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STATE OF NEVADA
Sagebrush Ecosystem Program

SAGEBRUSH ECOSYSTEM COUNCIL
STAFF REPORT
MEETING DATE: April 9, 2015

DATE: April 8, 2015

TO: Sagebrush Ecosystem Council Members

FROM: Sagebrush Ecosystem Technical Team
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SUBJECT: State Plan Section 4.0 Revision

SUMMARY

The purpose of this agenda item is to revise Section 4.0 of the State Plan. The BLM is close to finalizing their habitat objectives table and so the SETT took the latest version to the Science Work Group (SWG) for review. Following the SWG review, the SETT has made revisions to both the table and the text of Section 4.0 to incorporate SWG input. In additions, changes were made throughout the plan in areas that referenced Section 4.0. The revised versions are attached for review and approval.

PREVIOUS ACTION

December 18, 2013. Approval of Section 4.0 for inclusion in the State Plan.

October 1, 2014. Approval of the completed 2014 Nevada Greater Sage-grouse Conservation Plan, which contained the most current federal table at the time, but required further review and edits by the SWG process prior to adoption by the SEC.

DISCUSSION

The SWG met on December 5, 2013 to discuss the greater sage-grouse habitat objective table developed by the BLM and FS for inclusion in the EIS. The table was incorporated into Section 4.0 of the State Plan and approved by the SEC on December 18, 2013, with the caveat that the table was still under development and would come back to the SEC for final review and approval. For the October 1, 2014 SEC meeting and consequent State Plan approval, the most current federal table was included with the caveat that the table was still under development and would come back to the SEC for final review and approval. On March 11, 2015, the BLM provided to the SETT the final version of the greater sage-grouse habitat objectives table that will be included in the FEIS. The revised table was brought back to the SWG on March 19, 2015 for review and discussion.

Following the SWG meeting on March 19, 2015, there was not consensus on the proposed habitat indicator- **perennial grass height of 7 inches for late brood-rearing sites**. The attached Section 4 includes three options (A, B, and C) for the Council to consider, based on the input from the SWG. The introductory language of Section 4.0 was also modified to incorporate feedback from the SWG. Finally, sections of State Plan that referenced the desired habitat conditions were modified as needed to reflect changes to Section 4.0. These excerpts from the State Plan are also provided for review.

RECOMMENDATION

The Council should decide which of the three options, a combination thereof, or other available options is the most appropriate in determining a perennial grass indicator for late brood rearing sites. In addition, the Council should consider approval of the revisions to Section 4.0 and related wording throughout the plan.

POSSIBLE MOTION

Possible motions would be:

> "Motion to approve the proposed revisions of Section 4.0 Desired Habitat Conditions, and other sections of the 2014 State Plan which this change affects, for inclusion in the 2014 State Plan."
> or
> "Motion to approve the proposed revisions of Section 4.0 Desired Habitat Conditions, and other sections of the 2014 State Plan which this change affects, for inclusion in the 2014 State Plan on condition of specific revisions."

Attachments:

1: Section 4.0 Desired Habitat Conditions for Greater Sage-grouse in Nevada
2: Excerpts from the 2014 State Plan with track changes

Attachment 1

4.0 DESIRED HABITAT CONDITIONS FOR GREATER SAGE-GROUSE IN NEVADA

The desired habitat conditions for sage-grouse describe what is generally considered to be the highest quality seasonal habitat for greater sage-grouse, specific to Nevada. The desired habitat conditions do not specify what is and what is not habitat, but depict the characteristics of seasonal habitats that sage-grouse in Nevada are using most successfully, based on research in Nevada and the Great Basin. The desired habitat conditions are based on current knowledge of sage-grouse selection and demographic rates related to habitat conditions in Nevada and the Great Basin. Management to work towards these desired habitat conditions must be implemented using professional judgement that assesses ecological site descriptions (including current state and potential), adaptive management, and knowledge of authorized land uses and plans. Vegetation community responses to management techniques can be highly variable and may take years to reach desired conditions depending on a multitude of factors. Vegetation communities go through natural and human influenced successional stages over time that may or may not be progressing sites towards the desired habitat conditions. Therefore, monitoring and data collection must be conducted over a sufficient period of time to allow for an accurate accounting of whether or not a site is making progress toward the desired conditions.

The desired habitat conditions will be used to evaluate management actions and site conditions in sage-grouse habitat to ensure that 1) habitats are maintained if meeting desired conditions, or 2) habitats are trending toward these conditions if they are not being met. Management actions in sage-grouse habitats will include site-specific objectives using these desired habitat conditions as guidelines, while taking into account ecological site descriptions tied to state and transitions models. Progress of management actions will be evaluated through long-term monitoring and adaptive management. When habitat within the State is identified as not meeting these desired conditions and there are opportunities and resources available, the State will seek to work with private and public land managers to assess the causal factors and recommend adjustments in management to work towards the desired conditions. The desired habitat conditions in table 4-1 should not be used to conduct land health assessments and are not regulatory, but are intended to help guide planning for current and future management and should include adaptive management as a part of the process. In implementation, managers must have flexibility to manage for these desired sage-grouse habitat conditions along with other desired conditions on the site, taking into consideration existing permitted uses and corresponding management plans; as well, some sites may not have the potential to meet all desired sage-grouse habitat conditions specific to the site.

The State of Nevada recognizes that a resilient and resistant sagebrush ecosystem should be heterogeneous (a mosaic of multiple seral states) across the landscape and that achievement of these desired habitat conditions resulting in a large-scale homogenous landscape is not desirable within the State of Nevada. Thus, the State will work with land managers and advisors to work towards achieving or the continued maintenance of the desired conditions in Table 4-1, and to incorporate new science, adaptive management, and incentives in the future that will allow this to occur.

The desired conditions in Table 4-1 should not be reviewed, measured, or managed for, independently. Sage-grouse habitat suitability should be determined by the relationship among several indicator values including ecological site descriptions (including current state and potential) along with the relative abundance of habitat types across the landscape. These conditions apply to an area being used by sage-grouse for the appropriate life stage (microsites) and not across the entire site or landscape. The desired conditions for each seasonal habitat should only be assessed during the appropriate season of use (dates can vary annually based on climatic conditions) and in areas spatially mapped as the relevant seasonal habitat (expected from USGS in May 2015). Habitat types may not be mutually exclusive and therefore may have to be managed to meet multiple conditions or selected for the more limiting habitat in the area. It is important to understand that the desired conditions described for these habitat types are based on average plant productivity, structural data, supporting scientific literature, and expert opinion relative to sage-grouse use of sagebrush communities and they may not apply to all sagebrush communities in the planning area (Davies et al. 2006). These measures also do not account for inter-annual climate variation (Davies et al. 2006). Herbaceous vegetation, in particular, varies dramatically year to year; measurements for a single given year should not necessarily be used to adjust management decisions or actions. Individual indicator values do not define site suitability and overall site suitability descriptions require an interpretation of the relationships between the indicators, ecological site descriptions (including current state and potential), and other factors. In order to provide recommendations for management changes and adaptive management, professional expertise and judgment are required to properly assess current conditions. This should include but not be limited to inter-annual climate variation, and authorized uses and their associated plans.

These desired habitat conditions were developed by a team consisting of representatives from the USFWS, NDOW, USFS, USGS, and BLM. The team reviewed the Connelly et al. (2000) guidelines adding considerable detail and making adjustments based on regionally and locally derived data and analysis by the USGS. The State of Nevada's Science Work Group provided input on the science behind the desired habitat conditions.

Desired Habitat Conditions for Greater Sage-Grouse.
Site-specific objectives should be defined based on ecological site descriptions and current ecological state.

Life Requisite	Habitat Indicator	Objective	Notes
GENERAL/LANDSCAPE-LEVEL			
All Life Stages	Rangeland Health Indicator Assessments	Conduct assessments in sage-grouse habitat and develop site-specific objectives based off assessments	Pellant et al. 2005
Cover (Nesting)	Seasonal Habitat Needed	>65% of the landscape in sagebrush dominated cover	Aldridge and Boyce 2007
	Annual Grasses	<%5	Blomberg et al. 2012
Security (Nesting)	Conifer Encroachment	<3% phase I (>0-<25%cover) No phase II (25–50% cover) No phase III (>50% cover)	Casazza et al. 2011 USGS (In prep) (A)
Cover and Food (Winter)	Conifer Encroachment	<5% phase I (>0 - <25% cover) No phase II (25–50% cover) No phase III (>50%)	USGS (In prep) (A) USGS (In prep) (B)
	Sagebrush Extent	>85% sagebrush dominated land cover	USGS (In prep) (A) Doherty et al. 2008
LEK (Seasonal Use Period: 1 March – 15 May)			
Cover	Availability of Sagebrush Cover	Has adjacent sagebrush cover	Connelly et al. 2000 Blomberg et al. 2012 Stiver et al. (In press) HAF
Security[1]	Pinyon and/or Juniper Cover	<3% landscape canopy cover within 1 km of leks	Connelly et al. 2000 (modified) Stiver et al. (In press) HAF Baruch-Mordo et al. 2013 Coates et al. 2013 Manier et al. 2014
	Proximity of Tall Structures[2]	None within 3 miles (5 kilometers)	
NESTING[3] (Seasonal Use Period: 1 April- 30 June)			
Cover	Sagebrush Canopy Cover	≥20%	Kolada et al. 2009a Kolada et al. 2009b
	Residual and Live Perennial Grass Cover	≥10% if shrub cover is <25%	Coates et al. 2013 Coates and Delehanty 2010 Kolada et al. 2009a Kolada et al. 2009b
	Annual Grass Cover	<5%	Lockyer et al. (In press)
	Total Shrub Cover	≥30%	Coates and Delehanty

			2010 Kolada et al. 2009a Lockyer et al. (In press)
	Perennial Grass Height	Provide overhead and lateral concealment from predators	Connelly et al. 2000 Stiver et. al. (In press) HAF Connelly et al. 2003 Hagen et al. 2007
Security[1]	Proximity of Tall Structures[2] (1 meter above shrub canopy)	None within 3 miles (5 kilometers)	Coates et al. 2013 Gibson et. al. 2013 Manier et al. 2014

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BROOD-REARING/SUMMER[3] (Seasonal Use Period: 15 May- 15 September) Early brood-rearing seasonal use period: 15 May- 15 June Late brood-rearing seasonal use period: 15 June- 15 September			
All brood-rearing sites			
Cover	Perennial Grass Canopy Cover and Forbs	>15% combined perennial grass and forb canopy cover	Connelly et al. 2000 Hagen et al. 2007
Cover and Food	Perennial Forb Canopy Cover	≥5% arid ≥15% mesic	Casazza et al. 2011
Early and late brood-rearing – Upland Sites Only			
Cover	Sagebrush Canopy Cover	10-25%	Connelly et al. 2000
Late brood-rearing- Riparian Sites Only			
Cover and Food	Riparian Areas/Meadows	PFC[5]	Prichard et al. 1998 Prichard et al. 1999 Dickard et al. 2015 Stiver et al. (In press) HAF
Security	Riparian Area/Meadow Interspersion with Adjacent Sagebrush	Has adjacent sagebrush cover	Casazza et al. 2011 Stiver et al. (In press) HAF
Cover	Perennial Grass Height	Provide overhead and lateral cover from predators, for thermoregulation, insects, etc.[5]	Connelly et al. 2000 Stiver et. al. (In press) HAF Connelly et al. 2003 Hagen et al. 2007
Cover	Perennial Grass Height	4 – 8 inches[5]	Unpublished USGS Data
Cover	Perennial Grass Height	7 inches[5]	Hagen et al. 2007
Late brood-rearing – Both Upland and Riparian Sites			
Food	Perennial Forb Availability and Understory Species Richness	Understory Species Richness- > 5 grass and forb species present	Casazza et al. 2011
WINTER[3] (Seasonal Use Period: 1November – 28 February)			
Cover and Food	Sagebrush Canopy Cover	≥10% above snow depth	Connelly et al. 2000 USGS (In prep) (C)
	Sagebrush Height	>9.8 inches (25 centimeters) above snow depth	Connelly et al. 2000 USGS (In prep) (C)

Comment [KC1]: Option A

Comment [KC2]: Option B

Comment [KC3]: Option C

[1]Applicable to Phase I and Phase II pinyon and/or juniper.

[2] Does not include fences.

[3]Field collection data for these seasonal habitat delineations should only be taken in the areas mapped as that habitat type (maps expected from USGS in May 2015) and during the appropriate seasonal use period. Seasonal use periods are standardized for the purposes of this table, but may fluctuate annually due to climatic conditions.

[4]Species richness should include some forb species, with consideration given to sage-grouse preferred forb species listed in Stiver et al. In Press.

[5] Applies to grasses within sagebrush-shrub communities adjacent to riparian area. Sage-grouse generally select for perennial grass heights that are greater than what is randomly available in a given site (USGS unpublished data). Selected heights in Nevada on average range from 4" - 8" (average droop height of

live plants) depending upon resistance and resilience mapping and ecological site descriptions (USGS unpublished data). Generally, sites in the northern portion of the management area trend toward the upper end and those in the southern portion trend toward the lower end of the height range (USGS unpublished data).

[5]Site does not have to meet PFC but should be showing progress in trending toward functioning or functioning at risk.

[6]Relative to ecological site potential.

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Attachment 2

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developed a step-down process (FIAT 2014) based on Chambers et al. 2014 to identify management projects focused in key sage-grouse habitat to address the continual threat of fire and invasives, as well as conifer encroachment. Projects identified in through the FIAT will be incorporated into the SAP, as appropriate.

Nevada Revised Statute (NRS), Chapter 555 and Nevada Administrative Code (NAC), Chapter 555 address both noxious and invasive plants, their status, and any regulations regarding the control of such plants. The State has established a priority list of noxious weeds that require some form of control. Other widespread invasive plants, such as cheatgrass, while not on the noxious weed priority lists, pose a significant threat to Nevada's landscapes and habitats and will be addressed on a priority basis, particularly when they compromise sage-grouse ~~habitat objectives~~ desired habitat conditions ~~–~~(see Section 4.0).

The introduction of exotic invasive plant species in Nevada has likely been occurring since the early European settlers arrived and has been knowingly and unknowingly occurring since that time. While some species may go seemingly unnoticed, many currently pose significant threats to the sagebrush ecosystem, wildlife habitats, and our landscape in general. While all of these identified species are currently considered by the State as invasive plants, some warrant further declaration as 'noxious'. Noxious weeds are defined in NRS 555.130 as: "Any species of plant which is likely to be detrimental, destructive or difficult to control, but is not already introduced and established in the State to such an extent as to make its control or eradication impracticable in the judgment of the State Quarantine Officer". Plants that do not meet this definition are generally considered to be invasive or nuisance weeds. Cheatgrass falls into the 'invasive' category due to its expansive footprint within Nevada's sagebrush ecosystem.

Cheatgrass is an exotic species from the Middle East that was introduced in North America in the late nineteenth century and has become one of the most adaptive and dominant invasive plants in the Western U.S. This is especially true following fire and other major ground disturbing activities in sagebrush ecosystems, particularly at lower elevations and precipitation zones in Nevada.

Many factors will be considered when prioritizing treatments for fire and invasive plants (i.e. noxious weed presence, sage-grouse breeding densities, habitat suitability (abundance, quality, and connectivity), existing additional threats, resistance, resilience, ecological site description, state and transition models, etc.). Additionally, further prioritization may be determined by the type of action required (conservation related, prevention based, or restoration or rehabilitation activities), presence of or proximity to sage-grouse habitat, and the amount of funding available for treatment in a given year.

Goals, Objectives, and Management Actions

The overarching direction of Nevada's plan is to stop the decline of sage-grouse populations and restore and maintain a functioning sagebrush ecosystem. Currently, it is not economically or ecologically feasible to restore all fire damaged or invasive plant dominated landscapes, nor is it possible to prevent all fires, though the State acknowledges that this threat must be addressed in order to provide for the conservation of sage-grouse. In order to achieve this goal, the State will take a phased approach

Management Action 1.1.2e: Manage wildland fires in sage-grouse habitat to retain as much habitat as possible. Interior unburned islands of vegetation in areas of habitat should be protected through follow-up mop-up of the island's perimeter and interior, when fire crew safety is not at risk.

Post-Fire Restoration/ Rehabilitation

Emergency stabilization (ES) and burned area rehabilitation (BAR) funding streams are instrumental in the process of stabilizing soils and reestablishing adapted perennial vegetation on federal lands post-fire. Currently, these programs provide funding for rehabilitation treatment immediately post-fire, which does not reflect the need to accommodate for poor initial success due to lack of precipitation and other environmental variables.

Management Action 1.1.3a Work with federal, tribal, and local governments to develop dedicated funding sources that allow for up to five years of additional post-fire restoration treatments in order to better ensure projects meet goals and objectives.

Management Action 1.1.3b Until such time as dedicated funding sources for multi-year post-fire restoration treatments can be developed, federal, state, tribal, and local governments should submit budget requests and projections that reflect the need for funding that will cover actual and contingent yearly costs associated with successful multiyear post-fire rehabilitation efforts.

Management Action 1.1.3c: Use the concepts of resistance and resilience and products developed by BLM's FIAT (Fire and Invasives Assessment Team) group to determine if post-fire restoration actions are necessary to trend towards~~achieve~~ sage-grouse ~~habitat objectives~~ desired habitat conditions (see Section 4.0).

Management Action 1.1.3d: Control the spread of invasive plants post-fire.

Management Action 1.1.3e: Use collaborative and strategic approaches in post-fire rehabilitation efforts in sage-grouse habitat. Federal, state, tribal and local agencies should coordinate and collaborate on rehabilitation projects in sage-grouse habitat where responsibilities and land ownership interests intersect.

Management Action 1.1.3f: Design post-fire restoration treatments in Core, Priority, and General Management Areas to trend towards~~meet~~ sage-grouse ~~habitat objectives~~ desired habitat conditions (see Section 4.0). Consider the use of native plant materials based on availability and probability of success. When native plant materials are not available or the probability of success is low, use non-native plant materials that will best work towards achieving~~meet~~ sage-grouse ~~habitat objectives~~ desired habitat conditions. All seed used on rehabilitation and restoration projects must be certified seed. All mulch, straw or gravel/earth

materials used in rehabilitation and restoration projects must be certified weed free to the North American Invasive Species Management Association (NAISMA) standards.

Management Action 1.1.3g: Monitor post-fire restoration treatments to ensure long term persistence of restored habitat, and that the monitoring continues at least until treatment objectives are met.

Invasive plants

While wildfire is commonly the facilitator for the domination of invasive plants, such as cheatgrass, invasive plants are currently widespread throughout the Great Basin and can spread without the aid of wildfire. In order to address the general threat of invasive plants, the State will pursue a strategy of Prevent, Detect, Control, Restore, and Monitor, using the best available science. The Nevada Department of Agriculture (NDA) will utilize its EDDMapS program to assist the State in the implementation of these efforts.

Management Action 1.1.4a**:** *Prevent* the establishment of invasive plants into uninvaded sage-grouse habitat. This will be achieved by conducting systematic and strategic detection surveys, data collection, and mapping of these areas and engaging in early response efforts if invasion occurs. This will be achieved by further developing federal and state partnerships and working with counties, cities, and local groups, such as Weed Control Districts, Cooperative Weed Management Areas, and Conservation Districts. This is a priority for invasive plant control in the state of Nevada.

Management Action 1.1.4b: Apply Design Features to proposed anthropogenic disturbance (see Appendix A) in order to minimize land disturbance and prevent the spread of invasive plants.

Management Action 1.1.4c: Require anthropogenic disturbance proponents to monitor for the existence of invasive plants pre-disturbance and to report all findings to the NV EDDMapS database. Pre- and post-disturbance activities must include prevention strategies prior to entering sites, control, restoration, and monitoring for a minimum of three years or until the site is deemed noxious and invasive weed free following the disturbance. All sites must be certified weed free prior to any relinquishment of obligations that authorized the disturbance.

Management Action 1.1.4d: *Detect* new invasive plant infestations, whether it is a single plant or a small patch. If it can be detected and mapped early in the invasion and control begins immediately, then the likelihood for eradication will increase dramatically. NDA will use its EDDMapS program to assist in the effective and efficient implementation of this action.

Management Action 1.1.4e: Within sage-grouse habitat, and where funding may be a limiting factor, prioritize the control of invasive plants that are compromising attainment of sage-grouse ~~habitat objectives~~ desired habitat conditions (see Section 4.0).

Management Action 1.1.4f: Rehabilitate sites that are ecologically functioning, but at risk of crossing an ecological threshold and becoming nonfunctional due to already being compromised by invasive plants, to trend towards~~meet~~ sage-grouse ~~habitat objectives~~ desired habitat conditions ~~-~~(see Section 4.0). Rehabilitation may include re-vegetating sites with native plants cultivated locally or locally adapted, or non-native plant species where appropriate. Any rehabilitation project where invasive plants already occur or may be found in close proximity should include an invasive plant treatment and monitoring component within the plan.

Management Action 1.1.4g: Use ecological site descriptions and associated state and transition models to identify target areas for resiliency enhancement or restoration. Maintaining or enhancing resilience should be given top priority. In the Great Basin sagebrush-bunchgrass communities, invasion resistance and successional resilience following disturbance are functions of a healthy perennial bunchgrass component. Therefore a combination of active and passive management will be required to ensure this functionality. Areas that are in an invaded state that will likely transition to an annual grass monoculture if a disturbance occurs and are located within or near sage-grouse habitat should be prioritized for pre-fire management favoring native and adapted perennials and post-fire restoration efforts to increase resistance and resilience.

Management Action 1.1.4h: Engage climatological and meteorological professionals and their agencies to identify opportunities to increase both effectiveness and efficiency in the timing of restoration activities. Additional activities could include weather augmentation through cloud seeding, and assistance with both short term and longer term weather prediction model guidance or shorter term weather indicators.

Management Action 1.1.4i: Monitor and adaptively manage to ensure effectiveness of efforts to prevent, detect, control and restore. Use the resource mapping functions within EDDMapS to identify and map infestations as well as any prevention, restoration, or rehabilitation efforts.

Long term objectives and management actions:

Objective 2a: Maintain an ecologically healthy and intact sagebrush ecosystem that is resistant to the invasion of non-native species and resilient after disturbances, such as wildfire.

Objective 2b: Restore wildfire return intervals to within a spatial and temporal range of variability that supports sustainable populations of sage-grouse and other sagebrush obligate species.

Management Action 1.2.1 Develop consistent and dedicated funding sources in order to provide a consistent commitment to pre-suppression, suppression, post-fire restoration, and invasive plant management actions described above.

- Juniper can also indirectly influence sage-grouse avoidance of habitats through its influences on plant community compositional and structural changes, such as a reduction in the herbaceous understory (Knapp and Soule 1998, Miller et al. 2000).

- Sage-grouse avoided conifers at the 0.65 km scale (850m x 850m). Sage-grouse avoided mixed sagebrush/tree (≤40 trees/ha) at scales of 7.3 and 159.2 ha. Avoidance was most statistically supported when patch widths exceeded 200 m (Doherty 2008).

- Sage-grouse avoid areas encroached by P-J at scales of 7.9 ha to 226.8 ha (Casazza et al 2011).

- Recent modeling efforts by the Sage-grouse Initiative have shown that no leks remained active when P-J cover exceeded >4% and recommended focusing P-J removal treatments in Phase I stands (Baruch-Mordo et al 2013).

- Research focused on treatment effectiveness indicated that mechanical tree thinning increased native understory biomass by 200 percent (Brockway et al 2002).

- Removal, by cutting, of pinyon- juniper trees/shrubs in association with brush-beating to reduce height of mountain big sagebrush and deciduous brush resulted in doubling numbers of male sage grouse counted on treatment leks in years 2 and 3 post-treatment (Commons 1999).

Goals, Objectives, and Management Actions

Goal 1: Establish and maintain a resilient sagebrush ecosystem and restore sagebrush vegetation communities in order to provide for the conservation of sage-grouse and their habitat.

Objective 1.1: Reduce the expansion of P-J woodlands into otherwise suitable sage-grouse habitat.

Management Action 1.1.1: Inventory and prioritize areas for treatment of Phase I and Phase II encroachment that is contiguous with suitable sage-grouse habitat in Core, Priority, and General Management Areas in order to achieve sage-grouse ~~habitat objectives~~ desired habitat conditions (Table 4.1). Treat areas that have the greatest opportunity for recovery to suitable sage-grouse habitat based on ecological site potential.

Management Action 1.1.2: Prioritize areas for treatment of Phase III pinyon-juniper encroachment in strategic areas only to break up continuous, hazardous fuel beds, create movement corridors, or connect habitats. Treat areas that have the greatest opportunity for recovery to suitable sage-grouse habitat based on ecological site potential. Old growth trees should be protected on woodland sites.

Management Action 1.1.3*:* Aggressively implement plans to remove Phase I and Phase II encroachment in areas contiguous with suitable sage-grouse habitat. Only treat areas in Phase III encroachment to reduce the threat of severe conflagration, create movement corridors, or connect habitats. Phase III treatments may need additional rehabilitation/restoration actions if perennial understory vegetation is absent.

not acceptable management. Non-management will negatively impact or potentially create irreversible habitat impacts within the SGMA; therefore, use all tools available to actively manage wild horses and burros within HMAs and WHBTs.

Objective 1.1: Maintain healthy and diverse wild horse and burro populations in the State of Nevada in a manner that ~~meets~~ maintains or is actively managed to trend towards sage-grouse ~~habitat objectives~~ desired habitat conditions, as applicable ~~-~~(see Table 4.1).

Management Action 1.1.1: Focus expenditures of appropriated funds on management of wild horses and burros on public lands over care in captivity.

Management Action 1.1.2: Even if current AML is not being exceeded, yet habitat within the SGMA continues to become degraded, at least partially due to wild horses or burros, established AMLs within the HMAs or WHBTs should be reduced through the NEPA process and monitored annually to help determine future management decisions. Unless already meeting the lowest established AMLs, during periods of drought, AMLs should be reduced to remain consistent with the declining levels of available forage).

Management Action 1.1.3: Methods that were used to initially establish AMLs should be reevaluated to determine if they are still sufficient to maintain or achieve sage-grouse ~~habitat objectives~~ desired habitat conditions, as applicable (see Table 4.1).

Management Action 1.1.4: Use professionals (botanists, rangeland ecologists, wildlife biologists, hydrologists, etc.) from diverse backgrounds to conduct land health, and riparian proper functioning condition assessments.

Management Action 1.1.5: Conduct annual site specific wild horse and burro grazing response indices (Swanson et al. 2006) assessments, and habitat objective assessments.

Management Action 1.1.6: When implementing management activities, water developments, or rangeland improvements for wild horses or burros, consider both direct and indirect effects on sage-grouse and use the applicable Site Specific Consultation Based Design Features (Design Features; see Appendix A) to minimize potential impacts or disturbances.

Management Action 1.1.7: To expedite recovery time and enhance restoration efforts following wildfire or sage-grouse habitat enhancement projects, consider a significant reduction and temporary removal or exclusion of all wild horses and burros within or from burned areas where HMAs and WHBTs overlap with sage-grouse Core, Priority, and General Management Areas. Wild horse grazing behaviors and specialized physiological requirements make unmanaged grazing on recently burned/treated areas problematic for reestablishment of burned or seeded vegetation (Arnold and Dudzinski 1978, Rittenhouse et al. 1982, Duncan et al. 1990, Hanley 1982, Wagner 1983, Menard et al. 2002, Stoddart et al. 1975, Symanski1994).

Management Action 1.1.8: If current AML is being exceeded, consider emergency short-term measures to reduce or avoid degradation of sage-grouse habitat from HMAs or WHBTs that are in excess of established AMLs within the SGMA.

Plan for and implement an immediate reduction in herd size to a level that would enable the area to ~~recover to~~ trend towards ~~meet the habitat objectives in~~ desired habitat conditions in Table 4.1 and to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area. Consider lowering the AML levels to prevent future damage.

Management Action 1.1.9: If monitored sites are not meeting sage-grouse ~~habitat objectives~~ desired habitat conditions, as applicable in Table 4.1, even if AML is being met, and it is determined that wild horses or burros are the primary causal factor, then implement protective measures as applicable in addressing similar emergencies (e.g. fire, flood, drought, etc.).

Management Action 1.1.10: Consider exclusionary or controlled use pasture fencing of riparian or other mesic sites and implement water developments (following the Design Features as described in Appendix A) to ensure dispersal or avoidance of sites heavily impacted by wild horses (Feist 1971, Pellegrini 1971, Ganskopp and Vavra 1986, Naiman et al. 1992). A water source should be provided, as horses traditionally do not leave known water sources just because they are fenced.

Management Action 1.1.11: As climate data become available, adjust wild horse and burro and rangeland management practices to allow for Core, Priority, and General Management Areas to sustain or restore the sagebrush ecosystem resiliency and resistance.

Management Action 1.1.12: Collaborate with weather and climate professionals and agencies (UNR, DRI, NOAA, etc.) to proactively manage the rangeland resources and adjust, as necessary, the current wild horse and burro management policies. Ensure that sufficient ongoing public and political education is provided.

Objective 1.2: Evaluate conflicts with HMA designations in SGMAs and modify LUPs to avoid negative impacts on sage-grouse.

Management Action 1.2.1: Even if current AML is not being exceeded, yet habitat within the SGMA continues to become degraded, at least partially due to wild horses or burros, reduce established AMLs within the HMAs or WHBTs and monitor resource objectives annually to help determine future management decisions. Unless already meeting the lowest established AMLs, during periods of drought, AMLs should be reduced to levels that are consistent with the declining levels of available forage. *(same as Management Action 1.1.2)*

Management Action 1.2.2: Ensure that Herd Management Area Plans and WHBT plans are developed or amended within the Core, Priority, and General management areas, identified in the State's management areas map, taking into consideration the sage-grouse ~~habitat objectives~~ desired habitat conditions (see Table 4.1).

Management Action 1.2.3: Conduct herd management activities, as originally authorized, to avoid conflicts between the potential implementation of regulations within the Wild Free-Roaming Horses and Burros Act and the Endangered Species Act

Goal 2: As authorized in the Wild Free-Roaming Horses and Burros Act of 1971: Achieve and maintain wild horses and burros at or below established AMLs within the SGMA and mange for zero horse populations in non-designated areas within the SGMA to reduce impacts to sage-grouse habitat.

Objective 2.1: Meet established AMLs in all HMAs and WHBTs in Core, Priority, and General Management Areas within five years.

Management Action 2.1.1: Focus expenditures of appropriated funds on management of wild horses and burros on public lands over care in captivity. *(same as Management Action1.1.1)*

Management Action 2.1.2: Even if current AMLs are not being exceeded, yet habitat within the SGMA continues to become degraded, at least partially due to wild horses or burros, reduce established AMLs within the HMAs or WHBTs and monitor resource objectives annually to help determine future management decisions. Unless already meeting the lowest established AMLs, during periods of drought, AMLs should be reduced to a level that is consistent with maintaining or trending towards sage-grouse ~~habitat objectives~~ desired habitat conditions, as applicable (see Table 4.1). *(same as Management Action 1.1.2)*

Management Action 2.1.3: *Reevaluate m*ethods that were used to initially establish AMLs to determine if they are still sufficient to maintain or trend towards~~achieve~~ sage-grouse ~~habitat objectives~~ desired habitat conditions, as applicable (see Table 4.1). (same as Management Action 1.1.3)

Management Action 2.1.4: Given their capability to increase their numbers by 18%-25% annually, resulting in the doubling in population every 4-5 years (Wolfe et al. 1989; Garrott et al. 1991), conduct wild horse gathers to attain the lowest levels of AML. This in combination with continued and expanded use and development of effective forms of population growth suppression techniques will enable AMLs to be maintained for longer periods and reduce the frequency of gathers and associated cost and effort.

Management Action 2.1.5: If current AMLs are being exceeded, consider emergency short-term measures to reduce or avoid degradation of sage-grouse habitat from HMAs or WHBTs that are in excess of established AMLs within the SGMA.

Plan for and implement an immediate reduction in herd size to a level that would enable the area to trend towards ~~recover to meet~~ the desired habitat conditions, as applicable ~~habitat objectives~~ in Table 4.1 and to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area. Consider lowering the AMLs to prevent future damage. *(same as Management Action 1.1.7)*

maintain or strengthen financial viability that also work to conserve or protect the renewable natural resources of Nevada, including sage-grouse and other wildlife species habitat.

The State will continue to support current, and development of new, public outreach and educational programs that assist with the proper understanding and implementation of the actions listed below to achieve the goals and objectives within this plan.

The State will also work with federal land managers and livestock owners to develop acceptable procedures to conduct consistent rangeland or resource monitoring with appropriate frequency. This should allow for greater flexibility in administering adaptive management decisions to achieve targeted goals and objectives.

The State encourages federal agencies to ensure that any loss of grazing allotment rights that were not directly attributable to the permittees actions or inactions are mitigated to attain a no-net-loss of AUMs.

Conservation Goal, Objective, and Management Actions

Goal 1: Ensure that existing grazing permits maintain or enhance sage-grouse habitat. Utilize livestock grazing when appropriate as a management tool to improve sage-grouse habitat quantity and quality, or to reduce wildfire threats. Based on a comprehensive understanding of seasonal sage-grouse habitat requirements, and in conjunction with the need for flexibility in livestock operations, make cooperative, timely, seasonal range management decisions to meet vegetation management objectives, including fuels reduction.

Objective 1.1: In sage-grouse habitat, manage for vegetation composition and structure that maintains or is actively managed to trend towards ~~achieves~~ sage-grouse seasonal ~~habitat objectives~~ desired habitat conditions, as applicable (see Table 4.1), enhancing resilience and resistance based upon the ability of the ecological site to respond to management. This objective recognizes spatial and temporal variations across seral stages.

Management Action 1.1.1: Within sage-grouse habitat, incorporate sage-grouse ~~habitat objectives~~ desired habitat conditions, as applicable (see Table 4.1), and management considerations into all BLM and Forest Service grazing allotments through allotment management plans (AMP), multiple use decisions, or permit renewals or Forest Service Annual Operating Instructions.

Implement appropriate prescribed grazing actions, at scales sufficient to influence a positive response in sage-grouse habitats, such as NRCS Conservation Practice Standard 528 for prescribed grazing (NRCS 2011).

Management Action 1.1.2: In sage-grouse habitat, work cooperatively on integrated ranch planning within sage-grouse habitat so operations with deeded land, and BLM or Forest Service allotments, can be planned as single units, providing flexibility and adaptive management across

all ownerships and not altering stocking rates on operations for progressive management decisions.

Management Action 1.1.3: Continue the use of land health assessments on BLM-administered lands or the Sierra and Central/Eastern Nevada Riparian Field Guides and the Resource Implementation Protocol for Rapid Assessment Matrices on Forest Service-administered lands in sage-grouse habitat to evaluate current conditions as compared to sage-grouse ~~habitat objectives~~ desired habitat conditions described in Table 4.1. Incorporate the results of BLM and Forest Service monitoring and land health assessments into future management applications to ensure the maintenance or active management to trend towards ~~progress toward meeting~~ sage-grouse desired habitat conditions~~habitat objectives~~. Incorporate terms and conditions into grazing permits and adjust these as needed through monitoring and adaptive management to meet sage-grouse ~~habitat objectives~~ desired habitat conditions.

Management Action 1.1.4: Where current permitted livestock grazing is identified as the causal factor of not meeting the desired habitat conditions, i~~I~~mplement management actions (grazing decisions, Annual Operating Instructions [Forest Service only], AMP/Conservation Plan development, or other agreements) to modify grazing management to ~~–~~trend towards ~~meet seasonal sage-grouse habitat objectives~~ desired habitat ~~as~~conditions, as applicable ~~defined~~ in Table 4.1. ~~where current livestock grazing is identified as the causal factor of not meeting those objectives.~~ Consider singly, or in combination, changes in:

1. Season, timing (duration) or rotation of use;
2. Distribution of livestock use;
3. Intensity of use;
4. Type of livestock (e.g., cattle, sheep, horses, llamas, alpacas and goats; Briske et al. 2011); and
5. Numbers/ AUMs of livestock and other ungulates (includes temporary nonrenewable (TNR) use, and nonuse).

   Before imposing grazing restrictions or seeking changes in livestock stocking rates or seasons of permitted use, federal agencies in coordination with grazing permittees must identify and implement all economically and technically feasible livestock distribution, forage production enhancement, weed control, prescribed grazing, off-site water development by the water rights holder, shrub and pinyon/juniper control, livestock salting/supplementing, and riparian pastures and herding. (Eureka County Master Plan 2010)

Management Action 1.1.5: At a minimum, use grazing management strategies for riparian areas and wet meadows to maintain or trend towards ~~achieve~~ riparian Proper Functioning Condition (PFC) and promote brood rearing/summer ~~habitat objectives~~ desired habitat conditions, as described in Table 4.1, within sage-grouse habitat. Within sage-grouse habitat, manage wet meadows to maintain a component of available perennial forbs with diverse species richness to facilitate brood rearing and stabilizing riparian species (Burton et al. 2011)

near where water flows to achieve or maintain PFC. Use Ecological Site Descriptions (ESD) or locally relevant information about soils, hydrology, soil moisture, and site potential to set realistic objectives and evaluate assessments and monitoring data (Swanson et al. 2006). Also conserve or enhance wet meadow complexes to maintain or increase amount of edge and cover near that edge to minimize elevated mortality during the late brood rearing period (Hagen et al. 2007; Kolada et al. 2009a; Atamian et al. 2010) as observed throughout the stream/watershed and not limited to only easily accessible sites. Some defined areas of concentrated livestock use may be necessary to protect and enhance the overall riparian area.

Management Action 1.1.6: Authorize new water development for diversion from spring or seep sources only when sage-grouse habitat would not be net negatively affected by the development. This includes developing new water sources for livestock as part of an AMP/conservation plan to improve sage-grouse habitat.

Management Action 1.1.7: Analyze springs, seeps and associated pipelines to find mutually beneficial enhancement opportunities for livestock and wildlife that restores functionality to riparian and mesic areas within sage-grouse habitat, and allow them to be developed.

Management Action 1.1.8: In sage-grouse habitat, encourage and allow vegetation treatments that conserve, enhance, or adaptively restore resilience and resistance over time. This includes adaptive management as part of an AMP/Conservation Plan to improve sage-grouse habitat.

Management Action 1.1.9: Evaluate the role of existing seedings that are currently composed of primarily introduced perennial grasses that are in and adjacent to sage-grouse habitat to determine if additional efforts should be made to restore sagebrush or to improve habitat quality for sage-grouse. If these seedings are part of an AMP/Conservation Plan or if they provide value in conserving, enhancing, or protecting the rest of the sage-grouse habitat, then no restoration may be necessary. Assess the compatibility of these seedings for sage-grouse habitat or as a component of a grazing system during the land health assessments (Davies et al. 2011), or other analyses such as the Humboldt-Toiyabe Resource Implementation Protocol for Rapid Assessment Matrices (USDAFS - HTNF 2007).

Management Action 1.1.10: In sage-grouse habitat, ensure that the design of any new structural range improvements and the location of supplements (salt or protein blocks) to enhance sage-grouse habitat or minimize impacts in order to maintain or trend towards ~~meet~~ sage-grouse desired habitat conditions, as applicable ~~objectives~~ (see Table 4.1). Structural range improvements, in this context, include but are not limited to: cattle guards, 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. Potential for invasive species establishment or their increase following construction must be considered in the project plan and then monitored, treated, and rehabilitated post-construction.

Management Action 1.1.11: Locate salting and supplemental feeding locations, and temporary or mobile watering and new handling facilities (corrals, chutes, etc.) at least 1/2-mile from riparian zones, springs, meadows, or 1 mile from active leks in sage-grouse habitat, unless the pasture is too small or another location offers equal or better habitat benefits. The distance should be based on local conditions.

Management Action 1.1.12: To reduce sage-grouse strikes and mortality, remove, modify or mark fences in high risk areas within sage-grouse habitat based on proximity to lek, lek size, and topography (Christiansen 2009; Stevens 2011). Consideration of the utility of the fence should also be taken into consideration to ensure that its removal does not promote degradation of the overall management for habitat or other desired conditions~~objectives~~ (Swanson et al. 2006).

Management Action 1.1.13: In sage-grouse habitat, monitor, treat and, if necessary, restore sites with invasive species associated with existing range improvements (Gelbard and Belnap 2003; Bergquist et al. 2007). State listed noxious weeds (NRS Chapter 555) should be given the highest priority. In general, monitor, map, treat (using integrated pest management and associated tools), and restore sites that have invasive and noxious weed species, especially those associated with disturbance activities.

Management Action 1.1.14: Consider all options to allow responsible management of livestock grazing on an allotment before any voluntary withdrawal of a grazing permit is considered, in conformance with the multiple use sections of the Taylor Grazing Act. All permit relinquishments should be voluntary.

Management Action 1.1.15: Prior to implementation, establish project monitoring sites where vegetation treatment is planned and monitor at least annually during the recovery period. To ensure effective recovery, monitoring should continue for a number of years immediately following the livestock exclusion period and following livestock reintroduction, depending on local site conditions.

Management Action 1.1.16: When conditions, i.e., climatic variations (such as drought) and wildfire, require unique or exceptional management, work to protect sage-grouse habitat on a case by case basis and implement adaptive management to allow for vegetation recovery that meets resistance, resilience, and sage-grouse life cycle needs in sage-grouse habitat as needed on an individual allotment basis.

Management Action 1.1.17: During the annual grazing application, work with permittees to avoid consistent concentrated turn-out locations for livestock within approximately 3 miles of known lek locations during the March 1 to May 15 period. During the March 1 to May 15 period, avoid domestic sheep use, bedding areas, and herder camps within at least 1.24 miles (2 kilometers) of known lek locations. Utilize land features and roads on maps provided to the

Objective 1.1: Achieve no net unmitigated loss of sage-grouse habitat due to new anthropogenic disturbances and any associated facilities and infrastructure within the Sage-Grouse Management Area (SGMA) in order to maintain stable or increasing sage-grouse populations.

Management Action 1.1.1: All new proposed anthropogenic disturbances within the SGMA will trigger timely SETT Consultation for application of the "avoid, minimize, mitigate" process (see Section 3.0). This will serve as a centralized impact assessment process that provides consistent evaluation, reconciliation and guidance for project development.

Management Action 1.1.2: Avoid new anthropogenic disturbance activities and its associated facilities and infrastructure within the SGMA. Locate activities, facilities, and infrastructure in non-habitat wherever possible. Avoidance of a disturbance within sage-grouse habitat is the preferred option. If avoidance cannot be reasonably accomplished, the project proponent must demonstrate why it cannot be reasonably accomplished in order for the SETT to consider minimization and mitigation alternatives. The process to demonstrate that avoidance cannot be reasonably accomplished (the "avoid process") is determined by the four management categories. (See Table 3-1 for more details on the avoid process.) If development cannot be sited in non-habitat, it should occur in the least suitable habitat.

Management Action 1.1.3: If adverse impacts to sage-grouse and their habitat cannot be avoided, require project proponents to minimize impacts by employing Site Specific Consultation-Based Design Features (Design Features; see Appendix A) appropriate for the project. This may include seasonal operational restrictions, noise restrictions, clustering disturbances, and placing infrastructure in previously disturbed locations.

Management Action 1.1.4: Technically evaluate and where reliability is not adversely impacted, seek to site new linear features in existing corridors (Figure 11) or, at a minimum, co-locate with existing linear features in Core, Priority, and General Management Areas.

Management Action 1.1.5: Reduce and eliminate artificial hunting perches and nesting substrate for aerial predators. This can be achieved by installing anti-nesting and anti-perching devices on new power lines (see Section 7.3) or burying power lines. Bury distribution power lines of up to 35kV where ground disturbance can be minimized, and where technically and economically feasible. Where technology and economic factors allow, bury higher kV power lines (see Appendix A). Sage-grouse desired habitat conditions ~~habitat objectives~~ (see Section 4.0) will be incorporated when reclaiming the site.

Management Action 1.1.6: Encourage continued research in the development of more effective perching and nesting deterrent options (see Section 7.3).

Management Action 1.1.7: Aggressively engage in rehabilitation/weed control efforts during pre- and post-project construction.

Management Action 1.1.8: If impacts from anthropogenic disturbances cannot be avoided and after minimization options have been exhausted, residual adverse impacts are required to be offset through compensatory mitigation. Mitigation obligations will be determined through the Conservation Credit System (see Section 8.0).

Objective 1.2: Explore options to minimize impacts from existing and abandoned anthropogenic disturbances and associated infrastructure.

Management Action 1.2.1: While SETT Consultation and the "avoid, minimize, mitigate" process do not apply retroactively to existing anthropogenic disturbances, encourage existing operators to incorporate the Design Features outlined in Appendix A and contact the SETT for timely input on techniques and practices to avoid and minimize existing impacts to sage-grouse and their habitat.

Management Action 1.2.2: Inventory abandoned mine sites within sage-grouse habitat, where practical, and reclaim sites to trend towards~~meet~~ sage-grouse desired habitat conditions ~~habitat objectives~~ (see Section 4.0). Coordinate with the Abandoned Mine Lands Program on this effort.

Management Action 1.2.3: Work with the energy industry to explore opportunities to install anti-nesting and anti-perching devices on existing power lines and tall structures and to bury existing power lines where technology and economic factors allow.

Management Action 1.2.4: Inventory power lines and utility structures that are no longer in use and look for opportunities to decommission the lines and reclaim the sites to trend towards~~meet~~ sage-grouse desired habitat conditions ~~habitat objectives~~ (see Section 4.0).

Management Action 1.1.3: Assist in efforts to enhance collaborative monitoring through volunteer organizations, recreational groups, etc., to collect data that would assist in the protection, enhancement, or restoration of sage-grouse habitats.

Management Action 1.1.4: Support studies that further the understanding of the relationship between recreational uses and their potential impacts on sage-grouse.

Management Action 1.1.5: Utilize sage-grouse habitat mapping to inform state and federal recreation management plans.

Management Action 1.1.6: Where feasible locate recreation trails strategically to create or augment fuel breaks in the margins of sage-grouse habitats and landscapes and not create roads or trails where they cause net negative direct and indirect impacts.

Objective 1.2: Support and implement efforts to reduce the potential for additional sage-grouse habitat fragmentation from unauthorized 'trail making'.

Management Action 1.2.1: Support and promote efforts by state, local, and federal agencies and recreational groups to promote educational campaigns that encourage responsible OHV and recreation activities that avoid or minimize negative impacts to sage-grouse and their habitat, including the spread of invasive species.

Management Action 1.2.2: Work with state, local, and federal agencies and recreational groups to inventory unauthorized trails in Core, Priority, and General Management Areas and where feasible restore trails to trend towards ~~meet~~ sage-grouse ~~habitat objectives~~ desired habitat conditions (see Table 4-1).

Objective 1.3: Promote the leveraging of funding from all sources when addressing sage-grouse habitat enhancement, restoration, or preservation projects.

Management Action 1.3.1: Develop a database to share with interested agencies and groups to maximize efforts and leverage funding.

Management *Action 1.3.2:* Encourage and support the Commission on Off-Highway Vehicles to expend OHV registration funds to enhance, restore, or protect sage-grouse habitat.

APPENDICES

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• Provide training to fuels treatment personnel on sage-grouse biology, habitat requirements, and identification of areas used locally.

•Fuels treatment project design in sagebrush and pinyon-juniper encroached sagebrush habitats must be based on the best available science. At a minimum, project proponents will consider best available science including: use of site appropriate state and transition models; ecological site characteristics; and, the evaluation of resilience to disturbance and resistance to invasive annual grasses.

• Ensure the proposed prescription burning plans meet the need of the resource via a comprehensive review by proponents, fire managers, wildlife biologists and resource managers, at a minimum.

• Use prescriptive fire use on project sites where state and transition models, ecological site descriptions and existing high site resilience/resistance are used as principle components of the prescription planning process. The desired outcome of all prescription fire use in appropriate sagebrush habitat is to minimize undesirable long-term effects on vegetation or soils (e.g., minimize mortality of desirable perennial herbaceous species and reduce risk of annual grass invasion).

• Ensure proposed sagebrush treatments are planned with full interdisciplinary input pursuant to NEPA and coordination with NDOW and SETT, and that treatment acreage is conservative in the context of surrounding sage-grouse seasonal habitats and landscape.

• Ensure that treatments are configured in a manner that promotes use by sage-grouse.

• Incorporate roads and natural fuel breaks into fuel break design

• Utilize supervised livestock grazing as a tool to reduce fuels and control ~~of~~ non-native species. Targeted grazing needs to be conducted within the framework of the sage-grouse desired habitat conditions ~~habitat objectives~~ (Table 4-1).

Comment [LNE9]: Fuels and Fire Management and Post-Fire Rehabilitation Subsection

• Power-wash all vehicles and equipment involved in fuels management activities prior to entering the area to minimize the introduction of undesirable or invasive plant species.

• Design vegetation treatments in areas of high fire frequency, which facilitate firefighter safety, reduce the potential acres burned, and reduce the fire risk to sage-grouse habitat. Additionally, develop maps for sage-grouse habitat, which spatially display existing fuels treatments that can be used to assist suppression activities.

• For implementing specific sage-grouse habitat rehabilitation projects in annual grasslands, first give priority to sites which are adjacent to or surrounded by Core Management Areas or that reestablish continuity between priority habitats. Annual grasslands are a second priority for rehabilitation when the sites are not adjacent to Core Management Areas, but within two miles of Core Management Areas. The third priority for annual grassland habitat restoration projects are sites beyond two miles of Core Management Areas. The intent is to focus restoration outward from existing, intact habitat. Within

• When reseeding roads, primitive roads, and trails, use appropriate seed mixes and consider the use of transplanted sagebrush in order to trend towards achieving ~~meet~~ sage-grouse ~~habitat restoration objectives~~ desired habitat conditions (Table 4-1). Where invasive annual grasses are present, herbicides may be used to enhance the effectiveness of any seeding and to also establish islands of desirable species for dispersion.

• Use existing roads, or realignments to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, then any new roads would be constructed to the minimum standard necessary to support the intended use.

• Work with local governments to minimize upgrading of existing routes that would change route category (road, primitive road, or trail) or capacity unless the upgrading would have minimal impact on sage-grouse habitat, is necessary for motorist safety, or eliminates the need to construct a new road, while providing for the intended use.

• Manage on-road travel and OHV use in key grouse areas to avoid disturbance during critical times such as winter and nesting periods.

• Consider road removal, realignment, or seasonal closures where appropriate to avoid degradation of habitat and /or to avoid disturbance during critical periods of the sage-grouse life cycle.

Recreation

• Special recreation permits must have stipulations to minimize impacts to sage-grouse and sage-grouse habitat based upon the specific activity and ensures no net unmitigated loss of sage-grouse habitat.

• Issue special recreation permits with appropriate distance and timing restrictions to minimize impacts to seasonal sage-grouse habitat.

• Develop trail mapping, and educational campaigns to reduce recreational impacts on sage-grouse, including effects of cross country travel.

• Where feasible, locate recreation trails strategically to create or augment fuel breaks in the margins of sage-grouse habitats and landscapes and not create roads or trails where they cause net negative direct and indirect impacts.

• Take measures to minimize or reduce activities and to avoid an ambient noise level increase >10 dB at the edge of leks during the lekking season generally, March 1 through May 15 from one hour before sunrise until 9:00 a.m. (Patricelli et al. 2010, Blickley et al. 2012, Patricelli et al. 2013).

Comment [LNE10]: Travel and Transportation subsection

Appendix B:

Development Process and Justification for Desired Habitat Conditions ~~Habitat Objectives~~

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for Greater Sage-Grouse in Nevada

Greater Sage-Grouse Proposed Desired Habitat Conditions ~~Habitat Objectives~~

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Questions and Answers

1. How were the Proposed~~-~~ Desired Habitat Conditions ~~Habitat Objectives~~ for GRSG developed?
   The proposed Desired Habitat Conditions ~~habitat objectives~~ are a synthesis of existing data across the state of Nevada and portions of the Bi-State in California. The U.S. Geological Survey was primarily responsible for much of the synthesis and in translating often complex habitat relationships and GRSG responses into the proposed desired habitat conditions ~~habitat objectives~~ which could be summarized and applied on the ground. A team consisting of representatives from the U.S. Fish and Wildlife Service, BLM, Nevada Department of Wildlife, and U.S. Forest Service reviewed the Connelly et al. 2000 guidelines and also reviewed a bibliography of Nevada-based research made available by the U.S. Geological Survey. The team then went through each Connelly et al. 2000 guideline and reviewed it with respect to localized data. The Connelly et al. 2000 guidelines remained as a default unless refined by new information. In March 2015, the Science Work Group met and further revised the State Plan section 4.0 and the desired habitat conditions table.

2. Why are the Proposed Desired Habitat Conditions ~~Habitat Objectives~~ for GRSG different from Connelly et al. 2000 guidelines?
   The Connelly et al. 2000 guidelines were a strong synthesis of research until that time. The guidelines themselves suggest that studies which define GRSG habitat on a more region-specific basis should be used where supported by research. These proposed desired habitat conditions ~~habitat objectives~~ respond to more localized data than the Connelly et al. 2000 guidelines, which relied heavily on data from the eastern half of the range of GRSG where a perennial grass component is more dominant, and where large-scale ecological changes such as invasive grasses and conifer encroachment are largely absent. The proposed desired habitat conditions ~~habitat objectives~~ reflect those differences.

3. What are the differences between the Proposed Desired Habitat Conditions ~~Habitat Objectives~~ for GRSG and Connelly et al. 2000 guidelines?
   While numerous differences exist, they are driven primarily by three elements: 1) the reduced role of perennial grasses for nest concealment as revealed by many nesting habitat studies throughout Nevada; 2) the increased habitat fragmentation and degradation as a result of invasive grasses and conifer encroachment; and 3) the elevated importance of late-summer brood-rearing habitats in the lower precipitation zones of Nevada. The proposed desired habitat conditions ~~habitat objectives~~ also reflect recent research into more complex aspects of habitat juxtaposition, such as the interspersion of meadow habitat with adjacent sagebrush cover, and the attempt to quantify other scale-dependent relationships such as the degree of conifer encroachment.

4. Are the Proposed Desired Habitat Conditions ~~Habitat Objectives~~ for GRSG supported by science?
   The proposed desired habitat conditions ~~habitat objectives~~ are supported by numerous studies throughout Nevada from the Bi-State area in southwestern Nevada and California through the Elko District into northeastern Nevada. Much of the synthesis of research which resulted in these

proposed desired habitat conditions ~~habitat objectives~~ for GRSG was conducted by the U.S. Geological Survey.

5. Are the Proposed Desired Habitat Conditions ~~Habitat Objectives~~ for GRSG consistent with the BLM National Technical Team report (NTT)?
   The NTT report suggests the use of local and state seasonal GRSG desired habitat conditions ~~habitat objectives~~ when they are available and references the habitat recommendations from Connelly et al. 2000 if they are not.

6. What is the rationale for eliminating the residual cover standard (7 in/18cm) from GRSG nesting habitat?
   Localized data indicate that sagebrush canopy cover was the primary indicator of nesting success within Nevada. Research indicates that the primary deterrent to successful nesting was predation, specifically by common ravens, an aerial predator. Thus, the research demonstrated that overhead concealment was the primary indicator of nesting success and that the lateral concealment component of perennial grasses drove nesting success only when sagebrush canopy was deficient.

7. What is the difference between tall trees and power lines?
   These differ in degree of impact. Generally, power lines are larger and have much greater visibility. They contribute to fragmentation and provide potential predators with larger scale, more pervasive access to habitats.