

Greater Sage-Grouse Land Use Plan Implementation Guide

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List of Acronyms

AIM – assessment, inventory, and monitoring
APD – application for permit to drill
AquADat – Aquatic AIM Data
ARMP – approved resource management plan
ARMPA – approved resource management plan amendment
ARS – Agricultural Research Service
BCARP – biological control agent release proposal
BLM – Bureau of Land Management
BPS – Budget Planning System
BSU – biologically significant unit
CMAT – Corporate Metadata Advisory Team
COT – Conservation Objectives Team
CSDGM – Content Standard for Digital Geospatial Metadata
DAC – Data Advisory Committee
DAWG – Data Advisory Working Group
DIMA – Database for Inventory, Monitoring, and Assessment
DOI – Department of the Interior
EA – environmental assessment
EIS – environmental impact statement
ESD – ecological site description
FACTS – Forest Service Activity Tracking System
FBMS – Financial and Business Management System
FGDC – Federal Geographic Data Committee
FIAT – Fire and Invasives Assessment Tool
FRIS – Forest Resource Information System
FTEM – Fuels Treatment Effectiveness Monitoring
FY – fiscal year
GHMA – general habitat management area
GRSG – Greater Sage-Grouse
HAF – Habitat Assessment Framework
IB – information bulletin
IHMA – important habitat management area
IM – instruction memorandum
LHA – land health assessment
LHS – land health standard
LMF – Landscape Monitoring Framework
LUP – land use plan
MOU – memorandum of understanding
NEPA – National Environmental Policy Act
NIFC - National Interagency Fire Center
NFPORS – National Fire Plan Operations and Reporting System
NISIMS – National Invasive Species Information Management System
NOC – National Operations Center
NRCS – Natural Resources Conservation Service
PAC – priority area for conservation

PGH – preliminary general habitat
PHMA – priority habitat management area
PMDS – Performance Management Data System
PPA – project planning area
PPH – preliminary priority habitat
PUP – pesticide use proposal
RDF – required design feature
REA – rapid ecoregional assessment
RIPS – Rangeland Improvement Project System
RMP – resource management plan
ROD – record of decision
SCID – Stewardship Contracting Information Database
SDARTT - Surface Disturbance and Reclamation Tracking Tool
SFA – sagebrush focal area
SFP – special forest products
SGI – Sage Grouse Initiative
SMaRRT – Sagebrush Management Resistance and Resilience Tool
TerrADat – Terrestrial AIM Data
TSIS – Timber Sale Information System
USFWS – U.S. Fish and Wildlife Service
USGS – U.S. Geological Survey
USFS – U.S. Forest Service
VTRT – vegetation treatment area data standard
VTS – Vegetation Treatment Solution
WAFWA – Western Association of Fish and Wildlife Agencies
WFMI – Wildland Fire Management Information
WY DDCT – Wyoming Density and Disturbance Calculation Tool

Introduction

On September 21, 2015, the Department of the Interior (DOI) Assistant Secretary for Land and Minerals Management signed the records of decision (RODs) for the approved resource management plan amendments (ARMPAs) for the Great Basin region¹ and for the Rocky Mountain region² and the approved resource management plans (ARMPs) for Billings, Buffalo, Cody, HiLine, Miles City, Pompeys Pillar National Monument, South Dakota, and Worland (Figure 1).³ The conservation measures outlined in these plans were a critical factor in the recent U.S. Fish and Wildlife Service (USFWS) decision that the Greater Sage-Grouse (GRSG) no longer warrants protection under the Endangered Species Act.

These plans define GRSG habitat management areas and establish habitat management objectives. To help ensure these objectives are achieved, the plans identify specific measures to reduce the threat of rangeland fire and invasive plants, to minimize new surface disturbance, and to improve habitat. The plans establish rangewide requirements to monitor and report on changes in the extent and condition of habitat. The plans also establish soft and hard triggers and responses for adaptive management.

While the GRSG provided much of the impetus for preparing these plan revisions and amendments, in many respects the plans are not about conserving a single species. Rather, they create a vision for how the Bureau of Land Management (BLM) is going to conserve, restore, and use the sagebrush steppe, the largest ecosystem in the lower 48 states, and one for which the BLM has major management responsibilities.

As many of the GRSG plan decisions operate at multiple spatial scales and cross field office and jurisdictional boundaries, it is critical that BLM field offices have a shared understanding of the commitments in the plans and a common approach to implementing them. This guide is intended to help foster such a shared understanding and common approach to plan implementation, especially with respect to the monitoring and reporting commitments in the plans.

Within the next 5 years, the USFWS will conduct a GRSG status review. To help inform this review, it is critical that the BLM has the capacity to systematically document how the GRSG plans are being implemented and to systematically demonstrate that the plans are effective at reducing the threat of rangeland fire and invasive plants, minimizing new surface disturbance, and improving habitat. A major objective of this guide is to help the BLM develop such capacity.

This implementation guide is not intended to replace the RODs or the individual plan amendments or revisions—they are the controlling legal documents. Nor is the guide intended to provide formal direction on implementing the plans—such formal guidance will be forthcoming in BLM instruction memoranda, manuals, and handbooks. Lastly, this guide is not intended to be a standalone “how-to guide” for every issue or situation. BLM state offices may supplement this guide to address regionally specific issues.

¹ The Great Basin region includes the Greater Sage-Grouse subregions of Idaho and southwestern Montana, Nevada and northeastern California, Oregon, and Utah.

² The Rocky Mountain region includes the Greater Sage-Grouse subregions of Lewistown, North Dakota, northwest Colorado, and Wyoming.

³ The record of decision for the Lander Resource Management Plan was signed on June 26, 2014. It includes comparable Greater Sage-Grouse conservation measures.



Figure 1. Greater Sage-Grouse planning areas

Organization of the Guide

The guide contains seven chapters organized around specific plan implementation topics: (1) habitat and assessment, (2) vegetation management and fire, (3) livestock grazing, (4) disturbance, (5) mitigation, (6) monitoring and adaptive management, and (7) data. Each chapter includes a summary of the commitments in the plans relating to the topic in question and then a discussion of critical implementation issues.

Where relevant, the guide integrates guidance from a number of Secretarial orders and strategies that complement the GRSG plans. Such orders and strategies include Secretarial Order 3330 on “Improving Mitigation Policies and Practices of the Department of the Interior;” Secretarial Order 3336 on “Rangeland Fire Prevention, Management, and Restoration;” the “National Cohesive Wildland Fire Management Strategy;” the “National Seed Strategy for Rehabilitation and Restoration;” and “Advancing Science in the BLM: An Implementation Strategy.”

This implementation guide is presented in an electronic format that enables the reader to quickly search for specific information. Throughout the document, hyperlinks are provided that navigate directly to specific direction in the RODs and LUPs to ensure an accurate and consistent understanding of the guidance. It is critical for users of this guide to understand how one resource area relates to another. Thus, it is recommended that users become familiar with all chapters of this guide, to ensure an interdisciplinary perspective of the management direction.

Coordination

While BLM managers and staff are the primary audience for this guide, the BLM recognizes that others may find it of interest. Successful implementation of the GRSG plans will require close coordination among state and federal agencies, tribes, and local units of government. It also will require the active involvement of a wide variety of public land users and nongovernmental organizations with an interest in the conservation and use of the sagebrush steppe. The BLM is committed to working with its partners and stakeholders to enhance the coordination and integration of sagebrush-related management actions.

Some of this coordination will occur through the development of the regional Conservation and Restoration Strategy mandated by the Secretarial order on rangeland fire (see Chapter 2); the development of a Regional Mitigation Strategy in each Western Association of Fish and Wildlife Agencies (WAFWA) management zone (see Chapter 5); the administration of the disturbance cap at the biologically significant unit scale (see Chapter 4); and other cross-jurisdictional activities mandated by the plans. Other coordination will occur through established planning and impact assessment procedures on site- and project-specific issues and proposals.

Next Steps

A collective understanding of these plans and of what will be required to implement them will evolve. As a consequence, the BLM anticipates that this guide will evolve as well. The bureau is planning to release a new version of this guide later this year. The next version will address a number of discrete topics that were not covered in this guide, including travel and transportation management and wild horses and burros. The next version will also incorporate information from internal and external meetings scheduled for spring 2016.

Chapter 1: Habitat and Assessment

1.1 Land Use Plan Commitments

The 2015 GRSG land use plans (LUPs) designate management areas and establish habitat management objectives that the BLM is committed to assess and monitor during implementation. This chapter discusses designated habitat management areas, habitat objectives, and habitat assessment and monitoring.

1.1.1 Habitat Management Areas

The GRSG LUPs designate at least two categories of GRSG habitat management areas. Priority habitat management areas (PHMAs) largely coincide with areas identified as priority areas for conservation (PACs) in the [Conservation Objectives Team report](#) (USFWS 2013) (COT report). Remaining current habitat is designated as general habitat management areas (GHMAs). Note that some subregional plans include additional habitat categories (see Tables 1 and 2).

The LUPs also identify sagebrush focal areas (SFAs), which, in general, are a subset of PHMAs. SFAs correspond to the areas identified by the USFWS as GRSG “strongholds,” as detailed in an October 27, 2014, memorandum from USFWS Director Dan Ashe to BLM Director Neil Kornze and USFS Chief Tom Tidwell. The memorandum identified areas “that have been noted and referenced by the conservation community as having the highest densities of the species and other criteria important for the persistence of the species” ([Ashe 2014](#)). The SFAs in the LUPs reflect the areas within the identified strongholds that are administered by the BLM and the USFS and that are inside the planning area boundaries.

The BLM and USFS GRSG LUPs govern approximately 67 million acres of PHMA, GHMA, and important habitat management areas (IHMA) (Idaho only). Of this, approximately 35 million acres are identified as PHMA; 29 million acres are identified as GHMA; and 3 million acres are identified as IHMA. SFAs consist of 12 million acres of the 35 million PHMA acres. Figure 2 displays SFAs, PHMAs, and GHMAs on BLM-administered lands.

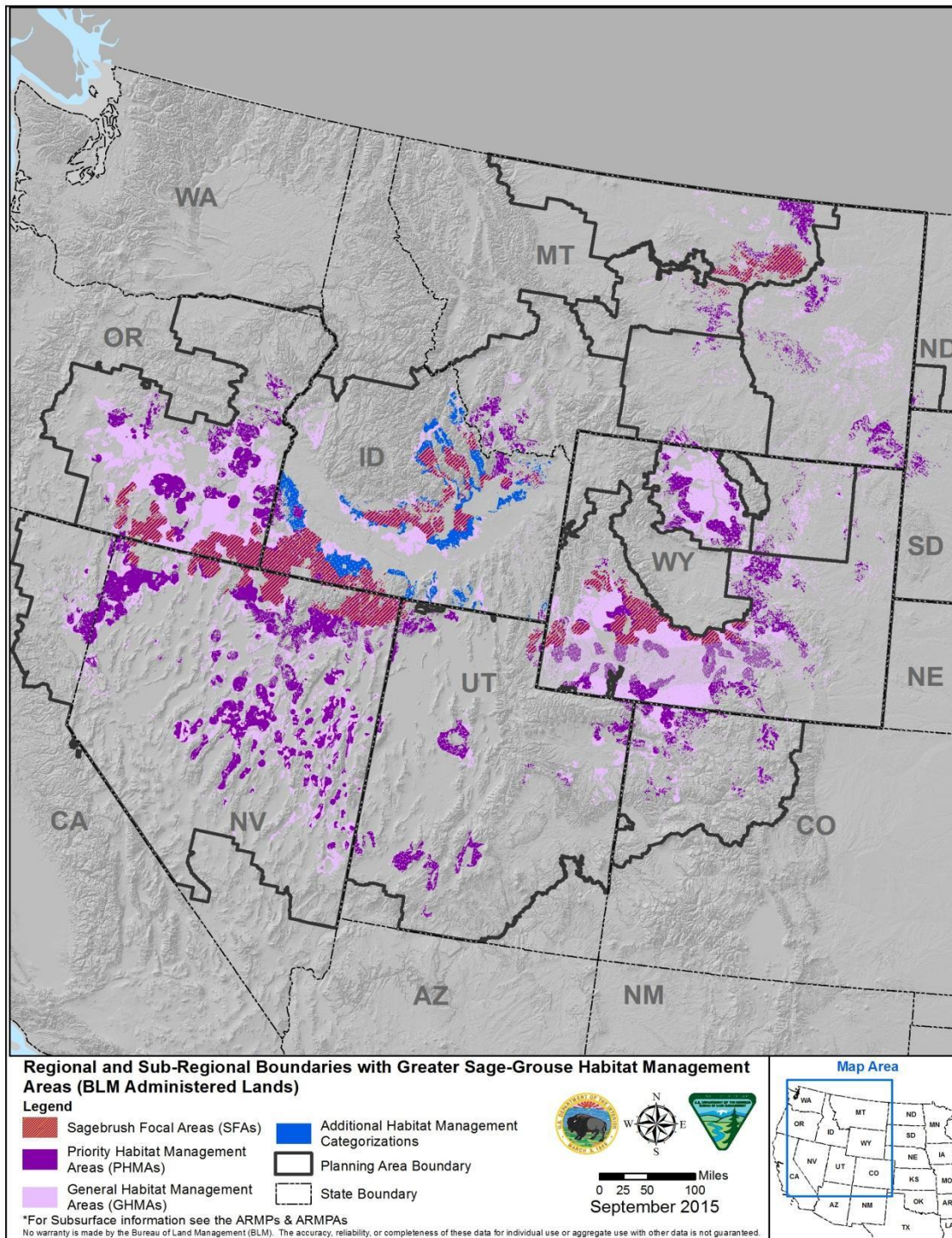


Figure 2. Map with regional and subregional boundaries displaying Greater Sage-Grouse SFAs, PHMAs, and GHMAs on BLM-administered lands.

The PHMA and GHMA habitat categories for the Rocky Mountain region are defined the same as for the Great Basin region. Additional categories are the Restoration Habitat Management Areas (RHMA) in Montana where management actions balance ongoing and future resource uses, so that habitat is maintained, allowing residual populations in impacted areas to persist; and in the Northwest Colorado ARMPA includes Linkage and Connectivity Habitat Management Areas (LCHMA) to facilitate movement of GRSG and maintain ecological processes. Table 1 comes from the ROD for the Great Basin region and provides specific information regarding additional habitat categories and provides the number of acres of each habitat category.

Table 1. Surface acres of PHMAs, GHMAs, OHMAs, and IHMAs in the decision area for the Great Basin region

**Table 1-3
Surface Acres of PHMAs, GHMAs, OHMAs, and IHMAs in the Decision Area for the Great Basin Region**

BLM-Administered Surface Acres	PHMAs	GHMAs	OHMAs	IHMAs
Idaho and Southwestern Montana	4,627,200	2,179,700	0	2,737,600
Utah*	2,023,400	502,500	0	0
Oregon	4,547,000	5,660,150	0	0
Nevada and Northeastern California	9,309,700	5,720,600	5,876,600	0
Total Acres	20,507,300	14,062,950	5,876,600	2,737,600

Source: BLM GIS 2015

*41,200 acres of National Forest System lands in the Anthro Mountain area of Utah would be managed as neither PHMAs nor GHMAs. These areas would be identified as "Anthro Mountain." In the Utah ARMPA, these areas are considered split-estate, where the BLM administers the mineral estate.

- **PHMA**—BLM-administered lands identified as having the highest habitat value for maintaining sustainable GRSG populations. The boundaries and management strategies for PHMAs are derived from and generally follow the PPH boundaries. PHMAs largely coincide with areas identified as PACs in the COT Report (except for PACs in Nevada and Utah, as specified on page 13 of the COT Report).
- **GHMA**—BLM-administered GRSG habitat that is occupied seasonally or year-round and is outside of PHMAs. It is where some special management would apply to sustain GRSG populations. The boundaries and management strategies for GHMAs are derived from and generally follow the PGH boundaries.
- **OHMA**—BLM-administered land in Nevada and Northeastern California, identified as unmapped habitat in the Proposed RMP/Final EIS, that is within the Planning Area and contains seasonal or connectivity habitat areas. With the generation of updated modeling data (Spatially Explicit Modeling of Greater Sage-Grouse Habitat in Nevada and Northeastern California; Coates et al. 2014) the areas containing characteristics of unmapped habitat were identified and are now referred to as OHMAs.
- **IHMA**—BLM-administered land in Idaho that provides a management buffer for and that connect patches of PHMAs. IHMAs encompass areas of generally moderate to high habitat value habitat or populations but that are not as important as PHMAs. These lands serve a critical role in the adaptive management strategy developed by the State of Idaho and adopted in the ARMPA.

Table 2 comes from the ROD for the Rocky Mountain region and provides specific information regarding additional habitat categories and provides the number of acres of each habitat category.

Table 2. Surface acres of PHMAs, GHMAs, RHMAs, and LCHMAs in the decision area for the Rocky Mountain region

Table 1-3a
Surface Acres of PHMAs, GHMAs, RHMAs, and LCHMAs in the Decision Area for the Rocky Mountain Region

BLM-Administered Surface Acres	PHMAs	GHMAs	RHMAs	LCHMAs
Lewistown	233,219	112,341	-	-
North Dakota	32,900	80	-	-
Northwest Colorado	921,500	728,000	-	81,900
Wyoming	4,895,100	6,032,500	-	-
Billings	158,926	176,734	78,927	-
Buffalo	137,451	627,824	-	-
Cody	317,307	740,797	-	-
HiLine	1,432,689	289,756	-	-
Miles City	817,000	1,395,000	87,000	-
Pompeys Pillar NM	-	-	-	-
South Dakota	127,735	23,684	-	-
Worland	799,391	1,290,562	-	-
Total Acres	9,873,218	11,417,278	165,927	81,900

Source: BLM GIS 2015

- **PHMAs**—BLM-administered lands identified as having highest habitat value for maintaining sustainable GRSG populations. The boundaries and management strategies for PHMAs are derived from and generally follow the PPH boundaries. PHMAs largely coincide with areas identified as PACs in the COT Report.
- **GHMAs**—BLM-administered GRSG habitat that is occupied seasonally or year-round and is outside of PHMAs, where some special management would apply to sustain GRSG populations. The boundaries and management strategies for GHMAs are derived from and generally follow the PGH boundaries.
- **RHMAs (Billings and Miles City only)**—BLM-administered lands where maintaining populations is a priority, a balance between ongoing and future resource use so that enough quality habitat is maintained to allow some residual population in impacted areas to persist and that emphasizes the restoration of habitat to reestablish or restore sustainable populations.
- **LCHMAs (Northwest Colorado only)**—BLM-administered lands that have been identified as broader regions of connectivity important to facilitate the movement of GRSG and maintain ecological processes.

1.1.2 Habitat Management Objectives

The decisions in both RODs to conserve, enhance, and restore GRSG habitat are based on habitat selection by sage-grouse at multiple spatial scales (broad, mid, fine, and site scale). At the broad scale, sage-grouse are generally found in areas with relatively dense sagebrush cover within which a variety of more specialized seasonal habitat conditions can be found. At the mid, fine, and site scales, seasonal habitats are connected to areas predominantly composed of sagebrush that contains a variety of grasses and forbs, are relatively free of anthropogenic disturbance, and have functioning wet meadows. The objectives in the LUPs are composed of indicators that are important components of sage-grouse habitats at multiple scales. At the landscape (broad) scale, the objective covers the amount of sagebrush within PHMAs and SFAs, while more specific objectives ensure that desired conditions exist for seasonal habitats within the broad expanse of sagebrush.

A broad-scale vegetation objective is contained in both RODs ([BLM Great Basin Region](#), [BLM Rocky Mountain Region](#)) and the 2015 GRSG LUPs: In all SFAs and PHMAs, the desired condition is to maintain all lands ecologically capable of producing sagebrush (but no less than 70 percent) with a minimum of 15 percent sagebrush canopy cover.

Mid-, fine-, and site-scale objectives are found in the habitat objectives tables in the 2015 GRSG LUPs. The tables contain desired conditions, supported by research and monitoring, for each GRSG habitat indicator within the four seasonal habitats (breeding, nesting, brood-rearing, and winter). In addition, the tables contain percentages of the habitat indicators needed to meet the desired vegetation conditions of each of the four seasonal habitats.

The RODs require all BLM use authorizations to contain terms and conditions to meet or make progress toward meeting the habitat objectives, based on site conditions and ecological potential.

The habitat objectives table for each plan can be found at:

- [Billings Field Office Approved Resource Management Plan, page 2-14, Table 2-6](#)
- [Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices Approved Resource Management Plan Amendment for Greater Sage-Grouse, page 29, Table 2-2 and 2-3](#)
- [Buffalo Field Office Approved Resource Management Plan, page 26, Table 2.6](#)
- [Cody Field Office Approved Resource Management Plan, page 21, Table 2.7](#)
- [Worland Field Office Approved Resource Management Plan, page 22, Table 2.7](#)
- [HiLine District Office Approved Resource Management Plan, page 2-21, Table 2.3-2](#)
- [Lewistown Field Office Approved Resource Management Plan Amendment, page 2-4, Table 2-2](#)
- [North Dakota Approved Resource Management Plan Amendment, page 2-4, Table 2-2](#)
- [Northwest Colorado Approved Resource Management Plan Amendment, page 2-4, Table 2-2](#)
- [Miles City Field Office Approved Resource Management Plan, page 2-15, Table 2-6](#)
- [South Dakota Approved Resource Management Plan, page 2-19, Table 2-6](#)
- [Idaho and Southwestern Montana Approved Resource Management Plan Amendment, page 2-5, Table 2-2](#)
- [Nevada and Northeastern California Approved Resource Management Plan Amendment, page 2-4, Table 2-2](#)
- [Oregon Approved Resource Management Plan Amendment, page 2-4, Table 2-2](#)
- [Utah Approved Resource Management Plan Amendment, page 2-4, Table 2-2](#)

1.1.3 Habitat Assessment and Monitoring

The GRSG LUPs commit to assessment and monitoring of conditions in GRSG LUP-designated habitat management areas to determine effectiveness of use authorizations and management actions, which includes land health assessments (LHAs) and vegetation treatment monitoring. BLM field offices are required to use the “[Sage-Grouse Habitat Assessment Framework](#)” (HAF), Technical Reference 6710-1 (Stiver et al. 2015), and the mid-, fine-, and site-scale indicators provided therein to describe and rate sage-grouse habitat suitability when assessing sage-grouse habitat. GRSG LUP habitat objective indicator values (the desired conditions identified in the habitat objectives tables in each GRSG LUP; see Chapter 1.1.2 of this guide) should replace HAF indicator values, where they differ, and should be used to determine GRSG habitat suitability. In field offices without a GRSG habitat objectives table, follow the methodology in the [HAF technical reference](#) to determine indicator values.

Multiscale sage-grouse habitat assessments using the HAF are part of the multiscale land health assessment process to identify areas with significant departure from expected conditions. The site-scale sage-grouse habitat assessment is part of the land health standards (LHSs) assessment and evaluation to determine if LHSs are being achieved. The standards assessment and evaluation will be used to develop terms and conditions for BLM authorization or reauthorization, including BLM grazing authorizations.

BLM field office priorities for completing sage-grouse habitat assessments will follow criteria from the applicable LUP and from forthcoming policy for processing livestock grazing authorizations in GRSG habitat. Priorities may be further refined by BLM field office wildlife biologists and interdisciplinary teams to ensure that habitat assessments are conducted within areas where habitat information is lacking and in areas of concern for sage-grouse habitat or populations where changes in management may be expected to improve sage-grouse habitat (e.g., where an LUP adaptive management trigger has been tripped).

1.2 Implementation Topics and Guidance

(Note: The following is interim guidance pending issuance of Washington Office instruction memoranda.)

1.2.1 Habitat Management Areas

The habitat management area decisions made in BLM LUPs identify land use allocations and management actions necessary to meet the LUP purpose of incorporating conservation measures to conserve, enhance, and/or restore GRSG habitat by reducing, eliminating, or minimizing threats to that habitat.

Some states/state wildlife agencies may have delineated habitat management areas using different terminology (key, core, etc.). Note that the GRSG LUP-designated habitat management areas may not always be fully aligned with state designations. Areas of sage-grouse habitat occurring outside of the LUP-designated areas should be managed using guidance from [BLM Manual 6840, “Special Status Species Management.”](#)

As new information becomes available about GRSG habitat, including seasonal habitats, in coordination with the state wildlife agency and USFWS, and based on the best available scientific information, the BLM (with State Director concurrence) may update or revise the GRSG habitat management area maps and/or associated management decisions through plan maintenance or plan amendment/revision, as appropriate.

1.2.1.1 Seasonal Habitat Delineations

Seasonal habitats (breeding, nesting, early brood-rearing, late brood-rearing, and winter) were largely incorporated into the designated habitat management areas. Seasonal habitat delineations are approximations and/or models of use areas and potential habitat across the landscape, including movement corridors.

Identifying seasonal habitats is an integral part of the process to apply the habitat objectives and to assess and monitor conditions within the seasonal habitats. In many cases, seasonal habitats overlap each other; therefore, delineating distinct boundaries among habitats may be difficult or inappropriate in some landscapes. The BLM will continue to work with state wildlife agencies and others to delineate and/or refine seasonal habitat categories and movement corridors.

Acquiring, developing, and/or maintaining accurate and timely GRSG information across scales is an iterative process. The intent of identifying and monitoring habitat is to depict the spatial extent of existing habitat and have readily available information to track short- and long-term changes to habitat availability and condition (e.g., as a result of fire or rehabilitation). Field units, in coordination with state wildlife agencies and other partners, should use existing GRSG seasonal habitat classification mapping, radio telemetry/GPS monitoring, and inventories (if available) to inform planning decisions and delineate GRSG seasonal habitat for analyses at smaller scales.

At the larger scale, the BLM (led by the National Operations Center), in partnership with the USGS, is in the process of developing methodologies for mid-scale habitat patch-related indicators. The project will then focus on an initial identification of GRSG seasonal habitats that incorporates other sources of information (e.g., the "[Greater Sage-Grouse Monitoring Framework](#)," the grass/shrub project, existing state and regional mapping efforts, habitat objectives from the GRSG LUPs, BLM field office information) to identify potential seasonal habitats. This first model is scheduled for completion by the end of FY 2016.

Through partnerships with the Range-wide Interagency Sage-Grouse Conservation Team and the Executive Oversight Committee, radio telemetry/GPS and GRSG population data will be used to validate and improve these initial habitat models and develop empirically based occupied seasonal habitat models. These partnerships promote the information development and sharing processes under the [WAFWA/Department of Agriculture/Department of the Interior GRSG memorandum of understanding](#) (MOU) (WAFWA 2008).

1.2.2 LUP Habitat Objectives

The GRSG LUP habitat objective indicator values (the desired conditions identified in the habitat objectives table in each GRSG LUP; see Chapter 1.1.2 of this guide) should replace HAF indicator values, where they differ, and should be used to determine sage-grouse habitat suitability. In field offices without a GRSG habitat objectives table, follow the methodology in the [HAF technical reference](#) to determine indicator values.

BLM offices are responsible for using the habitat objectives (1) as part of evaluating whether applicable land health standards are being achieved, (2) when setting objectives for vegetation treatments, and (3) in developing terms and conditions to be incorporated into all BLM use authorizations regarding the actions needed to meet, or make progress toward meeting, the habitat objectives. State offices, in coordination with the field and district offices, are responsible for evaluating LUP effectiveness,

including whether the plan is meeting the GRSG habitat objectives (see the "[Greater Sage-Grouse Monitoring Framework](#)" for more details).

1.2.3 Habitat Assessment and Monitoring

1.2.3.1 Completing the HAF

The suite of measurable habitat indicators from the [HAF](#) will be used to evaluate whether sage-grouse habitat is suitable, marginal, or unsuitable (see Table 3). Note that a single habitat indicator does not necessarily define habitat suitability for an area or particular scale. For the broad scale, habitat suitability is assessed across the entire range of the species. Mid-scale habitat descriptions are linked to sage-grouse dispersal capabilities across broad landscapes among populations and subpopulations. Fine-scale indicators address factors that affect sage-grouse use of, and movements between, seasonal habitats (breeding, summer, and wintering). Site-scale suitability is described by more detailed vegetation indicators, such as canopy cover, that represent habitat criteria for specific seasonal needs. Field offices will coordinate with district offices, state offices, and the National Operations Center (NOC) to acquire the best available data to inform mid-, fine- and site-scale suitability ratings.

Table 3. Summary of habitat suitability indicators and descriptions for the mid, fine, and site scales. Suitability descriptions appropriate for each scale are based on the habitat indicator measurements for that scale (Stiver et al. 2015).

Mid-Scale (Second-Order) Descriptions – Isolated/small population, subpopulation, or home range of group of leks	
Habitat Indicators	<ol style="list-style-type: none"> 1. Habitat Availability 2. Patch Size and Number 3. Patch Connectivity 4. Linkage Area Characteristics 5. Landscape Matrix and Edge Effect 6. Anthropogenic Disturbances
General Suitability Descriptions	<p>Suitable: Landscapes have connected mosaics of sagebrush shrublands that allow for bird dispersal and migration movements within the population or subpopulation area. Anthropogenic disturbances that can disrupt dispersal or cause mortality are generally not widespread or are absent.</p> <p>Marginal: Landscapes have patchy, fragmented sagebrush shrublands that are not well connected for dispersal and migration in portions of the population or subpopulation area. Anthropogenic disturbances that disrupt dispersal or cause mortality are present throughout all or portions of the landscape. Some lek groups or subpopulations are isolated or nearly isolated.</p> <p>Unsuitable: Landscapes were former shrubland habitat now converted to predominantly grassland or woodland cover or other unsuitable land cover or use. Remaining sagebrush patches are predominantly unoccupied or have few remaining birds. Portions of the population or subpopulation area may become occupied in the foreseeable future through succession or restoration.</p>
Fine-Scale (Third-Order) Descriptions – Seasonal habitats within home ranges	
Habitat Indicators	<ol style="list-style-type: none"> 1. Seasonal Habitat Availability 2. Seasonal Use Area Connectivity 3. Anthropogenic Disturbances
General Suitability Descriptions	<p>Suitable: Home ranges have connected seasonal use areas. Anthropogenic features that can disrupt seasonal movements or cause mortality are generally absent or at least not widespread.</p> <p>Marginal: Home ranges have poorly connected or disjunct seasonal use areas. Anthropogenic features that can disrupt seasonal movements or cause mortality may occur within the home range.</p> <p>Unsuitable: Home ranges have seasonal use areas with predominantly grasslands, woodlands, or incompatible land uses (anthropogenic features) not conducive to Greater Sage-Grouse seasonal movements or habitat use. Most leks have been abandoned or have few remaining birds.</p>
Site-Scale (Fourth-Order) Descriptions – Use areas within seasonal habitats	
Habitat Indicators	<ol style="list-style-type: none"> 1. Sagebrush Cover (all seasons) 2. Sagebrush Height (all seasons) 3. Predominant Sagebrush Shape (breeding only) 4. Perennial Grass and Forb Heights (breeding) 5. Perennial Grass Cover (breeding and summer/late brood-rearing) 6. Perennial Forb Cover (breeding and summer/late brood-rearing) 7. Preferred Forb Availability (breeding and summer/late brood-rearing) 8. Riparian Stability (summer/late brood-rearing) 9. Availability of Sagebrush Cover (leks and summer/late brood rearing – riparian/wet meadow) 10. Proximity of Detrimental Land Uses (leks) 11. Proximity of Trees or Other Tall Structures (leks)
General Suitability Descriptions	<p>Suitable: Seasonal habitat has a preponderance of sagebrush cover types with sufficient shrub and herbaceous cover to protect Greater Sage-Grouse from predators and weather and successfully raise young. Food resources are present or in close proximity to cover.</p> <p>Marginal: Seasonal habitat has a preponderance of sagebrush cover types with sparse shrub and/or herbaceous cover that does not provide the shelter needs for protection from predators and weather. Food resources are present but are either not at levels expected for ecological site potential or not in close proximity.</p> <p>Unsuitable: Seasonal habitat has a preponderance of land cover types that do not provide sufficient cover or food resources to meet the life requisite needs though there is potential to meet them in the future.</p>

Assessment, inventory, and monitoring (AIM) site-scale core indicator data collected within GRSG habitat should be supplemented with data that address HAF-specific indicators and methods to complete the habitat suitability determination. Supplementary HAF site-scale indicators not collected by AIM protocol include distance from a lek to adequate sagebrush cover, proximity of detrimental land uses from a lek, proximity of trees and other tall structures from a lek, riparian/wet meadow stability, and the average depth of snow in winter habitat areas. Indicators not described in the HAF (such as lentic sites) may be needed to address specific habitat characteristics in some areas and should be added as needed to complete the suitability rating. Where the BLM has existing AIM indicator data, the need for resampling should be evaluated on a case-by-case basis and should consider (1) whether the missing indicators can be evaluated remotely and (2) whether AIM results indicate that vegetation cover may lead to a rating of less than suitable. In addition, field offices may have legacy datasets that can be incorporated to inform the evaluation of site-scale habitat indicators or trends in habitat condition.

After the forms and descriptions are completed, field offices will compile a HAF summary report that contains:

- The names of the individuals completing the assessment and the name of the field office.
- Maps of the assessment area and seasonal habitats.
- Summarized information about data sources, including the metadata.
- The process to identify sampling locations (e.g., randomization, targeted, strata, etc.).
- A summary of the mid-, fine-, and site-scale habitat suitability descriptions and ratings, including the rationale used to reach those ratings.

Upon completion of each HAF summary report, the field office will submit a pdf version of the report to the state office wildlife program lead or sage-grouse conservation biologist to upload to the GRSG SharePoint site.

The HAF summary report and the assessment data and information will be used to:

- Inform the multiscale land health assessments.
- Inform the allotment-scale land health standard(s) relative to wildlife/special status species (as articulated in [BLM Handbook H-4180-1, "Rangeland Health Standards"](#)).
- Inform the design of management actions to improve GRSG habitat at the mid, fine, and site scales.
- Design, assess, and monitor the effectiveness of vegetation treatments in GRSG habitats.
- Identify habitat conditions that are likely to be limiting for GRSG populations.
- Provide context in NEPA documents for proposed actions in GRSG habitats.
- Understand the habitat value of debits and credits related to mitigation.

1.2.3.2 Linking the HAF to the LHA

When using a sage-grouse habitat assessment report for land health assessments, an interdisciplinary team is responsible for reviewing the HAF report(s) and data applicable to the land health evaluation area to evaluate whether the appropriate land health standard is being achieved.

The [HAF](#) describes a process to make one of three possible suitability ratings for the mid, fine, and site scales: suitable, marginal, or unsuitable. Use the fine scale information (Form F-1) and the site scale information for each seasonal habitat and strata within that habitat that received a suitability rating during the HAF process ([Forms S-2 through S-6](#)). When applying the HAF to a land health standards assessment, the wildlife biologist will assemble [Form S-7](#) (the summary of the suitability ratings) and rationale from the site-scale forms to inform whether the appropriate land health standard(s) for GRSG habitat is being achieved or if significant progress is being made toward meeting the standard. Use the following guidelines when linking the HAF suitability rating to the land health standard(s):

1. A **suitable** habitat rating at the site scale will be considered as achieving the land health standard(s).
2. An **unsuitable** habitat rating at the site scale will be considered as not achieving the land health standard(s) if the site has the ecological potential to produce vegetation of the desired condition.
3. A **marginal** habitat rating at the site scale requires the BLM interdisciplinary team to further examine GRSG habitat information from the HAF report and the most recent population information to evaluate whether the land health standard(s) is being achieved, whether significant progress is being made toward meeting the standard(s), or whether the standard(s) is not being met. The following considerations will guide and provide context to the evaluation:
 - **Fine-scale suitability description:** The fine-scale suitability description from the report should be used to evaluate whether the seasonal habitat in question is limited in spatial extent or is likely to be highly important to GRSG populations within the broader landscape.
 - **Sample size and variability:** The sample sizes within each analysis area must provide sufficient precision for the individual HAF indicator(s). If sample sufficiency is determined to be too low, additional samples are necessary to rate suitability.
 - **Habitat trends and characteristics:** To achieve the land health standard(s), quantitative monitoring data must indicate an upward trend for the indicator(s) within the seasonal habitat of interest.
 - **Marginal habitat not requiring management changes:** These areas have a low likelihood that changes in management would improve habitat suitability rating at a scale relevant to the analysis area within a short time period (e.g., ≤ 5 years). For example, changes in livestock grazing management are less likely to affect sagebrush cover than grass and forb growth characteristics.

When evaluations and determinations are completed or updated, use the mapping standards and categories found in an attachment of [Washington Office Instruction Memorandum 2012-124](#) to report these supplemental findings of the land health evaluations. Mapping will be important for identifying where assessment areas overlap and for documenting the relationship between habitat conditions and management of activities.

Chapter 2: Vegetation Management and Fire

2.1 Land Use Plan Commitments

This chapter focuses on the fire and vegetation plan commitments related to the National Greater Sage-Grouse Planning Strategy, as described in the RODs for the [Great Basin](#) (p. 1-19) and [Rocky Mountain](#) (p. 1-21) regions and subregions.

“The ARMPs and ARMPAs were developed to meet the purpose and need to conserve, enhance, and restore GRSG habitat by eliminating or minimizing threats to their habitat identified in the 2010 listing decision and highlighted in the Background and Purpose Section of the COT Report (FWS 2013). Consequently, consistent with guidance in the COT and NTT Reports, four essential components of the GRSG conservation strategy were identified, as follows” (BLM 2015q, 2015r):

- Avoiding or minimizing new and additional surface disturbances
- Improving habitat conditions
- Reducing threats of rangeland fire to GRSG and sagebrush habitat in the Great Basin
- Monitoring and evaluating the effectiveness of conservation measures and implementing adaptive management, as needed

In order to address these components, the BLM is committed to the fire and vegetation management responses in Tables 4 and 5.

Table 4. Key responses regarding fire and vegetation management from the Great Basin region GRSG ARMPAs that address the COT report threats (BLM 2015q)

Threats to GRSG and its Habitat (from COT Report)	Key Management Responses from the Great Basin Region GRSG LUPs
Fire	<ul style="list-style-type: none"> ● Identify and prioritize areas that are vulnerable to wildfires and prescribe actions important for GRSG protection. ● Restrict the use of prescribed fire for fuel treatments. ● Prioritize post-fire treatments in SFAs, other PHMAs, IHMAs, and GHMAs.
Nonnative, invasive plant species	<ul style="list-style-type: none"> ● Improve GRSG habitat by treating annual grasses. ● Treat sites in PHMAs, IHMAs, and GHMAs that contain invasive species infestations through an integrated pest management approach.
Sagebrush removal	<ul style="list-style-type: none"> ● PHMAs—Maintain all lands capable of producing sagebrush (but no less than 70 percent), with a minimum of 15 percent sagebrush canopy cover, consistent with specific ecological site conditions. ● Ensure that all BLM use authorizations contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives for GRSG.
Pinyon and juniper expansion	<ul style="list-style-type: none"> ● Remove conifers encroaching into sagebrush habitats, prioritizing occupied GRSG habitat, in a manner that considers tribal cultural values.

Table 5. Key responses regarding fire and vegetation management from the Rocky Mountain region GRSG ARMPs and ARMPAs that address the COT report threats (BLM 2015r)

Threats to GRSG and its Habitat (from COT Report)	Key Management Responses from the Rocky Mountain Region GRSG ARMPs and ARMPAs
Fire	<ul style="list-style-type: none"> ● Restrict the use of prescribed fire for fuel treatments. ● Prioritize post-fire treatments in SFAs (only found in Lewistown, HiLine, and Wyoming ARMPA), other PHMAs, and GHMAs.
Nonnative, invasive plant species	<ul style="list-style-type: none"> ● Improve GRSG habitat by treating annual grasses. ● Treat sites in PHMAs, RHMAs, and GHMAs that contain invasive species infestations through an integrated pest management approach.
Sagebrush removal	<ul style="list-style-type: none"> ● PHMAs—Maintain all lands capable of producing sagebrush (but no less than 70 percent), with a minimum of 15 percent sagebrush canopy cover, consistent with specific ecological site conditions. ● Ensure that all BLM use authorizations contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives for GRSG.
Pinyon and juniper expansion	<ul style="list-style-type: none"> ● Remove conifers encroaching into sagebrush habitats, prioritizing occupied GRSG habitat, in a manner that considers tribal cultural values.

2.2 Implementation Topics and Guidance

This section is split into two parts. The first part includes a summary of the vegetation and fire management direction from the GRSG LUPs and application of that direction to address related threats to GRSG and its habitat. The second part addresses the relationship between the LUPs and other broad strategies influencing the management of GRSG habitat.

2.2.1 Location of Vegetation and Fuels Management Direction in the LUPs

BLM vegetation and fuels management direction is set forth in the GRSG LUPs in Chapter 2 under the special status species, vegetation, and fire and fuels management sections and in Appendix C, required design features and best management practices. The special status species section contains specific objectives for the vegetation in breeding, brood-rearing, and wintering habitat (see Chapter 1.1.2 of this guide for locations of habitat objectives tables in the GRSG LUPs).

The vegetation section of each LUP describes the types of treatments that are allowed within GRSG habitat management areas; objectives concerning conifer removal, invasive plant control, and sagebrush management; and seasonal restrictions on when treatments can be conducted. The vegetation sections also identify priority areas or vegetation conditions for treatment, to be used in conjunction with the [Fire and Invasives Assessment Tool \(FIAT\)](#) in the Great Basin region and the related process under development for the Rocky Mountain region. The vegetation sections provide direction on the use of native plant materials in emergency stabilization, restoration, and rehabilitation work. Individual GRSG LUPs may contain additional vegetation objectives beyond those in the habitat objectives tables located in Chapter 2.

The fire and fuels management section contains direction on fuel breaks and NEPA requirements for the use of prescribed fire in sagebrush. Appendix C provides additional direction governing vegetation and fuels management treatments. Note that vegetation and fuels management actions must comply with any relevant required design features unless the NEPA analysis clearly documents why a particular relevant required design feature would not apply.

In addition, the adaptive management strategy, usually found in an appendix of each GRSG LUP, may contain additional restrictions on when, where, and what vegetation and fuels management actions may occur once a hard or soft trigger is tripped in a given biologically significant unit (BSU). Hard and soft triggers are defined in more detail in the adaptive management sections of the LUPs and summarized in Chapter 6 of this guide, Monitoring and Adaptive Management. If a soft trigger is tripped, a causal factor analysis will be completed, which will be used to determine if vegetation or fuels treatments are causal (too much, too little) and to inform what changes to vegetation and fuels management implementation are needed.

2.2.2 Establishing Vegetation Objectives for Habitat Protection and Restoration Actions

Where: Each LUP contains the following vegetation objective: In all SFAs and PHMAs, the desired condition is to maintain all lands ecologically capable of producing sagebrush (but no less than 70 percent) with a minimum of 15 percent sagebrush canopy cover. Also, Chapter 2 of each LUP identifies additional habitat objectives (see Chapter 1.1.2 of this guide for the locations of habitat objectives tables in the GRSG LUPs).

How: Consistent with the LUP vegetation and habitat objectives described in Chapter 1.2.3 of this guide, site-specific objectives should be established during project planning under NEPA, such as treating an invasive plant population or reducing hazardous fuels, or within programmatic planning conducted under NEPA, such as integrated pest management plans or postfire normal year rehabilitation plans that step down to site-specific treatments.

Who: The deciding official for the project will identify an interdisciplinary team to develop and analyze the proposed action(s) and alternative(s) consistent with agency policy. Interdisciplinary teams will include a broad representation of scientific and natural resource expertise. The issues arising from the proposed action would determine the specific types of expertise needed.

2.2.3 Using Habitat Objectives to Develop Project and Programmatic Plans

What: Proposed actions with vegetation objectives for habitat protection and restoration actions intended to benefit GRSG will have objectives consistent with those in the LUP for the mid and site scales found in Chapter 2 of the LUPs (see Chapter 1.1.2 of this guide for the locations of habitat objectives tables in the GRSG LUPs).

How and Who: Interdisciplinary teams will still need to assess vegetation within the analysis area relative to the mid-scale and site-scale habitat objectives in the LUP. Interdisciplinary teams should then use this information to inform development of proposed actions and alternatives.

2.2.4 Identifying Habitat Protection and Restoration Actions (e.g., fuel breaks, invasive species treatments, and other vegetation treatments)

Following the processes identified in the [NEPA handbook](#) (Figures 1.1, 1.2), offices will collaborate with the public and stakeholders before and during the NEPA process to ensure a coordinated landscape-level approach using the best available science to target vegetative treatments across the landscape. As part of the implementation of Secretarial Order 3336, the BLM is developing a Conservation and Restoration Strategy that will provide additional tools to support prioritization of habitat protection and restoration actions.

Within the Great Basin region, the five completed FIAT reports identified project planning areas (PPAs). These PPAs are prioritized landscapes identifying treatments to protect or restore habitats, which could provide a preliminary proposed action for consideration during NEPA. As these assessments are updated and additional areas are included in FIAT reports, this information would be used to target vegetation treatments.

Within the Rocky Mountain region, the USFS Rocky Mountain Research Station is drafting a general technical report similar to [RMRS-GTR-326](#) to address the characterization of GRSG habitat in the Rocky Mountains as it relates to habitat condition and prioritization of treatments. Following completion of the general technical report, GRSG habitat assessments would be undertaken to aid in prioritizing the landscapes and identifying areas where additional work is needed. The tool for conducting these GRSG habitat assessments would be similar to the FIAT within the Great Basin region.

2.2.5 Evaluating Attainment of Vegetation Objectives/Desired Conditions to Support Effectiveness Monitoring

When evaluating project effectiveness, offices should reference the [AIM](#) and [HAF](#) to assist in the collection of information that could be used to inform the 5-year LUP monitoring efforts (see Chapter 6 of this guide, Monitoring and Adaptive Management, for more detail).

2.2.6 Preventing Subsequent Management Actions from Jeopardizing Habitat Protection and Restoration Investments

BLM deciding officials, in cooperation with state governments and the USFWS, should carefully consider the implemented protection and restoration investments (such as fuel breaks, seeding, weed treatments, and planting) when evaluating a proposed management action or use. This should be completed before and during the evaluation of any proposed action or environmental analysis (NEPA).

2.2.7 Current Reporting Systems to Identify the Locations of Past, Present, and Planned Vegetation Management Actions

Offices should work at all levels of the organization and across programs to integrate vegetation management project work, especially work identified through FIAT assessments. Development of a fuels management and restoration out-year program of work should be coordinated with other programs and external collaborators and partners to leverage funding where possible. Additionally, the USFWS may require annual reporting on vegetation treatment accomplishments and effectiveness. Vegetation treatment data must be kept up to date by following the quality assurance and quality control measures required for data collection and submission to local, state, regional, and national datasets. Data stewards are responsible at all levels of the organization (local vegetation manager, state program leads, and national program leads) to ensure data reporting is timely and consistent. While field data calls won't be completely eliminated, the vast majority of data calls should be able to be addressed through queries of integrated vegetation databases. It is important to note that the information that follows lays out existing reporting mechanisms currently in use by the many programs that conduct vegetation management work and that, due to the increased need for integration between programs in planning, implementation, and reporting of accomplishments, a new way of doing business in the future is described later in this chapter.

Note: Tracking disturbance related to discrete permitted activities is not included as part of vegetation treatments in the context of habitat protection and restoration.

The BLM transmitted the requirement to complete geospatial reporting of vegetation treatments using the National Invasive Species Information Management System ([NISIMS](#)) and the [vegetation treatment area data standard](#). All vegetation treatment information will be reported annually at the local, regional, and national levels. Field staffs are responsible for following BLM data standards and BLM policy related to reporting vegetation treatments.

Other BLM reporting systems critical to vegetation treatment reporting include:

- National Fire Plan Operations and Reporting System ([NFPORS](#)): NFPORS is the national database used for submitting budget requests, approving funding, and tracking accomplishments for the fuels and emergency stabilization and rehabilitation programs. All fuels management and FIAT restoration projects (including planning, implementation, and monitoring), regardless of funding source, must be captured in the NFPORS ([Fire and Aviation Instruction Memorandum 2015-022](#)).

Additionally, wildlife program-funded vegetation treatments are addressed in [Washington Office Instruction Memorandum 2016-004](#).

- Rangeland Improvement Project System (RIPS): Instruction Memorandum 2001-27 established policy that all projects will be entered into RIPS, which was subsequently updated by Instruction Memorandum 2005-201. However, as other systems have been developed (e.g., NISIMS), treatment information is being entered into other systems or there may be dual entry requirements for RIPS and other systems.
- The Forest Resource Information System (FRIS) contains the Timber Sale Information System (TSIS), Stewardship Contracting Information Database (SCID), and Special Forest Products (SFP) database. All harvest/removal of vegetative materials (including pinyon/juniper) is tracked in one of these databases, including vegetation treatment projects and permits (e.g., fuelwood, etc.).
 - TSIS tracks and manages timber sale contracts and collects location information in the form of a legal description.
 - SCID tracks and manages all stewardship projects along with associated location information (e.g., latitude and longitude) of the project area.
 - SFP collects data on vegetative permits including small amounts of timber that are below the timber sale threshold. SFP collection is dispersed and is not tracked geospatially.

2.2.8 Vegetation Management Reporting Procedures

When:

Proposed Program of Work:

- At the local, regional, and national levels, program leads will develop an integrated program of work. All budget requests for vegetation management project work will be identified in the Budget Planning System (BPS) or NFPORS.

Funded Program of Work:

- As a part of the BLM's preliminary target allocation and annual work plan processes, priority project work identified in NFPORS and BPS are approved by national program leads for funding.
- Targets identified in NFPORS and the BLM's Performance Management Data System (PMDS).
- Funding allocated and expenditures tracked at the local, regional, and national offices through the Financial and Business Management System (FBMS).
- Offices are to complete invasive species survey data for proposed treatments and input all required information in NISIMS.
- Pesticide use proposals (PUPs) and biological control agent release proposals (BCARPs) will be signed and approved by the Deputy State Director prior to any chemical or biological treatment. Currently, these proposals are to be completed via NISIMS.

Completed Projects:

- For all programs, polygons for completed treatments must be submitted to the geospatial database (VTRT) and NISIMS database. Due dates are established by an instruction

memorandum (currently updated annually). The most recent version is [Washington Office Instruction Memorandum 2014-005](#).

- For fuels, emergency stabilization and rehabilitation, and invasive species treatments, offices are to annually input project completion data into NFPORS and NISIMS.
- Resource programs that require RIPS reporting are due annually by October 15.

Who:

Vegetation Management Reporting Responsibilities

- Working with partners, designated resource and fire/fuels management staff input fuels/vegetation treatments into the relevant system of record.
- [Washington Office Instruction Memorandum 2015-129](#) directs the NISIMS database administrator at the NOC to take specific actions to minimize duplicate entry into the VTRT.

2.2.9 Future BLM Reporting System to Identify the Location of Past, Present, and Planned Vegetation Management Actions

The national data stewards of the various BLM vegetation data systems are developing a Vegetation Treatment Solution (VTS) to consolidate, analyze, report, integrate, and spatially display vegetation treatment data. The VTS will result in reduced data entry and enable comprehensive BLM-wide display and analysis capability for vegetation treatments data. Phase 1 is scheduled for completion in FY 2016.

2.2.10 Current Reporting Systems to Identify Wildfire Locations

In accordance with standards outlined in [Fire and Aviation Instruction Memorandum 2012-027](#), offices must provide geospatial perimeters for all fires that burned BLM lands and were greater than 10 acres in size. Business needs determine the frequency of updates. Each state office provides final fire perimeter datasets to the NOC at least yearly no later than January 15.

The BLM uses the Wildland Fire Management Information (WFMI) to report nonspatial fire occurrence. Offices must finalize wildfire reports in WFMI no later than 30 business days after the fire has been declared out.

2.2.11 Evaluating Success of Altered Wildfire Outcomes Due to Reported Fuels Management Actions

The Fuels Treatment Effectiveness Monitoring (FTEM) system stores information about the interactions between wildfires and fuels treatments designed to alter fire behavior. FTEM was started in 2006 by the USFS with voluntary reporting and became a requirement for the USFS in 2011 and for the BLM, NPS, BIA, and USFWS in 2012. Users may add supplemental information to FTEM reports to capture details specific to GRSG.

FTEM allows agencies to gauge the overall utility of fuel treatment programs and verify whether fuel treatments contributed to altering fire behavior and/or aid in fire suppression actions. FTEM reports can be rolled up at the local, state, and national levels to provide fuels treatment effectiveness information at the program level. In tandem with resilience and resistance concepts and other baseline data, this data can further inform fire operations and vegetative management decisions. Note: Work is currently underway to update the mechanism for FTEM reporting.

Current BLM policy ([Fire and Aviation Instruction Memorandum 2015-001](#)) requires reporting to FTEM within 90 days of a wildfire/fuels treatment intersection. BLM fuels management specialists, technicians, and fire planners at the district and field level are responsible for reporting wildfire/fuels treatment interactions in FTEM. Fuels management specialists will work with vegetation management and fire

operations staff to complete the report in FTEM. [Chapter 17](#) of the Red Book (“Interagency Standards for Fire and Fire Aviation Operations”) also includes specifics on required reporting.

2.2.12 Fire Planning and Operations Priorities

For wildland fire management, the protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural (including GRSG) and cultural resources will be done based on the values to be protected, human health and safety, and the costs of protection.

2.2.13 Fire Planning and Operations in Relation to Habitat Management

Fire management plans, preplanned dispatch response, local operating plans, and resource advisory plans that are utilized during wildfires and fire management actions must be updated to reflect habitat management area priorities identified in LUPs. Additionally, unit-specific GRSG fire management-related information must be preloaded into the Wildland Fire Decision Support System to inform incident decisions and aid in development of strategies and tactics. Additional guidance on required fire management plan content is available on the [Fire Planning and Fuels Management intranet site](#).

2.2.14 Fire Planning and Operations Changes

Great Basin: Further prioritization of fuels management and fire response will use the FIAT outcomes that are found in individual FIAT reports. For areas within GRSG habitat that have not completed a FIAT assessment, the FIAT process is described in an appendix to the LUP.

Rocky Mountain: Within the Rocky Mountain area, Sagebrush Management Resistance and Resilience Tool (SMaRRT) assessments have not been completed. When completed, these assessments may provide additional prioritization of fuels management and fire response within GRSG habitat.

2.2.15 Fire Management Plan Updates

[Fire and Aviation Instruction Memorandum 2015-033](#) issued direction for offices included in the five completed FIAT reports to update their fire management plans by June 30, 2016, to incorporate the new fire management direction for GRSG provided by the LUPs and supported by the FIAT reports. Non-FIAT offices within the GRSG LUPs must complete updates by June 30, 2017.

2.2.16 Using Wildfires to Meet Resource Objectives in GRSG Habitat Management Areas

Most of the GRSG LUPs provide for the use of wildfire to meet resource objectives. However, actual direction varies between plans, and users should reference their individual plans to determine availability to manage wildfire to meet resource objectives consistent with LUP objectives.

2.2.17 Using Prescribed Fire in GRSG Habitat Management Areas

Prescribed fire can be used in GRSG habitat management areas to meet resource objectives. However, all GRSG LUPs include the following language regarding the use of prescribed fire: “If prescribed fire is used in GRSG habitat, the NEPA analysis for the burn plan will address:

- why alternative techniques were not selected as viable options
- how Greater Sage-grouse goals and objectives would be met by its use
- how the COT Report objectives would be addressed and met
- a risk assessment to address how potential threats to Greater Sage-grouse habitat would be minimized.”

For the purpose of meeting the intent of the LUP requirement, the NEPA analysis should consider the probability of habitat loss from prescribed fire versus the probability of habitat loss from wildfire, other disturbance, or succession if no treatment occurred. Additionally, this requirement is specific to GRSG habitat, which is slightly different than LUP-designated habitat management areas. See Chapter 1 of this guide, Habitat and Assessment, for additional information regarding the difference.

2.2.18 Vegetation Treatment Decision Notice/ROD Completed Prior to GRSG LUP Publication

Vegetation treatment decisions that were authorized prior to the approval of the GRSG RODs and LUPs, that have not been implemented to date, should follow the DNA (determination of NEPA adequacy) process and worksheet in BLM Handbook H-1790-1, "National Environmental Policy Act Handbook," to determine if existing NEPA is in conformance with the newly amended/revised LUPs and that NEPA analysis addressed the required information.

2.2.19 Habitat Restoration Projects in Lands with Wilderness Characteristics (Outside Designated Wilderness or Wilderness Study Areas)

Figure 3 provides guidance for restoration projects within lands with wilderness characteristics (Note: Decisions for lands with wilderness characteristics are not included in the GRSG LUPs).

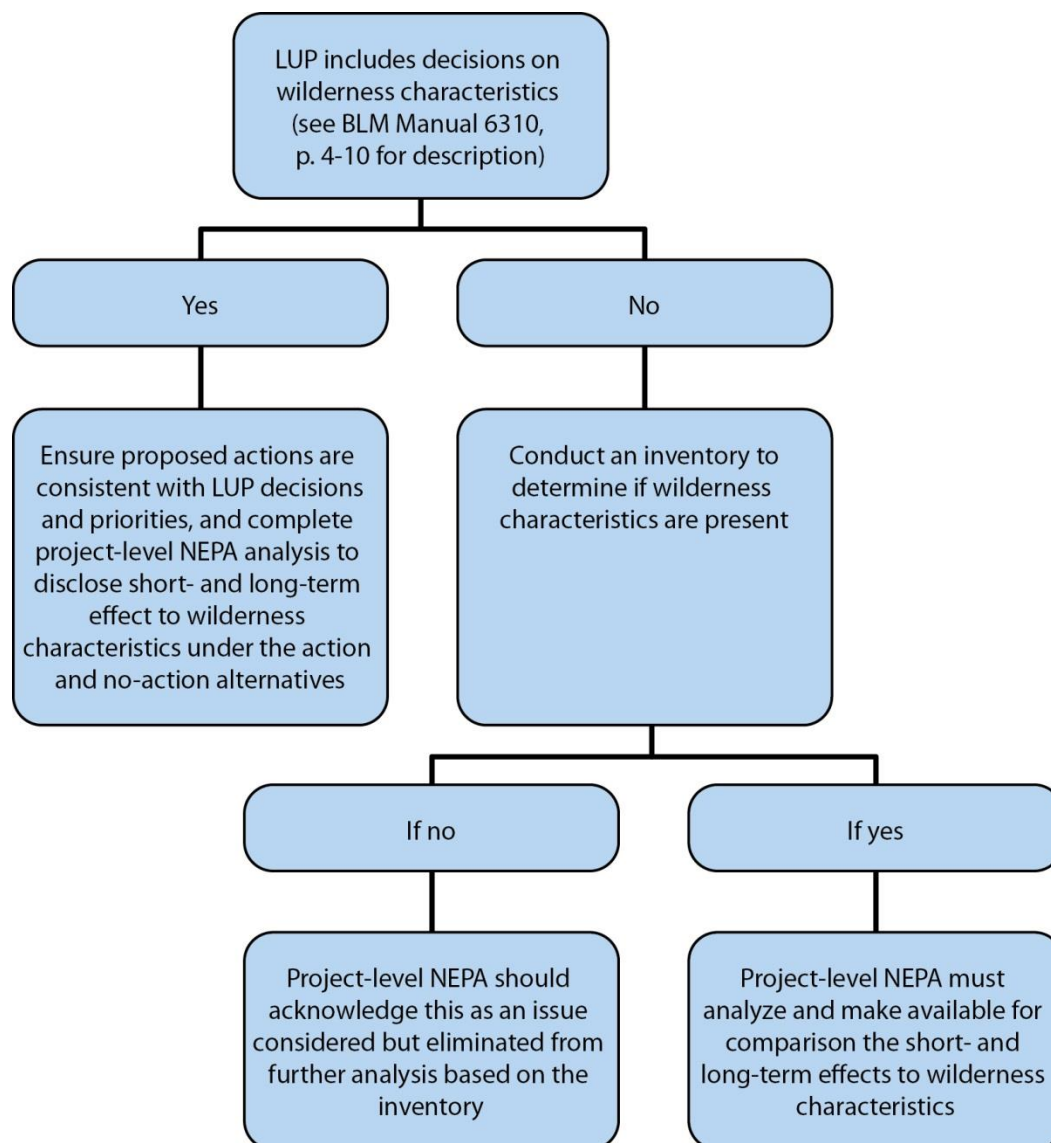


Figure 3. Decision tree guidance for restoration projects within lands with wilderness characteristics

2.2.20 Secretarial Order 3336

[Secretarial Order 3336](#) emphasizes that rangeland fire management is a critical priority for “protecting, conserving, and restoring the health of the sagebrush-steppe ecosystem and, in particular, greater sage-grouse habitat, while maintaining safe and efficient operations.” Additionally, it emphasizes that the “Allocation of fire management resources and assets before, during, and after wildland fire incidents will reflect this priority.” The order directed the creation of a Department-level Rangeland Fire Task Force to deliver a science-based comprehensive strategy to reduce the threat of large-scale rangeland fire to GRSG habitat and the sagebrush-steppe ecosystem. The order set forth guiding principles and overarching expectations in Sections 5 and 6 of the order, respectively. Elements of the forthcoming Conservation and Restoration Strategy will include effective rangeland management, fire prevention, fire suppression, and restoration at a landscape scale.

The order directed the task force to develop and deliver an implementation plan, initial report, and final report to the Secretary of the Interior. The [implementation plan](#), completed and issued on January 30, 2015, outlines the work plan for implementing the order. The [initial report](#), signed by the Secretary on March 9, 2015, identified specific actions for the DOI and its partners to undertake prior to the onset of the 2015 western fire season.

Building on the initial report, the [final report](#) outlines an approach for improving the efficiency and efficacy of actions to better prevent and suppress rangeland fire and to improve efforts to restore fire-impacted landscapes beyond 2015. These activities involve targeted investments to enhance efforts to manage rangeland fire in specific portions of the Great Basin region, based on relative resilience and resistance to fire; consistent with efforts on tribal, state, and other lands; and in keeping with the trust responsibilities to Indian tribes and various statutory obligations. The actions in the final report primarily focus on the needs of the Great Basin region, but the strategies developed (or lessons learned) will be applied rangewide where there is benefit to sagebrush-steppe habitat and GRSG.

2.2.21 Relationship between Secretarial Order 3336 and the GRSG LUPs

Secretarial Order 3336 will enhance existing tools to implement the GRSG LUPs and improve abilities to protect GRSG habitat from damaging wildfires and also fills a gap between the direction appropriate in the plans on wildfire and invasive species and the threat identified by the USFWS in the Conservation Objectives Team final report.

2.2.22 Implementing Secretarial Order 3336

While DOI bureau executives are the leads for many action items, program managers at many levels are responsible for carrying out many of the actions identified in the initial and final reports. Additional specific direction and due dates will be issued to the field via instruction memoranda and information bulletins as implementation plans for action items are completed by the assigned task teams, which report to the Rangeland Fire Task Force.

2.2.23 Coordinating and Integrating Fire and Resource Program Activities

Secretarial Order 3336 is an integrated strategy that has already brought about a high level of coordination and integration of the fire and resource programs. Development of a Conservation and Restoration Strategy is one of the tasks assigned in the order. The task force will be led by the BLM Forest, Rangeland, Riparian, and Plant Conservation Division with participation from the BLM Wildlife Conservation Division and the BLM Fire Planning and Fuels Management Division as part of the implementation of the order. The Conservation and Restoration Strategy will leverage resilience and resilience concepts and tools to increase the success of fire prevention, suppression, and restoration. By

establishing a coordinated science action plan, the Conservation and Restoration Strategy ensures that these efforts are based on sound research. The Conservation and Restoration Strategy will improve management efficiency and effectiveness through better implementation, coordination, and accountability; enhanced geospatial management strategies; thorough environmental review and compliance; and efficient targeting of resources and funding. The Conservation and Restoration Strategy will acknowledge risks to resource treatments and will incorporate geospatial tools and objectives and FIAT reports. Fire operations will also incorporate priorities developed in the FIAT and Secretarial Order 3336 to better integrate resource program concerns.

2.2.24 Development of a Multiscale Approach for Conservation of Sagebrush Ecosystems and GRSG Across the Range

The forthcoming Conservation and Restoration Strategy will include a baseline assessment with conceptual models and other components necessary to provide an overarching strategy for on-the-ground restoration actions in the sagebrush-steppe and will provide a foundation for adaptive management and budget prioritization.

2.2.25 Development and Major Components of the Conservation and Restoration Strategy

- Identify scales and boundaries.
- Identify values (function, condition, community, species, etc.).
- Evaluate persistent ecosystem-based threats, such as invasive species, wildfire, and climate change across regional/WAFWA zone and subregional scales.

Many field offices are already involved in implementing this strategy through their planning and implementation of the FIAT assessments, the [Bi-State Action Plan](#), and other efforts to conserve and restore sagebrush ecosystems and GRSG.

2.2.26 FIAT Protocol within the Great Basin Region

Resistance and resilience concepts, as described in [General Technical Report RMRS-GTR-326](#) (Chambers et al. 2014), are the cornerstones of the FIAT protocol. These assessments identify priority habitat areas and management strategies to reduce the threats to GRSG from invasive annual grasses, wildfires, and conifer expansion. In addition, these assessments provide the USFWS with regulatory certainty on the extent, location, and rationale for management opportunities that address significant threats to GRSG as identified in the Conservation Objectives Team report. In the Great Basin region, the FIAT process involves three steps:

Step 1: Establish the regional context for priority GRSG habitats and threat factors, and prioritize landscape protection.

Step 2: Incorporate local data with Step 1 findings to identify potential project areas, treatment opportunities, and management strategies to ameliorate threats to GRSG.

Step 3: Develop a process to prioritize FIAT project priority areas (PPAs) between all completed FIAT report areas. The Great Basin State Directors assigned a team to develop this prioritization process in February 2015 at the Boise FIAT Implementation meeting. The outcome of this prioritization between PPAs will inform and influence funding decisions for multiple programs that fund vegetation management work and will serve as the rationale for adjusting baseline allocations to the states. This information will be utilized from FY 2017 through FY 2021 and will

aid in the identification of an integrated, multiyear program of work within the Great Basin FIATs.

2.2.27 Relationship between FIAT and the GRSG LUPs

The BLM and rangeland researchers developed the FIAT process to identify specific threats from invasive annual grasses, fire, and conifer encroachment to sage-grouse habitat within the Great Basin and develop recommendations to address those threats. These stepdown assessments serve as bridges between the LUP and project-level planning and may provide a draft of proposed actions for future planning efforts when conducting project-scale evaluations in conformance with NEPA. The BLM will coordinate with liaisons from the USFWS, USFS, state agencies, and NRCS regarding FIAT implementation and priorities. The FIAT is not a management action but rather an approach to assessing lands for restoration, fuels management, and fire suppression activities. The completed FIAT reports and Secretarial Order 3336 are located at: <http://www.nifc.gov/fireandsagegrouse/>.

2.2.28 Influence of FIAT Outcomes and Priorities on Treatments and Restoration

FIAT assessments identify a suite of recommended treatments addressing and prioritizing fuels management, habitat restoration, and invasive plant treatment needs. These assessments may be utilized as a starting point in the development of a proposed action to be considered through the NEPA process, or they may be utilized to inform budget requests for implementation where NEPA has already been completed.

2.2.29 FIAT Equivalent for the Rocky Mountain Region

While expected to be similar to the FIATs in the Great Basin region, the GRSG Sagebrush Management Resistance and Resilience Tool (SMaRRT) assessments have not yet been completed for the Rocky Mountain area. These assessments, while following the same process, may address different threats and recommend different actions than those identified in the Great Basin FIAT. These threats and actions will be assessed using a companion to General Technical Report RMRS-GTR-326 that is currently being drafted to address the characterization of Rocky Mountain GRSG habitat. Publication of the general technical report is estimated to be summer 2016.

2.2.30 National Seed Strategy

The “National Seed Strategy for Rehabilitation and Restoration, 2015-2020” ([Seed Strategy](#)) provides a more coordinated approach for stabilization, rehabilitation, and restoration treatments and a framework for actively working with the private sector in order to build a “seed industry” for rehabilitation and restoration. The Seed Strategy complements existing BLM guidance provided in BLM Handbook H-1740-2, “Integrated Vegetation Management,” and provides current “best available science” to inform plant community-wide restoration needs. The strategy is designed to help address future challenges in responding appropriately to large-scale disturbances and other stressors that threaten important plant communities and the ecosystem services they provide on federal, state, local, and private land. These stressors include the spread of invasive plant species, altered wildfire regimes, habitat modification, land overuse, and climate change (PCA 2015).

National-scale success will be achieved through a coordinated nationwide network of native seed collectors, farmers, and growers working to develop seed; nurseries and seed storage facilities to supply adequate quantities of appropriate seed; and a network of restoration ecologists to help ensure that the right seed is in the right place at the right time (PCA 2015).

2.2.31 Major Components of the Seed Strategy

The Seed Strategy seeks to develop seed and other plant materials that will meet long-term goals to maintain and improve the biological and physical conditions at a site, ranging from reclamation to restoration.

The four goals of the strategy are to:

1. Identify seed needs, and ensure the reliable availability of genetically appropriate seed.
2. Identify research needs and conduct research to provide genetically appropriate seed and to improve technology for native seed production and ecosystem restoration.
3. Develop tools that enable managers to make timely, informed seeding decisions for ecological restoration.
4. Develop strategies for internal and external communication.

2.2.32 Relationship between the Seed Strategy and the GRSG LUPs

The Seed Strategy is national in scope, and its actions affect the land health of many diverse plant communities. Specific to the sagebrush-steppe, the Seed Strategy directly links to key vegetation management goals and objectives identified in the GRSG LUPs that relate to the use of native seed to improve GRSG seasonal habitat. See Table 6 for an example.

Table 6. Example of GRSG LUP vegetation management and Seed Strategy cross-walk.

Idaho GRSG LUP Vegetation Objective	National Seed Strategy Objective
VEG-2: Implement vegetation rehabilitation or manipulation projects to enhance sagebrush cover or to promote diverse and healthy grass and forb understory to achieve the greatest improvement in GRSG habitat...	Goal 2, Objective 2.3 - Action 2.3.3 - Advance investigations to diversify depleted native communities to improve structure and function and to replace nonnative monocultures with native communities.
VEG-3: Require use of native seeds for restoration based on availability, adaptation (ecological site potential), and probability of success (Richards et al. 1998)...	Goal 2, Objective 2.2 – Conduct species-specific research to provide seed technology, storage, and production protocols for restoration species.
VEG-5: Consider establishing seed harvest areas that are managed for seed production...	Goal 1, Objective 1.3, Action 1.3.2 – Improve agency and partner capability to plan for seed needs by seed zone.
VEG-6 - Re-establishment of appropriate sagebrush species/subspecies and important understory plants, relative to site potential, shall be the highest priority for rehabilitation efforts...	Goal 1, Objective 1.3, – Increase the supply and reliable availability of genetically appropriate seed

2.2.33 Seed Strategy Implementation

The initial phase of implementation will be via federal leads working with state, private, and nongovernmental organization partners. A draft business plan is available ([Draft Business Plan for the National Seed Strategy](#)), and the draft implementation plan is scheduled for release in 2016.

2.2.34 Sage Grouse Initiative

The NRCS launched the Sage Grouse Initiative (SGI) in 2010 as a highly targeted and science-based landscape approach to proactively conserve GRSG and sustain the working rangelands that support western ranching economies. This innovative partnership of ranchers, agencies, universities, nonprofit groups, and businesses all embrace a common vision—achieving wildlife conservation through sustainable ranching.

Conservation practices are designed to be positive solutions addressing threats facing both GRSG and rangelands. This type of conservation work includes: developing grazing management practices to maintain nesting cover, removing encroaching conifers that have invaded sagebrush-steppe, securing conservation easements to keep working lands working as intact range in perpetuity, and making fences more visible to reduce GRSG collisions.

NRCS sage-grouse conservation efforts are part of [Working Lands for Wildlife](#), the agency's effort to accelerate conservation efforts for at-risk species while providing [regulatory predictability](#) for up to 30 years.

Under the "[Sage Grouse Initiative 2.0 Investment Strategy, FY 2015-2018](#)," the NRCS will focus on reducing the threat of wildfire and spread of invasive grasses after fires to restore wildlife habitat and quality livestock forage. The strategy will also focus on removing encroaching conifers, protecting rangeland from exurban development and cultivation, protecting mesic habitats like wet meadows, and reducing fence collisions. See also www.sagegrouseinitiative.com for additional information.

2.2.35 Relationship between the Sage Grouse Initiative and the GRSG LUPs

While not a specific component of the LUPs, the SGI does tie to the goal of GRSG conservation and collaboration. Additionally, the BLM and NRCS are developing an MOU to provide the foundation for partner opportunities in landscape-scale planning and project completion across jurisdictional and ownership boundaries.

2.2.36 Major Components of the Sage Grouse Initiative

The NRCS works with private landowners to support GRSG habitat conservation and restoration by:

- **Funding/financial assistance:** Funding range improvement and vegetation/habitat enhancement treatments on private and public lands through Farm Bill conservation programs, such as the [Environmental Quality Incentives Program](#) (EQIP).
- **Technical support:** Providing technical expertise to ranchers and other private landowners to help with project design to achieve habitat objectives.
- **Conservation easements:** Entering into long-term agreements with ranchers and other private landowners to ensure that high value lands for sage-grouse habitat are retained as agricultural or grazing lands and not developed for other uses not compatible with conservation.
- **Landscape planning:** Developing long-term plans for entire watersheds via either watershed management plans or coordinated resource management plans that cover all lands and cooperators within the watershed boundary utilizing a partnership/community approach for long-term watershed/habitat enhancement.

Chapter 3: Livestock Grazing

3.1 Land Use Plan Commitments

Livestock grazing is the most widespread type of land use across the sagebrush biome, and almost all sagebrush areas are managed for livestock grazing. Improper livestock management can be a threat to GRSG and its habitat. Livestock grazing on BLM-managed lands is subject to 43 CFR 4180, “Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration.” As a result, the development of grazing-related portions of activity plans; establishment of terms and conditions in permits, leases, and other grazing authorizations; and range improvement activities are subject to 43 CFR 4180. The standards and guidelines must provide for habitat quality for native plant and animal populations and, specifically, for listed, candidate, and special status species.

Each of the GRSG LUPs contains a habitat objectives table in Chapter 2 (see Chapter 1.1.2 of this guide for the locations of habitat objectives tables in the GRSG LUPs). These tables summarize the suite of habitat indicators and desired conditions supported by research and monitoring that represents the seasonal habitat needs for GRSG. Grass height and forb cover and diversity are the habitat characteristics most directly affected by livestock grazing management. To a lesser extent, sagebrush seedling establishment, cover, and growth form can also be affected by livestock grazing. In addition, range management structures, if not properly sited and developed, may be detrimental to GRSG.

The standards and guidelines and GRSG LUP habitat objectives will be applied to livestock grazing leases and permits as they are reviewed and processed to ensure that grazing management practices meet or make progress towards meeting GRSG habitat objectives.

The BLM is committed to prioritizing the review and modification of grazing management where this work will provide the most meaningful improvements to habitat condition for GRSG, in the short term (5-10 years) and long term (>10 years). The BLM is also committed to streamlining management responses when livestock grazing practices are found to be impacting progress towards meeting GRSG habitat objectives in sagebrush focal areas (SFAs) and priority habitat management areas (PHMAs).

Management objectives and legal requirements for other resources will continue to apply throughout the review and processing of grazing permits/leases under an environmental assessment (EA) or environmental impact statement (EIS). Alternatives will be developed and analyzed as appropriate to meet all relevant resource management objectives, as identified in the purpose and need statement for the NEPA document. All actions approved or authorized by the BLM must conform to the applicable GRSG LUP, which includes its resource management objectives.

Livestock Grazing Commitments

The following commitments related to the BLM livestock grazing program are contained in the Great Basin and Rocky Mountain RODs and are common to the plans for the Rocky Mountain and Great Basin regions. Management actions included in the RODs are incorporated into the plans through the decision process. Additional commitments and management actions are included in the individual GRSG LUPs.

1. Prioritize the review and processing of grazing permits and leases in SFAs, followed by PHMAs.
2. Ensure that all BLM use authorizations contain terms and conditions regarding the actions needed to meet or make progress toward meeting the habitat objectives for GRSG.

3. Ensure that the NEPA analysis for renewals and modifications of grazing permits and leases includes specific management thresholds, based on the GRSG habitat objectives table, land health standards, and ecological site potential, to allow adjustments to grazing that have already been subjected to NEPA analysis.
4. Prioritize field checks in SFAs, followed by PHMAs, to ensure compliance with the terms and conditions of grazing permits, and focus on areas that contain riparian areas (including wet meadows).
5. At the time a permittee or lessee voluntarily relinquishes a permit or lease, the BLM will consider whether the public lands where that permitted use was authorized should remain available for livestock grazing or be used for other resource management objectives, such as reserve common allotments or fire breaks. This does not apply to or impact grazing preference transfers, which are addressed in 43 CFR 4110.2-3.
6. Allow range improvements that do not impact GRSG, or that provide a conservation benefit to GRSG, such as fences for protecting important seasonal habitats.
7. Remove livestock ponds built in perennial channels that are negatively impacting riparian habitats. Do not permit new ones to be built in these areas.

3.2 Implementation Topics and Guidance

3.2.1 Commitment #1: Priorities for Reviewing and Processing Grazing Permits/Leases

The following is interim guidance pending issuance of Washington Office instruction memoranda.

Grazing management must maintain or allow progress towards meeting land health standards for each of the fundamentals of rangeland health (43 CFR 4180.1) and the GRSG habitat objectives identified in Chapter 2 of each LUP (see Chapter 1.1.2 of this guide for the locations of habitat objectives tables in the GRSG LUPs). In addition, grazing practices should be compatible with meeting objectives for habitat improvement, habitat restoration, and fuels management projects. Field offices should base the review and processing of grazing permits on resource issues and conditions rather than on permit/lease expiration dates.

The BLM will prioritize the review of grazing permits/leases, authorizing use in GRSG habitat to determine if modification of current grazing use is necessary to maintain or achieve land health standards, including GRSG habitat objectives. In general, prioritization will include the processing of grazing permits/leases in SFAs, followed by PHMAs outside of the SFAs. Areas not meeting land health standards or habitat objectives will be high priority for processing, particularly if current livestock grazing appears to be a significant causal factor. When current livestock management is determined to be a significant causal factor in failure to meet one or more standards, adjustments to grazing permits/leases must be made prior to the next grazing season to allow significant progress toward meeting standards (43 CFR 4180.2). Areas outside of GRSG habitat that are not meeting land health standards may be higher priority for review and processing than habitat areas that are meeting standards within GRSG habitat. In setting workload priorities, precedence will be given to existing permits/leases in SFAs and PHMAs that are not meeting land health standards, with focus on those

containing riparian areas, including wet meadows. The BLM may use other criteria for prioritization, such as responding to an urgent natural resource concern (e.g., fire) or legal obligations.

In GRSG habitat within and outside of SFAs, the prioritization process may also consider, but is not limited to, the following factors (not in order of importance):

- Allotments containing large, contiguous areas of sagebrush cover.
- Areas where modifications to grazing management will facilitate implementation of vegetation treatments to make progress towards meeting treatment objectives.
- Other affected resources, such as threatened and endangered or special status species or wild horses and burros, and specially designated areas, such as National Conservation Lands or areas of critical environmental concern.
- Areas where there is preliminary information to indicate resource issues or likelihood of areas not meeting standards, but that have not been evaluated.
- Areas with declining GRSG populations or known threats to GRSG habitat availability (e.g., cheatgrass invasion).

3.2.1.1 Preparing for Permit Review and Processing

Following identification of priority areas for processing permits, the BLM should ensure there are complete land health assessments (LHAs) to be included in the review and processing of grazing permits. To the extent available, use information from the Fire and Invasives Assessment Tool (FIAT), BLM rapid ecoregional assessments (REAs), [HAF](#) reports, and other landscape-scale reviews to inform the priority setting process. The information in these tools can best be used to identify general conditions and other program priorities, as well as risks and potential opportunities for integrated management at the landscape scale.

3.2.2 Commitment #2: Incorporating Terms and Conditions into Grazing Permits to Meet Habitat Objectives

Fully processed grazing permits for all allotments in designated GRSG habitat will be issued with terms and conditions needed to meet or make progress towards meeting GRSG habitat objectives. Field offices will use the results of the “[Sage-Grouse Habitat Assessment Framework](#)” (HAF) when completing land health assessments, evaluations, and determinations⁴ in accordance with the GRSG HAF policy.⁵

3.2.3 Commitment #3: Incorporating Management Thresholds and Defined Responses into the NEPA Analysis and Grazing Permits/Leases

The following is interim guidance pending issuance of Washington Office instruction memoranda.

3.2.3.1 Incorporating Thresholds and Responses

The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within SFA and PHMA will include specific management thresholds based on GRSG habitat

⁴ Land health assessments and evaluations assess conditions relative to the rangeland health standards and guidelines that apply to each parcel of BLM-managed land to evaluate whether each applicable standard is being met, or whether significant progress is being made towards meeting each standard. When one or more standards are not being met, the BLM completes a determination to identify the significant causal factor(s) in failure to meet the standard(s).

⁵ Refer to the GRSG HAF policy (IM in development) for guidance on applying the GRSG habitat objectives and the HAF to assess and monitor GRSG habitat. Also, use the HAF habitat suitability ratings to evaluate the land health standard as it pertains to GRSG.

objectives table, land health standards and ecological site potential. Field offices will prioritize where thresholds and defined responses are incorporated into grazing permits. Over time, thresholds will be developed for all allotments within SFA and PHMA and incorporated into the terms and conditions of grazing permits/leases. Field offices will incorporate management thresholds and one or more defined responses into the terms and conditions of all grazing permits when: (1) a land health evaluation (LHE) incorporates the HAF; (2) the results of the HAF indicate that habitat is marginal or unsuitable; and (3) the authorized officer determines that current livestock grazing is the significant causal factor for not meeting standards relative to GRSG habitat⁶. (See Figure 4). The indicators and desired conditions in the habitat objectives table will guide the development of thresholds for the seasonal habitats found in the allotment. Any one single habitat indicator does not define whether the habitat objective is or is not met. Instead, the preponderance of evidence from all indicators within that seasonal habitat period must be considered when assessing GRSG habitat objectives. Thresholds will indicate progress towards meeting the desired conditions for that habitat indicator. Percent utilization, bank alteration limits, and/or browse utilization limits are examples of measurements that, if exceeded, would result in the authorized officer applying one or several responsive management actions.

Over time, thresholds will be developed for all allotments in SFA and PHMA, including when the permit/lease is processed again; when preparing an EA/EIS for adjustments for fire, drought, and other conditions that could require management changes; or when livestock grazing was determined to be a causal factor in the failure to meet standards. The authorized officer may elect to incorporate thresholds and responses into a grazing permit for an allotment that currently meets land health standards for GRSG for other reasons. For example, field offices may want to incorporate thresholds and responses if recent changes in grazing management have been implemented or to ensure success of vegetation treatments.

3.2.3.2 NEPA Review and Using a Categorical Exclusion

The field offices will complete the appropriate level of NEPA analyses on an allotment or multiple allotment basis. In most instances, field offices will prepare an EA; however, there may be instances in which preparation of an EIS is necessary, as described in BLM Handbook H-1790-1, "National Environmental Policy Act."

Thresholds and responses will be developed and identified for all of the BLM-developed action alternatives in the NEPA analysis. Multiple responses should be evaluated in the NEPA document that will allow the BLM and permittees a suite of options for responding more quickly when exceeding thresholds. The alternatives should also identify the location, timing, frequency, and methodologies used for monitoring the thresholds. The results of monitoring will determine if alternative management responses are required. Different management responses may be needed if:

- The management response was specifically analyzed in the NEPA document for the authorization and included in the decision, as provided in 43 CFR 4160, to issue a proposed/final decision and modified permit.
- The management response was analyzed in another alternative in the NEPA document for the authorization, but was not included in the original decision. Field offices will follow the decision

⁶ Refer to the IM "Setting Priorities for and Processing Grazing Authorizations in Greater Sage-Grouse Habitat" (IM in development) for guidance on prioritizing the review and processing of grazing permits/leases in GRSG habitat.

processes provided in 43 CFR 4160 to issue a proposed/final decision and modified permit. The grazing decision will identify the response described in one of the other NEPA-compliant alternatives. A determination of NEPA adequacy (DNA) should be prepared when selecting a previously analyzed approach for the authorization and issuing a proposed/final grazing decision.

- Monitoring determines that a different management response is needed, but the response was not analyzed in the NEPA analysis for the authorization. Field offices will implement interim measures that are within the terms and conditions of the existing permit (and covered in an existing NEPA analysis) to minimize impacts to GRS habitat. Field offices must expedite further NEPA analysis to modify the permit and implement the appropriate management response.

The authorized officer may use a categorical exclusion (CX)⁷ to satisfy NEPA requirements before issuing a grazing permit in accordance with Section 402(h)(1) of FLPMA, as amended by Public Law No. 113-291. Criteria for using this CX authority include:

- An authorized officer finding that the permit or lease would continue the current grazing management.
- A land health evaluation has been completed for the allotments authorized for use by the permit or lease.
- The land health evaluation shows that GRS habitat objectives are being met, and the evaluated area (e.g., allotment, watershed, etc.) is meeting land health standards.
- The land health evaluation shows that GRS habitat objectives are being met, but the evaluated area (e.g., allotment, watershed, etc.) is not meeting land health standards and the cause is due to factors other than current livestock grazing.

[Washington Office Instruction Memorandum 2015-121](#) requires review of the 12 extraordinary circumstances listed in 43 CFR 46.215. Field offices are also required to document the rationale as to why the CX applies.

To be consistent with the GRS LUPs, field offices will need to review existing data or collect additional data to complete HAF habitat suitability ratings and update existing land health evaluations where field offices have not issued a grazing permit or lease under 43 CFR 4160.

⁷ Washington Office IM 2015-121, titled "Implementing Amended Section 402(h)(1) of Federal Land Policy and Management Act - Using a Categorical Exclusion when Issuing a Grazing Permit or Lease."

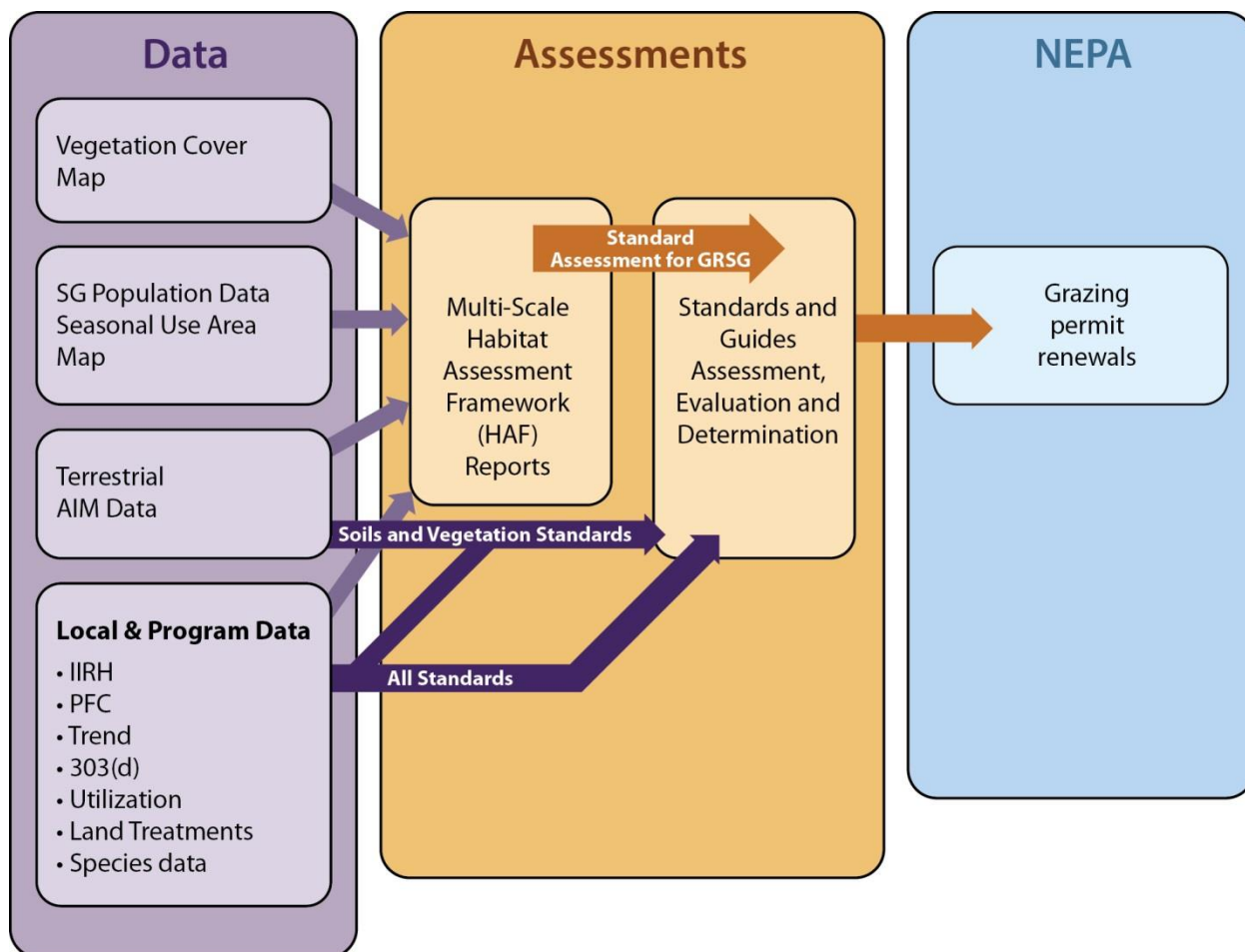


Figure 4. Incorporation of AIM data and HAF assessments in the land health assessment and grazing permit renewal process in GRSG habitat management areas. Purple boxes are data sources. Orange boxes are assessment documents. Grazing permit renewal NEPA includes alternative development. Multiscale HAF reports incorporate GRSG population data and remote sensing, AIM, and local data to assess habitat quality. Soils and vegetation standards incorporate AIM and local data and are used, along with the HAF, to evaluate the wildlife standard relative to GRSG. Local data are relevant to all standards.

3.2.4 Commitment #4: Prioritizing for Effectiveness and Implementation Monitoring within GRSG Habitat

3.2.4.1 Setting Priorities for Effectiveness Monitoring

Field offices will be responsible for monitoring to determine whether management is meeting habitat objectives, land health standards, and other LUP objectives. Frequency of monitoring will be influenced by field office capacity and should be based upon the level of resource concerns and uncertainties associated with each allotment or grazing permit/lease. For example, after issuing a new fully processed grazing permit, it may be appropriate to monitor an allotment more frequently in the first 2 to 3 years of implementing a new grazing management system, while less frequent monitoring would be needed where a satisfactory management system has been in place for several years. Monitoring priority should be placed on allotments where management thresholds and responses have been incorporated into grazing permits/leases.

Field offices will prioritize grazing compliance checks in SFAs, followed by PHMAs, and focus on areas that contain riparian areas (including wet meadows). Within each habitat category, monitoring of grazing use and compliance with permits and management plans should be emphasized in areas where livestock use has the potential to affect seasonal GRSG habitats. For instance, summer grazing in areas with unprotected lentic areas and wet meadows should be prioritized to ensure that unacceptable impacts to these important GRSG brood-rearing areas are not occurring. Similarly, spring grazing in breeding and nesting habitat should be prioritized to ensure that adequate residual herbaceous vegetation is left to provide for concealment throughout the nesting period, as defined by seasonal habitat objectives listed in each LUP.

Compliance monitoring may also be prioritized in areas outside SFAs/PHMAs where there are known compliance or trespass issues, or other resource priorities, such as habitat for other sensitive species.

3.2.5 Commitment #5: Use of Public Lands after Voluntary Relinquishment of Grazing Permits/Leases

The deciding official will use the criteria in [Instruction Memorandum 2013-184](#) (“Relinquishment of Grazing Permitted Use on the Bureau of Land Management Administered Lands”) and management direction in the GRSG LUPs to determine whether public lands associated with a relinquishment should remain available for livestock grazing. Based on IM 2013-184 and the GRSG LUPs, the deciding official will determine whether to reassign the livestock forage allocation to a new or different permittee or whether to designate the allocation for other uses such as a reserve common allotment or fire breaks. The BLM’s receipt of a relinquishment does not automatically close areas to livestock grazing. The deciding official should coordinate with partners and interested publics in making this decision.

The decisionmaking process should incorporate, at a minimum, the current land health status of the allotment, applicable standards that address habitat for GRSG and any other special status species, interest and/or availability of qualified applicants, and the potential for increased management flexibility on other allotments that contain GRSG habitat. It will depend on the individual habitat conditions and their relative value on the affected allotment.

Allotments/pastures/areas included in relinquished permits/leases should be examined within the context of larger habitat conditions and livestock management considerations. If these areas can be used to provide increased livestock management flexibility that maintains or increases GRSG habitat quality across larger scales through the creation of reserve common allotments, this should be considered during the decisionmaking process. Forage available for livestock on reserve common allotments is to be allocated through temporary, nonrenewable permits in order to meet resource objectives elsewhere such as rest or deferment due to fire or vegetation treatments.

3.2.6 Commitments #6 and #7: Range Improvements and Livestock Ponds

Allow range improvements that do not impact GRSG or that provide a conservation benefit to GRSG, such as fences for protecting important seasonal habitats. Remove livestock ponds built in perennial channels that are negatively impacting riparian habitats and do not permit new ones to be built in perennial channels. Additional guidance for evaluation of existing and proposed range improvements with respect to their effects on GRSG and GRSG habitat will be developed.

Range improvements are constructed and maintained on public lands to support orderly and effective management of livestock grazing, wild horse and burro management, and other resource objectives. Some examples of structural range improvements include, but are not limited to: fences, exclosures,

corrals, or other livestock handling structures; pipelines, troughs, storage tanks (including moveable tanks used in livestock water hauling); windmills, ponds/reservoirs, solar panels, and spring developments.

In addition to required design features (RDFs) contained in each LUP, the following criteria should be considered when evaluating the impacts of existing and proposed range improvements to GRSG habitat:

- Wire fences should be located outside of high collision-risk areas. When this is not possible, fence marking should be employed to reduce hazards if the fence cannot be relocated or removed.
- Taller structures should not increase GRSG avoidance or predation hazards by providing raptor perching locations within proximity to leks.
- Spring developments should maintain or increase the amount and quality of wet meadow habitat available for GRSG brood rearing.
- Authorized maintenance activities should not pose a risk of increased weeds, removal of sagebrush, or disturbance of birds.
- Water developments should be designed to minimize the risk posed by West Nile virus.
- Riparian and wet meadow enclosures are designed to allow access by GRSG and minimize fence collision risk.
- New livestock ponds will not be constructed in perennial stream channels. Existing ponds built in perennial channels that are negatively impacting riparian habitats will be removed.

3.2.6.1 Proposed (New) Range Improvements

The analysis of the effects of proposed (new) range improvements on GRSG and GRSG habitat would occur through the NEPA process when (1) an application is received and accepted from an external applicant or (2) when the BLM identifies a need for a range improvement (43 CFR 4120.3), often during the grazing permit renewal process.

The interdisciplinary team will evaluate any proposals for range improvements and work with proponents to develop appropriate alternatives so that range improvements do not impact GRSG and/or GRSG habitat. Alternatives may include, but are not limited to, alternative design and/or placement of the range improvements, or alternate management strategies such as livestock herding or changes in numbers or season of use. An appropriate range of alternatives would be analyzed through the NEPA process. The deciding official will determine whether the proposed range improvement alternative or another alternative provides for no impact or a conservation benefit to GRSG habitat, taking into account the subsequently listed criteria and RDFs in the relevant LUP. Proposals for new livestock ponds in perennial channels will not be approved.

3.2.6.2 Existing Range Improvements

Existing range improvements would be evaluated during the land health and/or NEPA process to determine their impact and/or conservation benefit with regards to GRSG and/or their habitat. In areas not scheduled for grazing permit processing, the interdisciplinary team should, at a minimum, review records of fences in areas of high collision risk, based upon modeling and local knowledge, and take appropriate actions to remove, modify, or replace any range improvements that are found to be negatively impacting GRSG habitat or posing unacceptable risks for collisions, GRSG avoidance, or increased predation. Additional review and modification of range improvements may take place outside of the grazing permit process based upon identified issues (e.g., reviewing water developments if the West Nile virus is a particular threat in the area) and workload priorities.

Existing range improvements are assumed to be necessary to implement existing management. However, some existing range improvements are not currently being used and/or they are not functioning for their intended purpose. Unnecessary or nonfunctioning structures should be identified during the land health assessment and/or grazing permit renewal process and evaluated for their necessity and/or impacts to GRS habitat if not repaired or removed.

Chapter 4: Disturbance

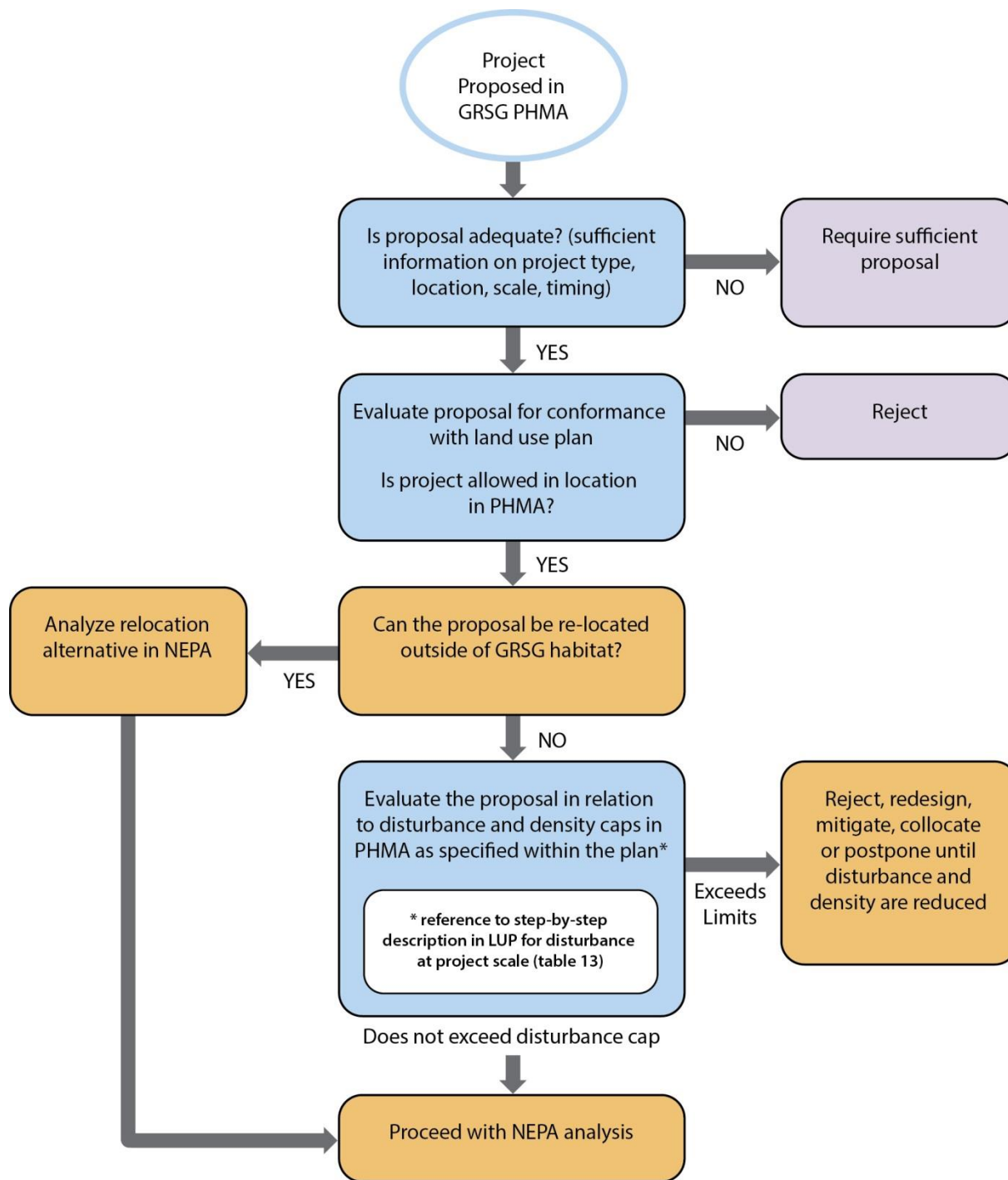
4.1 Land Use Plan Commitments

To achieve the objective of minimizing disturbance in GRSG habitat, each GRSG LUP employs management decisions, which include allocation decisions (determining allowable uses) and restrictions on those uses in identified habitat areas. The management decisions within GRSG habitat management areas vary, but the following description outlines the overall approach. For details specific to each planning area, refer to individual LUPs.

- In sagebrush focal areas (SFAs), new surface-disturbing activities are prohibited, subject to valid and existing rights. For example, in the fluid minerals program, any new leases issued within SFAs would include a “no surface occupancy” stipulation with no waivers, exceptions, or modifications.
- In the remaining priority habitat management areas (PHMAs), new surface disturbance is avoided or limited. Any leases issued within PHMAs would include a “no surface occupancy” stipulation with limited potential for exception.
- Within general habitat management areas (GHMAs), additional surface disturbance may be authorized, subject to appropriate minimization measures.

Upon receipt of a request for land use authorization in GRSG habitat, the BLM will refer to the LUP to determine LUP conformance (see Figure 5). In addition to restrictions on allowable uses, additional measures to reduce impact to GRSG habitat are described in the LUPs and include prioritization of projects that fall outside of habitat management areas (goals and objectives for mineral resources). These additional resources incorporate required design features (RDFs) for projects that are authorized within habitat management areas and require mitigation for any residual impacts from authorized uses through compensatory mitigation. Consideration of RDFs and other types of mitigation are discussed in Chapter 5 of this guide.

In addition to the allocation decisions and additional conservation measures, each GRSG LUP includes requirements to monitor disturbance and density of anthropogenic activities in PHMAs and limit disturbance at the biologically significant unit (BSU) and project scales.



- Land use plan conformance
- Mitigation opportunity

Figure 5. Step-by-step process to determine if a request for land use authorization in GRSG habitat complies with the GRSG LUP.

4.2 Implementation Topics and Guidance

4.2.1 Broad-Scale (WAFWA Management Zone) Disturbance Monitoring

Annually, with a trend analysis in 5-year intervals, the NOC will calculate disturbance using nationally available datasets and assumptions to approximate and report disturbance footprints for the 12 identified threat categories as outlined in the monitoring framework included in each LUP.

4.2.2 Mid-Scale Disturbance Monitoring

Annually, with a trend analysis in 5-year intervals, the NOC will calculate and report disturbance at the BSU scale using nationally available datasets and assumptions to approximate disturbance footprints for the 12 identified threat categories outlined in the monitoring framework included in each LUP. These datasets will also be available to determine the percent disturbance at the BSU scale. The subsequent sections describe the process for limiting disturbance at the BSU and project scale through disturbance and density caps included in each LUP.

4.2.3 Disturbance and Density

Table 7 provides the specific location in each LUP that contains the details of the methodology for applying the density and disturbance cap. The general requirements included in all plans are outlined in the sections that follow (4.2.3.1 and 4.2.3.2).

Table 7. Location of density and disturbance cap methodology in each LUP

Rocky Mountain Region		
Lewistown	Appendix E	Greater Sage-Grouse Disturbance Caps
North Dakota	Appendix E	Greater Sage-Grouse Disturbance Caps
Northwest Colorado	Appendix E	Methodology for calculating disturbance caps
All Wyoming plans: Wyoming RMPA Buffalo Field Office Cody Field Office Worland Field Office	Appendix D	Greater Sage-grouse Habitat Management Strategy
Billings Field Office/Pompeys Pillar	Appendix E	Greater Sage-Grouse Disturbance Caps
HiLine	Appendix E	Greater Sage-Grouse Disturbance Caps
Miles City Field Office	Appendix E	GRSG Disturbance Cap
South Dakota Field Office	Appendix E	GRSG Disturbance Cap
Great Basin Region		
Idaho and Southwestern Montana	Appendix E	Anthropogenic Disturbance and Adaptive Management
Nevada and Northeastern California	Appendix E	Greater Sage-Grouse Disturbance Cap Guidance
Oregon	Appendix E	Disturbance Cap Calculation Method
Utah	Appendix E	Greater Sage-Grouse Disturbance Cap Guidance

4.2.3.1 Disturbance Cap

The disturbance cap applies to the PHMAs within both the BSUs (except Wyoming) and the proposed project analysis areas. Westwide disturbance data layers will be analyzed by the NOC to estimate the percent disturbance in PHMAs by BSU, and this information will be made available to individual offices to determine if the disturbance cap has been exceeded at this scale. Individual state, district, or field offices which have local data that provide more specific information regarding

disturbance at the BSU scale are encouraged to use that data where available. At the proposed project analysis area, actual disturbance data should be used. In Wyoming, the proposed LUPs are consistent with the State of Wyoming's Core Area Strategy, and disturbance data is maintained by the University of Wyoming. Other states will begin to inventory disturbance using the Surface Disturbance and Reclamation Tracking Tool (SDARTT) as it is developed. This database is being developed in partnership with the USGS and will serve as a national repository for project-level disturbance and reclamation footprints once fully developed and implemented.

Formulas for calculations of the amount of disturbance in the PHMA in a BSU and in a proposed project area are as follows:

- For the BSUs:

Percent degradation disturbance = (combined acres of the 12 degradation threats) ÷ (acres of all lands within the PHMA in a biologically significant unit) x 100 (see "[The Greater Sage-Grouse Monitoring Framework](#)" for description of threats included)

- For the project analysis area:

Percent degradation disturbance = (combined acres of the 12 degradation threats + the 7 site-scale threats) ÷ (acres of all lands within PHMA in the project analysis area) x 100

The denominator in the disturbance calculation formula consists of all acres of lands classified as PHMA within the analysis area (BSU or project analysis area). Areas that are not GRSG seasonal habitats and areas that are not currently supporting sagebrush cover (e.g., due to wildfire) are included in the acres of PHMA in the denominator of the formula. Information regarding GRSG seasonal habitats, sagebrush availability, and areas with the potential to support GRSG populations will be considered along with other local conditions that may affect GRSG during the analysis and potential mitigation of the proposed project area.

To determine the level of disturbance at the proposed project analysis area, the following methodology can be used:

- Determine potentially affected occupied leks by placing a 4-mile boundary around the proposed area of physical disturbance related to the project. All occupied leks located within the 4-mile project boundary and within PHMAs will be considered affected by the project.
- Identify a 4-mile boundary around each of the affected occupied leks.
- The PHMA within the 4-mile lek boundary and the 4-mile project boundary creates the project analysis area for each individual project. If there are no occupied leks within the 4-mile project boundary, the project analysis area will be that portion of the 4-mile project boundary within the PHMA.
- Digitize all existing anthropogenic disturbances (identified in Table E-1 of the relevant GRSG LUP) and the seven additional features that are considered threats to GRSG (identified in Table E-2 of the relevant GRSG LUP). One-meter resolution NAIP imagery is recommended. Use existing local data if available.
- Calculate percent degradation disturbance using the previously discussed formula. If existing disturbance is less than 3 percent, proceed to the next step. If existing disturbance is greater than 3 percent, defer the project.

- Add the proposed project disturbance footprint area, and recalculate the percent disturbance. If disturbance is less than 3 percent, proceed to the next step. If disturbance is greater than 3 percent, defer the project.
- Calculate the disturbance density of energy and mining facilities. If the disturbance density is less than 1 facility per 640 acres, averaged across the project analysis area, proceed to the NEPA analysis, incorporating mitigation measures into an alternative. If the disturbance density is greater than 1 facility per 640 acres, averaged across the project analysis area, either defer the proposed project or collocate it into existing disturbed area.
- If a project that would exceed the degradation cap or density cap cannot be deferred due to valid existing rights or other existing laws and regulations, fully disclose the local and regional impacts of the proposed action in the associated NEPA document.

4.2.3.2 Density Threshold

Most LUPs also incorporate a cap on the density of energy and mining facilities to an average of 1 facility per 640 acres in the PHMA in a project authorization area. If the energy and mining density in a proposed project area is on average less than 1 facility per 640 acres, the analysis will proceed through the NEPA process incorporating mitigation measures into an alternative. If the energy and mining density is greater than an average of 1 facility per 640 acres, the proposed project will either be deferred until the density of energy and mining facilities is less than the cap or collocated into an existing disturbed area (subject to applicable laws and regulations, such as the General Mining Law of 1872 and valid existing rights). See Figure 5. The density threshold of 1 facility per 640 acres does not apply to Nevada.

Chapter 5: Mitigation

5.1 Land Use Plan Commitments

5.1.1 Commitment 1: Net Conservation Gain, Durability, Timeliness, and Additionality

In undertaking BLM management actions, and consistent with valid existing rights and applicable law, in authorizing third-party actions that result in habitat loss and degradation, the BLM will require and assure mitigation that provides a net conservation gain to the species, including accounting for any uncertainty associated with the effectiveness of such mitigation. The requirement will be achieved by avoiding, minimizing, and compensating for unavoidable impacts by applying beneficial conservation actions to offset remaining impacts associated with the action. If impacts from BLM management actions and authorized third-party actions result in habitat loss and degradation that remain after applying avoidance and minimization measures (i.e., residual impacts), then compensatory mitigation projects will be used to provide a net conservation gain to the species. Any compensatory mitigation will be durable, timely, and in addition to that which would have resulted without the compensatory mitigation.

This mitigation approach is consistent with the [Council on Environmental Quality's regulations](#), [Presidential memorandum on mitigation](#), [Secretarial Order 3330](#), [DOI landscape-scale mitigation policy](#), [BLM interim policy on mitigation](#), and the [USFWS "Greater Sage-Grouse Range-Wide Mitigation Framework."](#)

5.1.2 Commitment 2: Regional Mitigation Strategy

The BLM will establish a WAFWA Management Zone GRSG Conservation Team (hereafter, Conservation Team) that will develop a Regional Mitigation Strategy addressing each WAFWA management zone. This team will include membership from the state governments, BLM, NRCS, USFS, and USFWS. The Regional Mitigation Strategy will inform the NEPA decisionmaking process, including the application of the mitigation hierarchy for BLM actions and third-party authorizations that result in habitat loss and degradation.

5.1.3 Commitment 3: State-Level Compensatory Mitigation

To align with existing compensatory mitigation efforts, the GRSG compensatory mitigation program will be managed at a state level, in collaboration with BLM partners. To ensure transparent and effective management of the compensatory mitigation funds, the BLM will enter into a contract or agreement with a third party to help manage state-level compensatory mitigation funds, within 1 year of the issuance of the ROD.

5.2 Implementation Topics and Guidance

The remainder of this chapter addresses general implementation issues related to mitigation contained in the commitments of the GRSG LUPs. Detailed GRSG mitigation implementation guidance will occur through the Regional Mitigation Strategies and via interim BLM Manual 1794 and interim BLM Handbook H-1794-1 on mitigation.

5.2.1 Commitment 1: Net Conservation Gain, Durability, Timeliness, and Additionality

5.2.1.1 Net Conservation Gain - Concept

The net conservation gain commitment in the LUPs is important to ensure that the species is on a track towards recovery. The standard applies to any action that results in habitat loss and/or degradation, no matter which type of habitat the impacts are within (see the monitoring appendix of the LUPs for a list of some of the actions that result in habitat loss and/or degradation).

The BLM is responsible for ensuring that the mitigation associated with land use authorizations projected to cause GRSG habitat loss and/or degradation will ultimately result in a net conservation gain to the species. In practice, the determination that net conservation gain is achieved will occur during the NEPA analysis and in the decision document for a proposed land use authorization. At a minimum, the NEPA analysis should address how each alternative does or does not meet the net conservation gain standard. It can also be useful to provide a framework for making these determinations in programmatic analyses (e.g., an oil and gas field development EIS).

Net conservation gain means that a land use activity results in, or is mitigated sufficiently to provide, an actual benefit or gain above baseline conditions. Achieving this mitigation standard will require implementation of avoidance, minimization, and compensatory mitigation. In practice, net conservation gain means a comparison of the magnitude of residual impacts (those impacts that remain after avoidance and minimization) to the magnitude of compensatory mitigation actions to ensure the latter is greater than the former. However, net conservation gain is not simply a mathematical equation; when assessing if net conservation gain will be achieved for a land use authorization, the deciding officials should consider:

1. **Habitat as surrogate:** The size of habitat loss or degradation is the surrogate for assessing the impacts to the species itself. The LUPs require net conservation gain to the species. Therefore, implementation of compensatory mitigation is not simply 1 acre bigger than the habitat loss or degradation; it must ensure that the magnitude of compensatory mitigation is large enough to offset the impacts and provide a gain above the baseline to the species.
2. **Risk:** Any uncertainty associated with the effectiveness of mitigation (including avoidance, minimization, and compensation) is additional to achieving a net conservation gain. If there is any risk of failure of any mitigation measures, there should be a mechanism in place to account for this risk (e.g., an increase in the magnitude of compensatory mitigation, percent-based contingency add on, developing a reserve account). For example, if scientific studies estimate that the risk of failure of a compensatory mitigation measure is 32%, then a proportional increase in the magnitude of compensatory mitigation should be included in the compensatory mitigation requirement. If a scientific estimate of risk is unavailable, a percent-based contingency can be added onto the compensatory mitigation obligation (e.g., 15%).

The Regional Mitigation Strategy will discuss this topic in more depth.

5.2.1.2 Net Conservation Gain – Baseline, Debits, and Credits

The BLM, in cooperation with the state government and other local entities, needs to assess and document the baseline condition of both the impacted site and the compensatory mitigation sites in order to determine the potential for benefits to GRSG habitat (i.e., in order to ensure achieving net conservation gain). The change in baseline condition is used to assess both the debits at the impacted sites and the credits at the compensatory mitigation site. In cases where compensatory mitigation is implemented via a preservation action, the potential change in baseline should be assessed according to what would have been lost if the site had not been protected as

compensation; though preservation is generally only appropriate when there is an imminent threat to the site.

The Regional Mitigation Strategy will discuss minimum requirements for baseline data collection at all relevant scales (both the indicators and the methods, which should be aligned with the broader inventory and monitoring program the BLM has committed to for GRSG habitat as described in Chapter 6 of this guide). The Regional Mitigation Strategy will also discuss key principles for debit and credit formulas (e.g., habitat quantification tools, individual banking credit valuations, state mitigation frameworks, etc.). This rangewide agreement will allow for multiscale data to be assimilated into larger datasets to help meet a variety of reporting requirements and to provide for efficiency and predictability in the permitting process.

The same indicators and methods used for baseline data collection should also be used to monitor and report upon the effectiveness of implemented compensatory mitigation measures. These data are also useful to test the assumptions of debit and credit formulas and support any necessary adaptation of the tools.

5.2.1.3 Durability

The BLM should ensure that mitigation measures and compensatory mitigation sites are durable. Durability includes three types of considerations for mitigation measures and for compensatory mitigation sites: resource (i.e., required outcomes are being achieved), administrative (i.e. incompatible uses are being excluded), and financial (i.e., financing is sufficient to maintain, monitor, and adapt).

The BLM will ensure that the responsible party for a mitigation measure and/or a compensatory mitigation site, such as an authorized land user or the sponsor of a mitigation bank or exchange, will maintain the durability of the mitigation. The BLM should ensure that the responsible party is obligated to correct any loss of durability (i.e., a reversal) with such instruments as a reserve pool of credits and/or reserve finances, except if the BLM determines that the loss of durability was caused by a force majeure event (i.e., an event that cannot be reasonably anticipated or controlled, such as natural disasters outside of a predicted range of disturbance). The BLM will handle any unforeseeable reversals when/if they occur, on a case-by-case basis.

The BLM should ensure that mitigation measures and compensatory mitigation sites are durable for the duration of the impacts resulting from the land use activity. The duration of the impact includes the time it takes to restore the resources impacted (including direct and indirect effects) by a land use activity, even if this time period extends beyond the expiration of the land use activity. The BLM should use past experience and the best available scientific information to estimate the duration of the impact. The duration of some impacts may be permanent, such as the construction of a new transmission line or a county road, and therefore, the mitigation credit must be in place in perpetuity. As a rule of thumb, the BLM should err on the side of too long estimates (including perpetuity, if needed), rather than too short estimates.

When compensatory mitigation involves the purchase of credits from a mitigation bank or mitigation exchange, the credit-generating activities should be in place for the duration of the impacts from the land use activity. While many credits from banks and exchanges are offered in perpetuity, some banks and exchanges are adopting the concept of term credits, in which those credits exist for a time period less than perpetuity. The use of term credits is generally only

permissible if the term of those credits at least matches the duration of the impacts from the land use activity. The BLM is currently working with the USFWS and state partners to determine the appropriateness of dynamic credits (i.e., several short-term credits used in sequence to meet the duration of the impacts).

The Regional Mitigation Strategy will discuss this topic in more depth.

5.2.1.4 Timeliness

Consideration should be given to how timely the compensatory mitigation measures will be at achieving their outcomes. A best practice would be to conduct compensatory mitigation measures in advance of the proposed impact, so the outcomes have been achieved, before the land use impacts commence. When this is infeasible, a proportional increase in the magnitude of compensatory mitigation to account for the time lag between the benefits of the measures and the impacts of the land use activity should occur.

The Regional Mitigation Strategy will discuss this topic in more depth.

5.2.1.5 Additionality

The benefits of any compensatory mitigation measure need to be in addition to that which would have resulted without the compensatory mitigation and should improve upon the baseline conditions and trends. Additionality is measured from both the perspective of the resource (i.e., is the resource better off than it would have been had there not been any compensatory mitigation?) and the perspective of finances (i.e., would the compensatory mitigation measure not have been otherwise funded and implemented had there not been any compensatory mitigation fund?).

The Regional Mitigation Strategy will discuss this topic in more depth.

5.2.2 Commitment 2 – Regional Mitigation Strategy

A Regional Mitigation Strategy is a tool that helps better plan for mitigation, in advance of impacts, and provides more cross-region consistency. A regional strategy will provide recommendations; however, it is not a decision document. Any recommendations will need to be analyzed through the NEPA process for actions that will cause habitat loss or degradation.

The BLM has convened an interagency, intergovernmental group to serve as the Conservation Team to develop a single rangewide mitigation strategy. BLM leadership, in coordination with BLM partners, decided it was most efficient to have a single Conservation Team work on a single rangewide mitigation strategy, as much of the content will be the same across the range. The Conservation Team is prepared to identify additional team members, if necessary, to help develop any zone-specific information. This approach satisfies the commitments in the LUPs, as each WAFWA management zone will be addressed.

The Conservation Team will utilize all relevant policy (e.g., BLM, USFWS, and Governors' mitigation policies) to draft the Regional Mitigation Strategy. Additionally, the Conservation Team will incorporate public review into the drafting of the Regional Mitigation Strategy, as diverse stakeholder input will provide value to informing the strategy.

The Conservation Team has developed a draft outline of the Regional Mitigation Strategy, as follows:

1. Introduction and Background

2. Mitigation Governance
3. Net Conservation Gain
4. Impacting Actions
5. Avoidance and Minimization
6. Compensation (w/ illustrative examples)
 - a. Baseline
 - b. Debits and Credits
 - c. Timeliness
 - d. Additionality
 - e. Durability
 - f. Compensatory Mitigation Measures and Sites (as informed by the Conservation and Restoration Strategy required for the implementation of [Secretarial Order 3336](#)).
 - g. Adaptive Management of Compensatory Mitigation Measures
 - h. Compensatory Mitigation Mechanisms
 - i. Monitoring and Reporting
7. Future Adaptation of Mitigation Strategy

Before the Regional Mitigation Strategy is complete, the BLM is still required to implement mitigation to achieve net conservation gain for impacts to habitat. The BLM will make this determination through analysis in the NEPA process, with mitigation analyzed in alternatives, discussed in the impact analysis, and, if applicable, required in the decision document. The BLM will not have the benefit of the recommendations of the Regional Mitigation Strategy, and so, the NEPA analysis may be more cumbersome. With or without the Regional Mitigation Strategy, the outcomes of mitigation for GRSG habitat should be similar, albeit potentially less strategic than with the benefit of the Regional Mitigation Strategy already in place.

5.2.3 Commitment 3 – State-Level Compensatory Mitigation

5.2.3.1 Compensatory Mitigation Funds Management

To ensure transparent and effective management of the compensatory mitigation funds, the BLM committed in the LUPs to enter into a contract or agreement with a third party to help manage state-level compensatory mitigation funds, within 1 year of the issuance of the ROD. The compensatory mitigation managers should help perform oversight of compensatory mitigation mechanisms; accept, manage, and expend mitigation funds; operate a transparent and credible accounting system; certify mitigation credits; and manage reporting requirements. The third party, in this case, may be the State Government or another entity (e.g., other federal agencies, foundations, profit or nonprofit organizations, or similar organizations); in any case, the BLM should coordinate closely with the State Government.

5.2.3.2 Other Compensatory Mitigation Mechanisms

In addition to the management of state-level compensatory mitigation funds, the BLM will consider allowing the use of third-party compensatory mitigation mechanisms (e.g., mitigation banks, mitigation exchanges, mitigation funds), after a rigorous review process, either of its own accord or that of its partners (e.g., USFWS, state conservation bank review team).

A formal and binding agreement should be in place between the compensatory mitigation mechanisms sponsor, the BLM (and/or another federal or state agency), and any other applicable parties that documents the standards (consistent with current policy), in addition to providing

reasonable access to the compensatory mitigation site(s) for oversight purposes. The agreement should also ensure that the BLM is provided with, at a minimum, reports on compensatory mitigation measures implemented and monitoring data.

The Regional Mitigation Strategy will identify any existing and approved compensatory mitigation mechanisms.

Chapter 6: Monitoring and Adaptive Management

6.1 Land Use Plan Commitments

6.1.1 Commitment to Monitoring

The BLM has made significant commitments in the GRSG LUPs for monitoring actions to conserve GRSG habitats at multiple scales. The results from the monitoring will inform the agencies of the effectiveness of efforts to reduce disturbance and restore seasonal habitats in priority areas and of the status of the population and habitat related to the triggers set in the LUPs for adaptive management. The BLM will report annually on the results of the monitoring efforts.

Monitoring tied to GRSG LUP decisions has four parts: (1) implementation monitoring (e.g., are decisions being implemented in a timely manner, are actions implemented consistently with the plan decisions?); (2) habitat monitoring (e.g., sagebrush availability and condition, habitat degradation, and energy and mining density); (3) population (demographics) monitoring; and (4) effectiveness monitoring (e.g., are the decisions and implementation actions achieving the desired conservation goals?). Through effectiveness monitoring, the BLM can answer questions about how decisions and actions impact GRSG habitat. Understanding the effectiveness and validating results of LUPs and management decisions is an important part of measuring performance under the Government Performance and Results Act. For example, riparian condition is a primary measure for LUP effectiveness (see [Washington Office Instruction Memorandum 2010-101](#)).

Monitoring that is applicable for evaluating management effectiveness can also be used to address a number of other critical habitat variables (e.g., location, condition, habitat loss or gain, size of patches, etc.). Monitoring attributes of GRSG habitat, in coordination with population monitoring by state wildlife agencies and other partners, will allow linking real or potential habitat changes (from both natural events and management actions) to changes in GRSG populations. This analysis will enable the BLM to identify drivers of population change across large landscapes and to address the drivers of negative effects on GRSG populations with appropriate management actions.

6.1.2 GRSG Monitoring Framework and Disturbance Appendix

The purpose of the BLM and USFS "[Greater Sage-Grouse Monitoring Framework](#)" (hereafter, monitoring framework) that was included as an appendix in all of the GRSG LUPs is to describe the methods to monitor habitats and evaluate the implementation and effectiveness of the BLM's National Greater Sage-Grouse Planning Strategy. The regulations for the BLM (43 CFR 1610.4-9) and the USFS (36 CFR 219, revised as of July 1, 2010) require that LUPs establish intervals and standards, as appropriate, for monitoring and evaluations based on the sensitivity of the resource to the decisions involved. Therefore, the BLM will use the methods described in the monitoring framework to collect monitoring data and to evaluate implementation and effectiveness of the GRSG planning strategy and the conservation measures contained in their respective LUPs. The GRSG disturbance caps appendix (usually Appendix E of the GRSG LUPs; see Table 7 of this guide) further describes methodology for monitoring habitat degradation at larger scales. A monitoring plan specific to the LUP will be developed during plan implementation and will require engagement of field office, state office, and NOC subject matter experts.

The national-scale deployment of AIM, known as the Landscape Monitoring Framework (LMF), commenced in 2011 in coordination with the NRCS, with the collection of 1,000 plots of field-collected

monitoring data across the Western United States. The LMF aims to provide nonbiased estimates of vegetation and soil condition and trend using a statistically balanced sample design across BLM lands, with the additional benefit of complete compatibility with NRCS-NRI data and sample design to facilitate all lands reporting. With the understanding that sage-grouse habitat indicators should be a component of the data collection, a group of GRSG habitat and sagebrush plant community subject matter experts from the BLM, USFWS, WAFWA, NRCS, Agriculture Research Service (ARS), state wildlife agencies, and academia identified those vegetation indicators collected at LMF sampling points that inform GRSG habitat needs. The common indicators that were identified include: species composition, foliar cover, height of the tallest sagebrush and herbaceous plant, intercanopy gap, percent of invasive species, sagebrush shape, and bare ground. To increase the precision of estimates of sagebrush conditions within the range of GRSG, additional plot locations in occupied GRSG habitat (GRSG intensification) were added in 2013. The common indicators are also collected on sampling locations in the NRCS Rangeland Monitoring Survey. The GRSG baseline data will be collected over a 5-year period, and an annual report will be prepared describing the status of the indicators. Beginning in year 6, the annual status report will be accompanied with a trend report, which will be available on an annual basis thereafter contingent upon continuation of the current monitoring budget. This information, in combination with mapping information, mid-scale habitat suitability indicator measures, and sagebrush availability information will be used to assess the effectiveness of the planning strategy.

6.1.3 Adaptive Management

Each LUP includes an overarching adaptive management strategy that includes soft and hard triggers and responses. 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—habitat loss and/or 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 is tripped during the life of the LUPs, the BLM and USFS response is to apply more conservative or restrictive conservation measures at the implementation/project stage to mitigate for the specific causal factor in the decline of populations and/or habitats, with consideration of local knowledge and conditions. In each LUP, a soft trigger begins a dialogue between the state, USFWS, and the BLM or USFS to see if the causal factor can be determined and what implementation-level activities can be used to reverse any trend. 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 is necessary to stop a severe deviation from GRSG conservation objectives set forth in the LUPs. If a hard trigger is tripped, the hard trigger plan-level response set forth in the applicable plan will be put in place. In the event that new scientific information becomes available demonstrating that the hard trigger would be insufficient to stop a severe deviation from GRSG conservation objectives set forth in the LUPs, the BLM will immediately assess what further actions may be needed to protect GRSG and its habitat and ensure that conservation options are not foreclosed. This could include a formal directive such as an instruction memorandum or a plan amendment, which, to the extent that it is supported scientifically, may be drawn from the range of alternatives analyzed in the development of the LUPs.

6.2 Implementation Topics and Guidance

6.2.1 Collecting AIM Core and Supplemental Data to Inform the Habitat Assessment Framework Site-Scale, Seasonal Assessments, Habitat Objectives, and Land Health Standards

The following is interim guidance pending issuance of a Washington Office instruction memorandum on implementing the Habitat Assessment Framework.

Beginning in FY 2016, state monitoring leads will work with the NOC and field or district offices to initiate local monitoring programs to collect information that can be used to inform the GRSG habitat assessments. To clarify, AIM describes a process to design and implement a monitoring plan using consistent indicators and methods, and HAF describes a process to interpret the data to make a suitability determination for GRSG habitat. Currently, AIM monitoring projects are utilizing seasonal field crews for data collection and are being hired through agreements with partner organizations, concentrating on those that engage youth. Agreements to hire seasonal crews should be coordinated through the BLM state monitoring lead (monitoring lead) in coordination with field offices, districts, and the NOC. Training is a significant need for these crews which will be organized using a train the trainer approach that will be organized by the state monitoring leads and supported by the AIM training cadre. Training will include methods for BLM core and HAF indicators, calibration, quality control, and, as appropriate, [“Interpreting Indicators of Rangeland Health”](#) (Pellant et al. 2005). District and/or field offices will need to organize field crew day-to-day operations, and they will have the primary responsibility for ensuring safety of the field crews and the quality of the data through regular calibration of the crews.

Alternatively, there may be monitoring programs (e.g., Utah State, Aquatic and Riparian Effectiveness Monitoring Program, PACFISH/INFISH Biological Opinion Effectiveness Monitoring Program) that can serve as valid data collection programs. Regardless of the approach, the AIM implementation team at the NOC must be involved in the development and implementation of the monitoring plan to avoid the collection of data that cannot be aggregated into the national database—Terrestrial AIM Data (TerrADat) (or AquADat for the Aquatic AIM Data)—or to avoid the collection of data that is inadequate to answer the management question. Training to complete the HAF process is being coordinated by the Washington Office Wildlife Program (WO-230) and will be available for use in FY 2016.

The site-level data collected with the BLM core methods is the data that will be used to determine if the area is meeting the vegetation objectives described in the GRSG LUPs. Vegetation objectives are specific to each planning area.

Supplemental indicators may be necessary to adequately describe some seasonal habitats and complete the habitat suitability determination. Supplementary HAF data at the site scale includes distance from a lek to adequate sagebrush cover, proximity of detrimental land uses from a lek, proximity of trees and other tall structures from a lek, riparian/wet meadow stability, and the average depth of snow in winter habitat areas. Additional indicators may be needed to address specific habitat characteristics in some areas and should be added as needed to complete the suitability determination. In most cases, the additional data will remain the responsibility of the field office wildlife program. In many cases, the need for these supplemental indicators will become apparent while the interdisciplinary team is in the field completing the land health assessment, and the indicators can be collected at that time.

As a side note and reassurance for those states that have ongoing AIM monitoring projects, the data collected in prior years is completely compatible and valuable to inform baseline data, derive HAF indicators, serve as control sites, and for use at multiple scales to answer multiple questions. In some instances, supplemental indicators will need to be added to answer specific GRSG seasonal habitat requirements.

Since the [HAF](#) is an interagency document, methods other than those described in [BLM Technical Reference 440](#) (MacKinnon et al. 2011) were included. However, for the BLM, seasonal crews will collect data following the methods described in Technical Reference 440, with some modifications for supplemental seasonal habitat indicators—which will accommodate the use of field tablets; the Database for Inventory, Monitoring, and Assessment (DIMA); and the national BLM EGIS database for monitoring data, Terrestrial AIM Data (TerrADat). Indicators and methods outside those supported in DIMA will not be eligible for uploading and management through TerrADat. BLM core terrestrial and aquatic indicators ([BLM Technical Reference 1735-1](#)) will be collected using consistent methods and electronic data capture.

6.2.2 Using Legacy Data in Greater Sage-Grouse Monitoring

Though the majority of BLM legacy data cannot be used for quantitative reporting on condition and trend, as required by our monitoring commitments for GRSG, the data are still extremely useful. The most direct use of legacy monitoring data is to help attribute causation to conditions of resources. These data can also be used to help inform expectations and provide a context for developing adaptive management triggers. The quantitative monitoring data being collected as part of AIM and the HAF currently lack information on causation of conditions that these legacy datasets are specifically designed to provide.

6.2.3 Monitoring Forb Availability and Cover in Wet Meadows, Seeps and Springs, and Riparian Areas to Meet Site-Scale Habitat Objectives

Monitoring forb availability and cover in wet meadows, springs, seeps, and riparian areas that provide important brood-rearing habitat for GRSG will require development and adoption of a consistent protocol. Additionally, the location of many of these wet areas is unknown, identifying a significant data gap. The development of a methodology to measure and inventory these important areas requires additional work. In the interim, field offices will use existing information, such as the proper functioning condition (PFC) assessment ([BLM Technical Reference 1737-16](#)) and the multiple indicator monitoring method for streams ([BLM Technical Reference 1737-23](#)), where applicable, in conjunction with the HAF riparian summer/late brood-rearing habitat suitability worksheet (Form S-5) and professional judgment to help inform summer/late brood-rearing habitat assessments. Deploying these methods should be coordinated in those important brood-rearing areas where a GRSG habitat assessment is being completed to provide the necessary information to complete the suitability determination for these habitats. Please note that PFC is not approved for multiscale assessments or trend measurement and is intended for use at the site scale only.

6.2.4 Identifying Methodologies and Measuring the Mid-Scale HAF Indicators (e.g., patch size, patch connectivity, linkage areas and landscape matrix, and edge effects) and Indicator Importance in LUP Implementation

The GRSG Disturbance and Monitoring Subteam used the ecological systems in LANDFIRE (2103) to identify the current geographic extent of sagebrush and the geographic extent of lands capable of producing sagebrush within GRSG habitat management areas. Those ecological systems are listed in the "[Greater Sage-Grouse Monitoring Framework](#)" in Attachment B and were aggregated into the sagebrush

base layer. The sagebrush base layer provides a first approximation of mid-scale habitat amount and distribution and can be used on a case-by-case basis in implementing LUPs.

At finer scales, field offices should use existing GRSB seasonal habitat classification mapping and inventories (where available), which will complement the mid-scale indicators. This information can be used to further inform GRSB habitat use at smaller scales of habitat selection and more local-scale analyses.

Field offices should work with their state wildlife agency and BLM state office counterparts to identify mid-scale (e.g. BSU, population/subpopulation area) and/or fine-scale (e.g., seasonal ranges) habitat indicator objectives for their projects, as appropriate. For example, a large-scale juniper control project can, over time, help to achieve mid- and fine-scale objectives to improve local population dispersal and connectivity between seasonal habitats in home ranges. Some state wildlife agencies or planning areas have also identified potential GRSB linkages as part of their habitat delineation maps.

Other community types (that do not contain sagebrush) are occupied and used by GRSB to meet various life history requirements. To inform seasonal habitat objectives, and to implement the HAF, further information and tools are needed for habitat identification. Therefore, the BLM has initiated multiple projects with the USGS to identify Westwide approaches to measure the mid-scale indicators. As these methodologies are developed, additional guidance on implementing the HAF and coordination with monitoring will be issued.

Initial models will be developed by the end of FY 2016 that will assist in predicting seasonal use areas. These models will be validated and refined through coordination across the BLM and with partners. The BLM will continue partnerships with the Range-wide Interagency Sage-Grouse Conservation Team and the Executive Oversight Committee to incorporate coordinated radio telemetry/GPS and GRSB population data into the models. These data will be used to validate and improve the initial models, refine models to adjust for regional conditions, and develop empirically based occupied seasonal habitat models. Partnerships promote the information development and sharing processes under the [WAFWA/Department of Agriculture/Department of the Interior GRSB MOU](#).

In addition, WAFWA has an ongoing genetics project that aims to identify genetic population structure, genetic distance among, and genetic diversity within these populations. The project also seeks to identify which landscape features impact genetic structure and to use measures of genetic diversity to prioritize management of the species. The unprecedented resolution of these analyses will improve initial population connectivity models and assist in prioritizing protection or populations of concern. The BLM will be able to use these research products to inform if, when, and where genetic rescue is appropriate and to quantify the consequences of anthropogenic landscape alteration on GRSB population connectivity.

6.2.5 Completing Multiscale Assessments and Reporting on the Terrestrial, Aquatic, and Special Status Species (e.g., GRSB habitat condition and trend)

Table 8 describes the monitoring commitments at the broad and mid scales. Broad-scale characteristics are the availability of large expanses of sagebrush or grass/sagebrush habitat, presence of migration corridors, and presence of other habitats and land uses within these large expanses. Mid-scale habitat characteristics are related to the configuration of sagebrush or grassland/sagebrush habitat patches and the land cover or land use between the habitat patches within a subpopulation.

Table 8. Monitoring commitments at the broad and mid scales

Monitoring Type		Scales				
		Broad Range	Broad and Mid WAFWA MZ	Mid Population	Mid BSU	Mid LUP
Vegetation - Sagebrush Condition	What?	Core & HAF Indicator Values (e.g., cover, composition, bare ground, invasive species)				
	How?	LMF and AIM	LMF and AIM	LMF and AIM	LMF and AIM	LMF and AIM
	Who?	NOC and SO	NOC and SO	NOC and SO	NOC and SO	NOC and SO
	When?	Annually	Annually	Annually	Annually	Annually
Vegetation - Sagebrush Availability	What?	% Sagebrush in the Area of Interest				
	How?	Landfire, Grass-shrub, and Fire	Landfire, Grass-shrub, and Fire	Landfire, Grass-shrub, and Fire	Landfire, Grass-shrub, and Fire	Landfire, Grass-shrub, and Fire
	Who?	NOC	NOC	NOC	NOC	NOC
	When?	Annually	Annually	Annually	Annually	Annually
Disturbance/ Degradation	What?	% of Discrete Disturbance in Scale of Interest				
	How?	National Data	National Data	National Data	National Data	National Data
	Who?	NOC	NOC	NOC	NOC	NOC
	When?	Annually	Annually	Annually	Annually	Annually
Disturbance/ Degradation (Density of Energy and Mining)	What?	Number of Energy and Mining Facilities per 640 Acres				
	How?	National Data	National Data	National Data	National Data	National Data
	Who?	NOC	NOC	NOC	NOC	NOC
	When?	Annually	Annually	Annually	Annually	Annually

Table 9 describes the monitoring commitments at the fine and site (treatment) scales and for effectiveness of vegetation treatments. Fine-scale habitat assessments take into account seasonal use areas or home ranges of GRSG associated with a lek or group of leks. Seasonal habitat availability, connectivity, and anthropogenic disturbances should be described at this scale. Fine-scale habitat mapping uses the information gathered at the mid scale and refines it to show seasonal habitat patterns for a home range of interest. Site (treatment)-scale measures describe the availability of protective vegetation cover and food resources within seasonal habitats. Table 10 describes the monitoring, data, and reporting commitments at the various scales.

Table 9. Monitoring commitments at the fine and site (treatment) scales and for effectiveness of vegetation treatments

Monitoring Type		Scales	
		Fine	Site or Project
GRSG Seasonal Habitat	What?	Core and HAF Indicator Values	
	How?	HAF	HAF
	Who?	FO	FO
	When?	As needed	As needed
Habitat Availability	What?	Local Vegetation and Seasonal Habitat Maps	
	How?	Veg Map	Veg Map
	Who?	FO	FO
	When?	As needed	As needed
Disturbance/Degradation	What?	Acres Disturbed	
	How?	SDARTT	SDARTT
	Who?	FO and SO	FO and SO
	When?	Each Project	Each Project
Disturbance/Degradation (Density of Energy and Mining)	What?	Number of Energy and Mining Facilities per 640 Acres	
	How?	SDARTT	SDARTT
	Who?	FO and SO	FO and SO
	When?	Each Project	Each Project

Table 10. Composite diagram describing the monitoring, data, and reporting commitments at the various scales

		Scales					Scales		
		Broad	Broad and Mid	Mid	Mid	Mid	Fine	Site	Site
Monitoring Type		Range	WAFWA MZ	Population	BSU	LUP	Habitat	Project	Local
Vegetation - Sagebrush Condition	What?	Core & HAF Indicators							
	How?	LMF	LMF	LMF	LMF	LMF	HAF	HAF	HAF
	Who?	AIM	AIM	AIM	AIM	AIM	Local	Local	Local
	When?	Annually	Annually	Annually	Annually	Annually	As needed	As needed	As needed
Vegetation - Sagebrush Availability	What?	% Sagebrush							
	How?	Landfire	Landfire	Landfire	Landfire	Landfire			
	Who?	NOC	NOC	NOC	NOC	NOC			
	When?	Annually	Annually	Annually	Annually	Annually			
Disturbance/ Degradation	What?	% Disturbance					% Disturbance		
	How?	National Data	National Data	National Data	National Data	National Data	SDARTT	SDARTT	SDARTT
	Who?	NOC	NOC	NOC	NOC	NOC	Local	Local	Local
	When?	Annually	Annually	Annually	Annually	Annually	By project	By project	By project
Disturbance/ Degradation (Density of Energy & Mining)	What?	Density of Energy & Mining							
	How?	National Data	National Data	National Data	National Data	National Data			
	Who?	NOC	NOC	NOC	NOC	NOC			
	When?	Annually	Annually	Annually	Annually	Annually			
Implementation	What?	Decision Tracking							
	How?					ePlanning Log	ePlanning Log	ePlanning Log	ePlanning Log
	Who?					NEPA teams	NEPA teams	NEPA teams	NEPA teams
	When?					Annually	By project	By project	By project
Population	What?	Population Trend							
	How?								
	Who?	WAFWA	WAFWA	WAFWA	WAFWA	WAFWA			
	When?	Annually	Annually	Annually	Annually	Annually			
Effectiveness	What?	Effectiveness of Treatments and Management Actions							
	How?					TerrADat	TerrADat	TerrADat	TerrADat
	Who?					Local	Local	Local	Local
	When?					Set by Project	Set by Project	Set by Project	Set by Project

6.2.6 Integrating Fine- and Site-Scale Monitoring Data with Mid-Scale Products to Meet Annual Reporting Needs

The fine- and site-scale data will be integrated into a number of mid- and broad-scale products. The quantitative monitoring field data collected using the AIM core method protocol will be shared with BLM mapping partners (e.g., LANDFIRE, USGS) to improve the quality of the source data used in BLM broad- and mid-scale GRS products. The more data the BLM can submit to these efforts—data that has

been collected and verified using the AIM data collection and stewardship process—the higher the accuracy of the future mapping products. Ultimately, the accuracy of LANDFIRE and grass/shrub mapping products will reach a level so that additional mapping efforts will not be needed for individual BLM units. This will result in a nationwide base vegetation map with adequate accuracy to initiate new planning efforts and to determine the effectiveness of landscape vegetation objectives in existing LUPs.

More directly, the fine- and site-scale data will feed updates to the sagebrush availability dataset annually generated by the NOC. Fine- and site-scale monitoring data that documents restoration success will allow sagebrush areas that have been removed from the sagebrush availability dataset to be returned to that layer, thus increasing the amount of available sagebrush. As currently described in the monitoring framework in the LUPs, the only way to add sagebrush areas back into the availability layer is through successful restoration documentation through fine- and site-scale monitoring data.

Assuming fine- and site-scale data are collected using consistent methodology (e.g., AIM core indicators), along with using the statistically valid sample from the terrestrial and/or aquatic monitoring master sample, data collected at this finer scale can be integrated into larger scale assessments. By using the master sample to establish monitoring locations, data collected at any scale can be appropriately weighted through the use of statistical tools for use at multiple scales.

6.2.7 Information Needed to Determine if the LUP Area is Meeting or Making Progress Toward Meeting Land Health Standards

The following is interim guidance pending issuance of a Washington Office instruction memorandum on monitoring for LUP effectiveness.

The “[Greater Sage-Grouse Monitoring Framework](#)” found in each of the GRSG LUPs commits the BLM to report on the areas within GRSG habitat that are meeting or making progress toward meeting the land health standards. Since each state has developed a number of different land health standards, it is difficult to address the indicators for each of those standards in an overarching document. However, the state-defined land health standards must, at a minimum, address the four fundamentals of rangeland health (43 CFR 4180.1). This section describes the data needed to address the fundamentals at the LUP scale, recognizing that additional data may be required for state land health standards that address resources not described in the fundamentals.

At a minimum, the ratings and summary report from completing the BLM Technical Reference 1734-6, “[Interpreting Indicators of Rangeland Health](#)” (Pellant et al. 2005), and the BLM Technical Reference 6710-1, “[Sage-Grouse Habitat Assessment Framework](#)” (Stiver et al. 2015), will be used to inform the land health fundamentals and the land health standard evaluation. BLM Technical Reference 1735-1, “[AIM National Aquatic Monitoring Framework](#),” provides quantitative information to evaluate watershed function, aquatic habitat, and water quality. Taken together, this information will provide the baseline information to determine if the GRSG areas within an LUP are meeting or making progress toward meeting the appropriate land health standards and thus meeting the four fundamentals. This is not an allotment-by-allotment approach; rather it is evaluating a larger geographic area, such as a grouping of watersheds or other landscape unit.

6.2.8 Establishing Sample Locations for Monitoring Terrestrial and Aquatic Resources

One of the AIM principles and also one of the HAF requirements is to collect data using a nonbiased sample frame. This allows the data to be used at multiple scales and for multiple purposes. Significant efficiencies will be gained and will also allow the BLM to collect more samples in those areas that are

more sensitive to change or have a greater likelihood of management challenges. The BLM will establish a master list of sample points to use when developing a statistically valid field office monitoring plan. The field office provides significant input into the sample design and monitoring plan for terrestrial and aquatic resources. Sample designs are intended to be comprehensive across all BLM lands and are intended to ascertain achievement of the GRSG conservation strategy and LUP objectives, the effectiveness of fire and vegetation projects, and the effectiveness of individual treatments. Drawing sample points from the master sample will be accomplished by the National Operations Center (NOC) Assessment and Monitoring Branch, with input from the local field office or larger management unit, if appropriate. All sample designs must be drawn from the BLM master sample to ensure the data collected in one field office can be combined with other field offices so the BLM and its partners can use the data points to answer resource questions at multiple scales (e.g., the biologically significant unit, planning unit, or region). If the master sample does not contain the density of sample points necessary to inform specific management questions (e.g., habitat improvement project effectiveness) or to increase the accuracy of the estimate in habitats of high value, additional sample points will need to be established and validated by the NOC to ensure the data are compatible with the master sample. Minimizing the additional sample points and allowing the data to be available at multiple scales allows multiple management questions to be answered, while maximizing the benefit of the sample points.

State monitoring leads should begin working with the NOC and field or district offices as soon as possible to establish a sampling framework for aquatic and terrestrial sample sites. The sample design and identification of sample locations should be completed in early spring 2016. Additional funding will be used to augment the current staff at the NOC to support this effort.

6.2.9 Monitoring LUP Implementation

Table 11 describes the information that is required to track authorizations and other management actions.

Table 11. Process to track authorizations and other management actions

Monitoring Type		Scale
		Project
Implementation	What?	Decision Tracking
	How?	ePlanning Log
	Who?	FO and SO NEPA teams
	When?	By project

6.2.10 Monitoring LUP Effectiveness

BLM Handbook H-1601-1, "Land Use Planning Handbook," describes the analysis and reporting requirements for effectiveness of the LUP for renewable resources. To assess whether resource management plans for renewable resources are effective in achieving objectives, LUP monitoring reporting will occur on a 5-year basis, as documented in the evaluation schedule. Plan evaluations should also be completed prior to any plan revisions and for major plan amendments. Special or unscheduled evaluations may also be required to review unexpected management actions or significant

changes in the related plans of Indian tribes, other federal agencies, and state and local governments or to evaluate legislation or litigation that has the potential to trigger an RMP amendment or revision.

The effectiveness monitoring questions, as required by the “Land Use Planning Handbook” and modified by the GRSG LUPs, are: (1) Is the plan effective in achieving (or making progress toward achieving) desired outcomes based on land health standard objectives and GRSG habitat objectives?; (2) Are RMPs meeting, or making progress toward meeting, land health standards, including special status species/wildlife habitat standard?; (3) Is the plan meeting the disturbance objective(s) within the RMP area?; and (4) Are the populations within this plan boundary increasing, stable, or declining? The RMP evaluation can be used to determine if (1) decisions remain relevant to current issues, (2) any decisions need to be revised, (3) any decisions need to be dropped from further consideration, and (4) any areas require new decisions.

The information needed to complete the RMP evaluation is described in the monitoring framework and in the forthcoming IM for effectiveness monitoring of renewable resources. Resource condition and disturbance data will be made available by the NOC through the EGIS web portal and Geospatial Gateway, and population data should be available through the WAFWA MOU or other agreements with the state. State offices will be responsible for completing the 5-year LUP effectiveness report, with the NOC providing tools to facilitate the development of these reports. When possible, the effectiveness reporting should coincide with the LUP review.

6.2.11 Making Adaptive Management Decisions

Each LUP describes a timeline for evaluating soft and hard adaptive management triggers, but in all cases, triggers must be evaluated annually. Adaptive management triggers are typically assessed in the fall after the fire season has ended and the state’s wildlife agency has provided the BLM with its final lek count data. Hard and soft trigger thresholds will also be considered during analysis of proposed projects or land use changes affecting GRSG habitat. In addition, anthropogenic disturbance caps will be evaluated at the project scale by the field in coordination with the respective state office, before proceeding with the NEPA requirements. The amount of disturbance on all lands within the BSU will be calculated by the NOC on an annual basis using the consistent, Westwide datasets identified in the monitoring framework.

Adaptive management is also intended to be implemented in the project scale, required design feature scale, and best management practices. In these cases, implement and monitor to see if the action precipitated the desired result, and if not, determine what was missing and make the necessary changes in the next treatment or authorization. Adaptive management is a continuous improvement cycle.

The LUPs describe the metrics and consequence of tripping soft or hard habitat and/or population triggers. Habitat availability is assessed through examining the amount of sagebrush within the BSU. Methods to assess population trends at the BSU scale are described in each plan. Adaptive management decisions would generally follow within (see the individual plan requirement) days of the evaluation of the soft and hard population and habitat triggers. The evaluation should be completed by the appropriate state or management zone implementation team and should include participation by or input from the state wildlife agency relative to population triggers. Field units and GRSG local working groups or other partners may also play a role.

A summary report detailing the analysis and rationale will be developed by the implementation team and provided to BLM officials along with any recommendations. For most states, an LUP amendment

will be required to change the more restrictive decisions in use after the trigger was tripped. Soft trigger responses are described in the plan and will be implemented for all future authorization where the response is appropriate.

The decision authority for adaptive management decisions rests with the appropriate BLM State Director, depending on the scale of the biologically significant units or other scale from which adaptive management triggers are described.

6.2.12 Engaging Partners in Population and Habitat Monitoring

Partners can participate in a number of monitoring activities. Population monitoring is the responsibility of the state wildlife agencies; however, BLM biologists often assist state wildlife management agencies to conduct lek counts. Other entities may participate in lek count efforts, and any agreements to assist with population monitoring should be coordinated with the state wildlife agencies.

Agreements between individual states and/or other entities may be necessary to formalize a cooperative habitat monitoring strategy for each state. Formal agreements may be needed to ensure that methodologies are consistent between BLM monitoring protocols and partner monitoring protocols.

6.2.13 Potential Future Changes in the Methodology Used by States and WAFWA to Estimate GRSG Population Trends

Ongoing and future science efforts are evolving to improve and standardize GRSG population and trend estimation. When the wildlife agency partner comes forward with a modified methodology that may affect the use of the data for adaptive management purposes, the matter will be taken up by the WAFWA Management Zone GRSG Conservation Team to determine whether the data resulting from the use of new methodology will result in a need to modify the adaptive management triggers in the LUP. Close coordination between the BLM, USFS, and state wildlife agencies is imperative to ensure that population monitoring and analysis can provide accurate information to assess the status of populations and their status relative to management triggers in the LUPs.

6.3 Additional Guidance and Tools

The following documents and tools provide additional information and guidance:

- BLM Technical Note 445, "AIM-Monitoring: A Component of the BLM Assessment, Inventory, and Monitoring Strategy" (Taylor et al. 2014).
- BLM Technical Note 440, "BLM Core Terrestrial Indicators and Methods" (MacKinnon et al. 2011).
- BLM Technical Reference 1735-1, "AIM National Aquatic Monitoring Framework: Introducing the Framework and Indicators for Lotic Systems"
- The Database for Inventory, Monitoring, and Assessment (DIMA) is available for terrestrial field data collection, and the National Aquatic Monitoring Center has developed a tool to collect the aquatic core indicators. A master sample design tool is in development and deployment through Sitka Tech but managed through the NOC Branch of Assessment and Monitoring.
- TerrADat is used as an enterprise terrestrial database, and a geocortex tool is under construction for reporting.
- Tools and methods are needed for riparian (both lentic and lotic) vegetation monitoring. PFC is appropriate for assessments; however, it clearly states that it is not appropriate for monitoring.

- A significant gap has been identified in the ability to analyze data and generate reports. Since the plots are weighted, simple statistical analysis methods (e.g., simple averages) are not appropriate for analyzing data collected using a statistically valid sample design. More complex statistical analysis is required. This capacity issue must be addressed before any significant level of reporting can begin.

The BLM needs ecological site descriptions or reference sites to determine potential and evaluate management options. Evaluating these management options (and limitations) requires:

- 1) understanding the soils,
- 2) vegetation state and trajectory,
- 3) landscape position, and
- 4) local climate (temp and precipitation).

The NRCS Web Soil Survey application provides a map unit name and the included soil series, and will link to ESDs if available. However, a single soil mapping unit can have one to several series included in the description, so it is important to dig a soil pit on the site, evaluate soil color, texture, stone content, and depth to bedrock (if found) to . Current vegetative cover can be the result of recent or historic disturbance so may not be representative.

When determining ecological site potential, the hierarchy of ESD quality for use by the BLM is the following:

1. If there is an approved ESD, use that for developing management options.
2. If there is not an approved ESD, check with NRCS to see if there are provisional ESDs - these are not available to the public, but the BLM can access them.
3. Draft ESDs, which have not undergone QA/QC checks, can be used with caution, and any site correlation work the BLM does should be reported to the NRCS for use in final ES description and approval.
4. If there are no draft ESDs available in your local area, consult with regional soils experts to identify if external ecological sites are similar enough to use for management decisions.
5. If there are is not an applicable ESD, use an interdisciplinary team to develop a site reference sheet (discussed in the Indicators of Rangeland Health manual), and use a consensus approach within your interdisciplinary team to determining current site state, potential future states (desired and undesired), and agree on a management course to reach one of those desired future states, with sufficient and appropriate monitoring to track site vegetative cover trajectories.

Chapter 7: Data

7.1 Land Use Plan Commitments

Data provides the foundation for the GRSG LUPs and their implementation. Through the planning process, the BLM worked collaboratively with state wildlife agencies to delineate habitats and generate geospatial representations of these areas (see Chapter 1 of this guide, Habitat and Assessment). These habitat data served as the basis for the development of allocation decision data, representing management direction for the various BLM programs and activities within the identified habitat management areas (HMAs). The allocation decision and habitat data are the primary geospatial products of the planning process and will serve as a reference point for the implementation of management decisions. In addition, the GRSG LUPs commit the BLM to quantify sagebrush availability and disturbance at multiple scales, as well as to use specific monitoring approaches within the range of GRSG and detailed reporting requirements. The plan-generated data (HMAs and allocation decisions), as well as the implementation-generated data (monitoring and reporting information), are not standardized through the plans themselves. Instead, the information is being generated, stored, analyzed, and reported within the context of being evaluated for standardization, as described in more detail in this chapter.

Further, numerous internal and external datasets exist that are used by the field to inform management decisions, in conjunction with the LUPs and the datasets generated by the planning process. These data vary in source and ideally are available to all personnel regardless of location. Internal dataset accessibility, standardization, and metadata are discussed in Chapter 7.2, along with a strategy for accessing externally generated data for use in LUP implementation. It should be noted that a comprehensive list of datasets used by BLM personnel in the performance of their duties is far too extensive to detail in this document.

7.2 Implementation Topics and Guidance

7.2.1 New Geospatial Datasets Critical for LUP Implementation and Monitoring

In addition to the extensive suite of data used by BLM staff during their daily work, the datasets in Table 12 are critical to LUP implementation and monitoring and have either been created through the planning process or will be created through plan implementation. These are recognized as neither officially standardized nor subjected to the standards development processes established by the BLM. As implementation progresses, integration of these data under a standardization framework may be evaluated via the processes established by the Data Advisory Committee (DAC) and/or the Data Advisory Working Group (DAWG), including, but not limited to, deeming the existing creation and/or collection methods as sufficient for a nationally recognized dataset. Other state-specific datasets (e.g., core areas) and other datasets on habitat management areas should be consolidated and stored at the state office level.

Table 12. Datasets that are critical to GRS G LUP implementation and monitoring

Dataset Name/Theme	Plan Allocation Decisions (Numerous Datasets and Themes)
Description	Datasets were developed through the planning process and detail the areas where the BLM prohibits, restricts, or allows various types of activities under its multiple-use mission. Developed individually for each LUP, these data are a primary reference when considering project authorizations. During plan development, the NOC, in coordination with the planning leads and in consultation with the “Land Use Planning Handbook,” consolidated allocation data across all planning efforts into 15 program areas and more than 40 individual datasets representing discrete management decisions. This approach facilitated alternative analysis across all 10 states involved in the planning effort. However, many planning units were required to consolidate more refined datasets into the program area categories and decision-specific datasets. The ROD data will be collected and consolidated at the NOC and used to facilitate the development and evaluation of standards for these data themes.
Storage/Access	Housed by each state office, consolidated and made available for internal use by the NOC.
Dataset and Standards Status	Datasets in Place, Official Standards In Development – While official data standards are in development for these types of geospatial data, no finalized guidance is available for developing allocation decision datasets. The consolidated plan decision data will be used to assist in the finalization of allocation decision data standard development.

Dataset Name/Theme	Sagebrush Focal Areas
Description	The USFWS provided the BLM with a geospatial dataset representing highly important landscapes (Memorandum FWS/AES/058711, October 27, 2014) for consideration when developing land use allocation decisions in 2014. The NOC worked with planning leads, the Washington Office, and individual plan personnel to refine these data to represent a subset of priority habitat management areas within the BLM’s decision space, which would be managed under allocation decisions deemed most protective for sagebrush ecosystems.
Storage/Access	Housed by each state office, consolidated and made available for internal and external use by the NOC.
Dataset and Standards Status	In Place, No Official Data Standard – This dataset is a derivative of several BLM and non-BLM data products. It can be considered finalized and eligible for designation as a standard dataset, subject to revision solely through plan maintenance or amendment.

Dataset Name/Theme	Priority, Important, and General Habitat Management Areas (PHMA, IHMA, and GHMA)
Description	Geospatial representations of sagebrush ecosystems comprising sage-grouse habitat that were developed by state fish and wildlife agencies, with varying degrees of BLM input, across the species' range. These data served as the basis for allocation decision development by each plan in coordination with regional and national planning leads. While delineations may have been more specific within certain plans, these data were collected and consolidated to create a rangewide data layer delineating priority, important (Idaho only), and general habitat management areas.
Storage/Access	Housed by each state office (including more refined delineations); consolidated into PHMA, IHMA, and GHMA format; and made available for internal and external use by the NOC.
Dataset and Standards Status	In Place, No Official Data Standard – This dataset is primarily derived from non-BLM data products and analyses. It can be considered finalized and eligible for designation as a standard dataset, subject to revision solely through plan maintenance or amendment.

Dataset Name/Theme	Disturbances – Fine and Site Scale
Description	<p>Each LUP details an approach to quantify discrete disturbances when evaluating proposed projects for approval, as outlined in the “Greater Sage-Grouse Monitoring Framework” (see Chapter 4 of this guide for details on disturbance calculations). The creation, storage, and analysis of geospatial data representing disturbance is a new requirement for the BLM and involves two databases, each of which has its own schema and data capture methods:</p> <ol style="list-style-type: none"> 1. Wyoming Density and Disturbance Calculation Tool (WYDDCT) Application – Developed by the State of Wyoming to support its Core Area Strategy. Each plan in Wyoming will use this database and analysis tool to quantify disturbance at the fine and site scales, with Montana planning to implement the same application in the future. 2. Surface Disturbance and Reclamation Tracking Tool (SDARTT) – An application in development by the BLM in partnership with the USGS. Similar to the DDCT tool in Wyoming, the application will capture, store, and analyze geospatial data depicting disturbance at the fine and site scale. Once fully deployed, this application will be capable of consuming data developed using the WY DDCT application.
Storage/Access	1. WY DDCT Application – Access and utilization is coordinated with the State of Wyoming. Information and access is located at: https://ddct.wygisc.org/home.aspx

	2. SDARTT – Currently in beta testing. Will be housed and maintained by the USGS with BLM staff access via approval based on Active Directory Credentials. The potential for the BLM to assume responsibility at the NOC will be evaluated in the future.
Dataset and Standards Status	<p>1. WY DDCT Application: In Place, No Official Data Standard – The data generated using this application is based on a robust database schema which has been in use for some time. Disturbance calculations for the LUPs in Wyoming follow the methodologies established by the State of Wyoming and may differ from surrounding states. These data are not subject to standardization by the BLM.</p> <p>2. SDARTT: In Development, No Official Data Standard – The data generated using this application will be based on a database schema which facilitates the capture of geospatial data representing the 19 landscape-level and site-specific degradation threats identified in the “Greater Sage-Grouse Monitoring Framework.” As deployment and application refinement ensues, these data may be evaluated for designation as standardized datasets.</p>

Dataset Name/Theme	Disturbances – Broad and Mid Scale
Description	As detailed in the “Greater Sage-Grouse Monitoring Framework,” these data are an assemblage of various public and proprietary datasets depicting the 12 landscape-level degradation threats in a consistent manner across the 10 state ranges of the GRSG.
Storage/Access	These data are acquired and analyzed annually, as detailed in the “Greater Sage-Grouse Monitoring Framework,” by the NOC and made available for internal use. Statistics for broad- and mid-scale summary units (management zone, population, BSU) may be made available for external use.
Dataset and Standards Status	In Place, No Official Data Standard – A consistent suite of data sources and a standardized analysis approach is outlined in the “Greater Sage-Grouse Monitoring Framework.” These data are available for DAC/DAWG review and for consideration as standardized datasets, although this process has not been initiated.

Dataset Name/Theme	Assessment, Inventory, and Monitoring Field-Collected Data
Description	These data are generated through field surveys conducted according to the methodologies outlined in the “Assessment, Inventory, and Monitoring Strategy for Integrated Renewable Resources Management” (AIM Strategy) (Toevs et al. 2011).
Storage/Access	Data is collected by field, district, and/or state offices. Consolidation of

	field-collected data undergoes national aggregation at the NOC and is available for internal use. External publication is expected.
Dataset and Standards Status	In Place, Standardized Collection Methodologies – The AIM Strategy details explicit field data collection methodologies based on the principle of “single collection, multiple use.” While the BLM DAC/DAWG have not created official standards for these data, the protocols outlined in the AIM Strategy can be considered standardization guidance.

Dataset Name/Theme	Habitat Assessment Framework Field-Collected Data
Description	These data are generated through field surveys conducted within habitat management areas, in accordance with the methodologies outlined in the “Sage-Grouse Habitat Assessment Framework” (Stiver et al. 2015).
Storage/Access	Data will be collected by field, district, and/or state offices. Consolidation at the state level is expected, and national aggregation will leverage the existing database infrastructure created for AIM data and will be performed at the NOC. Both internal and external publication is in development. The internal site can be found at https://blmspace.blm.doi.net/oc/intra/drs/SitePages/BLM%20Terrestrial%20AIM%20(TerrADat).aspx
Dataset and Standards Status	Collection Yet to Be Implemented, Standardized Collection Methodologies – The Habitat Assessment Framework (as well as the related AIM Strategy) detail explicit field data collection methodologies based on the principle of “single collection, multiple use.” While the BLM DAC/DAWG has not created official standards for these data, the protocols outlined in the Habitat Assessment Framework can be considered standardization guidance.

Dataset Name/Theme	Habitat Assessment Framework Habitat Suitability Reports and Seasonal Delineations
Description	These data are generated through the interpretation of field surveys conducted in habitat management areas, in accordance with the methodologies outlined in the “Sage-Grouse Habitat Assessment Framework” (Stiver et al. 2015). Data collected by field, district, and/or state offices will be interpreted by local subject matter experts to detail site suitability and drive seasonal habitat delineations. These data may be both spatial and nonspatial in nature.
Storage/Access	To Be Determined – These interpretations have not been widely conducted. A storage, access, and data management approach will be developed as assessments are completed and may evolve as the program matures.

Dataset and Standards Status	Yet to Be Implemented – The “Sage-Grouse Habitat Assessment Framework” details the approach for determining habitat suitability and seasonal habitat delineations. However, professional judgment by the subject matter expert is involved in the final reports. These spatial and nonspatial data will utilize the standard approaches outlined in the Habitat Assessment Framework but may not be candidates for data standardization under existing protocols.
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Dataset Name/Theme	Biologically Significant Units (BSUs)
Description	These data represent an intermediate scale of aggregation of GRSG habitats and vary among the LUPs in their delineation. In general, they are based on GRSG populations or other biologically meaningful habitat groupings. Their intended purpose is for the BLM to calculate the percent disturbance on PHMA per unit for mid-scale monitoring.
Storage/Access	Housed by each state office, consolidated and made available for internal use at the NOC.
Dataset and Standards Status	These data are derivatives of BLM and non-BLM data products and identified in each LUP as the intermediate-scale monitoring unit. It can be considered finalized and eligible for designation as a standard dataset, subject to revision solely through plan maintenance or amendment.

Dataset Name/Theme	Priority Areas for Conservation (PACs)
Description	This dataset represents areas of importance to GRSG as identified by the Conservation Objectives Team in 2013 and revised by the USFWS for use in the listing decision in 2015. Broad- and mid-scale sagebrush availability and disturbance estimates may be calculated within these areas.
Storage/Access	Data has been obtained from the USFWS representing these areas and will be made available for internal use by the NOC. The NOC will coordinate acquisition and distribution of any potential future updates.
Dataset and Standards Status	In Place – This dataset is a non-BLM data product. It can be considered finalized and eligible for designation as a standard dataset, subject to revision solely through modification mechanisms deemed appropriate by the data creator.

Dataset Name/Theme	Sage-Grouse Management Zones
Description	This dataset represents regional analysis units, based on major floristic provinces and threats to sagebrush ecosystems. They were designated by WAFWA and refined in 2015 for use in the USFWS listing decision. Their

	use will be to serve as a landscape-level unit of measure for annual reporting and 5-year trend analysis.
Storage/Access	Data has been obtained from the USFWS representing these areas and will be made available for internal use by the NOC. The NOC will coordinate acquisition and distribution of any potential future updates.
Dataset and Standards Status	In Place – This dataset is a non-BLM data product. It can be considered finalized and eligible for designation as a standard dataset, subject to revision solely through modification mechanisms deemed appropriate by the data creator.

Dataset Name/Theme	Sage-Grouse Populations, Including Estimates, Trends and Lek Locations
Description	These data represent aggregations of GRSG into distinct population and subpopulation units and descriptive (nonspatial) information about the GRSG within them. The spatial data were designated by WAFWA and refined in 2015 for use in the USFWS listing decision. The spatial data will serve as a unit of measure for annual reporting and 5-year trend analysis. The nonspatial data will be acquired annually under an MOU with WAFWA for use in annual reporting and 5-year trend analysis through coordination with the Washington Office and NOC.
Storage/Access	Geospatial data has been obtained from the USFWS representing these areas and will be made available for internal use by the NOC. The NOC will coordinate acquisition and distribution of any potential future updates. Descriptive population statistics have yet to be acquired but will be utilized for annual and 5-year trend reporting.
Dataset and Standards Status	In Place – This dataset is a non-BLM data product. It can be considered finalized and eligible for designation as a standard dataset, subject to revision solely through modification mechanisms deemed appropriate by the data creator.

Dataset Name/Theme	Existing Vegetation Type (EVT)
Description	This derived raster dataset represents sagebrush-related pixels found in the LANDFIRE dataset and is created and updated at the NOC in accordance with procedures outlined in the “Greater Sage-Grouse Monitoring Framework.” Its purpose is to inform broad- and mid-scale sagebrush availability metrics.
Storage/Access	Created, stored, and made available internally by the NOC.
Dataset and Standards Status	In Place – This dataset is derived from BLM and non-BLM data as outlined in the “Greater Sage-Grouse Monitoring Framework” and

	updated annually. Each annual product can be considered final and is available for evaluation as a standardized dataset.
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Dataset Name/Theme	Biophysical Setting Capable of Supporting Sagebrush (BpS)
Description	This derived raster dataset represents pixels found in the LANDFIRE dataset that are capable of supporting sagebrush ecosystems and has been created by the NOC in accordance with procedures outlined in the "Greater Sage-Grouse Monitoring Framework." Its purpose is to inform broad- and mid-scale delineation of areas capable of supporting sagebrush vegetation.
Storage/Access	Created, stored, and made available internally by the NOC.
Dataset and Standards Status	In Place – This dataset is derived from BLM and non-BLM data as outlined in the "Greater Sage-Grouse Monitoring Framework." The product can be considered final and is available for evaluation as a standardized dataset.

Dataset Name/Theme	NEPA Project Locations
Description	These data represent point locations for NEPA-related projects. They provide basic descriptive information about each project and link to the associated NEPA documents.
Storage/Access	Created by field, district, and/or state offices. The points and associated documents are stored and made available internally by the NOC through the ePlanning application.
Dataset and Standards Status	In Deployment – ePlanning is currently undergoing a phased deployment to the field. NEPA documentation and point capture for project locations have not been subjected to standardization processes employed within the BLM.

Dataset Name/Theme	Treatments (Vegetation)
Description	These data represent the location and details regarding vegetation treatments conducted or supported by the BLM under various programs.
Storage/Access	Created by field, district, and/or state offices and currently stored in several program-specific databases. Access varies by program and database. However, a consolidated data entry and reporting application is in development.
Dataset and Standards	In Place/In Development – Comprehensive vegetation treatment data

Status	standards are currently in development to support a Vegetation Treatment Solution, which will aggregate the various databases and facilitate uniform spatial and tabular data capture and reporting across all programs.
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Dataset Name/Theme	Regional Habitat Models and Intactness Measures
Description	These data are in development in partnership with the USGS. Their intended use is to facilitate consistent habitat delineations across the range of the GRSG and to assess landscape-level fragmentation of habitats, amongst other metrics.
Storage/Access	To be determined.
Dataset and Standards Status	These data are in development but may be available in the future.

Dataset Name/Theme	Grass/Shrub Mapping Products
Description	These data are in development in partnership with the USGS. Their intended use is to improve the accuracy of grass- and shrub-dominated ecosystem mapping to assist in habitat delineations and long-term monitoring efforts.
Storage/Access	To be determined.
Dataset and Standards Status	These data are in development but may be available in the future.

7.2.2 Data Standards and Standardized Data and Their Importance

Data standardization, metadata development, enterprise-level management, and publication of data, in combination with robust data quality assurance and updated processes, are required components of a mature data approach that can support land management decisionmaking at multiple scales. While traditional methods of local data gathering and assessment within specific management units have generally been effective for managing individual units, the BLM is moving towards assessing, reporting on, and managing lands at multiple scales to facilitate its mission. By setting and adhering to minimum data standards, the data gathered at local units can be rolled up confidently for assessment and reporting across units and larger landscapes, as well as utilized as the basis for consistent management approaches at appropriate scales. Thoughtful and useful metadata details the quality, currency, purpose, origin, and other factors of the data itself and can provide information about the quality of data on a record-by-record level if implemented correctly. This allows analysts, decisionmakers, land management partners, and the public to confidently and appropriately use data with a fundamental understanding of its limitations. Finally, centralized management and publishing/distribution of data

ensures users are accessing the same information for decisionmaking and that their information is the most current available—not an obsolete snapshot taken at some point in the past. As new data comes in, existing data is updated and improved, which facilitates sharing within the BLM and with land management partners, other agencies, and the public with confidence.

A full data standard is based on identified business requirements. The business requirements are captured and documented in a process involving subject matter experts and modeling sessions in which the data requirements are defined and a full logical data model is developed. This process enables the organization to capture and document any specific business requirements, how they relate to other data within the organization, and any specific business rules for the governance of the data. Following the logical data model development, implementation requirements are identified and defined. Once an implementation method is initiated, a standardized schema is developed and a complete data standard can be finalized.

A standardized dataset can be developed by performing an analysis of existing physical data stores and determining the overlap or commonalities across datasets. Based on this type of analysis, a schema that contains the identified common elements and uniform definitions for the dataset or data theme is finalized. The schema development is a critical step to ensuring that the quality of the data can be measured. While this is much quicker and easier than developing and documenting a full data standard, there is an assumption that the existing data stores were meeting the business data requirements.

The identification of critical datasets is ongoing, involving multiple program leads to help identify data priorities for the BLM. The Data Advisory Working Group (DAWG) is tasked with recommending the annual data priorities to the Data Advisory Committee (DAC). A structured effort is currently underway in which the DAC is examining these organizational priorities, with continuing input from the business leads, to ensure that organizational needs are being addressed. The priorities list for FY 2016 is currently being developed by the DAC and DAWG and involves the evaluation of several hundred datasets and themes, including those identified in 7.2.1 of this guide. Once this process is complete, prioritization and initiation of data standards and/or standardized dataset designation will commence. The existing data standards and standardized data schemas can be explored by visiting the NOC Data Resource Management Program SharePoint site: <http://teamspace/sites/blmnds/default.aspx>.

While standards development is driven primarily by data management experts and business leads across programs, compliance is the responsibility of the data creator and is discussed in more detail in 7.2.3 of this chapter. The NOC not only facilitates the establishment of standards, but it also provides expertise in data quality to assist in generating compliant datasets from the field to the national level.

7.2.3 Data Quality, Data Replication, and Data Publication Responsibilities

All specialists at all levels of the BLM have a role to play in data quality. The field and district office is primarily responsible for collecting and entering the data, and the state office program lead checks for accuracy and consistency, as does the Washington Office program lead. The NOC produces a data quality report regarding the condition of the tabular data (if it accurately followed data standards) and the geometry (only if allotment boundaries are crossing each other, but not if the allotment boundaries are correct on the ground—that is the responsibility of the field office).

Each state currently has its own data replication infrastructure in place to reap the field and or district office data, consolidate, and replicate to the NOC. About 20 datasets are in the process of being

replicated. The GRSG implementation effort will not change this infrastructure or the current roles and responsibilities but will add to the number of replicated datasets.

With approval from the national data steward (usually at the Washington Office), national services are created through coordination with the NOC. Layer files are available on the Geospatial Gateway and through the EGIS Portal (internal access only). The service can be moved for external consumption if requested by the data steward.

Figure 6 displays the roles and responsibilities at each level of the agency regarding data quality, data replication, and data publication, including the interaction between different levels.

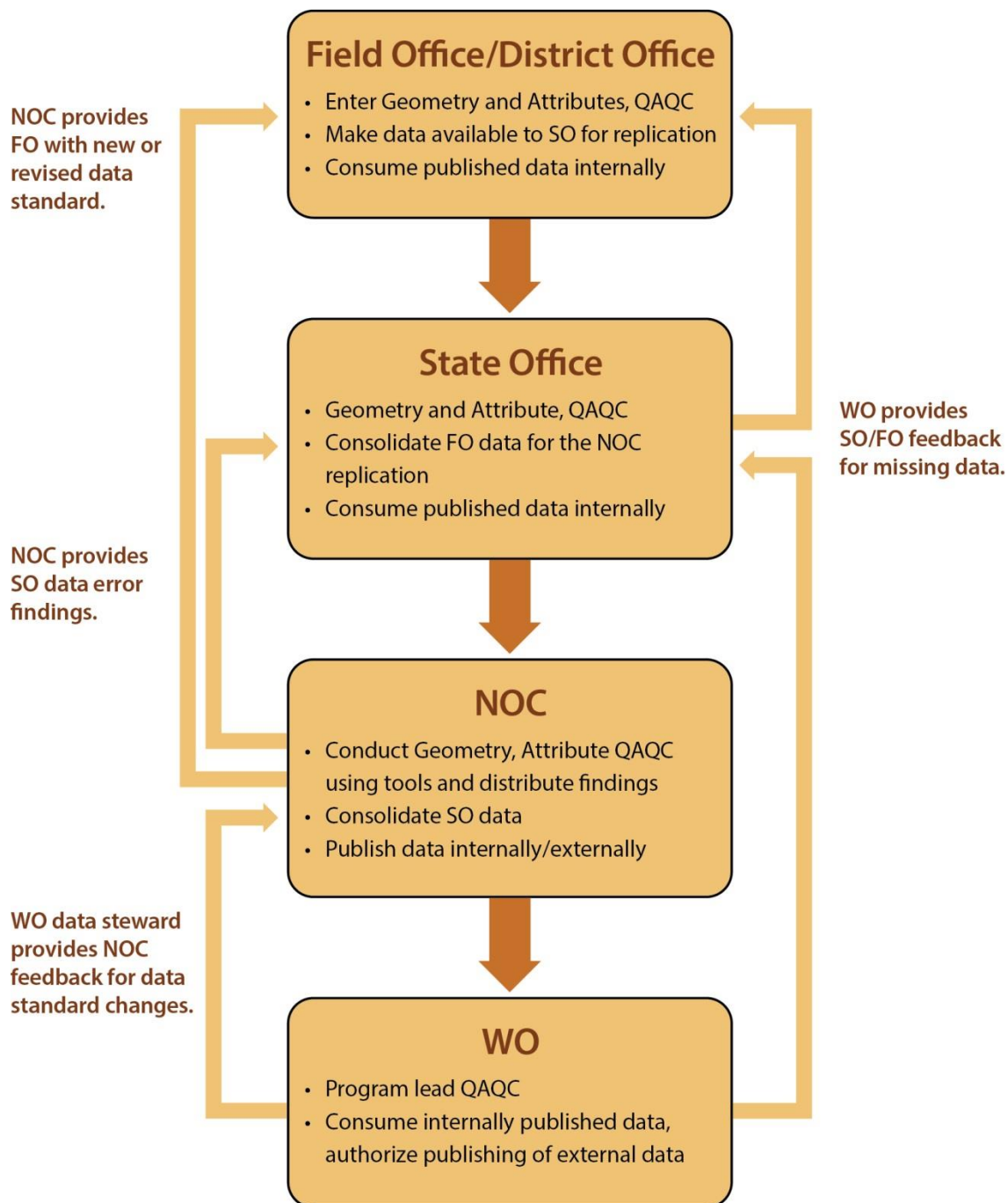


Figure 6. Data quality, data replication, and data publication roles and responsibilities at each level of the BLM, including the interaction between different levels.

7.2.4 Metadata Requirements, Documenting Limitations, and Data Uncertainties

The BLM requires metadata for both spatial and nonspatial data to facilitate the location of data in large corporate holdings and to document the numerous aspects involved in the generation of a dataset. The Dublin Core metadata standard is used for nongeospatial data and is comprised of 15 properties that describe the resource represented in the nonspatial data. This standard was developed to be applicable

to a wide variety of data types from electronic (web and digital files) to physical (books, CD, etc.) resources. The content and format is relatively simple in comparison to metadata used with geospatial datasets.

The Federal Geographic Data Committee Content Standard for Digital Geospatial Metadata (FGDC CSDGM) is the basis for BLM geospatial metadata. The Corporate Metadata Advisory Team (CMAT) is the entity within the BLM responsible for the development of metadata standards, as well as tools and templates used to apply these standards. In addition, the CMAT is tasked with evaluation modifications to these standards as technology and external best practices evolve. The FGDC CSDGM has been modified to fit the DOI metadata harvesting procedures, which facilitates the consumption of BLM metadata records by data.doi.gov, where it will be used in reporting and other analyses. Metadata records are then automatically harvested to data.gov as the federal government's single point for searching for data of all types. Additionally, the geospatial metadata records are also harvested to the Geospatial Platform for those interested in searching specifically for geospatial data holdings with the federal government. See 7.2.5 of this chapter for additional discussion on data sharing and accessibility. While the CMAT is the governing entity for BLM metadata standards, each individual who creates data is responsible for also creating compliant metadata. The geospatial metadata requirement details are too extensive to comprehensively include in this guide. However, in general, they require the inclusion of: keywords, general dataset descriptions, detail processing history, accuracy assessments, attribute definitions, and disclaimers regarding known or potential issues in the use of the dataset, as well as use and distribution limitations. The NOC has developed several templates to streamline the creation and application of compliant metadata, as well as tools to assist in the evaluation of metadata against the standard requirements. Additionally, all data standards and standard data schemas released by the NOC are accompanied by a template prepopulated with the most common metadata elements. Additional information regarding the metadata standards, tools for creating and evaluating standards, and explicit direction in the form of handbooks and instruction memoranda can be found in the NOC Data Resource Management Program SharePoint site: <http://teamspace/sites/blmnds/default.aspx>.

7.2.5 Making Data Accessible Internally and Externally for LUP Implementation

Data sharing, either internally or externally, begins with a robust data storage and management structure. Centralized data storage and management provides a single access point and ensures that all users are consuming the most current version of a uniformly generated dataset, enhancing repeatability and confidence in analysis. Once a data standard is completed and released with an IM, or once a standardized dataset is developed, each state office is responsible for following the associated implementation guidelines. This initiates the collection of data from the field/district office and consolidation within a state-held enterprise geodatabase structure. The data collection and consolidation process requires the input of both subject matter experts and GIS specialists to ensure collected data meet the established standard(s) and are properly documented with applicable metadata. The state office may apply additional requirements to data collection to meet their specific business practices. However, only those elements meeting the standard requirements are replicated to the national level at the NOC. The national spatial datasets are processed through quality checks, which generate quality reports, and national-level metadata are then created. The replication and quality check cycle is most commonly completed on a monthly basis, with a few spatial dataset exceptions (SMA for example).

With approval from the national data steward, National ArcGIS Server Services are created and made internally available on the Geospatial Gateway through layer files. The services are also made available through the rest end point (<https://gis.blm.doi.net/arcgis/rest/>) and EGIS Portal

(<https://egisportal.blm.doi.net/portal/home/>). These centralized consolidation and distribution approaches allow for BLM-wide access for mapping and analysis.

National services, initially developed and deployed for internal use, can also be moved to public facing services if requested by the data steward through rest end point (<https://gis.blm.gov/arcgis/rest/>) and/or by registering the data through layer packages on the Landscape Approach Data Portal (<http://www.landscape.blm.gov/geoportal/catalog/main/home.page>). This approach also facilitates the consumption of the published data by other federal data warehouses by leveraging the required metadata elements (discussed previously) in federated searches. By implementing these data consolidation and distribution practices, the public and external partners can be confident when acquiring data generated by the BLM that is approved for release.

The internal distribution of nonstandardized, nonpublic data is facilitated by the EGIS directory structure. Datasets can be stored and accessed, with permissions controls as appropriate, across the BLM as official standardization processes are developed. Further, the aggregation and distribution of non-BLM data, which is frequently utilized for day-to-day activities, particularly those data necessary for LUP implementation, are consolidated in the Reference National folder of the EGIS directory. A spreadsheet detailing the items consolidated in the Reference National folder, along with their present status and additional distribution information, is maintained in the directory. Those who rely on authoritative externally sourced data are encouraged to recommend additions to this repository, as it will build the repeatability and reliability of analyses across the BLM and minimize redundant data storage.

While these approaches to sharing standardized data are effective for internal (DOI) and public consumption, a gap still exists when the need to share nonpublic datasets with external partners arises. Currently, electronic transmission as email attachments is possible for smaller datasets, but larger files are typically shared on solid storage devices via personal or courier delivery. A method to share these types of datasets with non-DOI partners is a necessary item to be addressed for LUP implementation, as well as to increase the BLM's overall capacity to collaboratively work in data-intensive partnerships.

7.2.6 Geospatial Dataset Analysis and Reporting

Data analysis and reporting responsibilities are scale dependent, and timing of these activities may vary as BLM and partner needs arise. Additional information regarding the evaluation and reporting on spatial and nonspatial data is discussed in Chapter 6: Monitoring and Adaptive Management of this guide. The following information describes each level of analysis along with general roles and timelines. As LUP implementation progresses, analysis and reporting methods may be refined.

7.2.6.1 Broad and Mid Scales (First and Second Order: Rangewide, Management Zone, Population, Priority Area for Conservation)

When: Annually, with a trend analysis performed every 5 years to be provided to the USFWS.

Who: An interdisciplinary team comprised of the regional implementation coordinators, NOC, and Washington Office should be formed to consult with the USFWS to determine the exact report structure, content, and delivery format.

How: Multiple types of information will be compiled and reported annually, as outlined in the "Greater Sage-Grouse Monitoring Framework,"—an appendix in each GRSG LUP—including:

1. Compile and summarize project-level and site-specific actions and authorizations in relation to plan allocation decisions and habitat delineations by extracting and analyzing ePlanning and other consolidated authorization databases (data calls may be necessary until ePlanning is fully deployed).
2. Use rangewide vegetation and disturbance data to calculate the following habitat descriptors:
 - Sagebrush availability (Existing Vegetation Type - EVT) and its relation to what the landscape could potentially support (Biophysical Setting Capable of Supporting Sagebrush - BpS)
 - Habitat degradation
 - Energy and mining density
3. Use population demographic information provided by WAFWA/state wildlife agencies in concert with the degradation and sagebrush metrics to establish trends and explore causation.
4. Integrate the results of items 1 through 3 with available fine- and site-scale data to inform individual LUPs and national strategy effectiveness.

7.2.6.2 Fine and Site Scales (Third and Fourth Order: Local and/or Project)

When: As needed (project proposals, seasonal field studies, bureau or partner needs, etc.) and annual summaries

Who: State, district, and field staff, in coordination with regional implementation teams and the NOC. Each level of organization will play slightly different roles in data analysis and reporting. Flexibility is encouraged to facilitate the most effective application of personnel and equipment resources.

1. State offices will serve as the primary link between local and regional/national data collection and analysis. Primary roles include:
 - Coordinate with district/field offices and the NOC on field project data consolidation and summary reports.
 - Coordinate with state wildlife agencies on modifications to habitat delineations (either HAF-derived or through partner agency determinations).
 - Ensure project-level disturbance and density calculations are consolidated in appropriate systems (SDARTT when available and WY DDCT).
 - Ensure authorizations (projects, treatments, etc.) are documented in appropriate systems (ePlanning, etc.).
 - Coordinate with the NOC to determine LUP effectiveness and the need for adaptive management actions.
2. Field or district offices will lead data collection, stewardship, and quality control and should maintain close coordination with state offices. Primary roles include:
 - Data collection, quality control, and reporting.
 - HAF – third and fourth order summaries
 - Proper Functioning Condition
 - AIM
 - Land health assessments
 - Wildlife monitoring/surveys
 - Treatments
 - Other local projects

- Project-level NEPA analysis and approvals (disturbance, treatments, reclamation, etc.)

How: Data collection and analysis will follow relevant applicable protocols, as outlined in existing and pending guidance.

7.2.7 Interpreting Results of Dataset Analysis

Analysis results will be used by multiple specialists and deciding officials at all levels of the BLM. Similar to the process of geospatial dataset and analyses, as discussed in 7.2.6, analysis interpretation is scale dependent. It is important to realize, however, that each “level” of analysis and interpretation influences the others, and in practice, each level is interconnected through data consolidation, analysis, causation determinations, and subsequent recommendations. Additional information regarding how data is analyzed and interpreted can be found in Chapter 6: Monitoring and Adaptive Management of this guide.

7.2.7.1 Broad and Mid Scales

Assessing National Planning Strategy Effectiveness (Washington Office and the NOC): The effectiveness of the National Greater Sage-Grouse Planning Strategy will be evaluated using a suite of questions, as outlined in the “Greater Sage-Grouse Monitoring Framework,” aimed at landscape-level measures and trends to determine if changes are beneficial or detrimental to the long-term viability of the sagebrush ecosystem. These analyses will provide a basis for recommendations to alter any negatively trending landscape-level metrics. Generally, the information evaluated at this scale will include: overall sagebrush availability, amount of habitat degradation and the intensity of activities, any change in population estimates, estimation of BLM and USFS contribution to any changes in sagebrush availability, and an estimation of BLM and USFS contribution to changes in disturbance.

Assessing LUP Effectiveness (State Office, Regional Implementation Coordinators, NOC, and Washington Office): The effectiveness of each LUP will be examined using a similar suite of questions as those employed for the national strategy effectiveness evaluation, as outlined in the “Greater Sage-Grouse Monitoring Framework.” These questions will be evaluated to determine if each GRSG LUP is meeting the unique objectives within it and, if not, why these objectives are not being met. In general, the LUP effectiveness evaluation will be based on: (1) whether vegetation conditions are meeting land health standards and habitat objectives with an allotment and sage-grouse habitat management areas respectively; (2) the amount of disturbance within habitat management areas; and (3) any change in population estimates.

7.2.7.2 Fine and Site Scales (Field, District, and State Offices)

Fine- and site-scale data interpretation involves staff applying their professional judgment to analysis outputs in relation to plan objectives and authorization approvals. These activities include, but are not limited to, evaluation of project proposals in relation to allocation decisions and disturbance caps (NEPA analyses), initiation of adaptive management actions based on plan-specific thresholds, vegetation treatment prioritization, mitigation coordination, and the delineation of seasonal habitat using field-collected monitoring data.

7.2.8 Combining Internal and External Professional Scientific Expertise with Quantitative Data

The publication titled “[Advancing Science in the BLM: An Implementation Strategy](#)” (Kitchell et al. 2015) outlines two goals: (1) Ensure effective and consistent science integration into BLM’s core work

processes; and (2) Ensure that relevant, timely scientific information is accessible to BLM staff and managers. The following discusses the two goals, along with guiding principles and practices, and how they apply to GRSG LUP implementation.

7.2.8.1 Use the best available scientific knowledge relevant to the problem or decision, relying on peer-reviewed literature when it exists.

Geospatial data collection and analysis methods should be informed by a regular review of literature for the best available scientific knowledge. For example, the lek buffers and respective distances outlined in the monitoring framework were discussed in the USGS article “Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review,” which can be found at <http://pubs.usgs.gov/of/2014/1239/>.

7.2.8.2 Recognize the dynamic and interrelated nature of socioecological systems within which the BLM operates.

Interdepartmental and interagency projects relating to landscape-level ecosystem analysis and multiscale metrics should be encouraged. Current efforts include work with state wildlife agencies to modify habitat delineations, as needed, using telemetry and lek data and other data sources; work with the USGS to develop landscape-level metrics to support BLM land health assessments and applications to rangewide seasonal habitat mapping at multiple scales; work with the USGS to map grass and shrubs; and work relating to climate change.

7.2.8.3 Acknowledge, describe, and document assumptions and uncertainties.

Limitations of individual datasets should be described in its metadata, as outlined in 7.2.4 of this chapter. Any report created for internal or external purposes should disclose the assumptions and uncertainties associated with the datasets utilized, the methods used, shortfalls of a model, and the implications of the analysis. Considerations could include, but are not limited to, the scale of the data (e.g., using 30-m resolution raster data), timeline of analysis (e.g., annual calculation of disturbance cap), and accuracy of various equipment for collecting GPS data.

7.2.8.4 Use quantitative data when it exists, in combination with internal and external professional scientific expertise.

This is not just for calculating acres. Leverage monitoring and geospatial data to synthesize quantitative data when possible to describe trends and prescribe management actions. Internal and external professional expertise can be used to inform methods, calibrate models, and inform coefficients.

7.2.8.5 Use transparent and collaborative methods that consider diverse perspectives.

The use of partnerships with other agencies, research institutions, and stakeholders will introduce diverse perspectives. Analysis should be documented using models or scripts to encourage both transparency and repeatability. Meticulous record keeping and data storage is encouraged for tracking calculations, and time-stamped data is encouraged at all levels of the bureau.

7.2.8.6 Ensure that relevant, timely scientific information is accessible to BLM staff and managers.

This is described in 7.2.5 of this chapter, “Making Data Accessible Internally and Externally for LUP Implementation.”

7.2.9 Accountability Measures

First, ensure the use of Program Element (PE) codes to state the specifics of the data requirements. A unit of accomplishment only counts when it is measured with the specific data requirements. If data is not collected with the prescribed methodology, to a standard, or to a defined quality, it will not equal a unit of accomplishment. For example, if an office's target for the year is treatment of 2,000 acres of invasive species habitat, the office must record the spatial extent and proper attributes into the VTRT and/or NISIMS database (pending the forthcoming VTS database). Even if the office completed 2,000 acres of treatment on the ground, if the data is not recorded properly, the accomplishment will not be counted.

Second, a process to track datasets should be maintained at the field office and state level with a monthly update interval. This process should identify the datasets that have been used to collect information at the site level on vegetation, habitat, aquatic, riparian, wet meadow, vegetation treatment, etc. Provide documentation on the compliance of each standard in a summarized, easy to use interface, such as a single document or spreadsheet. This "dashboard" (a consolidated document or spreadsheet) of information provides fellow resource staff, GIS staff, managers, and leadership a picture of both the quality of the data being used to inform decisions and the level of completion. The format and storage location shall be at the discretion of the individual office responsible for the data and is suggested as a best practice for accountability.

The success of GRSG LUP implementation is highly dependent on the entry, use, maintenance, and analysis of high-quality and consistent data (both spatial and nonspatial)—hence the importance of new conversations and ideas with leadership regarding accountability measures.

7.3 Additional Guidance and Tools

A number of existing IMs mandate use of determined data standards for datasets critical to accomplishing not just GRSG LUP implementation, but all BLM work. States may have processes to attach additional data fields, but the IMs in Table 13 detail the minimum standard required. The SharePoint site for data standards is located at:

<http://teamspace/sites/blmnds/Established%20Data%20Standards/Forms/Grouped%20by%20Standard.aspx>.

Table 13. Existing instruction memoranda regarding the minimum spatial data standards required

Dataset	Dataset Abbreviation	IM Link	National Data Steward
Areas of Critical Environmental Concern	ACEC		TBD
Administrative Units	ADMU	http://www.blm.gov/wo/st/en/info/regulations/Instruction Memos and Bulletins/national instruction/2012/IM 2011-063_ch1.html	Kathie Libby WO-800
Cadastral Data Content	CADS	http://web.blm.gov/internal/wo-500/directives/dir-10/im2010-133.html	Bob Ader WO-300
Fire Management Planning Areas and Units	FMPA	http://web.blm.gov/internal/fire/Directives/IM2012/FA_IM2012026.pdf	TBD
Fire Polygons	FPER	http://web.blm.gov/internal/fire/Directives/IM2012/FA_IM2012026.pdf	Dianna Sampson NIFC
Grazing Allotments and Pasture Boundaries	GRA	http://www.blm.gov/wo/st/en/info/regulations/Instruction Memos and Bulletins/national instruction/2010/IM 2010-076.html	Richard (Dick) Mayberry WO-200
Ground Transportation Linear Features	GTLF	http://www.blm.gov/wo/st/en/info/regulations/Instruction Memos and Bulletins/national instruction/2015/IM 2015-061.html	TBD WO-200
Land Health Reporting	LHR	http://www.blm.gov/wo/st/en/info/regulations/Instruction Memos and Bulletins/national instruction/2012/IM 2012-124.html	Richard (Dick) Mayberry WO-200
Land Use Planning Area Boundaries	LUPA	http://www.blm.gov/wo/st/en/info/regulations/Instruction Memos and Bulletins/national instruction/2010/IM 2010-199.html	Leonard Gore WO-210
National Landscape Conservation System	NLCS	http://www.blm.gov/wo/st/en/info/regulations/Instruction Memos and Bulletins/national instruction/2011/IM 2011-057.html	TBD
Riparian Proper Functioning Condition	PFC	http://www.blm.gov/wo/st/en/info/regulations/Instruction Memos and Bulletins/national instruction/2010/IM 2010-197.html	TBD
Vegetation Treatment Areas	VTRT	http://www.blm.gov/wo/st/en/info/regulations/Instruction Memos and Bulletins/national instruction/2011/IM 2011-115.html	TBD
Wild Horse and Burro Management Areas	WHB	http://web.blm.gov/internal/wo-500/directives/dir-13/im2013-019.html	Bea Wade WO-260

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