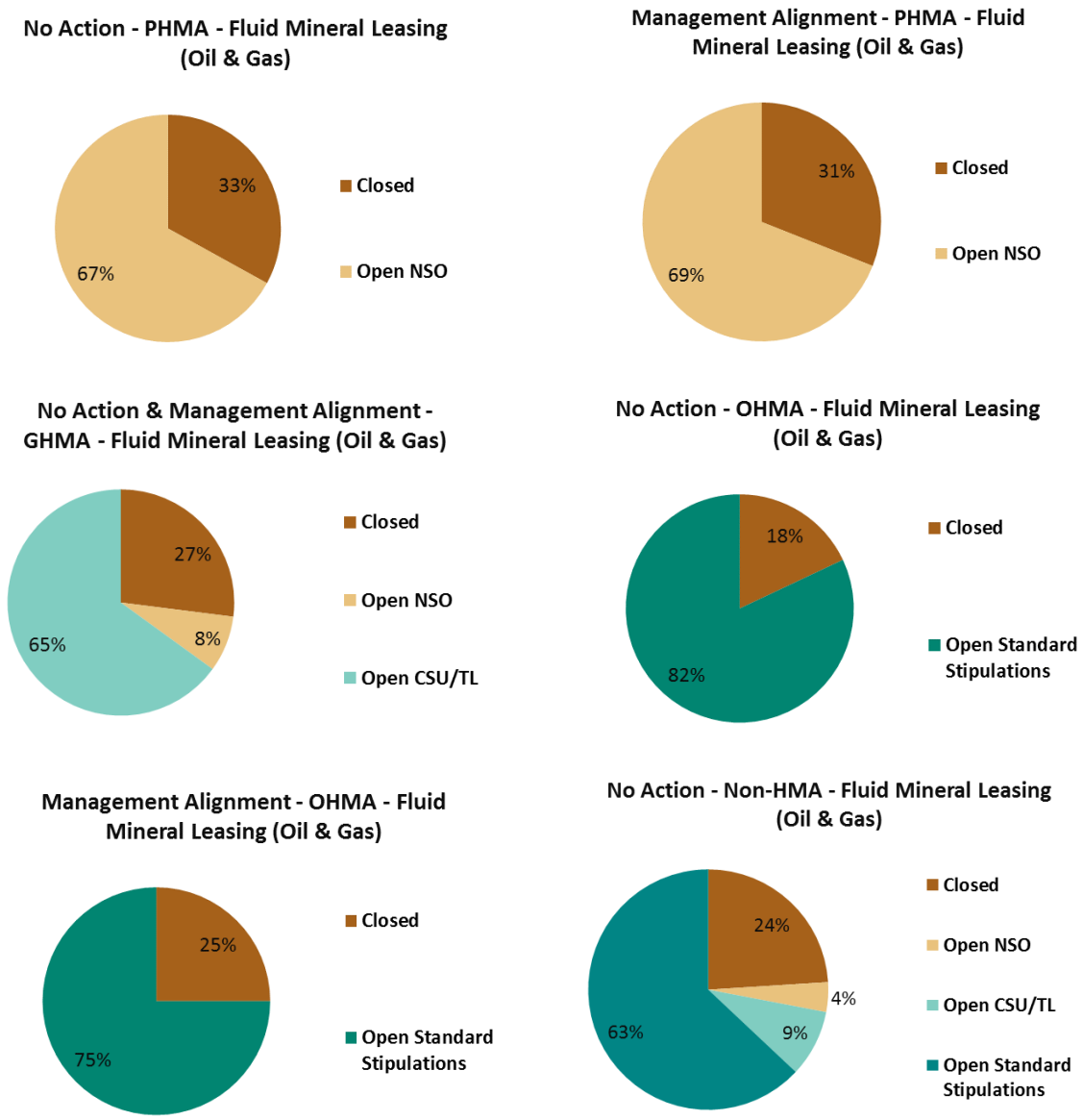


Figure 56 – Fluid Mineral (Oil & Gas) Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

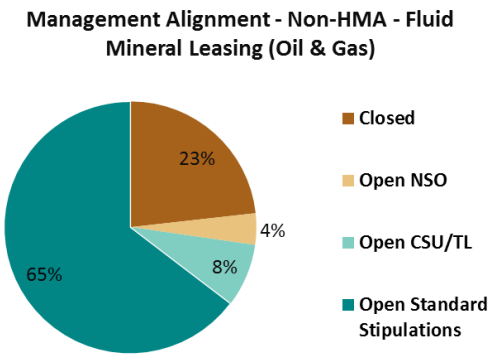


Figure 56 (cont'd) – Fluid Mineral (Oil & Gas) Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

VIII. Rights-of-Ways

Table 58 – Rights-of-Ways Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Rights-of-Ways Decisions in MZ V by Habitat Management Area Type					
Rights-of-Ways	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	956,000	445,000	158,000	787,000	**2,347,000**
Avoidance	3,634,000	4,349,000	0	325,000	**8,307,000**
Open	87,000	106,000	744,000	2,449,000	**3,386,000**
Total	**4,677,000**	**4,900,000**	**902,000**	**3,561,000**	**14,040,000**
Rights-of-Ways	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	922,000	459,000	141,000	824,000	**2,346,000**
Avoidance	3,854,000	4,281,000	0	325,000	**8,460,000**
Open	51,000	69,000	423,000	2,685,000	**3,228,000**
Total	**4,827,000**	**4,809,000**	**564,000**	**3,834,000**	**14,034,000**

Approximate % of Habitat Management Area by Rights-of-Ways Decision in MZ V					
Rights-of-Ways	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	78%	89%	0%	9%	**59%**
Avoidance	20%	9%	18%	22%	**17%**
Open	2%	2%	82%	69%	**24%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Rights-of-Ways	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	80%	89%	0%	8%	**60%**
Avoidance	19%	10%	25%	21%	**17%**
Open	1%	1%	75%	70%	**23%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

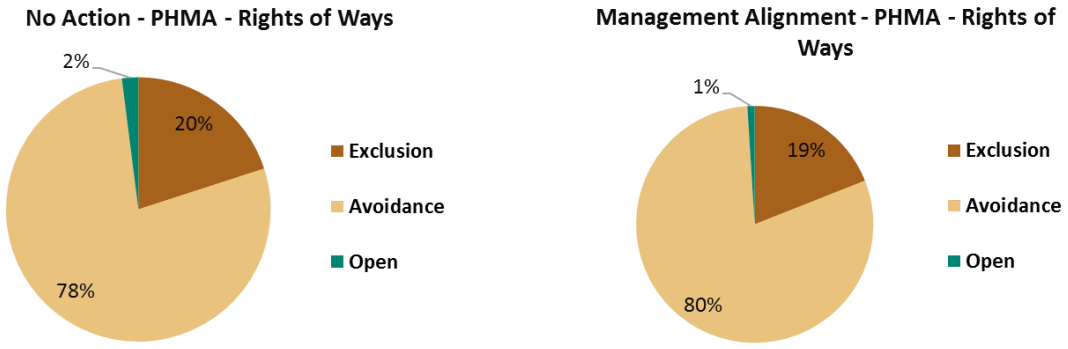


Figure 57 – Rights-of-Ways Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

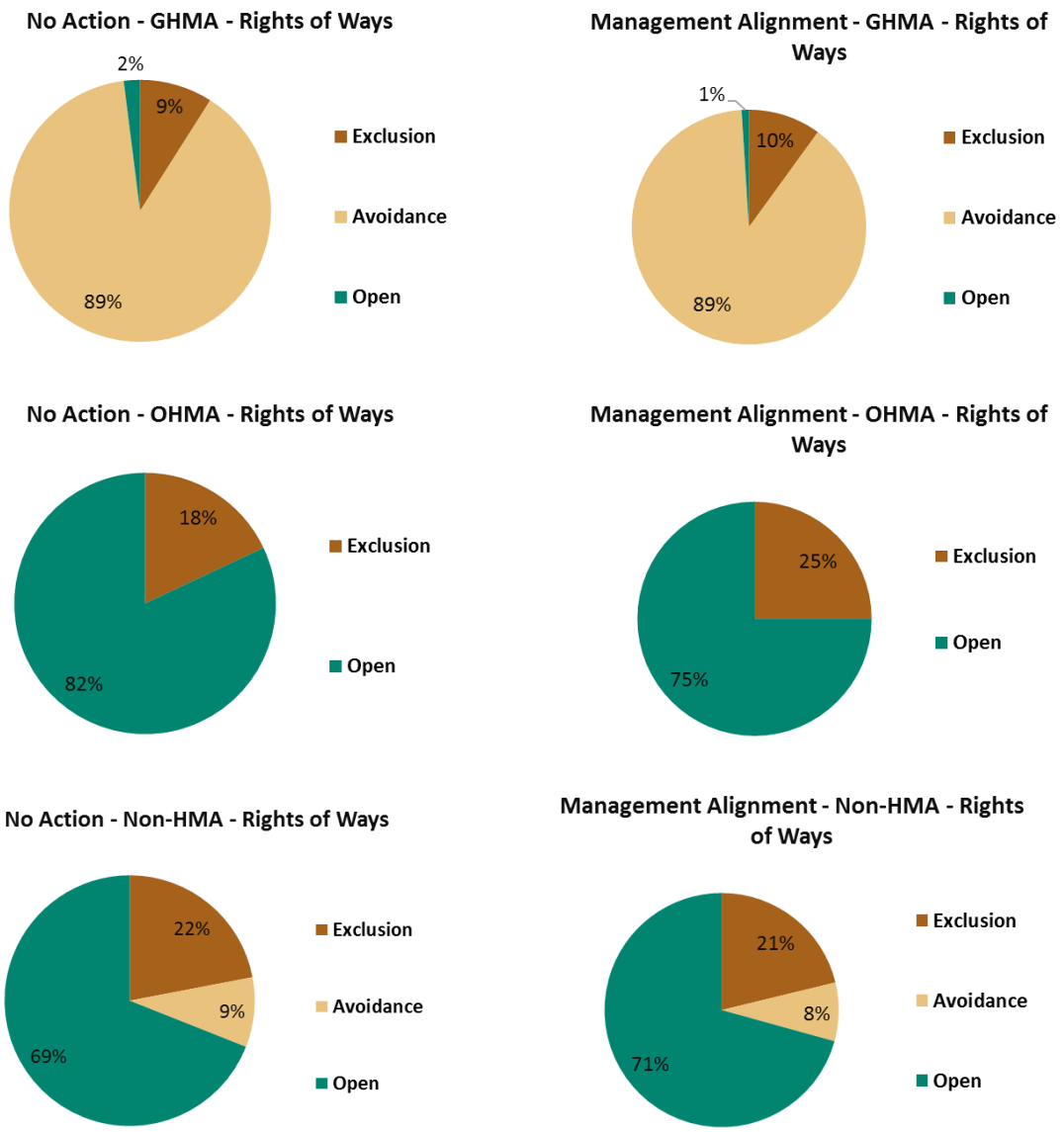


Figure 57 (cont'd) – Rights-of-Ways Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

IX. Salable Minerals Materials

Table 59 – Salable Minerals Materials Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Salable Minerals Materials Decisions in MZ V by Habitat Management Area Type					
Salable Minerals Materials	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	4,980,000	1,402,000	158,000	935,000	**7,475,000**
Open	1,000	3,621,000	744,000	2,827,000	**7,194,000**
Total	**4,980,000**	**5,024,000**	**903,000**	**3,762,000**	**14,669,000**
Salable Minerals Materials	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	5,135,000	1,416,000	141,000	972,000	**7,664,000**
Open	0	3,518,000	423,000	3,057,000	**6,998,000**
Total	**5,135,000**	**4,934,000**	**564,000**	**4,030,000**	**14,663,000**

Approximate % of Habitat Management Area by Non-Energy Leasable Minerals Decision in MZ V					
Salable Minerals Materials	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	100%	28%	17%	25%	**51%**
Open	<1%	72%	83%	75%	**49%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Salable Minerals Materials	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	100%	29%	25%	24%	**52%**
Open	0%	71%	75%	76%	**48%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

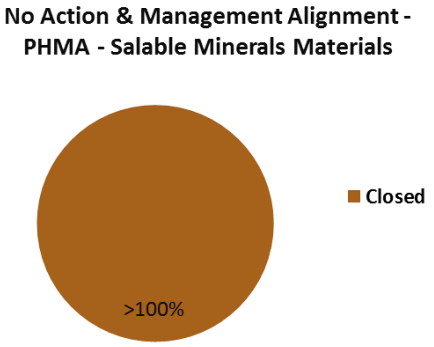


Figure 58 – Salable Minerals Materials Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Figure 58 (cont'd) – Salable Minerals Materials Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

X. Solar Energy

Table 60 – Solar Energy Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Solar Energy Decisions in MZ V by Habitat Management Area Type					
Solar Energy	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	3,932,000	1,466,000	897,000	2,191,000	**8,487,000**
Avoidance	750,000	3,438,000	1,000	348,000	**4,537,000**
Open	0	0	4,000	1,032,000	**1,036,000**
Total	**4,683,000**	**4,904,000**	**903,000**	**3,571,000**	**14,060,000**

Solar Energy	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	4,088,000	1,373,000	564,000	2,457,000	**8,483,000**
Avoidance	750,000	3,438,000	0	349,000	**4,537,000**
Open	0	0	0	1,034,000	**1,035,000**
Total	**4,838,000**	**4,810,000**	**564,000**	**3,841,000**	**14,054,000**

Approximate % of Habitat Management Area by Solar Energy Decision in MZ V					
Solar Energy	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	84%	30%	99%	61%	**60%**
Avoidance	16%	70%	<1%	10%	**32%**
Open	0%	0%	<1%	29%	**7%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Solar Energy	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	84%	29%	100%	64%	**60%**
Avoidance	16%	71%	0%	9%	**32%**
Open	0%	0%	0%	27%	**7%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

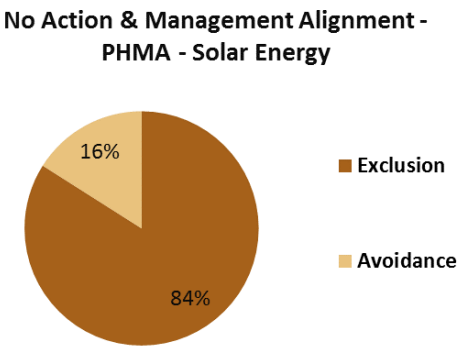


Figure 59 – Solar Energy Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

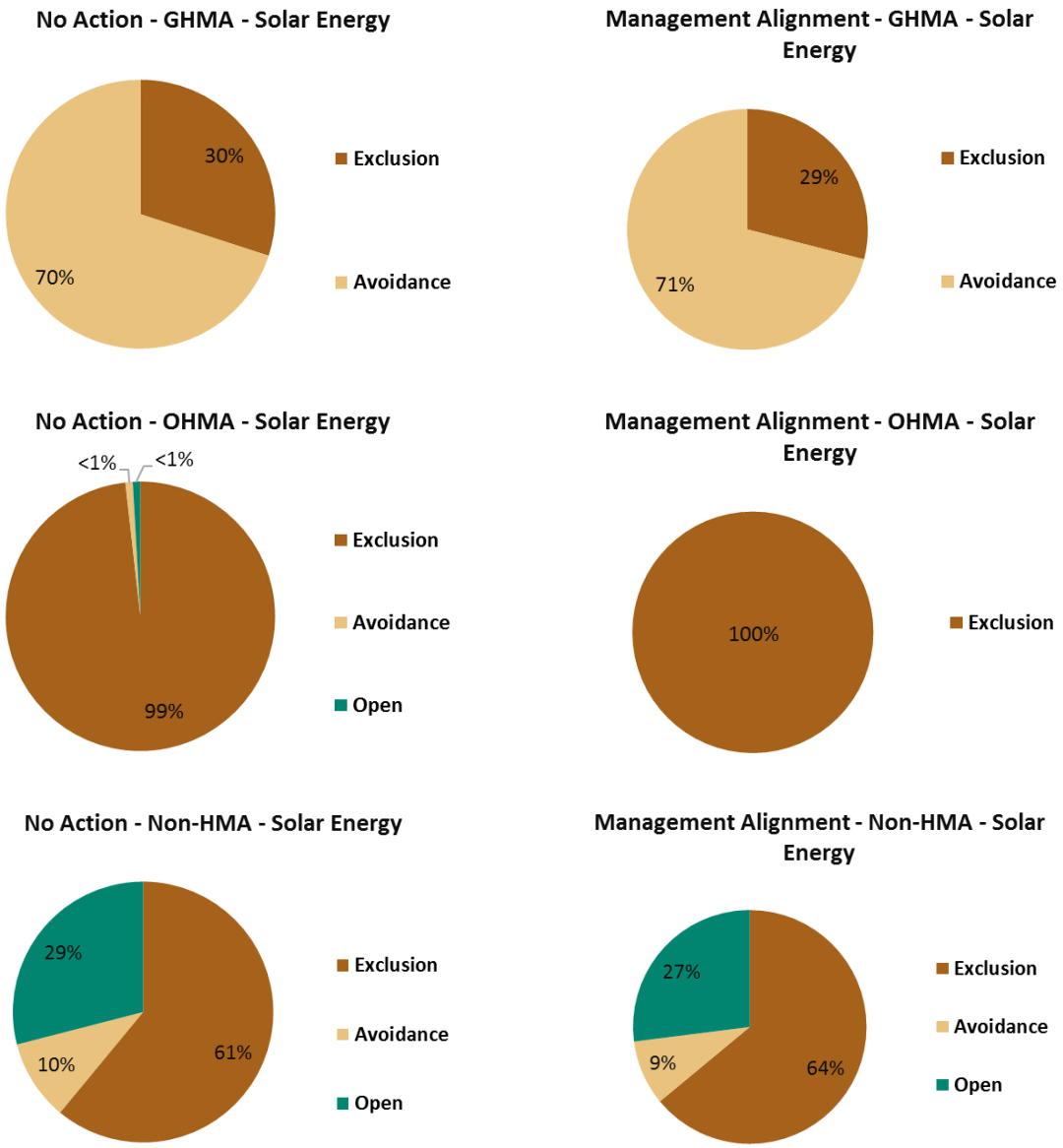


Figure 59 (cont'd) – Solar Energy Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

XI. Trails and Travel Management

Table 61 – Trails and Travel Management Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Trails and Travel Management Decisions in MZ V by Habitat Management Area Type					
Trails and Travel Management Decisions	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	220,000	215,000	59,000	423,000	**917,000**
Limited	4,452,000	4,681,000	428,000	1,257,000	**10,818,000**
Open	0	2,000	414,000	1,888,000	**2,304,000**
Total	**4,672,000**	**4,897,000**	**901,000**	**3,568,000**	**14,038,000**
Trails and Travel Management Decisions	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	215,000	214,000	64,000	424,000	**917,000**
Limited	4,613,000	4,591,000	290,000	1,280,000	**10,774,000**
Open	0	2,000	209,000	2,131,000	**2,342,000**
Total	**4,828,000**	**4,807,000**	**562,000**	**3,836,000**	**14,032,000**

Approximate % of Habitat Management Area by Trails and Travel Management Decisions Decision in MZ V					
Trails and Travel Management Decisions	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	5%	4%	7%	12%	**7%**
Limited	95%	96%	48%	35%	**77%**
Open	0%	<1%	46%	53%	**16%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Trails and Travel Management Decisions	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Closed	4%	4%	11%	11%	**7%**
Limited	96%	96%	52%	33%	**77%**
Open	0%	<1%	37%	56%	**17%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

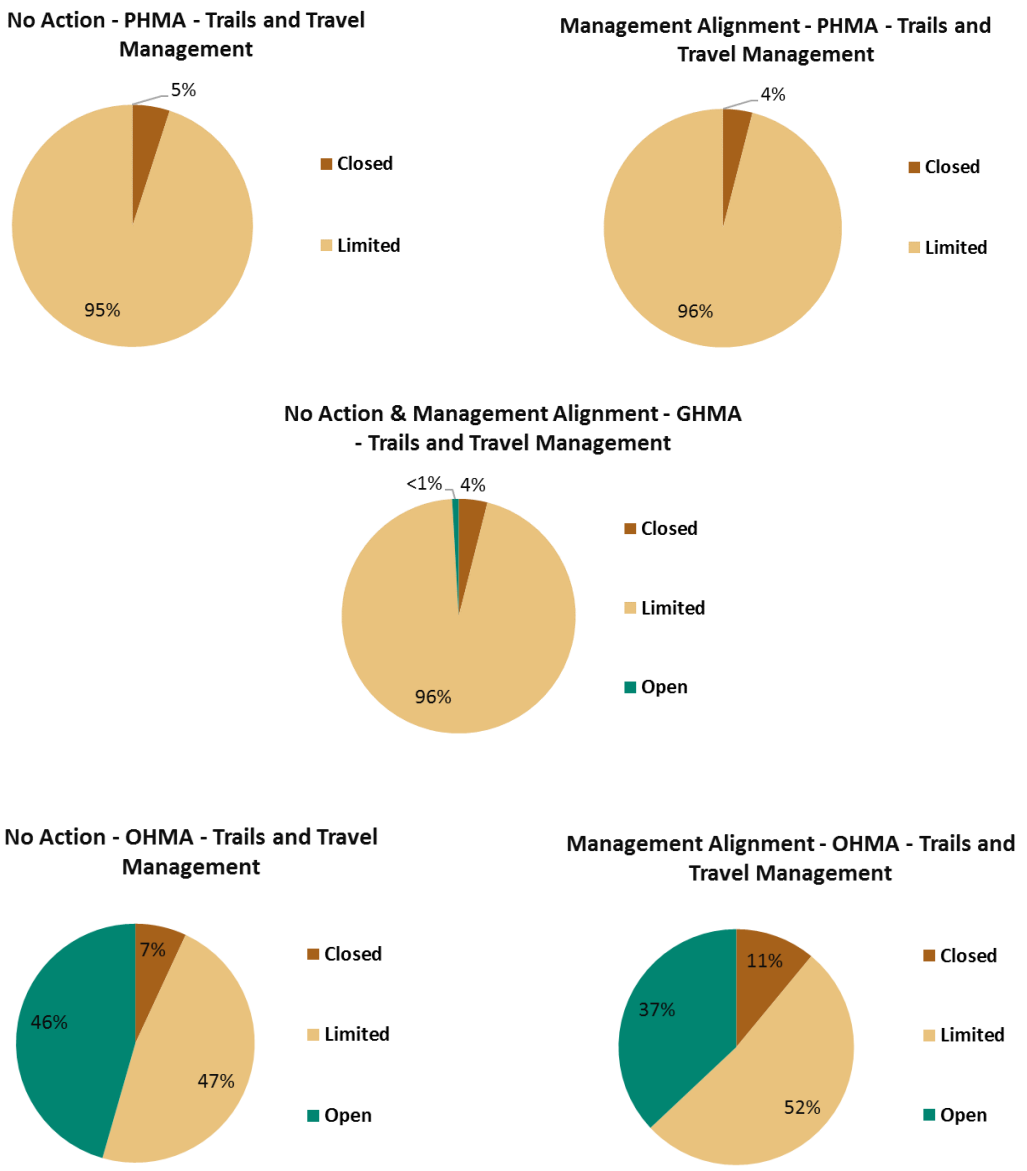
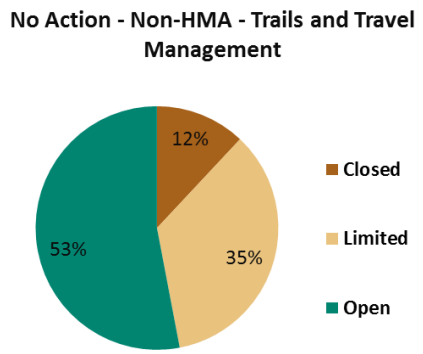


Figure 60 – Trails and Travel Management Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.



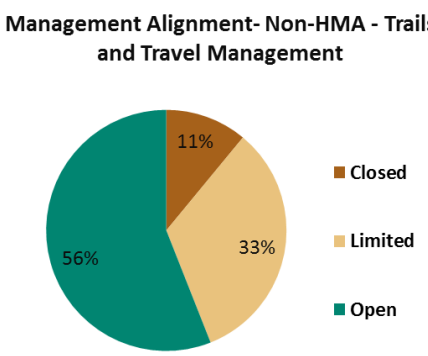


Figure 60 (cont'd) – Trails and Travel Management Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

XII. Wind Energy

Table 62 – Wind Energy Decisions within MZ V

Acres and percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

Approximate Acres of Wind Energy Decisions in MZ V by Habitat Management Area Type					
Wind Energy	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	3,927,000	454,000	158,000	792,000	**5,330,000**
Avoidance	750,000	4,445,000	0	321,000	**5,516,000**
Open	1,000	0	744,000	2,456,000	**3,201,000**
Total	**4,678,000**	**4,900,000**	**903,000**	**3,568,000**	**14,048,000**
Wind Energy	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	4,083,000	467,000	141,000	829,000	**5,520,000**
Avoidance	750,000	4,341,000	0	321,000	**5,412,000**
Open	0	0	423,000	2,686,000	**3,110,000**
Total	**4,833,000**	**4,809,000**	**564,000**	**3,836,000**	**14,042,000**

Approximate % of Habitat Management Area by Wind Energy Decision in MZ V					
Wind Energy	**No Action**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	84%	9%	17%	22%	**38%**
Avoidance	16%	91%	0%	9%	**39%**
Open	<1%	0%	82%	69%	**23%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**
Wind Energy	**Management Alignment**				
	PHMA	**GHMA**	**OHMA**	**Non-HMA**	**Total**
Exclusion	84%	10%	25%	22%	**39%**
Avoidance	16%	90%	0%	8%	**39%**
Open	0%	0%	75%	70%	**22%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**

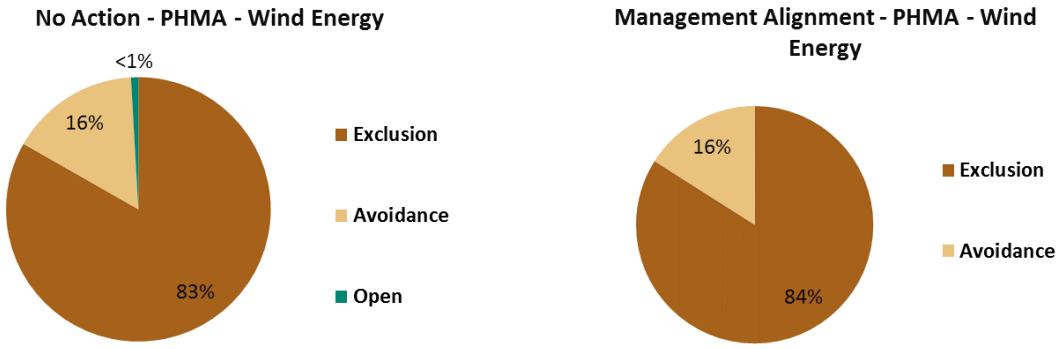


Figure 61 – Wind Energy Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

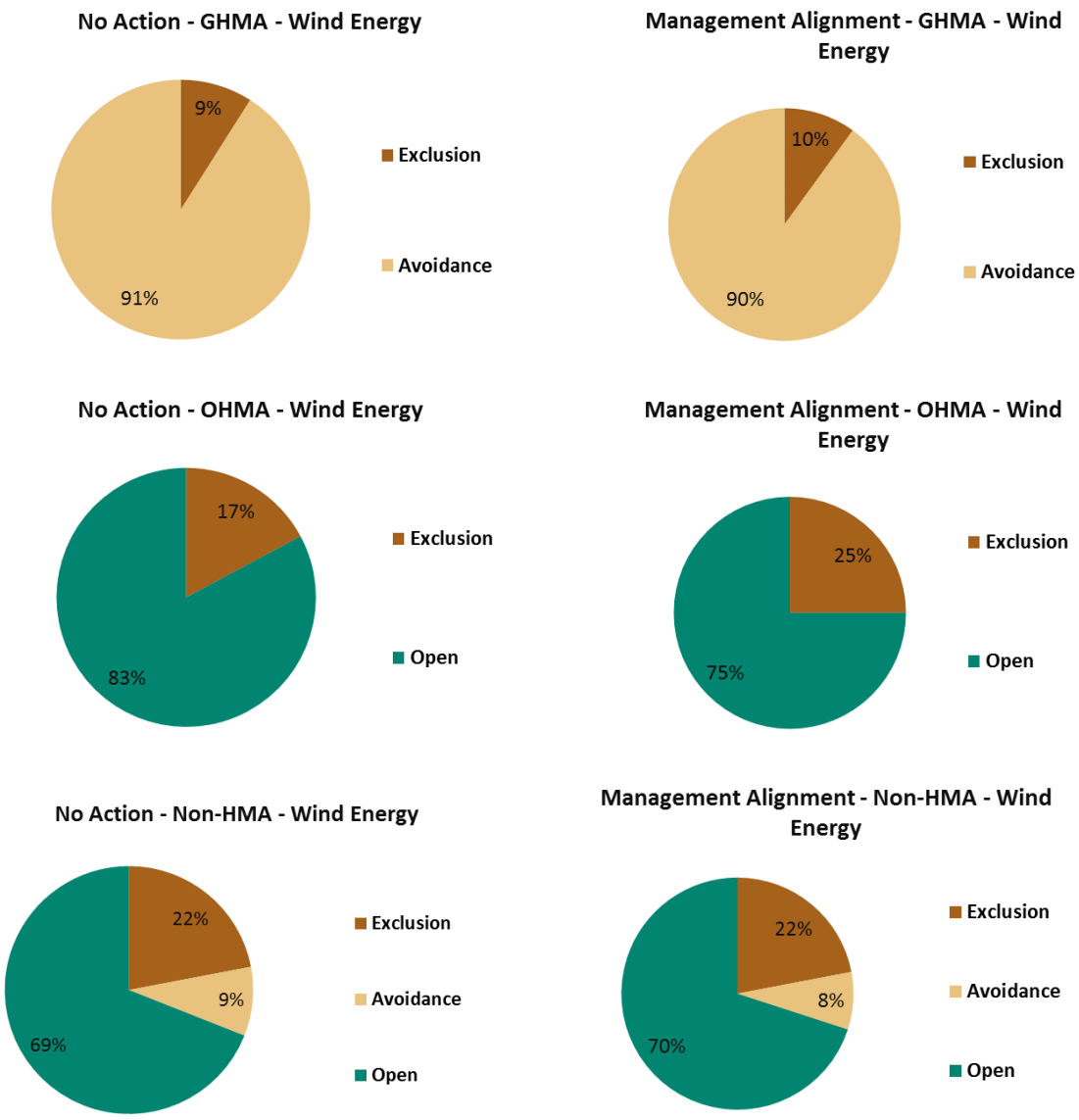


Figure 61 (cont'd) – Wind Energy Decisions within MZ V

Percentages reflect BLM managed lands. Percentages may not total to 100% due to rounding. All figures and tables are intended for Management Zone summary purposes only. They represent data available at the time of consolidation and may be revised as Plans are finalized. Consult each individual EIS for final/official acreages.

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Appendix C

Review of the NTT and COT Report's Relevance to the Planning Process; Incorporation of the NTT, COT, and USGS Summary of Science into the Oregon Planning Process

Appendix C. Review of the NTT and COT Report's Relevance to the Planning Process; Incorporation of the NTT, COT, and USGS Summary of Science into the Oregon Planning Process

This appendix outlines how the NTT and COT and reports factored into the planning process for the FEIS, and how NTT, COT, and USGS science was incorporated into the planning process.

C.1 BLM National Technical Team Report (2011)

In 2010, the US Fish and Wildlife Service (USFWS) determined that Greater Sage-Grouse warranted listing under the Endangered Species Act, but was precluded from listing due to other priorities. In response to this determination, the BLM initiated a land use planning process in 2011. To help inform that process the BLM assembled a "National Technical Team" (NTT), comprising state and federal resource specialists and scientists to review the scientific literature available at that time. On December 21, 2011 the NTT finalized a document entitled *A Report on National Greater Sage-Grouse Conservation Measures*, also known as the National Technical Team Report (NTT Report). The report was developed to provide "the latest science and best biological judgement" from the available literature (NTT Report, Introduction, page 5). Though the NTT Report is not itself science, the NTT used the best science available at that time to inform the conservation measures it identified for BLM decision-makers to consider through the land use planning and NEPA process.

On December 27, 2011, the BLM issued policy in Instruction Memorandum 2012-044 requiring BLM offices to "consider all applicable conservation measures when revising or amending its RMPs in Greater Sage Grouse habitat" (IM-2012-44, Policy/Action). The IM clarified a distinction between "all applicable conservation measures" and those included in the NTT Report by noting in the following sentence that "the conservation measures developed by the NTT…must be considered and analyzed, as appropriate, through the land use planning process" (ibid). Each BLM planning effort complied with this policy by including an alternative based entirely on the conservation measures identified by the NTT. This was Alternative B in the 2013 Draft EIS and 2015 Final EIS, and by extension in the 2018 Draft and Final EISs. Through this alternative and corresponding analysis, the BLM complied with its policy for considering the conservation measures in the NTT Report.

It is critical to clarify that neither the NTT nor the BLM's policy intended that the conservation measures in the NTT Report were to be automatically applied across the range without intervening consideration through detailed land use planning and NEPA analysis. In the same paragraph that directs the BLM to "consider all applicable conservation measures" from the NTT Report, IM-2012-044 also notes that "while these conservation measures are range-wide in scale, it is expected that at the regional and sub-regional planning scales there may be some adjustments of these conservation measures in order to address local ecological site variability." Moreover, the NTT understood that the measures in its report would be evaluated alongside competing land use planning considerations and with follow-up

environmental analysis relating to the conservation efficacy of its measures. As the NTT Report described, the conservation measures are not themselves management decisions but rather have been prepared "to assist [the BLM] in making management decisions." (NTT Report, Introduction, page 5.) In other words, "the conservation measures described in [the] report *are not an end point* but, rather, *a starting point* to be used in the BLM's planning processes" (ibid, page 5) (emphasis added).

The principle of local adaptation of scientific results and recommended conservation measures derived from them is present in other documents with sage-grouse conservation recommendations. In 2014, three years after the NTT Report, the Department of the Interior requested the US Geological Survey (USGS) prepare a report that compiled and summarized published scientific studies regarding buffer distances around sage-grouse habitats. In the report titled *Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review* (Open File Report 2014-1239), USGS scientists note that "responses of individual birds and populations, coupled with variability in land-use patterns and habitat conditions, add variation in research results. This variability presents a challenge for land managers and planners seeking to use research results to guide management and plan for sage-grouse conservation measures. Variability between sage-grouse populations and their responses to different types of infrastructure can be substantial across the species' range. Logical and scientifically justifiable departures from the 'typical response,' based on local data and other factors, may be warranted when implementing buffer protections or density limits in parts of the species' range" (USGS Open File Report 2014-1239, page 2). A simple statement from the report indicates this variability, where the USGS scientists noted that "there is no single distance that is an appropriate buffer for all populations and habitats across the sage-grouse range" (ibid, pg. 2).

Further, the BLM's policy requiring consideration of the conservation measures in the NTT Report allowed for individual planning efforts to make adjustments to the report's conservation measures. IM-2012-044 states that "the NTT-developed conservation measures were derived from goals and objectives developed by the NTT" and that "these goals and objectives are a *guiding philosophy* that should *inform* the goals and objectives developed for individual land use plans. However, *it is anticipated that individual plans may develop goals and objectives that differ and are specific to individual planning areas*" (emphasis added). The anticipation for variability across the range is even more explicit when the IM notes that "while [the NTT Report's] conservation measures are range-wide in scale, *it is expected* that at the regional and sub-regional planning scales there may be some adjustments of these conservation measures in order *to address local ecological site variability*" (emphasis added). With specific consideration of this variability, each BLM planning and NEPA effort developed and analyzed a range of alternative approaches for sage-grouse habitat management in each sub-region/state. Through this process, the BLM considered local and regional differences, analyzing the effect of each alternative approach locally and cumulatively.

As the NTT developed its conservation measures, it did not take into consideration other legal and regulatory requirements associated with land use planning and NEPA. For example, the NTT's range-wide conservation measures did not take into account State or local greater sage-grouse conservation efforts.

Further, the NTT Report's conservation measure that recommends that priority sage-grouse habitat areas be designated as unsuitable for all surface mining of coal entirely overlooks the specific process to determine unsuitability prescribed in 43 Code of Federal Regulations (CFR) 3461. Elsewhere the NTT

Report states that "a 4-mile [no surface occupancy (NSO) stipulation] likely would not be practical given most leases are not large enough to accommodate a buffer of this size, and lek spacing within priority habitats is such that lek-based buffers may overlap and preclude all development" (NTT Report, page 21) and therefore presents a conservation measure to close priority sage-grouse habitat areas to fluid mineral leasing. This is not consistent with BLM planning guidance directing planning teams that "when applying leasing restrictions, the least restrictive constraint to meet the resource protection objective should be used" (BLM-H-1601 Appendix C page 24); whether or not a lease is large enough to accommodate a large NSO should not be a consideration if NSO provides the necessary protection. In its foundational legislation for the BLM, Congress specifically declared that it neither enlarged nor diminished the authority of the states in managing fish and wildlife. In recognizing this role, as well as local knowledge and expertise, Congress directed the BLM to develop its land use plans to "be consistent with State and local plans to the maximum extent [the BLM] finds consistent with Federal law and the purposes of [FLPMA]" (Federal Land Policy and Management Act {FLPMA}, Section 202 (c)(9)).

In recognition of instances where the NTT Report's conservation measures were not consistent with law, regulation, or policy, the BLM's policy direction in IM-2012-044 directs that "when considering the [NTT Report's] conservation measures…BLM offices should ensure that implementation of any of the measures is consistent with applicable statute and regulation. Where inconsistencies arise, BLM offices should consider the conservation measure(s) to the fullest extent consistent with such statute and regulation."

Each BLM planning effort fully considered the broad, range-wide recommendations from the NTT Report through the required NEPA process. This consideration was accomplished, as directed by Congress, using a "systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences" (FLPMA Section 202(c)(2)). Through careful consideration of the NTT's conservation measures, as well as local expertise, monitoring, partnerships, and other resource and land uses, the BLM developed sage-grouse management goals, objectives, and management actions that accounted for the variability of habitat and resources across the range. Through the combination of both the 2015 and 2019 planning processes the BLM complied with the statutory requirement that the BLM resolve, "to the extent practical, inconsistencies between Federal and non-Federal Government plans" (FLPMA Sec. 202(c)(9)). Through these efforts, the BLM has met its statutory and regulatory responsibilities related to its consideration of the conservation measures contained in the NTT Report.

What the NTT Report and its Conservation Measures Are:

- The NTT Report included science-based management considerations for greater sage-grouse to promote sustainable sage-grouse populations.
- The conservation measures were to be considered and analyzed through the BLM's land use planning process.
- The conservation measures are range-wide in scale, not accounting for local variability.
- The conservation measures were a starting point to be used in the BLM's planning process.
- The NTT Report was developed by a team of resource specialists and scientists familiar with greater sage-grouse literature.

What the NTT Report and its Conservation Measures Are Not:

- Unlike FLPMA's requirement that the BLM develop and modify Land Use Plans in coordination with state and local plans and policies, the NTT Report was not developed with input from or consideration of plans, policies, or programs of State, Tribal, or local government agencies.
- The conservation measures were not developed using a systematic interdisciplinary approach, as required by FLPMA for land use plans.
- The NTT Report presented conservation measures that would provide food and habitat for one species of wildlife, but did not consider other FLPMA requirements for BLM to manage for other species and resources while also recognizing the need for sources of minerals, food, timber and fiber from public lands.
- The NTT Report is not a land use plan, or an amendment or revision to a land use plan.
- The conservation measures were based on best available science at the time and do not provide for future updates in scientific knowledge or technological advancements.
- When preparing the NTT Report, the NTT did not complete a NEPA analysis on its conservation measures. Instead, the BLM completed NEPA and land use planning processes in 2015 and 2019 to assess the environmental consequences of the NTT Report's conservation measures, as well as alternatives to those measures—and to account for competing land management considerations.

C.2 US FISH AND WILDLIFE CONSERVATION OBJECTIVES TEAM REPORT (2013)

In 2012 the director of the USFWS convened a Conservation Objectives Team (COT) of state and USFWS representatives. The team developed a peer-reviewed report (COT Report) that delineated objectives based on the "best scientific and commercial data available at the time of its release" (COT Report, page ii). The COT Report, released in March 2013, identifies conservation objectives, measures, and options for each of the Greater Sage-Grouse threats assessed. The COT Report also identified Priority Areas for Conservation (PACs) which were identified as "the most important areas needed for maintaining sage-grouse representation, redundancy, and resilience across the landscape" (ibid, page 13). Unique compared to the NTT Report, the COT Report identified threats to each PAC, recognizing that threats vary across the range, and therefore corresponding management should vary to address those threats. The preface to the report is clear that the COT report "is guidance only" and that the "identification of conservation objectives and measures does not create a legal obligation beyond existing legal requirements" (ibid, page ii). Further, the preface notes that the objectives "are subject to modification as dictated by new findings, changes in species' status, and the completion of conservation actions" (ibid, page ii).

The COT Report clearly identifies the necessity to adapt sage-grouse conservation goals, objectives, and measures due to variability across the range. The COT noted that "due to the variability in ecological conditions and the nature of the threats across the range of the sage-grouse, *developing detailed, prescriptive species or habitat actions is not possible at the range-wide scale*" (emphasis added) (COT Report, Section 5- Conservation Objectives, page 31). The COT Report summarizes the relationship between its range-wide conservation goals, objectives, and measures and the state-specific planning efforts, noting that "specific strategies or actions necessary to achieve the following conservation objectives must be developed and implemented at the state or local level, with the involvement of all stakeholders" (ibid).

The BLM received the COT Report when developing its 2013 Draft EIS and fully considered it prior to Draft EIS publication, providing for public review of the BLM's evaluation. Upon receipt of the Report the BLM evaluated the range of alternatives and determined that the threats addressed by the COT Report were all addressed in the range of alternatives; this was presented to the public in Appendix C in the 2013 Draft EIS. The BLM also evaluated the impacts to Greater Sage-Grouse from the alternatives and determined that the COT Report objectives were all addressed within the range of alternatives; this was presented to the public in the 2013 Draft EIS Chapter 2 Table 2.4 (Comparison of Alleviated Threats to Greater Sage-Grouse in the Oregon Sub-Region).

Following public comments and development of the 2015 Proposed Plan, Section 2.5 of the Final EIS updated the crosswalk between the USFWS threats and the BLM program areas, showing that all the threats for which the BLM has discretion were addressed. Section 2.11.7 notes that all conservation measures and objectives identified in the COT report were considered within the 2015 Final EIS range of alternatives. Finally, a table was added to the 2015 Final EIS Executive Summary that showed the management actions from the 2015 Proposed Plan that addressed the COT Report threats.

On October 2, 2015, the USFWS determined that "listing the sage-grouse as a threatened or endangered species is not warranted…" (Federal Register Vol. 80, No. 191, 59936). One of the rationales for this determination was that "the new Federal land-management paradigm is established in 98 amended Federal Plans that reduce and minimize threats to the species in the most important habitat for the species" (ibid). Through this language, it is clear that the 2015 planning efforts incorporated the recommendations from the COT Report to a degree that met the report's goal of "long-term conservation of sage-grouse and healthy sagebrush shrub and native perennial grass and forb communities by maintaining viable, connected, and well-distributed populations and habitats across their range, through threat amelioration, conservation of key habitats, and restoration activities" (COT Report, page 13).

What the COT Report and its Objectives, Measures and Options Are:

- The COT Report is a compilation of reasonable objectives, based upon the best scientific and commercial data available at the time of its release, for the conservation and survival of greater sage-grouse.
- The COT Report is guidance to federal land management agencies, state sage-grouse teams, and others developing efforts to achieve conservation for greater sage-grouse.
- The COT Report was clear that its objectives were subject to modification based on new findings, changes in species' status, and the completion of conservation actions.
- The COT Report was developed by a team of state and USFWS representatives selected by their respective state or agency.

What the COT Report and its Objectives, Measures and Options Are Not:

- The COT Report is not a recovery plan, conservation strategy, or conservation agreement.
- The COT Report did not include input from BLM biologists or BLM field staff familiar with local habitat conditions and threats.

- The COT Report was not developed with input from the BLM, its managers, planners, wildlife program leads, or field biologists and as such includes objectives, measures and options that do not consider the BLM's statutory, regulatory, or policy requirements.
- When preparing the COT Report, the USFWS did not complete a NEPA analysis on its conservation objectives, measures, and options. Instead, the BLM completed NEPA and land use planning processes in 2015 and 2019 to assess the environmental consequences of the COT Report conservation objectives, measures, and options, as well as alternatives to those objectives, measures, options—as they applied to the development of affected BLM land use planning decisions—while accounting for competing land management considerations.

C.3 EXCERPTS FROM THE OREGON FINAL EIS NOVEMBER 2018

- **Chapter 1: Purpose of and Need for Action**
    - **Section 1.1 Introduction. p. 1-2.** On June 7, 2017, the Secretary issued SO 3353 for the purpose of enhancing cooperation among 11 western states and the BLM in managing and conserving Greater Sage-Grouse. SO 3353 directed an Interior Review Team, consisting of the BLM, the USFWS, and United States Geological Survey (USGS), to coordinate with the Sage-grouse Task Force, which is comprised of representatives of the governors of each of the 11 states. They also were directed to review the 2015 Greater Sage-Grouse plans and associated policies to identify provisions that may require modification to make the plans more consistent with the individual state plans and better balance the BLM's multiple-use mission as directed by SO 3349.
    - **Section 1.4 Planning Criteria. p. 1-7.** The BLM has identified the following planning criteria:
        - The BLM will comply with all laws, regulations, policies, and guidance related to public lands management on BLM-administered lands.
        - Greater Sage-Grouse is a state-managed species dependent on sagebrush steppe habitats managed in partnership by federal, state, and local authorities. State game and fish agencies' Greater Sage-Grouse data and expertise will be used to the fullest extent practicable in making management determinations on BLM-administered lands.
        - Lands addressed in the RMPA/EIS will be BLM-administered land in Greater Sage-Grouse habitats, including surface and split-estate lands with federal mineral rights. Any decisions in the RMPA/EIS will apply only to BLM-administered lands.
        - This RMPA/EIS will comply with SOs, including 3353 (Greater Sage-Grouse Conservation and Cooperation with Western States), which strives for compatibility with state conservation plans.
        - This RMPA/EIS will incorporate, as appropriate, information in a USGS report that identified and annotated Greater Sage-Grouse science published since January 2015 (Carter et al. 2018) and a report that synthesized and outlined the potential management implications of this new science (Hanser et al. 2018).
        - This RMPA/EIS will recognize valid existing rights.

- All activities and uses within Greater Sage-Grouse habitats will follow existing and current land health standards (Standards for Rangeland Health and Guidelines for Livestock Grazing Management, 1997).
- Where restrictive land use allocations or decisions are in effect for other resources (e.g., wilderness study areas, areas of critical environmental concern/research natural areas, cultural resources, and riparian areas) under existing RMPs, those more restrictive land use allocations or decisions will not be amended by this RMPA/EIS.

- **Chapter 2: Alternatives**
  - **Section 2.2.1 Varying Constraints on Land Uses and Development Activities. p. 2-2 - 3.** The BLM considered the entire range of alternatives from the 2015 Final EIS to identify issues meriting reconsideration, given the BLM's goal of enhancing alignment with state plans. In this manner, the BLM will continue to appropriately manage Greater Sage-Grouse and its habitat through this planning effort in tandem with the 2015 ROD/ARMPA. Further, additional constraints on land uses or development without a documented need would not meet the purpose of SO 3353. The BLM did not discover new information that would indicate the agency should increase the level of conservation, management, and protection to achieve its land use plan objective. As part of the consideration of whether to amend the 2015 Greater Sage-Grouse LUPs, the BLM partnered with the USGS to review the best available information published since January 2015, develop an annotated bibliography of that Greater Sage-Grouse science (Carter et al. 2018; see Section 3.1), and incorporate the information into this EIS. In addition, SO 3353 directs the BLM to promote habitat conservation, while contributing to economic growth and energy independence. As analyzed in the 2015 Final EIS (see Sections 4.4.6, pages 4-112 and 113; Section 4.5.6, pages 4-132 and 133; Section 4.8.6, Alternative C, page 4-193; Section 4.16.6, page 4-278; Section 4.20.3, page 4-330; Section 4.20.4, pages 4-351 to 4-355) and hereby incorporated by reference, all of the previously analyzed alternatives, including one proposing constraints stricter than the current management plan, were predicted to result in a loss of development opportunities on public lands.

- **Chapter 3: Affected Environment**
  - **Section 3.1 Introduction. p. 3-1.** The BLM analyzed the management situation in full compliance with its regulations and policies. The BLM evaluated inventory and other data and information, partnering with USGS and coordinating extensively with States, to help provide a basis for formulating reasonable alternatives. The BLM described this process in its Report to the Secretary in response to SO 3353 (Aug. 4, 2017). Among other things, the Report describes how the BLM coordinated "with each State to gather information related to the [Secretary's] Order, including State-specific issues and potential options for actions with respect to the 2015 GRSG Plans and Instruction Memorandums (IMs) to identify opportunities to promote consistency with State plans." (Report to the Secretary at 3.) This process overlapped to some degree with the BLM's scoping process, which also assisted the BLM in identifying the scope of issues to be addressed and significant issues, and with coordination with the States occurring after the Report.

- **Section 3.1 Introduction. p. 3-2.** Based on available information, including the USGS reports described below, the BLM has concluded that the existing condition is not substantially different from that in 2015; therefore, for those resource topics discussed in detail in this RMPA/EIS, the data and information presented in the 2015 Final EIS regarding the affected environment is hereby incorporated by reference into this RMPA/EIS. Specific section and page number references for this incorporation by reference are provided in Section 3.2, Resources Affected, below. Where notable changes to the baseline condition have occurred since 2015, a discussion is included in this RMPA/EIS. Each resource topic listed below includes the following:
  - A reference to the location of the affected environment discussion of that resource topic in the 2015 Final EIS, incorporating by reference the cited information.
  - A brief description of new data or information, if that data or information would substantially alter the description of the existing condition of that resource topic from the description that was presented in the 2015 Final EIS.
  - A description of changes to the existing condition of the resource topic that have occurred since the 2015 Final EIS (e.g., a large wildfire), if applicable to the resource topic.
- Actions that have been authorized since the 2015 ARMPA were authorized consistent with the 2015 Final EIS. The BLM will continue to implement the decisions in the 2015 ARMPA, unless and until those decisions are amended.

  Acreage figures and other numbers are approximated using geographic information systems (GIS) technology and do not reflect exact measurements or precise calculations. These GIS-derived acreages are reasonable approximations for planning purposes.

  USGS Reports As part of the consideration of whether to amend some, all, or none of the 2015 Greater Sage-Grouse land use plans, the BLM requested the USGS to develop an annotated bibliography of Greater Sage-Grouse science published since January 2015 (Carter et al. 2018) and a report that synthesizes and outlines the potential management implications of this new science (Hanser et al. 2018).

  Following the 2015 plans, the scientific community has continued to improve the knowledge available to inform management actions and an overall understanding of Greater Sage-Grouse populations, habitat requirements, and their response to human activity. The review discussed the science related to six major topics identified by USGS and BLM, as follows:
  - Multiscale habitat suitability and mapping tools
  - Discrete human activities
  - Diffuse activities
  - Fire and invasive species
  - Restoration effectiveness
  - Population estimation and genetics

- **<u>Chapter 4:</u> Environmental Consequences**
    - **Section 4.5 Impacts on Greater Sage-Grouse. p. 4-6.** Grazing impacts would vary within and among the key 13 RNAs under the Proposed Plan Amendment, depending on site productivity, timing of grazing, stocking intensity, and duration of grazing within each RNA. General impacts from grazing on Greater Sage-Grouse are described in the 2015 Final EIS, Section 4.3, pages 4-7 to 4-94, and are hereby incorporated by reference. More specifically, pages 4-16 to 4-20 describe the impacts on Greater Sage-Grouse and its habitat from improper livestock grazing, an identified threat in the Conservation Objectives Team (COT) Report (USFWS 2013). Improper grazing, defined as grazing practices that are inconsistent with local ecological conditions and result in degradation of habitat for local wildlife species, can have adverse effects on Greater Sage-Grouse and its habitat, and may work synergistically with other potential threats, such as invasive plants and wildfire, to increase impacts (USFWS 2015). In its 2015 decision to not list Greater Sage-Grouse, the USFWS concluded that "although livestock grazing is widespread in the sagebrush ecosystem, and we expect some continued impacts from improper grazing at local scales, existing Federal regulations with full implementation, in combination with voluntary efforts on non-Federal rangelands are reducing the prevalence of improper grazing and its impacts to sage-grouse" (50 CFR Part 17 page 59911). Properly managed livestock grazing is compatible with managing for Greater Sage-Grouse conservation outcomes and can be used to reduce fuel loads (Davies et al. 2010; Davies et al. 2011), to protect intact sagebrush habitat, and to increase habitat extent and continuity (Connelly et al. 2004).
    - **Section 4.5 Impacts on Greater Sage-Grouse. p. 4-7.** The Proposed Plan Amendment would result in 21,959 fewer undisturbed acres within Oregon available for additional research in plant communities important to Greater Sage-Grouse to further determine the impact of livestock grazing on Greater Sage-Grouse and their habitats. Beck and Mitchell (2000) indicated there is a lack of ungrazed comparison areas for evaluating livestock impacts on seasonal needs of Greater Sage- Grouse. Hockett (2002) noted the lack of large representative tracts of ungrazed habitat makes it nearly impossible to determine and monitor the actual consequences of livestock grazing. Although the USFWS (2015) has determined improper livestock grazing can have adverse effects on Greater Sage-Grouse habitat, properly-managed grazing may benefit the species. Here, the RNAs would remain subject to management, to promote the key characteristics of the RNAs, including regulation of grazing, to maintain and promote the key characteristics of the RNAs. Moreover, the RNAs are so small in size relative to the size of the species' range that any impacts of livestock grazing on Greater Sage-Grouse populations using these areas are minimal and undetectable. Moreover, closing the key RNAs to livestock grazing would not address any threats to Greater Sage-Grouse habitat identified in the COT report (USFWS 2013) that may exist within the boundaries of the RNAs.
    - **Section 4.9 Impacts on Livestock Grazing. p. 4-17.** The contrasting impacts of proper and improper livestock grazing on Greater Sage-Grouse, Vegetation, Fish and Wildlife, and Special Status Species are discussed in detail in the 2018 RMPA/EIS in Sections 4.5, 4.6, 4.7, and 4.8 respectively. As noted in other sections of this EIS, all activities and uses within Greater Sage-Grouse habitats will follow existing and current

land health standards (Standards for Rangeland Health and Guidelines for Livestock Grazing Management, 1997).

- Impacts of improper livestock grazing on Greater Sage-Grouse and its habitat were discussed in detail in the 2015 Final EIS in Section 4.3 (pages 4-7 to 4-94, and specifically pages 4-16 to 4-20), Section 4.4 (page 4-112), Section 4.5 (page 4-133), and Section 4.7 (4-170), and are hereby incorporated by reference. Pages 4-16 to 4-20 describe the impacts of improper livestock grazing on Greater Sage-Grouse as an identified threat in the COT Report (USFWS 2013). The 2015 Final EIS noted that improper grazing could result in overutilization of forage by livestock, leading to increased competition with wildlife for forage, and potentially reduced cover and nesting habitat for other species. Livestock could also spread invasive plants, which would degrade habitats. Special status wildlife could be displaced from their habitats, which could increase competition for resources in adjacent habitats. Impacts would vary depending on the extent of vegetation removal, type of habitat impacted, and season of use and duration of the grazing period. Livestock could degrade riparian areas, which could impact riparian-dependent, aquatic, and fish species.
- The 2015 Final EIS also discussed the beneficial impact proper livestock grazing can have on Greater Sage-Grouse and its habitat (Sections 4.3, 4.4, 4.5 and 4.8). Sections 4.5, 4.6, 4.7, and 4.8 of this EIS similarly discuss the beneficial impact of properly managed grazing on habitat conditions for Greater Sage-Grouse. When properly grazed, beneficial impacts can include sustainable, diverse, and vigorous mixtures of native vegetation for Greater Sage-Grouse forage and habitat. In addition, proper management of grazing livestock can control invasive plants and reduce fuel accumulations, protect intact sagebrush habitat, and increase habitat extent and continuity.
- **Section 4.11 Cumulative Impacts. p. 4-20.** This RMPA/EIS incorporates by reference the analysis in the 2015 Final EISs and the 2016 SFA Withdrawal Draft EIS, which comprehensively analyzed the cumulative impacts associated with these planning decisions under consideration in that process. The 2015 EISs, and to some degree the 2016 SFA EIS evaluated the cumulative impacts associated with the No-Action Alternative in this RMPA/EIS. The Proposed Plan Amendment's effects are effectively within the range of effects analyzed by the 2015 and 2016 EISs. The 2015 Final EISs are quite recent, and the BLM has determined that conditions in the Great Basin have not changed significantly based, in part, on the USGS science review (see Chapter 3), as well as the BLM's review of additional past, present, and reasonably foreseeable actions in 2018.
- **Section 4.11.1 Range-wide Cumulative Effects Analysis – Greater Sage-Grouse. p. 4-23.** The BLM's assessment that conditions and cumulative impacts have not changed significantly is based, in part, on the USGS science review (see Chapter 3) and the BLM's review of additional past, present, and reasonably foreseeable actions in 2018. Since the nature and context of the cumulative effects scenario have not appreciably changed since 2015, and the 2015 plans included analysis by WAFWA MZ across the entire range of the Greater Sage-Grouse, the cumulative effects analysis in the 2015 Final EIS applies to this planning effort and provides a foundation for the BLM to identify any additional cumulative impacts.

- **Section 4.11.1 Why Use WAFWA Management Zones? p. 4-24-26.** The cumulative effects analysis area for Greater Sage-Grouse extends beyond a state, political, or planning area boundary to reflect the WAFWA MZs because they encompass areas with similar issues, threats, and vegetative conditions important Greater Sage-Grouse habitat management. Each suite of threats to specific Greater Sage-Grouse populations have been identified in the COT report, 2015 Regional RODs, and the Listing Decision. The 2015 Regional RODs identify how planning level allocation decisions address the identified threats to populations, which are aggregated in this analysis by MZs. The threats vary geographically and may have more or less impact on Greater Sage-Grouse and its habitat in some parts of the MZs, depending on such factors as climate, land use patterns, and topography.

C.4 COT, NTT AND USGS 2018 GENERAL INFORMATION

Outline:

1) COT and NTT Reports
    a) Introduction
    b) Description of each document
    c) How the reports were considered in 2015 and 2019 LUP decision
    d) How/which parts were implemented
2) USGS 2018 Annotated Bibliography: Research on Sage-Grouse since 2015
    a) Description
    b) How it was considered in 2018

1.a. Introduction to COT and NTT reports:

Upon review of the best available science and commercial information, the USFWS concluded in 2010 that the Greater Sage-Grouse warranted protection under the ESA. Two factors leading to the decision to list the species as "warranted but precluded" were threats to habitat and the inadequacy of existing regulatory mechanisms.

1.b.i. Sage-Grouse National Technical Team (NTT). A Report on National Greater Sage-Grouse Conservation Measures. December 2011. https://eplanning.blm.gov/epl-front-office/projects/lup/9153/39961/41912/WySG_Tech-Team-Report-Conservation-Measure_2011.pdf

In 2011, in response to the USFWS 2010 warranted but precluded finding, the BLM initiated a land use planning process and assembled a National Technical Team (NTT) made up of state and federal sage-grouse experts to review all of the best available science on sage-grouse and habitat impacts and make recommendations for conservation measures that should apply inside Priority Habitats. The report describes the scientific basis for the conservation measures proposed within each BLM program area.

Among the key recommendations of the National Technical Team's final report (NTT 2011) were recommendations to: (1) close Priority Habitats to future mining claims and leasing for oil, gas, and coal; (2) apply four-mile NSO buffers around sage-grouse leks for existing oil and gas leases; and (3) cap cumulative habitat disturbance at 3% of the landscape and one industrial site per square-mile.

1.b.ii. Conservation Objectives Team (COT). Greater Sage-Grouse Final Report. February 2013. https://www.fws.gov/greatersagegrouse/documents/COT-Report-with-Dear-Interested-Reader-Letter.pdf

In 2012, at the request of the Greater Sage-Grouse Task Force, a group of state and federal representatives (Conservation Objectives Team (COT)) produced a report that identified the most significant areas for Greater Sage-Grouse conservation (Priority Areas for Conservation (PACs)), the principal threats within those areas, and the degree to which such threats need to be reduced or ameliorated to conserve the Greater Sage-Grouse so that it would not be in danger of extinction or likely to become so in the foreseeable future.

1.c. How COT and NTT were considered in 2015 and 2019 LUP decisions:

2015: As directed in the BLM Washington Office IM 2012-044, the conservation measures developed by the National Technical Team were to be considered and analyzed, as appropriate, through the land use planning and NEPA processes by all BLM state and field offices that contain occupied Greater Sage-Grouse habitat. IM 2012-144 https://www.blm.gov/policy/im-2012-044 also directed the BLM to refine the Preliminary Priority Habitat and Preliminary General Habitat data through the land use planning process. The 2013 Draft Greater Sage-Grouse RMP amendments and revisions/Draft EISs contained one alternative based on the conservation measures developed by the National Technical Team and evaluated through the 2012-2015 planning process.

2019: The BLM considered the entire range of alternatives from the 2015 Final EIS to identify issues meriting reconsideration, given the BLM's goal of enhancing alignment with state plans. In this manner, the BLM will continue to appropriately manage Greater Sage-Grouse and its habitat through this planning effort in tandem with the 2015 ROD/ARMPA.

1.d. How/which parts of NTT were implemented:

The 2015 Proposed LUPA incorporated management based on the National Technical Team recommendations.

2 USGS 2018 Annotated Bibliography: Research on Sage-Grouse since 2015

2.a. Description:

In June 2017, Secretarial Order 3353 Greater Sage-Grouse Conservation and Cooperation with Western States established a team to review the federal land management agencies' Greater Sage-Grouse Plan Amendments or Revisions completed on or before September 2015. https://www.doi.gov/sites/doi.gov/files/uploads/so_3353.pdf

In 2018, additional constraints on land uses or development without a documented need would not meet the purpose of SO 3353. The BLM did not discover new information that would indicate the agency should increase the level of conservation, management, and protection to achieve its land use plan objective. As part of the consideration of whether to amend the 2015 Greater Sage-Grouse RMPs, the BLM requested the USGS to develop an annotated bibliography of Greater Sage-Grouse science published since January 2015 (Carter et al. 2018; see Section 3.1). In addition, SO 3353 directs the BLM to promote habitat conservation, while contributing to economic growth and energy independence. As analyzed in the 2015 Final EIS, all of the previously analyzed alternatives, including one proposing

constraints stricter than the current management plan, were predicted to result in a loss of development opportunities on public lands.

2.b. How USGS Bibliography was considered in 2018

As part of the consideration of whether to amend some, all, or none of the 2015 Greater Sage-Grouse land use plans, the BLM requested the USGS to develop an annotated bibliography of Greater Sage-Grouse science published since January 2015 (Carter et al. 2018)1 and a report that synthesizes and outlines the potential management implications of this new science (Hanser et al. 2018).

C.5 How the 2019 ARMPA Changes Affect Alignment with USFWS Conservation Objectives Team Objectives

This appendix includes a description of the 2013 USFWS Conservation Objectives Team (COT) Report, including how the 2013 Draft EIS and 2015 Final EIS included sections that documented how the report's objectives were all addressed in the considered range of alternatives. The October 2, 2015 USFWS determination that listing sage-grouse as threatened or endangered was partially based on the 2015 ARMPAs incorporating management that reduced or minimized threats. This section summarizes how the 2019 ARMPA affects alignment of the BLM Oregon's plan with the COT Report objectives and the COT Report's goal of "long-term conservation of sage-grouse and healthy sagebrush shrub and native perennial grass and forb communities by maintaining viable, connected, and well-distributed populations and habitats across their range, through threat amelioration, conservation of key habitats, and restoration activities" (COT Report, page 13).

C.5.1 Issue: Grazing in Key Research Natural Areas

The COT Report includes a table that characterizes threats to Greater Sage-Grouse by population. One of the threats assessed included improper grazing. For two of the five Oregon populations assessed, threats from improper grazing were identified as "unknown". For three of the five Oregon populations assessed, threats from improper grazing were identified as "present and widespread" (see COT Report, Table 2, pages 16 through 29).

The COT Report objective for livestock grazing in general is to "conduct grazing management…in a manner consistent with local ecological conditions that maintains or restores healthy sagebrush shrub and native perennial grass and forb communities and conserves the essential habitat components for sage-grouse (e.g. shrub cover, nesting cover)" (COT Report, page 45). It goes on to note that "areas which do not currently meet this standard should be managed to restore these components." Under the 2019 RMPA, livestock grazing management is governed by the livestock grazing provisions in the 2015 ARMPA apart from making 13 of the 15 key RNAs available for livestock grazing. Livestock grazing in the 13 key RNAs aligns with COT objectives as these 13 key RNAs are required to meet rangeland health standards and other applicable BLM regulations and policies. The BLM requires changes to livestock grazing management when a rangeland health assessment identifies livestock grazing as a causal factor in the failure to meet rangeland health standards.

One of the general conservation objectives identified in the COT report (pg. 35) is to prioritize, fund, and implement research to address existing uncertainties associated with sage-grouse and sagebrush habitat management. One way the BLM Oregon is meeting this objective is by funding a grazing effects study on sagebrush obligate avian species, including sage-grouse. In addition, BLM Oregon has increased standardized monitoring in sagebrush communities within RNAs. Research remains a priority in

Research Natural Areas and the districts retain the authority to implement research in the key RNAs. The BLM would continue to manage all RNAs for the values they were designated for, per District RMPs, following existing management guidance and consistent with direction for PHMA.

As a whole, the 2015 OR ARMPA was consistent with the COT Report, including the livestock grazing objectives and management actions. Now, with the 2019 amendment, , the 2015 OR ARMPA remains consistent with the COT report.

Appendix D

Responses to Substantive Public Comments on the 2020 Draft Supplemental EIS

Appendix D. Responses to Substantive Public Comments on the 2020 Draft Supplemental EIS

INTRODUCTION

The Notice of Availability (NOA) for the Oregon Draft Supplemental Environmental Impact Statement (DSEIS) was published in the *Federal Register* on February 21, 2020 (85 Federal Register 10183, February 21, 2020), followed by a 90-day public comment period ending on May 21, 2020.

The Bureau of Land Management (BLM) received comments primarily through the online comment form that was provided on the project website[1]. The BLM recognizes that commenters invested considerable time and effort to submit comments on the DSEIS; as such, BLM developed a comment analysis method to ensure that all comments were considered, as directed by National Environmental Policy Act (NEPA) regulations.

The BLM developed a systematic process for responding to comments to ensure all comments were tracked and considered. On receipt, each comment letter was assigned an identification number and logged into a tracking database that allowed the BLM to organize, categorize, and summarize comments. Comments were coded by appropriate categories based on content of the comment.

Comments similar to each other were grouped under a topic heading. The BLM then drafted a statement summarizing the issues contained in each group of comments. Responses to all substantive comments submitted on the DSEIS will be provided in the Final Supplemental Environmental Impact Statement (FSEIS) in accordance with 40 CFR 1503.4 – Response to Comments[2].

Across all six Draft SEISs that were published on February 21, 2020, a total of 125,840 submissions were received; 222 of these were considered unique submissions. Some of the comments received throughout the public comment period expressed personal opinions or preferences, had little relevance to the adequacy or accuracy of the DSEIS, or represented commentary on resource management that is outside the scope of this planning process. These commenters did not provide specific information to assist the planning team in making a change to the DSEIS, did not suggest other alternatives, and did not take issue with methods used in the DSEIS; these comments are not addressed further in this comment summary report. Copies of all substantive comment letter submissions are available upon request.

Several organizations and groups held standardized letter campaigns to submit comments during the public comment period for the DSEIS. Through this process, their constituents were able to submit the standard letter or a modified version of the letter indicating support for the group's position on the DSEIS. Individuals who submitted a modified standard letter generally added new comments or

[1] https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=105596&dctmId=0b0003e88110d407

[2] https://www.govinfo.gov/content/pkg/CFR-2012-title40-vol34/pdf/CFR-2012-title40-vol34-sec1503-4.pdf

information to the letter or edited it to reflect their main concerns. The BLM received 125,840 campaign letters from two separate organizations, most of which were identical to the master letter.

The BLM read, analyzed, and considered all comments of a personal or philosophical nature and all opinions, feelings, and preferences for one element or one alternative over another. Because such comments were not substantive, the BLM is not responding to them. It is also important to note that, while the BLM reviewed and considered all comments, none were counted as votes. The NEPA public comment period is neither an election nor does it result in a representative sampling of the population. Therefore, public comments are not appropriate to be used as a democratic decision-making tool or as a scientific sampling mechanism.

The BLM received substantive comments regarding best available science and information considered while preparing the DSEIS. These included peer reviewed articles, references, and requests for new studies. The BLM will review the full text citations outlined in these comments and will consider information presented when determining if plan modifications are necessary.

SUMMARIES OF ISSUE TOPICS

This appendix is split up into four sections: Rangewide Comment Responses; Oregon-Specific Comment Responses; Rangewide Comments; and Oregon-Specific Comments. The Rangewide Comment Responses section contains a summary of comments received that apply mostly rangewide. The BLM recognizes that not all of these comments apply to all states, but they do apply across multiple states. This section also contains a response to the summaries of comments. The Oregon-Specific Comment Responses section contains a summary of comments received specific to Oregon and responses to those comments. The full text of parsed comments received both rangewide and Oregon-specific can be found in the respective sections.

D.1 RANGEWIDE SUMMARY OF PUBLIC COMMENTS AND RESPONSES

D.1.1 Rangewide

Summary: Commenters felt that the DSEIS is lacking in that there is no assessment of broad-scale applicability of these plans to meet the management goals BLM has established.

Response: Each BLM State Office is undergoing a 5-year monitoring reporting process regarding the progress of implementing Greater Sage-Grouse management. Based on the 2015 EIS monitoring plans, the BLM is producing a National Greater Sage-Grouse 5-Year Implementation Monitoring Report that it will submit to WAFWA for its Greater Sage-Grouse 2020 Conservation Assessment. The WAFWA-led team will review multiple reports from state and federal agencies, including BLM's Monitoring Report, to assess the implementation of the conservation commitments that resulted in the not warranted determination in 2015. The WAFWA team will review the Conservation Efforts Database as well. These additional steps are an assessment of the broad-scale applicability of the plans over a subregion.

D.1.2 Purpose and Need

Summary: Commenters asserted that the purpose and need in the DSEIS should reflect the need to address the new circumstances, science, and environmental concerns of the proposed action in the 2018 FEIS allowing for informed decision-making.

Response: The purpose and need was defined specifically to address a preliminary injunction order by the US District Court, which preliminarily found that the 2018 EISs likely needed to be supplemented to address the range of alternatives, a hard look at environmental impacts, cumulative effects analysis, and the BLM's approach to compensatory mitigation. The BLM continues to review new science related to Greater Sage-Grouse, and the plan allows for flexibility to consider new science, based on each state's needs and circumstances.

Summary: Commenters noted that the purpose and need in the DSEIS is different from the 2015 EIS and should consider a new range of alternatives.

Response: The purpose and need for this SEIS does differ from the 2015 EISs' purpose and need. In the 2018 FEISs, the BLM analyzed the Management Alignment Alternative and the Proposed Plan Amendment, incorporating the full range of alternatives considered in the 2015 EISs. The purpose and need for the SEIS is solely to address the preliminary injunction order by the US District Court, which preliminarily found that the 2018 EISs likely needed to be supplemented to address the range of alternatives, a hard look at environmental impacts, cumulative effects analysis, and the BLM's approach to compensatory mitigation. No new alternatives are needed to satisfy the purpose and need of the SEIS.

D.1.3 Issues

Summary: Commenters requested that the BLM provide additional new analysis in the FSEIS and not just refer to previous analysis.

Response: The purpose and need for this SEIS is solely to address the preliminary injunction order by the US District Court, which preliminarily found that the 2018 EISs likely needed to be supplemented to address the range of alternatives, a hard look at environmental impacts, cumulative effects analysis, and the BLM's approach to compensatory mitigation. Only that analysis needed to respond to the purpose and need is included in the SEIS. For example, the cumulative analysis section was updated in the SEIS to account for additional past, present, and reasonably foreseeable projects; there is an updated assessment of habitat and population triggers tripped; and there is an update to the number of acres of habitat treated.

Summary: Commenters expressed concern about dismissing the issue of predators from detailed analysis in the DSEIS.

Response: The issue was not carried forward for additional analysis in the 2019 planning process because predation was not an issue specifically raised by the Governors for consistency and alignment of the BLM's plans with state Greater Sage-Grouse management plans and policies. As such, there was no need to re-evaluate decisions related to predation from the 2015 plans in the DSEIS. The purpose and need for the SEIS is solely to address the preliminary injunction order by the US District Court, which preliminarily found that the 2018 EISs likely needed to be supplemented to address the range of alternatives, a hard look at environmental impacts, cumulative effects analysis, and the BLM's approach to compensatory mitigation.

Summary: Commenters asserted that the FSEIS should analyze the magnitude of predation as a factor in causing the decline in Greater Sage-Grouse populations.

Response: Under the approved plans, when population triggers are tripped, the BLM does a causal factor analysis to determine the factors in declining populations in an area, which may include predation. The BLM acknowledges the multitude of factors that potentially contribute to population declines, as reflected in the adaptive management strategy.

D.1.4 Range of Alternatives

Summary: Commenters felt that the DSEIS does not explore the differences in the range of alternatives between the 2015 and 2019 plans, and only analyzes two alternatives: a No Action Alternative and the Management Alignment Alternative. Commenters felt that this is an inadequate range of alternatives.

Response: In the 2018 FEISs, the BLM analyzed the Management Alignment Alternative and the Proposed Plan Amendment, while also incorporating the full range of alternatives considered in the 2015 plans. The DSEIS carries this full range of alternatives forward, as described in detail in Section 2.1 of each DSEIS.

D.1.5 New Alternative

Summary: Commenters felt that the BLM should consider a new alternative that withdraws the 2019 ROD and that rejects the 2015 protection measures for Greater Sage-Grouse.

Response: Such a proposal would be the No Action Alternative analyzed in the 2015 EISs and part of the full range of alternatives analyzed in the 2018 FEISs.

D.1.6 Alternatives–Other

D.1.7 Data and Science

Summary: The public submitted studies published since the 2018 USGS synthesis for consideration by the BLM. Additionally, the public submitted reviews of scientific literature for the BLM to consider in the FSEISs.

Response: The BLM partnered with USGS in 2018 to review new information since the 2015 RODs. The BLM subsequently incorporated the management implications of that information into the 2018 EISs. The report from USGS is available here and referenced throughout the SEIS.

The BLM places great import on the best available information, including new scientific studies and government reports that indicate a potential change in BLM's assumptions or conditions related to a land use planning effort. The BLM has to balance reviewing new information with determining what information is relevant to a decision in light of the BLM's purpose and need. Many commenters highlighted information and studies for the BLM to consider, and the BLM has reviewed each source submitted.

Upon review, the BLM found that the most up-to-date Greater Sage-Grouse science and other information has incrementally increased, and built upon, the knowledgebase of Greater Sage-Grouse management evaluated by the BLM most recently in its 2019 land use plan amendments, but does not change the scope or direction of the BLM's management. While the NTT, the COT and this new science and information remain thus consistent with the scope of the 2019 planning decisions, new science does suggest adaptations to management may be warranted at site-specific scales. This is

precisely the approach envisioned by the NTT and COT reports as well as the BLM's decades long planning efforts to address local actions that may affect Greater Sage-Grouse.

The scientists and managers that authored the COT and NTT reports could not have anticipated all the variables that would affect sage grouse into the future when they provided their recommendations. Varying topographic factors, ecological site potential, changes in methodologies, technological advances, variation in vegetation types, and anthropogenic disturbance, to name a few, make it difficult to adequately address all factors that affect sage grouse populations and habitat. Therefore, where appropriate, the BLM will consider this science and information through implementation-level NEPA analysis, consistent with its approved land use plans, policies, and regulatory frameworks.

Summary: The DSEIS inadequately addresses best available science on anthropogenic climate change.

Response: The BLM has analyzed climate change, including by addressing changes in fire frequency, changes in frequency of drought conditions, and the spread of invasive species. All of these factors can contribute to impacts on Greater Sage-Grouse and its habitat, regardless of the cause. Climate is one factor that affects populations and habitat, but not the only factor.

Summary: The DSEIS neglects the advances in technology that reduce the potential disturbance to Greater-Sage Grouse.

Response: The 2019 plans sought maximum alignment with state management plans for Greater Sage-Grouse within the BLM's management authority. BLM anticipated advances in technology and built in increased flexibility in implementation through things like exceptions, modifications, and waivers for fluid minerals stipulations. This increased flexibility would allow for oil and gas development in instances where impacts on Greater Sage-Grouse can be reduced to acceptable levels, such as through technology advancement.

Summary: The BLM should coordinate and consult with other federal or state agencies that maintain scientific expertise on both sage-grouse and sagebrush habitat to ensure that the conclusions in the FSEIS are scientifically credible.

Response: The BLM places great import on the best available information, including scientific studies and government reports that indicate a potential change in our assumptions or conditions related to a land use planning effort. The BLM acknowledges that states have management responsibility for managing Greater Sage-Grouse populations. In managing Greater Sage-Grouse, the BLM works closely with the states to determine population trends, and coordinates with other federal agencies such as USGS, USFWS, and NRCS on interpreting scientific information related to the species. The BLM has to balance reviewing new information with determining what information is relevant to a decision in light of the BLM's purpose and need. The BLM will continue to coordinate and, as applicable, consult with its partners on Greater Sage-Grouse management.

Summary: A commenter suggests that the need to address and correct the scientific flaws that originated in the 2015 plans and were carried forward to the 2019 plans has become even more urgent. The 2015 plans ignored the full spectrum of on-point, more recent science currently available, and instead relied upon biased and outdated science. BLM should consider usage of a stage-based population dynamic model. The reports erroneously ignore accurate population data and adopt methodologically

flawed modeling approaches that have consistently failed to accurately predict populations. The reports ignore natural population fluctuations and land use plans must consider large-scale climatic fluctuations and Greater Sage-Grouse population responses.

Response: The BLM partnered with USGS in 2018 to review new information since the 2015 RODs and the BLM subsequently incorporated the management implications of that information into the 2018 EISs. The report from USGS is available here and referenced throughout the SEIS.

The BLM places great import on the best available information, including new scientific studies and government reports that indicate a potential change in our assumptions or conditions related to a land use planning effort. The BLM has to balance reviewing new information with determining what information is relevant to a decision in light of the BLM's purpose and need. Many commenters highlighted information and studies for the BLM to consider, and the BLM has reviewed each source submitted. The BLM will continue to consider new science at the project phase of plan implementation as standard practice, as new science is constantly being published. Amending the plans to incorporate new science is not necessary because authorized officers use best available information to inform their decisions during plan implementation.

The Purpose and Need statement for the 2019 plans included a goal of aligning the BLM's management of Greater Sage-Grouse habitat with state plans. There were several instances during the 2019 planning process where states brought new science to BLM's attention that was used to formulate the Management Alignment Alternative. For example, the BLM incorporated new science on residual grass height, habitat mapping, and effects of oil and gas drilling.

Summary: Declining Greater Sage-Grouse populations in recent years should be considered in the analysis.

Response: Population declines are tracked in the land use plan through the adaptive management strategy. The trigger sensitivity accounts for the cyclical nature of Greater Sage-Grouse population levels. The SEISs address population declines through the disclosure of tripped triggers in Chapter 3 of each state's SEIS. The BLM acknowledges that states have management responsibility for managing Greater Sage-Grouse populations. In managing Greater Sage-Grouse, the BLM works closely with the states to determine population trends, and coordinates with other federal agencies such as USGS, USFWS, and NRCS on interpreting scientific information related to the species. There is a fresh look each year when the BLM receives the annual population data from the states, which, taken with the habitat data collected annually by the BLM, informs any adaptive management needed. If the data indicate that a trigger has been tripped, the BLM works with state and local partners to determine the causal factors and propose management changes.

In areas where triggers have been tripped, as disclosed in Chapter 3 of each state's SEIS, adaptive management has been implemented to prevent new disturbance that would impact Greater Sage-Grouse habitat on BLM-administered lands. The adaptive management framework was set up so that the BLM could respond to population and habitat dynamics without a plan amendment.

Summary: BLM should clarify the shortcomings of the NTT and COT reports.

Response: This was clarified in an appendix to each of the DSEISs titled *Review of the NTT and COT Report's Relevance to the Planning Process; Incorporation of the NTT, COT, and USGS Summary of Science into the [Subregion] Planning Process*.

D.1.8 Direct/Indirect Impacts

Summary: The BLM should include robust assessments of Greater Sage-Grouse population-level response to direct, indirect, and cumulative impacts associated with the alternatives.

Response: The SEISs address population declines through the disclosure of tripped triggers in Chapter 3 of each state's SEIS. In areas where triggers have been tripped, adaptive management has been implemented to prevent new disturbance that would impact Greater Sage-Grouse habitat on BLM-administered lands. The adaptive management framework was set up so that the BLM could respond to population and habitat dynamics without a plan amendment.

D.1.9 Assumptions and Methodology

Summary: Commenter argues that the proposed changes to the 2015 plan contradict scientific recommendations for conserving Greater Sage-Grouse, and the supplemental environmental impact statement fails to analyze and acknowledge the negative impacts that will result from the agency's proposed change in management direction.

Response: No changes were proposed in the 2020 SEISs.

D.1.10 Cumulative Impacts

Summary: The CEA failed to account for a number of relevant activities.

Response: The BLM has updated the past, present, and reasonably foreseeable actions as needed to reflect all current projects in the FSEIS.

Summary: The BLM should clarify in the FSEIS whether the cumulative effects analysis was done at the rangewide level organized by the WAFWA management zones.

Response: The BLM considered cumulative impacts on a rangewide basis, organizing that analysis at the geographic scale of each WAFWA management zone.

D.1.11 Adaptive Management

Summary: Flexibility should be added to adjustments in "Land Tenure," to "Rights-of-Way," and to "Travel Management" relative to site conditions in any FSEIS and plan amendments.

Response: The 2019 plans sought maximum alignment with state management plans for Greater Sage-Grouse within the BLM's management authority. Where such flexibility was needed to align with state plans, it was included in the 2019 Approved Plans. Additional flexibility or changes to decisions from the 2019 Approved Plans is outside the scope of these SEISs.

Summary: BLM should explain how ARMPA's adaptive management will work without monitoring the plan.

Response: BLM's ARMPA adaptive management strategy is based on population data from the states and habitat data collected by the BLM. These data are evaluated annually to determine the need for adaptive management changes as a result of tripped triggers. In addition, the BLM's 5-year monitoring report (completed in 2020) will be used in the WAFWA Greater Sage-Grouse 2020 Conservation Assessment.

D.1.12 Burial of Transmission Lines

Summary: The public submitted studies for consideration by the BLM regarding mitigation to transmission lines.

Response: Mitigation measures will be considered during project design and implementation and will be based on best available science and site-specific conditions.

Summary: Transmission line projects should not be exempt from abiding by the avoidance areas. All high-voltage related projects should comply with the proposed LUPA conservation measures. Alternative routes for these transmission projects exist, and more can be suggested to avoid interference with PHMA and GHMA. Flexibility in these projects to find a balance in interests is still possible to reap the benefits of energy for human use, while also preventing degradation of Greater Sage-Grouse habitat in PHMA and GHMA.

Response: Mitigation measures, including alternative routes, will be considered during project design and implementation and will be based on best available science and site-specific conditions.

D.1.13 Disturbance and Density Caps

Summary: The DSEIS fails to explain why Greater Sage-Grouse in Wyoming are more tolerant of disturbance than other states, or indeed, more tolerant than the best available science demonstrates.

Response: Wyoming BLM's 5 percent disturbance cap includes additional disturbance types (e.g., burned areas) not included in the list of disturbance types in other states, where the disturbance cap was set at 3 percent.

D.1.14 Habitat Management Area

Summary: The spatial extent of habitat management areas should not be modified.

Response: HMAs reflect habitat that is mapped based on best available information. If BLM and the state find that habitat was not reflected correctly in light of new information, plan maintenance or an amendment can be used to update boundaries to reflect the change in information.

Summary: The management prescriptions associated with habitat management areas should not be modified.

Response: The purpose of these plan amendments is to increase consistency with state management. In some cases that resulted in changes to management within the HMAs.

Summary: Restoration targets for Priority Habitat Management Areas (PHMA) should be developed and incorporated into the plans.

Response: While BLM has not developed specific restoration targets, the BLM has committed to significant restoration and recovery actions. The BLM spent considerable time and energy on the development of the FIATs that identify specific areas for specific types of actions and used that as a basis for requesting funding from Congress. Some targets have been developed but are not included in the plans for reasons such as uncertainty of funding to implement the actions to reach the targets.

Summary: The DSEIS fails to take a hard look at tripped triggers and fails to provide a full and clear listing of tripped triggers.

Response: The SEISs address population declines through the disclosure of tripped triggers in Chapter 3 of each state's SEIS. In areas where triggers have been tripped, adaptive management has been implemented to prevent new disturbance that would impact Greater Sage-Grouse habitat on BLM-administered lands. The adaptive management framework was set up so that the BLM could respond to population and habitat dynamics without a plan amendment.

Summary: Commenters state that the 2018 FEIS and DSEIS continue to fail to disclose the basis by which private lands can be considered in a federal land management planning document, and that the BLM has no authority under FLPMA to apply land use plan restrictions on private land. Other commenters request that the BLM apply Greater Sage-Grouse habitat management area definitions to private land.

Response: The BLM acknowledges that this planning effort does not apply land use plan restrictions on private land. However, when calculating disturbance either at the project or BSU level, the BLM does consider the cumulative disturbance in the area, which may include private, state, or other federal land. Based on the total disturbance in the area, the BLM has the authority to apply the management prescribed in the plan on BLM-administered lands. Furthermore, during cumulative effects analysis, the BLM considers past, present, and reasonably foreseeable projects on all lands in the impact area, regardless of jurisdiction.

D.1.15 Habitat Objectives

Summary: The BLM has neglected to acknowledge the habitat conditions and trends across Greater-Sage Grouse range in the DSEISs, despite that trends are currently declining.

Response: The BLM acknowledged habitat changes for Greater Sage-Grouse when in 2010 it undertook a planning action to provide regulatory certainty for the species. Prior to that effort, the BLM partnered with the WAFWA, state wildlife agencies, and others, to manage habitat for Greater Sage-Grouse. Habitat conditions are assessed using the Habitat Assessment Framework. Habitat availability is tracked according to the Monitoring Framework or by the adaptive management strategy described in each land use plan. The adaptive management strategy is designed to respond to changing habitat conditions when triggers are tripped. The BLM considered cumulative impacts on a rangewide basis, organizing that analysis at the geographic scale of each WAFWA management zone.

Summary: The DSEIS inadequately addresses fragmentation within management areas on an individual scale**.**

Response: Fragmentation was addressed during the 2015 planning process. The analysis was incorporated by reference in the 2019 planning process. Additional information regarding habitat fragmentation was not needed to meet the purpose and need of the SEIS.

D.1.16 Lek Buffers

Summary: Lek buffers should be maintained to protect leks.

Response: The BLM agrees that lek buffers are one of many important conservation tools available to manage sagebrush habitat and protect Greater Sage-Grouse. The BLM is retaining, and in some instances modifying or clarifying, the application of lek buffers as a management tool.

Summary: Lek buffers should be larger than prescribed in the plan amendments.

Response: As applicable, each RMPA has an appendix that addresses lek buffers and allows the BLM to adjust lek buffers based on the best available science, which would allow the BLM to adjust the buffers based on new information as well. Further, some states are clarifying the approach in this RMPA effort, or adjusting to better align with their individual state's management. For more specific information, please refer to the individual plans and their associated lek buffer appendix.

Summary: The 2011 NTT and 2013 COT report have a substantive number of flaws that need to be revised.

Response: The role of the NTT and COT reports is discussed in an appendix to each of the DSEISs titled *Review of the NTT and COT Report's Relevance to the Planning Process; Incorporation of the NTT, COT, and USGS Summary of Science into the [Subregion] Planning Process*. These reports are static reviews of scientific literature. The USGS did an updated review of scientific literature prior to the 2019 planning process. The BLM will continue to take into account best available science for Greater Sage-Grouse management.

Summary: Use of lek buffers and associated modifications must be included for analysis in this SEIS, not left for clarification through plan maintenance, because lek buffers were not fully analyzed in the previous EIS nor provided for public review and consideration.

Response: Lek buffers were part of the 2015 planning process and the public was provided an opportunity to comment during that process. As part of the 2019 planning process, the intent of lek buffers was clarified for some states, which is a maintenance action. For other states, the lek buffers were modified and the intent was clarified. In both cases, the public was provided an opportunity to comment on the 2018 DEIS and this DSEIS.

D.1.17 Livestock Grazing Management

Summary: Rangeland health assessments do not adequately ensure protection and restoration of sage-grouse habitat. The BLM should include a discussion about how changes to scale and timeframe for rangeland health assessments will impact sage-grouse habitat management and agency land managers to adjust grazing practices when standards are not met.

Response: Rangeland health assessments are used to assess whether the rangelands are meeting standards and are not intended to protect or restore Greater Sage-Grouse habitat, although there is a

standard for wildlife/special status species habitat, which would include Greater Sage-Grouse habitat. The analysis of any future changes to the grazing regulations is outside the scope of this analysis and will be disclosed during other decision-making processes.

Summary: The DSEIS inadequately addresses the plan for closure of sage-grouse allotments upon receipt of waived or retired grazing permits.

Response: As explained in the DSEISs, the 2019 planning process incorporated the full range of alternatives from the 2015 planning process. Therefore, neither the 2019 planning process nor these SEISs expressly address this issue because there was no change proposed to the decision in the 2019 process. However, as the commenter acknowledges, the BLM did consider this within the range of alternatives for Greater Sage-Grouse management.

Summary: The DSEIS inadequately addresses the potential impact of livestock grazing on Greater Sage-Grouse habitat.

Response: The impacts of livestock grazing were disclosed in the 2015 plans. The 2019 plans did not change decisions that change the impacts previously disclosed, as described in Chapter 1 of the 2018 FEISs. Therefore, it was neither a subject of analysis in 2019 nor one in the SEISs. Furthermore, the purpose and need for the SEISs is solely to address the preliminary injunction order by the US District Court, which preliminarily found that the EISs likely needed to be supplemented to address the range of alternatives, a hard look at environmental impacts, cumulative effects analysis, and the BLM's approach to compensatory mitigation. No new alternatives are needed to satisfy the purpose and need of the SEISs.

D.1.18 Withdrawal Recommendation and SFAs (Sagebrush Focal Areas)

Summary: Sagebrush focal areas (SFAs) should not be removed from the plans. Inconsistency in retention and removal of SFA across states is arbitrary and capricious. BLM is not legally required to remove SFA. Justifications for eliminating SFAs are inadequate.

Response: BLM is focused on aligning its management with state management. BLM's goal is to promote consistency and alignment with each state's management for Greater Sage-Grouse. Where BLM has increased its management flexibility, it has done so to improve alignment with the state plans and based on local information. In 2019, the BLM determined that SFA designations provided a redundant layer of resource protection and land use prioritization within PHMA and is acting within its discretion to remove SFA designation. Further, the BLM canceled the proposed withdrawal of SFAs through a publication in the *Federal Register* on October 11, 2017 (82 Fed. Reg. 47,248) after findings in the Sagebrush Focal Area Draft EIS noted that there was broadly low potential for locatable minerals within the recommended withdrawal area.

Summary: BLM should remove all reference to SFAs. SFAs are an overreach and unnecessary as priority habitat designations provide adequate habitat protection.

Response: SFAs and associated management direction specific to the SFAs were removed through the 2019 plans, except for in Oregon where they retained the SFA designation (see response to comment under **Section E.2.5**).

D.1.19 Mitigation

Summary: A mandatory net-gain compensatory mitigation standard is supported by some commenters and objected to by others.

Response: Following extensive review of FLPMA, including existing regulations, orders, policies, and guidance, the BLM concluded that FLPMA does not explicitly mandate or authorize the BLM to require public land users to implement compensatory mitigation as a condition of obtaining authorization for the use of the public lands (Instruction Memorandum No. 2018-093, *Compensatory Mitigation*, July 24, 2018). Under FLPMA, the BLM has an obligation to ensure that its actions do not result in "unnecessary or undue degradation." Preventing unnecessary or undue degradation does not mean preventing all adverse impacts upon the land. The negative inference of the words "unnecessary" and "undue" is that a certain level of impairment may be necessary and due under a multiple use mandate. See Theodore Roosevelt Conservation Partnership v. Salazar, 661 F.3d 66, 78 (D.C. Cir. 2011) ("FLPMA prohibits only unnecessary or undue degradation, not all degradation.") (emphasis in the original); see also BLM, Instructional Memorandum No. 92-67 (Dec. 3, 1991) ("'Unnecessary and undue degradation' implies that there is also necessary and due degradation. For example, if there is only one route of access possible for development of an existing oil and gas lease, and that route presents the likelihood of some degradation of public lands or resources, such degradation may be considered necessary for the management of the oil and gas resource. . . . As another example, the RMP/EIS or site-specific environmental document may identify mitigation which would result in excessive expenditures of money or unusual technological requirements to achieve compliance. Otherwise there would be some degree of degradation of public lands or resources. If the mitigation would render the proposed operation uneconomic or technologically infeasible so that a prudent operator would not proceed, such degradation may also be considered necessary for the management of the oil and gas resource.") (emphasis in the original). Accordingly, FLPMA does not require and implicitly counsels against a net-gain standard, which would be inconsistent with the negative inference of the phrase "unnecessary or undue degradation." Even if the BLM has authority to use compensatory mitigation, the BLM has – consistent with its multiple-use mission – determined that exercise of that authority to meet a net conservation gain mitigation standard is unwarranted. Moreover, as described in the FEIS, the goal of the RMP amendments to– improve the condition of sage grouse habitat – remains as a planning-level objective for sage grouse conservation.. As a practical matter, it is too speculative to analyze the impacts of the shift back to a "no net loss" standard from a "net-gain" standard at the programmatic level. First, the BLM continues to identify ways to avoid, minimize, and rectify the impact of specific projects at the project-specific level. Second, it is impossible to predict the amount of compensatory mitigation that might voluntarily occur in the future and the environmental consequences of that compensatory mitigation. Therefore, analysis of the environmental impact of compensatory mitigation (or lack thereof) is more appropriate for future project-specific NEPA, where it is possible to assess any project-specific compensatory mitigation that is offered voluntarily or as part of a state approach, including avoidance, minimization, and rectification measures applicable to the specific project and site. The BLM is committed to working with the project proponents and States to ensure that those actions are reasonable, effective, and implemented according to best management practices, to the extent that federal law allows.

Summary: Various commenters argued that the "net conservation gain" standard should be retained, modified, or eliminated. Many commenters requested clarification of the BLM's authority to impose compensatory mitigation.

Response: Following extensive review of FLPMA, including existing regulations, orders, policies, and guidance, the BLM concluded that FLPMA does not explicitly mandate or authorize the BLM to require public land users to implement compensatory mitigation as a condition of obtaining authorization for the use of the public lands (Instruction Memorandum No. 2018-093, Compensatory Mitigation, July 24, 2018). Under FLPMA, the BLM has an obligation to ensure that its actions do not result in "unnecessary or undue degradation." Preventing unnecessary or undue degradation does not mean preventing all adverse impacts upon the land. The negative inference of the words "unnecessary" and "undue" is that a certain level of impairment may be necessary and due under a multiple use mandate. See Theodore Roosevelt Conservation Partnership v. Salazar, 661 F.3d 66, 78 (D.C. Cir. 2011) ("FLPMA prohibits only unnecessary or undue degradation, not all degradation.") (emphasis in the original); see also BLM, Instructional Memorandum No. 92-67 (Dec. 3, 1991) ("'Unnecessary and undue degradation' implies that there is also necessary and due degradation. For example, if there is only one route of access possible for development of an existing oil and gas lease, and that route presents the likelihood of some degradation of public lands or resources, such degradation may be considered necessary for the management of the oil and gas resource. . . . As another example, the RMP/EIS or site-specific environmental document may identify mitigation which would result in excessive expenditures of money or unusual technological requirements to achieve compliance. Otherwise there would be some degree of degradation of public lands or resources. If the mitigation would render the proposed operation uneconomic or technologically infeasible so that a prudent operator would not proceed, such degradation may also be considered necessary for the management of the oil and gas resource.") (emphasis in the original). Accordingly, FLPMA does not require and implicitly counsels against a net-gain standard, which would be inconsistent with the negative inference of the phrase "unnecessary or undue degradation." Even if the BLM has authority to use compensatory mitigation, the BLM has – consistent with its multiple-use mission – determined that exercise of that authority to meet a net conservation gain mitigation standard is unwarranted. Moreover, as described in the FEIS, the goal of the RMP amendments to– improve the condition of sage grouse habitat – remains as a planning-level objective for sage grouse conservation.. As a practical matter, it is too speculative to analyze the impacts of the shift back to a "no net loss" standard from a "net-gain" standard at the programmatic level. First, the BLM continues to identify ways to avoid, minimize, and rectify the impact of specific projects at the project-specific level. Second, it is impossible to predict the amount of compensatory mitigation that might voluntarily occur in the future and the environmental consequences of that compensatory mitigation. Therefore, analysis of the environmental impact of compensatory mitigation (or lack thereof) is more appropriate for future project-specific NEPA, where it is possible to assess any project-specific compensatory mitigation that is offered voluntarily or as part of a state approach, including avoidance, minimization, and rectification measures applicable to the specific project and site. The BLM is committed to working with the project proponents and States to ensure that those actions are reasonable, effective, and implemented according to best management practices, to the extent that federal law allows.

Summary: Various commenters argued that recent changes in mitigation policy and the applicability to sage-grouse warrant additional analysis, public review, or an SEIS.

Response: The BLM has prepared this SEIS with the explicit intention of providing commenters and the public at large with an additional opportunity to review and analyze the BLM's approach to mitigation policy. To wit, the BLM received approximately 70 discreet public comments referencing the BLM's approach to mitigation and the applicability to Greater Sage-Grouse. These comments build upon and

supplement public input on the 2018 DEISs, which requested comment on implementing mitigation, "including alternative approaches to requiring compensatory mitigation in BLM land use plans.". The 2018 FEISs clarified how voluntary compensatory mitigation should be considered in the management of Greater Sage-Grouse habitat and how BLM will work with each state management agency to implement its compensatory mitigation strategy. This clarification aligned the 2019 ARMPAs with BLM policy and with the scope of compensatory mitigation authority expressly provided by FLPMA. Further, in many cases, the public will have additional opportunity to comment on specific mitigation approaches at the project-specific level.

Summary: Many commenters stated the BLM should clarify how it will implement compensatory mitigation.

Response: The BLM entered into agreements with the States of Colorado, Idaho, Nevada, Oregon, Utah, and Wyoming to clarify how BLM, project proponents, and state management agencies will collaborate to implement a state's compensatory mitigation plan. The BLM will defer to a state methodology for habitat quantification if such a tool exists and incorporate the state's assessment into the appropriate NEPA documentation. The Proposed Plan Amendment clarified that the BLM will consider compensatory mitigation only as a component of compliance with a state mitigation plan, program, or authority, or when offered voluntarily by a project proponent. The Proposed Plan Amendment further clarified the application of the mitigation standard as a planning-level goal and objective for Greater Sage-Grouse habitat conservation. BLM commits to cooperating with the states to analyze applicant-proffered or state-imposed compensatory mitigation to offset residual impacts. BLM may then authorize such actions consistent with NEPA analysis and the governing land use plan.

Summary: The BLM should work with the states to recommend compensatory mitigation actions.

Response: The BLM follows the memoranda of understanding with the states regarding compensatory mitigation which, as clarified in the 2019 plans, generally states that the states are to recommend compensatory mitigation actions and the BLM is to analyze them in the appropriate NEPA document. Although the states recommend compensatory mitigation, there is close coordination between the BLM and the state wildlife agencies when discussing site conditions and the mitigation hierarchy.

Summary: To be effective, mitigation should be required by the BLM and not left to the states.

Response: Following extensive review of FLPMA, including existing regulations, orders, policies, and guidance, the BLM has concluded that FLPMA does not explicitly mandate or authorize the BLM to require public land users to implement compensatory mitigation as a condition of obtaining authorization for the use of the public lands (Instruction Memorandum No. 2018-093, *Compensatory Mitigation*, July 24, 2018). However, the BLM is committed to applying and enforcing the mitigation hierarchy of actions to avoid, minimize, and otherwise mitigate impacts to the extent that federal law allows. A principal component of Greater Sage-Grouse management is the implementation of mitigation actions to ameliorate the threats and impacts to Greater Sage-Grouse and its habitats. The 2019 Proposed Plans clarified how voluntary compensatory mitigation should be considered in the management of Greater Sage-Grouse habitat and how BLM will work with each state management agency to implement its compensatory mitigation strategy. Additionally, compensatory mitigation was one of many tools used in the 2015 plans to balance uses of public land. However, the mechanism for implementing compensatory mitigation has changed since the 2015 plans as the BLM clarified its

mitigation policy. Furthermore, since the 2015 plans were implemented, many states have established their own compensatory mitigation programs and increased their own investment in restoring and improving Greater Sage-Grouse habitat. The BLM sought comment on compensatory mitigation again as part of this SEIS.

D.1.20 Modifying Waivers, Exceptions, and Modifications of Fluid Minerals

Summary: The uncertainty with how waivers, exceptions, and modifications will be used introduces uncertainty to protections that are not fully analyzed. Criteria for the use of waivers, exceptions, and modifications should be more narrowly prescribed.

Response: Under the 2019 ARMPAs, waivers, exemptions, and modifications would be granted only when meeting specific criteria designed to advance the management goals and objectives in the RMPs. BLM's Approved Plan Amendment balanced the risk of uncertainty against the benefits of management flexibility when considering whether to grant a waiver, exception, or modification. Planning criteria identified for that amendment include consideration of how planning decisions may impact future listing determinations under the Endangered Species Act.

Summary: BLM should monitor the use of waivers, exceptions, and modifications.

Response: Some BLM State Offices, through the fluid minerals program, track waivers, exceptions, and modifications. The BLM is currently reviewing whether and how to apply these practices at the national level. It should be noted that waivers, exceptions, and modifications would only be authorized upon meeting the criteria in the Approved Plans, which demonstrate that Greater Sage-Grouse and its habitat would not be adversely impacted.

D.1.21 Prioritization of Mineral Leasing

Summary: The BLM does not address the elimination of prioritizing project-level development outside PHMA, which is required under the 2015 ARMPAs but eliminated under the 2018/2020 EISs.

Response: The BLM has implemented the plans in conformance with its regulations and policies. IM 2018-026 explicitly states that "BLM does not need to lease and develop outside of Greater Sage-Grouse habitat management areas before considering any leasing and development within Greater Sage-Grouse habitat." Prioritization of oil and gas leasing outside of PHMA and GHMA is included as an objective in the 2015 plans, not an allocation. The 2018 plan continues restrictive stipulations in PHMA and may serve to encourage leasing and development outside of PHMAs but does not represent a prohibition on doing so and is consistent with IM 2018-026. The BLM will continue to work with states in determining appropriate prioritization of leasing outside of PHMA.

D.1.22 Greater Sage-Grouse

Summary: Regulatory changes and regulatory uncertainty increase the likelihood of listing of the species under the Endangered Species Act. The impacts analysis is deficient. Protections afforded by the plans are not sufficient to prevent listing of the species.

Response: The BLM's 2018 proposed plans balance the risk of uncertainty against the benefits of management flexibility and alignment when considering changes to the 2015 plans. Planning criteria

identified for the 2019 amendments include consideration of how planning decisions may impact future listing determinations under the Endangered Species Act.

Summary: The FSEIS needs to evaluate current population status and trends and disclose how the various alternatives would impact future population trends, which directly affect the risk that Greater Sage-Grouse may face "potential listing" under the Endangered Species Act.

Response: Population declines are tracked in the land use plan through the adaptive management strategy. The trigger sensitivity accounts for the cyclical nature of Greater Sage-Grouse population levels. The SEISs address population declines through the disclosure of tripped triggers in Chapter 3 of each state's SEIS. The BLM acknowledges that states have management responsibility for managing Greater Sage-Grouse populations. In managing Greater Sage-Grouse, the BLM works closely with the states to determine population trends, and coordinates with other federal agencies such as USGS, USFWS, and NRCS on interpreting scientific information related to the species. There is a fresh look each year when the BLM receives the annual population data from the states, which, taken with the habitat data collected annually by the BLM, informs any adaptive management needed. If the data indicate that a trigger is tripped, the BLM works with state and local partners to determine the causal factors and propose management changes.

In areas where triggers have been tripped, as disclosed in Chapter 3 of each state's SEIS, adaptive management has been implemented to prevent new disturbance that would impact Greater Sage-Grouse habitat on BLM-administered lands. The adaptive management framework was set up so that the BLM could respond to population and habitat dynamics without a plan amendment.

Because part of the purpose for the 2015 plans was to provide for regulatory certainty with respect to Greater Sage-Grouse management and prevent the listing of the species, analysis of the alternatives considered in 2015 inherently included a risk assessment regarding the potential for listing. One of the alternatives considered in each of the plans in 2015 was the state management plans. In the 2019 planning process, the BLM again evaluated the state management plans as the management alignment alternatives and agreed-upon changes as the proposed plan amendments. Many factors outside of the BLM's authority contribute to population fluctuations; therefore, BLM management cannot be directly linked to predicting future population trends.

Additionally, while planning criteria identified for the 2019 amendments included consideration of how planning decisions may impact future listing determinations under the Endangered Species Act, it is not within the BLM's authority to determine whether certain actions would be sufficient to avoid listing. NEPA does not require the BLM to disclose whether the proposed changes provide regulatory certainty to support a determination that is within the jurisdiction of the USFWS. The BLM has disclosed the impacts of the changes in management regarding mitigation.

D.1.23 Non-Greater Sage-Grouse

Summary: There is a lack of information in the DSEIS regarding the environmental baseline and information needs to be updated.

Response: The BLM acknowledged that there have been changes to the landscape since 2015; however, due to the scale of the analysis in the 2019 planning process, data collected consistently across the range indicate that the extent of these changes to the landscape are relatively minimal. For example,

BLM monitoring data collected and analyzed annually at the BSU scale, as outlined in the Greater Sage-Grouse Monitoring Framework, indicate that there has been a minimal overall increase in estimated disturbance within PHMA. Moreover, there has been an overall minimal decrease in sagebrush availability in PHMA within BSUs. Based on available information, including the USGS reports, the BLM concluded that the existing condition was not substantially different from that which existed in 2015; therefore, the data and information presented in the 2015 FEISs were incorporated by reference into the 2018 RMPAs/EISs. Where notable changes to the baseline condition changed, a discussion was included.

D.1.24 Fluid Minerals

Summary: The BLM does not disclose acreage of oil and gas leasing activities rangewide and must correct this.

Response: Existing oil and gas leases form the affected environment. To the extent detail is needed to support analysis, information has been disclosed through the 2015 and 2019 planning processes. The BLM continues to offer oil and gas leases in conformance with the Greater Sage-Grouse management plans.

D.1.25 Fire and Fuels

Summary: Many commenters requested use of managed livestock grazing as a means of reducing fuel loads and affirmed that restricting grazing will increase vegetative fuel loads and increase wildfires.

Response: Restricting livestock grazing (specific to identifying areas as unavailable to livestock grazing) is not analyzed or incorporated in the RMPA. In addition, use of managed livestock grazing as a means of reducing fuel loads (targeted grazing) is a tool that BLM can implement and would not be prevented based on the provisions in any of the alternatives analyzed in this planning effort.

Summary: The BLM needs to address the threat of invasive plant species as well as sagebrush and other shrub encroachment in fire management considerations. Outcome-based grazing practices could be a tool to control these species.

Response: Management prescriptions associated with reducing invasive species were analyzed and discussed in the 2015 FEIS and were incorporated by reference in the 2018 EIS. Outcome-based grazing is a tool that can be implemented where appropriate and is authorized through 43 CFR 4120.2 of the livestock grazing regulations during permit renewal.

D.1.26 Vegetation

Summary: The BLM did not disclose the effectiveness of treatments in recent years for Greater Sage-Grouse habitat enhancement.

Response: A NEPA analysis of BLM-proposed vegetation treatments is performed at the local level, and post-treatment monitoring is conducted at that level. Treatments are expected to be successful when fully implemented as described in the project NEPA. No national repository of effectiveness of treatments exists. Projects are designed at the field level based on current conditions, past success, recent literature, and the purpose and need for the proposal.

Summary: Commenters caution that juniper-removal projects in Greater Sage-Grouse habitat may result in expansion of cheatgrass. Activities should be limited that cause soil disturbance (grazing, drilling, etc.) in order to prevent the spread of invasive species.

Response: The 2015 plans include RFDs to prevent the spread of invasive species. It is also common practice to implement such measures during project design and implementation.

D.1.27 Guidance and Policy

Summary: As cooperating agencies, the Counties should be involved throughout the NEPA process, including the preparation of this SEIS. BLM should thoroughly consider these plans and alternatives and coordinate with the Counties on the final land use plans.

Response: The BLM values its coordination with local jurisdictions as it does other federal and state agencies. The BLM relied on the special expertise of these entities as cooperating agencies during the 2015 and 2019 planning processes. The SEISs were undertaken solely to respond to the preliminary injunction order. No new decisions are required to be made. Instead, BLM clarified and updated its existing NEPA analysis, highlighting the issues raised in Judge Winmill's order. Although many agencies have special expertise related to Greater Sage-Grouse management, such expertise was not necessary to comply with the purpose and need for these SEISs.

D.1.28 Statutes and Regulations

Summary: The BLM inappropriately tiered to a document of equal scope. The BLM failed to summarize and relate applicability of material incorporated by reference to the new plans.

Response: BLM is using incorporation by reference to streamline its analysis consistent with administrative priorities. Incorporation of the 2015 EIS by reference is allowable under BLM regulations and is appropriate in this circumstance because the purpose of this action builds upon the goals and objectives of the 2015 EIS. Further, the CEQ 40 Questions, Question 24c, states that, "Tiering is a procedure which allows an agency to avoid duplication of paperwork through the incorporation by reference of the general discussions and relevant specific discussions from an environmental impact statement of broader scope into one of lesser scope or vice versa." The BLM summarized and referenced applicable aspects of the 2015 EIS throughout the 2018 EIS, but especially in Chapters 2 and 4.

Summary: The BLM has failed to consult with USFWS about the impacts of the proposed plan.

Response: The BLM coordinated with USFWS in 2018 regarding the changes in the Proposed Plan Amendments to determine if there would be different effects from those referenced in the Biological Opinions. All states received concurrence letters from USFWS that, while the 2019 plans constituted a change to the 2015 plans, the effects described in the 2019 plans were consistent with those analyzed during 2015 consultation efforts and did not consider re-initiation of Endangered Species Act Section 7 consultation necessary. Because no new decisions are being considered in the SEISs, consultation as part of this effort is not necessary.

D.2 OREGON-SPECIFIC SUMMARY OF PUBLIC COMMENTS AND RESPONSES

D.2.1 Purpose and Need

Summary: Commenters felt that the purpose and need in the FSEIS should reflect the need to address the new circumstances, science, and environmental concerns on the proposed action allowing for informed decision making.

Response: The purpose and need was defined specifically to address the 2019 preliminary injunction order by the US District Court that the BLM needed to supplement the 2018 EISs to address the range of alternatives, environmental impacts analysis, cumulative effects analysis, and the BLM's approach to compensatory mitigation in the 2018 EISs. The BLM continues to review new science related to Greater Sage-Grouse, and the DSEIS incorporated new science and information to allow for flexibility based on each state's site-specific needs and circumstances.

D.2.2 Issues Dismissed From Detailed Analysis

Summary: Commenters recommended that the BLM should evaluate the impact of increased leasing and permitting in Greater Sage-Grouse habitat and include a landscape scale impact analysis in the FSEIS that does not just repeat the 2015 analysis.

Response: In the 2019 planning process, the only issue at hand for Oregon related to maintaining existing livestock grazing or removing livestock grazing in research natural areas (RNAs). As such, no new analysis regarding leasing and permitting was needed for the DSEIS, so the 2015 analysis still applies.

D.2.3 Livestock Grazing Management

Summary: Commenters called for the BLM to evaluate the impact of grazing on the research purposes of the RNAs and 2015 ARMPA. Commenters asserted that the BLM should include any monitoring information collected from the RNAs in the FSEIS, and rescind the 2020 RNA Notification letter.

Response: See Section 4.2, Analytical Assumptions, page 4-1 and 2 as well as Section 4-5, Pages 4-6 to 4-9 in the November 2018 FEIS that describes the impacts to Greater Sage-Grouse of leaving the RNAs open to livestock grazing, including the ability to conduct research on livestock grazing both within and outside of RNAs. On page 4-8 of the 2018 FEIS BLM acknowledges that "retaining livestock grazing in the 13 key RNAs would not provide sufficient variability of sites needed to meet the research purposes identified in the 2015 ARMPA." Monitoring is on-going and relevant monitoring information to the decision process was included the various EISs. Any new or existing monitoring data in the RNAs will be considered for site-specific decisions regarding research or management of the RNAs. The BLM is implementing the 2015 ARMPA as directed by the 2019 preliminary injunction. Implementation of the 2015 ARMPA direction to make the 13 key RNAs unavailable to livestock grazing under BLM grazing regulations required issuance of the notification letters.

Summary: Commenters asserted that the BLM should work with local governments more and not deny grazing on the basis of voluntary compensatory mitigation.

Response: The BLM continues to coordinate and work with local governments on implementing land use plans, including the Greater Sage-Grouse plans. Voluntary compensatory mitigation is not a criterion for changing grazing management or authorizing grazing permits.

D.2.4 Data and Science

Summary: Commenters asserted that the BLM should include current data in the FSEIS that reflects declining Greater Sage-Grouse populations and the effects of grazing in key RNAs and on Greater Sage-Grouse habitat. Commenters also called for the BLM to restore reference sites and include new data from state core area boundaries.

Response: Oregon Greater Sage-Grouse population trends since 2015 are explained in Chapter 3 Section 3.3 of the DSEIS, which was updated with the most recent data and information available given the timing of the EIS production process. Population estimates for state designated Core Areas (same as PACs) are described in Section 3.3, as well, and incorporated by reference to Foster 2019 in this section. The effects of grazing in key RNAs and on Greater Sage-Grouse are described in Chapter 4 Sections 4.5 and 4.6 of the DSEIS.

Summary: The DSEIS fails to address genetic connectivity and conservation of winter habitat.

Response: Habitat objectives include those for winter habitat. Managing for winter habitat provides connectivity between seasonal habitats, which also connects populations. The land use plan designated habitat management areas typically incorporate winter use areas. The habitat management areas were delineated in coordination with the state wildlife agency and are intended to incorporate all seasonal habitat requirements. The planning allocations for each habitat management area provide use restrictions in Greater Sage-Grouse habitats that will conserve all habitat types, including winter habitat. See Habitat Objectives table in Chapter 2 of the 2015 ARMPA.

D.2.5 Greater Sage-Grouse

Summary: Commenters felt that the BLM population estimates for Greater Sage-Grouse in the DSEIS are not accurate.

Response: The BLM relies on state data for population estimates of Greater Sage-Grouse, which is the best available data. The BLM used State population data in the 2019 FEIS and the 2020 DSEIS. The State is responsible for managing sage-grouse populations.

Summary: Commenters called for the BLM to provide a full listing of PACs and tripped triggers and how they relate to key RNAs in the FSEIS.

Response: Table 3-2 in the DSEIS identifies the PACs with all key RNAs and tripped triggers and has been updated with the most recent status information (March 2020; see Oregon IB-2020-21). When a trigger is tripped, the BLM produces a Causal Factor Analysis that describes threats to Greater Sage-Grouse and possible causes within the PAC.

Summary: Commenters recommended that the BLM require management for Climate Change Consideration Areas to conserve wildlife and incorporate effects to climate change.

Response: The BLM considered strategic areas, including climate change consideration areas, in the 2015 Final Environmental Impact Statement (see June 2015 FEIS, Chapter 2, Proposed Plan, Pages 2-47 to 50, and Chapter 4, Section 4.4.7 and 4.5.7). The September 2015 Approved Resource Management Plan Amendment adopted Sagebrush Focal Areas, which incorporated the concepts, goals, and objectives of the strategic areas, including climate resiliency, described in the 2015 FEIS. The BLM

Oregon 2019 amendment did not change or alter the SFA land use designation, goals, objectives, and management directions of the 2015 Oregon ARMPA. Allowing grazing to continue in the key RNAs would not exacerbate the effects of climate change within the RNAs because grazing must meet all standards and guidelines for rangeland health. Two of the 15 key RNAs (Foster Flat and Guano Creek RNAs) were closed to grazing prior to the 2015 amendment; these RNAs would remain available for study. On page 4-22 of the DSEIS, the BLM acknowledges that providing only two RNAs for studying the effects of changing climate in the absence of grazing would provide a more "limited representation of the geographic and climatic variability in Oregon's Greater Sage-Grouse habitat."

D.2.6 Livestock Grazing

Summary: Commenters felt that the BLM should analyze how the Greater Sage-Grouse plans would be consistent with the Oregon State plans without research and study in ungrazed key RNAs.

Response: Published science on effects of livestock grazing in Greater Sage-Grouse habitat is identified in the DSEIS Chapter 4 section 4.5, as well as in the 2015 ARMPA. The Oregon Action Plan does not address RNAs (a BLM land use allocation) and does not contain an objective to study impacts of livestock grazing, although suitable areas exist in Oregon to conduct this research. Grazing effects studies are ongoing within Great Basin states (see DSEIS Section 4.5 page 4-16), and similar studies are likely to continue indefinitely. In addition, BLM Oregon is coordinating with the USFWS to demonstrate AIM on the Hart Mountain National Antelope Refuge (see DSEIS Section 4.5 page 4-18), an ungrazed refuge that supports some of the same or similar plant communities as found in the key RNAs.

Summary: Commenters recommended that the BLM analyze the impact of grazing restrictions on local economies and Greater Sage-Grouse habitat in the FSEIS.

Response: The BLM did an analysis of Greater Sage-Grouse management on local economies in 2015 at the scale of millions of acres of BLM-administered lands in Oregon. The BLM also considered changes proposed in the 2019 planning process by looking at the economics related to the approximately 22,000 acres in 13 key RNAs and carried them forward into Section 4.10 of the DSEIS.

Summary: Commenters asserted that the BLM failed to analyze the effects of livestock grazing on sagebrush communities by lifting the RNA grazing closure.

Response: Response: The BLM carried forward the impacts of decisions considered in the 2019 planning process into the DSEIS. The 2015 GRSG Final EIS analysis looked at livestock grazing on millions of acres of Greater Sage-Grouse habitat in Oregon. Livestock grazing was not listed in the Conservation Objectives Team (COT) report as a threat to GRSG, however improper grazing was considered a threat in the COT report (USFWS 2013). The 2019 FEIS analysis, in Sections 4.5 and 4.6, described impacts to Greater Sage-Grouse and Vegetation from improper livestock grazing for the 21,959 acres in the 13 key RNAs.

Section 4.5, Impacts on Greater Sage-Grouse, of the November 2019 Final EIS addressed the impacts of improper livestock grazing on Greater Sage-Grouse and GRSG habitat. On page 4-6 it states that general impacts from grazing on Greater Sage-Grouse are described in the 2015 Final EIS, Section 4.3, pages 4-7 to 4-94, and are hereby incorporated by reference. More specifically, pages 4-16 to 4-20 describe the impacts on Greater Sage-Grouse and its habitat from improper livestock grazing.

Section 4.6, Impacts on Vegetation, including Plants, Riparian Areas, and Wetlands, in the 2019 FEIS analyzed improper livestock grazing impacts to the specific vegetation communities of the 21,959 acres within the 13 key RNAs. Also, on page 3-22 it was noted that all rangeland health standards were met in these RNA allotments. The land health assessments showed that upland watershed and ecological processes were functioning appropriately.

D.2.7 Cumulative Impacts

Summary: Commenters called for the BLM to consider the impacts from outside of state boundaries in the FSEIS.

Response: The BLM considered impacts at the WAFWA zone in the cumulative impacts analysis of the DSEIS (see Section 4.11 and Appendix B of the DSEIS).

D.3 RANGEWIDE COMMENT EXCERPTS

D.3.1 Range-wide

State-level approaches to managing sage-grouse differ substantially across the range of the species. While some of these programs have been evaluated for effectiveness at statewide or smaller scales, other state plans are untested. Further, the potential collective effectiveness of these programs has not been examined, and the BLM provides no assessment of broad-scale applicability of these programs to meet the management goals the agency has established for itself. It is critical that the BLM evaluates the local programs it relies on and aligns only with programs that rigorously demonstrate that the conservation efforts collectively have a high probability of maintaining the long-term viability of sage-grouse populations across the range of the species.

D.3.2 Purpose and Need

There is no need to undertake the massive effort and expense of a totally new planning process. We urge the BLM to complete the 2020 DSEISs and issue a new record of decision based on the 2015 and 2019 NEPA analyses, as supplemented, rather than initiate a new land use planning process to consider new alternatives or information.

D.3.3 Issues

The 2019 plan amendments fail to provide adequate protections for sage grouse habitats from mineral development, livestock grazing, renewable energy development, range improvement structures, recreational facilities (including motorized trails), transmission lines, and other permitted activities, and also fail to consider reasonable alternatives to add science-based protections to avoid or minimize these impacts

BLM has failed to take a hard look at noise impacts to sage-grouse, and the resulting noise restrictions are scientifically invalid. We raised this issue in earlier comments and protests on all the plans (see Appendices B-K) and provided the relevant science supporting our claims. The DSEISs persist in allowing noise levels that will be harmful to sage-grouse.

BLM made no effort at all to analyze the impacts of noise on sage-grouse in PHMA in the FEISs; it makes the same mistake in the DSEISs. See Idaho DSEIS at 4-30; Wyoming DSEIS at 4-98. There is no analysis of the impacts of allowing limitless noise during the breeding and nesting seasons. There is no analysis of the impact of disturbing and stressing sage-grouse using habitats that surround leks, or of the magnitude

of impact of displacement, reduction of nest success or brood success, and potentially lek abandonment that would result from daytime noise authorized within PHMA, IHMA, and GHMA. There is also no analysis on the effects of allowing noise greater than 25 dBA by failing to set baseline levels at natural ambient noise levels that have been empirically established. Indeed, if there is already human-caused noise at a lek site, and this noise level becomes the new ambient baseline (which is permitted under the wording of the DSEIS), then noise levels could be authorized to steadily creep upward until surrounding habitats and leks are abandoned by grouse. But the DSEISs do not disclose this, because the DSEISs do not make a good-faith effort to take a hard look at the impacts of noise, and instead perpetuates the problems of the FEISs..

D.3.4 Range of Alternatives

The document only analyizes 2 alternatives -- a no-action alternative and the Management Allignment Alternative. This is an inadequate range of alternatives, particularly as one of them is "Do-nothing".

There is an inadequate range of alternatives – only 2 were actually analyzed: No Action Alternative and the Management Alignment Alternative

In the 2019 Plan Amendments, there were two alternatives, but one - the "No Action" alternative - was not actually an alternative, since the BLM concluded that it would not meet the stated purpose and need. Similarly, while BLM purported to incorporate its evaluation of alternatives from the 2015 Sage-grouse Plans, those alternatives also did not meet its purpose and need for the 2019 Amendments. The court found: "Common sense and this record demonstrate that mid- range alternatives were available that would contain more protections for sage grouse than this single proposal." WWP v. Schneider, 417 F.Supp.3d at 1332. The court found that BLM must consider reasonable alternatives, including mid-range alternatives that would contain more protections for sage grouse than the "Management Alignment Alternative." Id. Nonetheless, in the Draft Supplemental EISs, BLM declines to consider any new alternatives and continues its commitment to the only action alternative in the 2019 Amendments. With respect to other alternatives, BLM states that "all of the previously analyzed alternatives, including one proposing constraints stricter than the current management plan, were predicted to result in a loss of development opportunities on public lands," which is in conflict with the goals and purpose of SO 3353 to "promote habitat conservation, while contributing to economic growth and energy independence." Oregon Draft SEIS, p. 2-3. Clearly, BLM is not evaluating the alternatives from the 2015 Sage-grouse Plans or any other alternatives. Rather, the agency is just re-explaining an approach that the court has already rejected. The range of alternatives is "the heart of the environmental impact statement." 40 C.F.R. § 1502.14. NEPA requires BLM to "rigorously explore and objectively evaluate" a range of alternatives to proposed federal actions, including considering more environmentally protective alternatives and mitigation measures. See 40 C.F.R. §§ 1502.14(a) and 1508.25(c); see also, Kootenai Tribe of Idaho v. Veneman, 313 F.3d 1094,1122-1123 (9th Cir. 2002) (and cases cited therein)

In this new DSEIS, the BLM has added nearly 300 pages of analyses of alternatives. However, these alternatives were considered in the 2015 LUPA process and decision, and not considered as alternatives in the 2019 RMPA process or in this DSEIS process. It is unclear how including these alternatives will cure the likely NEPA violation described in the Preliminary Injunction. "The stated goals of a project necessarily dictate the range of 'reasonable' alternatives. Id. An agency need not consider alternatives that are 'unlikely to be implemented or those inconsistent with its basic policy objectives.' Id" 13 Presumably this set of alternatives, like the No Action Alternative would not comport with the purpose

and need of the 2019 RMPA because the 2019 RMPA purpose and need comports with new science and new policy implemented after the 2015 effort.

The DSEISs defend the failure to consider a range of alternatives in the 2018 FEIS by citing back to the 2015 plans' range of alternatives. See, e.g., Idaho DSEIS at ES-4; NV/CA DSEIS at 2-1 to 2-3. But the DSEISse fail to explore the differing contexts of the 2015 and 2018 plans, including the decrease in sage-grouse populations since the 2015 plans and the 2.4 million acres of new oil and gas leases the 3,570 new drilling permits in designated sage-grouse habitat allowed between January 2017 and March 2019. The "No Action" alternative has thus changed significantly since 2015.

BLM's regulations require BLM to "develop several complete alternatives for detailed study" in land-use planning. 43 C.F.R. § 1610.4-5. BLM cannot legitimately claim that it "considered" all of the alternatives evaluated during the 2015 Plan Amendment NEPA process. BLM eliminated these from reconsideration in 2019 because they "were predicted to result in a loss of development opportunities." See e.g., ID 831-33.11. Alternatives not considered in detail cannot be used to meet the agency's obligations to "rigorously explore" alternatives. Moreover, the Ninth Circuit has flatly rejected the approach of "incorporating" previously considered but rejected alternatives. See Sierra Forest Legacy v. Rey, 577 F.3d 1015 (9th Cir. 2009); Sierra Forest Legacy v. Sherman, 646 F.3d 1161 (9th Cir. 2011).

ICA believes that when the BLM conducted their analysis for the 2019 RMP, they considered a reasonable range of alternatives. During that process, they also referenced the alternatives that were extensively analyzed in the 2015 planning process. The DSEIS accurately justifies this process and underscores that a reasonable range of alternatives were presented and adequately analyzed.

D.3.5 New Alternative

We have repeatedly proposed a number of reasonable alternatives and BLM should evaluate them and others. As part of addressing the court's ruling, BLM should consider the alternatives we have proposed, including: * An alternative that is explicitly focused on enhancing cooperation with the states while conserving, enhancing and restoring sage-grouse habitat. We submitted a proposed alternative that would accomplish these goals, set out in detail in Attachment 1 to Exhibit 2 (our overarching comments), incorporated herein by reference. * Alternatives to complete additional analysis of net conservation gain and Sagebrush Focal Areas (SFA), which the 2019 Amendments eliminated in some states. * An alternative to maintain SFAs without the previously-proposed mineral withdrawal, while considering how application can be better coordinated with the states. * An alternative to strengthen criteria and restrictions for waivers, exceptions and modifications to lease stipulations. * An alternative to strengthen the approach to prioritizing oil and gas leasing and development outside habitat.

D.3.6 Alternatives - Other

BLM claims to have incorporated by reference alternatives from the 2015 ARMPA EIS process, and to have "Fully Analyzed" these alternatives, along with others, in the DSEIS. Table 2-2, Idaho DSEIS at 2-19; Table 2-2, Wyoming DSEIS at 2-13;NV/CA DSEIS at 2-9 to 2-12 (Table 2-2a); Northwest Colorado DSEIS at 2-5 (Table 2-1). This table is immediately followed by Table 2-3, "Detailed Comparison of 2019 Alternatives," in which only a No Action Alternative, the Management Alignment Alternative, and the Proposed Plan (essentially identical to the Management Alignment alternative) are described. Idaho DSEIS at 2-23; Wyoming DSEIS at 2-28; NV/CA DSEIS at 2-16; Northwest Colorado DEIS at 2-9 (Table 2-2). The Management Alignment Alternative and Proposed Plan are so similar that BLM provides a

single, common impacts analysis for both, with no differentiation between the effects of the two alternatives. See Wyoming DSEIS at 4-91. Thus, the 2019 plan amendment EIS considers basically two alternatives: a No Action alternative (which would leave the 2015 Plan Amendment, with all its weaknesses and inadequacies, unchanged), and the Management Alignment/Proposed Plan alternative, which the agency ultimately adopted and which significantly weakened sage-grouse habitat protections provided under the 2015 plan amendment. This Management Alignment alternative is designed to make federal sage-grouse protections mirror state policies

D.3.7 Data and Science

The Winmill Decision reinstates the 2015 Plans, and BLM has stated that it is accordingly implementing the 2015 Plans in the affected states.3 Consequentially, the need to address and correct the scientific flaws that originated in the 2015 Plans and carried forward to the 2019 Plans has become even more urgent.

The 2015 Plans ignored the full spectrum of on-point, more recent science currently available, and instead relied upon biased and outdated science. Namely, BLM relied on several outdated and faulty reports: the National Technical Team ("NTT") Report, the Conservation Objectives Team ("COT") Report, the Comprehensive Review of Ecology and Conservation of the Greater Sage Grouse: A Landscape Species and its Habitats ("the Monograph"), and the "Conservation Buffer Distance Estimates for Greater Sage-Grouse-A Review" (the "Buffer Report")4(collectively "the Reports."). 4 Daniel J. Manier, et al., Conservation Buffer Distance Estimates for Greater Sage-Grouse-A Review, U.S. GEOLOGICAL SURVEY OPEN-FILE REPORT 2014-1239 (2014), http://dx.doi.org/10.3133/ofr20141239.

The Reports erroneously ignore accurate population data and adopt methodologically- flawed modeling approaches that have consistently failed to accurately predict populations. This selective use of science is wholly misleading, and assumes GRSG populations are in decline despite evidence to the contrary. More specifically, the Reports ignore natural population fluctuations; single out human-driven activities for alleged declines; and, again, overlook actual threats to GRSG such as weather, predation, and hunter harvest-primary drivers of GRSG population changes (in contrast to anthropogenic disturbance) (see Blomberg et al. 20149 Guttery et al. 201310, and Ramey et al. 201811). Other factors not seriously considered were raven predation (see, e.g., Coates et al. 201612) and hunter harvest at times of the year and during life stages when GRSG are most vulnerable (see, e.g., Blomberg et al. 201513; Caudill et al. 201714). It is worthwhile to note that GRSG hunter harvest reports from the states of Colorado, Utah, Wyoming, Montana, Oregon, Nevada, and California show a take of approximately 129,095 birds between 2000 and 2018. 9 Erik J. Blomberg, et al., Carryover Effects and Climatic Conditions Influence the Postfledging Survival of Greater Sage-Grouse, 4(23) ECOLOGY & EVOLUTION, 4488-4499 (2014), https://doi.org/10.1002/ece3.1139. 10 Michael R. Guttery, et al., Effects of Landscape-Scale Environmental Variation on Greater Sage-Grouse Chick Survival, 8(6) PLoS ONE e65582 (2013), https://doi.org/10.1371/journal.pone.0065582. 11 Rob Roy Ramey II, et al., Local and population-level responses of Greater sage-grouse to oil and gas development and climatic variation in Wyoming. PeerJ 6: e5417 (2018), http://doi.org/10.7717/peerj.5417. 12 Peter S. Coates, et al., Landscape characteristics and livestock presence influence common ravens-Relevance to greater sage-grouse conservation: ECOSPHERE, v. 7, no. 2, article e01203, 20 p., https://doi.org/10.1002/ecs2.1203. 13 Erik J. Blomberg, et al., The influence of harvest timing on greater sage-grouse survival-A cautionary perspective: J. OF WILDLIFE MANAGEMENT, v. 79, no. 5, p. 695-703 (2015). 14 Danny Caudill, et al., Individual

heterogeneity and effects of harvest on greater sage-grouse populations: J. OF WILDLIFE MANAGEMENT, v. 81, no. 5, p. 754-765 (2017).

the Reports themselves were premised on a faulty bias-the presumption that GRSG populations are in decline due to disturbance from various land use activities, of which oil and gas development was allegedly a primary factor. The NTT Report also failed to acknowledge lower impact technologies and mitigation that emerged and became the standard in the oil and gas industry around 2005, such as hydraulic fracturing and directional drilling. These modern technologies, along with 3-D and 4-D remote-sensing of underground hydrocarbon reservoirs and other developments, have radically minimized disturbance compared to the practices in use just a decade or more previously which were reviewed by the studies cited by the Reports.15 15 See Rob Roy Ramey II, et al., Oil and Gas Development and Greater Sage Grouse ("Centrocercus urophasianus"): A Review of Threats and Mitigation Measures, 35 (1/2) J. OF ENERGY AND DEV., 49-78 (2011)

GRSG research published since 2015 is "extensive and collectively supersedes the NTT and COT reports." See Exhibit A at 1; see also Exhibit A-1. Much of the new research has occurred thanks to improvements in: estimating seasonal habitat, modeling population trends in light of climate variables, and determining causality behind predation and disturbances. Further, new science has shown that GRGS dispersal is much more expansive than was thought prior to 2015, both in distances flown and dispersal frequency. In addition, improved means of mitigation and habitat recovery have decreased overall GRSG disturbances. In sum, the scientific understanding of GRSG populations and how various factors affect said populations has advanced far beyond the biased and limited work upon which the 2015 Plans (and, to a certain extent, the 2019 Plans) rely.

Since 2005, studies have analyzed large-scale climatic fluctuations and the resulting effects on inland species, including GRSG. Notably, research has emphasized the impacts sea surface temperature variations in the North Pacific Ocean have on GRSG populations due to the resulting climatic patterns. The PDO is one of several climate indices useful in estimating population responses. Ramey et al. 2018. In sum, GRSG populations experience cyclic fluctuations "linked to patterns of temperature and precipitation. . .which affect reproduction and survival…." Exhibit B at 1. To maintain accuracy, any land use plans must take into account large-scale climatic fluctuations and GRSG population responses.

GRSG populations fluctuate naturally due to "population density feedbacks affect[ing] population growth rate" and "inter-annual and multi-decadal variation in large-scale regional weather patterns." See Exhibit D at 1. Therefore, any research which calculates population estimates in terms of the effect of anthropogenic activities must also account for population changes resulting from these natural factors. Furthermore, changes to one GRSG lek population may affect nearby leks. Id. at 2. Ideally, population modeling should incorporate data from unrelated leks (to function as a control group) and data regarding effects from climate changes and density feedbacks. We urge BLM to consider usage of a stage-based population dynamic model. "The advantages of stage-based population dynamic models are that multiple sources of information for different life-stages and sexes including prior information from previous analysis can be readily incorporated while lags are readily accounted for thus providing tighter linkages between population drivers and lek counts." Id. This will bring sage grouse management into the contemporary realm of real-time population modeling.

Mathematical Error in Edmunds et al. 201716 Managers must be cognizant of errors scientific papers that can compromise results and interpretations, even if identified and "corrected" later. We highlight

here, a paper by Edmunds et al. (2017) that found that "populations in 5 of the 8 working group[s in Wyoming] significantly declined (? < 1 with p < 0.05) between 1993 and 2015; and 2) that [sub]populations within working groups can follow different trends." See Exhibit E at 1. However, Edmunds et al. later published an erratum (Edmunds et al. 2018)17 finding that the mathematical calculations were incorrect, thereby invalidating their first conclusion: that the populations in 5 of the 8 working group significantly declined (? < 1 with p < 0.05) between 1993 and 2015. However, they authors did not state that needed change to the text of their erratum. Thus, managers could easily misinterpret the conclusions as valid, when they are not. Beyond this issue, a central failure of many past papers (including those cited by the Reports), is that they do not account for population-wide temporal oscillations (i.e., those driven by climatic variation/weather). Moreover, analyzing subpopulation-level differences in trends merely adds noise to analyses. 16 David R. Edmunds, et al., Greater sage-grouse population trends across Wyoming: WY Sage-Grouse Population Viability Analysis. J. WILDLIFE MANAGEMENT, 82(2): 397-412 (2017), http://doi.org/10.1002/jwmg.21386. 17 David R. Edmunds, et al., Erratum-Greater sage-grouse population trends across Wyoming. J. WILDLIFE MANAGEMENT, 82(8):1808 (2018).

The agency should emphasize the use of locally-collected monitoring and transparent assessment data and the continued development and integration of local data and information, peer-reviewed science (with publicly-available data), and other high quality information.

The Counties urge BLM to consider innovative new tools, such as the use of unmanned aerial vehicles with infrared sensing, and new statistical approaches to undertake more accurate population counts.

Federal population targets and triggers are inappropriate and unwarranted. First, local governments may have better information. Second, wildlife management is a state issue. To the extent population numbers are utilized, the BLM should rely upon state and local population data

It is vital that the BLM develop processes to use data from a variety of sources, including peer-reviewed journals with associated data, agency data, and local collected partner information. BLM should also rely upon locally-relevant science and data to inform implementation of management actions, data sharing, and the development of methods to gather and use local and traditional ecological knowledge. BLM must review and consider the DQA Challenges with respect to the Reports underpinning the land use plan amendments and the GRSG listing decision and revise its planning documents and decisions appropriately. The Counties strongly support peer review, transparency and reproducibility in regards to science as well as the relevance to local conditions. Had BLM recognized the flaws brought to bear in the Challenges and new science available, the Winmill Decision may have turned out differently.

Sage-Grouse populations have declined precipitously over the past three years; The Draft SEIS's do not take into account the significant declines (30-60 percent) in Sage-Grouse populations in all 7 states over the past 3 years (2016-19) California – reduced 3.86 percent/year since 1999 (60 percent total) Montana – 40 percent reduction since 2016 Oregon – the lowest population levels ever recorded; 28% loss in one year Idaho – 52 percent reduction since 2015 Nevada – one third reduction since 2016 Wyoming – 44 percent reduction since 2016 Utah – 61 percent reduction since 2015 Colorado – 5 out of 6 leks showed a 69 percent reduction since 2016

The draft EIS does not mention or take into account that all 7 states where populations were monitored from 2016 to 2019 showed significant population declines ranging from 30% to over 60% decline.

The Draft SEIS's do not take into account the significant declines (30-60 percent) in sage-grouse populations in all 7 states over the past 3 years (2016-19)

On a related note, DNR encourages the BLM to consider the most recent available data in its analyses in future versions of this supplemental review process. We note, for instance, that Section 3.3 in the 2020 DSEIS, Changes to Affected Environment Since 2015, replicates the same section from the 2018 PRMPA/FEIS, which considered 2014-2017 data in calculating the 3-year average High-Male Count (HMC) used to estimate GrSG populations. Subsequent revisions to this EIS should examine data from the previous two years (2018-2019) when calculating the most recent 3-year average HMC. In addition, the BLM mentions Reasonably Foreseeable Actions as an item to be clarified in the 2020 DSEIS, but the document does not take any new information into account in its analysis. 20 Future EIS revisions or planning decisions should incorporate updated data, recent events, BLM actions, new plans and decisions, revised regulations, etc., when presenting reasonably foreseeable scenarios both in the evaluation of cumulative or other environmental effects and in consideration of changed conditions that could warrant new review (see Appendix 2, Section 2.1, Table 1, Rangewide Impacts from Past, Present, and Reasonably Foreseeable Actions). For example, a recent report suggests a significant increase in the rate of fluid mineral leases issued within GHMA and PHMA under the 2015 CO GrSG RMPA, as compared to in recent years.21 20 DSEIS, 1-13. 21 National Audubon Society, Oil and Gas Leasing on Federal Lands and in Sage Grouse Habitats: October 2015 through March 2019 (July, 2019), Tables 2-4.

Improved Prioritization of GRSG Management Author: Doherty et al. Year: 2016 Title: Importance of regional variation in conservation planning-A rangewide example of greater sage-grouse: Ecosphere, v. 7, no.10, article e01462, 27 p. Implications: Improved spatial population models show overlap of habitats, populations, conservation actions, and threats. Threats to, or conservation actions in, these hotspots could affect a large proportion of GRSG populations. Thresholds in vegetation cover types, disturbance, and other factors varied spatially, so results from one location may not extrapolate to other locations. GRSG in MZ VI (Columbia Basin) and MZ I (Northern Great Plains) appeared to diverge in functional habitat selection from other MZs. The authors emphasize the large spatial scale of this analysis and that on-the-ground management actions may need to be informed by analyses at smaller spatial scales. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; Conservation planning Significance: Management prioritization, improved methodology Comments: Underscores the fact that a one-size fits all approach is inappropriate.

Improved Prioritization of GRSG Management Author: Chambers et al. Year: 2016 Title: Using resilience and resistance concepts to manage threats to sagebrush ecosystems, Gunnison sage-grouse, and greater sage-grouse in their eastern range-A strategic multi-scale approach: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, General Technical Report RMRS-GTR-356, 143 p., Implications: "This [USDA] report provides a strategic approach developed by a Western Association of Fish and Wildlife Agencies interagency working group for conservation of sagebrush ecosystems, Greater sage-grouse, and Gunnison sage-grouse. It uses information on (1) factors that influence sagebrush ecosystem resilience to disturbance and resistance to nonnative invasive annual grasses and (2) distribution and relative abundance of sage-grouse populations to address persistent ecosystem threats, such as invasive annual grasses and wildfire, and land use and development threats, such as oil and gas development and cropland conversion, to develop effective management strategies.""Areas for targeted management are assessed by overlaying matrix components with Greater sage-grouse Priority Areas for Conservation and Gunnison sage-grouse critical habitat and linkages, breeding bird

concentration areas, and specific habitat threats. Decision tools are discussed for determining the suitability of target areas for management and the most appropriate management actions." Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; Conservation management Significance: Prioritization of management; Provides a holistic approach to managing threats, conservation, and restortation. Comments: Caveat: long-term projections based on untestable Global Circulation Models

Improved Prioritization of GRSG Management Author: Chambers et al. Year: 2017 Title: Science framework for conservation and restoration of the sagebrush biome: Linking the Department of the Interior's Integrated Rangeland Fire Management Strategy to long-term strategic conservation actions. Part 1. Science basis and applications: Geno. Tech. Rep. RMRS-GTR-360. Fort Collins, CO: U.S Department of Agriculture, Forest Service, Rocky Mountain Research Station. p. 213. Implications: This comprehensive report provides the scientific basis and applications for the DOI's Conservation and Restoration Strategy for sagebrush ecosystems. As such, it is a highly influential document. The Science Framework is intended to "help prioritize areas for management and determine the most appropriate management strategies. The Science Framework is based on: (1) the likely response of an area to disturbance or stress due to threats and/or management actions (i.e., resilience to disturbance and resistance to invasion by nonnative plants), (2) the capacity of an area to support target species and/or resources, and (3) the predominant threats." Supersedes NTT: Yes Supersedes COT: Yes Issue: Comprehensive conservation strategy. Significance: Likely highly influential document. Comments: Additional review suggested.

Improved Prioritization of GRSG Management Author: Chambers et al. Year: 2017 Title: Using resilience and resistance concepts to manage persistent threats to sagebrush ecosystems and greater sage-grouse: Rangeland Ecology and Management, v. 70, no. 2, p. 149-164. Implications: From the paper's conclusions: "We successfully operationalized resilience and resistance concepts in a risk-based framework to help managers reduce persistent threats to a species of high concern in one of the largest terrestrial ecosystems in North America. By linking our understanding of sagebrush ecosystem resilience to disturbance and resistance to invasive annual grasses to sage-grouse distribution and habitat requirements, we provided a means for decision makers to strategically allocate resources and triage complex problems. This approach offers an innovative decision support system to address the needs of at-risk species in the context of dynamic and adaptive ecosystems. We believe this approach is applicable to species conservation in other largely intact ecosystems with persistent, ecosystem-based threats such as invasive species and altered disturbance regimes." Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; identification of threats; conservation triage Significance: Improved methodology and prioritization of management Comments: Utilize an operational definition of resistance and resilience.

Improved Prioritization of GRSG Management Author: Crist et al. Year: 2019 Title: Science framework for conservation and restoration of the sagebrush biome: Linking the Department of the Interior's Integrated Rangeland Fire Management Strategy to long-term strategic conservation actions. Part 2. Management applications. Gen. Tech. Rep. RMRS-GTR-389. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 237 p. Implications: The strategic, long-term, multiscale approaches described in this report, as well as associated tools, will aid resource managers in implementing on-the-ground management actions in the sagebrush biome. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement Significance: Prioritization of management. Likely highly influential. Comments: Additional review suggested.

PAW maintains the NTT Report does not represent the best available science as it relates to oil and gas impacts to sage-grouse habitat. The technological improvements associated with oil and gas development also reduced the threats of oil and gas as outlined in the COT Report. BLM should not solely rely on these documents when forming oil and gas stipulations and conservation measures. We are encouraged that BLM included a review of these Reports and analyzed their relevance to the planning process in Appendix F to the Draft SEIS.

PAW supports the analysis provided in the Draft SEIS, particularly as the 2015 ARMPAs analyzed impacts that were as a result of previous technological techniques and the science does not reflect the significant changes that have taken place over the past decade. Specifically, the timeframe of the research included in the NTT and COT Reports predates significant technological advancements that have taken place in the oil and gas industry during that timeframe. These advancements have played a dramatic role in reducing well pad and road density and disturbance associated with oil and gas development.

the NTT report failed to recognize that the level of disturbance and activity associated with a well is not constant throughout its life. The highest level of surface disturbance associated with oil and gas development occurs during the construction, drilling and completion phases, which can last up to a few months, depending upon the time it takes to complete the well. Once production ensues, these activities subside dramatically, especially with the increased use of remote monitoring of oil and gas operations. Shortly after well completion, the operator normally begins interim reclamation to restore any impacted habitat that is not being used. This interim reclamation remains in effect until the well has been depleted. Upon conclusion of production activities, the operator will then move forward with plugging and abandonment procedures, which also includes final reclamation that will ultimately result in full restoration of the site and its return to productive habitat.

they believe that a wide variety of peer-reviewed publications which collectively provide the best available science for sage-grouse should form BLM's basis for conserving the species. They went on to recommend that management and regulatory mechanisms be centered upon the best available science which would provide the best strategy for near- and long-term management of sage-grouse and provide the best opportunity for precluding a listing under the Endangered Species Act (ESA).

Based upon these new documented findings, the assumptions contained in the NTT are incomplete. They are predicated upon widespread development of oil and gas using tightly spaced vertical wells and, therefore, result inaccurate hypothesis that oil and gas development "impacts are universally negative and typically severe."

More importantly, new science and new technology in the deployment of oil and gas development indicates impacts to sage-grouse will be significantly lower than those described in the NTT Report.

The 2015 plans resulted from years of negotiations between ranchers, scientists, state and Federal agencies, and the conservation community. It is a science based plan that was agreeable to all the stakeholders. It led to the USFWS withdrawing it's plan to list the species under the Endangered Species Act. If the 2015 plan is NOT adopted, I feel that the Greater Sage-Grouse SHOULD be listed under the Endangered Species Act

Similarly, while BLM refers to its reliance on "best available science," that is not defined or explained in the Draft Supplemental EISs. In fact, as discussed in detail in a June 2018 letter submitted by numerous

sage-grouse scientists recognized as experts in this field, the 2019 Amendments were contrary to the best science. See, June 2018 Sage-grouse scientists letter, attached as Exhibit 3.

BLM is also obligated to evaluate "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts" through supplemental NEPA. 40 C.F.R. § 1502.9(c)(ii). There are significant new circumstances and information that BLM must take into account, some of which we have repeatedly highlighted in previous comments and protests but have continued to intensify. These are discussed in detail in a letter from expert sage-grouse scientists, attached as Exhibit 4. Sage-grouse populations have been declining and this trend has become even more concerning. As noted in the attached sage-grouse scientists' letter, state-level data indicates sage-grouse populations have declined 44% on average over the last four years, with estimated statewide declines in strongholds of between 33% and 52% in Oregon, Idaho, Nevada, Montana, and Wyoming. BLM must take these losses and the continued projected declines into account in evaluating the impacts of the proposed changes to the 2015 Sage-grouse Plans.

Specifically, the DSEIS does not update the No Action Alternative using the best available science. It remains based on analysis that was not comprised of the best available science and includes outdated and improper habitat mapping, 15 an issue that this County and others repeatedly explained throughout the RMPA process.16 As the Court pointed out in its October 2019 decision, "In order to be adequate, an environmental impact statement must consider "not every possible alternative, but every reasonable alternative."17 The No Action Alternative, as it is currently presented and analyzed, is not a reasonable alternative as it fails to include the best available science or comport with current BLM policy. A possible solution therefore is for BLM to update the science behind the No Action Alternative so that it is current with the science used in the Management Alignment Alternative. The County hopes that the BLM will update the science of the No Action Alternative in order to demonstrate how the preferred alternative better aligns with the BLM's stated policy goals and the conservation of Sage-grouse.

Chapter 5, Consultation and Coordination, does not indicate any coordination or consultation with other Federal (USFWS, USGS) or state agencies, who maintain scientific expertise on both sage-grouse and sagebrush habitat. Without consultation with these scientific experts, the conclusions of this document on potential impacts to the Greater sage-grouse lack scientific credibility.

The Idaho District court granting the motion to preliminarily enjoin the 2019 plans relies in large part on the assumption that the 2015 plans were based on the sound science, specifically the findings and suggestions contained in the 2011 National Technical Team (NTT) and 2013 Conservation Technical Team (COT) Reports.11 The Idaho District Court incorrectly assumed in its decision that the NTT and COT reports represent the best available science, and therefore, any deviation from these reports amounts to an unjustified reduction in protection for the Sage Grouse.12 This reliance on the NTT and COT Reports is misplaced. 11 See Western Watersheds Project et al v. Schneider et al. Case No. CV-00083-BLM, 2019, at 11, 17. (D. Idaho Oct. 16, 2019). 12 Id. The 2011 NTT Report and the 2013 COT Report did not receive adequate peer review and suffered from a number of substantive flaws including: ignoring substantial threats such to the Greater Sage Grouse such as predation in favor of unsupported conjectures regarding human impact; failure to account for natural population fluctuations due to weather patterns; not using the best available science, and were policy rather than science driven. These flawed reports suggested the adoption of equally flawed measures that became central to the 2015

planning effort including the designation of Sage Brush Focal Areas (SFAs) and the establishment of lek buffers.

the application of lek buffer distances was integrated into another document previously not available or included in the DEIS for public review: a U.S. Geological Survey (USGS) report entitled Conservation Buffer Distance Estimates for Greater Sage-grouse - a Review, USGS Open File Report 2014 1239. Both SFAs and lek buffer distances were allowed to evolve from the NTT and COT reports into the 2015 plans without receiving adequate review and comment and in place of utilizing existing conservation tools already available.

Although the SFAs and the lek buffers constituted substantial changes to the proposed action, no supplemental EIS was prepared to analyze them and the public was not provided an opportunity to offer input on their use as guiding elements of the 2015 land use plans. As a result, the 2015 plans did not reflect the best scientific information available to and used by the states that are home to the Greater Sage Grouse.

Sage-grouse population declines and habitat loss represent significant new environmental information that bears on the management actions established in the 2015 and 2019 sage-grouse RMP amendments. BLM must address these circumstances through supplements to the EISs used to inform those RMPs as prescribed in 40 CFR 1502.9(c)(1)(ii) of the National Environmental Policy Act (NEPA). Specifically, the regulations require agencies to: "prepare supplements to either draft or final environmental impact statements if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." The Draft SEISs released February 11, 2020 do not reflect the reality of these new circumstances and provide no scientific justification for the majority of BLM management decisions given the current situation. Accordingly, BLM must expand the scope of these SEISs to address this new information and set of circumstances facing sage-grouse and sagebrush habitat.

The BLM needs to expand the scope of the Draft SEISs to address new circumstances described and substantiated with recent population and sagebrush habitat trends. Expansion of the scope provides an opportunity for the BLM to more rigorously analyze and assess the direct, indirect and cumulative impacts of management decisions on sage-grouse populations and habitats. Accomplishing such assessments is entirely feasible given the expertise, data, and analytical tools currently available to the BLM. The U.S. Geological Survey (USGS) in their synthesis of relevant literature published from 2015 to 2017 describe several decision-support tools that would apply directly to such analyses. The BLM itself has developed the Assessment, Inventory, and Monitoring (AIM) strategy and the Fire and Invasives Assessment Tool (FIAT) which are expressly meant to provide the agency with analyticallyderived information for making impact and habitat management decisions. Further, in each of the 2015 Final EISs the BLM included a Greater Sage-grouse Monitoring Framework which established metrics and approaches for monitoring response of sage-grouse to management actions. The data and analytical tools established in this framework are also directly applicable to analyses we suggest.

2015 Greater Sage Grouse Plans Were Not Supported by the Best Available Science The Idaho District court granting the motion to preliminarily enjoin the 2019 plans relies in large part on the assumption that the 2015 plans were based on the sound science, specifically the findings and suggestions contained in the 2011 National Technical Team (NTT) and 2013 Conservation Technical Team (COT) Reports.11 The Idaho District Court incorrectly assumed in its decision that the NTT and COT reports represent

the best available science, and therefore, any deviation from these reports amounts to an unjustified reduction in protection for the Sage Grouse.12 This reliance on the NTT and COT Reports is misplaced.

we believe it is imperative that BLM clarify how the 2019 plans relied on the best available science, a critical component of the decision in the district court. As such, we request that BLM update and supplement its review of the scientific information on which it relies for conservation of sage grouse habitat and management of those federal lands. Specifically, BLM must take into account scientific information that has been developed since the reports prepared by the National Technical Team (NTT)1 in 2011 and the Conservation Objectives Team (COT)2 in 2013, including over 150 scientific papers and reports prepared since 2014 that are described and referenced in the materials we submit as attachments to this letter (Attachment B and F below). These reports make clear that the NTT and COT reports are no longer the best available science, contra the district court's assertion. 1 Report on National Greater Sage-Grouse Conservation Measures Produced by the BLM Sage-Grouse National Technical Team, Bureau of Land Management (Dec. 2011). 2 Greater Sage-Grouse (Centrocercus urophasianus) Conservation Objections: Final Report, U.S. Fish and Wildlife Service (Feb. 2013).

The Trades previously argued that BLM's reliance in the 2015 Land Use Plan Amendments (LUPAs) on the U.S. Fish and Wildlife Service's COT Report and BLM's NTT Report in determining stipulations, restrictions, and conservation measures for operations in sage-grouse country was arbitrary and capricious under the Administrative Procedures Act. The NTT Report and the COT Report failed to utilize the best available science; failed to adhere to the standards of integrity, objectivity, and transparency required by the agency guidelines implementing the Data Quality Act, and suffered from inadequate peer review (Attachment A below). The NTT Report fails to adequately support its propositions and conclusions. For example, the NTT Report provided no scientific justification for the three percent disturbance cap, which was described in the 2015 LUPAs. Rather, the disturbance cap was based upon the "professional judgment" of the NTT authors and the authors of the studies they cited, which represents opinion, not fact. The noise restrictions and required design features in the 2015 LUPAs, also recommended by the NTT report, are likewise based upon studies that relied on unpublished data and speculation, and employed suspect testing equipment under unrealistic conditions. Conservation measures based upon "professional judgment" and flawed studies do not constitute the best available science, and BLM should not have relied upon these studies or the NTT Report in the 2015 LUPAs

the NTT Report failed to cite or include numerous scientific papers and reports on oil and natural gas operations and mitigation measures that were available at the time the report was created. For example, the NTT Report failed to cite a 2011 paper (which was made available to the NTT authors) that discusses the inadequacy of the research relied upon by the NTT Report in light of new technologies and mitigation measures designed to enhance efficiency and reduce environmental impacts

The COT Report likewise fails to utilize the best available science, and the BLM and other agencies inappropriately relied upon it in the 2015 LUPAs. The COT Report provides no original data or quantitative analyses, and therefore its validity as a scientific document hinges on the quality of the data it employs and the literature it cites. The COT Report contains serious methodological biases and mathematical errors, and the report's data and modeling programs are not public and thus neither verifiable nor reproducible. Finally, the COT Report provides a table assigning various rankings to GrSG

threats, but gives no indication that any quantitative, verifiable methodology was used in assigning these ranks. Absent a quantifiable methodology, these rankings are subjective and rather than relying upon any conservation measures derived from these rankings.

more recent genetic studies with large sample sizes and data from GPS tagged birds reveal that sage grouse disperse over much greater distances than previously thought, refuting previous assumptions central to the NTT and COT reports that sage grouse dispersal was limited. These same data also refute the assumptions behind the extinction predictions by Garton et al. (2011) that were central to the COT report and the 2010 "Warranted but Precluded" ESA-listing decision. Finally, this new body of science provides extensive documentation of refined mitigation measures and habitat restoration that reduce impacts to GrSG. This dramatically improved body of research is more precise and reliable than the studies previously relied upon in the NTT and COT Reports, and other reports relied upon in the development of the 2015 LUPAs.

as the information we're submitting with this letter will describe in more detail, various advancements in operational efficiency, with secondary benefits to sage grouse, have also been implemented in exploration and production operations carried out within the GrSG range, both as voluntary efforts and as measures undertaken in compliance with regulatory requirements. These improvements in operational efficiency translate into reduced drilling and completion times, reductions in operational footprints, reduced noise and truck traffic, and therefore, reduced disturbance to sage grouse and other species. Virtually all of these innovations came after the primary and most influential studies on which the NTT and COT Reports rely were conducted (i.e. after 2006)

The Pinedale Planning area is an area in which a significant population of the GrSG occurs as well as a region within which periods of noteworthy oil and natural gas resource development have taken place during the past 100 years. Therefore, we think it is particularly important to note that another difference between past and current oil and natural gas development, particularly in the Pinedale Planning Area, has been the implementation of extensive mitigation measures designed to reduce overall impacts to sage grouse and enhance their habitat. Pinedale was the subject of many of the reports upon which the findings and conclusions of the NTT and COT Reports were based. These factors demonstrate the importance of BLM's management of these lands and lands elsewhere in the range of the GrSG being informed by the best available science (Attachment E).

What would be the most effective strategy to ensure that an effort to revise and update LUPs are not again influenced by misguided information and recommendations of the Monograph and NTT, COT, and Buffer reports? With over 150 scientific papers and reports produced on greater sage-grouse biology and conservation since 2014, a straightforward solution would be to either file new DQA challenges, describing why the Monograph and reports are outdated and superseded by new research, or work with the BLM to help them reach the same conclusion and revise its contested RMPs accordingly

we produced our annotated bibliography as a spreadsheet (Attachment F). This spreadsheet lists: the lead author, citation, implications, whether it supersedes the NTT or COT reports, the primary issue addressed, the significance of the findings, and additional comments. We have also flagged papers for additional review because of their potential to be highly influential during the upcoming USFWS status review and land use plan revisions. After reviewing these papers, several key observations emerge: 1) The science that has been published since 2015 is extensive and collectively supersedes the NTT and COT reports. Importantly, improved methodologies such as: refined technology to estimating GRSG

seasonal habitat, models that incorporate climate variables to predict population trends, and cause and effect mechanisms that drive predation or disturbance. Additionally, several recent papers document how new oil and gas technologies (i.e. directional drilling) and environmental regulations (i.e. Wyoming's Core Areas) have measurably reduced impacts to GRSG. Similarly, genetic studies with large sample sizes and data from GPS tagged birds reveal that GRSG disperse over much greater distances than previously thought, refuting previous assumptions central to the NTT and COT reports that GRSG dispersal was limited. These same data also refute the assumptions behind the extinction predictions by Garton et al. (2011) that were central to the COT report and the 2010 "Warranted but Precluded" ESA-listing decision. And finally, this new body of science provides extensive documentation of refined mitigation measures and habitat restoration that reduce impacts to GRSG. This dramatically improved body of research is more precise and reliable than the studies previously relied upon in the NTT, COT, Buffer Report, and land use plans.

We expect that anthropogenic climate change will be cited in the upcoming USFWS status review as a serious threat to sage grouse. That assessment is based on multiple papers that make long-range projections regarding the future of GRSG habitat, forward in time to 2050, 2070, and 2100. The weakness of these papers however, is three-fold. First, these papers base their long-range predictions on downscaled general circulation models (IPCC or similar) and rely on linking outputs of several models, thus multiplying uncertainty. Second, we found that at least two of these papers utilize the "unlikely high-risk future" scenarios of the IPCC Representative Concentration Pathway RCP8.5. A recent January 29, 2020 paper in the journal Nature pointed out the fallacy of basing predictions on such worst-case scenarios as they are highly unlikely to come true (https://www.nature.com/articles/d41586-020-00177-3). And third, such long-range predictions are inherently untestable as hypotheses because: a) their predictions extend far enough into the future that they exceed a typical human career span (i.e. 30 years), thus it is highly unlikely that they will ever be tested, and b) because of the fast pace of climate science, no one bothers to testing the validity of such predictions at shorter intervals in the first place. This general lack of potential falsifiability puts many climate science predictions outside the realm of empirical, testable science.

numerous papers point to a stable or not-so troubling GRSG declines to a stable equilibrium, there are a handful of authors who consistent seem to find severe, ongoing declines in the same data sets. It would be worthwhile reviewing these papers in detail to understand why this is the case. These reviews should be completed before the USFWS status review gets underway

It is well documented in the scientific literature that annual fluctuations in sea surface temperatures in the North Pacific Ocean drive multi-year variation in temperature and precipitation patterns in western North America. The Pacific Decadal Oscillation (PDO) is an index of the sea surface temperature variation in the North Pacific Ocean that has a significant influence on temperature and precipitation patterns (http://research.jisao.washington.edu/pdo/PDO.latest). This regional climatic variation (i.e. periodic fluctuations in large-scale weather patterns) in turn affect marine and terrestrial plant and animal population cycles, and contributes to phenomena such as summer heat and fire frequency in the western USA. Large-scale climate indices, such as the PDO, often outperform local temperature and precipitation data in predicting population dynamics and ecological processes (Stenseth et al. 2002; Hallett et al. 2004). Multiple authors have reported that greater sage-grouse populations experience cyclic fluctuations, and that these population dynamics are linked to patterns of temperature and precipitation, or the PDO, which affect reproduction and survival (Blomberg et al., 2012, 2014, 2017;

Green, Aldridge & O'Donnell, 2016; Coates et al., 2016; Gibson et al., 2017; Ramey et al. 2018). This relationship between climatic variation on population dynamics of greater sage-grouse is not surprising as there is a long and ecologically important history of studies examining the influence of climatic variation on the population dynamics of other tetraonids, including black grouse, ptarmigans, and prairie chickens. Those papers include: Moran (1952, 1954); Ranta, Lindstrom & Linden (1995); Lindström et al. (1996); Cattadori, Haydon & Hudson (2005); Ludwig et al. (2006); Kvasnes et al. (2010); Selås et al. (2011); Viterbi et al. (2015); Ross et al. (2016); Hagen et al. (2017). Significance The significance of these findings to the conservation of sage grouse, and to future land use plans in particular, are threefold: 1) State and federal agencies need to account for the predictable responses to periodic regional climatic fluctuations when managing sage grouse in Wyoming and elsewhere in the western USA in an adaptive management framework. This is especially important as the current USFS and BLM Land Use Plans for greater-sage grouse make no mention of this obviously important demographic phenomenon. 2) Policies based on population "triggers" (i.e. additional restrictions and conservation measures that are implemented when a population dips to a certain level) are flawed unless the effects of the PDO are taken into account so that natural fluctuations are not misinterpreted. Such triggers should be defined as the percent divergence from the expected carrying capacity, with the carrying capacity tracking the regional climate. Several of the current triggers will be tripped during the course of natural population fluctuations. 3) The current pattern of the PDO indicates that sage grouse populations will be at a temporary low ebb in 2020 when the US Fish and Wildlife Service conducts a status review and reconsiders an Endangered Species Act "threatened" listing

Neilson et al. (2005) were the first to hypothesize that inter-annual and inter-decadal climate variability of El Niño-La Niña (ENSO) and the Pacific Decadal Oscillation (PDO) affect sagebrush ecosystem dynamics in the Great Basin, with the PDO being the primary driver of wet-dry cycles

Fedy and Doherty (2011) Reported on the synchrony between population cycles of Wyoming cottontail rabbits (Sylvilagus spp.) and greater sage-grouse, and hypothesized "a broad-scale causal influence" of weather cycles affecting these species.

Blomberg et al. (2012) reported that as much as 75% of the annual variance in greater sage-grouse population size in their study area over 12 years could be accounted for with annual variation in precipitation variables. The authors concluded that, "These results are consistent with bottom-up regulation of sage-grouse populations, where abundance is determined in large part by climate-driven variation in resource availability."

Guttery et al. (2013) reported that large-scale climatic variability in Utah and Idaho plays a primary role in determining greater sage-grouse reproductive success and that temperature and precipitation variables were found to have significant effects on chick survival. They concluded that, "An understanding of large-scale population drivers is essential for effective wildlife conservation planning and provides a baseline for developing meaningful hypotheses about specific local factors affecting populations at smaller spatial and temporal scales."

Coates et al. (2016 and 2017) demonstrated the importance of modeling climatically driven population cycles of sage grouse in Nevada and eastern California to understand "the difference between when populations are responding naturally to weather related patterns, compared to experiencing more localized- and habitat-based declines."

3D seismic surveys The rapid evolution of 3D seismic survey technology and its widespread adoption in the mid-1990s was arguably the most significant change to how oil and gas exploration and development occurred in sage grouse habitat (Gray et al. 2002; Chopra and Marfurt 2005). While this technology resulted in the discovery and development of new oil and gas fields, it also led to far more efficient and concentrated development of those resources than was previously possible. Consequently, the previous practice of grading access roads and drilling numerous exploratory "wildcat wells" across the landscape became obsolete by the late 1990s. With concentrated development possible directly over the most concentrated resources, planned oil and gas development was possible along with large, planned conservation set-asides for sage grouse and other species. In the Pinedale Planning Area, this led to large no surface occupancy areas being set aside by the BLM for sage grouse and other species. To visualize one-hundred years of change in surface development in the Pinedale Planning Area, from the era of wildcat well exploration and development to 3D seismic exploration and development (post 1995)

The most environmentally-significant of these new technologies has been improvements to and widespread adoption of directional drilling (Arthur and Cornue 2010; BLM 2006a; Ramey, Brown, and Blackgoat 2011; Seto 2011; Applegate and Owens 2014). Directional drilling involves drilling multiple wells (up to 50 presently) that angle away from a centralized well pad and single rig to tap oil and gas deposits a mile or more away and thousands of feet below the surface (https://www.rigzone.com/training/insight.asp?insight_id=295). This is a far more efficient, economical, and less environmentally impactful method than drilling many vertical wells to tap the same resource, because operators can access subsurface resources over a broad area from a single pad. (Directional wells that start vertically and make a 90-degree turn to traverse laterally to access in horizontal strata are known as horizontal wells.) Formerly, many closely-spaced vertical wells on separate pads were required to tap the same resource, which resulted in extensive surface disturbance, such as that seen in aerial photographs of the Jonah Field in Wyoming in the early 2000s. The Jonah Field underwent extensive vertical drilling in the 1990s before the widespread adoption of directional drilling and more stringent regulations on well pad spacing. While many directional wells currently traverse laterally a distance of less than two miles, the most recent records for lateral distance is 6.1 miles in the USA and 6.8 miles in Qatar (https://www.drillingcontractor.org/corva-helps-break-north-american-drilling-record-for-longest-lateral-with-32468-ft-well-53647; https://www.guinnessworldrecords.com/world-records/longest-drilled-oil-well/). These records illustrate that under ideal conditions a single well pad has the potential to access oil and gas resources in a subsurface area of over 19 square miles (12,265 acres) with minimal surface disturbance. Data from the Pinedale Planning Area shows that the transition from predominantly vertical wells to directional wells occurred around 2004 (Figure 1). This represented a major shift in drilling efficiency and subsequently less surface disturbance. Directional wells now account for virtually all of the wells drilled in the Pinedale Planning Area and those planned for the Normally Pressurized Lance Field. More recently, advances in computational geoscience coupled with down-hole, near-the- drill-bit gamma ray, resistivity, and navigational sensors, allow real-time, high resolution 3D visualization of subsurface features in rocks surrounding the bore as drilling proceeds. This technology, coupled with the advent of rotary steerable system drill bits (first introduced on the Pinedale Anticline in 2008) dramatically decreases drilling time (Okafor et al. 2009). This combination of technologies, along with more recent advances in dynamic point-the-bit rotary steerable systems and analytical software has ushered in a new era of "geosteering" which has further increased the efficiency of tapping subsurface resources (Zhang et al. 2019). In simple terms, higher drilling efficiency translates into less surface disturbance and activity above ground, both of which can affect sage grouse. Directional drilling of multiple wells from the same well pad has also led to a new type of operational efficiency, one

that was not possible during the single-well-per-pad-era: the co-location of supporting infrastructure for completion and production activities being simultaneously carried out on different wells drilled from the same well pad. This translates into reduced surface disturbance, equipment moving on and off site, and manpower required. For example, drilling rig moves that used to take 150 or more truck trips to move between pads, are now accomplished by skidding the rig a few feet to a nearby location on the same pad (Kreckel, 2011). See attachment for Figure 1. Figure 1. Annual number of vertical and directional wells drilled by the oil and gas industry in the Pinedale Planning Area from 1973 to 2012. The annual number of traditional vertical bore wells is indicated in red, and directional wells (including horizontal wells) are indicated in blue. The transition from predominantly vertical wells to directional wells took place in 2004. As of 2010, virtually all new wells drilled in the Pinedale Planning Area are directional wells.

Advances in technology allow shorter drilling and completion times, reducing potential disturbance to sage grouse More efficient technology has also resulted in shorter drilling and well completion times. While the averages we report show marked improvement (from spudding to completion), it should be noted that these completion times also include periods of inactivity at a well site due to interruptions from logistical and seasonal constraints. Therefore, actual drill and completion times (not including inactive periods), may provide a more accurate portrayal of the duration of potentially disturbing activities to sage grouse. For example, companies reported that drilling a well on the Pinedale Anticline (with an average depth of 13,000 feet) took an average of 65 days in 2002 and this decreased to 35 days by 2006 (OGJ 2007). By 2011 this had improved further, to an average of 14 days of drilling to depth, and in 2013, QEP Resources reported that they had achieved a well to depth time of 9.3 days, a new record (QEP 2013). Similar improvements in drilling and completion efficiency have been reported elsewhere (DTC Energy Group 2013). Overall, uninterrupted completion times have dropped from six months to as few as 2 to 3 days in 2013 (AECOM 2013). Currently (as of January 2020), the average well depth on the Pinedale Anticline is 13,700 feet and drilling from spud to total depth takes an average of 8 days (range 6 to 10 days). Completions take approximatly 3 days for two wells which are done in pairs for greater efficiency (data from Ultra Resources, Inc.). Collectively, these data illustrate that much has changed in drilling and completion technology over the 18 years from 2002 to 2020, resulting in reduced industrial activity and subsequent potential disturbance to sage grouse.

Beginning in the early 2000s closed-loop drilling fluid systems began to replace open reserve pits adjacent to wells being drilled. Closed-loop drilling fluid systems are a best management practice that has emerged as a more environmentally responsible and economically viable alternative to open reserve pits and evaporation ponds that require frequent truck trips, can trap sage grouse and other birds, and represent a potential source of groundwater pollution (US Environmental Protection Agency 2019). Closed-loop systems separate drilling fluid from drill cuttings and other solids, which are dewatered for solid waste disposal in landfills. Water is then recycled back into the drilling process, minimizing fresh water use and making solid waste easier to dispose of (Colorado School of Mines. 2009; Pei et al. 2011). While an increasing number of companies have adopted closed loop drilling systems and on-site water purification systems to recycle produced water (Colorado Department of Natural Resources 2019, as cited in U.S. Environmental Protection Agency 2019), some have gone further and implemented a comprehensive, field-level liquid gathering systems (LGS) and water purification facilities. The most notable of these liquid gathering and water purification facilities went online on the Pinedale Anticline in 2012 and was designed to eliminate 165,000 truck trips per year (BLM 2005). A study conducted over two winters reported that the LGS system reduced overall human activity at LGS-equipped well pads, as compared to conventional well pads, by at least a factor of two and thereby reduced avoidance by sage

grouse (Holloran et al. 2015). That study concluded that "implementing efforts to decrease anthropogenic activity levels associated with infrastructure of natural gas fields during both drilling and production phases of development (i.e. using LGS) may also help reduce effects of the infrastructure on wintering sage-grouse." A similar LGS and water purification system is also planned for the Normally Pressurized Lance Field for the same reasons

Other advancements in operational efficiency, with secondary benefits to sage grouse, have also been implemented in the Pinedale Planning Area, both as voluntary and regulatory efforts. The most significant of these to sage grouse have included: - Installation of remote telemetry systems to monitor wells and condensate tanks (initiated in 2008 and completed in 2012; BLM 2008a,b). - Electrification of the Pinedale Anticline (BLM 2012), allowing equipment to be powered with electricity rather than internal combustion generators and motors. While this change was originally intended to reduce high levels of ozone accumulation in the Pinedale Planning Area, it has the secondary benefit of reducing engine noise and truck traffic (needed to refuel and maintain internal combustion engines). - Required use of EPA compliant Tier II diesel engines on drill rigs, with phase out into more efficient Tier III and IV designs, all of which reduce noise (and pollutants) compared to non-compliant engines in use prior to 2006. Collectively, these improvements in efficiency translate into reduced drilling and completion times, reduced noise and truck traffic, and therefore, reduced disturbance to sage grouse and other species. Virtually all of the innovations listed above came after the primary and most influential studies were conducted at Pinedale (i.e. after 2006). Admittedly, the development of more efficient oil and gas development and production technology is often driven by economic considerations, however the benefits to the environment are obvious: reduced drilling and completion time which translates into less noise, less traffic, and less overall disturbance to wildlife

The biggest limitation of a statistical approach is the uncertainty in the effect of an individual project. At more local scales, this uncertainty can be substantially reduced by including data from other similar projects in the analyses while allowing for inter-project variation in the response (LaMontagne et al. 2002) through a random effect (Kéry 2010). Large-scale projects such as land-management plans may have to be broken into a series of smaller activities in order to estimate the effect with sufficient certainty for it to be useful in decision-making. The models should strive to analyse all available lek count data including historical counts using stage-based population dynamic models (Kery and Schaub 2011; McCaffery and Lukacs 2016). The advantages of stage-based population dynamic models are that multiple sources of information for different life-stages and sexes including prior information from previous analysis can be readily incorporated while lags are readily accounted for thus providing tighter linkages between population drivers and lek counts. However, computational memory and/or run-time requirements may necessitate the fitting of simpler models to reduced datasets if they cannot be overcome through the use of supercomputers

Mining Author: Petersen et al. Year: 2016 Title: Response of greater sage-grouse to surface coal mining and habitat conservation in association with the mine: Human-Wildlife Interactions, v. 10, no. 2, p. 205-216. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: The authors conclude that surface coal mining and associated mitigation did not cause a decline in the existing GRSG population at the Alton/Sink Valley area of southwest Utah. Habitat fidelity and acclimation to a long history of anthropogenic activities may have affected GRSG behavior in this region. GRSG at this location did not avoid mining activities as other GRSG populations have been observed to

do elsewhere in the range. Supersedes NTT: Yes Supersedes COT: Yes Issue: Coal mining; mitigation Significance: Lack of avoidance is notable, the question is why?

Predation Author: Harju et al. Year: 2018 Title: Common raven movement and space use: influence of anthropogenic subsidies within greater sage-grouse nesting habitat: Ecosphere, v. 9, no. 7, article e02348, 16 p, https://doi.org/10.1002/ecs2.2348. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: Lethal control of ravens at primary subsidies likely does not impact breeding ravens, who tend to utilize these sources less and pose a greater threat to GRSG through nest depredation. Inducing nest failure may cause ravens to change their space use and movement patterns to a wider-ranging nonbreeding pattern, which would likely, and leave them more vulnerable to lethal control at primary subsidies. Supersedes NTT: Yes Supersedes COT: Yes Issue: Predation; mitigation (Technique refinement) Significance: Ravens Comments: Potential method to disrupt raven behavior making them more succeptible to lethal control.

Author: Creutzburg et al. Year: 2015 Title: Climate change and land management impact rangeland condition and sage-grouse habitat in southeastern Oregon: AIMS Environmental Science, v. 2, no. 2, p. 203-236. Implications: This paper, "evaluated varying scenarios of future climate and management and their implications for rangeland condition and habitat quality, ... simulations indicate that climate change may have both positive and negative implications for maintaining sage-grouse habitat." Supersedes NTT: Yes Supersedes COT: Yes Issue: Climate (long range predictions) Significance: Potential changes to habitat are posiive and negative for GRSG Comments: "Linking multiple models creates greater complexity and creates new opportunities for error." In this case, four models with unknown error.

Climate (long range preditions) Author: Homer et al. Year: 2015 Title: Forecasting sagebrush ecosystem components and greater sage-grouse habitat for 2050-Learning from past climate patterns and Landsat imagery to predict the future. Ecological Indicators, v. 55, p. 131-145. Implications: Predicted losses of GRSG habitat to 2050 based on two extreme scenario, downscaled IPCC general circulation models. Issue: Climate (long range predictions) Significance: Questionable long-range predictions Comments: Caveats: Old error-prone data mixed with new data (1984-2011); Predictions rely on two highest anthrogenic radiative forcing models

Climate (long range preditions) Author: Balzotti et al. Year: 2016 Title: Beyond the single species climate envelope-A multifaceted approach to mapping climate change vulnerability: Ecosphere, v. 7, no. 9, article e01444, 23 p., https://doi.org/10.1002/ecs2.1444. Implications: Long-range predictions of habitat changes in Nevada and Utah (to 2070) were based on machine-learning software utilizing regional predictions derived from previously published, downscaled global general circulation models and data from 1961-90 "normal period." Issue: Climate (long range predictions) Significance: Long-term predictions on habitat or population trends Comments: Caveat: Long range predictions to 2070. Predictions untestable.

Climate (long range preditions) Author: Boyte et al. Year: 2016 Title: Boyte, S.P., Wylie, B.K., and Major, D.J., 2016, Cheatgrass percent cover change-Comparing recent estimates to climate change-driven predictions in the northern Great Basin: Rangeland Ecology and Management, v. 69, no. 4, p. 265-279. Implications: Identified areas where cheatgrass was likely to change and projected the potential future magnitude of change for years 2050 and 2070. Climate projections were based on scenarios from the Intergovernmental Panel on Climate Change (IPCC) for 2050 and 2070. Issue: Climate (long range predictions) Significance: Evaluated potential cheatgrass spread inl future Comments: Caveat: Climate projections based on scenarios derived from IPCC general circulation models

Climate (long range preditions) Author: Palmquist et al. Year: 2016 Title: Mid-latitude shrub steppe plant communities-Climate change consequences for soil water resources: Ecology, v. 97, no. 9, p. 2342-2354 Implications: Long-range predictions (to 2100) based on global circulation models (GCM), representative concentration pathways (RCPs), and process-based soil water model. Longer, drier summers will likely have a negative effect on sagebrush regeneration and seedling survival and may result in changes to plant functional group composition within current GRSG habitats. Oucome depends on GCM chosen. Issue: Climate(long range predictions) Significance: Questionable very long-range predictions Comments: Caveats: Predictions based on down-scaled general circulation models and outputs of multiple linked models.

Climate (long range preditions) Author: Palmquist et al. Year: 2016 Title: Spatial and ecological variation in dryland ecohydrological responses to climate change- Implications for management: Ecosphere, v. 7, no. 11, article e01590, 20 p., Implications: Long-range predictions (2050) based on GCM and RCPs. Predict drier summer conditions in higher elevation areas could lead to increased suitability for big sagebrush, whereas mid to lower elevation sites could become less suitable for big sagebrush and consequently GRSG. This information could help prioritize areas for conservation of shrub steppe ecosystems into the future (but they do not say how). Issue: Climate (long range predictions) Significance: Questionable long-range predictions based on most extreme warming scenario (i.e. 5°C by 2100). Comments: Caveat: Predictions based on most extreme scenario RCP8.5 (i.e. unlikely high-risk future) and outputs of multiple linked models.

Regional climatic variation and weather Author: Caudill et al. Year: 2016 Title: Factors affecting seasonal movements of juvenile greater sage-grouse-A reconceptualized nest survival model: The Condor, v. 118, no. 1, p. 139-147. Implications: Results suggested that precipitation, rather than snow accumulation or depth, was the primary driver of juvenile migration. Movement from late fall habitats to winter habitats was variable, indicating that the effects of harvest may vary with harvest timing and its relation to seasonal movements. Changes in climate may negatively affect GRSG if the onset of winter conditions is delayed, affecting the movement of juveniles to winter habitat. The model application presented here may be used to develop a better understanding of relations between environmental factors and GRSG behavior. Supersedes NTT: Yes Supersedes COT: Yes Issue: Seasonal climate and juvenile GRSG migration; Technique refinement: hunting season Significance: Measurable effects of weather on seasonal movements and habitat use; prioritization of management

Regional climatic variation and weather Author: Gibson et al. Year: 2017 Title: Weather, habitat composition, and female behavior interact to modify offspring survival in greater sagegrouse: Ecological Applications, v. 27, no. 1, p. 168-181. Implications: The authors evaluated relations between (1) weather and brood survival, (2) drought and breeding site selection, and (3) shifts in breeding site selection and brood survival of GRSG. Chick survival was negatively related to drought severity. Nest sites at low elevations may contribute little to reproduction in drought years,and extended droughts may be detrimental to GRSG populations that cannot access highelevation sites. Supersedes NTT: Yes Issue: Climate (local/seasonal and regional drought) Significance: Local/seasonal effects of weather and drought on vital rates, nesting behavior, and population Comments: GRSG exihibit behavioral response to drought although prolonged drought can be deleterious.

Regional climatic variation and weather Author: Coates et al Year: 2018 Title: The relative importance of intrinsic and extrinsic drivers to population growth vary among local populations of greater sage-

grouse: an integrated population modeling approach: AUK, v. 135, no. 2, p. 240-261. Implications: Using integrated population modeling allowed the authors to disentangle the effects of precipitation variability on GRSG populations at the DPS level from those at the sub-population level. This information will help resource managers understand how growth rates in the Bi-State DPS can appear stable, while at the same time, certain sub-populations may decline due to extrinsic factors such as drought, unless management actions are taken. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; population trends Significance: Measurable local, seasonal effects of precipitation variabilityon population dynamics.

Regional climatic variation and weather Author: Mathews et al. Year: 2018 Title: An integrated population model for greater sage-grouse (Centrocercus urophasianus) in the bi-state distinct population segment, california and nevada, 2003-17: US Geological Survey Open-File Report 2018-1177, 89 p., https://doi.org/10.3133/ofr20181177. Implications: Results suggested that GRSG use increased following pinyon-juniper conifer removal treatments. Modeling showed annual variations in subpopulations, with an overall 2 percent decline in the Bi-State population from 2003 to 2017. The overall decline in the Bi-State population was likely a result of drought events; subpopulations that are stable or increasing are insulated from drought due to water availability. Issue: Climate (regional variation and drought); Habitat restoration; Translocation Significance: Population trends in response to drought, Positive resposnse to habitat restoration) Comments: Increased GRSG use after tree removal, drought causes population declines. Mixed results for translocated broods.

Regional climatic variation and weather Author: Ramey et al Year: 2018 Title: Local and population-level responses of greater sage-grouse to oil and gas development and climatic variation in Wyoming: PEERJ, v. 2018, no. 6, p. e5417, https://doi.org/10.7717/peerj.5417. Implications: Hierarchical models were used to estimate the effects of the areal disturbance due to well pads as well as climatic variation on individual lek counts and Greater sage-grouse populations (management units) over 32 years. Modeling revealed that oil and gas had a strong negative effect on local-scale lek attendance within a 3.2 km radius around a well. Oil and gas was a weak predictor of population-scale changes, but appeared consistent with local-scale responses. The PDO was found to be a strong predictor of long-term population density fluctuations at local and population scales. Supersedes NTT: Yes Supersedes COT: Yes Issue: Climate (regional climatic variation); population fluctuations; oil & gas Significance: PDO was the major driver of population trends rather than oil and gas development Comments: Wildlife agencies need toaccount for the effects of regional climatic variation when managing sage-grousepopulations.

Translocation and Captive Breeding for GRSG Restoration Author: Thompson et al. Year: 2015 Title: Captive rearing sagegrouse for augmentation of surrogate wild broods-Evidence for success: Journal of Wildlife Management, v. 79, no. 6, p. 998-1013. Implications: Egg collection and hatching, rearing, and adoption of captive-raised chicks into wild broods is feasible. Supersedes NTT: Yes Supersedes COT: Yes Issue: Captive rearing GRSG; itigation Significance: Another paper showing population augmentation is feasible

Translocation and Captive Breeding for GRSG Restoration Author: Gruber-Hadden et al. Year: 2016 Title: Population vital rates of resident and translocated female greater sage-grouse: Journal of Wildlife Management, v. 80, no. 4, p. 753-760. Implications: Retention of translocated GRSG within the targeted release site was 82 percent. There was not statistical support for a difference between resident and translocated birds for female, nest, and chick survival. Nest initiation rates and clutch sizes were

generally higher for residents compared to translocated GRSG. Nest success was positively related to grass height. Successful translocations will depend on resolving issues that have imperiled the resident population. Supersedes NTT: Yes Supersedes COT: Yes Issue: Mitigation Significance: Translocation Comments: Small sample size, more data needed

Translocation and Captive Breeding for GRSG Restoration Author: Apa, et al. Year: 2017 Title: Apa, A.D., Thompson, T.R., and Reese, K.P., 2017, Juvenile greater sage-grouse survival, movements, and recruitment in Colorado: Journal of Wildlife Management, v. 81, no. 4, p. 652-668. Implications: Experimentally introduced domestically-hatched chicks into existing wild broods. Was deemed successful because survival rates of these birds were comparable to wild-hatched birds. Supersedes NTT: Yes Supersedes COT: Yes Issue: mitigation; translocation Significance: Translocation successful; reintroduction and augmentation are viable techniques Comments: Successful experimental reintroduction technique.

Translocation and Captive Breeding for GRSG Restoration Author: Duvuvuei et al. Year: 2017 Title: Contribution of translocated greater sage-grouse to population vital rates: Journal of Wildlife Management, v. 81, no. 6, p. 1033-1041. Implications: Translocating adult females may maximize translocation success overall, as adults are more likely than juveniles to raise a brood in the first year. Authors recommend continuing monitoring for multiple years following translocations. They suggest that factors causing declines in the focal GRSG population be mitigated prior to receiving translocated females. Supersedes NTT: Yes Supersedes COT: Yes Issue: Mitigation Significance: Translocation/population augmentation Comments: One of several recent studies that have shown translocation is a useful tool for GRSG conservation.

Translocation and Captive Breeding for GRSG Restoration Author: Ebenhoch et al. Year: 2019 Title: Effects of post-release movements on survival of translocated sage-grouse: The Journal of Wildlife Management, v. 83, no. 6, p. 1314-1326. Implications: Supersedes NTT: Newly translocated GRSG had smaller home ranges and traveled longer daily distances than either resident or previously translocated birds, but distances moved between seasonal centers did not differ among the three groups. Annual survival was not significantly lower in newly translocated birds; males and birds that moved greater daily distances had greater mortality risk. Newly translocated birds initiated nests less often than other groups, but nest initiation date and nest survival did not vary with residency status. Nest success was higher when nests were initiated later in the nesting season. Resident GRSG nested farther from active leks than translocated birds. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique improvement; Mitigation Significance: Translocation of GRSG is a potential tool for augmenting declining populations or reestablishing ones that have been extripated. Comments: It has long been argued that translocation is unsuccessful despite data to the contrary (Strawberry Hill). This information also suggests that survival of translocated birds does not differ from resident birds

Translocation and Captive Breeding for GRSG Restoration Author: Heinrichs et al. Year: 2019 Title: Optimizing the use of endangered species in multi-population collection, captive breeding and release programs: Global Ecology and Conservation, v. 17, article e00558, 12 p, https://doi.org/10.1016/j.gecco.2019.e00558. Implications: Modeled tradeoffs of releasing captive bred birds to augment populations. Reported,"Releases into small and rapidly declining populations provided the greatest near-term reductions in extinction risk, but improvements were short-term. Yet releases into larger and more stable populations resulted in longer lasting conservation benefits than in more

vulnerable populations but required greater initial release effort. Systematic modeling approaches that evaluate a spectrum of trade-offs and quantify conservation risks and benefits can help direct the expectations and effort invested in captive breeding and release programs." Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; captive breeding and release Significance: Captive breeding and release is a potentially effective tool to bolster wild populations.

Improved Habitat Mapping and Assessment Author: Gibson et al. Year: 2015 Title: Observer effects strongly influence estimates of daily nest survival probability but do not substantially increase rates of nest failure in greater sage-grouse: The Auk, v. 132, no. 2, p. 397-407 Implications: Observer-induced nest abandonment can decrease estimates of daily nest survival. The authors recommend assessing the potential costs and benefits of nest surveys on sensitive populations and incorporating bias corrections into estimates of nest survival. Supersedes NTT: Yes Issue: Technique refinement; nest survival studies Significance: Researchers can have deleterious effect on parameter they are studying. Comments: Raises concern that some previous studies may have biased results.

Improved Habitat Mapping and Assessment Author: McCaffery et al. Year: 2016 Title: Improved analysis of lek count data using N-mixture models: Journal of Wildlife Management, v. 80, no. 6, p. 1011-1021 Implications: The authors found that N-mixture models produced more accurate population trend estimates than naive lek count data, largely because they corrected for substantial year-to-year variability in detection probability. Using naive lek count data may result in inaccurate and misleading estimates of GRSG population size and trend when compared to results obtained by using an N-mixture modeling approach that can better account for variable detection probability and missing data. The authors provide suggestions for lek monitoring designs that can be analyzed using N-mixture models Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; population trend estimates Significance: Highly significant paper on estimating population trend estimates than traditional methods from lek count data. Comments: Additional review suggested

Improved Habitat Mapping and Assessment Author: McCaffery and Lukacs Year: 2016 Title: A generalized integrated population model to estimate greater sage-grouse population dynamics: Ecosphere, v. 7, no. 11, article e01585, 14 p., Implications: Integrated population models improved estimates of annual GRSG population dynamics by smoothing variability attributable to sampling noise. The authors conclude that their integrated population model framework could provide robust assessments of population size and trend, information on mechanisms underlying observed trends, and a unified tool for use by GRSG biologists studying various populations throughout the range of the species. The authors suggest that future field sampling efforts should seek improved information on sex and age ratios, female population sizes, sex-specific survival rates by life stage, and the proportion of leks surveyed annually in a given area. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement: Improved analysis of lek count data using N-mixture models Significance: Highly significant paper for future estimating of population trends and abundance Comments: Additional review suggested

Improved Habitat Mapping and Assessment Author: Caudill et al. Year: 2017 Title: Individual heterogeneity and effects of harvest on greater sage-grouse populations: Journal of Wildlife Management, v. 81, no. 5, p. 754-765. Implications: "Using the revised formulae, the authors demonstrated that effects of selective harvest on grouse tend to be depensatory [adult mortality contributes to reduced productivity and/or survivorship in the population] when robust individuals are more susceptible to harvest, and some level of compensation is likely when frail individuals are more

susceptible to harvest." Issue: Technique refinement; Hunting Significance: Mitigating potential population-level effect of hunting Comments: Example of effective application of determing cause and effect mechanisms for effective mitigation.

Improved Habitat Mapping and Assessment Author: Forby et al. Year: 2017 Title: Emerging technology to measure habitat quality and behavior of grouse-Examples from studies of greater sage-grouse: Wildlife Biology, article wlb.00238, 10 p., https://doi.org/10.2981/wlb.00238 Implications: Significant changes in our understanding of GRSG ecology may arise from new technologies, but they will require scientific testing, calibration, and communication between managers and scientists to overcome challenges and target data collection and use Supersedes NTT: Yes Issue: Potential technique refinements Significance: Showcasing of various potential Improvements in methodology via UAVs, spectral imaging, robotic animals and biotelemetry systems. Comments: Caveat: Except for spectral imaging of vegetation, seems like high tech methods in search of a question.

Improved Habitat Mapping and Assessment Author: Fregman et al. Year: 2017 Title: Necklace-style radio-transmitters are associated with changes in display vocalizations of male greater sage-grouse: Wildlife Biology, article wlb.00236, 8 p., https://doi.org/10.2981/wlb.00236. Implications: Vocalizations made by males with necklace-style radio transmitters fell outside the normal range of vocalizations produced by males throughout the range of GRSG, suggesting that radio collars may impair their ability to produce normal vocalizations. The use of necklace-style collars that sit on the necks of GRSG are not recommended for use in behavioral studies of GRSG. Alternative attachment methods should be developed and tested. Supersedes NTT: Yes Issue: Technique refinement Significance: Necklace-style transmitters alter behavior. Comments: Raises concern that previous studies that used this and other outdated technology may have biased results.

Improved Habitat Mapping and Assessment Author: Hagen et al. Year: 2018 Title: Estimating sex-ratio, survival, and harvest susceptibility in greater sage-grouse: making the most of hunter harvests: Wildlife Biology, article wlb.00362, 7 p., https://doi.org/10.2981/wlb.00362. Implications: The authors suggest that demographics of harvested populations can be modeled for GRSG or other game birds using a mark-recovery approach of harvested individuals. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; population estimation Significance: Hunter harvested sage grouse are an important source of data on suvivorship. Comments: Caveat: requires hunting

Improved Habitat Mapping and Assessment Author: Monroe et al. Year: 2019 Title: The importance of simulation assumptions when evaluating detectability in population models: Ecosphere, v. 10, no. 7, p. 1-17., https://doi.org/10.1002/ecs2.2791. Implications: Using simulation scenarios with systematic trends in detectability may be more informative for evaluating population models than scenarios that assume detectability is constant or random. With finite monitoring resources available, using auxiliary data on lek attendance to model GRSG populations with N-mixture models may allow more leks to be studied less intensively. However, additional investigation is needed to evaluate the extent to which auxiliary data are appropriate for different GRSG populations across their range. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; estimating abundance and population trend Significance: Simulations used to evaluate proposed analytical approach which performed favorably

Improved Habitat Mapping and Assessment Author: Severson et al. Year: 2019 Title: Global positioning system tracking devices can decrease Greater Sage-grouse survival: The Condor, v. 121, p. 1-15. Implications: The authors reported, "We found lower survival for GPS marked compared to VHF-

marked sage-grouse across most sex, age, and seasonal comparisons. Estimates of annual survival for GPS-marked sage-grouse were 0.55-0.86 times that of VHF-marked birds with considerable variation among sex and age classes. Differences in survival could be attributed to features associated with GPS devices, including greater weight, position of attachment (e.g., rump-mount harness), and a semi-reflective solar panel." Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; GPS tagging Significance: GPS tagged individual had decreased survival compared to older VHF rtechnology. Studies using GPS tags assume no cost to survival or fitness, an assumption obviously violated. Comments: Consistent with other studies. Previos studies using GPS may have biased results.

Improved Prioritization of GRSG Management Author: Dahlgren et al. Year: 2015 Title: Greater sage-grouse and range management-Insights from a 25-year case study in Utah and Wyoming: Rangeland Ecology and Management, v. 68, no. 5, p. 375-382. Implications: This retrospective analysis used 25 years of data across three large landscapes in northern Utah and southwestern Wyoming to assess sage-grouse population change and corresponding land management differences and sagebrush treatments (prescribed fire, chemical treatment, and grazing) in a case study design to test hypotheses and make recommendations based on research. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; habitat and population management Significance: Long-term research used to inform effective habitat and population management.

Improved Prioritization of GRSG Management Author: Carlisle et al. Year: 2018 Title: Identifying holes in the greater sage-grouse conservation umbrella: Journal of Wildlife Management, v. 82, no. 5, p. 948-957. Implications: The authors conclude that species with small distributions or those with habitat requirements that are only partly similar to those of GRSG will receive relatively fewer conservation benefits from GRSG as an umbrella species. These species may need seperate protections established for their conservation. The authors further suggest that applying the umbrella species concept to GRSG and sagebrush habitats requires attention to details regarding the umbrella species, habitat reserves created to benefit the species, and the degree of habitat similarity shared with co-occurring species. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; GRSG as a conservation "umbrella species" Significance: Prioritization of management actions; unintended consequences Comments: The NTT, COT, and LUPs completely fail to take into account other species and can have negative impacts on other species at a local level. The one-size fits all, single species managemnt approach has proven adverse effects to other species.

Improved Prioritization of GRSG Management Author: Hanser et al. Year: 2018 Title: Greater sage-grouse science (2015-17)-synthesis and potential management implications: U.S. Geological Survey, Open-File Report 2018-1017, 46 p., https://doi.org/10.3133/ofr20181017. Implications: This is a USGS synthesis of papers from the USGS annotated bibliography on GRSG literature by Carter et al. (2018) covering topics: The six primary topics were: Multiscale habitat suitability and mapping tools; Discrete anthropogenic activities; Diffuse activities; Fire and invasive species; Restoration effectiveness; Population estimation and genetics. Supersedes NTT: Yes Supersedes COT: Yes Issue: Literature review 2015-2018 Significance: Likely influential in USFWS 2020 status review. Comments: USGS literature review. Potentially influential, additional review recommended.

Habitat Improvement Author: Gustafson et al. Year: 2018 Title: Using object-based image analysis to conduct high-resolution conifer extraction at regional spatial scales: International Journal of Applied Earth Observation and Geoinformation, v. 73, p. 148 - 155. Implications: The maps produced can help to

inform land managers on where to target pinyon-juniper treatment in order to aid sagebrush restoration and GRSG conservation. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement Significance: Prioritization of management actions; Unintended consequences Comments: The NTT, COT, and LUPs completely fail to take into account other species and can have negative impacts on other species at a local level. The one-size fits all, single species managemnt approach has proven adverse effects to other species.

Habitat Improvement Author: Gustafson et al. Year: 2018 Title: Using object-based image analysis to conduct high-resolution conifer extraction at regional spatial scales: International Journal of Applied Earth Observation and Geoinformation, v. 73, p. 148 - 155. Implications: The maps produced can help to inform land managers on where to target pinyon-juniper treatment in order to aid sagebrush restoration and GRSG conservation. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; habitat mapping; Pinion-juniper treatment Significance: Habitat mapping; habitat restoration Comments: Potential technique for offset mitigation.

Habitat Improvement Author: Ricca et al. Year: 2018 Title: A conservation planning tool for greater sage-grouse using indices of species distribution, resilience, and resistance: Ecological Applications, v. 28, no. 4, p. 878-896. Implications: The CPT could help resource managers evaluate potential costs and benefits of treatments in particular locations in order to facilitate restoration prioritization decisions across landscapes used by GRSG. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; habitat restoration Significance: Prioritization of management; new planning tool Comments: An improved planning tool. Also undermines the argument that habitats cannot be restored by recognizing the BLM prioritization process for restoring lands needs improvement. This tool can help with that.

Habitat Improvement Author: Davee et al. Year: 2019 Title: Using beaver dam analogues for fish and wildlife recovery on public and private rangelands in Eastern Oregon: Research Paper PNW-RP-617. Northwest Climate Hub, U.S Department of Agriculture, Forest Service, Pacific Northwest Research Station, p. 32. Implications: Beaver dam analogues can improve habitat for fish and wildlife, including GRSG, but implementing this tool may require navigating new or yet-to-be established regulatory pathways and obtaining by-in from private landowners and ranchers is an important consideration for increasing implementation of this tool. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; Mitigation; Habitat restoration Significance: Innovative method for habitat resotation; habitat expansion Comments: Expands mesic areas making them more resilient (potentially usefull for drought/climate mitigation and/or conservation offset).

Mitigation-Restoration of Habitat - Pinyon-Juniper removal Author: Farzan et al. Year: 2015 Title: Western juniper management-Assessing strategies for improving greater sage-grouse habitat and rangeland productivity: Environmental Management, v. 56, no. 3, p. 675-683. Implications: The study showed that juniper removal can benefit both GRSG and cattle forage production, but the benefits depend on site characteristics and how sites were selected. Sites chosen to maximize forage did not substantially benefit GRSG. Sites chosen for GRSG habitat did benefit forage production, but larger habitat treatments had decreasing returns on investment. The benefits achieved for either goal were altered by agency coordination, budgetary constraints, and wildfire. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; pinyon-juniper removal Significance: Management can be

prioritized to benefit GRSG habitat and cattle forage Comments: Management actions can have a dual purpose.

Mitigation-Restoration of Habitat - Pinyon-Juniper removal Author: Coates et al. Year: 2017 Title: Pinyon and juniper encroachment into sagebrush ecosystems impacts distribution and survival of greater sage-grouse: Rangeland Ecology and Management, v. 70, no. 1, p. 25-38. Implications: From the authors: "Collectively, these results provide clear evidence that local sage-grouse distributions and demographic rates are influenced by pinyon-juniper, especially in habitats with higher primary productivity but relatively low and seemingly benign tree cover. Such areas may function as ecological traps that convey attractive resources but adversely affect populationvital rates. To increase sage-grouse survival, our model predictions support reducing actual pinyon-junipercover as low as 1.5%, which is lower than the published target of 4.0%." Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; Improved standards for pinyon-juniper removal Significance: New threshold for pinion-juniper removalprovided greater benefits to GRSG

Mitigation-Restoration of Habitat - Pinyon-Juniper removal Author: Prochazka et al. Year: 2017 Title: Encounters with pinyon-juniper influence riskier movements in greater sage-grouse across the Great Basin: Rangeland Ecology and Management, v. 70, p. 39-49. Implications: The authors conclude that GRSG are negatively affected by pinyon-juniper encroachment because this habitat type stimulates faster, high-risk movements, such as flight, which likely attract visual predators. Further, the study quantifies age-specific GRSG mortality risk when individuals move through landscapes containing pinyon-juniper stands. Supersedes NTT: Yes Supersedes COT: Yes Issue: Pinion-juniper; predation risk Significance: Pinion-juniper; predation risk Comments: Cause and effect mechanism explaining predation risk

Mitigation-Restoration of Habitat - Pinyon-Juniper removal Author: Reinhardt et al. Year: 2017 Title: The authors conclude that the optimization framework and models used in this study illustrate an approach, increasingly available to land managers, which can augment or complement standard expert-based approaches to planning and prioritization. Such approaches could reduce planning and implementation time for landscape-scale conifer removal treatments. Topics: broad-scale habitat characteristics, conifer expansion, new geospatial data, habitat restoration or reclamation Implications: Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; conifer removal Significance: Prioritization of management Comments: Improved methodology

Mitigation-Restoration of Habitat - Pinyon-Juniper removal Author: Davies and Bates Year: 2019 Title: Longer-term evaluation of sagebrush restoration after juniper control and herbaceous vegetation trade-offs: Rangeland Ecology & Management, v. 72, no. 2, p. 260-265. Implications: Following juniper control in dense stands that lack sagebrush, mountain big sagebrush re-establishment is likely to be accelerated by seeding, whereas herbaceous vegetation cover may be reduced. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; pinion-juniper removal and sagebrush restoration

Mitigation-Wildfire Author: Davis and Crawford Year: 2015 Title: Case study-Short-term response of greater sage- grouse habitats to wildfire in mountain big sagebrush communities: Wildlife Society Bulletin, v. 39, no. 1, p. 129-137. Implications: The authors sought to identify the short-term (<11 year) response of GRSG nesting and brood-rearing habitats to wildfire. In mountain big sagebrush communities where sagebrush is abundant, the understory is composed of adequate native perennial grasses and forbs, and invasive annual grasses are limited, prescribed burning may be a useful tool for

improving GRSG nesting and brood-rearing habitat. The application of fire treatments in less mesic sagebrush communities with fewer forbs may not produce the desired results, which emphasizes that management decisions need to be made in light of existing conditions and documented GRSG seasonal habitat needs. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; prescribed fire Significance: Selective use of prescribed fire to improve GRSG habitat. Comments: Supresedes NTT because fire treatments may benefit higher elevation mountain big sagebrush communities i.e. not a one-size-fits-all strategy.

Mitigation-Wildfire Author: Coates et al. Year: 2016 Title: Wildfire, climate, and invasive grass interactions negatively impact an indicator species by reshaping sagebrush ecosystems: Proceedings of the National Academy of Sciences of the United States of America, v. 113, no. 45, p. 12745-12750. Implications: The authors describe, "Using three decades of sage-grouse population count, wildfire, and climate data within a modeling framework that allowed for variable postfire recovery of sagebrush, we provide quantitative evidence that links long-term declines of sage-grouse to chronic effects of wildfire. Projected declines may be slowed or halted by targeting fire suppression in remaining areas of intact sagebrush with high densities of breeding sage-grouse." Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; targeted wildfire supression Significance: Prioritization of fire suppression to minimize deleterious effects to GRSG Comments: Important preplanning strategy to reduce threat of wildfire.

Mitigation-Wildfire Author: Ellsworth et al. Year: 2016 Title: Ecosystem resilience is evident 17 years after fire in Wyoming big sagebrush ecosystems: Ecosphere, v. 7, no. 12, article e01618, 12 p., https://doi.org/10.1002/ecs2.1618. Implications: Results demonstrate post-fire resiliance of the xeric Wyoming big sagebrush system, possibly because of its high quality and presence of unburned patches within the fire perimeter. The conditions are representative of xeric Wyoming big sagebrush communties prior to the invasion of cheatgrass, where there were islands of sagebrush left after fire which helps the system recover from fire and provide habitat for GRSG. Controlled burning of some xeric sagebrush systems that are in goodcondition and dominated by natives may have benefits for ecosystem heterogeneity and herbaceous cover. Authors conclude, "Our results illustrate that management of all habitat components, including natural disturbance and a mosaic of successional stages, is important for persistent resilience and that suppression of all fires in the sagebrush steppe may create long-term losses of heterogeneity in good condition Wyoming big sagebrush ecosystems." Supersedes NTT: Yes Supersedes COT: Yes Issue: Wildfire; mitigation strategy Significance: Selective use of prescribed fire

Mitigation-Wildfire Author: Foster et al. Year: 2018 Title: Potential effects of GPS transmitters on greater sage-grouse survival in a post-fire landscape: Wildlife Biology, v. 2018, no. 1, p. 1-5. Implications: Survival rates measured in this post-fire study were much lower than observed in other studies in the Great Basin, though they did eventually increase to comparable levels (after the conclusion of this study). If the slightly lower survival rates of birds with GPS versus VHF devices observed in this study are confirmed (5% lower survival), they are of concern because of the increasing use of GPS units and the potential for effects of this magnitude to affect population growth rates. Findings from this study were limited by small sample sizes. Supersedes NTT: Yes Supersedes COT: Yes Issue: Post-fire study; GPS transmitters affect survival Significance: GPS transmitters reduce survival compared to VHF transmitters Comments: Authors appropriately recognize that the GPS may have biased the conclusions. As such, this study better informs future study designs.

Mitigation-Wildfire Author: Shinneman et al. Year: 2018 Title: A conservation paradox in the great basin-altering sagebrush landscapes with fuel breaks to reduce habitat loss from wildfire: US Geological Survey, v. XXX, no. XXX, p. XXX*Open File Report. Implications: The authors conclude that more research is needed to document fuel break effectiveness, effects on plant communities, and effect on wildlife. However, they suggest that installing fuel breaks in an effort to protect intact sagebrush habitat may provide long-term benefits to sagebrush-associated species, even if these benefits come at a cost to some individual species at local scales. Supersedes NTT: Yes Supersedes COT: Yes Issue: Wildfire; fuel breaks Significance: Supports the reality that historical habitat was not a vast sagebrush sea, but rather an ecosystem made up of sagbrush islands. Comments:Suggest additional review due to significance as a mitigation measure.

Mitigation-Wildfire Author: Foster et al. Year: 2019 Title: Greater sage-grouse vital rates after wildfire: Journal of Wildlife Management, v. 83, no. 1, p. 121-134. Implications: GRSG continued to use areas within the wildlife perimeter, but had lower nest and adult survival rates compared to other reported values for GRSG in the Great Basin. Apparent decreased nest site fidelity within the fire perimeter may relate to increased habitat fragmentation. Increased nest survival in the second year may relate to increased vegetation in the burned area. Findings suggest that fire suppression activities to maintain intact habitat patches may be a critical tool for managers of GRSG populations and habitat in landscapes prone to fire. Supersedes NTT: Yes Supersedes COT: Yes Issue: Wildfire; mitigation strategy Significance: Improved Wildfire firefighting strategy to benefit GRSG.

Mitigation-Wildfire Author: Shinneman et al. Year: 2019 Title: The ecological uncertainty of wildfire fuel breaks: examples from the sagebrush steppe: Frontiers in Ecology and Environment, v. 17, no. 5, p. 279-289. Implications: To produce a robust cost-benefit analysis regarding fuel break effectiveness and ecological impacts, more research is needed. The authors suggest several specific research questions that could provide useful information to policy and decision-makers "to disentangle their ecological costs and benefits." Supersedes NTT: Yes Supersedes COT: Yes Issue: wildfire; fuel breaks Significance: Ecological cost benefit analysis of fuel breaks Comments: Ecological cost benefit analysis of fuel breaks

Mitigation-Wildfire Author: Stenvoorden et al. Year: 2019 Title: The potential importance of unburned islands as refugia for the persistence of wildlife species in fire-prone ecosystems: Ecology and Evolution, DOI: 10.1002/ece3.5432. Implications: Population dynamics of leks located within fire perimeters are negatively impacted. Unburned islands play an important role as refugia, and maintaining unburned vegetation may be vital for the success of GRSG populations after a wildfire event. The recovery of natural vegetation postfire may also benefit GRSG populations. Supersedes NTT: Yes Supersedes COT: Yes Issue: Wildfire; fire suppression Significance: Prioritization of fiire suppression to maintain unburned refugia and enhance pos- wild fire restoration.

Other Mitigation Author: Blomberg et al. Year: 2015 Title: Blomberg, E.J., 2015, The influence of harvest timing on greater sage-grouse survival-A cautionary perspective: Journal of Wildlife Management, v. 79, no. 5, p. 695-703. Implications: The author concluded that timing of mortality, coupled with potential effects indicated by compensatory and additive mortality models, suggests that moving harvest to later in the year will not benefit GRSG populations and may have unintended negative consequences. Issue: Technique refinement: hunting season Significance: Reducing population effects but shifting hunting season Comments: Applies only to where GRSG are hunted

Other Mitigation Author: Wing and Messmer Year: 2016 Title: Impact of sagebrush nutrients and monoterpenes on greater sage-grouse vital rates: Human-Wildlife Interactions, v. 10, no. 2, p. 157-168. Implications: Study results confirmed the importance of black sagebrush as pre-nesting season forage and suggested that any forage selection related to monoterpenes may reflect some aspect of an individual monoterpene rather than the total concentration of all monoterpenes. Study results should be interpreted cautiously because of the small sample size, single year, and single study site. Supersedes NTT: Yes Supersedes COT: Yes Issue: black sagebrush; GRSG forage

Other Mitigation Author: Blomberg et al. Year: 2015 Title: Blomberg, E.J., 2015, The influence of harvest timing on greater sage-grouse survival-A cautionary perspective: Journal of Wildlife Management, v. 79, no. 5, p. 695-703. Implications: The author concluded that timing of mortality, coupled with potential effects indicated by compensatory and additive mortality models, suggests that moving harvest to later in the year will not benefit GRSG populations and may have unintended negative consequences. Issue: Technique refinement: hunting season Significance: Reducing population effects but shifting hunting season Comments: Applies only to where GRSG are hunted

The BLM 2020 draft SEISs do not address or offer any substantive analysis or cumulative impact assessments of its management decisions.

Only after thoroughly analyzing these eminently reasonable, science-based sage-grouse habitat protections will BLM have given the requisite consideration to a range of reasonable alternatives under its plan amendment SEISs. (We also note that BLM did not provide a scoping period for the SEIS; this is WWP et al.'s first opportunity to provide comments on the scope of the 2020 draft SEIS.)

Also notable is BLM's claim that "it did not discover new information that would indicate the agency should increase the level of conservation, management, and protection to achieve its land use plan objective." New information on habitat and population declines clearly provides such "new information" suggesting that protections should be increased. Moreover, BLM's claim begs the question: did BLM discover new science suggesting the agency should decrease the level of conservation?

BLM has a NEPA duty to evaluate how baseline sage-grouse conditions have changed since its last analysis in the 2015 Plans and since BLM prepared its 2018 FEIS. The DSEIS, like the FEIS, is flawed because it fails to look at updated data on sage-grouse populations and analyze the proposed actions against this new baseline.

The BLM's failure to consider updated population data is just one failing of the agency to take a hard look and use the best available science in informing its decision-making. In fact, population declines have continued across the species' range.

In Montana, the population dropped more than 40 percent in the past three years. MFWP 2019.

In North Dakota, a spring 2019 survey found just 29 male grouse, despite having supplemented the population with birds from Wyoming since 2017.10 10 https://bismarcktribune.com/news/state-and-regional/yearslong-effort-to-save-sage-grouse-in-nd-takes- a/article_ff07b771-1ad0-5861-8ea1-e2c7d2695805.html ? In South Dakota and Washington, sage-grouse populations are vanishingly small.

WWP has gathered population data directly from state wildlife agencies and, upon review and analysis, verified the reported trajectories; presumably, the BLM should be able to obtain, analyze, and disclose the same downward trends in this SEIS process. BLM should provide a spatially explicit lek trend analysis, determining whether downward population counts are proximate to habitat impacts authorized by these plans, and/or whether management and land tenure makes a difference as to the population trajectory on leks. This analysis should include all of the states with Greater sage-grouse-including Washington, North and South Dakota, and Montana-not just the states included in the recent plan revisions.

Another new and relevant study pertaining to sage-grouse populations that should be considered is Edmunds et al. 2018, which discusses how the scale of a population analysis may obscure the site-specific population impacts of disturbance. BLM should collect the spatial population data for every state and take a fresh, hard look at the lek trends relative to the disturbances allowed by the plans.

The BLM must also consider the new scientific evidence that pinyon-juniper forests comprise an enormous amount of the Great Basin's potential for carbon storage. See Fusco, et al. 2019. The impacts of the vegetation treatment projects that BLM is promoting must be balanced against the loss of this potential. The BLM must also consider the new evidence that shows how coniferous forests are able to respond to climate change and analyze how the proposed vegetation projects undermine that potential.15 BLM must also analyze how its habitat improvement projects for sage-grouse affect the habitat of other sagebrush species, such as mule deer. Morano et al. 2019. Additionally, the predictions of climate-adaptations and species movement should be used for determining the connectedness of sage-grouse populations and the need for more protected habitats, not fewer, as the 2019 plans provide.16 15 D. Scott Mackay, Philip R. Savoy, Charlotte Grossiord, Xiaonan Tai, Jonathan R. Pleban, Diane R. Wang, Nathan G. McDowell, Henry D. Adams, John S. Sperry. Conifers depend on established roots during drought: results from a coupled model of carbon allocation and hydraulics. New Phytologist, 2019; 225 (2): 679 DOI: 10.1111/nph.16043 16 Lawler JJ, Rinnan DS, Michalak JL, Withey JC, Randels CR, Possingham HP. 2020 Planning for climate change through additions to a national protected area network: implications for cost and configuration. Phil. Trans. R. Soc. B 375: 20190117. http://dx.doi.org/10.1098/rstb.2019.0117

BLM seems to claim, in identical or virtually-identical appendices to the DSEISs, that the NTT Report and COT Report no longer represent the best available science on sage-grouse needs in light of new State sage-grouse plans, or else that BLM relied on the best available science because it included the U.S. Fish and Wildlife Service as a cooperating agency in developing the 2019 sage-grouse plans, or else that it did not need to apply the best available science in the NTT Report, only consider it, and the Plans comply with the COT Report. See, e.g., WY DSEIS at 1-3 to 1-4; ID DSEIS at 1-3. These statements are incoherent and inaccurate; sage-grouse habitat needs have not changed since 2011, nor has our scientific understanding of those needs, nor could the implementation of State plans alter sage-grouse biology. BLM's failure to apply the science-based recommendations set forth in the NTT Report was an error in its 2015 Plans that carried over in the 2019 Plans and persists in the rationalizations set forth in the DSEISs now.

The NTT Report set forth science-based protections recommended to protect sage-grouse from the effects of activities shown to be harmful to the species and its habitat. The reasons BLM gives for departing from NTT's recommendations reveal that BLM's motivation in this planning effort is not to

implement protections the sage- grouse needs, but rather to loosen restrictions on activities known to harm the species.

BLM claims that it can depart from the NTT Report recommendations because IM-2012- 044 states "while [the NTT Report's] conservation measures are range-wide in scale, it is expected that at the regional and sub-regional planning scales there may be some adjustments of these conservation measures in order to address local ecological site variability." ID DSEIS at Appx. S-1-2 (emphasis added). But this highlights one of the problems with the Plans that we have repeatedly identified; adjustments to sage-grouse habitat needs identified in the NTT are not being made "to address local ecological site variability," they are being made based upon what is politically acceptable to powerful State and industry interests. BLM has not identified any science on "local ecological site variability" that would support its departures from the NTT report. Indeed, BLM's initiation of this new NEPA process to advance "management alignment" and backfill its decision to depart still farther from NTT's science-based recommendations only underlines that the process is being dictated by politics and not by what science says the species needs to survive and recover.

BLM makes much of the assertion that the NTT prescribes conservation measures that are applicable rangewide, and are not tailored to local conditions or political preferences. See, e.g., Northwest Colorado DSEIS at App-3-3, App-3-4. This is because NTT recommendations are based on the best available science, whereas politics are bound to influence local decision- making more so than science. . The habitat requirements of sage-grouse do not differ substantially from state to state, or from county to county. Sage-grouse require large tracts of undeveloped sage-grouse habitat, everywhere throughout their range. Sage-grouse are sensitive to industrial activity, and are disturbed and displaced by it, everywhere throughout their range. The large majority of sage-grouse nest within 4 miles of the lek site, everywhere throughout their range (and this has been shown in habitats as disparate as the cold deserts of western Wyoming (Holloran et al. 2005), the mixed-grass prairies of the High Plains in the Dakotas (Kaczor et al. 2011), and the hot deserts of Nevada (Coates et al. 2013)). Sage-grouse require at least 7 inches of grass height (10.2 inches in the far eastern end of their range) for hiding cover to maximize their nest success and ability to escape predation, and this has been demonstrated definitively from the shortgrass prairies on northeastern Wyoming (Doherty et al. 2014) to the arid deserts of the Great Basin in Oregon (Gregg et al. 1994). This objective, as listed in the objective table, needs to be an enforceable standard that is applied annually as a term of use for every livestock grazing lease.

The burden of proof is upon the BLM if they wish to show a scientific basis for altering protection measures from region to region, but there is no such scientific basis. Instead, BLM seeks only to defer to the desires of certain state and local governments, and industry lobbyists, to minimize sage grouse protections to levels that would be more profitable for local, politically influential industries, but detrimental to sage-grouse based on the best available science. The habitat requirements of sage-grouse do not differ significantly, rangewide, and it is therefore inappropriate for sage-grouse habitat protection thresholds to differ rangewide.

BLM seems to be trying to address its failure to adhere to the recommendations of the NTT Report by now claiming the NTT Report somehow does not represent the best available science. WY DSEIS at 1-3. "Of course, agencies may change their policies over time. But an agency must at least display awareness that it is changing position and show that there are good reasons for the new policy." Oregon Nat. Desert Ass'n v. Rose, 921 F.3d 1185, 1190 (9th Cir. 2019), reh'g denied (July 3, 2019) (internal

quotations omitted). BLM seems intent on ignoring that the NTT Report is still the only available resource recommending science-based measures to protect sage-grouse. Until BLM and other agencies produce equally robust and scientifically- supported recommendations on measures to protect sage-grouse, the NTT measures remain what science says is required to protect sage-grouse. The burden of proof is upon the BLM if they wish to show a scientific basis for altering protection measures from region to region, but there is no such scientific basis.38 38 BLM posits that Carter et al. (2018) and Hanser et al. (2018) constitute significant advancements in the best available science on sage-grouse that should inform plan amendments. See, e.g., ID DSEIS at S-1-14. However, neither the annotated bibliography provided by Carter et al. (2018) - essentially a collection of abstracts - nor the Hanser et al. (2018) which adds two paragraphs of generalizations about the need for more sagebrush science and science-based management decisions to accompany its collection of abstracts (without making a single recommendation regarding a sage-grouse habitat protection threshold) attempt a current review of the science leading to science-based sage-grouse habitat management prescriptions. Which is not to say these publications are devoid of scientific value. Hanser et al. (2018) includes abstracts for papers by Shinneman et al. (2018)(reviewing the science and concluding that fuel break construction has no proven value for reducing the intensity or extent of fires in sagebrush habitats, while the impacts of fuel break construction to sage grouse are known and certain), Shinneman et al. (2019)(showing that fuel breaks could be vectors for cheatgrass invasion, fragment sagebrush habitats, and increase predation on sage-grouse by ravens and other predators), Pilliod et al. (2017) (showing that cheatgrass expands during wet years), Coates et al. (2016a)(fire and subsequent cheatgrass invasion have contributed significantly to sage-grouse declines in the Great Basin), and Coates et al. (2016b) (showing that the presence of livestock significantly increased raven occurrence, to the detriment of sage-grouse). However, for most of the key issues surrounding the appropriate levels of habitat protections under the Wyoming DSEIS (appropriate size of lek buffers, appropriate disturbance density, legitimacy of DDCT/BSU-level analysis of disturbance density thresholds, appropriateness of Wyoming lek buffers in PHMA or GHMA, appropriate allowable noise levels, or appropriateness of sage- grouse PHMA boundaries), the studies in these two compendia of abstracts are silent, and the best available science either was reviewed in the NTT report, or has been brought forward to the BLM's attention by conservation NGOs like WWP et al. in comments on the sage-grouse RMPA process.

In addition to arbitrarily downplaying the importance of the NTT Report, the DSEISs contains a misleading analysis of why the 2019 amendments are supposedly consistent with the COT Report. See, e.g., UT Appx 4 at 4-21; CO Appx 3 at App-3-16; ID Appx S-1 at App-S-1- 15; WY Appx F at App-F-15. But the COT report was primarily focused on identifying threats to the sage-grouse, not on undertaking a comprehensive review of the scientific literature (as NTT did) nor recommending measurable sage-grouse protections based on that science to be applied in land-use plans (as NTT did). Simply complying with the COT Report (to the extent the Plans do) is not enough - they must also implement the protections required by NTT.

As someone who cares about birds and the places they need, I strongly oppose any changes to the BLM sage-grouse management plans from what was originally agreed to in 2015. The health of our nation's public lands is important to me. It is a legacy that we are passing on to future generations. BLM should focus on engaging communities in implementing the 2015 plans. In 2010, the U.S. Fish and Wildlife Service determined that Greater Sage-Grouse populations were in serious trouble and warranted protection under the Endangered Species Act. An unprecedented numbers of stakeholders across the West worked for many years on ensuring that sage-grouse management is based on science and good

for local economies. The plans that were agreed to in 2015 led the USFWS to reverse its 2010 decision and find the future for sage-grouse was secure. Weakening the plans would not be good for western states, put years of good work to waste, and revive the risk of a threatened or endangered species listing that was averted in 2015. BLM must use this supplemental process to thoroughly evaluate how its proposed change in management direction is likely to harm Greater Sage-Grouse habitat and is inconsistent with accepted science that tells us to meaningfully protect it. An honest analysis should lead to a different conclusion. Management of our nation's public lands should be based on science and take the long-term needs of communities into consideration, not the short-term political gains of a few.

The DSEIS addresses the agency's past and present use of the 2011 National Technical Team report (NTT) and the 2013 Conservation Objectives Team report (COT). In general, ICA both approves of and encourages the agency's use of the best available science throughout the NEPA analysis process and when decisions are made. We have long maintained significant concerns with the 2011 National Technical Team report (NTT). Among other things, the NTT was a one-size-fits-all management prescription that treated livestock grazing as a primary threat, contrary to the COT Report and the best available science. Further, the use of the NTT report was problematic as it contained overly burdensome recommendations that were not based on local conditions in Idaho. The NTT report failed to make use of the latest scientific and biological information available. According to an independent review of the report, it contained many methodological and technical errors, selectively presented scientific information to justify recommended conservation measures, and was disproportionately influenced by a small group of specialist advocates. By contrast, the COT allows land managers to be more responsive to localized threats and concerns and emphasizes the importance for state-based plans.

Predation Author: Howe and Coates Year: 2015 Title: Observations of territorial breeding common ravens caching eggs of greater sage-grouse: Journal of Fish and Wildlife Management, v. 6, no. 1, p. 187-190. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: Ravens can significantly influence reproductive success of GRSG at local scales, but population-level effects remain unclear. Breeding ravens may target GRSG nests more than nonbreeders. Declines of GRSG may be compounded by anthropogenic activities that have improved nesting habitat for ravens in sagebrush ecosystems. Supersedes NTT: Yes Supersedes COT: Yes Issue: predation; mitigation (Technique refinement) Significance: Predator management and mitigation Comment: Examined cause and effect mechanisms behind predation

Predation Author: Coates et al. Year: 2016 Title: Landscape characteristics and livestock presence influence common ravens-Relevance to greater sage-grouse conservation: Ecosphere, v. 7, no. 2, article e01203, 20p., https://doi.org/10.1002/ecs2.1203.Background: Over the last four decades, Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: Supersedes NTT: Yes Supersedes COT: Yes Issue: Predation mitigation; reducing GRSG nest and brood predation by ravens Significance: Anthropogenic subsidies; Ravens Comment: Important as it examined cause and effect mechanisms.

Predation Author: Dinkins et al. Year: 2016 Title: Effects of common raven and coyote removal and temporal variation on climate on greater sage-grouse nesting success: Biological Conservation, v. 202, p. 50-58 Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: The authors asked whether (1) changes in raven density and coyote abundance following removal efforts affected GRSG nest success and (2) weather conditions influenced these results for coyotes.

Management of breeding and transient ravens may be a viable mitigation action in areas with high raven densities because it can reduce raven abundance and may increase GRSG nest success. However, long-term solutions, such as reducing supplemental food sources and perch structures, are necessary. Coyote removal likely results in lowered GRSG nest success because of the potential expansion of mesopredators (for example, badgers, skunks, and raccoons), which do better at smelling and thus locating and predating GRSG in wetter years. Supersedes NTT: Yes Supersedes COT: Yes Issue: Predation; Potetial mitigation (Technique refinement) Significance: Recommendations for more effective predator management; Mesopredator release after coyote removal Comment: Also, noted increased coyote predation on GRSG in wet years (like due to smell) - good investigation of cause and effect mechanisms.

Predation Author: Peebles et al. Year: 2016 Title: Effectiveness of the toxicant DRC-1339 in reducing populations of common ravens in Wyoming: Wildlife Society Bulletin, v. 40, no. 2, p. 281- 287. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: Results indicated that raven populations near GRSG nests can be reduced through DRC-1339 poisoning. However, populations quickly recovered to pretreatment levels, suggesting that annual treatment may be needed. The authors also suggested limiting anthropogenic sources of food for ravens and frequently removing roadkill. Supersedes NTT: Yes Supersedes COT: Yes Issue: Predation (Technique refinement) Significance: Prioritization of management actions; raven management using DRC-1339 avicide

Predation Author: Walker et al. Year: 2016 Title: Mapping and prioritizing seasonal habitats for greater sage-grouse in Northwestern Colorado: Journal of Wildlife Management, v. 80, no. 1, p. 63-77. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: Study in Northwestern Colorado. GRSG generally selected for vegetation characteristics at small spatial scales (100-400 m); terrain roughness was also a strong negative predictor at 100 m in all seasons. A mosaic of habitats with sagebrush are important in multiple seasons, and actions that increase sagebrush within 400 m and reduce forest within 100-400 m may be most beneficial. Topics: broad-scale habitat characteristics, new geospatial data, effect distances or spatial scale, behavior or demographics, habitat selection, site-scale habitat characteristics Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; habitat mapping Significance: Imporved habitat mapping for enhancement (i.e. pinion-juniper removal) and mitigation.

Predation Author: Conover and Roberts Year: 2017 Title: Predators, predator removal, and sage-grouse-A review: Journal of Wildlife Management, v. 81, no. 1, p. 7-15. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: This was a literature review of past studies of varying quality, methods, and conclusions. The authors concluded that predation is not a likely factor in rangewide GRSG trends, with the exception of ravens in recent years. Issue: Predation Significance: Literature review Comments: Caveat: literature review of papers looking at different predator species and using different methods.

Predation Author: Peebles et al. Year: 2017 Title: Adult sage-grouse numbers rise following raven removal or an increase in precipitation: Wildlife Society Bulletin, v. 41, no. 3, p. 471-478. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: Supersedes NTT: Yes Supersedes COT: Yes Issue: Predation; mitigation (Technique refinement) Significance: Prioritization of management; Predator control Comments: Makes a connection between weather conditions and predator control, suggesting thatwhen used in conjunction managers can increase GRSG survival.

Predation Author: Gibson et al. Year: 2018 Title: Effects of power lines on habitat use and demography of greater sage-grouse (Centrocercus urophasianus): Wildlife Monographs, v. 200, no. 1, p. 1-41. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: There was support for GRSG avoidance of power lines to 10 km, for decreased demographic rates to 12.5 km, and for decreased population growth to 5 km. Multiple effects of transmission lines varied with raven abundance, which increased near the transmission line in this study. Some effects were small, highlighting the importance of long-term (10-20 year) studies of impact assessment. Transmission line effects on GRSG may be mitigated by decreasing raven numbers near the line, but the effectiveness of previous predator control and perch deterrent efforts have been inconclusive. Co-locating, burying, or routing lines outside of GRSG habitat may be options. Supersedes NTT: Yes Supersedes COT: Yes Issue: Transmission lines; associated predation; mitigation Significance: Potential mitigation of raven predation near transmission lines. Comments: Negative effects can be potentially mitigated

Predation Author: Kirol et al. Year: 2018 Title: Using DNA from hairs left at depredated greater sage-grouse nests to detect mammalian nest predators: Wildlife Society Bulletin, v. 42, no. 1, p. 160-165. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: This study presents a novel, noninvasive, and cost-effective survey method that minimizes collection bias and can be used at larger spatial scales to gain insight on mammalian predators that influence GRSG nest productivity. It can also help to identify exotic predators that benefit from human subsidies and habitat modification. This methods could be expanded to include other forms of DNA (e.g. feathers or saliva) for greater inference. Supersedes NTT: Yes Supersedes COT: Yes Issue: Predation (Technique refinement) Significance: Potential method for identifying mammalian predators of GRSG nests. Comment: Trail cameras at nests would provide data with shorter turn-around time.

Predation Author: O'Neil et al. Year: 2018 Title: Broad-scale occurrence of a subsidized avian predator-reducing impacts of ravens on sage-grouse and other sensitive prey: Journal of Applied Ecology, v. 55, no. 6, p. 2641-2652., https://doi.org/10.1111/1365-2664.13249 Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: The authors proposed that their anthropogenic influence index can be used to identify priority areas where ravens are more likely to affect GRSG. It can also be used to target where management of anthropogenic features can help reduce raven expansion. Finally, they argued that their methods can be applied to the management of other generalist predators. Supersedes NTT: Yes Supersedes COT: Yes Issue: predation (Technique refinement) Significance: Prioritization of management; improved methodolgy for more effective predator management

Predation Author: O'Neil et al. Year: 2018 Title: Broad-scale occurrence of a subsidized avian predator-reducing impacts of ravens on sage-grouse and other sensitive prey: Journal of Applied Ecology, v. 55, no. 6, p. 2641-2652., https://doi.org/10.1111/1365-2664.13249 Implications: The authors proposed that their anthropogenic influence index can be used to identify priority areas where ravens are more likely to affect GRSG. It can also be used to target where management of anthropogenic features can help reduce raven expansion. Finally, they argued that their methods can be applied to the management of other generalist predators. Supersedes NTT: Yes Supersedes COT: Yes Issue: predation (Technique refinement) Significance: Prioritization of management; improved methodolgy for more effective predator management

Predation Author: Smith et al. Year: 2018 Title: Phenology largely explains taller grass at successful nests in greater sage-grouse: Ecology and Evolution, v. 8, p. 356-364 Implications: The available evidence for a causal relation between grass height and nest success was weak, although grass height remained positively correlated with nest survival in the Powder River Basin of Wyoming after correction. Variations in results suggested that taller grass may be beneficial to nest survival in some circumstances (such as where shrub cover is low), but this explanation was not supported by the data analyzed here. Nest site selection or other life stages (for example, brood survival) may be affected by the structure of grasses. The authors suggested that findings from previous studies may have led to an overemphasis of the role of grass height in GRSG nesting habitat quality. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement: habitat quality mapping Significance: Grass height is over emphasized in evaluating habitat quality.

Predation Author: Dudko et al. Year: 2019 Title: Movements of female sage grouse centrocercus urophasianus during incubation recess: IBIS, v. 161, no. 1, p. 222-229. Implications: Data suggest that a larger area around nests than previously thought may be important for nesting success, which is an important consideration in determining minimum patch sizes needed for nesting and appropriate spatial scales for evaluating nesting habitat. The flights associated with recesses may expose GRSG to predation by ravens. Striking vertical structures during these flights, which typically occur during low light conditions, may be a mortality risk. Issue: Predation risk; Potential mitigation Significance: Ravens Comments: Provides a behavioral mechanism for susceptibility to raven predation, and therefore informs better predator control methods.

Predation Author: Kammerle and Storch Year: 2019 Title: Predation, predator control and grouse populations: a review: Wildlife Biology, article wlb.00464, 12 p., https://doi.org/10.2981/wlb.00464. Implications: Well-designed predator control programs are likely to cause short-term benefits to various grouse species. However more research is needed, particularly on how the competitive interactions of predator species influence grouse predation risk and whether removing certain predator species may have unintended cascading effects. Supersedes NTT: Yes Supersedes COT: Yes Issue: Predation; mitigation (Technique refinement) Significance: Predator management Comments: Looked at cause and effect mechanisms behind unintended consequences.

Predation Author: Smith et al. Year: 2019 Title: Approaches to delineate Greater Sage-grouse winter concentration areas: The Journal of Wildlife Management, v. 83, no. 7, p. 1495-1507. Implications: The authors suggest that individual-based resource selection function models(RSF) can be useful when data on flock sizes are not available in winter concentration areas. They also suggest that their survey and modeling approach was constructive for identifying habitat selection and determining whether currently protected areas are adequate for all seasons of use by GRSG (. They conclude that an important amount of GRSG winter habitat might not be adequately protected by Core Areas in Wyoming (although this conclusion is not well justified). Issue: Potential technique refinement Significance: This is duplicative of other methods to delineate winter habitat.

Analysis and mitigation to address impacts of predation of sage-grouse should also be taken into consideration. NACD encourages BLM to work with state and local governments and other appropriate federal agencies (such as U.S. Fish and Wildlife Service and USDA-Wildlife Services) to determine the most sensible approach to reduce the impacts of predation. Species such as the Common Raven have a

disproportionate impact on sage-grouse but also have paradoxical protections under the Migratory Bird Treaty Act

The DSEISs and the BLM still haven't taken a hard look at the effects of anthropogenic infrastructure and the subsidization of sage-grouse predators. We have provided extensive discussions of this in the past, but BLM continues to ignore the fact that its actions are creating improved conditions for predatory species such as ravens. Three new papers illuminate raven interactions with sage-grouse.Harju et al. (2018) discusses breeding ravens' use of structures (including oil and gas facilities) and the differences in the use of space between breeding and non-breeding ravens, which has implications for raven management that induces nest failure (such as oiling eggs) as a means for affecting predation on sage-grouse. O'Neil et al. (2018) provide spatial information about the effects of anthropogenic infrastructure and discuss how removing these subsidies could assist in preventing raven predation on sage-grouse. Dudko et al. (2019) posit that movements by sage hens assist in raven detection of nests, and that habitat important for nesting "may be more extensive than previously appreciated."

Habitat Improvement Author: Davee et al. Year: 2019 Title: Using beaver dam analogues for fish and wildlife recovery on public and private rangelands in Eastern Oregon: Research Paper PNW-RP-617. Northwest Climate Hub, U.S Department of Agriculture, Forest Service, Pacific Northwest Research Station, p. 32. Implications: Beaver dam analogues can improve habitat for fish and wildlife, including GRSG, but implementing this tool may require navigating new or yet-to-be established regulatory pathways and obtaining by-in from private landowners and ranchers is an important consideration for increasing implementation of this tool. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; Mitigation; Habitat restoration Significance: Innovative method for habitat resotation; habitat expansion Comments: Expands mesic areas making them more resilient (potentially usefull for drought/climate mitigation and/or conservation offset).

Mining Author: Pratt and Beck Year: 2019 Title: Greater sage-grouse response to bentonite mining: The Journal of Wildlife Management, v. 84, no. 4, p. 866-879 Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: In general, the adverse effects of bentonite mining on GRSG appear to be consistent with those of energy development. A greater proportion of the Bighorn Basin GRSG population is affected by mining during the winter season than at other times of the year. Therefore, prioritization of winter habitat may be a key management strategy there. Further, reclaimed mines remain unsuitable for GRSG due to slow regeneration of sagebrush cover, so intense propmotion of sagebrush regeneration is important for restoring GRSG habitat. Issue: bentonite mining impacts Significance: Reclaimed mines not utilized by GRSG due to slow regeneration

Re-setting noise limits to a maximum of 25 dBA, in accordance with the best available science;

Sage-grouse lek population declines occur once noise levels exceed the 25 dBA level. With this in mind, ambient noise levels should be defined in all plans as 15 dBA and cumulative noise should be limited to 25 dBA in occupied breeding, nesting, brood-rearing, and wintering habitats, which equates to 10 dBA above the scientifically-derived ambient threshold.

D.3.8 Direct/Indirect Impacts

Lastly, the terms "minor", "negligible", "similar", and "no measurable effects" run rampant throughout Chapter 4, however, none carry any objective definitions relative to the currently proposed alternatives.

For example, consider Section 4.11 Impacts on Livestock Grazing Subsection 4.11.2 Management Alignment Alternative: "Despite minor differences between the actions described in the Management Alignment Alternative and those analyzed in the 2015 Final EIS, the difference between the nature and type of impacts described would be negligible.

These impacts are discussed in Section 4.10 of the 2015 Final EIS." Modification of management procedures and stipulations regarding millions of acres of public land is hardly "minor," therefore, the impacts of such modifications cannot be "negligible." Furthermore, referencing an impact analysis corresponding to the current policy as analyzed in the past bears no merit to a "hard look" at impacts pertaining to the proposed modification of the current policy relative to its potential impacts in the future.

There is an inadequate analysis of the impacts to sage-grouse and sagebrush habitat from the proposed management changes, including increased oil and gas leasing, reduced mitigation, elimination of buffers, and the increased opportunity to use waivers, exemptions or modifications to oil and gas permit stipulations including within priority sage-grouse habitat. The conclusion that these changes will have no additional impact to sage-grouse populations is not supported. Allows county governments to determine whether waivers should be allowed rather than the scientists from the state wildlife agencies and U.S. Geological Survey.

The proposed management changes in the EIS which include increased oil and gas leasing, reduced mitigation, and oil and gas permit stipulations either being reduced or eliminated in sage grouse priority habitat are profoundly significant changes yet the document states that these changes will have no significant impact-- a conclusion that simply makes no sense. These changes will instead have significant impact.

It is imperative the scope of the current SEIS process be expanded to include robust examinations of multiscaled assessments of sage-grouse population-level response to direct, indirect, and cumulative impacts associated with management alternatives. Informed decision-making requires scientifically-valid approaches to assessing these impacts that expressly take into account the uncertainty and risk inherent in sagebrush habitat management.

D.3.9 Assumptions and Methodology

The attempts by the BLM to weaken the 2015 plan are putting our sagebrush ecosystem, and the hundreds of species that rely on it, at risk. The proposed changes to the 2015 plan contradict scientific recommendations for conserving greater sage-grouse, and the supplemental environmental impact statement fails to analyze and acknowledge the negative impacts that will result from the agency's proposed change in management direction.

D.3.10 Cumulative Impacts

In the 2019 Plan Amendments, BLM failed to conduct sufficient analysis of the proposed changes. As an example, the court found that BLM did not justify limiting its cumulative effects analysis to state boundaries, finding "sage grouse range covers multiple states and that a key factor - connectivity of habitat - requires a large-scale analysis that transcends the boundaries of any single State." WWP v. Schneider, 417 F.Supp.3d at 1333. Although the court noted BLM's unique position in being able to analyze cumulative impacts over the entire range of sage-grouse, the Draft Supplemental EISs ignore the

opportunity to conduct a sufficient analysis. Instead, BLM states: Conditions on public land also have changed little since the 2015 Final EISs, and to the extent that there have been new actions or developments, the impacts associated with those actions or developments are in line with the projections in the 2015 Final EISs regarding reasonably foreseeable actions and effects. . . . Since the nature and context of the cumulative effects scenario has not appreciably changed since 2015, and the 2015 analysis covered the entire range of the Greater Sage-Grouse, the BLM's consideration of cumulative effects in the 2015 Final EISs adequately addresses most, if not all, of the planning decisions to be made through this planning effort. Nevada Draft SEIS, pp. 4-53. This statement outright rejects the purpose of supplemental analysis, which is to supplement previous analysis to address impacts that have not yet been sufficiently considered, and ignores the substantial changes in condition on public lands. The 2019 Plan Amendments present sweeping changes across sage grouse range, yet fail to analyze large-scale impacts, as found by the court. Similar to the Richardson case, "BLM neglects the fundamental nature of the environmental problem at issue" that location of development widely influences the impacts on wildlife. 565 F.3d at 705. Reliance on previous analysis utterly fails to address the need for additional environmental review.

The court also found that BLM must conduct a "robust cumulative impacts analysis" but did not take into account impacts outside of state boundaries, even though "the sage grouse range covers multiple states and that a key factor - connectivity of habitat - requires a large-scale analysis that transcends the boundaries of any single State." WWP v. Schneider, 417 F.Supp.3d at 1332.

Instead of expanding its cumulative impacts analysis to the requisite scope, BLM made no changes and states: Since the nature and context of the cumulative effects scenario has not appreciably changed since 2015, and the 2015 analysis covered the entire range of the Greater Sage-Grouse, the BLM's consideration of cumulative effects in the 2015 Final EISs adequately addresses most, if not all, of the planning decisions to be made through this planning effort. Nevada Draft SEIS, p. 4-55. This is the same statement that BLM included in the 2019 Amendments. Further, the cumulative impacts analysis does not appear to address leasing and development that has occurred since 2018, which makes a significant contribution to overall impacts across the species' range. See, Appendix H (Cumulative Effects Supporting Information); Nevada Draft SEIS, p. 4-55. The BLM is required to consider the cumulative environmental impacts to sage-grouse and sage- grouse habitat in these FEISS. Cumulative environmental impacts are defined as: The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. 40 C.F.R. § 1508.7. "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." Id. Cumulative impacts must be considered in the scope of an EIS. Id. § 1508.25(c). BLM has not complied with this requirement, which would require evaluation of the impacts of the changes in the 2019 Amendments across the range of the sage-grouse, including population declines, loss of habitat to fire, the likely effects of fuel breaks projects, and the impact of increased oil and gas leasing and drilling.

Cumulative Impacts ? We agree with using the cumulative effects analysis (CEA) of the 2015 FEIS as a fundamental data to identify the additional cumulative impact. However, there is no clear information about the past cumulative effects analysis in the 2019 DEIS. It will impede public review and confuse decision makers. We request that it is made clear that the CEA in 2015 FEIS must appear in the 2019 EIS. According to the past cumulative effects analysis, the 2019 EIS also needs to clearly provide additional cumulative impacts between 2015 FEIS and 2019 EIS. ? The CEA does not include all relevant

activities, with oil and gas projects in Wyoming and other scheduled lease sales not contributing to the assessment. We ask that the BLM consider all relevant activities while conducting the CEA. When writing the FEIS, we ask that the BLM provide all past, present, and expected actions that will impact connected projects. ? Although Management Action 4 would allow Greater-Sage Grouse to be considered through site-specific analysis, it seems safer to keep the specific language regarding Greater-Sage Grouse in the Proposed Plan in Wyoming. This would guarantee that the Greater-Sage Grouse is considered when taking action. ? The preservation of Greater-Sage grouse habitat is vital, and millions of dollars have been spent protecting the species. Regarding the use and development of sage grouse critical habitat mentioned in the Unavoidable Adverse Impacts, a no net loss policy should be implemented to at least maintain the current amount of habitat available.

The counties have consistently opposed range-wide cumulative effects analysis and opposed the use management zones that go beyond a local BLM field office planning area or a particular National Forest. The counties' position on this has not changed. However, as to the question whether the DSEIS has clarified that the cumulative effects analysis was done at the range wide level organized by WAFWA management zones

Science-based Decision Making Data-driven, statistically-sound assessments of potential responses of sage-grouse populations and habitats to proposed management are necessary to ensure informed decision-making. Yet, the BLM in the 2020 Draft SEISs does not offer any substantive analysis of the indirect and cumulative impacts to sage-grouse of its management decisions. Given current circumstances, rigorous cumulative impact assessments are especially important because of BLM's reliance on the largely disjunct set of management approaches being implemented across the species' range (i.e., state-to-state coordination is limited). The BLM has failed to inform its decision making by not conducting rigorous impact analyses. This oversight will likely jeopardize the agency's ability to meet sage-grouse management goals.

NEPA requires adequate disclosure of the cumulative impacts of the proposed action "when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions." 40 C.F.R. § 1508.7. If separate proposed actions themselves are connected or cumulative, they must be analyzed in a single EIS. Id. § 1508.25(a). Here, BLM improperly fragmented its analysis into six EISs, in violation of 40 C.F.R. § 1508.25(a), and then also failed to conduct any meaningful cumulative impacts analysis within each EIS, in violation of 40 C.F.R. § 1508.25(c).

For example, the oil and gas leasing cumulative effects supporting data for the NW Colorado, Nevada/California, Utah, and Wyoming SDEIS analyses is out of date or non-existent. The Utah DSEIS does not include acreages for oil and gas lease sales held after December 2018 or that are currently pending, even though these lease sales include designated sage-grouse habitat management areas, which means that BLM is using outdated information for its decision- making.25 25 See Nevada/California DSEIS at H-4 and Utah DSEIS at D-8.

It is arbitrary and capricious for BLM to consider oil and gas leasing acreages in its sage- grouse plan NEPA analyses for some states but not all. Moreover, all of these acreage omissions must be remedied in the FSEIS for each state with oil and gas leasing. In order that BLM can make an informed decision about these greater sage-grouse plans, cumulative effects oil and gas leasing acreages should include both an acreage total and acreage breakouts by sage-grouse habitat management area type.

D.3.11 Adaptive Management

However, we oppose the universal retention as to "Land Tenure"; we oppose the universal avoidance of "Rights-of-way" in PHMA and IHMA, and we oppose the universal limited access as to "Travel management" - for the reasons we previously addressed in our comments. Specifically, flexibility should be added to adjustments in "Land Tenure", to "Rights-of-Way, and to "Travel Management" relative to site conditions in any FSEIS and plan amendments.

The SEISs also must disclose the known flaws in the methodology of Coates and others, which has resulted in some questions about the triggering changes from various states. The BLM should revisit all the states' data to see where triggers have been met with new and improved methods, and explain in the forthcoming EISs what causal factor analyses have resulted in which adaptive management changes

D.3.12 Burial of Transmission Lines

Wind Turbines and Transmission Lines Author: LeBeau et al. Year: 2017 Title: Greater sage-grouse habitat selection, survival, and wind energy infrastructure: Journal of Wildlife Management, v. 81, no. 4, p. 690-711. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: GRSG appeared to select nest sites without regard to wind energy infrastructure but avoided such infrastructure during brood rearing and summer. Stronger effects of disturbance associated with wind energy on brood-rearing habitat selection in the later time period suggest a lagged population-level response. GRSG survival did not appear to be negatively affected by the facility. Supersedes NTT: Yes Supersedes COT: Yes Issue: Wind energy; GRSG habitat use and survivorship Significance: Apparent lag effect of wind energy infrastructure.

Wind Turbines and Transmission Lines Author: Kohl et al. Year: 2019 Title: The effects of electric power lines on the breeding ecology of greater sage-grouse: Plos One, v. 14, no. 1, p. E0209968., https://doi.org/10.1371/journal.pone.0209968 Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: The authors proposed 2.3 km buffer zones around active leks as a best management practice for new transmission line construction. They also proposed site-specific management for distribution lines, and colocation with existing disturbances for all new power lines. Maintenance of sagebrush cover around power lines may improve GRSG habitat suitability, despite the presence of human disturbance. Issue: Mitigation Significance: Transmission lines

Wind Turbines and Transmission Lines Author: LeBeau et al. Year: 2019 Title: Greater Sage-grouse habitat function relative to 230-kV transmission lines: The Journal of Wildlife Management, p. 1-14. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: The authors suggest that future transmission line placement decisions should consider potential negative effects on GRSG habitat and demographics and that transmission lines should be located in areas of lower GRSG habitat suitability and greater than 3.1 km from occupied leks if possible. Issue: Mitigation Significance: Transmission lines

D.3.13 Disturbance and Density Caps

Uniquely among the ARMPAs, the Wyoming 2019 RMPA applied a disturbance density cap of 5% in PHMA rather than the 3% applied under other plans. The DSEIS fails to explain why sage-grouse in Wyoming are more tolerant of disturbance than other states, or indeed, more tolerant than the best available science demonstrates. Knick et al. (2013) concluded that 99% of the active leks in the study area (encompassing the entire western range of the greater sage grouse) were surrounded by habitat

with 3% or less surface disturbance (defined using GIS as residential or industrial development). Kirol (2012), found for his Wyoming study area that surface disturbance greater than or equal to 4% of the land area had a significant negative impact on greater sage grouse brood rearing habitat.

D.3.14 Habitat Management Area

Definitions and management actions associated with BLM habitat designations need to be removed from private land as they apply specifically to BLM administered lands; therefore there is no basis for including private land in density and disturbance calculations.

As Simplot noted in previous comments to the Draft ARMPA, the Final EIS and DSEIS continue to fail to disclose the basis by which private lands can be considered in a federal land management planning document. This seems to suggest a de-facto critical habitat designation without a listed endangered or threatened species. While section 4 of the ESA can take into consideration conservation efforts on state and private lands to avoid a listing, BLM has no authority under FLPMA to apply land use plan restrictions on private land. The Draft RMPA, the Final EIS and the DSEIS continue to apply Sage-Grouse habitat management area definitions, designated through the BLM planning process specifically for BLM administered land, to private land (including Planning Area, PHMA, IMHA and BSUs).

The DSEIS offers absolutely no science-based justification for the "modification" of HMAs. The only justification that can be ascertained from the document amounts to nothing more than an argumentum ad verecundiam opinion: "BLM recognizes that landscape level mapping may not accurately reflect on-the-ground conditions. Therefore, the HMAs (Figure 2-1 b) do not constitute a land use plan decision but rather a landscape level reference of relative habitat suitability. " (DSEIS Table 2-2b). Clearly as based on fundamental logic, HMAs constitute a land use plan decision because each HMA requires an explicit set of stipulations regarding how the land is utilized within each HMA. For example, as defined in the 2015 ARMPA for the Great Basin, SFAs are not simple "landscape level mapping" that "may not accurately reflect on-the-ground conditions". Rather, SF As are areas identified by interagency GRSG experts based on on-the-ground research that has occurred for decades. SF As are thus identified by the U.S. Fish and Wildlife Service (FWS) as GRSG "strongholds" and represent "a subset of priority habitat most vital to the species persistence within which we recommend the strongest levels of protection" (2015 ARMP A, Page 1-16). "The strongest levels of protection" can be further defined as No Surface Occupancy (NSO) to be applied without waiver, modification, or exception.

For example, consider W AFW A MZ III. How many acres of each HMA designation will be removed? How many acres are currently leased and planned to be leased for Minerals and Energy? How will modification of each HMA designation in W AFW A MZ III change the current HMA designation stipulations relative to Minerals and Energy development requirements? How many acres of currently leased and planned to be leased publio lands for Minerals and Energy development occur in SF As? How would removal of SF As and their associated "NSO without waiver, exception, or modification, for fluid mineral leasing" stipulation both directly and indirectly impact GRSG?

In order to take a hard look, the DSEIS needs to consider the effects of existing management and predict the impacts of future decisions. Without considering the current context of population and habitat triggers in each state, the agency is failing to take a hard look at its proposed amendments.

Aside from a brief, but incomplete (and already now outdated) narrative summary, the DSEIS fails to provide a full and clear listing of the PACs and tripped triggers, and how they relate to the key RNAs. BLM fails to include its Causal Factor Analyses ("CFA"), including the worksheets, annual review documents, and full reports, as an appendix to the EIS or otherwise. In fact, we understand that BLM has failed to complete many of the required CFAs. Again, the DSEIS fails to discuss this information essential to meaningful public review and informed agency decision making.

These results show that the ARMPA sage-grouse protections are not having the desired effect of recovering sage-grouse populations and habitats, but instead that populations and habitats across the West continue to deteriorate and "trip triggers" toward more intensive management actions. Thus, the BLM is using more protective management as a backstop when populations and habitats are in trouble instead of preventing the trouble in the first place through adequate regulatory mechanisms. The DSEIS is being issued in this context, and the BLM must take a hard look at this information in assessing the impacts of the proposed plans, including the effects on the ground of existing management.

Nor can BLM write off the tripping of these triggers as unrelated to management and excuse its failure to rein in industrial uses of sage-grouse habitats that way. Regardless of whether BLM management or some other factor is the direct cause of population declines and habitat degradation, BLM should address those problems by limiting known disturbances in sage-grouse habitats. To the extent the existing Plans or revised Plans allow the agency to do otherwise, they are inadequate to protect sage-grouse.

The 2019 amendments in certain states purport to allow BLM to adjust habitat management area boundaries through plan maintenance. These provisions must be cabined to ensure compliance with BLM land-use planning regulations, which provide that land use plan maintenance is only proper to reflect "minor changes in data." 43 CFR § 1610.5-4 (emphasis added) Thus, plan maintenance cannot properly be used to make anything exceeding a minor adjustment to habitat boundaries. See also Klamath Siskiyou Wildlands Ctr. v. Boody, 468 F.3d 549 (9th Cir. 2006) ("whenever resource management plans are changed in any meaningful way, the changes must be made via amendment (i.e., supported by scientific environmental analysis and public disclosure"); see also Conservation Nw. v. Sherman, 715 F.3d 1181, 1186 (9th Cir. 2013) (observing that there is a "low threshold to trigger formal amendment procedures").

D.3.15 Habitat Objectives

Section: 2.5 Page: 2-23 Paragraph/Line/Figure/Table: Table 2-2b Issue: Modifying Habitat Objectives Comment: No-Action Alternative: We do not support this approach as it does not allow for incorporation of the best available science that has emerged since, was not considered or was omitted previously, or will emerge. Additionally, the Habitat Objectives themselves are not achievable, applicable, or warranted in many areas of GRSG range, particularly in those areas that have crossed an ecological threshold to some other state. Setting objectives that are not SMART - specific, measurable, achievable, relevant, and time-certain - violates the BLMs own planning handbook. Proposed Plan Amendment: We generally support this alternative and the ability to incorporate best available science moving forward as well as the clarification as to how objectives are to be viewed and implemented. The following suggested revisions are intended to strengthen this alternative. Please revise the second paragraph to read "The Habitat Objectives (Table 2-2) in the 2015 Final EIS would be implemented following this guidance: The Habitat Objectives (Table 2-2) in the 2015 Final EIS are desired habitat conditions that are broad goals

based on Greater Sage-Grouse habitat selection that may not be achievable or applicable in all areas. The ability of a site to achieve the objectives should be based on site potential informed by ecological site descriptions, state-and-transition models, Disturbance Response Groups, etc. We also request adding a citation to the MOU that BLM and other federal agencies signed with NRCS regarding update and use of ESDs. The following references also support the use and application of these tools: * BOLTZ, S., AND G. PEACOCK. 2002. Ecological sites: understanding the landscape. Rangelands 24:18-21. * BRISKE, D.D., B.T. BESTELMEYER, T.K. STRINGHAM, AND P.L. SHAVER. 2008. Recommendations for development of resilience based state-and-transition models. Rangeland Ecology & Management 61:359-367. * SOIL SURVEY DIVISION STAFF. 1993. Soil survey manual. Soil Conservation Service US Department of Agriculture Handbook 18. * STRINGHAM, T.K., P. NOVAK-ECHENIQUE, P. BLACKBURN, C. COOMBS, D. SNYDER, AND A. WARTGOW. 2015. Final report for USDA ecological site description state-and-transition models, Major Land Resource Area 28A and 28B Nevada. University of Nevada Reno, Nevada Agricultural Experiment Station Research Report 2015-01. p. 1524. Available at: http://www.cabnr.unr. edu/resources/MLRA.aspx. * STRINGHAM, T.K., P. NOVAK-ECHENIQUE, P. BLACKBURN, D. SNYDER, AND A. WARTGOW. 2015. Final report for USDA ecological site description state-and-transition models by disturbance response groups, Major Land Resource Area 25 Nevada. University of Nevada Reno, Nevada Agricultural Experiment Station Research Report 2015-02:572. Available at: http://www.cabnr.unr.edu/resources/MLRA.aspx. * STRINGHAM, T.K., P. NOVAK-ECHENIQUE, D. SNYDER, S. PETERSON AND K. SNYDER. 2016. Disturbance Response Grouping of Ecological Sites Increases Utility of Ecological Sites and State-and-Transition Models for Landscape Planning in the Great Basin. Rangelands 38(6):371-378. Previous Unaddressed Comment on 2019 RMPA?: Yes

The DSEIS adequately addresses fragmentation within management areas on an individual scale. This is problematic because the management plans don't properly address fragmentation between management areas. This inadequacy is alarming from an ecological standpoint due to the likelihood of speciation.

Habitat Improvement Author: Pyke et al. Year: 2015 Title: Restoration handbook for sagebrush steppe ecosystems with emphasis on greater sage-grouse habitat-Part 1. Concepts for understanding and applying restoration: U.S. Geological Survey Circular 1416, 44 p. Implications: This report will help resource managers make decisions about where and how to conduct restoration treatments in former sagebrush ecosystems for the benefit of sagebrushobligate species like GRSG. Topics: broad-scale habitat characteristics, fire or fuel breaks, habitat restoration or reclamation, nonnative invasive plants. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement Significance: Prioritization of management Comments:

Habitat Improvement Author: Pyke et al. Year: 2015 Title: Restoration handbook for sagebrush steppe ecosystems with emphasis on greater sage-grouse habitat-Part 2. Landscape level restoration decisions: U.S. Geological Survey Circular 1418, 21 p Implications: This report and the decision tool that it describes will help resource managers make decisions for prioritizing landscapes for restoration work. Once priority landscapes are determined, managers can move to selecting sites for restoration and use Part 3 in the handbook series. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement Significance: Prioritization of management

Habitat Improvement Author: Pyke et al. Year: 2017 Title: Restoration handbook for sagebrush steppe ecosystems with emphasis on greater sage-grouse habitat-Part 3 . Site level restoration decisions: U.S.

Geological Survey Circular 1426, 62 p Implications: This report and the tool it describes will help resource managers make decisions that should enhance their success in restoring sagebrush ecosystems and thus GRSG habitat at an individual site. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement Significance: Prioritization of management

The BLM made no meaningful effort to look at the habitat conditions and trends across sage grouse range in the DSEISs, despite this being identified as a major failing of the 2019 plans. Instead, the BLM touts the acres of vegetation "treatments" on the plans' cover pages, without acknowledging that some of these "treatments" are untested, unsuccessful, and may not result in actual sagebrush restoration for many decades, if ever. The mere fact that treatment has occurred does not indicate that the habitat has successfully been restored. In fact, habitat conditions and trends across the range show widespread degradation.

It is not sufficient to protect only sage-grouse breeding, nesting, and brood-rearing habitats; if sage-grouse cannot survive the winter due to degradation or industrialization of their winter habitats, populations will decline toward extirpation. PHMAs were designated on the basis of buffers around active lek sites, which encompass the breeding and nesting habitats used by grouse during spring and summer. But protecting wintering habitats is equally important to assuring the continued existence and ultimate recovery of the species, and these wintering habitats are frequently located outside the protective boundaries of designated Priority Habitats. BLM's analysis highlights the importance of protecting these habitats. Haak (2020, Attachment O) demonstrates that the 2019 plans are insufficiently protective of all sage-grouse habitats, and states, in her professional opinion: I was also concerned by BLM's failure to assess the conservation value of peripheral sage-grouse populations and habitat. For example, in discussing the impacts of the elimination of GHMA in Utah, BLM asserts that "there would be no significant effect of accelerating the impacts on the small populations in former GHMA[.]" See Utah FEIS at 4-21. This statement fails to consider that peripheral sage-grouse populations and habitats help ensure the species continues to exist by contributing to redundancy, representation, and resilience. See U.S. Fish and Wildlife Service, Greater Sage-grouse (Centrocercus urophasianus) Conservation Objectives: Final Report (Feb. 2013) ("COT" Report), at 12- 13. As explained above, recent studies have also emphasized the importance of the landscape outside of PHMA as stopover habitat for long-distance migrants and corridors to seasonal habitats (Newton et al. 2017; Crist et al. 2015) as well as pathways for genetic connectivity and dispersal from population centers to low population areas around the range margins (Cross et al. 2018; Heinrichs et al 2018; Row et al. 2018). These surrounding habitats are also important for the preservation of conservation options as environmental conditions change (Burkhalter et al. 2018). BLM's FEISs failed to consider these values provided by GHMA and other non-priority habitats. Haak's observation here applies equally to wintering habitats outside of the protected HMAs. The DSEISs do nothing to reconcile this inadequacy, but forthcoming iterations of the plans should identify wintering habitats, connectivity corridors, and marginal habitats (including habitats and populations in Washington and the Dakotas, which have basically been written off by BLM in these revisions). Cross et al. (2018) provide the genetic analysis of sage-grouse networks that demonstrate the relative importance of each sage-grouse population to the maintenance of resilient and viable populations over time. Row et al. (2018) provides spatial insights into maintaining functional connectivity and causal resistance. Ricca et al. (2018) also provides insights into the significance of management on species distribution, resilience, and resistance.

Retaining 7-inch residual grass height requirements in lands currently designated as PHMA and IHMA and increase grass-height requirement effectiveness by adding a requirement that this provision be applied each spring to all BLM grazing allotments;

D.3.16 Lek Buffers

Kirol et al. (2020)17 studied greater sage-grouse at six locations across Wyoming from 2008-2014, measuring the impacts to grouse of both fossil fuel energy and renewable energy. Kirol et al. found that ongoing surface disturbance from energy development within 8 km (4.97 miles) of a greater sage-grouse nest decreased the likelihood of nest success. Sage-grouse broods within 1 km (0.62 miles) of ongoing surface disturbance from energy development were less likely to survive than those further away. As ongoing disturbance increased, sage-grouse nests had an increasing rate of failure. Furthermore, female sage-grouse avoided habitat with higher levels of disturbance in favor of habitat with lower levels of disturbance. This means that current BLM greater sage-grouse nest buffers are too small to conserve grouse and implementing disturbance caps of 3-5% does not eliminate the negative impacts of ongoing disturbance on nest survival. While this paper is specific to leks in Wyoming, it should be used in each of the forthcoming SEISs as evidence of the inadequacies of current and proposed regulations.

The 2011 NTT Report and the 2013 COT Report did not receive adequate peer review and suffered from a number of substantive flaws including: ignoring substantial threats such to the Greater Sage Grouse such as predation in favor of unsupported conjectures regarding human impact; failure to account for natural population fluctuations due to weather patterns; not using the best available science, and were policy rather than science driven. These flawed reports suggested the adoption of equally flawed measures that became central to the 2015 planning effort including the designation of Sage Brush Focal Areas (SFAs) and the establishment of lek buffers. Rather than using the established land management tools, the SFA framework was formalized in the pronouncement of an October 27, 2014 memorandum from former FWS Director Dan Ashe entitled "Greater Sage-grouse: Additional Recommendations to Refine Land Use Allocations in Highly Important Landscapes". Similarly, the application of lek buffer distances was integrated into another document previously not available or included in the DEIS for public review: a U.S. Geological Survey (USGS) report entitled Conservation Buffer Distance Estimates for Greater Sage-grouse - a Review, USGS Open File Report 2014 1239. Both SFAs and lek buffer distances were allowed to evolve from the NTT and COT reports into the 2015 plans without receiving adequate review and comment and in place of utilizing existing conservation tools already available.

Improved Habitat Mapping and Assessment Author: Dahlgren et al. Year: 2016 Title: Evaluating vital rate contributions to greater sage-grouse population dynamics to inform conservation: Ecosphere, v. 7, no. 3, article e01249, 15 p., Implications: Lek counts reliably estimate changes in GRSG populations, and telemetry studies are useful for demographic monitoring. In combination, these two methods can be used to measure life-cycle dynamics. Results suggest that GRSG females can exploit varying environmental conditions and may respond to management actions, whereas nest survival is highly variable and more affected by natural environmental variation. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; Lek count and telemetry studies Significance: Improved methodology for populaion management

Improved Habitat Mapping and Assessment Author: Fregman et al. Year: 2016 Title: Male greater sage-grouse detectability on leks: Journal of Wildlife Management, v. 80, no. 2, p. 266-274. Implications:

Conducting sightability surveys to establish correction factors is recommended to avoid underestimation of regional GRSG abundance, particularly if vegetation and snow cover vary among leks. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique improvement; lek counts Significance: Sightability estimates are key to estimating population density or abundance from count data. Comments: Improves lek counting, outdates previous methods and anything that relied on previous standards

Improved Habitat Mapping and Assessment Author: Fregman et al. Year: 2017 Title: Male greater sage-grouse movements among leks: Journal of Wildlife Management, v. 81, no. 3, p. 498-508. Implications: The reported frequency of crossing between leks is higher than in previous estimates. As such, movements between leks may explain a substantial amount of variability in annual lek counts, reducing the ability of lek count data to accurately depict GRSG population abundance or trends. Lek counts done earlier in the spring are less likely than those done later (at peak attendance) to reflect population abundance, particularly in areas where male GRSG move to higher elevations as snowpack melts. Conducting lek counts during peak attendance and avoiding counts during days with precipitation, particularly at higher elevations, is recommended. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique improvement; lek counts Significance: Timing of lek counts is important to maximizing sighting of males at leks.

Improved Habitat Mapping and Assessment Author: Shyvers et al. Year: 2018 Title: Dual-frame lek surveys for estimating greater sage-grouse populations: Journal of Wildlife Management, v. 82, no. 8, p. 1689-1700. Implications: Study in northwestern Colorado. Authors report that, "We estimated that annual lek surveys captured an average of 45-74% of active leks and 43-78% of lekking males each year. Our results suggest that many active leks remain unknown and annual counts fail to account for a substantial, but variable, proportion of the number of active leks and lekking males in the population in any given year. Managers need to recognize this potential source of bias in lek-count data and, if possible, account for it in trend analyses and management efforts." Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; lek counts Significance: Important for estimating population denity and trends in low density populations. Comments: Data used by CPW and BLM for RMP development for NW Colorado is obviously biased.

Improved Habitat Mapping and Assessment Author: Coates et al. Year: 2019 Title: Estimating sightability of Greater Sage-grouse at leks using an aerial infrared system and N-mixture models. Wildlife Biology, 2019: wlb.00552, p. 1-11. Implications: The authors suggest that ground-basd lek surveys are likely to result in population estimates about 14% lower than true values, especially in areas with high sagebrush cover. Using aerial integrated infrared imaging system surveys resulted in greater sightability rates, however using repeated morning ground-based surveys or generalized correction values provided by the authors could improve GRSG population estimates derived from ground-based lek counts. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; lek counts Significance: New method for estimating lek attendance and therefore, population trends.

Improved Habitat Mapping and Assessment Author: Fregmen et al. Year: 2019 Title: Weather conditions and date influence male sage grouse attendance rates at leks: IBIS, v. 161, no. 1, p. 35-49. Implications: Considering potential biases of attendance, detection can improve the performance of lek counts as indices of population abundance. Attendance here was strongly influenced by precipitation, consistent with other studies and supporting lek-count protocols that discourage counts during rain. Slight negative effects of wind observed here also support avoiding counts during high winds. Supersedes NTT: Yes

Supersedes COT: Yes Issue: Technique refinement; lek counts Significance: Don't count sage grouse in the rain.

Improved Habitat Mapping and Assessment Author: O'Donnell et al. Year: 2019 Title: Designing multi-scale hierarchical monitoring frameworks for wildlife to support management: a sage-grouse case study: Ecosphere, v. 10, no. 9, p. 1-34. Implications: The ability to cluster GRSG leks into nested, biologically meaningful lek clusters may aid researchers and managers in producing population trend estimates at different spatial scales and help them determine drives of trends across scales. This information will be important for developing effective management actions. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; population trends Significance: Additional research required for evaluation for implementation

Improved Habitat Mapping and Assessment Author: Wann et al. Year: 2019 Title: Assessing lek attendance of male greater sage-grouse using fine-resolution gps data-implications for population monitoring of lek mating grouse: Population Ecology, v. 61, no. 2, p. 183-197., https://doi.org/10.1002/1438-390X.1019. Implications: Lek-switching occurred at a higher rate than previously thought. Therefore, the authors recommended that surveys of leks within 4 km of each other should be conducted on the same morning to reduce the chance of double counting males. Date-corrected daily lek counts using attendance probability can reliably estimate population sizes, allowing more leks to be monitored less frequently. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; lek counts Significance: Potentially resolves issue with males moving beween multiple leks by counting simultaneously.

Ramey et al. (2018) reported that regional climatic variation, as indexed by the Pacific Decadal Oscillation (PDO), was an important positive predictor of density changes at both the local and population level, particularly in the most recent part of the time series when lek count data were of higher quality.

In essence, the local and population-level effects should be quantified by the relative change in abundance of sage grouse after controlling for intrinsic factors such as density-dependence and extrinsic factors such as climatic variation (Coates et al. 2018; Ramey et al. 2018). As described below, these methods include analysis of lek counts based on stage-based population dynamic models. The sage grouse abundance should be based on lek counts (Walsh et al. 2004) as this data is relatively inexpensive and non-intrusive to collect, has been collected historically via ground-based visual surveys for several decades in many areas and provides an index of population abundance (Monroe et al. 2016). In particular, the counts of male sage grouse should be corrected for sightability (Fremgen et al. 2016; Coates et al. 2019), seasonality (Wann et al. 2019) and where possible time of day to provide an estimate of the absolute male attendance at each lek in each year. Lek counts from ground based visual surveys can be supplemented by more extensive aerial infrared surveys (Gillette et al. 2013), provided they are also corrected for sightability (Coates et al. 2019).

The change in abundance due to human activity should be quantified in terms of the change in male lek attendance relative to what the attendance would have been in the absence of the activity. In order to estimate this term it is not enough to simply compare the lek attendance before the activity to the lek attendance after the activity. This is because lek attendance in sage grouse like other tetraonids (Kvasnes et al. 2010) undergoes large oscillations driven by density-dependence (i.e. population density feedbacks affect population growth rate) and regional climatic variation (i.e. inter-annual and multi-decadal variation

in large-scale regional weather patterns) (Ramey et al. 2018). In other words, we must be able to account for these two naturally interacting processes in any analysis of human influences. Without accounting for these, the result could be an activity with a negative impact appearing neutral or even beneficial if it was undertaken while the population was recovering from lowered densities due to suboptimal climatic conditions. Likewise, a downturn may be entirely due to natural processes, rather than the activity in question (e.g. a low ebb in the Wyoming sage grouse can be expected as part of a population cycle, based almost entirely on the natural processes).

In addition to accounting for temporal dependencies due to population fluctuations, the statistical models also need to account for spatial dependencies in the response of individual leks. In particular the effect of an activity is expected to decay by distance while reductions at one lek could lead to decreases or increases at neighbouring leks depending on whether depensation (i.e. decrease in local population density or number due to the loss of breeding adults) or compensation (i.e. displacement of breeding sage grouse to nearby, undisturbed leks) is occurring. The extent to which these mechanisms are operating and how best to model them remains an open question. However, this is an important question to answer because it is central to quantifying, the extent to which a locally-observed decrease in sage grouse density in a project area may, or may not be, contributing to an overall decrease in the carrying capacity of the larger, surrounding population, or the cumulative effects of multiple projects and activities on a population. In other words, the question of "how much is too much" development, relative to a desirable population threshold.

Depending on the scale, the most promising method(s) include statistical analyses that can either use other leks that are outside the zone of influence as controls and/or explicitly model density-dependence, climatic variation and other extrinsic factors (Ramey et al. 2018). Ideally they would do both. The resultant effect size should be expressed as the estimated n-fold change due to the activity with 95% confidence/credible intervals (Bradford et al. 2005). As described below, explicit models should be stage-based population dynamics models.

Excluding new primary, secondary, or high-activity roads within 1.9 miles of leks, and excluding all new road construction or location within 0.6 miles of leks (with no exceptions, waivers, or modifications)

The downward lek trends and population declines are worrisome; while sage-grouse are a cyclical species, the current downward trajectory is an anomaly.

Despite our extensive analysis and comments on the proposed changes in the 2019 RMPAs in regard to lek buffers, the DSEISs persist in maintaining the inadequate protections of the previous plans. We refer BLM to our previous comments - and extensive scientific evidence provided in literature - on this issue.

There have been a number of scientific studies demonstrating that lek buffers greater than the 0.25-mile lek buffers (e.g. authorized in the 2018 Idaho EIS for IHMA and GHMA, and also greater than the 0.6-mile buffers authorized for PHMA and SFA in the Idaho plan), are necessary to maintain current sage-grouse populations in the face of industrial development. No scientific study has ever recommended a lek buffer of 0.25 mile as an adequate conservation measure. The DSEISs don't provide any new or justifiable rationale for having weakened these standards in the FEIS or for rejecting the recommendations of an interagency team of sage-grouse experts from state and federal agencies who performed a comprehensive review of the scientific literature and recommended a 4-mile lek buffer for

siting industrial development in sage-grouse habitat (National Technical Team 2011), a prescription in greater accord with the science.

D.3.17 Livestock Grazing Management

BLM fails to consider new science showing harms to sage-grouse habitat from livestock grazing and fails to consider that even under the more-restrictive 2015 Plans, few changes to livestock grazing to address sage-grouse needs have occurred. BLM is treating addressing harms to sage-grouse from livestock grazing as a paper exercise instead of taking the substantive actions needed to protect the species' habitat. BLM's failure to address grazing by implementing the 2015 Plans only confirms that those Plans do not go far enough to protect sage-grouse and the 2019 Plans and SDEISs only repeat and exacerbate this error. New scientific studies more definitively link the presence of livestock grazing with cheatgrass. Time-series data and results in Williamson et al. (2019) indicate that grazing corresponds with increased cheatgrass occurrence and prevalence regardless of variation in climate, topography, or community composition, and provide no support for the notion that contemporary grazing regimes or grazing in conjunction with fire can suppress cheatgrass. None of the BLM's DSEISs incorporate or interpret this potential impact of livestock grazing on sage- grouse habitat.

The BLM has indicated in its scoping materials for the planned grazing regulations revision that it intends to make significant changes in how NEPA will be applied to grazing authorizations. According to the documents provided, the BLM will be seeking to eliminate the requirement for notice, comment, protest, and appeal on a substantial number of authorizations. These might include permits for trailing and crossing of livestock and temporary permits for "targeted grazing," supposedly to reduce fuel loads and wildfire risk. Targeted grazing authorizations are likely to include livestock infrastructure including fencing, water tanks and wells all of which can have significant negative impacts to sage-grouse in addition the impacts of the grazing itself which is likely to segment habitat and create barriers to sage-grouse migration, breeding, nesting and brood rearing. The BLM must address the impacts of targeted grazing on sage-grouse and discuss how any new categorical exclusions proposed in the grazing regulations revision might impact sage-grouse habitat.

the revisions to MD LG 16 omit including into the alphabetical items in MD LG 16 the clarification made in the DSEIS relative to its reliance upon the COT and NTT Reports in Appendix S-1. Specifically, Appendix S-1 allows revision of livestock management direction "to incorporate key components of the Governor's sage grouse plan into BLM Management Direction (MD)" so as to include: (a) removing the threshold and response requirement during livestock permit renewal; and (b) reiterating that grazing is guided by the C.F.R. 4100 Regulations. See DSEIS, Appendix S-1, at page APP-S-1-18. We support this approach, though the DSEIS erroneously fails to apply that approach in its revision of MD LG 16 and of MD LG 17 by not explicitly speaking to remove the threshold and response requirement during livestock permit renewal.

Grazing Author: Monroe et al. Year: 2017 Title: Patterns in greater sage-grouse population dynamics correspond with public grazing records at broad scales: Ecological Applications, v. 27, no. 4, p. 1096-1107, Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: High levels of grazing in this study represent intensities near maximum allowable levels defined by the Bureau of Land Management. Study findings did not suggest that reducing these grazing levels would benefit GRSG populations, but rather that grazing may have both positive and negative effects on GRSG, depending on timing and intensity. Study results suggest that broad-scale analyses are important to

capture the range of responses that wildlife can have to land-use and livestock management. These findings could also help guide sustainable livestock management decisions, such as delaying high-level grazing until after peak vegetation productivity, in similar habitats. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; grazing management Significance: Prioritization of management actions to improve grazing in GRSG habitat.

Grazing Author: Cutting et al. Year: 2019 Title: Maladaptive nest-site selection by a sagebrush dependent species in a grazing-modified landscape: Journal of Environmental Management, v. 236, no. Epub 2019, p. 622-630 Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: These findings suggest that certain sagebrush habitats may function as ecological traps, whereas others may be undervalued, especially in an actively grazed setting. Additional fencing in these locations may lower GRSG nest survival rates. Author Highlights, " Nest survival in preferred sagebrush type was one-fourth the rate in type avoided. Nest survival was four times higher when placed >100 m away from nearest fence. Timing of graze could best achieve herbaceous requirements for successful nesting. Fence modifications along with prioritization of sagebrush type are discussed." Issue: Grazing; mitigation Significance: Recommendations to avoid ecological traps in areas subject to grazing

Grazing Author: Runge et al. Year: 2019 Title: Unintended habitat loss on private land from grazing restrictions on public rangelands: Journal of Applied Ecology, v. 56, no. 1, p. 52-62. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: Restricting grazing on public lands could result in increased GRSG habitat loss on private land over the next 30 years. It is important to consider the connections between public land policy and private land use change. Policies that balance the need to conserve habitat on public lands with economic needs of ranchers are promising. Supersedes NTT: Yes Supersedes COT: Yes Issue: Grazing management Comments: Unintended consequences

Grazing Author: Taylor et al. Year: 2019 Title: Economic impact of sage grouse management on livestock grazing in the Western United States: Western Economics Forum, v. 17, no. 1, p. 98-114. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: Reducing or eliminating livestock grazing on federally protected lands recognized as GRSG habitat would create negative economic impacts on both a ranch-scale and regional-scale, and may create increased economic burdens for rural communities in western states. Issue: Grazing

In addition, the DSEISs inexplicably fail to consider closure of sage-grouse allotments upon receipt of voluntarily waived grazing permits. This action was identified within one of the alternatives in each of the 2015 plans, but not carried forward into the 2018 analyses or 2019 decisions. The interest in and need for grazing permit retirement has only grown since the earlier plans, but none of the DSEISs consider the action.

Our previous comments and protests have discussed the inadequacy of current rangeland health assessments to ensure the protection and restoration of sage-grouse habitat. The BLM, as a central component of the grazing regulations revision, appears to be advocating for moving from site-specific assessments of rangeland health on a 10-year timeline to larger scale assessments at the watershed or even RMP level which may only occur every 30 years or more. The BLM, therefore, must include in its current analysis a discussion about how any changes to scale and timeframe for rangeland health assessments will impact sage-grouse habitat management and the responsiveness of agency land managers to adjust grazing practices when standards are not met.

D.3.18 Withdrawal Recommendation and SFAs (Sagebrush Focal Areas)

Lack of consultation and coordination with state and local partners is a failure that plagued the 2015 land use plan development process throughout. As a result, the U.S. District Court for the District of Nevada held that BLM and USFS violated NEPA by failing to prepare a supplemental EIS to examine the SFA designations and allow for public comment. This failure underscores the process by which the overly restrictive 2015 plans were developed and the shortcomings that could have been avoided had the agencies deferred to state plans for Greater Sage Grouse conservation.

The Idaho District Court characterized the elimination of SFAs and "downgrading" these areas to Priority Habitat Management Areas (PHMAs) as a reduction in protection for the Greater Sage Grouse, and that in removing the SFAs, the final EISs for the revised plans "failed to identify any changes on the ground - or in the science - since the COT Report that had explained the need for the SFAs and designated those areas or the highest protection from energy development and other surface disturbance."13 Here again the Court ignored the fundamental change that had occurred - the rescission of the discretionary 10-million-acre mineral withdrawal that the SFA designation was created to support in the first place. 13 Western Watersheds Project et al v. Schneider et al. Case No. CV-00083-BLM, 2019, at 11. (D. Idaho Oct. 16, 2019).

The lack of basis for the withdrawal, and the contrived SFA designation designed to support it, was fully demonstrated by the BLM's own conclusion that mining impacted less than 0.1 percent of the Sage Grouse population.14 The DEIS explained that SFAs duplicate many protections already in place in PHMAs and do not provide appreciable benefit to the Greater Sage Grouse, including addressing the primary threats of wildfire and invasive species.15 As discovered during the NEPA process commenced to facilitate the withdrawals, the purported threat to the Greater Sage Grouse as dictated by the FWS was infinitesimal compared to the overall acreage proposed to be withdrawn. The BLM DEIS noted: "The total amount of mining related disturbance in Sagebrush habitat under the No Action Alternative [no withdrawal] would be 9,554 acres . . ., or approximately one-tenth of 1 percent of the total withdrawn area."16 (Emphasis added.) Indeed, the difference in acres that could be disturbed over 20 years between no withdrawal and a withdrawal of approximately 10 million acres was a mere 6,934 acres. Due to the compelling evidence related to the relatively small footprint of anticipated and foreseeable mining activities, on October 11, 2017, BLM allowed the two-year segregation period to expire by operation of law and cancelled the proposed SFA withdrawal.17 The shortcomings of the SFA designation and lek buffers included in the 2015 land use plans and grounded in the NTT and COT reports are well documented in the administrative record, and the Idaho District court erred in finding that deviation from these mechanisms constituted a reduction in Greater Sage Grouse protection without adequate review. 14 Sagebrush Focal Areas Withdrawal Environmental Impact Statement, Idaho, Montana, Oregon, and Wyoming (Dec. 2016) at 4-71. 15 Id. 16 Id. 17 82 Fed. Reg. 195, Oct. 11, 2017 at 47248.

Gold deposits like Gravel Creek (worth a gross $3 billion and growing) and Doby George are extremely rare, costly, and difficult to find; the odds of finding another similarly promising deposit elsewhere are extremely remote. Although the withdrawal was cancelled as unnecessary (which was appropriate) the segregation of these lands effective September 24, 2015 created a significant cloud of uncertainty on the project and continued development and had a chilling effect on Western's ability to continue raising necessary funds for its development. This is yet another reason why the No Action alternative should not be adopted and the BLM should consider this effect on WEX and similarly-situated mining

companies with valid existing rights in the DSEIS and should consider clarifying and confirming that such analysis must occur prior to any proposed withdrawal (based on existing law and regulations to avoid such harm in the future) in the future. WEX strongly supports and urges the BLM to adopt the provisions in the Management Alignment Alternative that eliminate the SFAs, remove any reference to any potential withdrawal of lands from mineral entry and reject in totality the No Action Alternative the adoption of which would not comport with the law.

the proposal for a potential mineral withdrawal included in the 2015 GSG LUPA was just that and not a foregone conclusion that it would be completed. As WEX argued to the Nevada District Court, we believe it was a legal shortcoming that the 2015 LUPA SEIS did not include a mineral potential report before proposing the withdrawal in the SEIS of 10 million acres of land (and was improper segmentation of the necessary NEPA processes). Once the proper NEPA analysis including the mineral potential in the area and a proper socioeconomic analysis of the impacts of such a withdrawal, the decision was clear: "the proposal to withdraw 10 million acres was unreasonable in light of the data that showed that mining affected less than 0.1 percent of Greater Sage-Grouse-occupied range." See DSEIS, Sec. 4.5.2, p.4-42 (quoting the BLM's Notice of Cancellation of Withdrawal Application and Withdrawal Proposal).

B. The Cancellation Of The Proposed SFA Withdrawal Necessitates Removal Of The SFA Designations As previously mentioned, part of the additional management package that accompanied the designations of SFAs was the recommendation to withdraw approximately ten million acres from operation of the Mining Law. The recommendation to withdraw in the 2015 Amendments was put into action upon the issuance of the RODs/LUPAs. See 80 Fed. Reg. 57,635 (Sept. 24, 2015) (notifying the public of the proposed withdrawal of BLM and Forest Service lands identified as SFAs in Idaho, Montana, Nevada, Oregon, Utah, and Wyoming). This notice also began the two- year segregation period, which prohibited entry and location on those lands. When the 2016 DEIS for the proposed withdrawal was released, it was clear the withdrawal of approximately ten million acres was not necessary to protect the greater sage-grouse or its habitat. For instance, even if no withdrawal occurred only 9,554 acres of the approximately ten million acres proposed for withdrawal could be disturbed by mining over a 20-year period. DEIS at vii, 4-87 ("The total amount of mining related disturbance in sagebrush habitat under the No Action Alternative [i.e., no withdrawal] would be 9,554 acres …, or approximately one-tenth of 1% of the total withdrawal area." (emphasis added)). In fact, the difference in acres that could be disturbed over 20 years between no withdrawal and the withdrawal of approximately ten million acres was only 6,934 acres

Although the SFAs and the lek buffers constituted substantial changes to the proposed action, no supplemental EIS was prepared to analyze them and the public was not provided an opportunity to offer input on their use as guiding elements of the 2015 land use plans. As a result, the 2015 plans did not reflect the best scientific information available to and used by the states that are home to the Greater Sage Grouse. Comments included in the SFA EIS Scoping Report and critiques by Western governors raised serious questions regarding the scientific integrity of the SFAs and their usefulness in the stated objective of Greater Sage Grouse conservation. Commenters also noted that portions of the SFAs were not suitable as Greater Sage Grouse habitat and that certain areas included within the designation are uninhabitable by the species due to past wildfire and lack of sagebrush ecosystems, facts which would have been obvious if BLM adequately assessed these lands on the ground in concert with state and local partners. Lack of consultation and coordination with state and local partners is

a failure that plagued the 2015 land use plan development process throughout. As a result, the U.S. District Court for the District of Nevada held that BLM and USFS violated NEPA by failing to prepare a supplemental EIS to examine the SFA designations and allow for public comment. This failure underscores the process by which the overly restrictive 2015 plans were developed and the shortcomings that could have been avoided had the agencies deferred to state plans for Greater Sage Grouse conservation. In addition to the procedural and scientific flaws of the SFA designation, SFAs were principally designed to support a 10-million-acre withdrawal of lands from location or entry under the General Mining Law of 1872 that was unjustified and which has since been rescinded. The Idaho District Court characterized the elimination of SFAs and "downgrading" these areas to Priority Habitat Management Areas (PHMAs) as a reduction in protection for the Greater Sage Grouse, and that in removing the SFAs, the final EISs for the revised plans "failed to identify any changes on the ground - or in the science - since the COT Report that had explained the need for the SFAs and designated those areas or the highest protection from energy development and other surface disturbance."13 Here again the Court ignored the fundamental change that had occurred - the rescission of the discretionary 10-million-acre mineral withdrawal that the SFA designation was created to support in the first place.

The lack of basis for the withdrawal, and the contrived SFA designation designed to support it, was fully demonstrated by the BLM's own conclusion that mining impacted less than 0.1 percent of the Sage Grouse population.14 The DEIS explained that SFAs duplicate many protections already in place in PHMAs and do not provide appreciable benefit to the Greater Sage Grouse, including addressing the primary threats of wildfire and invasive species.15 As discovered during the NEPA process commenced to facilitate the withdrawals, the purported threat to the Greater Sage Grouse as dictated by the FWS was infinitesimal compared to the overall acreage proposed to be withdrawn. The BLM DEIS noted: "The total amount of mining related disturbance in Sagebrush habitat under the No Action Alternative [no withdrawal] would be 9,554 acres . . ., or approximately one-tenth of 1 percent of the total withdrawn area."16 (Emphasis added.) Indeed, the difference in acres that could be disturbed over 20 years between no withdrawal and a withdrawal of approximately 10 million acres was a mere 6,934 acres. Due to the compelling evidence related to the relatively small footprint of anticipated and foreseeable mining activities, on October 11, 2017, BLM allowed the two-year segregation period to expire by operation of law and cancelled the proposed SFA withdrawal.17 The shortcomings of the SFA designation and lek buffers included in the 2015 land use plans and grounded in the NTT and COT reports are well

documented in the administrative record, and the Idaho District court erred in finding that deviation from these mechanisms constituted a reduction in Greater Sage Grouse protection without adequate review.

D.3.19 Mitigation

BLM must evaluate the impacts of not requiring compensatory mitigation and alternatives to address those impacts. To the extent BLM still considers removing the compensatory mitigation requirement and will rely on voluntary actions by operators and enforcing state requirements, the agency must consider the impacts of that change. Removing the compensatory mitigation requirement is a textbook example of a significant change that necessitates supplemental NEPA. 40 C.F.R. § 1502.9(c). Despite BLM's attempts to ignore the likely consequences, the loss of required mitigation that is enforced by BLM means that there is no consistent assurance mitigation will occur. The resulting loss of habitat must be analyzed, especially in light of the loss of population and habitat described above and in Exhibit 4 that

will compound these effects. BLM must consider alternatives that will address these increased threats to sage-grouse, such as increasing reliable protections from activities that damage habitat through measures like increasing protections for lands open to leasing. See, 40 C.F.R. §1502.14. BLM must conduct compliant supplemental NEPA to address the major effects of no longer requiring compensatory mitigation.

The State will work with the BLM to recommend, when appropriate, compensatory mitigation actions that create, restore, and/or protect functional habitat or habitat corridors to offset the impacts of unavoidable permanent disturbance to sage-grouse habitat. Generally, the State will recommend for every one acre of functional sage-grouse habitat permanently disturbed by project proponents, four acres of functional habitats or corridors created, restored, and/or preserved, as identified in the amended Utah Administrative Rule R634-3. Utah's compensatory mitigation ratio accounts for direct and indirect impacts that may result from permanent disturbance, differences in habitat quality, and uncertainty related to mitigation success. This ratio reduces project costs by simplifying the analysis of these factors, while also ensuring effective conservation outcomes.

The compensatory mitigation strategy contained in the Draft SEIS and the proposal to work with the State, the BLM, and the project proponents to analyze applicant-proposed or state-imposed compensatory mitigation to offset residual impacts is the best way to balance development and conservation in alignment with the State management plan.

I feel that compensatory mitigation is inadequate to mitigate for loss of Greater Sage-Grouse. You cannot compensate for the potential loss of a species like the Greater sage-Grouse monetarily. The new plan could significantly reduce the GRSG's chances of survival, and this is a tragic loss for all of us and future generations of Americans. I believe that the BLM has a Public Trust obligation to protect the Greater Sage-Grouse for all of us.

Supplemental Draft EISs should have been issued as required by NEPA when the BLM decided to eliminate mandatory compensatory mitigation. We are opposed to the elimination of mandatory compensatory mitigation, as mandatory compensatory mitigation is a cornerstone component contributing to the 2015 FWS determination that the GRSG is "not warranted" for listing under the ESA. An attempt to offer compensatory mitigation to development proponents as voluntary and regulated only under relevant State authorities both undermines the monumental collaborative conservation effort that resulted in the 2015 FWS determination and is likely to impose disadvantageous range wide impacts to GRSG. Further, the 2020 DSEIS does not appear to provide any substantive justification for eliminating mandatory compensatory mitigation.

Elimination of mandatory compensatory mitigation is likely to impose disadvantageous range wide impacts to GRSG by transferring compensatory mitigation authority to the State level. Consistent with the myriad of issues associated with the range wide cumulative impact analysis, "the states have no legal authority to dictate how federal lands are to be managed or to impose conditions like compensatory mitigation on federal land users" (DSEIS, C-172). Further pointing out the need for Federal involvement with regards to compensatory mitigation. GRSG occupy a geographic range composed of several states and they rely on habitat connectivity to persist. Imposing a state-led and therefore piecemeal compensatory mitigation policy is sure to result in range wide fragmentation of conservation efforts because compensatory mitigation policies are variable in degree of protection between states and also subject to change over time as political factors shift and economic reality varies. The 2020 DSEIS failed

to consider this concept and as a result, includes no substantive impact analysis or conclusionary justification regarding the potential benefits or detriments that such a policy modification may impose on GRSG across its range.

In addition, Section 4.13 Page 5-54 of the 2020 DSEIS presents language that suggests that there is not yet enough data regarding compensatory mitigation to provide a science-based assessment of compensatory mitigation "effectiveness or degree of benefit": "While the BLM has more than 90 RMPs, 9 strategies, and 45 agreements in active use that contain or address compensatory mitigation, the BLM has identified only limited implementation of compensatory mitigation consistent with the 2015 Greater Sage-Grouse Plans. Using data gathered in 2017, the BLM identified 13 Greater Sage-Grouse projects across 5 BLM states with a mandatory compensatory mitigation component or net gain standard implemented between October 2008 and June 2017.

In many cases, it is still too soon in the implementation of these compensatory mitigation actions to measure the effectiveness or degree of benefit each action provides." As the BLM acknowledges that the best available science shows that more information is required to provide a defensible conclusion regarding compensatory mitigation actions, it would be both irresponsible and unethical to modify the current compensatory mitigation policy until sufficient data has been collected to inform a formal NEPA analysis of the matter.

We maintain that BLM's position that it cannot require compensatory mitigation is unlawful. BLM's analysis is inaccurate and BLM has ample authority to require compensatory mitigation under FLPMA. First, IM 2019-018 relies on a Solicitor Memorandum M-37046, "Withdrawal of M-37039, "The Bureau of Land Management's Authority to Address Impacts of its Land Use Authorizations Through Mitigation." (June 30, 2017). Solicitor Memorandum M-37046 withdraws a previous Solicitor Opinion that confirmed BLM's authority to address land use authorizations through mitigation but did not conclude BLM did not have the subject authority; rather, it "attempted to answer an abstract question." In actuality, the direction in both IM 2019- 018 and the 2019 Amendments are arbitrary and capricious, and in violation of law.

To the extent BLM still considers removing the compensatory mitigation requirement and will rely on voluntary actions by operators and enforcing state requirements, the agency must consider the impacts of that change. Removing the compensatory mitigation requirement is a textbook example of a significant change that necessitates supplemental NEPA. 40 C.F.R. § 1502.9(c). Despite BLM's attempts to ignore the likely consequences, the loss of required mitigation that is enforced by BLM means that there is no consistent assurance mitigation will occur. The resulting loss of habitat must be analyzed, especially in light of the loss of population and habitat described above and in Exhibit 4 that will compound these effects. BLM must consider alternatives that will address these increased threats to sage-grouse, such as increasing reliable protections from activities that damage habitat through measures like increasing protections for lands open to leasing. See, 40 C.F.R. §1502.14. BLM must conduct compliant supplemental NEPA to address the major effects of no longer requiring compensatory mitigation. Recommendations: If BLM intends to proceed with a Supplemental EIS process, then BLM must address the flaws in the NEPA analysis connected with the 2019 Amendments, including the failures to fully assess the impacts of the changes to the 2015 Sage-grouse Plans and to consider an actual range of alternatives.

The revisions to the compensatory mitigation guidelines will likely prove to limit maintenance and/or restoration of habitat for sage-grouse. The new guidelines rely on existing policies to "fill in the blanks" when the BLM can't. Reliance on mitigation banking may be the most economical solution for "achieving reparations", but it is certainly not the most effective environmentally. Mitigation banking improves areas outside the area of concern, leaving the management area degraded. The no net loss concept embedded in conservation banking has proven to be, at best, modestly successful (Bull, J.W., Suttle, K.B., Gordon, A., Sing, N.J., Milner-Gulland, E.J., 2013). The implementation of a biodiversity offset by conservation banking walks a fine line between conservation and economic growth. Mitigation banking cannot be exchanged like currency to compensate for damages to the environment. Greater sage-grouse already suffer habitat loss due to climate change, suffering habitat loss due to anthropogenic, permitted events cannot be corrected indirectly by a mitigation banking system. Mitigation strategies concerning greater sage-grouse habitat areas should primarily be focused on ecological outcomes that directly correspond with greater sage-grouse populations. The mitigation banking strategy proposed by this plan is not sufficient in promoting the longevity of the species. The purpose of this EIS is to promote the conservation of sagebrush habitat for the greater sage-grouse species and to prevent the extinction of said species. The threshold of efficacy that conservation banking would have on a species bordering extinction is too small

Because priority habitat management areas (PHMAs) are discrete areas located throughout the range of sage-grouse, large-scale conservation strategies being pursued by BLM depend not only on maintaining suitable habitats within each priority area, but also in large part on maintaining the range-wide connectivity of populations among these priority areas. The loss of connectivity among sage-grouse population strongholds due to human-related or naturally occurring disturbance is a strong predictor of long-term population declines. BLM has a critical role in managing connectivity and other broad-scale issues. Yet, the agency's recent push towards project-specific evaluations and the elimination of its avoidance options (e.g., prioritization of oil and gas leasing outside of important sage-grouse habitats has been discontinued in practice by BLM [Instructional Memorandum 2018-026]) suggest that the BLM has no viable landscape-scale approach to managing impacts to sage-grouse or its habitats. Furthermore, the BLM currently is not requiring compensatory mitigation and has deferred to state plans. While deference to state authority and mitigation programs may work, we remain skeptical as to not only compliance but also effectiveness for achieving a no-net-loss standard. In other words, the lack of a broad perspective on management, restoration and mitigation will likely lead to continued degradation and loss of sage-grouse habitats as development in these habitats proceeds. The SEISs offer no analyses related to mitigation or restoration, which represents a fatal flaw in BLM's analysis of new information and circumstances.

IM No. 2018-093, however, does authorize voluntary compensatory mitigation by a project proponent. To ensure that compensatory mitigation is voluntary, the IM cautions that BLM must not explicitly or implicitly suggest that a project approval is contingent upon proposing a "voluntary" compensatory mitigation component, or that doing so would reverse or avoid an adverse finding. Importantly, the IM notes that "[e]ven if FLPMA authorizes the use of compensatory mitigation, it does not require project proponents to implement compensatory mitigation."21 Accordingly, the IM concludes that BLM will not mandate compensatory mitigation as a condition of project authorizations unless required by law. As such, compensatory mitigation, the foundation for the "net conservation gain" standard applied across the 2015 plans adopted across the range of BLM GRSG planning area, has been renounced. Similarly, On July 30, 2018 FWS formally withdrew two significant mitigation policies of the previous Administration.

The first policy, issued on Nov. 6, 2017, related to ESA compensatory mitigation policy, was withdrawn by the Endangered and Threatened Wildlife and Plants; Endangered Species Act Compensatory Mitigation Policy.19 The second, a Nov. 2016 policy, guided the Service on recommendations to mitigate impacts of activity of land and water developments on fish, wildlife, plants, and their habitats, was withdrawn by the FWS Mitigation Policy. The withdrawn policies were eleventh hour pronouncements by the previous Administration that imposed a net conservation gain standard as applied to matters particularly focused under the ESA, in addition to throughout FWS-related activities.

As justification for the policy revocation, FWS acknowledged serious concern that requiring mitigation for impacts unrelated to a project proponent's actions as potentially implicating federal constitutional concerns related to the Fifth amendment prohibition on takings.20 Additionally, according to FWS, "[t]he ESA requires neither 'net conservation benefit' nor 'no net loss,' and [FWS] has not previously required a 'net benefit' nor 'no net loss' while implementing the ESA.21 FWS recognized that, threaded between Sections 7 and 10 of ESA, "the applicant may do something less than fully minimize and mitigate the impacts of the take where to do more would not be practicable," while still advancing Section 7(a)(2) obligation to ensure that any federal activity is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of habitat.22 Accordingly, there is no legal basis to impose a "net conservation gain" standard in any way in the land use planning process. The Idaho District Court ignored BLM's IM and its well-founded interpretation of the law that FLMPA does not support mandatory compensatory mitigation and the Service's withdrawal of the policies on which net conservation gain was based. It is inappropriate to conclude that the rescission of unauthorized standards can serve as a degradation in species protection under the law. By extension, it is also inappropriate to conclude that the BLM violated NEPA by failing to analyze the impacts of not implementing standards it was not authorize to implement in the first place, and which had since been rescinded.

Another difference between past and current oil and gas development, particularly in the Pinedale Planning Area, has been the implementation of extensive mitigation measures designed to reduce overall impacts to sage grouse and enhance their habitat. Mitigation measures became notable with development of the Pinedale Anticline starting in 2000 (BLM 2000, 2008a) followed by the Jonah Drilling Infill Project (BLM 2006b) and culminating in the Pinedale Resource Management Plan Record of Decision (BLM 2008b). These measures have resulted in 183,608 ha of sage grouse habitat in the Pinedale Planning Area set aside by the BLM as unavailable to oil and gas development (BLM 2008b)

The DSEIS fails to include a fresh hard look at the removal of compensatory mitigation requirements from the 2019 plans. In order to properly assess the effects of this change from the 2015 plans, the BLM must first disclose an estimated amount of money set aside for compensatory mitigation over the life of the plan, then make educated estimates of how that money might be used to improve habitats (types of projects, acreage estimates), and then take a hard look at the population increases that such projects might be expected to generate, based on monitoring data from past compensatory mitigation projects. Please provide the information on projects funded, type of compensatory mitigation project funded, acres treated, and sage-grouse population gains (or losses) that occurred subsequent to compensatory mitigation projects in which BLM is a participating, funding, or observing member. Rangewide figures for acres treated and dollars spent in the past do not inform a "hard look" at the magnitude of the impacts of making compensatory mitigation optional (or leaving it up to the state, which amounts to the same thing since federal agencies cannot compel state agencies to require compensatory mitigation). BLM

asserts again in the DSEIS that vegetation treatments will offset the loss of federally-mandated compensatory mitigation, without acknowledging the past failures of such treatments or BLM's own acknowledgement that sage-grouse "did not benefit from, or were negatively affected by, prescribed fire and mechanical sagebrush removal." Oregon FEIS at 3-4. BLM also falsely claims that state mitigation programs will offset the loss of federal requirements. However, most states do not require compensatory mitigation at the same standard as the previous federal requirements. Many state programs are voluntary, narrow the circumstances in which the requirement applies, or reduce the standard by which habitat loss must be mitigated. Indeed, not all states even have their plans finalized yet. The BLM fails to disclose the potential implementation of these state mitigation plans but simultaneously fails to safeguard public lands by creating its own.

BLM also failed to acknowledge that it simultaneously amended its plans to allow operators to waive other restrictions-such as lek buffers and disturbance caps-if they "offset" impacts through state compensatory mitigation programs. See, e.g., UT 56 (MA-SSS-3B); CO 174-75 (NSO-2); ID 031; NVCA 215. As a result of these related changes, compensatory mitigation may actually facilitate habitat destruction under the 2019 Plan Amendments.

Instead of analyzing the impacts of compensatory mitigation removal, BLM punts analysis of effects to sage grouse habitats and populations in favor of vague assertions that "mitigation would continue." See, e.g. Idaho DSEIS at 4-28, Northwest Colorado DSEIS at 4-45. The closest the agency comes to a 'hard look' at mitigation effectiveness is the following: Anecdotally, the existing conservation credit systems, banks, and exchanges designed to offset impacts to Greater Sage-Grouse or its habitat have had mixed success. The BLM is aware of three mitigation banks (one commercial bank agreement in Wyoming and two single-user bank agreements with mining companies in Nevada) and one exchange system in Colorado specific to Greater Sage-Grouse currently in operation. However, the BLM does not have access to data or information that would further assess the relative benefit provided by these systems.

Furthermore, "it is speculative to assume the impacts from voluntary compensatory mitigation at the planning level without knowing the frequency with which project proponents would offer voluntary actions. The applicability and overall effectiveness of voluntary actions cannot be fully assessed until the project level when the specific location, design and impacts are known." See, e.g.Idaho DSEIS at 4-31; Wyoming DSEIS at 4-99; Northwest Colorado DSEIS at 4-47. Thus, instead of taking the legally required hard look at impacts of changing compensatory mitigation requirements, the best the BLM can muster is an admission that they have no idea. NEPA requires at least an informed estimate.

The BLM jettisoned the compensatory mitigation promised in the 2015 plans under the policy that BLM would only consider compensatory mitigation as a component of compliance with state mitigation plans, programs or authority, or when offered voluntarily. See, e.g. Idaho DSEIS at 2-3, Colorado DSEIS at 2-9. But nowhere do the plans take a comprehensive look at what the states' plans, programs or authorities are, nor the likelihood of voluntary mitigation by developers. Without this information, it is impossible to assess the overall mitigation in sage- grouse range, underscoring how destructive and uncertain these plans are.

The Idaho and Wyoming DSEISs do admit that the difference between "Net Conservation Gain" to "No Net Loss" has not been defined by BLM. Idaho DSEIS at 4-27; Wyoming DSEIS at 4-100. This is a very basic requirement of NEPA. See, e.g. Or. Natural Desert Ass'n v. Rose, 921 F.3d 1185, 1189-90 (9th Cir. 2019) (Interior Board of Land Appeals acted arbitrarily and capriciously where it changed the definition

of a "route" in a travel plan, but failed to explain "what led it to alter its earlier decision or why the new approach was more consistent with the text of the Steens Act"). Moreover, BLM's DSEISs are asserting that this change is not significant: "The BLM is not proposing any action that would preclude proponents from offering compensatory mitigation; it is clarifying the BLM's reliance on voluntary compensatory mitigation consistent with federal law." But there is a significant difference between requiring "net gain" and making any gains voluntary in terms of the "adequacy" of a regulatory mechanism. See, e.g., Idaho DSEIS at 4-34; Wyoming DSEIS at 4-102. One ensures that there is offset for habitat impacts and the other doesn't. The difference is greater than or equal to every developed/degraded acre. The forthcoming SEISs must admit and analyze this truth.

D.3.20 Modifying Waivers, Exceptions, and Modifications of Fluid Minerals

Removing waivers, modifications, and exceptions from habitat protection standards, so that they will be rigorously and dependably applied;

D.3.21 Prioritization of Mineral Leasing

Finally, BLM has not evaluated the impacts of its increased leasing and permitting in sage- grouse habitat. Since 2017 and this administration's abandonment of prioritizing leasing and development outside habitat, there has been a radical increase in leasing and permitting in sage- grouse habitat. See, Oil and Gas Development on Federal Lands and Sage-Grouse Habitats October 2015 to March 2019.5 Since the beginning of this administration, more than 4 million acres of grouse habitat have been put up for lease and approximately 2.5 million acres have sold. As the court noted, "there is no indication" that the administration will proceed at any slower pace. WWP v. Schneider, 417 F.Supp.3d at 1334. Given this trend, BLM can and should evaluate the impact of ongoing leasing and permitting in habitat. 5 available at https://www.audubon.org/sites/default/files/greater_sage-grouse_habitat_reportfinal_20190725.pdf

If the hard look at the impacts of eliminating mandatory compensatory mitigation was lacking in the FEIS, the impacts analysis on the impact of prioritizing oil and gas leasing and development outside sage grouse PHMA was completely absent. The DSEISs repeat these mistakes. Under the Obama administration, approximately 5 million acres of oil and gas leases nominated by the industry inside PHMA were pulled from the auction block under this provision. How many acres of PHMA would be abandoned as a result of leasing inside PHMA over the life of the plan amendment? To what degree would sage-grouse populations decrease as a result of leasing inside PHMA? The FEIS and the DSEIS are silent. Furthermore, BLM does not even attempt to address the elimination of prioritizing project-level development outside PHMA, which is required under the 2015 ARMPAs but eliminated under the 2018/2020 EISs.

D.3.22 Greater Sage-Grouse

Analysis of GRSG population impacts from predation and hunting must be included and considered in the development of the final land use plans. The Counties urge BLM to coordinate with local governments and the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service on these issues. In addition, any land use plans must recognize that GRSG populations respond to changes in weather. Wet or dry years are the biggest influence on populations apart from predation and hunting.

Support the development of recovery plans within 18 months of listing that includes clear objectives to reach for delisting to occur; for species already listed support the development of a recovery plan within 18 months of this document.

Require the petition of the immediate delisting of a species when population or recovery plan objectives have been met.

Support the development of local solutions (e.g., habitat management plans, conservation plans or conservation plans with assurances) to keep a species from being listed under ESA or as species of concern/species of special concern.

Include consideration of management activities on federal lands as part of the local solutions to keep a species from being listed under ESA or as a species of concern/species of special concern.

Additionally, BLM has just completed a Programmatic EIS for Fuel Breaks in the Great Basin that will guide BLM to "construct and maintain a system of up to 11,000 miles of strategically placed fuel breaks to control wildfires within a 223 million- acre area in portions of California, Idaho, Nevada, Oregon, Utah and Washington."4 As discussed in Exhibit 4, in the opinion of sage-grouse experts, this approach will require destruction of sage-grouse habitat and could result in substantial loss and/or degradation of sagebrush habitat. BLM must consider this new information when evaluating likely impacts to sage-grouse from the 2019 Amendments. 4 https://www.blm.gov/press-release/interior-improves-strategies-combat-wildfires-across-223-million-acres-great- basin

3.D. Mineral Withdrawal Simplot supports the continued exclusion of SFAs as stated in the DSEIS and the prior withdrawal of the application to designate approximately 10 million acres of public and National Forest system lands located within Idaho, Montana, Nevada, Oregon, Utah, and Wyoming as SFAs. In its 2010 finding, the FWS identified a number of specific threats to GRSG in the Great Basin Region; including the widespread present and potential impacts of wildfire, the loss of native habitat to invasive species, and conifer encroachment. Mining was not identified as a primary threat. This is further supported in the DSEIS at page ES-1: "The BLM determined that the proposal to withdraw these areas was unreasonable in light of the data that showed that mining affected less than 0.1 percent of Greater Sage-Grouse across its occupied range." The DSEIS further clarifies at page 4-76 that: "In its 2016 SFA Withdrawal EIS, the BLM quantified the possible adverse effects from locatable mineral exploration and mining on the approximately 10 million acres of SFAs proposed for withdrawal, finding that they would be limited to approximately 9,000 acres rangewide of surface disturbance over 20 years, with approximately 0.58 percent of Greater Sage-Grouse male birds possibly affected per year. The other action alternatives evaluated in the 2016 SFA Withdrawal Draft EIS similarly demonstrated negligible benefit of the proposed withdrawal to Greater Sage-Grouse and its habitat."

Because the initial purpose behind the entire BLM Sage-Grouse RMP amendment process was conditioned upon the principal goal "to avoid a potential listing" under the Endangered Species Act (ESA), the 2020 Final SEIS needs to cure the failure of the 2015 and 2019 NEPA processes by evaluating the environmental impacts of the alternatives with respect to Sage-Grouse population status and trends. The Final SEIS needs to evaluate current population status and trends and needs to disclose how the various alternatives would impact future population trends which directly affect the purported risk that Greater Sage-Grouse may face "potential listing" under the ESA.

Sage-grouse population declines and habitat loss represent significant new environmental information that bears on the management actions established in the 2015 and 2019 sage-grouse RMP amendments. BLM must address these circumstances through supplements to the EISs used to inform those RMPs as prescribed in 40 CFR 1502.9(c)(1)(ii) of the National Environmental Policy Act (NEPA). Specifically, the regulations require agencies to: "prepare supplements to either draft or final environmental impact statements if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." The Draft SEISs released February 11, 2020 do not reflect the reality of these new circumstances and provide no scientific justification for the majority of BLM management decisions given the current situation. Accordingly, BLM must expand the scope of these SEISs to address this new information and set of circumstances facing sage-grouse and sagebrush habitat.

The documents do present treatment and restoration acres, which are important, but there is essentially no mention of acres lost and how treated/restored acres might have offset that loss. Empirical metrics for habitat loss and acres of habitat that were mitigated and those that were not are fundamental to any meaningful "hard look" at environmental consequences. It is impossible to know exactly how much habitat has been gained or lost and what the trajectory for habitat and sage-grouse populations are without the full suite of metrics.

Furthermore, there is no mention as to whether habitat treatments and restoration were effective and, critically important, when or even if sage -grouse will ever occupy them, let alone successfully reproduce effectively in the future - the true metric of successful restoration. The temporal lag in treatment effectiveness should be accounted for in analyses and discussed in detail.

Idaho DSEIS at ES-1, Wyoming DSEIS at 1-1; Northwest Colorado DSEIS at ES-1. It is also informative to note that during the course of this period of state management of sage-grouse, the once-commonplace large flocks were eliminated and the birds became so rare, and their habitats so badly impacted by human activities, that the U.S. Fish and Wildlife Service found the species 'warranted, but precluded' for listing under the Endangered Species Act. And population declines have continued, as noted elsewhere in these comments.

BLM did not consider these increased habitat protections in the 2019 plan amendments, which this SEIS incorporates by reference without significant changes. See, e.g., Idaho DSEIS at 2-17; Northwest Colorado DSEIS at ES-3. This SEIS does nothing to remedy the failure of BLM to make needed improvements in sage-grouse habitat protections,

Dr Braun is understandably alarmed; he has been concerned about the population trajectory of sage-grouse for decades. His analysis of recent trends merits a hard look and some real consideration.In his professional opinion: These recent trends add urgency...to ensure that remaining sage-grouse populations and their habitats are protected from further degradation and fragmentation, to the maximum extent possible. Natural events - including drought and wildfires - are largely beyond federal land managers' control, but will continue and likely be exacerbated by climate change into the foreseeable future. It is thus essential that human actions - over which we do have control - not be allowed to contribute further to sage-grouse declines. Braun Declaration at 12, Attachment M. Dr. Braun's insights here and in the rest of his declaration (attached at M) should be part of BLM's hard look at the proposed action and incorporated in future iterations of the SEISs.

BLM's various arguments that NTT should not apply because it does not factor in other policy considerations or BLM guidance is nothing more than a list of excuses. For instance, the existence of other BLM authorities governing designation of areas as unsuitable for coal mining does not preclude BLM from adopting NTT's suggestion that PHMAs should be designated as unsuitable, it only provides a process for doing so. Id. at F-3; See also 43 U.S.C. § 1712(a) ("Land use plans shall be developed for the public lands regardless of whether such lands previously have been classified, withdrawn, set aside, or otherwise designated for one or more uses."). And, BLM's emphasis on applying the "least restrictive constraints" on oil and gas leasing to achieve the resource protection objective ignores that constraints in State plans like Wyoming's and others are not achieving the resource protection objective of preserving sage- grouse, which is why stronger protections are necessary to prevent further population declines. Id. BLM's suggestion in responding to the NTT Report that policy considerations should dictate which sage-grouse protections are applied - not science - is the overarching reason why BLM's land-use plans are failing to adopt adequate protections for the sage-grouse.

D.3.23 Non-Greater-Sage-Grouse

Global climate change has been caused largely by emissions from burning fossil fuels, so a public agency like the BLM can be on the forefront of reducing production of fossil fuels by denying oil and gas drilling leases. Livestock production also makes a major contribution to greenhouse gas emissions, with cattle being the largest portion (GAO 2006), so there is another opportunity to reduce GHG emissions. With climate's current unpredictability, all sage grouse habitat should be managed in a manner that addresses the possibility of a drought. Another example of the interconnection of all these factors is that climate change is causing wildfires to be hotter, windier, drier, and larger (Neary, 2019). BLM must include these stresses when considering the protection of public lands for its native biota.

Grazing Author: Smith et al. Year: 2018 Title: Effects of livestock grazing on nesting sage-grouse in central Montana: Journal of Wildlife Management, v. 82, no. 7, p. 1503-1515. Implications: Modified from USGS Annotated Bibliographies (2018, 2019) or from each paper: Female sage grouse selected nest sites based on sagebrush cover and distance from roads, and nest failure was driven by precipitation. Data regarding livestock was inconclusive. The authors suggest that conservation of shrub cover and preventing additional habitat fragmentation by roads would benefit GRSG nesting habitat and nest success. Issue: Roads; livestock grazing Significance: Seasonal effects of weather on nest success; roads fragment habitat

The Utah DSEIS similarly relies mainly on the 2015 plan for its environmental baseline (UT DSEIS at 3-4 to 3-5), and provides only the same information on sage-grouse seasonal habitat and anthropogenic disturbance as the 2018 FEIS. UT DSEIS at 3-8 to 3-10. Wyoming's DSEIS relies on 2015 conditions as a baseline for most impacts, but updates fire through 2017. Wyoming DSEIS at 3-6. This lack of information overlooks the changes on the ground in the interim and fails to provide the requisite hard look at the impacts of the proposed action; each of the forthcoming SEISs should update the baseline against which they compare the impacts of the various alternatives.

Dr. Jack Connelly provided this assessment of sagebrush and vegetation manipulations efforts in 2019: 1. Further, sagebrush and vegetation manipulation efforts - including mechanized methods using aerator with seeding, harrow or chain with seeding, drill seeding, hand planting plugs, and aerial seeding - are generally harmful to sage-grouse populations, with only weak evidence (at best) suggesting some treatments might be helpful. 2. Despite this scientific information, the 2019 Idaho and Wyoming Plan

Amendments permit prescribed burns and other sagebrush treatments as acceptable vegetation management practices in sage-grouse habitat. The 2019 Idaho Plan Amendments specifically allows these sagebrush manipulation and eradication methods, noting "[w]here desirable perennial bunchgrasses or forbs are deficient in existing sagebrush stands, use appropriate mechanical, aerial, or other techniques to reestablish them (e.g., a Lawson aerator with seeding, harrow or chain with seeding, drill seeding, hand planting plugs, aerial seeding, or other appropriate techniques)." 3. BLM approved these vegetation treatment methods despite the fact that little evidence demonstrates benefits of mechanical treatments of sagebrush for sage-grouse. In my expert judgment, these practices will only continue to destroy or degrade sage-grouse habitat, with limited or no benefit to sage-grouse populations and habitat. 4. The adverse impacts flowing from BLM's vegetation treatment projects will be further exacerbated by BLM's plans for fuels management activities. According to the 2019 Idaho and Wyoming Plan Amendments, fuels management activities - including construction of firebreaks; prescribed fire; and mechanical, chemical and biological fuels management - are specifically exempted from any disturbance limitations in sage-grouse habitat. In fact, these fuels management treatments may occur within the lek buffers in key sage grouse habitat. 5. BLM's fuels treatment activities are inconsistent with the best available scientific information on sage-grouse habitat and populations, and BLM provides no sound scientific support for its actions. Instead, BLM outright misrepresents leading research on this topic… in an apparent effort to manufacture a scintilla of scientific evidence supporting its activities. For example, in the 2019 Wyoming Plan Amendments, BLM justifies a robust vegetation treatment regime by claiming that a desired condition for sage-grouse breeding and nesting habitat includes 5-25% sagebrush canopy cover... 6. Absent these gross mischaracterizations, BLM lacks any scientific evidence supporting its decision allowing 5% sagebrush cover as a "desired condition," and compelling evidence indicates 5% canopy coverage is far too low for sage-grouse nesting habitat. In my judgment, managing sagebrush landscapes for a 5% sagebrush cover will harm sage- grouse populations and habitat, under the guise of restoring or improving both. 7. Finally, in the 2019 Idaho Plan Amendments BLM reasonably limited mechanized anthropogenic disturbance in nesting habitat during the nesting season and in wintering habitat during the winter season. But BLM then emasculates the importance of this reasonable and necessary conservation measure by exempting fuels and vegetation treatments "specifically designed to improve or protect Greater Sage-Grouse habitat." BLM cites no scientific authority supporting this exemption, and in my experience any activity that disturbs nesting hens is likely to result in nest abandonment and/or increased nest predation. Thus, BLM must prohibit all mechanized anthropogenic disturbance in breeding and winter habitat during the breeding and winter season. (Internal citations omitted, entire declaration provided in Attachment N). Dr. Connelly's expert opinion on the matter should be heeded, and the forthcoming iterations of the SEIS should explain why BLM believes that its use of scientifically inadequate protections in sage-grouse habitat is sufficient.

D.3.24 Fluid Minerals

The Center for Biological Diversity's Michael Saul also provided a revealing declaration in the preliminary injunction briefings. Attachment P. For example, Mr. Saul reviewed impacts in sage-grouse habitat that occurred between the 2019 Plan Amendments (in March) and his declaration (in June). He determined that BLM approved at least 5 oil and gas projects with 51 Applications to Drill (APDs) in Utah, 21 projects and 44 APDs in Wyoming, 1 project with 31 wells for oil and gas development in Colorado, and mining and destructive infrastructure projects in Idaho and Nevada. These were just some of the known impacts in designated sage-grouse habitat of the 2019 DSEISs prior to their injunction. The BLM must analyze and disclose the effects of these projects as the current environmental baseline and take a hard look at their impacts on sage-grouse habitat. The SEISs must discuss these and

the remaining data in Mr. Saul's declaration in forthcoming iterations in order to redress their failings under NEPA.

In 2019, a new report (Gardner, et al. 2019) analyzed oil and gas development on federal lands and sage-grouse habitats from the implementation of the 2015 plans through March 2019. This research demonstrated that drilling in designated sage-grouse habitat increased by 2.98 times between February 2017 and March 2019 compared with the October 2015 to January 2017 time frame. This was a rate higher than drilling on all public lands across all states during the same periods. This demonstrates that oil and gas development has shifted towards PHMA in all states since January 2017, following the removal of SFA restrictions and prioritizations due to BLM's abrupt cancellation of SFA designations. The data from Gardner, et al., should be analyzed and disclosed in any forthcoming environmental analyses completed pursuant to the BLM's plans.

BLM continues to omit numerous large-scale oil and gas developments in key sage- grouse habitat from its DSEIS analyses. These activities are occurring throughout the range of sage-grouse, including lands beyond those covered by the 2019 plan revisions. This includes all the states where sage-grouse presently occur or could recover, and across the land tenure. The failure to consider the current conditions and likely foreseeable future actions on Forest Service lands, state lands, and private lands is a serious omission. As discussed above, these impacts are significant, merit a hard look, and a discussion of each plan's impacts should include the cumulative effects of all the activities in the range.

The Nevada/CA and Wyoming DSEISs do not specify dates in their oil and gas Past leasing sections but do include a June 2018 lease sale in their Future Pending sections, so their leasing acreages are nearly two years out of date.26 BLM in both states routinely offers thousands of acres of designated sage-grouse habitat management areas during oil and gas lease auctions. The NW Colorado DSEIS provides no oil and gas leasing acreage information in its cumulative effects summary at all, nor did BLM include this information in the NW Colorado 2018 FEIS. See NW Colorado DSEIS at App-2-1 to App-2-2, 2018 FEIS at App-2-1 to App-2-2. BLM did not even provide oil and gas leasing acreage in the 2015 NW Colorado FEIS, instead merely stating: "The BLM routinely offers land parcels for competitive oil and gas leasing to allow exploration and development of oil and gas resources for public sale. Continued leasing is necessary for oil and gas companies to seek new areas for oil and gas production or to develop previously inaccessible/uneconomical reserves." NW Colorado 2015 FEIS at 5-5. The continued omission of oil and gas leasing acreages demonstrates that BLM has never considered the actual quantity and physical location of oil and gas leasing in Colorado sage-grouse habitat as part of the cumulative effects NEPA analysis the agency was required to conduct for the NW Colorado grouse plans. 26 See Wyoming DSEIS at D-14

D.3.25 Fire and Fuels

Wildland fires also continue to be an immediate and pervasive threat to sage-grouse, especially throughout western portions of the species' range. As discussed in our protest and in the attached sage-grouse scientists' letter, data indicates that fires on BLM lands are increasing, with 3 million acres burned in Idaho, Nevada and Utah. Once again, BLM should take into account the substantial losses of habitat and likely continued losses due to fire in evaluating the impacts of proposed changes. Additionally, BLM has just completed a Programmatic EIS for Fuel Breaks in the Great Basin that will guide BLM to "construct and maintain a system of up to 11,000 miles of strategically placed fuel breaks to control wildfires within a 223 million- acre area in portions of California, Idaho, Nevada, Oregon, Utah and

Washington."4 As discussed in Exhibit 4, in the opinion of sage-grouse experts, this approach will require destruction of sage-grouse habitat and could result in substantial loss and/or degradation of sagebrush habitat. BLM must consider this new information when evaluating likely impacts to sage-grouse from the 2019 Amendments. 4 https://www.blm.gov/press-release/interior-improves-strategies-combat-wildfires-across-223-million-acres-great- basin

Mitigation-Wildfire Author: Stenvoorden et al. Year: 2019 Title: The potential importance of unburned islands as refugia for the persistence of wildlife species in fire-prone ecosystems: Ecology and Evolution, DOI: 10.1002/ece3.5432. Implications: Population dynamics of leks located within fire perimeters are negatively impacted. Unburned islands play an important role as refugia, and maintaining unburned vegetation may be vital for the success of GRSG populations after a wildfire event. The recovery of natural vegetation postfire may also benefit GRSG populations. Supersedes NTT: Yes Supersedes COT: Yes Issue: Wildfire; fire suppression Significance: Prioritization of fiire suppression to maintain unburned refugia and enhance pos- wild fire restoration

Mitigation-Wildfire Author: Shinneman et al. Year: 2019 Title: The ecological uncertainty of wildfire fuel breaks: examples from the sagebrush steppe: Frontiers in Ecology and Environment, v. 17, no. 5, p. 279-289. Implications: To produce a robust cost-benefit analysis regarding fuel break effectiveness and ecological impacts, more research is needed. The authors suggest several specific research questions that could provide useful information to policy and decision-makers "to disentangle their ecological costs and benefits." Supersedes NTT: Yes Supersedes COT: Yes Issue: wildfire; fuel breaks Significance: Ecological cost benefit analysis of fuel breaks Comments: Ecological cost benefit analysis of fuel breaks

Mitigation-Wildfire Author: Foster et al. Year: 2019 Title: Greater sage-grouse vital rates after wildfire: Journal of Wildlife Management, v. 83, no. 1, p. 121-134. Implications: GRSG continued to use areas within the wildlife perimeter, but had lower nest and adult survival rates compared to other reported values for GRSG in the Great Basin. Apparent decreased nest site fidelity within the fire perimeter may relate to increased habitat fragmentation. Increased nest survival in the second year may relate to increased vegetation in the burned area. Findings suggest that fire suppression activities to maintain intact habitat patches may be a critical tool for managers of GRSG populations and habitat in landscapes prone to fire. Supersedes NTT: Yes Supersedes COT: Yes Issue: Wildfire; mitigation strategy Significance: Improved Wildfire firefighting strategy to benefit GRSG.

Mitigation-Wildfire Author: Shinneman et al. Year: 2018 Title: A conservation paradox in the great basin-altering sagebrush landscapes with fuel breaks to reduce habitat loss from wildfire: US Geological Survey, v. XXX, no. XXX, p. XXX*Open File Report. Implications: The authors conclude that more research is needed to document fuel break effectiveness, effects on plant communities, and effect on wildlife. However, they suggest that installing fuel breaks in an effort to protect intact sagebrush habitat may provide long-term benefits to sagebrush-associated species, even if these benefits come at a cost to some individual species at local scales. Supersedes NTT: Yes Supersedes COT: Yes Issue: Wildfire; fuel breaks Significance: Supports the reality that historical habitat was not a vast sagebrush sea, but rather an ecosystem made up of sagbrush islands. Comments:Suggest additional review due to significance as a mitigation measure.

Mitigation-Wildfire Author: Foster et al. Year: 2018 Title: Potential effects of GPS transmitters on greater sage-grouse survival in a post-fire landscape: Wildlife Biology, v. 2018, no. 1, p. 1-5. Implications: Survival rates measured in this post-fire study were much lower than observed in other studies in the

Great Basin, though they did eventually increase to comparable levels (after the conclusion of this study). If the slightly lower survival rates of birds with GPS versus VHF devices observed in this study are confirmed (5% lower survival), they are of concern because of the increasing use of GPS units and the potential for effects of this magnitude to affect population growth rates. Findings from this study were limited by small sample sizes. Supersedes NTT: Yes Supersedes COT: Yes Issue: Post-fire study; GPS transmitters affect survival Significance: GPS transmitters reduce survival compared to VHF transmitters Comments: Authors appropriately recognize that the GPS may have biased the conclusions. As such, this study better informs future study designs

Mitigation-Wildfire Author: Ellsworth et al. Year: 2016 Title: Ecosystem resilience is evident 17 years after fire in Wyoming big sagebrush ecosystems: Ecosphere, v. 7, no. 12, article e01618, 12 p., https://doi.org/10.1002/ecs2.1618. Implications: Results demonstrate post-fire resiliance of the xeric Wyoming big sagebrush system, possibly because of its high quality and presence of unburned patches within the fire perimeter. The conditions are representative of xeric Wyoming big sagebrush communties prior to the invasion of cheatgrass, where there were islands of sagebrush left after fire which helps the system recover from fire and provide habitat for GRSG. Controlled burning of some xeric sagebrush systems that are in goodcondition and dominated by natives may have benefits for ecosystem heterogeneity and herbaceous cover. Authors conclude, "Our results illustrate that management of all habitat components, including natural disturbance and a mosaic of successional stages, is important for persistent resilience and that suppression of all fires in the sagebrush steppe may create long-term losses of heterogeneity in good condition Wyoming big sagebrush ecosystems." Supersedes NTT: Yes Supersedes COT: Yes Issue: Wildfire; mitigation strategy Significance: Selective use of prescribed fire

Mitigation-Wildfire Author: Coates et al. Year: 2016 Title: Wildfire, climate, and invasive grass interactions negatively impact an indicator species by reshaping sagebrush ecosystems: Proceedings of the National Academy of Sciences of the United States of America, v. 113, no. 45, p. 12745-12750. Implications: The authors describe, "Using three decades of sage-grouse population count, wildfire, and climate data within a modeling framework that allowed for variable postfire recovery of sagebrush, we provide quantitative evidence that links long-term declines of sage-grouse to chronic effects of wildfire. Projected declines may be slowed or halted by targeting fire suppression in remaining areas of intact sagebrush with high densities of breeding sage-grouse." Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; targeted wildfire supression Significance: Prioritization of fire suppression to minimize deleterious effects to GRSG Comments: Important preplanning strategy to reduce threat of wildfire.

Mitigation-Wildfire Author: Davis and Crawford Year: 2015 Title: Case study-Short-term response of greater sage- grouse habitats to wildfire in mountain big sagebrush communities: Wildlife Society Bulletin, v. 39, no. 1, p. 129-137. Implications: The authors sought to identify the short-term (<11 year) response of GRSG nesting and brood-rearing habitats to wildfire. In mountain big sagebrush communities where sagebrush is abundant, the understory is composed of adequate native perennial grasses and forbs, and invasive annual grasses are limited, prescribed burning may be a useful tool for improving GRSG nesting and brood-rearing habitat. The application of fire treatments in less mesic sagebrush communities with fewer forbs may not produce the desired results, which emphasizes that management decisions need to be made in light of existing conditions and documented GRSG seasonal habitat needs. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; prescribed fire

Significance: Selective use of prescribed fire to improve GRSG habitat. Comments: Supresedes NTT because fire treatments may benefit higher elevation mountain big sagebrush communities i.e. not a one-size-fits-all strategy.

Indeed, from 2016-2019 fires burned approximately 3 million acres of BLM administered lands in Idaho, Nevada and Utah alone, representing a 43% increase in annual acres burned on BLM lands in these states compared to the previous 4-year period (2012-15; data from the Great Basin Coordination Center). Also, the BLM estimates that more than 2 million acres of designated sage-grouse habitat management areas burned between 2015 and 2017 in Idaho, Nevada, Utah and Wyoming. Importantly, trends generated from 2004-2015 data suggest that wildfire rates are increasing, and the median annual area burned is projected to increase 5-11 times across several states in the range of sage-grouse over the next two decades. These trends coupled with other habitat losses from development (which remain poorly documented) and other perturbations simply cannot be ignored and must be addressed through these supplemental analyses.

Dr. Haak's analysis determined that "core areas in Wyoming, Idaho, and Nevada are particularly at risk, having experienced large wildfires and increasing threats from energy development in just over three years." Haak 2019 at 27, attached. In sum, the analysis found: Since there has been no overlap between lands impacted by wildfire and those now marked for oil and gas development, the impact from these two factors is additive. Range-wide nearly three million hectares (over 7,000,000 acres) of currently occupied habitat, including almost 1.6 million hectares (over 3,800,000 acres) of priority habitat, have had a change of status since adoption of the 2015 Plan. This represents 5% of the priority habitat as defined by the PACs. A significant loss in just three years. Haak at 29, Attachment O. This is exactly the type of analysis that BLM could have undertaken - but didn't - in the 2019 amendments in order to take a hard look at the current conditions and likely effects of its proposed action. The SEISs must discuss these and the remaining data in Dr. Haak's declaration and report on them in forthcoming iterations in order to redress their failings under NEPA.

D.3.26 Vegetation

Improved Habitat Mapping and Assessment Author: Gibson et al. Year: 2016 Title: Evaluating vegetation effects on animal demographics-The role of plant phenology and sampling bias: Ecology and Evolution, v. 6, no. 11, p. 3621-3631. Implications: Statistical artifacts can confound interpretations of the importance of vegetation to GRSG nest survival. Researchers should consider the confounding effects of plant phenology when planning animal demography studies. The authors provide techniques for date corrections between hatching and nest-fate measurement. Supersedes NTT: Yes Issue: Technique refinement; nesting studies

Habitat Improvement Author: Lockyer et al. Year: 2015 Title: Nest-site selection and reproductive success of greater sage-grouse in a fire-affected habitat of northwestern Nevada: Journal of Wildlife Management, v. 79, no. 5, p. 785-797, Implications: Habitat management for all shrub species, rather than just sagebrush, may confer the greatest benefits to GRSG. Reproductive success of GRSG may be improved by maintaining perennial grasses and >40 percent shrub cover within 0.8 ha of nest sites. Cheatgrass control may also improve nest success. GRSG may benefit from postfire restoration that recovers shrubs and perennial grasses. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; habitat management Significance: Prioritization of management

Soil and soil biocrusts are the foundation of the sage steppe, providing many services to the plants which evolved with these crusts (Belnap 1994). The biocrusts are fragile, quickly broken under a cow hoof or tire, but when intact are more likely to exclude cheatgrass. Excluding livestock allows recovery (Zhang 2020, Ponzetti et al. 2007, Root et al. 2019, Reisner et al. 2013, Belnap et al., 1994). Soil disturbance increases cheatgrass which increases wildfire spread which increases cheatgrass. Limiting or removing causes of disturbance will allow soil and plants a chance to recover their original function.

Cheatgrass - All surface-disturbing activities tend to promote the spread of weeds (BLM 2005). In a 2006 Science review of dozens of published studies, the researchers observed that "native herbivores strongly suppressed, whereas exotic herbivores strongly enhanced, the relative abundance of exotic plants" (Parker et al. 2006). Cheatgrass is incompatible with or detrimental to all other renewable uses listed by FLPMA, uses such as "recreation, watershed, wildlife and fish, and natural scenic, scientific and historical values." 43 U.S.C. § 1702 (c). Yet by continuing grazing, drilling leases, treatments and other disturbances, the BLM insists on promoting cheatgrass, degrading sage steppe and habitat for sage grouse.

Since January 2017, BLM leased over 2.4 million acres and issued 3,570 drilling permits in sage-grouse habitat. Over decades, the activity under leases has actively removed and fragmented sage grouse habitat.

Habitat Improvement Author: Baxter et al. Year: 2017 Title: Baxter, J.J., Baxter, R.J., Dahlgren, D.K., and Larsen, R.T., 2017, Resource selection by greater sage-grouse reveals preference for mechanically-altered habitats: Rangeland Ecology and Management, v. 70, no. 4, p. 493-503. Implications: Dense patches of sagebrush were mechanically treated annually by using either a chain harrow or brushhog mower in treatment sites. An increase in forb cover after treatment was expected but not observed, potentially because of lower annual precipitation levels after treatment, competition with grasses, or a lag effect of treatment. A significant increase in use of habitat in and near (within 90 meters) treated mountain big sagebrush sites by brooding GRSG suggests that such treatments may be beneficial to GRSG. Issue: Technique refinement Significance: Habitat restoration Comments: Habitat improvement but Survival and recruitment were not assessed

Habitat Improvement Author: Carlisle et al. Year: 2018 Title: Nontarget effects on songbirds from habitat manipulation for greater sage-grouse: implications for the umbrella species concept: Condor, v. 120, no. 2, p. 439-455. Implications: The authors suggest that sagebrush mowing treatments intended to benefit GRSG, an ostensive umbrella species at a broad spatial scale, could have negative effects on co-occurring species at more localized scales, especially if mowing treatments are widespread. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement Significance: Prioritization of management actions; Unintended consequences Comments: The NTT, COT, and LUPs completely fail to take into account other species and can have negative impacts on other species at a local level. The one-size fits all, single species managemnt approach has proven adverse effects to other species.

Other Mitigation Author: Wing and Messmer Year: 2016 Title: Impact of sagebrush nutrients and monoterpenes on greater sage-grouse vital rates: Human-Wildlife Interactions, v. 10, no. 2, p. 157-168. Implications: Study results confirmed the importance of black sagebrush as pre-nesting season forage and suggested that any forage selection related to monoterpenes may reflect some aspect of an individual monoterpene rather than the total concentration of all monoterpenes. Study results should be

interpreted cautiously because of the small sample size, single year, and single study site. Supersedes NTT: Yes Supersedes COT: Yes Issue: black sagebrush; GRSG forage

Mitigation-Restoration of Habitat - Pinyon-Juniper removal Author: Davies and Bates Year: 2019 Title: Longer-term evaluation of sagebrush restoration after juniper control and herbaceous vegetation trade-offs: Rangeland Ecology & Management, v. 72, no. 2, p. 260-265. Implications: Following juniper control in dense stands that lack sagebrush, mountain big sagebrush re-establishment is likely to be accelerated by seeding, whereas herbaceous vegetation cover may be reduced. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; pinion-juniper removal and sagebrush restoration

Mitigation-Restoration of Habitat - Pinyon-Juniper removal Author: Reinhardt et al. Year: 2017 Title: The authors conclude that the optimization framework and models used in this study illustrate an approach, increasingly available to land managers, which can augment or complement standard expert-based approaches to planning and prioritization. Such approaches could reduce planning and implementation time for landscape-scale conifer removal treatments. Topics: broad-scale habitat characteristics, conifer expansion, new geospatial data, habitat restoration or reclamation Implications: Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; conifer removal Significance: Prioritization of management Comments: Improved methodology

Mitigation-Restoration of Habitat - Pinyon-Juniper removal Author: Prochazka et al. Year: 2017 Title: Encounters with pinyon-juniper influence riskier movements in greater sage-grouse across the Great Basin: Rangeland Ecology and Management, v. 70, p. 39-49. Implications: The authors conclude that GRSG are negatively affected by pinyon-juniper encroachment because this habitat type stimulates faster, high-risk movements, such as flight, which likely attract visual predators. Further, the study quantifies age-specific GRSG mortality risk when individuals move through landscapes containing pinyon-juniper stands. Supersedes NTT: Yes Supersedes COT: Yes Issue: Pinion-juniper; predation risk Significance: Pinion-juniper; predation risk Comments: Cause and effect mechanism explaining predation risk

Mitigation-Restoration of Habitat - Pinyon-Juniper removal Author: Coates et al. Year: 2017 Title: Pinyon and juniper encroachment into sagebrush ecosystems impacts distribution and survival of greater sage-grouse: Rangeland Ecology and Management, v. 70, no. 1, p. 25-38. Implications: From the authors: "Collectively, these results provide clear evidence that local sage-grouse distributions and demographic rates are influenced by pinyon-juniper, especially in habitats with higher primary productivity but relatively low and seemingly benign tree cover. Such areas may function as ecological traps that convey attractive resources but adversely affect populationvital rates. To increase sage-grouse survival, our model predictions support reducing actual pinyon-junipercover as low as 1.5%, which is lower than the published target of 4.0%." Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; Improved standards for pinyon-juniper removal Significance: New threshold for pinion-juniper removalprovided greater benefits to GRSG

Mitigation-Restoration of Habitat - Pinyon-Juniper removal Author: Farzan et al. Year: 2015 Title: Western juniper management-Assessing strategies for improving greater sage-grouse habitat and rangeland productivity: Environmental Management, v. 56, no. 3, p. 675-683. Implications: The study showed that juniper removal can benefit both GRSG and cattle forage production, but the benefits depend on site characteristics and how sites were selected. Sites chosen to maximize forage did not substantially benefit GRSG. Sites chosen for GRSG habitat did benefit forage production, but larger

habitat treatments had decreasing returns on investment. The benefits achieved for either goal were altered by agency coordination, budgetary constraints, and wildfire. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; pinyon-juniper removal Significance: Management can be prioritized to benefit GRSG habitat and cattle forage Comments: Management actions can have a dual purpose

Habitat Improvement Author: Ricca et al. Year: 2018 Title: A conservation planning tool for greater sage-grouse using indices of species distribution, resilience, and resistance: Ecological Applications, v. 28, no. 4, p. 878-896. Implications: The CPT could help resource managers evaluate potential costs and benefits of treatments in particular locations in order to facilitate restoration prioritization decisions across landscapes used by GRSG. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; habitat restoration Significance: Prioritization of management; new planning tool Comments: An improved planning tool. Also undermines the argument that habitats cannot be restored by recognizing the BLM prioritization process for restoring lands needs improvement. This tool can help with that.

Habitat Improvement Author: Gustafson et al. Year: 2018 Title: Using object-based image analysis to conduct high-resolution conifer extraction at regional spatial scales: International Journal of Applied Earth Observation and Geoinformation, v. 73, p. 148 - 155. Implications: The maps produced can help to inform land managers on where to target pinyon-juniper treatment in order to aid sagebrush restoration and GRSG conservation. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement; habitat mapping; Pinion-juniper treatment Significance: Habitat mapping; habitat restoration Comments: Potential technique for offset mitigation

Habitat Improvement Author: Gustafson et al. Year: 2018 Title: Using object-based image analysis to conduct high-resolution conifer extraction at regional spatial scales: International Journal of Applied Earth Observation and Geoinformation, v. 73, p. 148 - 155. Implications: The maps produced can help to inform land managers on where to target pinyon-juniper treatment in order to aid sagebrush restoration and GRSG conservation. Supersedes NTT: Yes Supersedes COT: Yes Issue: Technique refinement Significance: Prioritization of management actions; Unintended consequences Comments: The NTT, COT, and LUPs completely fail to take into account other species and can have negative impacts on other species at a local level. The one-size fits all, single species managemnt approach has proven adverse effects to other species

The USFS has been providing the public with a monitoring report regarding the implementation of the 2015 ARMPAs and the extent to which it is affecting designated sage- grouse habitat on forest lands.12 Table 5 in the 2019 report is particularly illustrative of rangewide conditions, but BLM's DSEISs do not contain any such tabulation of impacts an disturbance13(We note too that the Forest Service report offsets habitat destruction with "restoration" projects that are unproven and potentially damaging. See "Vegetation Treatments," below). 12 https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd695213.pdf 13 Surface disturbance is defined according to the RMPA's parameters, which does not include livestock disturbance (i.e. areas of livestock concrentation, miles of fencing, water structures, etc.). We disagree with this definition of surface disturbance and recognize that USFS is underestimating the impacts of authorized activities.

In terms of taking a hard look at the impacts of vegetation treatment, the DSEIS adds basically no new analysis to the analyses underlying the 2015 ARMPAs. See Idaho DSEIS at 4-28; NV/CA DSEIS at 4-3 to 4-10; 4-40 to 4-46; Wyoming DSEIS at 4-92; UT DSEIS at 4-41 to 4-67;

Having tallied these acreage figures, the BLM has shown that it has identified areas "treated in recent years," theoretically for sage-grouse habitat enhancement. But where is the hard look at the results of these treatments? Did viable sagebrush habitats meeting minimum sage-grouse habitat requirements result, and if so over how many acres? Did disturbed areas with little or no habitat value for sage-grouse result, and if so, where, and over how many acres? Did cheatgrass infestations increase on lands "treated" for habitat enhancement (or other) purposes, and if so, over how many acres? How many of these vegetation projects have also been designed to create supplementary forage for livestock? The DSEIS is silent on these questions, but the BLM is obligated to analyze and disclose this information to the public.

For example, we are concerned that juniper-removal projects in sage-grouse habitat may result in expansion of cheatgrass (Evans and Young 1985, Bates et al. 2005). This is particularly concerning where such projects involve mature juniper woodlands with little sagebrush understory. BLM has failed to adequately analyze the differences in impacts of invasive species resulting from juniper removal in stands of different densities and ages. Based on our review of the science, juniper removal (using hand-cutting and jackpot burning) in areas where junipers are sparse and young and sagebrush-grass understory is healthy (without a large component of cheatgrass) does not result in severe cheatgrass expansion when the area is protected from livestock grazing for two-plus years post-treatment, whereas projects that do not meet these criteria pose major cheatgrass risks and are likely to result in the further degradation, rather than restoration, of sage-grouse habitats.

BLM is also developing new categorical exclusions for pinyon-juniper treatments in sage-grouse habitat, one of which will allow for the clearcutting of pinyon and juniper trees over large areas up to 10,000 acres. Because these projects will be conducted under a categorical exclusion, there is likely to be very little analysis of long-term impacts to sage-grouse as a result of the associated disturbance to such large landscapes, increased human presence, and the potential increase in invasive plants such as cheatgrass. The BLM must analyze the potentially large increase in the number of projects that will be conducted and consider the cumulative impacts of the expected number of projects across such a substantial portion of sage-grouse habitat. The analysis must include a hard look at the potential negative side effects of these projects (e.g. increased fire occurrence through the spread of cheatgrass; See Fusco et. al. 2019b) and how they will impact sage-grouse habitat and populations in the longer term.

D.3.27 Guidance and Policy

Local governments are charged with protecting the health, safety and welfare of their citizens and serve as custodians of vital information including the cultural, social, economic and historical data necessary to fully evaluate the effects of any proposed actions which must be considered in order to compile an accurate NEPA review. The Counties were therefore dismayed that the BLM did not involve said Counties in the development of this SEIS. As cooperating agencies, the Counties should be involved throughout the NEPA process, including the preparation of this SEIS which was made necessary thanks to the Winmill Decision. See 40 CFR § 1501.6 (regarding the involvement of cooperating agencies). BLM must thoroughly consider these plans and alternatives and coordinate with the Counties on the final land use plans.

All decisions to permanently close an area needs to be done only after a thorough public outreach process that includes engagement of all local government agencies affected. The same outreach and engagement should be required for the closure of any road or trail, primitive or otherwise, that has not been through a comprehensive travel management plan process.

Placing these multiple-use, foundation-level plans at the mercy of a single-policy agenda destroys their utility. Single purpose initiatives, such as sage-grouse conservation, should be pursued within the framework of existing resource management plans, rather than becoming the reason for their constant revision. In other words, policy initiatives should be subordinate to multiple-use management plans, rather than the plans existing at the mercy of each new policy initiative. The 2019 land use plans revisions sought to restore the planning process consistent with the multiple-use mandate, and discontinue the single-purpose planning model that defined the 2015 plans.

In addition to other resource values, FLPMA specifically directs BLM to manage public lands "in a manner that recognizes the Nation's need for domestic sources of minerals…" FLMPA Sec. 102(a)(12). Unfortunately, the multiple-use management objective and FLMPA's directive to manage lands in a manner that recognizes the Nation's need for minerals became an afterthought in the development of the 2015 land use plans as FWS continued to dictate management objectives for the stated purpose of Greater Sage Grouse conservation above all other land uses covered by the plans.

The failure to revise the plan amendments toward true conservation does not follow BLM's internal policies that mandate species protection. BLM Manual 6840 "provide[s] policy and guidance for the conservation of BLM special status species and the ecosystems upon which they depend on BLM-administered lands."3 Its objective for species that are not currently listed under the Endangered Species Act (ESA) is to "initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA." Id. The BLM's State Director (the signatory of this Amendment) has the additional responsibility of "[e]nsuring that when BLM engages in the planning process, land use plans and subsequent implementation-level plans identify appropriate outcomes, strategies, restoration opportunities, use restrictions, and management actions necessary to conserve and/or recover listed species, as well as provisions for the conservation of Bureau sensitive species," and "[e]nsuring that land use and implementation plans fully address appropriate conservation of BLM special status species." The BLM SSP requires the agency to take action to prevent listing. 3 https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual6840.pdf

D.3.28 Statutes and Regulations

NEPA requires that agencies "prepare, circulate, and file a supplement to a statement in the same fashion (exclusive of scoping) as a draft and final statement unless alternative procedures are approved by the Council." 40 CFR § 1502.9(c)(4). Although the Draft EISs that supported the 2019 Amendments were issued for a 90-day comment period, BLM only issued this Draft SEIS for 45 days. While BLM extended the comment period for an additional 45 days on the date that the original comment period expired, this last minute action does not evidence good faith compliance with NEPA's requirements. We also note that BLM failed to conduct scoping as part of this supplemental NEPA process. Although scoping is not absolutely required when completing supplemental analysis, a scoping period is commonly offered during supplemental NEPA, especially when such supplemental analysis was in response to a court order. See, 40 CFR § 1502.9(c)(4);Notice of Availability of the Draft Amendment to the Approved

Resource Management Plan for the Miles City Field Office, Montana, and the Associated Supplemental Draft Environmental Impact Statement, 84 Fed. Reg. 22,516 (May 17, 2019); Notice of Availability for the Draft Supplemental Environmental Impact Statement and Potential Amendment for the Approved Resource Management Plan for the Buffalo Field Office, Wyoming, 84 Fed. Reg. 22,515 (May 17, 2019). The intent of scoping is to focus the analysis on significant issues and reasonable alternatives, to eliminate extraneous discussion, and to reduce the length of the EIS. By skipping this opportunity to solicit public input and influence the scope of supplemental analysis, BLM has further undermined this process.

The breadth of proposed regulatory changes currently being contemplated and finalized by the BLM demonstrate the absolute uncertainty of implementation of any aspect of the plans that is deferred to site-specific or future actions. Where BLM provides for management flexibility in implementation at the permitting or site-specific level, the SEISs must admit that the decision-making may be done outside of current levels and expectations of public participation and without in depth environmental analyses. The agency can't have it both ways: the ARMPAs can't rely on subsequent decision-making to implement the science and simultaneously be cutting the science out of subsequent decision-making.

No Notice and Comment on Eleventh-Hour Changes to the 2015 Plans In the last 60-90 days of the NEPA process on the 2015 Plans, DOI significantly altered their preferred alternative to include new regulatory measures relative to: GRSG "strongholds" or "focal areas"; the involvement of the USFWS and state wildlife agencies in granting waivers, modifications or exceptions to no surface occupancy areas ("NSOs"); so-called hard or soft triggers; and overall, a switch from managing lands to management of a species above all other considerations. The public, including the Counties, did not have an opportunity to review or comment on these significant eleventh-hour changes. Despite these significant flaws and issues, the agencies failed to revise the NW CO DEIS or the Reports. Given the importance federal law ascribes to the public's input with regard to rulemaking processes (see also 5 U.S.C. § 553, 40 C.F.R. § 1506.6, 40 C.F.R. § 1502.9(b); 40 CFR § 1503.1),18 it is clear that the agency's failure not only to obtain public comments on the "eleventh hour" changes introduced in the 2015 BLM FEIS, but also to incorporate local guidance and input received throughout the 2015 Plans' NEPA process, has resulted in regulation and land management which both omits and overrides the public's input in violation of federal law. 18 See also, Perez v. Mortg. Bankers Ass'n, 135 S.Ct. 1199, 1203 (2015) ("An agency must consider and respond to significant comments received during the period for public comment.")

Caerus believes that any plan should recognize the Bureau of Land Management's ("BLM") statutory mandate to manage public lands to accomplish multiple-use and sustained yield and should also explicitly recognize the valid existing rights ofleases acquired before the 2015 Plan was finalized.

Mentioned within the DEIS regarding FLPMA, Congress provided BLM with “discretion” and “authority” to manage public lands for multiple use and sustained yield. These terms need to be explained in detail further to define their purpose and state which direct authorities are able to be utilized in the multiple-use goal. Along with definitions, BLM contains “broad” responsibilities to manage public lands & resources similar to the Department of Interior (DOI) which has broad responsibilities to manage federal lands and resources.

Within ES.2, “By implementing these land use plan conservation measures and continuing to exercise its discretion to approve future project proposals under appropriate terms and conditions or deny them

where appropriate, the BLM can adequately protect Greater Sage-Grouse and its habitat while meeting its general obligation under FLPMA to manage public lands under principles of multiple use and sustained yield". Again, the terms of discretion and using words such as general does not portray the urgency and specific determination behind the BLM's missions and goals.

FLPMA specifically directs BLM to manage public lands "in a manner that recognizes the Nation's need for domestic sources of minerals…" FLMPA Sec. 102(a)(12). Unfortunately, the multiple-use management objective and FLMPA's directive to manage lands in a manner that recognizes the Nation's need for minerals became an afterthought in the development of the 2015 land use plans as FWS continued to dictate management objectives for the stated purpose of Greater Sage Grouse conservation above all other land uses covered by the plans. Placing these multiple-use, foundation-level plans at the mercy of a single-policy agenda destroys their utility. Single purpose initiatives, such as sage-grouse conservation, should be pursued within the framework of existing resource management plans, rather than becoming the reason for their constant revision. In other words, policy initiatives should be subordinate to multiple-use management plans, rather than the plans existing at the mercy of each new policy initiative. The 2019 land use plans revisions sought to restore the planning process consistent with the multiple-use mandate, and discontinue the single-purpose planning model that defined the 2015 plans.

the Idaho District Court found that discarding the "net conservation gain" standard and mandatory compensatory mitigation used in the 2015 plans, and which was central to FWS's not warranted decisions, eliminated protections without justification.18 Despite this opinion, it has been well established that the net conservation gain standard and compelling mandatory compensatory mitigation is beyond the authority of the BLM under FLMPA. On July 24, 2018, BLM provided specific policy direction on the issue of compensatory mitigation through issuance of Instruction Memorandum (IM) No. 2018-093. Specifically, BLM directed that compensatory mitigation cannot be required as a condition for the use of public lands nor can BLM accept any monetary payment to mitigate the impacts of any proposed action. In all instances, BLM must refrain from authorizing any activity that causes unnecessary or undue degradation (UUD), pursuant to Section 302 of FLPMA. 18 Western Watersheds Project et al v. Schneider et al. Case No. CV-00083-BLM, 2019, at 12, 24. (D. Idaho Oct. 16, 2019).

FWS recognized that, threaded between Sections 7 and 10 of ESA, "the applicant may do something less than fully minimize and mitigate the impacts of the take where to do more would not be practicable," while still advancing Section 7(a)(2) obligation to ensure that any federal activity is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of habitat.22 Accordingly, there is no legal basis to impose a "net conservation gain" standard in any way in the land use planning process. 22 See National Wildlife Federation v. Norton, 306 F. Supp. 2d 920, 928 (E.D. Cal. 2004).

1. FLPMA has an over-arching non-degradation mandate.
https://www.blm.gov/or/regulations/files/FLPMA.pdf 2. Neither FLPMA nor the Taylor Grazing Act mandates any particular level or frequency of livestock grazing or even that any particular lands be used for livestock. 43 U.S.C. § 315-315(r)(2000) 3. FLPMA expressly authorizes the BLM to "totally eliminate" any of the enumerated "principal uses" 43 U.S.C. § 1712 (e) and, specifically, to discontinue grazing to devote public lands to a "public purpose." 43 U.S.C. § 1752 (b)(2),(g) 4. FLPMA's definition of multiple use calls for management that "takes into account the long term needs of future generations for

renewable and nonrenewable resources, to meet the present and future needs of the American people. 43 U.S.C. § 1702 (c) 5. FLPMA defines sustained yield as "the achievement and maintenance in perpetuity (my emphasis) of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use. 43 U.S.C. § 1702(h) 6. In its planning directives, FLPMA requires the BLM to give priority to the designation and protection of areas of critical environmental concern. 43 U.S.C. § 1702 (c). The ACECs should be based in science. 7. FLPMA requires "consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output." 43 U.S.C. § 1702 (c). For instance, only 1.9% of US beef comes from BLM public lands (Kuhn 2020), and BLM public lands grazing accounts for only 0.41% of U.S. livestock receipts (Department of Interior Fiscal Year 2012 Economic Report).

The Multiple-Use Sustained-Yield Act lists standards and guidelines for management of public lands: 16 U.S.C. § 1604(g) (2000) * Suitability * Inventory of renewable resources, including soil and water * Consideration of economic and environmental aspects * Providing for diversity of plants and animal communities based on the suitability of the specific area How has BLM management incorporated these standards and guidelines? Loss of sagebrush and its many dependent species is a major environmental concern, yet there is little evidence the BLM is serious about the conservation of this habitat, even with its many documents concerning sage grouse habitat. The BLM should insure evaluation of the effects of each management system so that it will not result in substantial and permanent impairment of the productivity of the land. The maintenance of viable ecosystems is essential to providing a sustained yield of all federal land uses. Multiple use and sustained yield cannot be separated.

Multiple use, as incorporated in existing law, is not synonymous with commodity extraction, but rather requires a balancing of commodity uses, noncommodity uses, and environmental protection (Hardt 1994). The purpose of this balancing exercise, according to the Interior Board of Land Appeals court, is to ensure that "'all BLM decisions are in the public interest (National Wildlife Federation v. BLM Management. 140 IBLA 85. 101 1997). Maintaining sage grouse is in the public interest and is a noncommodity value on public land. Note: The Executive Summary for this DSEIS emphasizes the role of state agencies in the responsibility for sage grouse, but state agencies have little or no jurisdiction over the management of the ground, ie. habitat, which is the whole point of federal public land management documents like this one.

The BLM 2018 Public Land Statistics Report (online), reporting on the condition of a sample of 2665 riparian areas under its jurisdiction in Nevada, found: Proper Functional Condition - 33% Functional at Risk - 49% Non-functional - 17% Twenty years ago the BLM warned that a "large part of the Great Basin lies on the brink of ecological collapse," and the BLM attributed the "downward spiral of ecological conditions" on 75 million acres of public lands in the Great Basin to invasive plant species (primarily cheatgrass) and fire, and it related both fire and vegetative conditions to livestock grazing. (BLM 2000). Why does the BLM now ignore this causative relationship and the science supporting it?

We are in the midst of a national emergency around COVID-19, which is making it exceptionally difficult for people to participate in comment processes. Proceeding with lease sales would violate the public participation requirements of the Federal Land Policy and Management Act (FLPMA) and National Environmental Policy Act. In particular, FLPMA requires that BLM conduct land use planning processes "with public notice" and must provide "the public adequate notice and an opportunity to comment upon the formulation of standards and criteria for, and to participate in, the preparation and execution of

plans and programs for, and the management of, the public lands." 43 U.S.C. §§ 1712(a), 1739(e). NEPA requires that "environmental information is available to public officials and citizens before decisions are made and before actions are taken" and reiterates that "public scrutiny is essential to implementing NEPA." 40 C.F.R. § 1500.1(b). Further, NEPA obligates the BLM to "[m]ake diligent efforts to involve the public in preparing and implementing their NEPA procedures." 40 C.F.R. § 1506.6(a).

Moving forward with comment periods and decisions when the public is unable to properly participate violates the requirements of NEPA and FLPMA. BLM's public rooms are closed (making it difficult to conduct research), and state and local orders are encouraging people to stay at home and limiting travel. Notably, Oregon ranks 34th for broadband for internet access,1 compounding the challenges with participating in this process. Broadband internet is particularly problematic in rural areas of the state, exacerbating the challenges of participation in areas likely to be affected by leasing and other activities authorized by the proposed amendments. 1 Ranking is based on the % of the population with access to +25 mbps wired broadband (see https://broadbandnow.com/Colorado).

Members of Congress, attorneys general, and state and local governments have submitted requests that the federal government pause or extend public comment periods for rulemaking efforts and other processes during the novel coronavirus pandemic.2 Administrative actions and public comment periods for other federal agency actions are being suspended or extended for "to be determined" amounts of time due to the national emergency.3 BLM should heed these many indications that it is not responsible to move forward with this process. 2 See, e.g., letter from fourteen House of Representatives Committee Chairs to Office of Management and Budget , Acting Director Russell Vought, submitted April 1, 2020: https://www.eenews.net/assets/2020/04/02/document_gw_08.pdf; letter from Senators Wyden, Merkley, and Udall to Secretary Bernhardt requesting a pause on comment periods, submitted April 3, 2020:
https://www.wyden.senate.gov/imo/media/doc/040320%20Letter%20on%20DOI%20comment%20periods.pdf; letter from state attorney generals to Office of Management and Budget, Acting Director Russell Vought, submitted March 31, 2020: https://portal.ct.gov/-/media/AG/Press_Releases/2019/COVID-19-Rule-Delay-Letter--- Final.pdf?la=en; Letter from various state and local government organizations requesting a pause on all public comment and rulemaking processes, submitted March 20, 2020: https://www.nga.org/letters-nga/state-and-local- government-organizations-seek-pause-on-public-comments-on-rulemaking-processes/ 3 For example, DOI's Interior Board of Land Appeals extended all filing deadlines by 60 days in response to COVID-19; the Daniel Boone National Forest Supervisor suspended the public objection period for its planning effort in light of COVID-19; and the U.S. Forest Service extended a public comment period for the Nantahala and Pisgah forest plan revision with the length of time to be determined (available at:
https://www.fs.usda.gov/detail/nfsnc/home/?cid=stelprdb5397660).

Although the Draft EISs that supported the 2019 Amendments were issued for a 90-day comment period, BLM only issued this Draft SEIS for 45 days. While BLM extended the comment period for an additional 45 days on the date that the original comment period expired, this last minute action does not evidence good faith compliance with NEPA's requirements.

We also note that BLM failed to conduct scoping as part of this supplemental NEPA process. Although scoping is not absolutely required when completing supplemental analysis, a scoping period is commonly offered during supplemental NEPA, especially when such supplemental analysis was in response to a

court order. See, 40 CFR § 1502.9(c)(4);Notice of Availability of the Draft Amendment to the Approved Resource Management Plan for the Miles City Field Office, Montana, and the Associated Supplemental Draft Environmental Impact Statement, 84 Fed. Reg. 22,516 (May 17, 2019); Notice of Availability for the Draft Supplemental Environmental Impact Statement and Potential Amendment for the Approved Resource Management Plan for the Buffalo Field Office, Wyoming, 84 Fed. Reg. 22,515 (May 17, 2019). The intent of scoping is to focus the analysis on significant issues and reasonable alternatives, to eliminate extraneous discussion, and to reduce the length of the EIS. By skipping this opportunity to solicit public input and influence the scope of supplemental analysis, BLM has further undermined this process.

The Richardson court clarified that providing members of the public with an opportunity to comment, does not fulfill the purposes of NEPA if further analysis was not provided, stating: "[a] public comment period is beneficial only to the extent the public has meaningful information on which to comment." 565 F.3d at 708. Commenters on the 2019 Plan Amendments raised concerns with BLM's reliance on previous analysis and incorporation by reference. BLM did not change its approach in the 2019 Amendments and did not do so in the Draft Supplemental EISs. Instead, as noted above, BLM states that it will determine after the comment period on the Draft Supplemental EISs if it should conduct any new analysis of alternatives or information. Recommendation: If BLM intends to proceed with a Supplemental EIS process, then BLM must provide sufficient opportunities for meaningful public engagement, including a 90-day comment period on a Draft Supplemental EIS.

As summarized above and by the BLM, the WWP v. Schneider court identified four significant failings in the BLM's NEPA analysis in the 2010 Plan Amendment. BLM failed to remedy these violations and still needs to do so. Since BLM did not address these flaws, which we raised repeatedly in our comments and protest on the 2019 Amendments, we incorporate those by reference and have attached our protest and overarching comments on the Draft Amendments for easy reference as Exhibits 1 and 2.

BLM must take a "hard look" at the environmental consequences or a proposed action, and the requisite environmental analysis "must be appropriate to the action in question." Metcalf v. Daley, 214 F.3d 1135, 1151 (9th Cir. 2000); Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 348 (1989). The court found that BLM did not take the requisite hard look, noting its failure to respond to FWS and EPA concerns and finding "when the BLM substantially reduces protections for sage grouse contrary to the best science and the concerns of other agencies, there must be some analysis and justification - a hard look - in the NEPA documents." WWP v. Schneider, 417 F.Supp.3d at 1332. However, BLM did not conduct a new analysis to remedy this failure. Instead, BLM claims the "DSEIS also clarifies how the BLM considered comments, including those of other federal agencies and experts (including EPA), when developing its 2019 planning decisions." Oregon Draft SEIS, p. ES-3. Instead of addressing the need for an actual response in this Draft Supplemental EIS, BLM just notes that it "responded to each of EPA's comments and made corrections and/or changes in the 2018 FEISs" and states those responses "can be found in the administrative record." Id.

BLM removed the requirement for compensatory mitigation through the 2019 Amendments without providing an opportunity for public comment. As we have repeatedly pointed out and the court noted, "FWS relied on the mandatory compensatory mitigation provisions of the 2015 Plans to make its finding that an ESA listing was not warranted." WWP v. Schneider, 417 F.Supp.3d at 1333. The court found that "BLM's elimination of mandatory compensatory mitigation through the Final EISs appears to constitute

both a "substantial changes" to its proposed action and "significant new circumstances" under 40 C.F.R. § 1502.9(c), requiring that BLM have issued a supplemental draft EIS for public review and comment before finalizing changes." WWP v. Schneider, 417 F.Supp.3d at 1333. By refusing to disclose its Proposed Action until after all opportunity for comment has passed, an agency insulates its decision-making process from public scrutiny. Such a result renders NEPA's procedures meaningless." State of Cal. v. Block, 690 F.2d 753, 771 (9th Cir. 1982). Yet in the Draft Supplemental EIS, BLM implies that it would not consider the comments received or complete supplemental analysis on this topic, stating: This clarification simply aligns the 2018 Proposed Plan Amendment with BLM policy and the scope of compensatory mitigation authority expressly provided by FLPMA. Any analysis of compensatory mitigation relating to future projects is speculative at this level of land use planning; therefore, analysis of compensatory mitigation is more appropriate for future project-specific NEPA. Nevada Draft SEIS, p. 4-43 - 4-44.

In considering the argument that a net conservation gain standard for compensatory mitigation violated FLPMA, the court stated: The FEIS states that if actions by third parties result in habitat loss and degradation, even after applying avoidance and minimization measures, then compensatory mitigation projects will be used to provide a net conservation gain to the sage-grouse. The Agencies' goals to enhance, conserve, and restore sage-grouse habitat and to increase the abundance and distribution of the species, they argue, is best met by the net conservation gain strategy because it permits disturbances so long as habitat loss is both mitigated and counteracted through restorative projects. If anything, this strategy demonstrates that the Agencies allow some degradation to public land to occur for multiple use purposes, but that degradation caused to sage-grouse habitat on that land be counteracted. The Court fails to see how BLM's decision to implement this standard is arbitrary and capricious. Moreover, the Court cannot find that BLM did not consider all relevant factors in choosing this strategy… Western Exploration, LLC v. U.S. Department of the Interior, at 747. BLM's conclusions in IM 2019-018, cannot be supported by applicable law, as reviewed in Solicitor's Opinion M-37039 (Dec. 21, 2016) (attached and incorporated by reference as Exhibit 5). As detailed in M-37039, FLPMA and other applicable laws allow BLM to require compensatory mitigation. Taking the opposite approach based on a misreading of the law is both arbitrary and capricious and contrary to law, and moreover may violate FLPMA's requirement to avoid unnecessary or undue degradation. Abandoning compensatory mitigation as a tool to prevent habitat degradation would violate this requirement. As noted above, the unnecessary and undue degradation standard prohibits degradation beyond that which is avoidable through appropriate mitigation and reasonably available techniques. TRCP, 661 F.3d at 76-77; Colo. Env. Coal, 165 IBLA at 229. Offsite compensatory mitigation is a well-established, reasonable and appropriate tool that has long been used to limit damage to public lands. Refusing to use that tool fails to meet FLPMA's requirement that BLM avoid unnecessary or undue degradation.

Based on the weakened protections in the 2019 Amendments and the increased harm to sagebrush habitat related to wildfires and oil and gas development, the changes from the 2015 Sage-grouse Plans will affect numerous other plants and wildlife species, including those that are listed as threatened or endangered under the ESA. Since these are new risks of harm, arising out of BLM's changes in policy and amendments to the 2015 Plans, BLM cannot rely on findings from the 2015 ESA consultations. The ESA requires that BLM again undertake consultation with FWS under the ESA. Recommendation: If BLM intends to proceed with a Supplemental EIS process, then BLM must address the failure to consult under the ESA.

While issuing six Draft Supplemental EISs for comment, BLM has not actually undertaken a supplemental NEPA process. The agency has failed to provide a sufficient timeframe or structure for meaningful public input. Further, the environmental documents generally re-state (and often exactly re-state) the conclusions from the 2019 Amendments without conducting any additional analysis or taking into account new information and changed circumstances. BLM must thoroughly evaluate the real environmental effects of the 2019 Amendments. Because the 2019 Amendments undermine the key components of the 2015 Sage-grouse Plans that FWS relied on to justify finding the sage-grouse no longer warranted under the ESA, BLM must evaluate alternatives that will not jeopardize the survival of the species. In addition, BLM must consult with FWS regarding the impacts of the changes to the 2015 Sage-grouse Plans on species listed under the ESA.

Although the court in WWP v. Schneider held that BLM must consider impacts from the changes proposed in the 2019 Amendments, BLM glosses over these impacts in the Draft Supplemental EISs. For example, the Utah Draft Supplemental EIS states: At most, the prioritization objective could potentially result in temporarily deferring a parcel in PHMA from leasing to a later sale, but only in instances of large lease sales where staff capacity would be incapable of analyzing all the nominated parcels. Because the mineral leasing prioritization objective provides no certain or durable protection to PHMA, its removal would not increase threats, since the no surface occupancy stipulation is still in effect. Utah Draft SEIS, p. 4-52. Similarly, in the Northwest Colorado Draft Supplemental EIS, BLM acknowledges that the Management Alignment Alternative makes approximately 224,200 acres available for fluid mineral leasing that are closed under the No-Action Alternative. The Draft Supplemental EIS also acknowledges that "criteria for waivers, exceptions, and modifications in PHMA beyond 1 mile from active leks to allow for surface occupancy in cases where specific mitigation standards are met in consultation with CPW and/or it can be demonstrated that, due to topography, no impact on Greater Sage-Grouse or Greater Sage-Grouse habitat would occur," affecting these same acres. Northwest Colorado Draft SEIS, pp. 4-41 - 4-42. Nonetheless, BLM simply concludes, again: "Although the additional acres would be available to leasing, their impact on Greater Sage-Grouse would be similar to the No-Action Alternative" because "surface disturbance, fragmentation, and indirect habitat loss would not be expected to increase due to restrictions on surface disturbance." Northwest Colorado Draft SEIS, p. 4-42. In both situations, BLM concluded that there would be no increase in threats, although the new approaches are qualitatively different. The agency's conclusory statements eliminate the opportunity for rational decision-making; the decision is stated without explanation and does not allow for BLM or the public to be fully informed.

FLPMA unquestionably provides BLM with ample support for requiring compensatory mitigation, including its direction to manage public lands in a manner to ensure the protection of ecological and environmental values, preservation and protection of certain public lands in their natural condition, and provision of food and habitat for wildlife;6 and to "manage the public lands under principles of multiple use and sustained yield".7 The principles of multiple use and sustained yield pervade and underpin each of BLM's authorities under FLPMA, including the policies governing the Act,8 the development of land use plans,9 the authorization of specific projects,10 and the granting of rights of way.11 While FLPMA does not elevate certain uses over others, it does delegate discretion to the BLM to determine whether and how to develop or conserve resources, including whether to require enhancement of resources and values through means such as compensatory mitigation.12 In sum, these statutory policies encompass the protection of environmental and ecological values on the public lands and the provision of food and habitat for fish and wildlife and are furthered by the implementation of the mitigation hierarchy, including

compensatory mitigation, to protect and preserve habitat for the sage grouse. 6 43 U.S.C. § 1701(a)(8). Among other things, public resources should be managed to "protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values" and "provide food and habitat for fish and wildlife". 7 43 U.S.C. § 1732(a). 8 43 U.S.C. § 1701(a)(7). 9 43 U.S.C. § 1712(c)(1). 10 43 U.S.C. § 1732(a). 11 43 U.S.C. § 1765(a)(i). 12 P. L. 94-579 (Oct. 21, 1976) (stating an intent "[t]o establish public land policy; to establish guidelines for its administration; to provide for the management, protection, development, and enhancement of the public lands; and for other purposes." (emphasis added)). Additional authority also exists for the use of the mitigation hierarchy in issuing project-specific authorizations. For example, project-specific authorizations must be "in accordance with the land use plans,"13 so if the land use plans adopt the mitigation hierarchy or other mitigation principles for the sage grouse under the various authorities described above, the project authorization must follow those principles. Moreover, in issuing project-specific authorizations, BLM may attach "such terms and conditions" as are consistent with FLPMA and other applicable law.14 This general authority also confers broad discretion on BLM to impose mitigation requirements on project applicants, including compensatory mitigation in appropriate circumstances.15 13 43 U.S.C. 1732(a). 14 43 U.S.C. § 1732(b). 15 BLM also has authority and/or obligations to ensure that all its operations protect natural resources and environmental quality, through statutes such as the Mineral Leasing Act of 1920, 30 U.S.C. 181 et seq.; see also Independent Petroleum Assn. of America v. DeWitt, 279 F.3d 1036 (D.C. Cir. 2002) (Act grants "rather sweeping authority" to BLM, or NEPA, 42 U.S.C. 4321; see also 40 C.F.R. § 1505.2(c), which requires consideration of mitigation alternatives where appropriate. In addition, BLM's authority under FLPMA is broader than that exercised by purely land use or regulatory agencies such as EPA or zoning boards, because BLM [has authority] to act as both a regulatory and as a proprietor. Accordingly, BLM can take action using all the tools provided by FLPMA for managing the public lands, including issuing regulations, developing land use plans, implementing land use plans or in permitting decisions. 43 U.S.C. §§ 1712(a), 1732(a), 1732(b). Finally, as a distinct authority, BLM also has the obligation to ensure that project-specific authorizations do not result in "undue or unnecessary degradation." FLPMA states that BLM "shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the lands."16 A number of cases have found that BLM met its obligation to prevent unnecessary or undue degradation based, in part, on its imposition of compensatory mitigation. See e.g., Theodore Roosevelt Conservation Partnership v. Salazar ("TRCP"), 616 F.3d 497, 518 (D.C. Cir. 2010) (BLM decision to authorize up to 4,399 natural gas wells from 600 drilling pads did not result in "unnecessary or undue degradation" in light of substantial mitigation required from permittees, including prohibition of new development outside core area until comparable acreage in the core was restored to functional habitat, and a monitoring and mitigation fund of up to $36 million); see also Gardner v. United States Bureau of Land Management, 638 F.3d 1217, 1222 (9th Cir. 2011) (FLPMA provides BLM "with a great deal of discretion in deciding how to achieve the objectives" of preventing "unnecessary or undue degradation of public lands.") 16 43 USC § 1732(b).

The FLPMA requires that BLM conduct land management based on multiple use and sustained yield so that their various resource values are utilized in the combination that will best meet the present and future needs of the American people and that balances diverse resource uses. 8 FLPMA's multiple use directive informs Secretarial Order (SO) 3349, issued on March 29, 2017, ordering agencies to reexamine practices "to better balance conservation strategies and policies with the equally legitimate need of creating jobs for hard-working American families." On June 7, 2017, the Secretary issued Secretarial Order 3353 which aimed to enhance cooperation among eleven western states and the BLM in managing Sage-grouse, created the Sage-grouse Technical Review team, and generated the six plan

amendments. The County worked with NACO and provided scoping comments, participated in multiple cooperating agency meetings and phone calls, commented on the Preliminary Draft EISs and Draft EIS, and participated in the Protest Process prior to the March 2019 signing of the Record of Decision.9

The Idaho District court granting the motion to preliminarily enjoin the 2019 plans relies in large part on the assumption that the 2015 plans were based on the sound science, specifically the findings and suggestions contained in the 2011 National Technical Team (NTT) and 2013 Conservation Technical Team (COT) Reports.11 The Idaho District Court incorrectly assumed in its decision that the NTT and COT reports represent the best available science, and therefore, any deviation from these reports amounts to an unjustified reduction in protection for the Sage Grouse.12 This reliance on the NTT and COT Reports is misplaced. 11 See Western Watersheds Project et al v. Schneider et al. Case No. CV-00083-BLM, 2019, at 11, 17. (D. Idaho Oct. 16, 2019). 12 Id. The 2011 NTT Report and the 2013 COT Report did not receive adequate peer review and suffered from a number of substantive flaws including: ignoring substantial threats such to the Greater Sage Grouse such as predation in favor of unsupported conjectures regarding human impact; failure to account for natural population fluctuations due to weather patterns; not using the best available science, and were policy rather than science driven. These flawed reports suggested the adoption of equally flawed measures that became central to the 2015 planning effort including the designation of Sage Brush Focal Areas (SFAs) and the establishment of lek buffers.

The Idaho District Court ignored BLM's IM and its well-founded interpretation of the law that FLMPA does not support mandatory compensatory mitigation and the Service's withdrawal of the policies on which net conservation gain was based. It is inappropriate to conclude that the rescission of unauthorized standards can serve as a degradation in species protection under the law. By extension, it is also inappropriate to conclude that the BLM violated NEPA by failing to analyze the impacts of not implementing standards it was not authorize to implement in the first place, and which had since been rescinded.

Single-Purpose Land Use Plans Violate FLPMA and NFMA Multiple Use Mandate BLM and USFS are charged with managing lands under their jurisdiction for multipleuse and sustained yield under the guiding principles of FLPMA and NFMA. BLM's multiple-use management objective states that: "The objective of resource management planning by the Bureau of Land Management is to maximize resource values for the public through a rational, consistently applied set of regulations and procedures which promote the concept of multiple use management and ensure participation by the public, state and local governments, Indian tribes and appropriate Federal agencies. Resource management plans are designed to guide and control future management actions and the development of subsequent, more detailed and limited scope plans for resources and uses." 43 CFR § 1601.0-2.

Statements in the DSEISs are revelatory in their admission that BLM hasn't actually changed anything from the 2018 FEIS, but the agency instead seeks to provide exculpatory evidence to overturn the court's decision. For example, the DSEIS's "Introduction to Chapter 4, Environmental Consequences," (Idaho at 4-1) states, "The purpose of this chapter is to describe to the decision-maker and the public the differences between the entire range of alternatives considered in 2018, including the 2018 Draft Plan (Management Alignment Alternative), the 2018 Proposed Plan Amendment, as well as the range of alternatives incorporated by reference from the 2015 plan amendments. It is meant to clarify that Greater Sage-Grouse management was comprehensively analyzed in 2018 through multiple NEPA and

planning processes." This assumes that the court's injunction simply missed something that was already in the 2018 plans rather than that the Court accurately identified the BLM's failure to properly analyze and disclose the effects of a range of alternatives in the 2018 plans. Simply, the DSEIS reads more like an excuse for the 2018 FEIS's inadequacies than any real attempt to remedy the inadequacies the litigation identified. This is not the purpose of NEPA.

FLPMA mandates that the Secretary of Interior "shall" take any action necessary to prevent "unnecessary or undue degradation" of public lands. Id. § 1732(b). FLPMA further provides that BLM public lands "shall" be managed "for multiple use and sustained yield." Id. § 1732(a). The definition of "multiple use" calls for "harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output." Id. § 1702(c) (emphasis added). Both the "non-impairment" and "unnecessary and undue degradation" provisions constrain BLM's discretion in adopting or revising its land use plans. This prohibition on permanent impairment of the environment in FLPMA's definition of multiple-use is unique and purposeful. Instead of using the definition of multiple-use from the Multiple-Use Sustained-Yield Act, as it did in enacting NFMA, Congress chose to weave this environmental protection mandate into FLPMA's multiple-use provisions. See H. R. Rep. No. 94-583, 94th Cong. 1st Sess. (Dec. 18, 1975). BLM's 2019 amendments violate these mandates by allowing unnecessary/undue degradation and permanent impairment of greater sage-grouse habitat and populations. As we explain in more detail below, recent population data and triggers demonstrate that the 2015 protections are not having the desired effect of recovering sage-grouse populations and habitats. In the face of this data demonstrating that the existing regulatory mechanisms are insufficient to sustain the sage-grouse species, it is clear that further weakening the plans will only hasten this species' decline toward extinction and permanently impair BLM's ability, should ESA listing be necessary, to later recover the species.

Under FLPMA, the BLM must "use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences;" "consider the relative scarcity of the values involved and the availability of alternative means (including recycling) and sites for realization of those values;" and "weigh long-term benefits to the public against short-term benefits." 43 U.S.C. § 1712. The DSEISs do none of these things and instead seek to justify decisions to open public lands and sage-grouse habitat to more industrial and extractive uses, contrary to the science, and contrary to the broad interest in conserving the Sagebrush Sea and the numerous sensitive, imperiled, and rare species found there.

The current plans do not comport with the COT Report recommendations-which were themselves weakened due to political influence-instead representing the very minimum that is necessary for the agency to do. Since these proposed actions are inconsistent with the COT's recommendations, the 2019 plans fail to comply with FLPMA's overarching mandate.

For these and other reasons already outlined in the protests of 2019 and the comments of 2018, the BLM's DSEISs fail to reconcile the proposed actions with the mandates of FLPMA.

In Western Watersheds Project v. Schneider, 1:16-cv-083-BLM (D. Idaho), the court specifically addressed the fact that BLM issued six separate EISs in 2019 rather than provide one cumulative effects

analysis covering the broad, multi-state range of the sage-grouse. See Attachment A. The BLM persists in this error by issuing now six separate DSEISs.

As examples, reasonably foreseeable future actions that should be analyzed in the SEIS are the revisions underway to the CEQ NEPA rules and the BLM's grazing regulations. To the extent that any of the ARMPA provisions rely on future NEPA processes, the agency must admit the extent to which those NEPA processes may no longer be required. For example, the ARMPAs rely on assessments of habitat conditions and impacts of livestock grazing at the time of permit renewal and land health evaluation, but BLM is proposing to revise the processes of permit renewal and the spatial and temporal extent of land health evaluations.37 Though BLM's plans here are not entirely clear, it is clear that changing the underlying management of grazing - the most widespread extractive use in sage-grouse habitat - will affect the authority and enforceability of the ARMPAs. 37 https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projec tId=1500093

The Council on Environmental Quality's proposed NEPA regulations could also reduce the level of environmental analysis performed for oil and gas lease sales, exploration, and development through encouraging greater use of Categorical Exclusions, as well as elimination of NEPA analysis for actions deemed to be "non-discretionary." The proposed regulations could also reduce the NEPA analysis that mining exploration and development currently undergoes, again related to elimination of NEPA analysis for "non-discretionary" actions. As a result, oil and gas and mining impacts to greater sage-grouse could occur without the level of NEPA scrutiny they currently require, which BLM must address in these SEISs

It is likely that there are additional regulatory changes with impacts to sage-grouse that BLM has not considered in these extremely brief and conclusory DSEISs. In taking the required hard look at the impacts of the Plans, BLM must fully consider all anticipated regulatory changes that could apply to sage-grouse habitats.

Also demonstrating the political purpose of the Plan revision process, BLM seems to argue that its plan to craft management of federal lands around state plans is required to comply with FLPMA. The EISs quote selectively (and incompletely) from FLPMA, claiming that FLPMA directs "BLM to develop its land use plans to 'be consistent with State and local plans to the maximum extent'" and to "resolve, 'to the extent practical, inconsistencies between Federal and non-Federal government plans.'" ID DSEIS at S-1-2 to S-1-3 (quoting 43 U.S.C. § 1712(c)(9)); and see Northwest Colorado DSEIS at App-3-2. These partial quotes mischaracterize BLM's responsibilities under FLPMA, which directs: In implementing this directive, the Secretary shall, to the extent he finds practical, keep apprised of State, local, and tribal land use plans; assure that consideration is given to those State, local, and tribal plans that are germane in the development of land use plans for public lands; assist in resolving, to the extent practical, inconsistencies between Federal and non-Federal Government plans...Land use plans of the Secretary under this section shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act.

BLM must only develop its land use plans to be consistent with State plans "to the extent...consistent with Federal law and the purposes of [FLPMA]" and must only resolve inconsistencies between Federal and non-Federal Government plans "to the extent practical." Id. As we have explained, repeatedly, in previous comments and Court filings, aligning BLM's approach with the States' is not "practical" or "consistent with Federal Law and the purposes of" FLPMA because it departs drastically from what the

best available science shows is necessary to protect sage-grouse. In 2015, both BLM and FWS determined that the alternatives favored by certain states did "not incorporate adequate regulatory mechanisms . . . to conserve, enhance, and restore [greater sage-grouse] and its habitat." BLM has provided no rational explanation for why it now believes that these weaker plans are suddenly adequate to conserve sage-grouse populations, nor has it consulted with the USFWS on this point. If the purpose of the sage-grouse plan amendments is to provide adequate habitat protections on Federal lands to prevent sage-grouse from needing protection under the ESA, BLM must implement the measures that science shows are required. Indeed, that State plans fail to require or implement those measures is exactly why federal action is necessary.

NEPA requires EISs to "[s]tate whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not." 40 CFR§ 1505.2. BLM has again violated this requirement. It is clear that many other means of protecting sage-grouse are available. BLM has a duty under NEPA to disclose these measures and its rationales for rejecting them.

The BLM has failed to consult with the Fish and Wildlife Service about the impacts of the proposed plan. The ESA requires that an agency must consult whenever an action "may affect" a listed species or its critical habitat. See 50 C.F.R. § 402.14(a). The sage-grouse plan revisions will affect millions of acres and hundreds of species' habitats, but the BLM failed to consult with FWS over the effects of the plan on any listed or proposed-to-be-listed endangered or threatened species. This violates Section 7 of the ESA and must be remedied before a new decision on the SEISs is issued. See also Pidot (2018) for an assessment of the 2015 and 2019 plans with regard to their adequacy under the ESA and Timmer et al. (2019) for a discussion of sage-grouse as an umbrella species for sagebrush songbirds.

D.4 OREGON-SPECIFIC COMMENT EXCERPTS

D.4.1 Purpose and Need

Supplemental analysis must be substantive and provide a meaningful opportunity for comment; the Draft Supplemental EISs do not fulfill these requirements. Instead of conducting the in-depth analysis that should be part of a Draft Supplemental EIS, BLM has structured this process as a consideration of whether it will actually conduct any analysis. As the Draft Supplemental EIS states: The BLM's DSEIS, including any comments that the agency receives, will help the BLM determine whether its 2015 and 2019 land use planning and NEPA processes have sufficiently addressed Greater Sage-Grouse habitat conservation or whether the BLM should initiate a new land use planning process to consider additional alternatives or new information. To inform this decision that the BLM will make, it has prepared this DSEIS to address four specific issues: the range of alternatives, need to take a "hard look" at environmental impacts, cumulative effects analysis, and the BLM's approach to compensatory mitigation. Oregon Draft SEIS, p. ES-4. The court has already found that BLM failed to conduct sufficient analysis and must evaluate additional alternatives, but instead of providing the public with a Draft SEIS that addresses these findings, BLM is simply restating its previous position.

D.4.2 Issues Dismissed from Detailed Analysis

Finally, BLM has not evaluated the impacts of its increased leasing and permitting in sage- grouse habitat. Since 2017 and this administration's abandonment of prioritizing leasing and development outside habitat, there has been a radical increase in leasing and permitting in sage- grouse habitat. See, Oil and Gas Development on Federal Lands and Sage-Grouse Habitats October 2015 to March 2019.5 Since the beginning of this administration, more than 4 million acres of grouse habitat have been put up for lease

and approximately 2.5 million acres have sold. As the court noted, "there is no indication" that the administration will proceed at any slower pace. WWP v. Schneider, 417 F.Supp.3d at 1334. Given this trend, BLM can and should evaluate the impact of ongoing leasing and permitting in habitat.

D.4.3 Livestock Grazing Management

I. Conflict between the 2020 Oregon GRSG-SEIS and 2020 RNA Notification Letter. The 2020 Oregon GRSG-SEIS and 2020 RNA Notification Letter conflict; giving reason for BLM to rescind the 2020 RNA Notification Letter. Specifically, on the one hand, the 2020 RNA Notification letter provides us two-year notification to cancel a portion of our Permitted Use AUMs in the Fifth Mile Community Allotment due to the no grazing element for the Dry Creek Bench RNA, as per the 2015 Oregon GRSG-ROD-ARMPA dated September 15, 2015 ("2015 Oregon GRSG-ROD-ARMPA"), Objective LG 2, in Table 2-6 at page 2-18. See https://eplanning.blm.gov/eplfrontoffice/projects/lup/103348/143725/176961/OR_GRSG_ROD-ARMPA.pdf (last checked 4/2/2020 @ 9:49 A.M.). On the other hand, the 2020 Oregon GRSG-SEIS proposes to abandon the no grazing element for the Dry Creek Bench RNA otherwise imposed by the 2015 Oregon GRSG-ROD-ARMPA. The cover letter dated February 22, 2020, to the 2020 Oregon GRSG-SEIS states that: The Oregon Draft Supplemental Environmental Impact Statement (SEIS) is available for your review and comment. The Bureau of Land Management (BLM) prepared this document in accordance with the National Environmental Policy Act of 1969, as amended, the Federal Land Policy and Management Act of 1976, as amended, the BLM's Land Use Planning Handbook (H-1601-1), and other applicable law and policy. The affected area is the BLM Bums, Lakeview, and Vale District Offices in Oregon and encompasses approximately 60,649 surface acres in research natural areas. The Management Alignment Alternative has been identified in the Draft SEIS as the preferred alternative. … Emphasis supplied. In other words, the 2020 Oregon GRSG-SEIS only focuses upon the few acres within RNAs, inclusive of the Dry Creek Bench RNA, and intends in the "Management Alignment Alternative", which is identified as the "preferred alternative", to make livestock grazing "available in all or portions of the 13 key RNAs in keeping with the District RMP decisions that were amended by the 2015 ROD/ARMPA in order to support local communities and economies." 2020 Oregon GRSG-SEIS, Section 2.3.2 (Management Alignment Alternative), at page 2-6. Table 2-1 of the 2020 Oregon GRSG-SEIS provides in the "Management Alignment Alternative", relative to allowing livestock grazing within the RNAs, at page 2-16: [excerpt of table 2-1 on page 2-16 of the 2020 DSEIS] In addition, Table 2-2 of the 2020 Oregon GRSG-SEIS provides, relative to allowing livestock grazing within the RNAs, at page 2-19: [excerpt of table 2-2 on page 2-19 of the 2020 DSEIS] In addition, Table 2-4 of the 2020 Oregon GRSG-SEIS provides, relative to allowing livestock grazing within the RNAs, at page 2-24: [excerpt of table 2-4 on page 2-24 of the 2020 DSEIS] Based upon the foregoing, it is clear that BLM intends to implement a change as to the no livestock grazing element in at least the Dry Creek Bench RNA, and in turn, BLM intends to continue to allow livestock grazing in at least the Dry Creek Bench RNA. As such, before an unlawful irretrievable commitment of resources occurs to prohibit any livestock grazing in the Dry Creek Branch RNA as per the 2020 RNA Notification Letter, we strongly urge you to immediate rescind the 2020 RNA Notification Letter, pending at least the completion of the 2020 Oregon GRSG-SEIS process.

The BLM's preferred Management Alignment Alternative is a step in the right direction when it comes to GSG habitat management. Harney County applauds the alternative's inclusion of a reference to BLM's commitment to work with livestock permittees and stakeholders on "targeted grazing" to utilize grazing as a tool to manage the threat of wildfire, as well as BLM's commitment to develop "outcome-based grazing" to provide greater flexibility for livestock permittees and land managers to meet habitat

objectives. That being said, given the fact that (A) grazing is a part of the environmental baseline on most of these lands, and (B) active grazing management is one of, if not the most effective fire mitigation strategy, Harney County implores the BLM to clarify these "efforts" so as to make targeted grazing and outcome-based grazing clear regulatory management directives, instead of simply an option that may or may not be utilized.

Harney County commends the BLM for undertaking another effort to analyze alternatives considered during the 2015 and 2019 sage-grouse planning processes, BLM's consultation and coordination process with federal and state stakeholders, and the analysis completed to align BLM sage-grouse management with the State of Oregon's plans. While Harney County was surprised to learn of the Idaho District Court enjoining implementation of the 2019 Plan Amendments, it was favorable to see recognition of BLM's stated purpose for the 2019 Plan Amendments: "to enhance cooperation between the BLM and the States by modifying the BLM's protections for sage grouse to better align with plans developed by the States[,]" as well as the Court's recognition that such a purpose is "well within the agency's discretion[.]" Western Watersheds Project v. Schneider, 417 F. Supp. 3d 1319, 1327 (D. Id. 2019). Harney County fully supports BLM efforts to give state, and especially local, land use plans adequate consideration before the imposition of "one-size-fits-all" regulatory overlays. Pursuant to the 2015 Oregon GSG Amended RMP, over 3.6 million acres of combined primary and general habitat management area was designated within Harney County alone-over half the County. As such, the stated objective within the Management Alignment Alternative, to limit restrictions on grazing "in order to support local communities and economies," is incredibly important to Harney County. That being said, it still threatens to result in increased grazing restriction on lands where grazing has become part of the environmental baseline. As such, while the stated purpose of the Management Alignment Alternative is agreeable, Harney County encourages BLM to include or revise provisions therein in order to minimize the restrictions within the Management Alignment Alternative that could be harmful to rural communities and natural resource economies throughout the Western United States. Specifically, Harney County strongly opposes any reductions of permitted grazing levels to grazing permittees in Harney County.

The alternative description also notes that the BLM will collaborate with states and stakeholders to improve alignment between federal management plans and other plans and programs at the state level, while ensuring consistency with the BLM's multiple-use mission. This part of the alternative's description touches on two important issues. First, Harney County strongly supports the BLM's consistent and continued assurance that its decisions are in alignment with its multiple-use mission, as well as the dominant grazing use mandated by the Taylor Grazing Act, where applicable. Sustained multiple use of BLM lands in Harney County, particularly in the form of grazing, has been part of the environmental baseline throughout the vast majority of both the primary and general habitat management areas since the land was first settled. The commitment to working to develop "outcome-based grazing" to provide greater flexibility for livestock permittees and land managers to meet habitat objectives is crucial to fostering the multiple-use mission. Indeed, Harney County encourages the BLM to clarify what is currently described as an "effort to working" to develop this approach, in order for outcome-based grazing and permittee flexibility to become a more robust strategy directive. Flexibility for livestock permittees is extremely important to Harney County and all livestock permittees throughout the Western United States, and elaboration on this effort is warranted in order to memorialize BLM's commitment to the statutorily-mandated land management objectives. Second, Harney County suggests that language should be included in this portion of the alternative description to address improving

alignment with local government land use planning as well as that at the state level. BLM is right to include reference a commitment to working with permittees and stakeholders on targeted grazing to utilize grazing as a tool to manage the threats of wildfire and invasive species within GSG habitat. That being said, as currently drafted, the passing reference to "stakeholders" is insufficient to guarantee meaningful, comprehensive collaboration with those best-equipped to help the BLM in developing management objectives and plans on these particular lands; local governments and residents. As such, the BLM should augment the description here to clarify and strengthen the commitment to continue involving local government stakeholders, as well as ensure continued consultation and cooperation with the local government.

With respect to the BLM's assurance within this alternative description that it will not deny a proposed authorization in GSG habitat solely on the grounds that the proponent has not proposed or agreed to undertake voluntary compensation mitigation, Harney County supports the inclusion of this directive in the GSG SEIS. Harney County can foresee many situations where mitigation would be inappropriate, such in the continuations of a long-standing land management activity. Allowing BLM flexibility to determine the best course for satisfaction of the RMPA goals is crucial for efficient land and resource management. In cases where waivers, exceptions, or modification may be granted for projects with a residual impact, it is important the BLM has the discretion and authority to determine that while voluntary compensatory mitigation consistent with the state's management goals can be one criteria, there are numerous alternatives available to it and the project proponent in crafting a project plan that achieves the RMPA goals, objectives, and waiver, exception, or modification criteria. The BLM's commitment in this GSG SEIS to develop "outcome-based grazing" as a relied-upon method in order to "provide for greater flexibility for livestock permittees and land managers to meet habitat objectives as conditions on-the-ground change" suggests BLM is taking appropriate steps in this direction. That being said, Harney County encourages the BLM to elaborate on this, and include a description of "outcome-based grazing" that appropriately captures what that really is; an invaluable strategy in fire reduction, sagebrush habitat conservation, and management of natural resources. Harney County wholeheartedly supports BLM's commitment to allowing for more flexibility for livestock permittees and land managers, as such a course of action will streamline BLM permitting procedures, as well as produce actual beneficial results on the land.

With respect to livestock grazing within the RNAs, Harney County encourages the BLM to continue to work toward embrace the authority it has under 43 CFR 4110, 4130, or 4180 to modify the grazing use within the RNAs to increase the AUMs and grazing allowance. Harney County is pleased to see that rangeland health assessments resulted in finding that all health standards were met even with continued grazing ongoing. Recognition that upland watershed and ecological processes were found to be functioning appropriately, and that vegetative communities for which RNAs were designated in the first place were also healthy, while grazing was ongoing should be a reminder to the BLM and state agencies that wholesale restrictions on grazing is not called for. Again, while Harney County is happy to see that key RNA values are being maintained indicated to the BLM that adjustments to current grazing management are not needed, the BLM should not be reluctant to increase grazing allowance and/or AUM values within RNAs pursuant to 43 CFR 4110, 4130, or 4180 when conditions indicate that such an increase can be implemented without jeopardizing rangeland health. In other words, these values should not be static, permanent conditions that are closed to revision. Instead, the current closure of 21,959 acres to grazing and 1,772 AUMs within the RNAs should be continually revisited and subject to

amendment to allow increased levels of conditional grazing when rangeland health values are indicative of ecological recovery and the ability to sustain certain levels of grazing.

Grazing closures should not be considered hard values unopen to revision, and grazing- as a part of the environmental baseline and as a fire fuel reduction method-should be reallowed when conditions permit. While the loss of 1,772 AUMs within the RNAs is described GSG SEIS as having been "found to be negligible" at the state level, the economic impact on individual permittees and the small, rural communities wherein these RNAs exist is not negligible. As such, the wholesale grazing closure within the Foster Flat RNA within the Burns district, in particular, should be actively revisited and considered subject to change and revision to increase grazing appropriately, when rangeland health values are indicative of recovery.

One final general area where Harney County encourages the BLM to include more specific language pertains to fire mitigation and coordination with local rural fire protection districts. Harney County applauds the BLM's commitment in this GSG SEIS "to working directly with local communities on sagebrush conservation efforts," as well as its commitment to working with livestock permittees and stakeholders on "targeted grazing" to utilize grazing as a tool to create and maintain fuel breaks to manage threats of wildfire and invasive species in or next to GSG habitats. Targeted grazing is an absolutely crucial management tool for mitigation of catastrophic wildfire and fuel loads. BLM's commitment to targeted grazing is appropriate, but focus on this method could be taken a step further in order to result in real, on-the-ground results.

Is restoring livestock grazing to the 13 key RNAs necessary to achieving the research purposes of the 2015 ARMPA? If so, why? If not, why not?

Is restoring livestock grazing to the 13 key RNAs necessary to achieving the research purposes of the RNAs? If so, why? If not, why not?

Has BLM collected any ecological or other habitat monitoring information for the key RNAs since the agency made the 2015 decision to close them to grazing for research and study? If so, please disclose to the public and discuss that information in the Final Supplemental EIS, including in that document's affected environment and environmental consequences sections.

The Oregon sage-grouse population alone has dropped by a staggering 38% since BLM adopted its sage-grouse conservation plan in 2015. Data from individual PACs further confirm the serious cause for concern over whether BLM's 2015 plan is working. And this implicates the key RNAs and their role in providing scientific data essential to understanding the effects of livestock grazing, the single most widespread activity that continues to occur throughout the Oregon (indeed, every) ARMPA planning area.

Elsewhere, BLM states that it would "require changes to livestock grazing/management in the 13 RNAs if a rangeland health assessment identifies livestock grazing as a causal factor in the failure to meet rangeland health standards" or "for various reasons in accordance with its grazing regulations." DSEIS at 4-16. That is just the same management as is occurring on the other 12 million acres of grazed land. This tells us nothing. It certainly provides no information to help answer the core question of what the effects are "of grazing on the elements and values for which the RNAs were designated in the district plans." DSEIS at 4-15. But this is not surprising given BLM's failure to complete a number of CFAs

combined with its concession that it lacks "sufficient information" to determine the role of grazing.7 7 BLM also contends that the RNAs are "so small in size relative to the size of the [range of the sage-grouse] that any impacts of livestock grazing on Greater Sage-Grouse populations using these areas are minimal and undetectable." DSEIS at 4-17. But the question is about the impacts of grazing on unique and important vegetative communities, not to the range-wide population of the Greater sage-grouse.

We incorporate by reference the comments of the Oregon Natural Desert Association, et. al, 2020, to address the issues with the Oregon DSEIS. We add that Oregon suffers from the same disregard for completing NEPA analysis for grazing permit renewals. As of March 2020, 76.4% of allotments and 83.8% of permitted AUMs in Oregon are being renewed under Section 402(c)(2) of FLPMA under the same terms and conditions as the existing grazing permit.

D.4.4 Data and Science

BLM describes that "little to no research has been conducted on the impacts of grazing on forbs and insects used by Greater Sage-Grouse and on special status plants." DSEIS at 4-4. As a result, the agency "is uncertain how these resources would respond to not being grazed. Ungrazed comparison areas representing the seasonal needs of Greater Sage-Grouse are lacking." Id. BLM notes that whether removal of grazing would reduce the risk of invasive plant spread into the key RNAs "is uncertain." DSEIS at 4-4, 4-5. Like the other data and analytic gaps identified in this letter, these are uncertainties that require resolution. The information that would be gleaned from studying ungrazed RNAs is relevant to future BLM decisionmaking related to its management of livestock grazing, not only to the decisions to be made related to the ARMPA. BLM's obligation with respect to incomplete or unavailable information is spelled out in 40 C.F.R. § 1502.22. The regulation directs that if "the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement." Id. § 1502.22(a) (emphasis added). In other words, BLM has an obligation to gather this kind of essential, readily obtainable information.

The uncertainties here could be resolved simply by restoring scientific research and study of ungrazed plant associations in the key RNAs grazing closures. And because neither regulatory exception applies here, 40 C.F.R. § 1502.22(a), BLM is required to obtain this essential information. The explanation that "certain information was unavailable . . . because inventories either have not been conducted or are not complete" is insufficient. DSEIS at 4-15.

Genetic Connectivity and Winter Habitat. An agency must disclose and discuss "responsible opposing views" and scientific information in planning. 40 C.F.R. § 1502.9(b); Ctr. for Biol. Diversity v. U.S. Forest Serv., 349 F.3d 1157, 1167-68 (9th Cir. 2003). In comments and in its administrative protests in both 2015 and 2019, ONDA pointed out that the ARMPA fails to assess and provide management direction for providing for genetic connectivity corridors and conserving winter habitat. See, e.g., Jan. 7, 2019 ONDA Administrative Protest at 10-11 (raising these issues and referencing both prior comments and newly-published scientific papers).

As the U.S. Geological Survey noted in its 2017 synthesis report, new studies have "emphasized the importance of maintaining connectivity between populations to conserve genetic diversity" and that "[w]inter habitats outside of core areas support core area sage-grouse populations" (Hanser et al. 2017). In 2018, Cross et al. identified "hub" and "keystone" nodes that facilitate gene flow, and demonstrated

that the loss of these nodes "could lead to the disintegration of the network into smaller, isolated subnetworks." Protecting these nodes "will conserve genetic diversity and should maintain network connections to ensure a resilient and viable population over time." The researchers provide "network models [that] can be used to model gene flow, offering insights into its pattern and process, with application to prioritizing landscapes for conservation" (Cross et al. 2018). Crist et al. (2017) used graph theory to test connectivity between sage-grouse priority habitat areas, assessing the level of permeability/resistance to sage-grouse movement through habitat linkages based on various factors. In 2019, Monroe et al., using GPS data from Greater sage-grouse, described the importance of simulation assumptions when evaluating detectability in population models. The researchers explain how "dynamic N-mixture models" can be used to distinguish between trends in detectability and population size with a robust design where all or most sites are counted repeatedly each year. Conversely, "these processes are confounded in models of indices" and can lead to "biased estimates of population trends" (Monroe et al. 2019). In other words, tools are available for BLM to study this issue-and the agency has yet to do so, let alone assess those tools in its environmental review. See 40 C.F.R. § 1502.22(a) (requirement to gather and evaluate this type of information "essential to a reasoned choice among alternatives"). Please address how BLM will apply these new network models to ensure that the Oregon ARMPA is consistent with the Oregon Plan's connectivity-focused, winter habitat, and other specified conservation actions. In this analysis, please also address how the key RNAs, which lie within the all-important PACs, can serve to facilitate this study

Finally, the 2015 ARMPA explained that the Oregon PACs are based on ODFW Core Areas established in the state agency's 2011 sage-grouse conservation assessment and strategy (Hagen 2011). As BLM is aware, the ODFW plans to update its Core Area maps as new information is obtained on winter habitat use, lek distribution, and other factors. See 2015 ARMPA at E-2. ODFW has stated its intention to update the Core Area maps this year, in 2020, five years after completion of the ARMPA, and intends to incorporate new habitat information at that time. The DSEIS fails to acknowledge and address this important new information.

Finally, important new studies have emerged during the past five years and even since BLM's 2019 plan amendment. The agency must assess these studies in this supplemental review. See Coppes et al. (2019) (studying correlations between wind energy projects and sage-grouse populations) and Root et al. (2019) (presenting evidence that biocrusts increase site resistance to invasion at a landscape scale, mediate effects of disturbance, and promote native perennial grasses, and suggesting promising avenues for restoration in dryland ecosystems).

Given the flurry of overlapping management planning and potential effects on sage-grouse and their habitat in Oregon-particularly these projects focused on fire management and livestock grazing, and in which BLM admits numerous data and scientific gaps-it is more important than ever that BLM retain (i.e., restore) reference sites to study and inform management under these multiple layers of agency plans.

There continue to be no good reasons for BLM's 180-degree reversal abandoning scientific research and study in key RNAs. Because BLM did not sufficiently address significant impacts and other issues in the 2018 FEIS, and because there is new information bearing on significant environmental effects associated with the Oregon ARMPA, BLM should withdraw the March 15, 2019 Record of Decision, or initiate a new land use planning process with the purpose of doing so.

In Oregon, the 2019 count "constitutes the lowest sage-grouse population estimate in Oregon during the 1980-2019 analysis period," despite the second-highest survey effort in 2019.5

BLM has not addressed its failure to take a hard look at the impacts of the 2019 Amendments. BLM must take a "hard look" at the environmental consequences or a proposed action, and the requisite environmental analysis "must be appropriate to the action in question." Metcalf v. Daley, 214 F.3d 1135, 1151 (9th Cir. 2000); Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 348 (1989). The court found that BLM did not take the requisite hard look, noting its failure to respond to FWS and EPA concerns and finding "when the BLM substantially reduces protections for sage grouse contrary to the best science and the concerns of other agencies, there must be some analysis and justification - a hard look - in the NEPA documents." WWP v. Schneider, 417 F.Supp.3d at 1332. However, BLM did not conduct a new analysis to remedy this failure. Instead, BLM claims the "DSEIS also clarifies how the BLM considered comments, including those of other federal agencies and experts (including EPA), when developing its 2019 planning decisions." Oregon Draft SEIS, p. ES-3. Instead of addressing the need for an actual response in this Draft Supplemental EIS, BLM just notes that it "responded to each of EPA's comments and made corrections and/or changes in the 2018 FEISs" and states those responses "can be found in the administrative record." Id. Similarly, while BLM refers to its reliance on "best available science," that is not defined or explained in the Draft Supplemental EISs. In fact, as discussed in detail in a June 2018 letter submitted by numerous sage-grouse scientists recognized as experts in this field, the 2019 Amendments were contrary to the best science. See, June 2018 Sage-grouse scientists letter, attached as Exhibit 3. BLM is also obligated to evaluate "significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts" through supplemental NEPA. 40 C.F.R. § 1502.9(c)(ii). There are significant new circumstances and information that BLM must take into account, some of which we have repeatedly highlighted in previous comments and protests but have continued to intensify. These are discussed in detail in a letter from expert sage-grouse scientists, attached as Exhibit 4. Sage-grouse populations have been declining and this trend has become even more concerning. As noted in the attached sage-grouse scientists' letter, state-level data indicates sage-grouse populations have declined 44% on average over the last four years, with estimated statewide declines in strongholds of between 33% and 52% in Oregon, Idaho, Nevada, Montana, and Wyoming. BLM must take these losses and the continued projected declines into account in evaluating the impacts of the proposed changes to the 2015 Sage-grouse Plans.

D.4.5 Assumptions and Methodology

Aside from a brief but incomplete (and already now outdated) narrative summary, the DSEIS fails to provide a full and clear listing of the PACs and tripped triggers, and how they relate to the key RNAs. In an EIS, an agency must explain its methodology and results, and include its baseline studies as an appendix for the public to review. See Council on Environmental Quality, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18,026, 18,033-34 (Mar. 23, 1981) (questions 25a, 25b, explaining among other things that "the appendix should contain information that reviewers will likely want to examine").

D.4.6 Sage-Grouse

The protection and conservation of the Oregon Sage-Grouse Habitat is imperative to the species' rehabilitation. If the EIS's proposed reduction of the 13 Key RNAs was to be elected as a viable option, then the Sage-Grouse would suffer an even larger decline in the population. By Reducing the Acreage of the RNAs this species would lose important nesting rangeland and possibly be excluded from high

productivity areas lush with sagebrush and residual grass essential for nesting and consumption. Additionally, by limiting their range within Oregon it would reduce a large portion of land serving as migratory pathways and as permanent residences. The effects of the Habitat loss via this Alternative would not be, "instantaneous, particularly not when we consider changes at large spatial scales," (Hanski, 2011). However, it can be deduced that the reduction of the size of the 13 key RNAs would push the Sage-Grouse closer towards possible extinction.

The Sage-Grouse are not extremely migratory birds, they are, "mainly a permanent resident, but may perform some local movements, abandoning some high-elevation valleys in winter," (Audubon Society, 2019). Although, the largest recorded migration was 100 miles from Saskatchewan Canada to Montana. Consequently, the flocks specifically associated with the Oregon rangeland prefer to stay within their small areas, (Sage Grouse Initiative, 2020). Therefore, it is essential that the 13 Key RNAs are not to be reduced in Acreage. The Sage-Grouse is on the brink of being listed under the ESA as an endangered species.

Allowing grazing to be, "available in all or portions of the 13 key RNAs," and in a such a way that it,"would not change terms and conditions of existing grazing permits," would be detrimental to the Sage-Grouse population in the region, and would fly in the face of what those RNAs were designated for in the first place. If allowing grazing in some RNAs is deemed absolutely necessary, the only way that it can be allowed is to allow it in the early season in high productivity areas for a limited time. This limited grazing gives plants time to regrow later in the same season, which benefits Sage-Grouse by increasing their food supply and quality (USGS, 2017). This has been shown to ultimately benefit the Sage-Grouse and is the only way to concurrently allow grazing in an RNA while continuing to uphold the BLM's self-described goals of an RNA.

Chemical and mechanical treatments designed to increase grass forage for livestock significantly reduce the acceptability of sagebrush for the Sage-Grouse (Beck, 2000). These treatments lead to the conversion of sagebrush-dominated habitat to grass-dominated habitat, which is detrimental to Sage-Grouse populations (Braun, 1977). These indirect impacts of livestock grazing are much more harmful than direct impacts from the actual livestock, and should not be allowed in RNAs.

As well as being limited in time, duration, and allowable treatments, the grazing would have to be carefully monitored and tracked. Using this data in conjunction with Sage-Grouse population fluctuations would allow the BLM to monitor and assess whether or not the mitigation of grazing is actually working to protect the Sage Grouse in the RNAs, as well as uphold the goals of the RNAs by conducting ongoing research within them.

ONDA noted that sage-grouse continue to struggle in Oregon. The bird's statewide population has declined dramatically in recent years. It dropped by 7.7% in 2017, then by another 10.2% in 2018, and then by another 24.9% in 2019. By the end of 2019, the Oregon Department of Fish and Wildlife ("ODFW") estimated that the Oregon statewide sage-grouse population had now dropped to 13,827 individuals. This is far below the State of Oregon's population goal and 53% below the 2003 baseline population estimate of 29,237 individuals. This is the lowest population count of sage-grouse in Oregon during the analysis period from 1980 to present.

In fact, closing these RNAs to grazing could both contribute to and benefit from a robust new federal program and guidance for conserving and restoring sagebrush steppe, including application of passive

management. See Chambers et al. (2017); Crist et al. (2019); Pyke et al. (2015a); Pyke et al. (2015b); and Pyke et al. (2017). Research and monitoring in the closed areas could help to understand, clarify, validate or even refute various findings on the effects of livestock grazing on sagebrush steppe and sage-grouse habitat use. See, e.g., Monroe et al. (2017) (generally analyzing effects of public lands grazing on sage-grouse habitat use in Wyoming).

Livestock are not native wildlife. BLM cannot research and study "natural processes" in an RNA that is grazed by livestock, as domestic livestock grazing is an unnatural process on the public lands. See id. (describing natural processes). For purposes of sage-grouse conservation, allowing grazing in RNAs is not "necessary" to provide BLM with an opportunity to study grazed landscapes. There are plenty of grazed lands to choose from among the more than twelve million acres of non-RNA public lands still available for grazing under the ARMPA. What is rare, and therefore valuable for research and education, are ungrazed areas that allow BLM to undertake comparative studies on the impacts of livestock on sage-grouse in unique plant communities.

To date, BLM has not, in any EIS, protest resolution or decision document, addressed concerns about genetic connectivity and winter habitat that ONDA clearly and repeatedly brought to the agency's attention. BLM seems poised to repeat the same mistake again. The DSEIS states BLM declined to study issues that "do not further the purpose of aligning with the State's conservation plan." DSEIS at 1-9. But the Oregon Sage-Grouse Action Plan (2015) ("Oregon Plan") does, in fact, identify potential loss of population and genetic connectivity as a threat to sage-grouse. According to the state, "Continued habitat loss and fragmentation may increase the risk of loss of genetic variation in small, isolated sage-grouse populations." Oregon Plan at 167. The state emphasizes that genetic diversity is "necessary for a population to respond to environmental change; thus a loss of genetic variation may jeopardize the persistence of fragmented populations." Id.

Given the underlying purpose of ensuring its plans are consistent with state and local plans, including the Oregon Plan, BLM in this supplemental review should evaluate whether the ARMPA, as amended, "identifies" and "protects" habitat and genetic connectivity corridors in Oregon, including corridors that connect the all-important PACs. BLM should evaluate whether the plan enhances habitat in areas with the most potential to "improve connectivity" near isolated leks. And BLM should evaluate and ensure that the plan protects connectivity corridors on public lands from future development and projects that would reduce or eliminate sagebrush. See Oregon Plan at 168-172 & Fig. IV-15.

BLM must make these evaluations available for public review as part of this NEPA process. Currently, there is no place in the 2015 or 2018 BLM NEPA analyses that specifically evaluates these connectivity-based conservation actions in the Oregon Plan. See also Oregon Plan at 161-63 (similar discussion and conservation actions aimed at preserving uniquely important winter habitat areas), 172-73 (description of field-based studies of winter habitat areas), 210 (defining landscape connectivity and core areas to include important winter habitat components); cf. Jones (2019) at 30-32 (describing negative impacts of sagebrush removal in winter habitat).

Yet, BLM claims in the DSEIS that the statewide population "has not reached levels that are outside the range of natural variation." DSEIS at 3-5. The agency cites the 2019 ODFW population report (Foster 2019) for this proposition. The report in fact says no such thing. Rather, it observes that, in general, sage-grouse populations "fluctuate" over time (Foster 2019). While a decline as a general matter may track the "expected population cycle" in Oregon, the ODFW makes clear that the population estimate

this year "should be taken as a cause for concern" (Foster 2019). The ODFW had previously cautioned that estimates of sage-grouse population size in Oregon "should be considered indices only" given multiple "sources of uncertainty" in measuring populations (Foster 2019). But in its latest Information Bulletin (OR-IB-2020-021), the agency states that "the BLM and ODFW have confidence in the accuracy of the population estimates due to the high proportion of leks surveyed in a given year . . . and consistency in monitoring method applied over the previous 23 years" (ODFW 2020).

See Fig. 3 in Foster (2019) (where graph on left shows estimated spring breeding population, with gray line indicating 2003 baseline population level of 29,327 individuals, and pink dotted lines indicating the 95% confidence interval around the 2003 baseline estimate; and graph on right shows decline in average males per active lek complex). This population that now sits at less than half the individuals measured less than two decades ago is not within the "range of natural variation." DSEIS at 3-5. And the materials BLM cites in the DSEIS do not support such a statement.

Eight of the 20 PACs identified in Oregon (Beatys, Warners, Dry Valley/Jack Mountain, Trout Creeks, Louse Canyon, Cow Lakes, Crowley, and Bully Creek) contain key RNAs. According to BLM, population triggers (which require BLM to implement additional management measures for sage-grouse) were tripped in eight PACs in 2016, seven in 2017, and seven again in 2018. DSEIS at 3-6. Population triggers were exceeded in 11 PACs in 2019 (ODFW 2020). The ODFW documented population declines in 17 of 19 PACs where data were sufficient to analyze trend in 2019. Four PACs tripped a population trigger for the first time last year. BLM records show that between 2016 and 2019, hard and/or soft triggers were tripped in seven of the eight PACs within which key RNAs are situated. Of the 13 key RNAs, 12 are situated within PACs with tripped hard and/or soft triggers: Rahilly-Gravelly, Fish Creek Rim, Foley Lake, East Fork Trout Creek, Dry Creek Bench, Spring Mountain, Mahogany Ridge, Lake Ridge, South Bull Canyon, Black Canyon, South Ridge Bully Creek, and North Ridge Bully Creek. None of this is important information was disclosed in the DSEIS.

ONDA notes, too, our understanding that BLM has in fact failed to complete a number of the required CFAs. We ask that the agency address in the EIS and include as an appendix not only all of the completed CFA documentation for 2016 to present, but also indicate which CFAs remain incomplete. This material properly should have been included in an appendix to the DSEIS to allow the public a meaningful opportunity for review and comment. To the extent these as-yet-completed or only partially completed CFAs are essential to a reasoned choice among alternatives here-including those for PACs that include key RNAs-BLM must complete those analyses, include them in the EIS, and make them available for public review and additional comment prior to making any final decision. 40 C.F.R. § 1502.22(a).

Related, BLM must address the U.S. Fish and Wildlife Service's ("the Service") 2020 status review for the Greater sage-grouse. In its 2015 "not warranted" decision, the Service found that factors A and D, concerning habitat and regulatory mechanisms, were the main factors impacting the survival of the Greater sage-grouse in Oregon. 12-Month Findings on a Petition to List Greater Sage-Grouse (Centrocerus urophasianus) as an Endangered or Threatened Species, 80 Fed. Reg. 59,858 (Oct. 2, 2015); see also 16 U.S.C. § 1533(a)(1) (five factors for determining whether a species warrants listing as endangered or threatened). Much of BLM's 2015 ARMPA focuses on management efforts to limit the destruction, modification, or curtailment of habitat. The ARMPA was based on the best scientific and commercial data then available. That determination, however, did not guarantee that the sage-grouse

would not in the future warrant listing under the Endangered Species Act. As the Service noted, "new threats may develop, management may change, or the species may not prove as resilient as we concluded based on the currently available science." 80 Fed. Reg. at 59,941.

Please indicate when the Department of the Interior will complete its 2020 status review. This review is essential not only to the survival and recovery of the sage-grouse, but, more immediately, to the environmental review being undertaken by BLM in the DSEIS. See 40 C.F.R. § 1502.22(a) (requirement that "incomplete information relevant to reasonably foreseeable significant adverse impacts" shall be included in EIS).

BLM should also address the questions the Service previously recognized as important "to help inform an evaluation of the greater sage-grouse status in calendar year 2020." See U.S. Fish & Wildlife Service, "2020 Greater Sage-grouse Status Review" at 3 (asking, for example, whether BLM's sage-grouse plans were implemented as planned, whether projects were mitigated to a net conservation gain, whether adaptive management procedures were effective, whether required monitoring and scientific research occurred, and whether the percentage of grazing allotments failing to meet land health standards has changed since 2015).

Using key RNAs to study the role of livestock grazing as it relates to climate change also is important to ensure consistency with the Oregon Plan. See, e.g., Oregon Plan at 150 (describing that the "The extent to which inappropriate grazing may pose a threat to sage-grouse in Oregon" depends on a number of factors including climate), 179-80 (discussing climate change as a conservation threat to sage-grouse in Oregon). The Oregon Plan calls for using climate change models "to identify zones of sage-grouse habitat that are predicted to tolerate future climate patterns." Oregon Plan at 181. How do BLM's Climate Change Consideration Areas overlap with or contribute to Oregon's climate zones? How can the research and study called for in the 2015 ARMPA's key RNAs allow BLM to identify (and then preserve) these important climate change-tolerant zones? Where in the DSEIS or prior NEPA documentation has BLM assessed whether it has incorporated connectivity mapping with climate change modeling to ensure that opportunities exist for sage-grouse to adapt to changing habitat availability, as called for by the Oregon Plan's Action CC-1-2? Id. (also listing BLM as one of the "Responsible Parties" for these measures).

D.4.7 Non-Sage-Grouse

Wildland Fire. BLM states that it "does not know the specifics of how wildfire affected each RNA or which specific vegetation communities actually burned and at what severity." DSEIS at 3-9. Recent data indicate that North Ridge Bully Creek and South Ridge Bully Creek are now dominated by invasive annual grasses, "suggesting some level of interaction between frequent wildfires, drought, and grazing." Id. Large-scale studies including the Great Basin Ecosystem Strategy are not yet complete. DSEIS at 3-8.[8] Even so, recent studies indicate that there is "relatively little published science that directly addresses the ability of fuel breaks to influence fire behavior in dryland landscapes or that addresses the potential ecological effects of the construction and maintenance of fuel breaks on sagebrush ecosystems and associated wildlife species" (Shinneman et al. 2018). 8 Studies of landscape-scale "fuel breaks" projects are underway in a Programmatic EIS for a proposed network of fuel breaks in the Great Basin, and the Final EIS and Record of Decision for the similar Tri-State Fuel Break Project. See Notice of Availability of the Record of Decision for the Final Programmatic Environmental Impact Statement for Fuel Breaks in the Great Basin; Idaho, Washington, Oregon, California, Nevada, and Utah, 85 Fed. Reg.

18,585 (Apr. 2, 2020); Notice of Availability for the Tri-State Fuel Breaks Project Final Environmental Impact Statement, Idaho and Oregon, 85 Fed. Reg. 19,019 (Apr. 3, 2020); 85 Fed. Reg. 28,974 Notice of Availability for the Tri-State Fuel Breaks Project Record of Decision, Idaho (May 14, 2020).

A recent publication brings BLM's uncertainty into greater focus. Williamson et al. (2019) provide the most important research since Reisner et al. (2013), setting out well-designed and extensively replicated study plots over large geographic areas, which address multiple biological, environmental, topographic, and anthropogenic factors thought to influence the abundance and distribution of cheatgrass in the West. Importantly, both papers identify livestock grazing as a vector fort the spread of cheatgrass in sagebrush steppe. The new paper is most notable for its demonstration that, among the many factors analyzed, livestock grazing is a very close second to fire in explaining both the presence and relative abundance of cheatgrass through time. And these are the only two factors with strong explanatory power for this effect. These studies refute otherwise unsupported statements that grazing is "not a causal factor" for the presence or expansion of cheatgrass in areas suffering from habitat degradation. Williamson et al. (2019) also provide a data-rich response to Shinneman et al. (2018) calling for better scientific understanding of using fuel breaks (maintained by livestock grazing) in sagebrush steppe as a means of reducing wildfire. As the authors unambiguously state, "Our novel time-series data and results indicate that grazing corresponds with increased cheatgrass occurrence and prevalence regardless of variation in climate, topography, or community composition, and provide no support for the notion that contemporary grazing regimes or grazing in conjunction with fire can suppress cheatgrass." BLM must obtain and include such essential information in this review. 40 C.F.R. § 1502.22(a) ("the agency shall include" incomplete information "relevant to reasonably foreseeable significant adverse impacts" and "essential to a reasoned choice among alternatives" so long as "the overall costs of obtaining it are not exorbitant"). Moreover, under FLPMA, BLM has a non-discretionary duty to "prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values." 43 U.S.C. § 1711(a). This planning process has been ongoing for a decade; there is no excuse at this point not to have gathered, analyzed, and presented for public review this essential information.

Conserving wildlife affected by climate change will require management that preserves and restores habitat resiliency and connectivity over the long-term. As part of this planning process, BLM identified "Climate Change Consideration Areas" totaling 2.2 million acres of occupied and potential sage-grouse habitat in Oregon. These areas serve as climate change refugia for sage-grouse and other wildlife. See 2013 DEIS 2-19 to -20. BLM recognized that these areas are important for habitat restoration, off-site mitigation, conservation partnering, fire suppression, post-fire rehabilitation, and sage-grouse habitat and population monitoring and assessment. 2013 DEIS 8-15 to -16. BLM even recognized that the boundaries of Climate Change Consideration Areas might be adjusted over time as habitat shifts and sage-grouse populations move across the landscape. 2013 DEIS 2-19.

This failure is inconsistent with BLM's duty to take a "hard look" at the environmental impacts of proposed actions. It is also inconsistent with BLM's obligation under FLPMA to prevent unnecessary or undue degradation, and the Secretary's directive that BLM shall consider and analyze potential climate change impacts when undertaking long-range planning exercises like this land use plan amendment.

The Oregon Plan also calls for identifying and protecting "sagebrush habitat within PACs that is most likely to persist into the future under new climatic conditions associated with climate change." Oregon Plan at 181. Agencies should use "the conservation measures identified throughout this Action Plan to

protect these areas from primary and secondary threats that result in habitat fragmentation or loss." Id. (Action CC-2-1). Again, please indicate where in the DSEIS or prior NEPA documentation BLM has assessed how research in key RNAs may contribute to identifying and protecting these crucial habitats in PACs.

D.4.8 Livestock Grazing

Harney County's local economy depends heavily on the agricultural sector, particularly livestock production, which in turn depends on access to graze and forage on BLM administered lands. A smaller portion of the economy is also supported by tourism, which consists of people visiting the County to engage in a diverse array of activities such as hunting, fishing, motorized vehicle travel, horseback riding, hiking and wildlife viewing-most of which takes place on BLM land. Because the County's economy and welfare are so closely linked with federal land management decisions, and in particular those related to livestock grazing, the County is a major stakeholder with respect to the development and administration of BLM's grazing-related regulatory framework. Land use and resource management decisions made by federal agencies, and particularly those of the BLM, can have profound and significant impacts on the County's existing land use practices, economic development opportunities, as well as recreational opportunities. Beyond the public health impacts, GSG-related grazing restriction can and does dramatically thwart the agencies' ability to respond to fire with post-wildfire restoration and salvage efforts, exacerbating the risk of future wildfire, as well as the rural economies that depend on the forage for their cattle industry constituents. Planning decisions related to GSG management must not inhibit the use of grazing to reduce fire fuels. This results in a dramatic waste of marketable forage volume and a build-up of fuels for future fires.

Through a succession of comments and other submissions, ONDA urged BLM to either select the "No Action" alternative, leaving the 2015 plan for Oregon unchanged, or to undertake a new or supplemental review to address the many problems ONDA and others had identified with the 2015 plan throughout the public process. On November 26, 2018, BLM issued a Proposed Resource Management Plan Amendment and Final Environmental Impact Statement ("FEIS"). The agency declined to consider in detail any of the other alternatives ONDA and the public had suggested, and proposed to select its one and only "action" alternative, the Proposed Plan Amendment. The proposed amendment would eliminate the grazing closures on 13 "key" Research Natural Areas ("RNAs") in Oregon. On January 7, 2019, pursuant to BLM's land use planning regulations, ONDA and other conservation organizations protested the agency's proposed decision. The groups argued that BLM had failed to provide a reasoned explanation for its about-face on the RNAs, failed to demonstrate that it took the required "hard look" at the environmental effects of weakening the 2015 Approved Resource Management Plan Amendment ("ARMPA") by eliminating the 2015 grazing closures, and failed to ensure the reversal in policy would not result in impermissible "unnecessary or undue degradation" to the public lands and resources in the planning area. On March 15, 2019, the Acting State Director for BLM Oregon/Washington, Theresa Hanley, issued a Record of Decision ("2019 ROD") rejecting ONDA's protest and approving the 2019 ARMPA to amend BLM's Oregon sage-grouse plan. The 2019 ARMPA reverses the 2015 ARMPA decision to close to livestock grazing, for scientific research and study, the 13 key RNAs, and changes two Objectives and one Management Direction related to these again- unprotected RNAs. These are the specially-designated areas that BLM had explained in 2015 were critical to the agency's ability to assess the impacts of grazing and associated grazing management actions on sage-grouse, and for gauging the effectiveness of the 2015 plan. BLM based its 2019 decision on a desire "to eliminate economic impacts to certain livestock operators." Yet, BLM failed to identify the operators potentially affected by

the closure, failed to provide or identify the federally-issued permits, and failed even to identify the federal grazing allotments at issue. And BLM provided no specific, quantitative economic analysis of presumed financial impacts. Instead, the agency merely referenced, in the most general of terms, "the potential for economic impacts." The only numeric indicator BLM provides is the number of animal unit months ("AUMs") that would be unavailable for grazing in the research areas. Notably, the 2018 FEIS discloses that number is, in fact, lower today than BLM said it was in the 2015 DEIS. The DSEIS confirms this again. DSEIS at 3-22 ("since the issuance of the 2015 ROD/ARMPA in September 2015 . . . [t]he acres unavailable for livestock grazing remain at 21,959, and the estimated unavailable AUM numbers changed from 2,388 to 1,772"). In other words: whatever the economic impact to these unidentified grazing permits and operations actually might be, the 2018 FEIS, confirmed again in 2020, shows it is actually smaller than BLM assumed in 2015. And in 2015, BLM stated that even eliminating a higher number of AUMs would have "negligible or no impact on livestock grazing and range management." See also DSEIS at 3-22 (loss of 1,772 AUMs described as "negligible"). That, of course, is consistent with the RNA establishment reports, in which BLM found that most of the key RNAs "are lightly grazed due to the lack of available water" -supporting BLM's finding that removing grazing from these areas will have no measureable effect on permitted grazing operations. See DSEIS at 1-13.

The DSEIS also fails to provide readily available, public information on the amounts of subsidies these unidentified operators receive. This is information directly relevant to presumed, but otherwise amorphous, "economic impacts." See, e.g., W. Watersheds Proj. v. Bernhardt, 392 F. Supp. 3d 1225, 1262 (D. Or. 2019) (deeming it relevant that U.S. Department of Agriculture increased amount of subsidies paid to grazing permittee during years when grazing was not permitted, "indicating that such subsidies may be available to counter the economic harm caused by a reduced ability to graze on federal land").

By compelling Oregon/Washington BLM to reverse course and abandon the RNA grazing closure-indeed, by failing to implement it in the first place-the Trump administration has signaled that it does not want to learn about how livestock grazing affects sagebrush plant communities and whether BLM's sage-grouse conservation plan for Oregon (and other states where the agency authorizes livestock grazing) is working to protect and restore sagebrush habitats for the species. That is, again, consistent with the Trump administration's consistently anti-conservation, anti-science approach to land management. See Attachment A & supra n.4.

What would be more helpful to conservation of Greater sage-grouse: more, or less, information on the impacts of livestock grazing in unique ecological settings and habitat types?

BLM contends that "proper" livestock grazing management can "control invasive plants and reduce fuel accumulations, protect intact sagebrush habitat, and increase habitat extent and continuity." DSEIS at 4-27 (no scientific references cited). To demonstrate this, is it not necessary to compare ungrazed reference areas to grazed sites elsewhere?

Are there sites somewhere within the 12,083,622 acres that remain available for grazing under the 2015 ARMPA where BLM could study the effects of "proper" livestock grazing? If so, please specifically identify them. Please also provide the data that support that statement.

Is restoring livestock grazing to the 13 key RNAs necessary to studying the effects of "proper" livestock grazing? If so, why? If not, why not?

BLM suggests that "[r]emoving improper livestock grazing in the key RNAs . . . could reduce competition for forage and potentially increase Greater Sage-Grouse cover and nesting habitat, while protecting riparian areas that support riparian-dependent, aquatic, and fish species." DSEIS at 4-4. The agency misunderstands the purpose of removing grazing from key RNAs. It is not to study "proper" or "improper" grazing; the research is about studying what happens in these places in the absence of any livestock grazing (regardless of how characterized).

And please address how BLM's sage-grouse plan would still be consistent with these Oregon Plan provisions in the absence of ungrazed key RNAs research and study.

Here, BLM must include its Causal Factor Analyses ("CFA"), including the worksheets, annual review documents, and full reports, in an appendix to the EIS. And it must actually assess and discuss that information in the EIS itself. ONDA understands that in its CFA documentation, BLM has variously described livestock grazing as a "causal factor," an "applicable threat" or an "uncertain factor" in a number of the CFAs the agency has completed to date. See also DSEIS at 3-8 (stating that grazing "may play a role" in some tripped triggers). Yet, in the DSEIS, BLM merely states that it "lacked sufficient information" to determine the role of grazing with regard to tripped triggers in one of the PACs, Cow Lakes-within which the Spring Mountain and Mahogany Ridge key RNAs are situated. Id. And the agency vaguely states that it did not identify grazing as a causal factor in "the other four" (unnamed) PACs. Id.

BLM fails to address the environmental consequences of eliminating the grazing removal from key RNAs with regard to climate change, including those RNAs that lie within BLM- identified climate refugia. In the DSEIS, the agency notes only that: Understanding what role, if any, livestock grazing may be playing in the responses of important forbs and insects to disturbance events, changing climate, and soil water availability requires that the BLM have access to long-term ungrazed control sites that cover a variety of ecological settings and habitats. Understanding which forb responses are due to changes in climate and which are due to the interaction between changing climate and grazing becomes ever more important for informing subsequent management direction.

D.4.9 Cumulative Impacts

Here, BLM improperly fragmented its analysis into six EISs, in violation of NEPA, and then also failed to conduct any meaningful cumulative impacts analysis within each EIS, in violation of 40 C.F.R. § 1508.25(c). See also W. Watersheds Proj. v. Schneider, 417 F. Supp. 3d 1319, 1332-33 (D. Idaho 2019) (injunction order noting fact that BLM issued six separate EISs in 2019, rather than provide one cumulative effects analysis covering the broad, multi-state range of the sage-grouse). BLM persists in this error by issuing now six separate DSEISs.

BLM's decision to reverse and abandon the Oregon ARMPA provision for grazing-focused research and study in key RNAs has effects not just with regard to management of sage-grouse in Oregon, but, because this is a provision unique to BLM's entire sage-grouse conservation strategy range-wide, to sage-grouse habitat everywhere. This is a cumulative effect BLM must study and disclose to the public in the Supplemental EIS. In short, does abandonment of the key RNAs grazing closure decision have a cumulative effect when viewed with other proposed actions?

BLM has not conducted a sufficient cumulative impacts analysis. The court also found that BLM must conduct a "robust cumulative impacts analysis" but did not take into account impacts outside of state

boundaries, even though "the sage grouse range covers multiple states and that a key factor - connectivity of habitat - requires a large-scale analysis that transcends the boundaries of any single State." WWP v. Schneider, 417 F.Supp.3d at 1332. Instead of expanding its cumulative impacts analysis to the requisite scope, BLM made no changes and states: Since the nature and context of the cumulative effects scenario has not appreciably changed since 2015, and the 2015 analysis covered the entire range of the Greater Sage-Grouse, the BLM's consideration of cumulative effects in the 2015 Final EISs adequately addresses most, if not all, of the planning decisions to be made through this planning effort. Oregon Draft SEIS, p. 4-30. This is the same statement that BLM included in the 2019 Amendments. Further, the cumulative impacts analysis does not appear to address leasing and development that has occurred since 2018, which makes a significant contribution to overall impacts across the species' range. See, Appendix B (Cumulative Effects Supporting Information); Oregon Draft SEIS, p. 4-34. The BLM is required to consider the cumulative environmental impacts to sage-grouse and sage- grouse habitat in these FEISS. Cumulative environmental impacts are defined as: The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. 40 C.F.R. § 1508.7. "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." Id. Cumulative impacts must be considered in the scope of an EIS. Id. § 1508.25(c). BLM has not complied with this requirement, which would require evaluation of the impacts of the changes in the 2019 Amendments across the range of the sage-grouse, including population declines, loss of habitat to fire, the likely effects of fuel breaks projects, and the impact of increased oil and gas leasing and drilling.

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