

# Nevada and Northeastern California Greater Sage-Grouse

Proposed  
Land Use Plan Amendment and  
Final Environmental Impact Statement



## Volume V: Unprinted Appendices

US Department of the Interior  
Bureau of Land Management

US Department of Agriculture  
Forest Service

June 2015

Forest Service

BLM



The Bureau of Land Management's multiple-use mission is to sustain the health and productivity of the public lands for the use and enjoyment of present and future generations. The Bureau accomplishes this by managing such activities as outdoor recreation, livestock grazing, mineral development, and energy production, and by conserving natural, historical, cultural, and other resources on public lands.

The mission of the USDA Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations.

BLM/NV/NV/ES/15-09+1793

Cover Photo: Steve Ting

---

# Appendix A

Greater Sage-Grouse Habitat Map for Nevada and  
Northeastern California Land Use Plan Amendment



# APPENDIX A

## GREATER SAGE-GROUSE HABITAT MAP FOR NEVADA AND NORTHEASTERN CALIFORNIA LAND USE PLAN AMENDMENT

---

### INTRODUCTION

Throughout the planning process, the Bureau of Land Management (BLM) has identified the effects of the proposed Land Use Plan Amendment based on the degree and amount of impact to greater sage-grouse habitat. This document provides a ‘history’ of that process, with the intent being to demonstrate how the delineation of habitat has evolved during the planning process and the rationale for the use of the most current habitat mapping effort in the final plan amendment.

### HISTORY ON HABITAT IDENTIFICATION WITHIN THE NEVADA/NE CALIFORNIA SUB-REGION

#### Planning

A key element of the BLM strategy for the conservation of the Greater Sage-grouse (GRSG) is a scientific based delineation of the habitat it uses. The identification process in the Nevada-Northeastern California Sub-region has been a combination of habitat characteristics desired by GRSG during various annual life cycles and actual use by the species. It is acknowledged in the BLM process, as well in the scientific literature, that there is a hierarchy categorization of the habitat in regards to importance and use by GRSG. The need for identification of important habitat, as well as maintaining these areas, is summarized in the US Fish and Wildlife Service 2010 Findings regarding the listing of GRSG. As stated in their findings:

*“Sage-grouse exhibit strong site fidelity (loyalty to a particular area even when the area is no longer of value) to seasonal habitats, which includes breeding, nesting, brood rearing, and wintering areas (Connelly et al. 2004, Connelly et*

*al. 2011b). Adult sage-grouse rarely switch between these habitats once they have been selected, limiting their adaptability to change”*

Thus ensuring the conservation and protection of the most important habitat, in terms of use and quality, is paramount in the agency’s ability to sustain the GRSG population.

The National Technical Team (NTT) report identified that the overall goal for the BLM is development of regulatory mechanisms (Management Actions and Allocations) to protect priority GRSG habitat from human caused disturbances. The continuation of these anthropogenic disturbances could result in the reduction in distribution and abundance of GRSG. The report also acknowledged the need to delineate other habitat (general) so as to provide for the connectivity between areas of high use (priority habitat).

The NTT Report provided the following definitions:

**Priority Sage-grouse Habitat:** Areas that have been identified as having the highest conservation value to maintaining sustainable sage-grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. These areas have been identified by state fish and wildlife agencies in coordination with respective BLM offices.

**General Sage-grouse Habitat:** Is occupied (seasonal or year-round) habitat outside of priority habitat. These areas have been identified by state fish and wildlife agencies in coordination with respective BLM offices.

In December 27, 2011, the BLM issued Instruction Memorandum (IM) No. 2012-044 which provided field offices with direction regarding the Land Use Planning strategy for completing the analysis for land use plan amendments for the conservation of GRSG. The IM includes direction regarding habitat identification and delineations. Key points in the IM regarding habitat were:

- 1) Identification of a science based habitat map in coordination with state wildlife agencies for Preliminary Priority and General Habitat (PPH and PGH)
- 2) Refinement, through a science based approach, of the PPH and PGH through the planning process.
- 3) In those instances where the BLM State Offices have not completed this delineation, the Breeding Bird Density maps developed by Doherty 2010 would be used.

4) The IM defined PPH and PGH as follows:

**Preliminary Priority Habitat (PPH):** Areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. These areas have been/are being identified by the BLM in coordination with respective state wildlife agencies.

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

In December 2012, the Nevada Department of Wildlife (NDOW) issued their GRSG habitat Categorization maps. This categorization were based on 1) BLM sagebrush habitat mapping, 2) incorporation of lek data (75% Core Breeding density dataset developed by Doherty et. al; 2010) and 3) adjustments based upon recent vegetation data, telemetry data, and local biologist knowledge. The effort was accomplished through a GIS process.

NDOW identified five (5) categories in addition to non-habitat. These categories are identified in **Table A-1**:

**Table A-1  
NDOW Categorization Habitat**

<b>Category</b>	<b>Habitat Value</b>	<b>Life Cycle Use</b>
1	Essential/Irreplaceable	Lek and associated nesting habitat
2	Important Habitat	Brood rearing and winter habitat
3	Habitat of Moderate Importance	Habitats having meaningful potential but generally lack a key component
4	Low Value Habitat and Transitional Range	Habitat that contribute very little to GRSG
5	Unsuitable Habitat	Non-Habitat unless significant restoration is accomplished

In their release of the maps, NDOW specifically stated that the maps were for land use planning efforts and should be updated periodically to reflect new information regarding habit conditions and species use.

In March 2012, the BLM issued a press release indicating that the NDOW categorization mapping would be used for delineation of PPH and PGH habitat for GRSG. Essentially, NDOW's Categories 1 and 2 would constitute PPH and Category 3 would delineate PGH. In the release, the BLM invited public comments on the use of the NDOW map as a basis for identification of PPH

and PGH as part of the land use planning scoping process. The BLM received no substantive comments regarding the use NDOW categorization map.

On public lands administered by the California BLM, delineation of the PPH and PGH was based on 1) 75% and 100% Breeding Density mapping, 2) definitions identified in the NTT Report, 3) existing disturbances and/or uses 4) telemetry data, and 5) local biological knowledge.

**Draft Land Use Plan Amendment and Environmental Impact Statement**

The Draft LUPA/EIS identified a range of alternatives for management of priority, general, and un-mapped habitat. The “unmapped habitat” was defined as sage-grouse habitat within the planning area that is not considered to be Priority or General habitat, but where GRSG use has been observed or suspected. The Draft LUPA/EIS Alternative D analyzed all unmapped habitat and Required Design Features. The Draft LUPA/EIS analyzed 6 alternatives, including a No Action Alternative (A), an alternative based on the National Technical Team Report (NTT Report) (B), two citizen-based alternatives (C and F), the agency’s preferred alternative (D), and an alternative based on proposals from the State of Nevada(E).

**Table A-2** displays the acres of priority and general habitat that were identified in each of the alternatives. Alternative E was provided by the State of Nevada and did not cover all GRSG Habitat. It also had different management categories than the other alternatives.

**Table A-2  
Habitat Acres in the Draft LUPA/EIS (BLM & FS)**

	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>	<b>Alternative E</b>	<b>Alternative F</b>
<b>Priority</b>	12,693,500	17,732,900	12,927,400	10,655,300 (Occupied)	12,693,500
<b>General</b>	5,039,400		4,805,500	2,295,500 (Suitable)	5,039,400
<b>Unmapped</b>	32,135,700	32,135,700	32,135,700	2,432,200 (Potential)	32,135,700
<b>Total</b>	49,868,600	49,868,600	49,868,600	15,383,000	49,868,600

In the Draft LUPA/EIS, management actions and allocations ranged from prohibition (Closed, No Surface Occupancy (NSO), and Exclusion); Restricted Use (Avoidance; NSO with exemption, modification or waivers; and limited), or unrestricted (open). These management actions were applied to either or both PGH and PPH depending on the Alternative, with the most restrictive actions being applied to PPH. The range of actions varied from no restrictions (generally the No Action Alternative) to complete prohibition of all actions.

The Preferred Alternative (Alternative D) in the Draft LUPA/EIS included management actions that acknowledged the need to adjust habitat delineation based on new information.

The Nevada State Alternative (Alternative E) also identified the potential for adjustment to the habitat delineation. Specifically:

**Sub-Objective E-SSS 3:** SGMAs include Occupied Habitat, Suitable Habitat, Potential Habitat, and Non Habitat, as defined in the State of Nevada 2012. The Nevada Sagebrush Ecosystem Council – through field verifications and recommendations from the Nevada Sagebrush Ecosystem Technical Team based on the best available science – will further refine the habitat categories within the SGMAs. Also, it is understood that the final nomenclature for these habitat categories may vary.

To ensure all GRSG habitats were adequately conserved, the Draft LUPA/EIS (Alternative D) provides the following direction to unmapped habitat:

**Action D-SSS 7:** Implement the RDFs (Required Design Features) in areas outside of mapped PPMA and PGMA where GRSG use has been observed or suspected, areas and habitats which may be necessary to maintain viability of GRSG, or where the activity would affect GRSG or their habitat in PPMA or PGMA.

In the issuance of the Draft LUPA/EIS for public comment, the BLM specifically requested that public provide comments on all Management Actions, regardless of the Alternative as the final proposed plan amendment could include elements from any of the alternatives not just the preferred (Alternative D). Public comments included requests for incorporating updated science and mapping, specifically the *Spatially Explicit Modeling of GRSG Habitat in Nevada and Northeast California* (Coates et al 2014).

### **Updated Habitat Map**

In October 2014, BLM received a final version of the Management Categories for Greater Sage-grouse in Nevada and California (August 2014) from the State of Nevada. This map (hereinafter referred to as the updated map) is based on the GRSG habitat suitability modeling by the USGS (Coates et. al 2014a). The updated map was prepared in cooperation with Dr. Peter Coates with USGS, the States of Nevada and California, and the BLM. The updated map underwent peer review and is considered by the State, USGS, and the BLM as the best available science on location and suitability of sage grouse habitat in Nevada and northeastern California. The mapping effort incorporated updated telemetry data (1998-2013), landscape habitat mapping (which includes vegetation mapping as well as topography and land features) and GRSG lek data. The State of Nevada has requested that the updated map should be included in Alternative E.

The USGS approach identified a habitat suitability index based on telemetry data and landscape habitat mapping. The habitat suitability was then characterized for importance to GRSG as high, moderate, low or non-habitat. A Space Use Index (SUI) was developed based on lek attendance and density coupled with probability of sage-grouse occurrence relative to distance to nearest lek. The SUI was then intersected with the habitat suitability index to identify management categories for GRSG planning efforts as outlined below. Please reference Coates et al. 2014a for complete methods.

The categories identify are:

**Core Areas:** Defined as the intersection between all suitable habitats (high, moderate, and low categories) and the high use category. This habitat management class is intended to incorporate all suitable habitats that have relatively high certainty of current sage-grouse occupancy.

**Priority Areas:** Defined as both high suitability habitat that is present within the low-to-no use category and non-suitable habitat occurring within the high use category. This habitat management class encompasses: (1) high-quality habitats based on environmental covariates with a lower potential for occupancy given the current distribution of sage-grouse; and (2) sage-grouse incursion into areas of low quality habitat that is potentially important for local populations (for example, corridors of non-habitat connecting higher quality habitat).

**General Areas:** Defined as moderate and low habitat suitability that is present within the low-to-no use SUI category. This habitat management class represents areas with appropriate environmental conditions for sage-grouse, but is less frequently used by sage-grouse.

**Non-habitat Areas:** Defined as non-suitable habitat that is present within the low-to-no use SUI. This scenario represents habitat of marginal value to sage-grouse populations.

## **DISCUSSION REGARDING THE USE OF THE UPDATE MAP FOR GRSG HABITAT IDENTIFICATION IN FINAL ENVIRONMENTAL IMPACT STATEMENT**

### **Comparison**

The updated map's definitions and identification of Core and Priority habitat areas are consistent with the Draft LUPA/EIS' definitions and identification of priority and general habitat areas, respectively. The updated map's definition and identification of General habitat areas is consistent with the Draft LUPA/EIS' identification of the remainder of the planning area, referred to in the Draft LUPA/EIS as "unmapped" areas.

The basis for each mapping effort was current telemetry data, vegetation/habitat and use (i.e. lek information). These are the same factors used by NDOW in

the original Habitat Categorization Map. However, the updated map used a more robust modeling process.

**Table A-3** is a general comparison of the respect habitat delineations for each process.

**Table A-3  
Comparison of Habitat Categories**

Updated Map Categories of Habitat	Draft LUPA/EIS Categories of Habitat
<p><b>Core:</b> The intersection between all suitable habitats (high, moderate, and low categories) and the high use category. This habitat management class is intended to incorporate all suitable habitats that have relatively high certainty of current sage-grouse occupancy.</p> <p><b>Priority:</b> Includes both high suitability habitat that is present within the low-to-no use category and non-suitable habitat occurring within the high use category. This habitat management class encompasses: (1) high-quality habitats based on environmental covariates with a lower potential for occupancy given the current distribution of sage-grouse; and (2) sage-grouse incursion into areas of low quality habitat that is potentially important for local populations (for example, corridors of non-habitat connecting higher quality habitat).</p> <p><b>General:</b> Moderate and low habitat suitability that is present within the low-to-no use category. This habitat management class represents areas with appropriate environmental conditions for sage-grouse, but is less frequently used by sage-grouse.</p> <p><b>Non-habitat:</b> Non-suitable habitat that is present within the low-to-no use categories. This scenario represents habitat of marginal value to sage-grouse populations.</p>	<p><b>Priority (P):</b> Areas that have been identified as having the highest conservation value to maintaining sustainable GRSG populations. These areas include breeding, late brood-rearing and winter concentration areas.</p> <p><b>General (G):</b> Areas of occupied seasonal or year-round habitat outside of PPH.</p> <p><b>Un-mapped (U):</b> Areas outside of mapped PPH and PGH where GRSG use has been observed or suspected, areas and habitats which may be necessary to maintain viability of GRSG, or where the activity would affect GRSG or their habitat in PPH or PGH.</p>

**Table A-4** compares the acreage habitat according to the updated map and the acreages of habitat as set forth in the range of alternatives in the Draft LUPA/EIS.

As reflected in **Table A-4**, the acreage identified in the new map are quantitatively within the range of acreages that were analyzed in the Draft LUPA/EIS.

The Draft LUPA/EIS contains management direction for over 49 million acres of land administered by BLM and Forest Service. The action alternatives in the Draft LUPA/EIS provide a range of acreages that would be subject to priority

**Table A-4**  
**Comparison of Original Habitat Map with Updated Habitat Map**

Updated Map		Alternative B		Alternative C		Alternative D		Alternative E		Alternative F	
Core	9,573,300	PPH	12,693,500	PPH	17,732,900	PPH	12,927,400	Occup.	10,655,300	PPH	12,693,500
Priority	6,953,300	PGH	5,039,400	PGH	-----	PGH	4,805,500	Suitable	2,295,500	PGH	5,039,400
<b>Total</b>	<b>16,526,600</b>		<b>17,732,900</b>		<b>17,732,900</b>		<b>17,732,900</b>		<b>12,950,800</b>		<b>17,732,900</b>
General	6,709,100					Un-Mapped	32,135,700	Potent.	2,432,200		
<b>Total</b>	<b>23,235,700</b>						<b>49,868,600</b>		<b>15,383,000</b>		
Non-habitat	11,254,500							Non-habitat	522,600		
<b>Total</b>	<b>34,490,200</b>								<b>15,905,600</b>		

and general management actions. In addition, Alternatives D identified areas as “unmapped” habitat, and required design features (RDFs) would be implemented (Action D-SSS 7). Stated differently, the total acreage of “unmapped” areas where RDFs would be imposed is the difference between the entire planning area (approximately 49 million acres) and priority and general habitat areas (approximately 17.7 million acres), or approximately 32,000,000 acres. Under the No Action alternative (A), no public lands were designated by BLM as priority or general, nor were any specific areas or acreages (0 acres) identified as “unmapped” habitat that would be subject to the RDFs as in the action alternatives (**Action D-SSS-AM 9**).

#### Map Refinements Acknowledged

As identified above, one of the goals of the Draft LUPA/EIS was to “ensure additional PPMA and PGMA is identified based upon new science, monitoring of PPMA [priority habitat] and PGMA [general habitat].” One of the management actions for Alternative D stated that “GRSG habitat categorization and use management boundaries would be evaluated and adjusted based on continuing inventory and monitoring results every five years. Adjustments up to plus or minus ten percent of the mapped habitat within the population management zone would be made without further analysis” (**Action D-SSS-AM 9**). Alternative E similarly stated that “through field verifications and recommendations from the Nevada Sagebrush Ecosystem Technical Team based on the best available science – will further refine the habitat categories within the...[State, including]...Occupied Habitat, Suitable Habitat, Potential Habitat, and Non Habitat, as defined in the State of Nevada 2012 Plan” (**Sub-Objective E-SSS 3**). Further, Alternative D specifically stated that a protocol will be established “for incorporating new science and changes over time, to update and keep State-wide habitat maps current.” (**Action D-SSS-AM 1**)

The revised map was developed using the same parameters that were used in development of the original habitat map for the Draft LUPA/EIS. Specifically, both mapping efforts were based on vegetation conditions (habitat suitability) and known GRSG distribution and use. The primary difference between the maps is the level of knowledge of both the above parameters. No new attribute

was used in the development of the revised map that could significantly change the area of use by the GRSG.

The Land Use Plan Amendment identifies management actions and allocations that are applied to the specific habitat and the Draft LUPA/EIS describes the effects of the application of the management actions and allocations. The revised habitat map would not result in new decisions or environmental effects that were not considered and disclosed in the Draft LUPA/EIS.

In addition, the revised map identified priority, general, and unmapped habitat acres that are generally within the range of habitat disclosed in the Draft LUPA/EIS and encompasses the same area that was identified during the Draft LUPA/EIS public comment period.

## **CONCLUSION**

In conclusion, the BLM's use of the revised habitat map as to all categories of habitat identified is both quantitatively and qualitatively addressed in the alternatives analyzed in the Draft LUPA/EIS.

This page intentionally left blank.