

**LINCOLN COUNTY
SAGE GROUSE CONSERVATION PLAN**

May 20, 2004

TABLE OF CONTENTS

Preface	3
Introduction	4
Conservation Assessment	4-5
Historical Overview	5-6
Vegetation and Soils	6
Status and Distribution	7-9
Factors Affecting Sage Grouse Populations and Their Habitats	11
Goals, Objectives, and Strategies	14-19
Habitat Assessment Criteria	20-21
Habitat Assessment Process	22-24
Habitat and R-Values	25-26
Qualitative Habitat Assessment Criteria For Risk and Threat Tables	27
Appendix 1. Nesting and early brood rearing habitat features and indicators.	28-29
Appendix 2. Late brood-rearing habitat features and indicators.	30
Appendix 3. Winter habitat features and indicators.	31
Appendix 4. Characteristics of sagebrush rangeland needed for productive Sage Grouse habitats.	32
Appendix 5. Risks to Sage Grouse for Cave Valley Portion of Steptoe-Cave PMU.	33
Appendix 6. Summary of Habitat Risks to Sage Grouse for Cave Valley Portion of Steptoe-Cave PMU.	34
Appendix 7. Risks to Sage Grouse for Lincoln PMU.	35
Appendix 8. Summary of Habitat Risks to Sage Grouse for Lincoln PMU.	36
Appendix 9. Risks to Sage Grouse for Quinn PMU.	37
Appendix 10. Summary of Habitat Risks to Sage Grouse for Quinn PMU.	38
Appendix 11. Steptoe Valley/Cave Valley Population Management Unit Threat Table.	39-42
Appendix 12. Lincoln Population Management Unit Threat Table.	43-47
Appendix 13. Quinn Population Management Unit Threat Table.	48-51
Appendix 14. Lincoln County Planning Group Summary of Conservation Actions	52
Appendix 15. Summary of Responsibilities by Cooperator	53
Appendix 16. Conservation Actions for Management of Sage Grouse in Lincoln County.	54-65
Appendix 17. Maps	66-73

PREFACE

This plan was prepared by the Lincoln County Sage Grouse Technical Review Team, under the guidance of the Lincoln County Coordinated Resource Management Steering Committee.

Effective Sage Grouse management must involve a successful partnership with the Nevada Department of Wildlife (NDOW), the United States Forest Service (USFS), and the Bureau of Land Management (BLM) working in concert with private landowners and the public. NDOW, under the direction of the State Board of Wildlife Commissioners, is responsible for protection, propagation, restoration, transplanting, introduction, and management of wildlife species found within the State of Nevada and has the legal authority necessary to manage Sage Grouse. The BLM and USFS are responsible for habitat management of the federal public lands under their purview within the State of Nevada. The BLM and USFS will manage lands on the basis of multiple use and sustained yield.

This plan is intended to serve as a dynamic working document. The plan may be amended as new information becomes available, conditions change, or additional opportunities occur. Accordingly, the plan will be evaluated annually in order to better address the management needs of Sage Grouse and take the necessary steps to implement the relative actions.

THE LINCOLN COUNTY SAGE GROUSE CONSERVATION PLAN TECHNICAL REVIEW TEAM/LOCAL PLANNING GROUP

Jack Clifton
Pete Gill
John Hiatt
Bevan Lister
Manetta Lytle

Jim Potts (Facilitator)
Tommy Rowe
Michael Scott
William Smith
Steve Taylor

INTRODUCTION

The Sage Grouse Technical Review Team (TRT) prepared a management plan intended to meet the needs of the bird and related sagebrush ecosystem species. The plan will comply with the Governor's Conservation Strategy and local sub-plan provisions and guidelines. The TRT's mission was to:

1. Review currently available data of Sage Grouse habitat and current populations/densities in the plan area. Identify areas of high, moderate, low, and no potential or current populations in the plan area.
2. Work with all interested groups to define issues pertaining to Sage Grouse and related sagebrush ecosystem species management in the plan area, utilizing preliminary lists of issues developed by the Nevada Department of Wildlife, the Society of Range Management (winter 2001 meeting), the Nevada Sage Grouse Conservation Strategy Team, and the Northeastern Nevada Stewardship Group.
3. Based on 1 and 2 above, identify Population Management Units (PMU's).
4. Based upon information about habitats, populations, and threats, prioritize the PMU's for goal setting and strategy development.
5. Develop goals, objectives, and strategies. Strategies include:
 - A. Monitoring and research needs.
 - B. Management actions, guidelines, and methods addressing issues of vegetation, other wildlife, wild horses, livestock, predation, and human activities.
 - C. Develop schedules for implementation and monitoring.
 - D. Responsibilities of groups and agencies in achieving A, B, and C.
6. Develop a timeline for revisiting and revising goals, objectives, and strategies.

The TRT worked in conjunction with the CRM Steering Committee to develop the plan. The TRT submitted a draft of the plan to the CRM Steering Committee and Lincoln County Board of Commissioners for review and comment. The Lincoln County Board of Commissioners will continue to be involved in the review and will be required to give final approval to the plan.

This document is designed to utilize an adaptive management strategy in order to take advantage of all possible actions. Those involved with the Lincoln County Sage Grouse Conservation Plan felt that pilot projects should be designed, developed, and implemented so as to provide information as to levels of success as well as improving or increasing Sage Grouse habitat within the planning areas. Additionally, as new techniques, equipment, or strategies are developed, or as management or politics change, we would like to utilize those practices that will be the most beneficial for the resources of Lincoln County. By identifying those practices that work best we hope to save money and time in the future to meet our goals and objectives.

Conservation Assessment:

Plan Area: The planning area includes Lincoln County and portions of Nye County, an area of several million acres. Most of the federal lands are managed by the Bureau of Land Management Ely and Caliente Field Offices, the Humboldt-Toiyabe National Forest Ely Ranger District.

There are three population management units (PMU's) in the planning area. These include the following: Steptoe Valley/Cave Valley, Quinn, and Lincoln.

Historical Overview of Sage Grouse in the Plan Area:

The Sage Grouse is emblematic of the Great Basin's most characteristic plant community. Sagebrush, in its several species, covers, or at least used to cover the majority of the land in the Great Basin. Floristically, that part of eastern Nevada north of the 38th parallel is part of the Great Basin and is home to the Greater Sage Grouse (*Centrocercus urophasianus*). Accurate records from times prior to 1900 are hard to come by but during the early 20th century anecdotal records indicate that Sage Grouse were reasonably abundant and were a commonly used food item by at least some residents. Since the 1970's populations have suffered significant decline, according to data collected by all pertinent agencies. The big questions are the following: 1) Why the decline? and 2) What can we do about it?

As with many declines in the population of a wild animal species, there is no simple answer as to the cause. In fact, there are probably several causes, some more important than others. The single most important factor in the survival of most animal populations is habitat, in terms of both quality and quantity. An examination of the Sage Grouse's habitat requirements is instructive. As the name implies, the Sage Grouse lives in and around sagebrush. However, not all sagebrush is of equal value.

During the course of its life, the Sage Grouse depends on sagebrush in different ways. During nesting, the hens need sagebrush with a good understory of grasses and forbs to provide cover for the nest. Prior to nesting, the hen needs a nutritious diet of young sagebrush leaves and various forbs so that she can produce eggs with a high fat level in the yolk. This is critical to give newly hatched chicks the reserves to survive long enough to find nutritious food. The young chicks depend upon insects and soft succulent plant material provided by the native forbs. Sagebrush is the most important cover plant. In addition, the birds, especially the young, need cover to avoid detection and capture by predators. As the chicks grow, insects and forbs continue to be a critical part of the diet. During fall and winter when insects and green forbs are no longer available, the birds become totally dependent upon sagebrush for their dietary needs. The best forage comes from the youngest leaves of sagebrush plants. This means that young, actively growing plants provide much better food than old senescent plants. To satisfy the birds' needs during their life cycle, a sagebrush mosaic consisting of plants in all phases of the growth cycle is needed. This mosaic is dependent upon disturbance, which historically has been fire, for its existence.

The past century has seen dramatic changes in the sagebrush plant community in Lincoln County. Due to several factors, including but not limited to fire suppression, hundreds of thousands of acres of sagebrush habitat have been taken over by pinyon and juniper trees or have lost the understory of grasses and forbs. Areas that had dozens of active mating leks a century ago now have one or two, or in some cases, none. The end result of the replacement of what was a sagebrush-grassland interspersed with a few trees by what has become predominantly a pinyon-juniper woodland is the elimination of much of the habitat of the Sage Grouse. The implications of this change in the nature of the region's plant community are obvious.

What is not at all obvious is how to reverse the course and restore enough habitat so that Sage Grouse populations can recover. In Lincoln County more than a million acres of former prime habitat for Sage Grouse has transitioned into pinyon-juniper woodland or senescent sagebrush. Restoring habitat on the scale needed will be an unprecedented task. In the short term, a plan is needed to preserve the existing Sage Grouse population while at the same time we take actions to protect remaining quality habitat and restore a healthy sagebrush community where it no longer exists or is not currently functional. Ultimately this means restoring the natural disturbance regime of which fire was the predominant agent, but in the near term will require an

imaginative mix of techniques of which mechanical intervention may well play a major role. Following a fire it may take anywhere from 10-30 years for the sagebrush community to recover to the point that it provides high quality Sage Grouse habitat. Our biggest challenge will be to learn how to speed up this process to arrest the decline of the existing habitat and allow the remaining Sage Grouse populations to survive and ultimately expand to re-occupy all of their historic habitats that can reasonably be made available to them.

If this goal can be accomplished it will also benefit all the other animal species that depend on sagebrush during some part of their life cycle as well as reducing the risk of catastrophic wildfire now threatening a good part of this region.

The following document attempts to layout our present state of knowledge, define the problems, and present a blueprint for moving forward on a comprehensive plan to restore Sage Grouse populations in the planning area of Lincoln and Eastern Nye counties.

Vegetation and Soils as Attributes of Sage Grouse Habitat:

Sage Grouse habitat is those areas of rangelands that provide the bird with food, cover, and water. Sage Grouse habitat varies seasonally as food availability and food requirements of the bird change with the seasons (see Biological Overview in Governors' Plan). Food and cover, in turn, vary across the landscape as soils, disturbances, and other factors result in differences in plant communities. This variation in bird requirements and plant communities requires biologists and range ecologists to focus on specific sites when evaluating Sage Grouse habitat. Direction from the governor's team regarding sage grouse guidelines calls for a site-specific approach that uses local knowledge to evaluate sage grouse habitat and implement sage grouse guidelines.

An important source of local knowledge is the soil surveys published by the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS). A soil survey integrates climate, vegetation, and other environmental factors to locate and describe soils within the survey area. In addition, a soil survey correlates every soil to an ecological site that describes the potential of a soil to produce a certain plant community given historic levels of disturbance. The ecological site describes the plant community in terms of species composition and productivity. Knowing Sage Grouse food and cover requirements, biologists and range ecologists can identify ecological sites (e.g., locations) that may provide Sage Grouse habitat. A comparison of the current plant community at a location with the potential plant community of the ecological site for that location can indicate changes in habitat quality and habitat quantity for Sage Grouse. Then land managers can implement habitat restoration and improvements based on the potential of the ecological site and the needs of Sage Grouse.

One problem with the use of ecological site information is that historic levels of disturbance no longer occur in much of the planning area. Wildfire was the main disturbance that historically influenced sagebrush plant communities in Lincoln County. Fire suppression has removed the influence of wildfire and allowed dramatic changes in sagebrush plant communities to occur. In order to address these changes in plant communities, range ecologists developed the state and transition model that builds on ecological site information. The model proposes the concepts of states, transitions, and thresholds to help land managers prioritize and take actions that will meet management goals such as Sage Grouse habitat. Currently, NRCS is beginning to adapt ecological site information to the state-and-transition model. The use of state-and-transition model will allow land managers to make the best use of funding for Sage Grouse habitat improvement and restoration. Until the state-and-transition models and soil surveys are completed for the planning, management decisions will depend on the expertise of local biologists and range ecologists to evaluate Sage Grouse habitat.

Status and Distribution:

No formal population estimates of Sage Grouse were completed for the plan prior to 2002. Data sets that are useful for predicting past population trends include harvest data, lek attendance counts, trend lek studies, and wings collected from hunter-harvested birds. Data from the Lincoln County portion of the plan area are limited. Sage Grouse have not been hunted in Lincoln County since 1998. Lek trend studies exist for Lincoln County dating back to 1982. Wing data may be too intermittent to be of much value, but may warrant further analysis.

During the spring of 2004, Nevada Department of Wildlife personnel conducted ground surveys on all known active grounds in Lincoln County, that are accessible by four-wheel-drive vehicles. Two grounds were added to the active list; one a ground in Little Spring Valley that was thought to be inactive, and the other a new ground located in Hamlin Valley. A total of thirteen grounds were counted. Due to the relatively low number of known active grounds in Lincoln County, all grounds that are accessible by four-wheel-drive vehicles are counted and assessed for trend. Very little long-term trend data are available for Lincoln County. Of 47 known historic leks, a total of only 18 are known to be active. Short-term data indicate that breeding populations of Sage Grouse in Lincoln County are relatively stable at low numbers.

Generalized lek location and attendance information has been recorded on an increasing scale since the 1940s. These data include the locations of all recorded leks and random observations made on those leks over time. Data prior to 1971 are limited. However, it is interesting to note that large leks were documented in the 1940s and 1950s (and since) that are no longer active and have apparently not been replaced by other leks. In some cases, the reasons for this are clear, such as large burns or development. In northern Lincoln County, historic lek locations have been displaced by pinyon and juniper. These losses of useable habitat ultimately document decreases in carrying capacity and population levels beyond the short term. These observations support anecdotal reports of much higher bird numbers at times in the past.

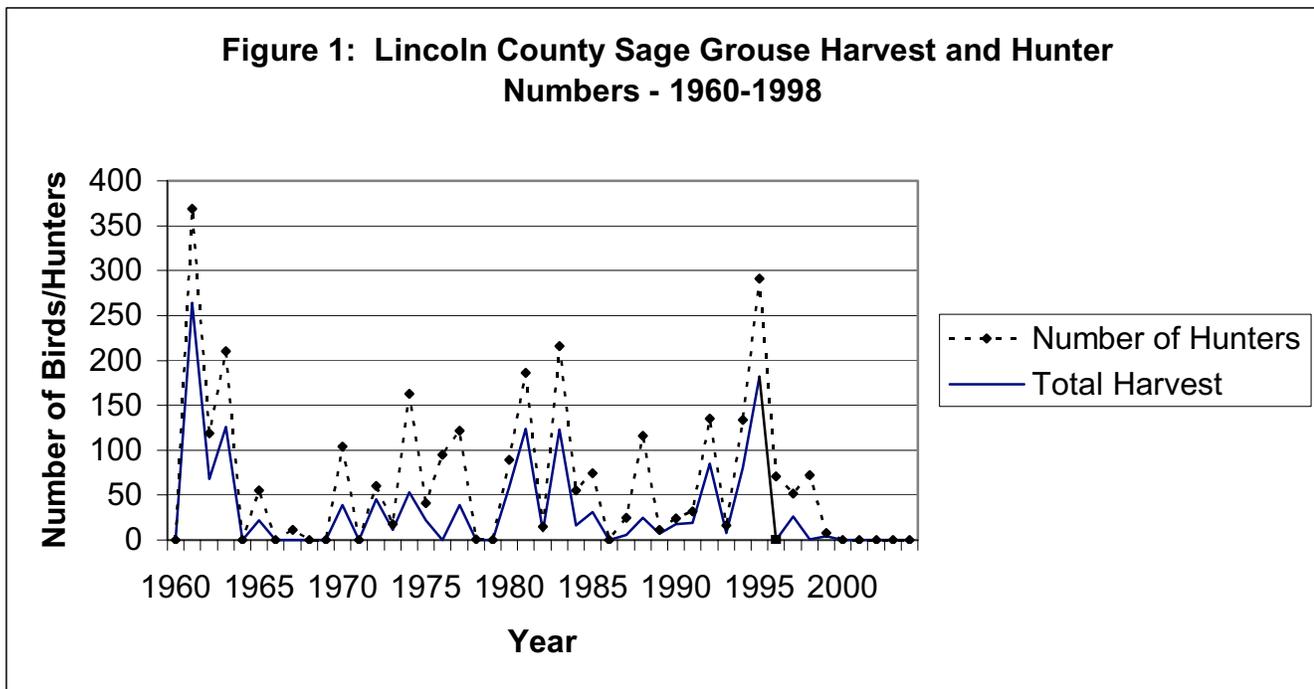
Movement/Migration Patterns – Sage Grouse populations display a wide variety of seasonal movement/migration patterns between winter, breeding and summer ranges (Connely et al. 2000). Some populations exhibit limited (<10 km) movements between seasonal habitats and are considered nonmigratory (Dalke et al. 1963, Wallestad 1975, Connelly et al. 1988, Wakkinen 1990). Migratory Sage Grouse can travel in excess of 75 km between distinct seasonal ranges (Dalke et al. 1963, Connelly et al. 1988). Limited telemetry data from Lincoln County indicate that birds moved approximately 24 km between breeding and summer habitats, crossing many km of non-habitat pinyon/juniper woodland. Throughout much of the planning area, the summer distribution of Sage Grouse tends to occur in higher elevation habitats while documented winter ranges are mostly associated with valley and bench areas. In some areas, summer, breeding and winter ranges appear to occur in close proximity, especially where Sage Grouse summer in association with agriculture. These observations suggest that both migratory and non-migratory populations exist in the planning area.

Information gathered by Bob McQuivey from the Pioche Daily Record indicates that high populations existed in Lincoln County during the 1870's. Additional references to high numbers of Sage Grouse in the 1870's are found in Franklin A Bucks', "A Yankee Trader in the Gold Rush." Pioche Daily Record references also indicate high populations during the mid-1890's through the mid-1900's. Although this information is largely anecdotal, it does show the presence of Sage Grouse in Lincoln County and indicates a cyclic nature of the Sage Grouse populations. Historically, Sage Grouse seasons were controlled by Lincoln County and are not well documented. Information indicates that both open and closed seasons occurred in Lincoln County prior to 1917. Available information indicates that the season was open in 1918. Closed seasons in Lincoln County occurred in 1928-1929, 1933-1935, 1937-1941, 1945-1946, 1950-1959, 1963, 1968, 1970-71, 1985, and 1998 to present. Harvest information from Lincoln County indicates that harvest has fluctuated with the highest documented harvest found in the early 1960's. High levels of harvest were also observed in the mid-1990's and

in the early 1980's (Figure 1). High levels of harvest were also observed in the mid-1990's and in the early 1980's (Figure 1).

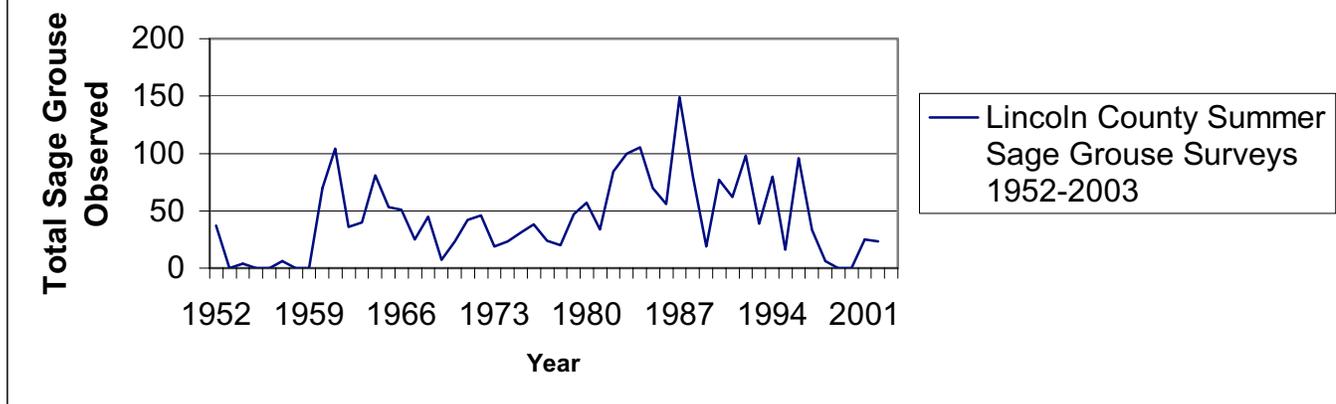
Table 1: Current Sage Grouse population estimate ranges, based on survey data from NDOW:

PMU	Low Sage Grouse Population Estimate	High Sage Grouse Population Estimate
Steptoe Valley/Cave Valley	1732	2021
Lincoln	984	1147
Quinn	53	62



Summer surveys in areas of Lincoln County have occurred since 1952. The highest sample was obtained in 1987; other high counts occurred in the early 1960's and the early 1980's. Although these data appear to correlate to the harvest data, neither data set give any indication of effort used to gather the data. Much of this information has been gathered from Spring Valley, above Eagle Valley Reservoir. Historically, surveys were conducted in areas that do not currently support populations of Sage Grouse due to pinyon-juniper invasion. The long-term cyclical nature of Sage Grouse populations is illustrated by Figure 2.

Figure 2: Lincoln County Summer Sage Grouse Surveys - 1952-2003



In summary, available data illustrate the cyclic nature of Sage Grouse populations. According to records, including anecdotal reports, populations have declined since the mid-1900's. Data indicate that Sage Grouse populations in the plan area declined from 1999-2002. Prolonged drought is likely the biggest factor in this recent decline. Current populations are low, not well distributed, and appear to be suffering from a continual loss of habitat.

The distribution of Sage Grouse in Lincoln County is limited to the northern portion of the county, as it approximates the southern extent of the birds' range. Habitats have been invaded by pinyon-juniper and large areas of historic Sage Grouse habitat no longer support Sage Grouse populations. Birds are generally found throughout the open valley bottoms, along riparian areas, open areas at high elevations, and agricultural areas. Pinyon-juniper has taken over nearly all the mid-slope Sage Grouse habitat throughout formerly occupied range. Areas where brood surveys were conducted during the 1960's now exist as mature pinyon-juniper forest. The Lincoln PMU, which had 36 documented leks at one time, now has only seven (7) known active leks. Most others have been invaded by pinyon-juniper. Pinyon-juniper is likely a major cause of habitat decline in Lincoln County. As pinyon-juniper expands, suitable Sage Grouse habitat is diminished. As Sage Grouse habitat becomes more limited, each risk or threat has a greater effect on the population.

Key Areas:

Lincoln PMU: Several key areas have been identified within the Lincoln PMU. Some of these areas vary due to time of year, while others appear to be yearlong range. Breeding areas include Patterson Wash and the Benchland area in south Lake Valley, the southern portion of South Lake Valley, south Hamlin Valley. Nesting and early brood-rearing areas include north and south Lake Valley, Dry Valley, and west Hamlin Valley. Late brood rearing areas include the upper elevations of Mount Wilson and White Rock Mountain, the Cobb Creek area north of White Rock Mountain, and west Hamlin Valley. Wintering areas include north and south areas in Lake Valley, South Spring Valley, and west Hamlin Valley. Key areas that have been identified as important yearlong areas include Little Spring Valley, and Table Mountain.

Cave PMU: Cave Valley has been determined to be a key area yearlong for Sage Grouse. Seven leks have been documented throughout the valley. The valley holds a mosaic of different types of sagebrush that likely serves as nesting and wintering habitat. Meadows at the north end of the valley, and a number of small springs or riparian areas probably serve as the bulk of the brood-rearing areas.

Quinn PMU: At this point, very little is known about Sage Grouse within the Quinn PMU. Although locations of historic leks are known, some of these areas have been invaded by pinyon and juniper and no longer serve as

Sage Grouse habitat. Other leks have not been found to be active at this point. Research is needed to determine key areas within this PMU.

In summary, some areas that previously provided good year-round habitat for Sage Grouse no longer do so. The expansion of pinyon and juniper trees into sagebrush plant communities, degradation of mesic habitats, changes in vegetation types due to climate, fire management, the spread of weeds and exotic plant species, and herbivory are some of the reasons the Sage Grouse is losing suitable habitat. However, not all habitat changes have been negative; some areas now provide suitable habitat where it did not historically occur. All of these habitat changes have impacted the distribution of the birds.

FACTORS AFFECTING SAGE GROUSE POPULATIONS AND THEIR HABITATS

Habitat Quantity:

- € The quantity of suitable Sage Grouse habitat in the plan area is decreasing due to the expansion of pinyon-juniper into sagebrush communities.
- € Large areas of stagnant sagebrush exist with little or no understory vegetation.
- € Lack of water (quantity, quality, and yield) in otherwise suitable habitat is adversely affecting populations.
- € Sagebrush has become reestablished in many old crested wheatgrass seedings and the areas now appear to provide suitable habitat, although the forb component is often limited.
- € Replacement of native vegetation by exotic weeds has a detrimental effect.
- € Areas of Sage Grouse habitat have been altered or converted.

Habitat Quality/Nutrition:

- € Rangeland uses (livestock, wild horse, and wildlife grazing; recreation and mining) resulting in decreases of perennial grass cover, forb composition, and diversity has reduced habitat condition in some areas.
- € Sagebrush can be a very aggressive and competitive plant that has caused decreases in perennial grass cover and forb composition that in turn has reduced habitat diversity and condition in some areas.
- € Expansion of pinyon-juniper into sagebrush communities has degraded the quality of sagegrouse habitat, and has reduced the productivity of water sources.
- € Gully formation and abandonment of irrigation systems have reduced the availability of riparian habitat available for Sage Grouse brood rearing.
- € Some spring outflows have been piped to other locations for various uses, sometimes eliminating the water found at the source. Although water may be available in other locations, it may or may not benefit Sage Grouse.
- € Changes in management and/or regulations have resulted in disruptions of available water sources, particularly of wells, for Sage Grouse.

Habitat Fragmentation:

- € Expansion of Pinyon and juniper woodland in the past century has, and continues to fragment Sage Grouse habitat.
- € Human activities such as construction, development, agriculture, and recreation, have reduced habitat for Sage Grouse in some parts of the plan area.
- € Fences, roads, and powerlines in Sage Grouse habitat are indirect and direct sources of mortality to the birds.
- € Lack of natural fire frequency has led to a predominance of pinyon-juniper, decadent sage, and overall loss of habitat.
- € Lack of post-fire management may or may not lead to fragmentation and loss of habitat
- € Conversion of sagebrush stands to alfalfa may or may not impact the Sage Grouse, depending on the location of the sagebrush stands and their relation to additional stands of sagebrush.

Changing Land Uses:

- € Wilderness Study Areas/Wilderness Management needs to be addressed to allow habitat projects to restore healthy sagebrush ecosystems in these areas.
- € Recreation, especially inappropriate use of off-road vehicles, may be negatively impacting Sage Grouse populations.

- ∄ Conversion of sagebrush habitat to agricultural crops such as alfalfa may affect Sage Grouse populations.
- ∄ Conversion of sagebrush stands to alfalfa may or may not impact the Sage Grouse, depending on the location of the sagebrush stands and their relation to additional stands of sagebrush.

Predation:

- ∄ Predation by many species of animals (e.g., raptors, corvids, and mammals) impacts survival and recruitment of Sage Grouse.
- ∄ Power lines, fences, windmills, and other structures, which are perches for raptors and corvids, have been installed in Sage Grouse habitat, thereby increasing the potential for predation.
- ∄ Pinyon-juniper establishment in sagebrush communities has provided additional perches for predatory birds.
- ∄ Some species of predators may occur in artificially high numbers due to alternative food sources (e.g., dumps, road kills).
- ∄ Federal and state laws, rules, and regulations have protected certain predators.

Livestock, Wild Horse, Wildlife Grazing:

- ∄ Grazing by ungulates in nesting areas could be reducing nesting success of Sage Grouse.
- ∄ In some instances, natural water sources and surrounding habitats are being negatively impacted by grazing and may be decreasing the success of Sage Grouse.
- ∄ Properly planned livestock grazing can improve and/or increase Sage Grouse habitat.

Fire Ecology:

- ∄ Wildfires have burned important areas of habitat and historic fire management practices have resulted in vegetation-type conversions away from those used by Sage Grouse.
- ∄ Recent fire management has interrupted the natural fire frequency of sagebrush communities and associated Sage Grouse habitat.
- ∄ Areas in which fires do occur generally are not suitable for Sage Grouse, until sagebrush becomes re-established.
- ∄ Current fire management practices inhibit using wildfire as a habitat management tool.

Disturbance: (see threat tables)

- ∄ Non human-caused: wildfire, drought.
- ∄ Human-caused: wildfire suppression, antler hunting, photography, development.
- ∄ Biological observations and surveys from aircraft, military overflights, and other aircraft uses may disturb birds to some extent.

Disease:

- ∄ Long-time White Pine County residents reported suspected disease outbreaks that killed many of the Sage Grouse in the 1960s and 1970s. These reports are anecdotal, but do serve to indicate that disease can affect Sage Grouse.
- ∄ West Nile Virus has been detected in Sage Grouse in other states, although not yet observed in Nevada.

Hunting:

- ∄ Prior to 1998 (when hunting was no longer permitted in Lincoln County), hunting provided valuable demographic data on Sage Grouse through the collection of wings from hunter-harvested birds.

Poaching:

- ∄ Poaching could be a significant source of mortality to Sage Grouse populations, depending on time of year, number of birds killed, population size, and location.

Politics:

- ∄ Some laws (e.g., NEPA, ESA, Migratory Bird Treaty Act, Wilderness Act, Wild Horse and Burro Act) may pose conflicts and challenges to the Sage Grouse Conservation Plan and implementation.
- ∄ Special interest groups may protest our conservation plan and may delay its implementation for years.
- ∄ Lack of agency commitment and cooperation to implement the plan.

GOALS, OBJECTIVES, AND STRATEGIES

Goals, Objectives, and Strategies have been created using the Lincoln County Planning Groups' best available information. Since the Lincoln County Sage Grouse Conservation Plan is intended to serve as a dynamic working document, the plan may be amended as new information becomes available, conditions change, or additional opportunities occur. Accordingly, the plan will be re-evaluated annually in order to better address the management needs of Sage Grouse and take the necessary steps to implement the relative actions. Additionally, some actions may or may not be utilized due to availability of time, personnel, and money. Strategies listed may be used as "tools in the toolbox" to affect change where needed for the benefit of Sage Grouse and Sage Grouse habitat.

Goal 1: Develop a more complete understanding of Sage Grouse and sagebrush dominated plant communities through research in the plan area.

Objective 1.1: Increase knowledge of existing Sage Grouse populations, distribution, and use patterns.

Benefit: Assists in the conservation of the species by developing a more complete understanding of local populations (movements, habitat requirements, preferences, etc.), which will be used to guide the application of management practices and strategies.

Success Standard: Achieve a more complete and comprehensive knowledge of each population group and its' dynamics.

Strategies:

- 1.1.1 Participate in the development of a standardized statewide Sage Grouse habitat monitoring protocol.
- 1.1.2 Draft proposals for research on population/habitat dynamics and acquire funds to implement the proposals with academic institutions.
- 1.1.3 Expand and evaluate program to monitor populations of Sage Grouse in order to make recommendations for management through lek counts, brood surveys, trapping and marking, and wing collection in hunting areas.
- 1.1.4 Use radio telemetry to identify seasonal use areas and migratory/non-migratory birds including migration patterns within PMU's or between adjacent PMU's or states.
- 1.1.5 Initiate research projects, which will benefit management and provide additional needed information on population/habitat dynamics.
- 1.1.6 Design and coordinate a survey program for leks and late brooding areas, which will provide scientifically sound data tailored for each PMU.
- 1.1.7 Explore the potential for augmenting populations through trapping and transplanting.
- 1.1.8 Monitor disturbed sites for occupation by Sage Grouse.

Objective 1.2: Develop an ecological understanding of sagebrush dominated plant communities and the role of disturbances or disturbance regimes in the dynamics of those systems.

Benefit: To have a sound scientific basis for land management decisions.

Success Standard: Achieve a more complete understanding of the various sagebrush ecosystems and how disturbance affects them.

Strategies:

- 1.2.1 Conduct a retrospective study of the effects of past fires and other disturbances such as seedings and chainings and describe vegetative succession in these areas.
- 1.2.2 Design and implement habitat research projects to identify adaptive management strategies beneficial to Sage Grouse.
- 1.2.3 Create a land management database that includes up-to-date research.
- 1.2.4 Explore the role of herbivores in affecting sagebrush ecosystem health.
- 1.2.5 Complete and digitize ecological status inventory within each PMU.
- 1.2.6 Carefully identify each sagebrush species and associated plant species, soils, and position on the landscape.
- 1.2.7 Explore the effects of OHV use and excessive road proliferation on sagebrush communities' ecological health.
- 1.2.8 Evaluate habitat fragmentation for Sage Grouse.

Goal 2: Manage for viable, healthy populations of Sage Grouse in all of the PMUs in the planning area.

Objective 2.1: Maintain or increase present populations Sage Grouse for the short term (e.g., trend over ten years).

Benefit: Populations should persist and thrive in areas of present occupation, so the Sage Grouse will be able to pioneer new areas as habitat becomes suitable for occupation.

Success Standard: No extirpation of breeding sub-populations occurs. Lek counts and brood surveys indicate stable or growing populations throughout the PMU.

Strategies:

- 2.1.1 Examine population viability and identify high priority sub-populations for protection in each PMU.
- 2.1.2 Reduce the detrimental effects of human disturbance and structures (powerlines, fences, poaching, OHV usage, etc.)
- 2.1.3 Inventory road and other recreational accesses that contribute to disturbance of sagebrush plant communities.
- 2.1.4 To augment recovery or management efforts, use predator control in Sage Grouse habitats where appropriate, e.g., where high numbers of predators are found, congregate, or where high predation rates are known.
- 2.1.5 Identify high priority areas for fire protection/suppression activities.
- 2.1.6 Identify high priority areas for the reestablishment of natural fire frequencies (e.g., managed natural fire).
- 2.1.7 Remove pinyon/juniper trees that are invading areas within 0.5 miles of currently active strutting grounds.
- 2.1.8 Coordinate and investigate means to minimize the impacts of new powerlines in existing Sage Grouse habitat and encourage removal of abandoned powerlines.
- 2.1.9 Coordinate and investigate means to minimize the impacts of wind-generation power structures.

Objective 2.2: Provide favorable conditions for the expansion of Sage Grouse populations into historic range in healthy and sustainable numbers.

Benefit: Bird populations occupying a large geographic area will be more resilient to threats.

Success Standard: Increased number of active leks or birds observed over a wide area.

Strategies:

- 2.2.1 Design and implement habitat research projects that facilitate adaptive management of Sage Grouse.
- 2.2.2 Develop alternative grazing areas to draw grazing animals away from Sage Grouse leks and nesting habitats at critical times.
- 2.2.3 Identify all sagebrush communities that are now dominated by pinyon-juniper or where pinyon-juniper is becoming established and prioritize for projects.
- 2.2.4 Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.
- 2.2.5 Use fire (prescribed fire or managed natural fire) to treat areas of decadent sagebrush or pinyon-juniper dominated sagebrush communities where appropriate.
- 2.2.6 Declare full-suppression and managed natural or prescribed fire areas for fire management activities.
- 2.2.7 Use prescribed fire to reduce heavy fuel loads in late seral stage P-J and sagebrush communities.
- 2.2.8 Identify sagebrush plant communities where there is a uniform age stand of decadent sagebrush that could provide better quality habitat, and investigate methods for remedy.
- 2.2.9 Remove pinyon-juniper in vicinity of springs to improve spring flow and water availability plus improve spring outflow wetlands habitat.

Goal 3: Manage for diverse, healthy, sagebrush plant communities within each PMU.

Objective 3.1: Maintain and improve existing sagebrush plant communities.

Benefit: Suitable habitat for Sage Grouse will be increased.

Success Standard: Habitat inventories are completed in each PMU and priority areas are categorized for projects. Approximately 10,000 acres per year are treated and/or modified through management, resulting in habitat expansion and/or improvement.

Strategies:

- 3.1.1 Inventory and map all habitats by vegetative cover and R-values periodically and/or as more data become available.
- 3.1.2 Identify and reduce the detrimental effects of inappropriate grazing on Sage Grouse habitats.
- 3.1.3 Develop new grazing areas to draw grazing ungulates away from Sage Grouse leks and nesting habitats at critical times.
- 3.1.4 Identify undesirable weed infestations and aggressively treat them to prevent spread utilizing best available technology including resources of the Tri-County Weed Control program.
- 3.1.5 Examine permitted grazing areas in Sage Grouse habitat and make recommendations for management, including using the CRM process.
- 3.1.6 Examine use by wild horses in Sage Grouse habitat and make recommendations for management, including using the CRM process.
- 3.1.7 Address impacts of insect infestations and/or lack of insects.
- 3.1.8 Encourage re-seeding of disturbed areas (e.g., resulting from chainings, fires, etc.) with appropriate native seed mixes.

- 3.1.9 Identify decadent sagebrush stands and apply management treatments to replace the decadent sagebrush with young, healthy, robust plants.
- 3.1.10 Support the implementation of the Great Basin Restoration Initiative through the Eastern Nevada Landscape Restoration Project.
- 3.1.11 Remove pinyon/juniper trees that are invading areas within 0.5 miles of currently active strutting grounds.

Objective 3.2: Where appropriate, restore dynamic sagebrush plant communities throughout each PMU.

Benefit: Increases in habitat for sagebrush obligate species resulting in future population expansion of these species.

Success Standard: Treat approximately 10,000 acres of potential habitat per year.

Strategies:

- 3.2.1 Identify all sagebrush sites that have become dominated by pinyon-juniper and prioritize for projects.
- 3.2.2 Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.
- 3.2.3 Use all appropriate means (e.g., fire, mechanical, and chemical, etc.) to treat pinyon-juniper sites that have the potential to support sagebrush habitats.
- 3.2.4 Use all appropriate means (e.g., fire, mechanical, or chemical methods) to treat senescent or degraded sagebrush communities to restore age class diversity.

Objective 3.3: Restore disturbance regimes, especially fire.

Benefit: Restores naturally functioning system processes to degraded sagebrush ecosystems.

Success Standard: Fire-caused disturbances result in plant community mosaics consistent with Goal #3.

Strategies:

- 3.3.1 Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.
 - 3.3.2 Identify and recommend full-suppression, managed natural, and prescribed fire areas for fire management activities in the plan area as relates to Sage Grouse habitat (across all jurisdictions, e.g., NDOW, NSP, USFS).
 - 3.3.3 Use prescribed fire to reduce heavy fuel loads in identified areas.
 - 3.3.4 Coordinate with and include Federal Agency fire managers into the planning process or educate them as part of the completion of the plan.
 - 3.3.5 Ensure that new resource management plan for the Ely BLM District includes appropriate fire management language.
 - 3.3.6 Ensure monitoring is completed and documented.
- ∄ Add future action items.

Objective 3.4: Assure that the availability of water is not a limiting factor in otherwise suitable habitat in accordance with Nevada Water Law.

Benefit: Allows for increased numbers and widely distributed populations of Sage Grouse throughout the plan area.

Success Standard: The availability of water allows occupation of habitat previously unoccupied due to lack of water.

Strategies:

- 3.4.1 Install water developments in areas of otherwise suitable habitat.
- 3.4.2 Work with permittees and water rights owners to ensure availability of water on a perennial basis where applicable.
- 3.4.3 Cooperate with water rights owners to leave water at all spring sources for wildlife use in accord with Nevada Water Law.
- 3.4.4 Cooperate with water rights owners to explore the possibility of using infrequently used wells as water sources for Sage Grouse.
- 3.4.5 Cooperate with water rights owners to restore and maintain previously available water sources (e.g., springs, pipelines, ditches) where feasible.
- 3.4.6 Inventory and identify privately owned water rights prior to any water development.
- 3.4.7 Remove pinyon-juniper in vicinity of springs to improve spring flow and water availability plus improve spring outflow wetlands habitat.

Goal 4: Address the biological, social, political, and economic ramifications of the plan.

Objective 4.1: Encourage landowners and permittees to modify land use practices that are detrimental to Sage Grouse.

Benefit: Higher quality and quantity of brood-rearing habitats. Local landowners appreciate importance of agricultural land in relation to Sage Grouse seasonal needs.

Success Standard: Less mortality associated with agricultural practices and more uniform and better quality brood-rearing habitat in agricultural fields and riparian/wet meadows throughout the plan area.

Strategies:

- 4.1.1 In cooperation with landowners, identify private lands within PMUs that may include Sage Grouse habitat.
- 4.1.2 Evaluate, with landowners, current land use practices that may be detrimental, neutral, or beneficial to Sage Grouse.
- 4.1.3 Work with private landowners to consider Sage Grouse needs in management practices.
- 4.1.4 Monitor effectiveness of modifications.

Objective 4.2: Ensure all land management agencies address Sage Grouse needs in future plans and actions.

Benefit: A unified and consistent approach to Sage Grouse/sagebrush management. A cooperative and uniform approach in all land use and management actions in the plan area in relation to Sage Grouse/sagebrush management.

Success Standard: Compatibility between federal, state, and county planning documents and management actions. Planning documents/contents are to be fully acceptable to respective boards of County Commissioners.

Strategies:

- 4.2.1 CRM Steering Committees and associated TRTs actively monitor progress of plan implementation.
- 4.2.2 Ensure that TRT members are involved in the planning process for land management decisions.
- 4.2.3 TRT members make recommendations of management actions and projects to benefit Sage Grouse in the plan area.
- 4.2.4 Encourage the implementation of the Great Basin Restoration Initiative and the Eastern Nevada Landscape Restoration Project.
- 4.2.5 Consultation with Native Americans.
- 4.2.6 Consultation with private property owners and stakeholders.
- 4.2.7 Propose, plan, and design habitat treatments for the benefit of multiple species, including Sage Grouse.
- 4.2.8 Coordinate all species management plans within and among all involved agencies.
- 4.2.9 Ensure that TRT members are involved in wilderness management planning to provide input related to sage grouse.

Objective 4.3: Implement a public education program that increases awareness of sagebrush ecosystems, Sage Grouse conservation efforts, and the role of fire.

Benefit: An informed public will be able to make educated decisions with respect to sagebrush and Sage Grouse conservation management in the future.

Success Standard: An informed public with opportunities for involvement.

Strategy:

- 4.3.1 Initiate a public education campaign that encourages input from local landowners and public lands users.
- 4.3.2 Encourage input to the planning process by local interests.
- 4.3.3 Educate the public about the risks to Sage Grouse by inappropriate use of OHVs.

Objective 4.4: Complete a formalized, workable local plan, accepted by the local county commissions, which will be incorporated into a statewide plan, and will be acceptable to USFWS under the PECE policy.

Benefit: Completion of an effective and implementable Sage Grouse conservation plan will give guidance and direction to complete projects beneficial to the sagebrush ecosystem, ensure sustainable Sage Grouse populations, and keep control of Sage Grouse management in local hands.

Success Standard: Preclude Endangered Species Act listing and regulatory actions on Sage Grouse through completion of a formal local plan and acceptance by the Lincoln County Board of Commissioners, its incorporation into a statewide plan, and its acceptance to the USFWS under the PECE policy.

Strategy:

- 4.4.1 Draft a local plan that conforms to the effective and implementable criteria of the USFWS PECE policy and is acceptable to the local community.
- 4.4.2 Use a broadly represented, consensus-based planning group.

PLAN IMPLEMENTATION

The projects proposed will be designed in such a way that they provide as much information as possible to guide further management actions. Towards that end projects will be sized and laid out so as to maximize effective use of available funds, optimize edge effects, provide residual cover, mimic natural fire effects and result in a mosaic appearance.

HABITAT ASSESSMENT CRITERIA

A required element for each local Nevada Sage Grouse Conservation Planning effort is to assess and evaluate habitat conditions and population risks within all PMU's. We have produced Habitat Planning Maps at varying spatial scales in order to achieve these objectives. In addition, the assessment criteria will be tied to the Ely BLM's Watershed Assessment Process wherever possible. The maps were first designed at the mid-level scale and were later refined at the fine-level scale of analysis using the best information available. They will ultimately provide an overall spatial portrayal of Sage Grouse sub-populations and habitat conditions in each PMU. To compliment this effort in the future, an objective and scientifically based project-level scale Habitat Assessment Criteria was developed. The pressing timeline of the Sage Grouse Conservation Plan makes it impractical to wait for newly remotely mapped vegetation data, comprehensive soil survey completion, or ecological site inventories in order to generate the habitat maps. Initial mapping efforts have been produced at a mid-scale (sub-basin) level and will be used in conjunction with data gathered at the fine-scale (watershed) level, consisting of population, habitat, and land-use data, to generate a refined fine-scale level Habitat Planning Map that will focus the planning efforts in identifying and prioritizing areas for future application of site specific Project-level Habitat Assessments and develop and implement specific on-the-ground projects and habitat restorations.

Tasks Needed to Achieve Objective 2 and 3 of the Nevada Sage Grouse Conservation Strategy:

- 1) Utilize the best available information to create a relatively simple, widely applicable Mid-level Landscape Scale Habitat Planning Map of each PMU showing Sage Grouse distributions and general habitat conditions.
- 2) Produce a Fine-Scale Habitat Planning Map, which considers habitat availability and fragmentation patterns in relation to the breeding, late brood rearing, and winter habitats. This map is not composed of detailed vegetation mapping, but broad delineations based on readily available information and "quick-and-dirty" habitat assessments of R-values (see page 27 for explanation of R-values) in prioritized areas of concern.
- 3) Develop Project- Scale Habitat Assessment Criteria relative to seasonal Sage Grouse habitat needs, to be used at a later time to develop comprehensive habitat evaluations.

The Sage Grouse Habitat Planning Map when used with fine-level population, habitat, and land-use data and project-level Habitat Assessment Criteria, will serve several purposes including:

- 1) Identifying general Sage Grouse habitat areas and aid in quickly assessing areas where Sage Grouse will be a primary concern, and those areas where Sage Grouse are not an issue.
- 2) Evaluate and document existing general Sage Grouse habitat condition, suitability, and habitat restoration needs in respect to habitat quality.
- 3) Assist in evaluating land uses on public lands that may affect Sage Grouse habitat conditions or habitat restoration efforts.
- 4) Graphically portray the degree of Sage Grouse habitat fragmentation on the landscape.
- 5) Serve as a tool for planning and prioritizing fire suppression, fuels management, and prescription activities.
- 6) Serve as an educational tool for explaining current Sage Grouse habitat conditions to resource users, cooperators, and interested parties.

This assessment process is designed to work as a hierarchical step-down analysis of Sage Grouse habitats for the Sage Grouse TRT. Many sources of national and local information were used to amass this protocol. Two documents, A Framework to Assist in Making Sensitive Species Habitat Assessments for the BLM-Administered Public Lands in Idaho (Idaho-BLM, 2000) and Guidelines to Manage Sage Grouse Populations and their Habitats (Connelly et al., 2000), provided the basis for these procedures. The local work and insight of Dr. Gary Back has also served as a building block for this protocol.

The overriding emphasis in this effort is to 1) keep it simple, 2) utilize combinations of available existing data to our best advantage, 3) identify missing data gaps and needs, and 4) produce a quality map and analysis of PMU habitat conditions and threats to Sage Grouse to be used as a planning tool by the TRT.

HABITAT ASSESSMENT PROCESS

A. Mid-Scale Information and Assessment Use

Sub-basin reviews are intended to provide an understanding of how management activities in sub-basins fit in with ecosystem and public land management approaches. Broad habitat and population status and condition data are appropriate for this scale.

Products:

1. General Habitat Planning Map

In most of the planning area suitable soils, vegetative data, and imagery are lacking to delineate existing and potential habitats to a fine-scale level. Until new vegetation mapping data and products are available that can discern important vegetation community differences, we will rely on current GAP data, and qualitative information to generate the Habitat Planning Map at the Mid-level sub-basin scale. More systematic and detailed vegetation mapping will occur at the fine-scale and then again at the project-level scale.

2. Watershed Assessments Schedule

Because of the large area comprised of public lands in the planning area that are administered by the BLM, Sage Grouse habitat assessments on a watershed basis will occur over many years. Therefore, it is essential that these evaluations be systematically planned and designed to address areas where habitats are most important, most susceptible to change or have the greatest restoration potential.

B. Fine-Scale Information and Assessment Use

Generally, fine-scale information is processed at the watershed level, but in some cases, it may be more appropriately collected at the allotment level. When fine-scale data (land use applications and locations, Sage Grouse population status and seasonal habitat dispersals, and more detailed vegetation delineations), is used in conjunction with mid-scale data (Habitat Planning Maps), areas of concern can be documented and a prioritized approach to population and habitat protection and restoration can be developed.

Products:

1. Synthesized Sage Grouse Population Data

These data will assist in defining areas of management and evaluation emphasis and be used to focus attention at the sub-population level. These data include the following:

- Lek Attendance/Monitoring Surveys
- Lek Status
- Brood surveys
- Random Sightings/Observations
- Season of Use Areas (Nesting/Early Brood-rearing, Brood Rearing, and Wintering)
- Population Viability Assessments

2. General Land Use Information

At this scale, gathering general public land use information will be very helpful and includes, but is not limited to the following:

- Watershed boundaries
- Grazing allotment and use area boundaries

Range improvement projects (chainings, seedings, water pipelines, etc)
Waters (Developed and Undeveloped)
WSA Boundaries
HMA Boundaries
Utility Corridors
Land Ownership
Roads

3. Refined Vegetation and Habitat Planning Map of Sage Grouse Sub-Populations

Working in the fine-scale, we begin to consider habitat availability and fragmentation patterns in relation to the breeding, late brood rearing, and winter habitat on specific sites of Sage Grouse sub-populations within the PMU. Refining the Habitat Planning Map is important at this stage, but is still not composed of detailed vegetation mapping, but broad delineations based on readily available information and “quick-and-dirty” habitat assessments of R-values in prioritized areas of concern.

- a. Breeding and Winter Habitats: Delineating R-values on sagebrush vegetation on breeding and winter habitats at the fine-scale level can be accomplished by utilizing the following existing GIS data layers and information:

Ecological Site Inventory (ESI) Maps and Data
Soil Maps
Historic Fire Information
Fire Emergency Rehabilitation Files/Maps
Fuels Management Files/Maps
Range Project/Allotment Files/Maps
Aerial and Satellite Imagery
Elevation Models

- b. Late Brood-rearing Habitats: At this scale, it is important to delineate the extent of brood-rearing areas that are potentially significant. GAP data is extremely lacking in this attribute and consistently confuses agriculture with wet-meadows/riparian habitats. Areas with wet meadow complexes, sagebrush areas adjacent to agricultural fields, perennial streams, and lakes, ponds or lakebeds with sagebrush in close proximity are typical late brood-rearing habitats for consideration. Several information sources are important to use at this scale:

National Wetland Inventory (NWI) Maps
State Water Right Files/Claims
Riparian Proper Functioning Condition (PFC) assessments and maps
Infrared Aerial Photography

C. Project-level Information and Site Assessments

Project-level or site-specific assessments will involve qualitative and quantitative on-the-ground data collection depending on management needs. Site-specific project-level procedures are to be used for a variety of purposes including detailed habitat assessments to characterize current habitat conditions, rangeland health evaluations through watershed analysis, proposed land exchanges, or to evaluate/monitor proposed habitat restoration projects.

Products:

1. Habitat Assessment Criteria

Appendices 1-4 represent the criteria of quantitative data to be evaluated during Habitat Assessments by Sage Grouse seasons of use (breeding, late brood rearing, and winter). Datasheets can be filled out without quantified data collection, but field workers should initially quantify all measurements to calibrate their visual estimation abilities. While the assessment framework allows for considerable flexibility in data type and detail, in complex or controversial areas, only qualitative evaluations should be used.

2. Detailed Habitat Assessments on Prioritized Site Selections

Priority and refined habitat areas of sub-populations identified at the fine-scale should be used to select restoration project sites for evaluation using the above Habitat Assessment Criteria.

It is important to note that not all indicators need to be in the “suitable habitat” category for a site to be considered as suitable. For example, if a site had suitable breeding habitat conditions for all indicators except sagebrush canopy cover (site had 30% canopy) then a site rating of suitable would be appropriate. However, if a site had suitable habitat conditions for all indicators except that sagebrush canopy cover was only 5%, then the site would be unsuitable since Sage Grouse must have sagebrush for nesting. Overall site evaluations will be based on best professional judgment with interdisciplinary involvement.

There are some general rules that will be followed for each seasonal habitat assessment involving site selection and timing (See General Directions at the bottom of Appendices 1-3).

HABITAT AND R-VALUES

Ø Key Habitat: All naturally large-scale habitats currently, historically, or potentially capable of supporting Sage Grouse populations. These habitats provide one or more of the seasonal requirements of the species in its life cycle. This does not imply critical, crucial, or high value/quality habitat, but only that the areas can, did, or could support Sage Grouse populations.

Quality Habitats (R0): Areas of intact sagebrush dominated habitats with good understory components. Meets the acceptable criteria for both sagebrush canopy and grass/forb understory. High priority habitats for protection.

Restoration Habitats: Areas that currently are, historically were, or potentially could be Sage Grouse habitat, and that if restored, would provide better habitat at sometime in the future.

R1: Areas with limited sagebrush, with acceptable grass and forb understory composition. May include native and seeded perennial grass rangelands.

R2: Areas with inadequate grass/forb understory composition, with or without adequate sagebrush cover. Expensive management treatments are needed for restoration.

- ∉ R2a: Decadent Sagebrush; cover exceeds the recommended levels.
- ∉ R2b: Areas where perennial or annual invasive species are present and will likely establish and dominate after a disturbance event. The site is at risk, but the threshold has yet to be crossed.
- ∉ R2c: Perennial or annual invasive dominated due to disturbance event. The threshold has been crossed.
- ∉ R2d: Excessive or inappropriate disturbance on the understory grass/forb component.

R3: Areas where natural sagebrush rangeland sites that have been encroached upon by Pinyon/Juniper. These are sagebrush rangelands, not natural woodland sites that predominately favor trees.

- ∉ R3a: Phase II of tree take over. Small trees of low density, with intact sagebrush/grass/forb understory. High management priority for alteration/maintenance.
- ∉ R3b: Areas where tree density has eliminated sagebrush, grass/forb understory. Where this threshold has been crossed, management options are expensive and limited.

R4: Areas where natural sagebrush rangeland sites have been type converted for private alternative use to agricultural annual grasslands/forbs (could be bare and fallow ground). Potential sagebrush habitats for restoration, but only at the discretion of the landowner.

R-VALUE DEFINITIONS

“Good” Understory: Preferred: ≥ 7 inches height, $\geq 10\%$ grass and $\geq 5\%$ forb canopy.

Acceptable: 5- <7 inches height, and 5- $<10\%$ grass, and 3- $<5\%$ forb canopy.

“Poor” Understory: <5 inches height, or $<5\%$ grass, or $<3\%$ forb canopy.

“Limited” Sagebrush: $<10\%$ canopy or <10 inches height.

“Decedent” Sagebrush: $>35\%$ canopy and/or >40 inches in height.

“Inappropriate” or “Excessive” Grazing: <5 inches height, or $<5\%$ grass, or $<3\%$ forb canopy

QUALITATIVE HABITAT ASSESSMENT CRITERIA FOR RISK AND THREAT TABLES

These tables depict risks and threats perceived by the Lincoln County Sage Grouse TRT members. Each risk is rated in the risk matrices (Appendices 5-10) for each of the Population Management Units (PMU's). Risks are rated on a scale from 0 (none) to 5 (high). If a risk rates 3 (moderate) or higher, it is considered a threat and listed in the threat tables (Appendices 11-13).

Each threat table lists threats that influence, or are perceived to influence, Sage Grouse populations during stages of their annual life cycle. The threats tend to be general in nature (e.g., human disturbance could be ATV recreation, utility corridors, or mining). When specific projects are planned in the PMU's, the specific threats will be addressed. For each threat, one or more strategies are identified to alleviate the threat. Every strategy in the threat table comes from the goals and objectives portion of the plan (see number after each strategy).

The numbering of the threats does not indicate any priority for alleviating the threat. The threats will be addressed according to their occurrence within the PMU's. The local planning group, or TRT, will prioritize projects. Additionally, the location of communities of different R-values in relation to current leks or quality habitat will influence priorities for alleviating threats.

Following the threat tables, task lists and implementation schedules for each PMU that identify conservation actions deemed necessary by the Lincoln County Sage Grouse TRT members to alleviate the identified threats are provided (Appendices 14-16). Next, a summary of responsibilities by cooperators for addressing and conducting the identified tasks is provided (Appendix 17). Lastly, a prioritized list of proposed projects to benefit Sage Grouse in each PMU, based on an analysis of the identified risks, is provided (Appendix 18). Appendices 14-18 will be completed as the TRT continues to develop the plan and receive input from the Governor's Team on how to proceed.

Appendix 1. Nesting and early brood rearing habitat features and indicators.*

Habitat Feature	Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Nesting Cover	Big sagebrush canopy cover	15-25%	10-14% or 26-35%	<10% or >35%
Nesting Cover Mesic Site Arid Site	Big sagebrush height	15-30 inches 12-30 inches	10-14 or 31-40 inches 10-11 or 31-40 inches	<10 or >40 inches <10 or >40 inches
Nesting Cover	Big sagebrush growth form	Spreading form, few if any dead branches	Mix of spreading and columnar growth forms	Tall, columnar growth form with dead branches
Nesting Cover	Herbaceous perennial grass/forb height	>=7 inches	5- <7 inches	< 5 Inches
Nesting Cover/Food Mesic Site ^a Arid Site ^b	Perennial grass canopy cover	>= 15% >= 10%	5-14% 5- <10%	<5% <5%
Nesting Cover/Food Mesic Site ^a Arid Site ^b	Forb canopy cover	>= 10% >= 5%	5- <10% 3- <5%	<5% <3%
Food	Forb Diversity	Forbs common, with at least a few preferred species present	Forbs common but only 1 or 2 preferred species present	Forbs rare to sparsely present

* Source: USDI BLM-Idaho. 2000. A Framework to Assist in Making Sensitive Species Habitat Assessments for BLM-Administered Lands in Idaho.

Note: The data in Appendix I was developed for sites in Idaho with 10” or more of annual precipitation. Northern Lincoln County, NV, being approximately 300 miles south of Idaho is significantly different in terms of vegetative cover. Although at the edge of natural range of the Sage Grouse, the birds are adapted to conditions in this area and do well in areas of appropriate habitat.

^a Mesic Site= Sites are generally in a >12” precipitation zone and *Artemisia tridentata vaseyana* is the common big sagebrush sub-species in the area.

^b Arid Site= Sites are generally in the 10-12” precipitation zone and *Artemisia tridentata wyomingensis* is the common big sagebrush sub-species in the area.

General Directions

- 1) Sites should be located on flat to slightly sloping lands. Slopes greater than 40% are unsuitable nesting habitat
- 2) Breeding habitat must be evaluated as close to the end of nesting as possible (Late May). For low elevation areas this will be May, or higher elevation areas it will be June.
- 3) Evaluation sites will be located at least ¼ mile from livestock water.
- 4) Where possible, utilize key areas for rangeland trend monitoring only if they are representative.
- 5) Precipitation can effect annual forb growth-if precipitation is a interpretation factor then this should be noted in the comment section.
- 6) Good nesting habitat may be provided disproportionately in small inclusions of big sagebrush surrounded by low sagebrush. In these situations nesting conditions should be measured in the big sagebrush patches. However, the low sagebrush community likely provides important pre-nesting and early brood-rearing habitat and should be evaluated for the forb composition indicators.
- 7) Where present, representative evaluation sites will be selected from major cover types of sagebrush/perennial grass, sagebrush/annual grass, perennial grasslands, annual grasslands, and sagebrush types becoming dominated by pinyon and juniper.

Appendix 2. Late brood-rearing habitat features and indicators.*

Habitat Feature	Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Food	Riparian and wet meadow plants	Mesic or wetland plant species dominate wet meadow or riparian area	Xeric plant species invading wet meadow or riparian area	Xeric plant species along waters edge or near center of wet meadow
Cover and Food	Riparian and wet meadow stability	No erosion evident: some bare ground may be evident but vegetative cover dominates the site	Minor erosion occurring and bare ground may be evident but vegetative cover dominates the site	Major erosion evident large patches of bare ground
Food	Forb availability in uplands and wetland areas ^a	Succulent forbs are readily available in terms of distribution and plant structure	Succulent forbs are available though distribution is spotty or plant structure limits effective use	Succulent forbs are scarce or not available due to site conditions or plant structure, despite favorable growing conditions
Cover	Proximity of sagebrush cover	Sagebrush cover is adjacent (<100 yards) to brood-rearing area	Sagebrush cover is in close proximity (100-300 yards) of brood-rearing areas	Sagebrush cover is unavailable (> 300 yards)

* Source: USDI BLM-Idaho. 2000. A Framework to Assist in Making Sensitive Species Habitat Assessments for BLM-Administered Lands in Idaho.

^a Forb availability and plant structure:

- a. In some cases forbs may be present on the site but trampling or grazing intensity may affect availability.
- b. Upland sites should only be evaluated if green, succulent forbs are present at the time of the site visit. Evaluating an area after forbs have desiccated is not advised even if the site may provide late brood-rearing habitat.

General Directions

- 1) Conducted in areas identified as important late brood-rearing habitats during fine-scale review.
- 2) Riparian areas and wet meadows located in deep canyons should not be considered brood-rearing habitat.
- 3) Evaluation sites should not be located in designated livestock stream crossings or water gaps.
- 4) Evaluations must be done in July-October, unless an adequate assessment can be done with existing data.

Appendix 3. Winter habitat features and indicators.*

Habitat Feature	Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Cover and Food	Sagebrush canopy cover	10-30%	5-9% or >30%	<5%
Cover and Food	Sagebrush height ^a	Generally normal tall or a diversity of sagebrush heights relative to species and site potential	Hedged shrubs, with some tall shrubs but generally more moderate to slightly shorter shrubs relative to site potential	Severely hedged, with poor height diversity and generally short shrubs relative to species and site potential

* Source: USDI BLM-Idaho. 2000. A Framework to Assist in Making Sensitive Species Habitat Assessments for BLM-Administered Lands in Idaho.

^a Sagebrush height: Measuring sagebrush heights above snow during the winter would be difficult for many areas. Since the evaluation sites are located in known or suspected wintering areas, sagebrush heights in the area relative to sagebrush species and ecological site is an important habitat indicator.

General Directions

- 1) Conducted in areas that were identified as winter areas during the fine-scale review.
- 2) Low elevation, fragmented sagebrush areas may provide important winter habitat.
- 3) Winter and breeding habitat will overlap in many areas although low sagebrush areas associated with wind swept ridges are often used.
- 4) Evaluations can be done at any time since sagebrush distribution, cover, and height are the only factors of concern.

Appendix 4. Characteristics of sagebrush rangeland needed for productive Sage Grouse habitats* .

	Breeding		Brood-rearing		Winter ^e	
	Height (inches)	Canopy (%)	Height (inches)	Canopy (%)	Height (inches)	Canopy (%)
<u>Mesic Sites^a</u>						
Sagebrush	15-30	15-25	15-30	10-25	10-15	10-30
Grass/Forb	>7 ^c	>= 25 ^d	Variable	>15	N/A	N/A
<u>Arid Sites^a</u>						
Sagebrush	12-30	15-25	15-30	10-25	25-35	10-30
Grass/Forb	>= 7 ^c	>= 15	Variable	>15	N/A	N/A
<u>Area^b</u>	>80		>40		>80	

* Source: Connelly, J.W., M.A Schroeder, A.R Sands, and C.E Braun. 2000. Guidelines to manage Sage Grouse populations and their habitats. Wildlife Society Bulletin 28(4): 967-985.

^a Mesic and Arid sites should be defined on a local basis: annual precipitation, herbaceous understory, and soils should be considered.

^b Percentage of seasonal habitat needed with indicated conditions.

^c Measured as “droop height”; the highest naturally growing portion of the plant.

^d Coverage should exceed 15% for perennial grasses and 10% for forbs: values should be substantially greater if most sagebrush has growth form that provides little lateral cover.

^e Values for height and canopy coverage are for shrubs exposed above snow.

Appendix 5. Risks to Sage Grouse for Cave Valley Portion of Steptoe-Cave PMU.

Risk	Rating	Comments
Fire – too much	1	Determine the historic fire regime for Cave Valley PMU
Fire – too little	4	Determine the historic fire regime for Cave Valley PMU
Human-caused mortality (hunting & poaching)	2	
Disease	1	Rating is based on few data; no disease as of yet has been detected, but further investigation is warranted
Pesticides	1	
Laws/policies/regulations	3	Include NEPA, Migratory Bird Act, Wilderness, ESA, Wild Horse and Burro Act, BLM Fire Plan/Policy, lawsuits
Livestock grazing – too much	3	Site-specific; grazing impacts need to be identified and evaluated on a case-by-case basis
Livestock grazing – too little	1	Site-specific; grazing impacts need to be identified and evaluated on a case-by-case basis
Wild horse/burro grazing – too much	4	Have limited/minimal ability to manage horses/burros
Wildlife grazing/browsing – too much	2	Primarily attributable to elk; important to know historical grazing/browsing impact of rabbits.
Wildlife grazing/browsing – too little	1	Little available information on this impact
Mining	1	
Human Impacts – direct (collisions with vehicles & structures)	1	
Human Impacts – direct (shed antler hunting)	2	
Human Impacts – direct (off-road racing)	2	
Human Impacts – direct (Research & monitoring)	1	
<i>Human Impacts – direct – Mean</i>	1	
Human Impacts – indirect (fences, windmills, powerlines)	2	These structures provide perch site for predatory birds
<i>Human impacts – indirect – Mean</i>	1.5	
Predation	3	Rating is based on few data; little predation has been observed, but a high number of predators (e.g., corvids) has been observed
Insects – too many	1	
Insects – too few	2	Determine where brood rearing occurs and whether enough insects occur in such areas
Climate/Weather	4	Have limited ability to control weather conditions; should attempt to improve habitat to buffer effects of suboptimal (e.g., drought/severe weather) conditions on Sage Grouse. Long-term climate trends may affect habitat conditions and Sage Grouse population viability.
Water Distribution	3	Improve springs, install water developments, and conduct other water development projects where necessary
Invasive or Noxious Weeds	1	
Pinyon-Juniper Invasion	5	Conduct large-scale habitat improvement projects; the Lincoln County T.R.T. contends that this is the major threat to Sage Grouse within the planning area

Appendix 6. Summary of Habitat Risks to Sage Grouse for Cave Valley Portion of Steptoe-Cave PMU.

Risk	Rating	Comments
Habitat Quantity (breeding)	3	
Habitat Quantity (early brood)	3	
Habitat Quantity (late brood)	4	
Habitat Quantity (winter)	1	
<i>Habitat Quantity – Mean</i>	2.75	
Habitat Quality (breeding)	3	
Habitat Quality (early brood)	3	
Habitat Quality (late brood)	4	
Habitat Quality (winter)	1	
<i>Habitat Quality – Mean</i>	2.75	

Appendix 7. Risks to Sage Grouse for Lincoln PMU.

Risk	Rating	Comments
Fire – too much	1	Restore historic fire regime
Fire – too little	5	Restore historic fire regime
Human-caused mortality (hunting & poaching)	1	
Disease	1	More information needed
Pesticides	2	Could be problematic around brooding areas adjacent to irrigated fields on private lands
Laws/policies/regulations	3	Include NEPA, Migratory Bird Act, Wilderness, ESA, Wild Horse and Burro Act, BLM Fire Plan/Policy, lawsuits
Livestock grazing – too much	3	Site-specific; grazing impacts need to be identified and evaluated on a case-by-case basis
Livestock grazing – too little	2	Site-specific; grazing impacts need to be identified and evaluated on a case-by-case basis
Wild horse grazing - too much	4	Wild horse numbers are above AML at present. Excessive numbers of wild horses cause habitat degradation.
Mining	1	Impacts of mining appear to be low at present time.
Human Impacts – direct (collisions with vehicles & structures)	1	Little information available
Human Impacts – direct (shed antler hunting)	3	Occurs at known lek, nesting, and brooding areas
Human Impacts – direct (off-road racing)	2	Conflicts are avoidable through communication between wildlife and land management agencies
Human Impacts – direct (off-road vehicles)	3	
Human Impacts – direct (general recreation, excluding off-road racing and vehicles)	2	Primary impacts occur post-brooding (late fall)
Human Impacts – direct (Research & monitoring)	1	
<i>Human Impacts - direct - Mean</i>	2	
Human Impacts – indirect (fences, windmills, powerlines)	3	These structures provide perch site for predatory birds
Predation	3	Related to habitat quality/quantity
Insects – too many	1	
Insects – too few	2	
Climate/Weather	4	Have limited ability to control weather conditions; should attempt to improve habitat to buffer effects of suboptimal (e.g., drought/severe weather) conditions on Sage Grouse . Long-term climate trends may affect habitat conditions and Sage Grouse population viability.
Water Distribution	3	Improve springs, install water developments, and conduct other water development projects where necessary
Invasive or Noxious Weeds	3	Include cheatgrass, thistles; much future potential
Pinyon-Juniper Invasion	5	Conduct large-scale habitat improvement projects; the Lincoln County T.R.T. contends that this is the major threat to Sage Grouse within the planning area

Appendix 8. Summary of Habitat Risks to Sage Grouse for Lincoln PMU.

Risk	Rating	Comments
Habitat Quantity (breeding)	4	
Habitat Quantity (nesting, early brood)	4	
Habitat Quantity (late brood)	3	
Habitat Quantity (winter)	3	
<i>Habitat Quantity – Mean</i>	3.5	Primarily attributable to pinyon-juniper expansion
Habitat Quality (breeding)	3	
Habitat Quality (nesting, early brood)	4	
Habitat Quality (late brood)	3	Potential for deterioration over time
Habitat Quality (winter)	3	
<i>Habitat Quality - Mean</i>	3.25	Primarily attributable to pinyon-juniper expansion

Appendix 9. Risks to Sage Grouse for Quinn PMU. Note: very little information available.

Risk	Rating	Comments
Fire – too much	1	Determine the historic fire regime for Quinn PMU
Fire – too little	4	Determine the historic fire regime for Quinn PMU
Human-caused mortality (hunting & poaching)	1	
Disease	1	Unknown
Pesticides	2	
Laws/policies/regulations	4	Include CFRs, NEPA, Migratory Bird Act, Wilderness, ESA, Wild Horse and Burro Act, BLM Fire Plan/Policy, lawsuits
Livestock grazing – too much	3	Site-specific; grazing impacts need to be identified and evaluated on a case-by-case basis
Livestock grazing – too little	1	Site-specific; grazing impacts need to be identified and evaluated on a case-by-case basis
Wild horse grazing - too much	4	Wild horse numbers are above AML at present. Excessive numbers of wild horses cause habitat degradation.
Mining	2	Impacts of mining appear to be low at present time.
Human Impacts – direct (collisions with vehicles & structures)	1	
Human Impacts – direct (shed antler hunting)	1	
Human Impacts – direct (off-road racing)	2	
Human Impacts – direct (off-road vehicles)	2	
Human Impacts – direct (general recreation, excluding off-road racing and vehicles)	2	
Human Impacts – direct (Research & monitoring)	0	
<i>Human Impacts - direct - Mean</i>	1.17	
Human Impacts – indirect (fences, windmills, powerlines)	1	These structures provide perch site for predatory birds
Predation	3	Very little information available
Insects – too many	1	
Insects – too few	2	
Climate/Weather	4	Have limited ability to control weather conditions; should attempt to improve habitat to buffer effects of suboptimal (e.g., drought/severe weather) conditions on Sage Grouse . Long-term climate trends may affect habitat conditions and Sage Grouse population viability.
Water Distribution	3	Improve springs, install water developments, and conduct other water development projects where necessary
Invasive or Noxious Weeds	3	Include cheatgrass, thistles; much future potential
Pinyon-Juniper Invasion	5	Conduct large-scale habitat improvement projects; the Lincoln County T.R.T. contends that this is the major threat to Sage Grouse within the planning area

Appendix 10. Summary of Habitat Risks to Sage Grouse for Quinn PMU.

Risk	Rating	Comments
Habitat Quantity (breeding)	1	
Habitat Quantity (nesting, early brood)	2	
Habitat Quantity (late brood)	3	
Habitat Quantity (winter)	1	
<i>Habitat Quantity – Mean</i>	1.75	
Habitat Quality (breeding)	1	
Habitat Quality (nesting, early brood)	2	
Habitat Quality (late brood)	3	
Habitat Quality (winter)	2	
<i>Habitat Quality - Mean</i>	2	Very little information available

Appendix 11. Steptoe Valley/Cave Valley Population Management Unit Threat Table.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
A. Fragmentation of Habitat from Pinyon/Juniper Invasion Rated: 5	A1: Identify high priority areas for the reestablishment of natural fire frequencies (e.g., managed natural fire).	2.1.6
	A2: Remove pinyon/juniper trees that are invading areas within 0.5 miles of currently active strutting grounds.	2.1.7
	A3: Identify all sagebrush communities that are now dominated by pinyon-juniper or where pinyon-juniper are becoming established and prioritize for projects.	2.2.3
	A4: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.	2.2.4 3.2.2
	A5: Use fire (prescribed burning or managed natural fire) to treat areas of decadent sagebrush or pinyon-juniper dominated sagebrush communities where appropriate.	2.2.5
	A6: Declare Full-Suppression and managed natural or prescribed fire areas for fire management activities.	2.2.6
	A7: Use prescribed fire to reduce heavy fuel loads in seral stage P-J and sagebrush communities.	2.2.7
	A8: Conduct a retrospective study of the effects of past fires and other disturbances such as seedings and chainings and describe vegetative succession in these areas.	1.2.1
	A9: Identify all sagebrush sites that have become dominated by P-J and prioritize for projects.	3.2.1
	A10: Use all appropriate means (e.g., fire, mechanical, and chemical, etc.) to treat pinyon-juniper sites that have the potential to support sagebrush habitats.	3.2.4
	A11: Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.	3.3.1
	A12: Identify and recommend full-suppression, managed natural, and prescribed fire areas for fire management activities in the plan area as relates to Sage Grouse habitat (across all jurisdictions, e.g., NDOW, NSP, USFS).	3.3.2
	A13: Use prescribed fire to reduce heavy fuel loads in identified areas.	3.3.3
	A14: Coordinate with and include Federal Agency fire managers into the planning process or educate them as part of the completion of the plan.	3.3.4

Appendix 11. Continued.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
B. Fire – Too Little Rated: 4	B1: Identify high priority areas for the reestablishment of natural fire frequencies (e.g., managed natural fire).	2.1.6
	B2: Use fire (prescribed burning or managed natural fire) to treat area of decadent sagebrush or pinyon-juniper dominated sagebrush communities where appropriate	2.2.5
	B3: Declare full suppression and managed natural or prescribed fire areas for fire management activities.	2.2.6
	B4: Use prescribed fire to reduce heavy fuel loads in seral stage pinyon-juniper and sagebrush communities	2.2.7
	B5: Use all appropriate means (e.g., fire, mechanical, or chemical methods) to treat degraded sagebrush communities to restore age class diversity.	3.2.4
	B6: Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.	3.3.1
	B7: Identify and recommend full suppression, managed natural, and prescribed fire areas for fire management activities in the plan area as they relate to Sage Grouse habitat (across all jurisdictions).	3.3.2
	B8: Use prescribed fire to reduce heavy fuel loads in identified areas.	3.3.3
	B9: Coordinate with and include Federal Agency fire managers into the planning process or educate them as part of the completion of the plan.	3.3.4
C. Climate/Weather (mitigate impacts) Rated: 4	C1: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.	3.2.2
	C2: Use all appropriate means (e.g., fire, mechanical, and chemical, etc.) to treat pinyon-juniper sites that have the potential to support sagebrush habitats.	3.2.3
	C3: Use all appropriate means (e.g., fire, mechanical, or chemical methods) to treat senescent or degraded sagebrush communities to restore age class diversity.	3.2.4
D. Predation Rated: 3	D1: To augment recovery or management efforts, use predator control in Sage Grouse habitats where appropriate, e.g., where high numbers of predators are found, congregate, or where high predation rates are known.	2.1.4
	D2: Initiate research projects that will benefit management and provide additional needed information on population/habitat dynamics.	1.1.5

Appendix 11. Continued.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
E. Livestock Grazing – Too Much Rated: 3	E1: Develop alternative grazing areas to draw grazing animals away from Sage Grouse leks and nesting habitats.	2.2.2
	E2: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.	2.2.4
	E3: Explore the role of herbivores in affecting sagebrush ecosystem health.	1.2.4
	E4: Identify and reduce the detrimental effects of inappropriate grazing on Sage Grouse habitats.	3.1.2
	E5: Develop new grazing areas to draw grazing ungulates away from Sage Grouse leks and nesting habitats at critical times.	3.1.3
	E6: Examine permitted grazing areas in Sage Grouse habitat and make recommendations for management, including using the CRM process.	3.1.5
F. Wild Horse Grazing – Too Much Rated: 4	F1: Develop alternative grazing areas to draw grazing animals away from Sage Grouse leks and nesting habitats.	2.2.2
	F2: Explore the role of herbivores in affecting sagebrush ecosystem health.	1.2.4
	F3: Identify and reduce the detrimental effects of inappropriate grazing on Sage Grouse habitats.	3.1.2
	F4: Develop new grazing areas to draw grazing ungulates away from Sage Grouse leks and nesting habitats at critical times.	3.1.3
G. Water Distribution Rated: 3	G1: Install water developments in areas of otherwise suitable habitat.	3.4.1
	G2: Work with permittees and water rights owners to ensure availability of water on a perennial basis where applicable.	3.4.2
	G3: Cooperate with water rights owners to leave water at all spring sources for wildlife use in accordance with Nevada Water Law.	3.4.3
	G4: Cooperate with water rights owners to explore the possibility of using infrequently used wells as water sources for Sage Grouse.	3.4.4
	G5: Cooperate with water rights owners to restore and maintain previously available water sources where feasible.	3.4.5
	G6: Inventory and identify privately owned water rights prior to any water development.	3.4.6
	G7: Remove pinyon-juniper in vicinity of springs to improve spring flow and water availability plus improve spring outflow wetlands habitat.	3.4.7

Appendix 11. Continued.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
H. Laws, Policies, and Regulations Rated: 3	H1: Support the implementation of the Great Basin Restoration Initiative through the Eastern Nevada Landscape Restoration Project.	3.1.10
	H2: Coordinate all species management plans within and among all involved agencies.	4.2.8
	H3: Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.	3.3.1
	H4: Coordinate with and include Federal Agency fire managers into the planning process or educate them as part of the completion of the plan.	3.3.4
	H5: CRM Steering Committees and associated Technical Review Teams actively monitor progress of plan implementation.	4.2.1
	H6: Ensure that TRT members are involved in the planning process for land management decisions.	4.2.2
	H7: TRT members make recommendations of management actions and projects to benefit Sage Grouse in the plan area.	4.2.3
	H8: Encourage the implementation of the Great Basin Restoration Initiative and the Eastern Nevada Landscape Restoration Project.	4.2.4
	H9: Consultation with Native Americans.	4.2.5
	H10: Propose, plan, and design habitat treatments for the benefit of multiple species, including Sage Grouse.	4.2.6
	H11: Coordinate all species management plans within and among all involved agencies.	4.2.7
	H12: Draft a local plan that conforms to the effective and implementable criteria of the USFWS PECE policy.	4.4.1
	H13: Use a broadly represented consensus based planning group.	4.4.2

Appendix 12. Lincoln Population Management Unit Threat Table.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
<p>A. Fragmentation of Habitat from Pinyon/Juniper Invasion Rated: 5</p>	<p>A1: Identify high priority areas for the reestablishment of natural fire frequencies (i.e. managed natural fire).</p>	2.1.6
	<p>A2:—Remove pinyon/juniper trees that are invading areas within 0.5 miles of currently active strutting grounds.</p>	2.1.7
	<p>A3: Identify all sagebrush communities that are now dominated by pinyon-juniper or where pinyon-juniper are becoming established and prioritize for projects.</p>	2.2.3
	<p>A4: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.</p>	2.2.4 3.2.2
	<p>A5: Use fire (prescribed burning or managed natural fire) to treat areas of decadent sagebrush or pinyon-juniper dominated sagebrush communities where appropriate.</p>	2.2.5
	<p>A6: Declare Full-Suppression and managed natural or prescribed fire areas for fire management activities.</p>	2.2.6
	<p>A7: Use prescribed fire to reduce heavy fuel loads in seral stage P-J and sagebrush communities.</p>	2.2.7
	<p>A8: Conduct a retrospective study of the effects of past fires and other disturbances such as seedings and chainings and describe vegetative succession in these areas.</p>	1.2.1
	<p>A9: Identify all sagebrush sites that have become dominated by P-J and prioritize for projects.</p>	3.2.1
	<p>A10: Use all appropriate means (e.g., fire, mechanical, and chemical, etc.) to treat pinyon-juniper sites that have the potential to support sagebrush habitats.</p>	3.2.4
	<p>A11: Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.</p>	3.3.1
	<p>A12: Identify and recommend full-suppression, managed natural, and prescribed fire areas for fire management activities in the plan area as relates to Sage Grouse habitat (across all jurisdictions, i.e. NDOW, NSP, USFS).</p>	3.3.2
	<p>A13: Use prescribed fire to reduce heavy fuel loads in identified areas.</p>	3.3.3
	<p>A14: Coordinate with and include Federal Agency fire managers into the planning process or educate them as part of the completion of the plan.</p>	3.3.4

Appendix 12. Continued.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
B. Fire – Too Little Rated: 5	<p>B1: Identify high priority areas for the reestablishment of natural fire frequencies (i.e. managed natural fire).</p> <p>B2: Use fire (prescribed burning or managed natural fire) to treat area of decadent sagebrush or pinyon-juniper dominated sagebrush communities where appropriate</p> <p>B3: Declare full suppression and managed natural or prescribed fire areas for fire management activities.</p> <p>B4: Use prescribed fire to reduce heavy fuel loads in seral stage pinyon-juniper and sagebrush communities</p> <p>B5: Use all appropriate means (e.g., fire, mechanical, or chemical methods) to treat degraded sagebrush communities to restore age class diversity.</p> <p>B6: Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.</p> <p>B7: Identify and recommend full suppression, managed natural, and prescribed fire areas for fire management activities in the plan area as they relate to Sage Grouse habitat (across all jurisdictions).</p> <p>B8: Use prescribed fire to reduce heavy fuel loads in identified areas.</p> <p>B9: Coordinate with and include Federal Agency fire managers into the planning process or educate them as part of the completion of the plan.</p>	<p>2.1.6</p> <p>2.2.5</p> <p>2.2.6</p> <p>2.2.7</p> <p>3.2.4</p> <p>3.3.1</p> <p>3.3.2</p> <p>3.3.3</p> <p>3.3.4</p>
C. Wild Horse Grazing – Too Much Rated: 4	<p>C1: Develop alternative grazing areas to draw grazing animals away from Sage Grouse leks and nesting habitats.</p> <p>C2: Explore the role of herbivores in affecting sagebrush ecosystem health.</p> <p>C3: Identify and reduce the detrimental effects of inappropriate grazing on Sage Grouse habitats.</p> <p>C4: Develop new grazing areas to draw grazing ungulates away from Sage Grouse leks and nesting habitats at critical times.</p>	<p>2.2.2</p> <p>1.2.4</p> <p>3.1.2</p> <p>3.1.3</p>
D. Climate/Weather (mitigate impacts) Rated: 4	<p>D1: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.</p> <p>D2: Use all appropriate means (e.g., fire, mechanical, and chemical, etc.) to treat pinyon-juniper sites that have the potential to support sagebrush habitats.</p> <p>D3: Use all appropriate means (e.g., fire, mechanical, or chemical methods) to treat senescent or degraded sagebrush communities to restore age class diversity.</p>	<p>3.2.2</p> <p>3.2.3</p> <p>3.2.4</p>

Appendix 12. Continued.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
<p>E. Laws, Policies, and Regulations Rated: 3</p>	E1: Support the implementation of the Great Basin Restoration Initiative through the Eastern Nevada Landscape Restoration Project.	3.1.10
	E2: Coordinate all species management plans within and among all involved agencies.	4.2.8
	E3: Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.	3.3.1
	E4: Coordinate with and include Federal Agency fire managers into the planning process or educate them as part of the completion of the plan.	3.3.4
	E5: CRM Steering Committees and associated Technical Review Teams actively monitor progress of plan implementation.	4.2.1
	E6: Ensure that TRT members are involved in the planning process for land management decisions.	4.2.2
	E7: TRT members make recommendations of management actions and projects to benefit Sage Grouse in the plan area.	4.2.3
	E8: Encourage the implementation of the Great Basin Restoration Initiative and the Eastern Nevada Landscape Restoration Project.	4.2.4
	E9: Consultation with Native Americans.	4.2.5
	E10: Propose, plan, and design habitat treatments for the benefit of multiple species, including Sage Grouse.	4.2.6
	E11: Coordinate all species management plans within and among all involved agencies.	4.2.7
	E12: Draft a local plan that conforms to the effective and implementable criteria of the USFWS PECE policy.	4.4.1
	E13: Use a broadly represented consensus based planning group.	4.4.2
<p>F. Livestock Grazing – Too Much Rated: 3</p>	F1: Develop alternative grazing areas to draw grazing animals away from Sage Grouse leks and nesting habitats.	2.2.2
	F2: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.	2.2.4
	F3: Explore the role of herbivores in affecting sagebrush ecosystem health.	1.2.4
	F4: Identify and reduce the detrimental effects of inappropriate grazing on Sage Grouse habitats.	3.1.2
	F5: Develop new grazing areas to draw grazing ungulates away from Sage Grouse leks and nesting habitats at critical times.	3.1.3
	F6: Examine permitted grazing areas in Sage Grouse habitat and make recommendations for management, including using the CRM process.	3.1.5

Appendix 12. Continued.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
G. Water Distribution Rated: 3	G1: Install water developments in areas of otherwise suitable habitat.	3.4.1
	G2: Work with permittees and water rights owners to ensure availability of water on a perennial basis where applicable.	3.4.2
	G3: Cooperate with water rights owners to leave water at all spring sources for wildlife use in accordance with Nevada Water Law.	3.4.3
	G4: Cooperate with water rights owners to explore the possibility of using infrequently used wells as water sources for Sage Grouse.	3.4.4
	G5: Cooperate with water rights owners to restore and maintain previously available water sources where feasible.	3.4.5
	G6: Inventory and identify privately owned water rights prior to any water development.	3.4.6
	G7: Remove pinyon-juniper in vicinity of springs to improve spring flow and water availability plus improve spring outflow wetlands habitat.	3.4.7
H. Predation Rated: 3	H1: To augment recovery or management efforts, use predator control in Sage Grouse habitats where appropriate, i.e. where high numbers of predators are found, congregate, or where high predation rates are known. H2: Initiate research projects that will benefit management and provide additional needed information on population/habitat dynamics.	2.1.4 1.1.5
I. Human Impacts – Shed Antler Hunting Rated: 3	I1: Inventory road and other recreational accesses that contribute to disturbance of sagebrush plant communities. I2: Initiate a public education campaign that encourages input from local landowners and public lands users. I3: Encourage education of the public about the risks to Sage Grouse by inappropriate use of OHV’s. I4: Consider placing signs in critical Sage Grouse habitat alerting recreational users about the concerns about Sage Grouse in the area.	2.1.3 4.3.1 4.3.3 4.3.4
J. Human Impacts – Off-road vehicles Rated: 3	J1: Inventory road and other recreational accesses that contribute to disturbance of sagebrush plant communities. J2: Initiate a public education campaign that encourages input from local landowners and public lands users. J3: Encourage education of the public about the risks to Sage Grouse by inappropriate use of OHV’s. J4: Consider placing signs in critical Sage Grouse habitat alerting recreational users about the concerns about Sage Grouse in the area.	2.1.3 4.3.1 4.3.3 4.3.4

Appendix 12. Continued.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
<p>K. Human Impacts – Indirect (fences, windmills, powerlines - i.e. perches) Rated: 3</p>	<p>K1: Reduce the detrimental effects of human disturbance and structures (powerlines, fences, hunting, poaching, OHV usage, biological study etc.)</p> <p>K2: To augment recovery or management efforts, use predator control in Sage Grouse habitats where appropriate, i.e. where high numbers of predators are found, congregate, or where high predation rates are known.</p> <p>K3: Coordinate and investigate means to minimize the impacts of new powerlines in existing Sage Grouse habitat and encourage removal of abandoned powerlines.</p> <p>K4: Coordinate and investigate means to minimize the impacts of wind-generated power structures.</p>	<p>2.1.2</p> <p>2.1.4</p> <p>2.1.8</p> <p>2.1.9</p>
<p>L. Invasive or Noxious Weeds Rated: 3</p>	<p>L1: Conduct a retrospective study of the effects of past fires and other disturbances such as seedings and chainings and describe vegetative succession in these areas.</p> <p>L2: Encourage re-seeding of disturbed areas (i.e. resulting from chainings, fires, etc.) with plants beneficial to Sage Grouse.</p> <p>L2: Identify undesirable weed infestations and aggressively treat them to prevent spread.</p> <p>L3: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.</p> <p>L4: Use all appropriate means (e.g., fire, mechanical or chemical methods) to treat degraded sagebrush communities to restore age class diversity.</p>	<p>1.2.1</p> <p>3.1.8</p> <p>3.1.4</p> <p>3.2.2</p> <p>2.2.4</p> <p>3.2.4</p>

Appendix 13. Quinn Population Management Unit Threat Table.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
<p>A. Fragmentation of Habitat from Pinyon/Juniper Invasion Rated: 5</p>	A1: Identify high priority areas for the reestablishment of natural fire frequencies (e.g., managed natural fire).	2.1.6
	A2: Remove pinyon/juniper trees that are invading areas within 0.5 miles of currently active strutting grounds.	2.1.7
	A3: Identify all sagebrush communities that are now dominated by pinyon-juniper or where pinyon-juniper are becoming established and prioritize for projects.	2.2.3
	A4: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.	2.2.4 3.2.2
	A5: Use fire (prescribed burning or managed natural fire) to treat areas of decadent sagebrush or pinyon-juniper dominated sagebrush communities where appropriate.	2.2.5
	A6: Declare Full-Suppression and managed natural or prescribed fire areas for fire management activities.	2.2.6
	A7: Use prescribed fire to reduce heavy fuel loads in seral stage P-J and sagebrush communities.	2.2.7
	A8: Conduct a retrospective study of the effects of past fires and other disturbances such as seedings and chainings and describe vegetative succession in these areas.	1.2.1
	A9: Identify all sagebrush sites that have become dominated by P-J and prioritize for projects.	3.2.1
	A10: Use all appropriate means (e.g., fire, mechanical, and chemical, etc.) to treat pinyon-juniper sites that have the potential to support sagebrush habitats.	3.2.4
	A11: Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.	3.3.1
	A12: Identify and recommend full-suppression, managed natural, and prescribed fire areas for fire management activities in the plan area as relates to Sage Grouse habitat (across all jurisdictions, e.g., NDOW, NSP, USFS).	3.3.2
	A13: Use prescribed fire to reduce heavy fuel loads in identified areas.	3.3.3
	A14: Coordinate with and include Federal Agency fire managers into the planning process or educate them as part of the completion of the plan.	3.3.4
A1: Identify high priority areas for the reestablishment of natural fire frequencies (e.g., managed natural fire).	2.1.6	

Appendix 13. Continued.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
B. Fire – Too Little Rated: 4	<p>B1: Identify high priority areas for the reestablishment of natural fire frequencies (e.g., managed natural fire).</p> <p>B2: Use fire (prescribed burning or managed natural fire) to treat area of decadent sagebrush or pinyon-juniper dominated sagebrush communities where appropriate</p> <p>B3: Declare full suppression and managed natural or prescribed fire areas for fire management activities.</p> <p>B4: Use prescribed fire to reduce heavy fuel loads in seral stage pinyon-juniper and sagebrush communities</p> <p>B5: Use all appropriate means (e.g., fire, mechanical, or chemical methods) to treat degraded sagebrush communities to restore age class diversity.</p>	<p>2.1.6</p> <p>2.2.5</p> <p>2.2.6</p> <p>2.2.7</p> <p>3.2.4</p>
	<p>B6: Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.</p>	3.3.1
	<p>B7: Identify and recommend full suppression, managed natural, and prescribed fire areas for fire management activities in the plan area as they relate to Sage Grouse habitat (across all jurisdictions).</p>	3.3.2
	<p>B8: Use prescribed fire to reduce heavy fuel loads in identified areas.</p>	3.3.3
	<p>B9: Coordinate with and include Federal Agency fire managers into the planning process or educate them as part of the completion of the plan.</p>	3.3.4
C. Wild Horse Grazing – Too Much Rated: 4	<p>C1: Develop alternative grazing areas to draw grazing animals away from Sage Grouse leks and nesting habitats.</p>	2.2.2
	<p>C2: Explore the role of herbivores in affecting sagebrush ecosystem health.</p>	1.2.4
	<p>C3: Identify and reduce the detrimental effects of inappropriate grazing on Sage Grouse habitats.</p>	3.1.2
	<p>C4: Develop new grazing areas to draw grazing ungulates away from Sage Grouse leks and nesting habitats at critical times.</p>	3.1.3
D. Climate/Weather (mitigate impacts) Rated: 4	<p>D1: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.</p>	3.2.2
	<p>D2: Use all appropriate means (e.g., fire, mechanical, and chemical, etc.) to treat pinyon-juniper sites that have the potential to support sagebrush habitats.</p>	3.2.3
	<p>D3: Use all appropriate means (e.g., fire, mechanical, or chemical methods) to treat senescent or degraded sagebrush communities to restore age class diversity.</p>	3.2.4

Appendix 13. Continued.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
E. Laws, Policies, and Regulations Rated: 4	E1: Support the implementation of the Great Basin Restoration Initiative through the Eastern Nevada Landscape Restoration Project.	3.1.10
	E2: Coordinate all species management plans within and among all involved agencies.	4.2.8
	E3: Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.	3.3.1
	E4: Coordinate with and include Federal Agency fire managers into the planning process or educate them as part of the completion of the plan.	3.3.4
	E5: CRM Steering Committees and associated Technical Review Teams actively monitor progress of plan implementation.	4.2.1
	E6: Ensure that TRT members are involved in the planning process for land management decisions.	4.2.2
	E7: TRT members make recommendations of management actions and projects to benefit Sage Grouse in the plan area.	4.2.3
	E8: Encourage the implementation of the Great Basin Restoration Initiative and the Eastern Nevada Landscape Restoration Project.	4.2.4
	E9: Consultation with Native Americans.	4.2.5
	E10: Propose, plan, and design habitat treatments for the benefit of multiple species, including Sage Grouse.	4.2.6
	E11: Coordinate all species management plans within and among all involved agencies.	4.2.7
F. Livestock Grazing – Too Much Rated: 3	F1: Develop alternative grazing areas to draw grazing animals away from Sage Grouse leks and nesting habitats.	2.2.2
	F2: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.	2.2.4
	F3: Explore the role of herbivores in affecting sagebrush ecosystem health.	1.2.4
	F4: Identify and reduce the detrimental effects of inappropriate grazing on Sage Grouse habitats.	3.1.2
	F5: Develop new grazing areas to draw grazing ungulates away from Sage Grouse leks and nesting habitats at critical times.	3.1.3
	F6: Examine permitted grazing areas in Sage Grouse habitat and make recommendations for management, including using the CRM process.	3.1.5

Appendix 13. Continued.

Threats (If rated “3” or higher in Risk Matrix)	Strategies to Alleviate Threats	Strategy Number
G. Water Distribution Rated: 3	G1: Install water developments in areas of otherwise suitable habitat.	3.4.1
	G2: Work with permittees and water rights owners to ensure availability of water on a perennial basis where applicable.	3.4.2
	G3: Cooperate with water rights owners to leave water at all spring sources for wildlife use.	3.4.3
	G4: Cooperate with water rights owners to explore the possibility of using infrequently used wells as water sources for Sage Grouse.	3.4.4
	G5: Cooperate with water rights owners to restore and maintain previously available water sources where feasible.	3.4.5
	G6: Inventory and identify privately owned water rights prior to any water development.	3.4.6
	G7: Remove pinyon-juniper in vicinity of springs to improve spring flow and water availability plus improve spring outflow wetlands habitat.	3.4.7
H. Predation Rated: 3	H1: To augment recovery or management efforts, use predator control in Sage Grouse habitats where appropriate, e.g., where high numbers of predators are found, congregate, or where high predation rates are known.	2.1.4
	H2: Initiate research projects that will benefit management and provide additional needed information on population/habitat dynamics.	1.1.5
I. Invasive or Noxious Weeds Rated: 3	I1: Conduct a retrospective study of the effects of past fires and other disturbances such as seedings and chainings and describe vegetative succession in these areas.	1.2.1
	I2: Encourage re-seeding of disturbed areas (e.g., resulting from chainings, fires, etc.) with plants beneficial to Sage Grouse.	3.1.8
	I2: Identify undesirable weed infestations and aggressively treat them to prevent spread.	3.1.4
	I3: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.	3.2.2 2.2.4
	I4: Use all appropriate means (e.g., fire, mechanical or chemical methods) to treat degraded sagebrush communities to restore age class diversity.	3.2.4

Appendix 14. Lincoln County Planning Group Summary of Conservation Action Summary.

Conservation Action	PMU Targeted	Risk Matrix Rating	Objective(s) Targeted	Strategy Number	Priority	Responsible Parties	Assisting Parties	Year 1	Year 2	Year 3	Year 4	Year 5	Projected Cost	Funding Source
Pinyon/Juniper Removal near Lek Sites	Cave Lincoln	5	2.1 2.2 3.1 3.2	2.1.1 2.1.7 2.2.4 3.1.11 3.3.2	High	BLM NDOW								
Conversion of Pinyon/Juniper to Historic Sagebrush Grassland	Cave Lincoln	5	1.2 2.2 3.1 3.2 3.3	1.2.1 1.2.2 2.2.3 2.2.4 2.2.7 3.1.3 3.1.11 3.2.1 3.3.2 3.3.3	High	BLM								
Cool Season Prescribed Fire	Lincoln	5	1.2 3.2 3.3	1.2.1 1.2.2 3.2.1 3.2.2 3.2.3 3.3.1 3.3.2 3.3.3	High	BLM								
Reach and maintain AML's in Herd Management Areas and remove all wild horses not in Herd Management Areas	Cave Lincoln Quinn	4	3.1	1.2.4 2.2.2 3.1.2 3.1.6	Med-High	BLM								
Survey to determine location and abundance of Sage Grouse and availability of suitable habitat	Quinn Lincoln Cave	4	1.1	1.1.3 1.1.4 1.1.5 1.1.6	Med-High	NDOW	Volunteers, BLM, ENLC							
Mechanical treatment of sagebrush and subsequent seeding of grasses and forbs	Cave Lincoln	3-4	1.2 2.2 3.2	1.2.2 2.2.4 2.2.9	Med	BLM (public land), private landowners NDOW	NRCS (private land), ENLC Wildlife Services							
Exploration of impact of predators (including corvids) and benefits of control projects	Cave Lincoln	3	1.1 1.2	1.1.5 2.1.1 2.1.4	Med	NDOW	Wildlife Services							
Restoration of historic spring sites and associated riparian areas (e.g., clearing of pinyon-juniper)	Cave Lincoln	3	3.4	3.4.3 3.4.5 3.4.7	Med	BLM	NDOW NRCS							
Seeding of forbs into historic crested wheat seedings	Lincoln Cave	3-4	2.2 3.1 3.2	2.2.4 3.1.5 3.1.8 3.2.2	Med	BLM	NDOW							
Improve Availability of Water	Cave Lincoln	3	2.2 3.4	3.4.1 3.4.4	Med	NDOW BLM	Volunteers							

High Priority: includes actions that preserve existing populations and can be accomplished in a relatively short period of time.

Medium Priority: includes actions that will restore habitat on large scale, but take decades to fully implement.

When potential habitat viability studies are completed (item 5 above) then habitat improvement activities will need to be implemented.

Appendix 15. Summary of Responsibilities by Cooperator.

Cooperator	Task and Lead Responsibilities
U.S. Bureau of Land Management	
U.S Forest Service	
Nevada Department of Wildlife	
Lincoln County	
Nye County	
White Pine County	
Natural Resource Conservation Service	
U.S. Fish and Wildlife Service	
Nevada Division of State Parks	
Nevada Natural Heritage Program	
Wildlife Services	

Note: *Table to be completed by Governor's Team*

Appendix 16. Conservation Actions for Management of Sage Grouse in Lincoln County. Note: based on risk analysis and availability of funding. The ultimate success of the following conservation actions will depend upon effective long-term monitoring, record-keeping, and use of adaptive management.

Project 1: Pinyon/Juniper Removal near Lek Sites

Risk: 5 (0 = No Risk, 5 = High Risk); Pinyon/juniper encroachment results in loss of lek sites and creates perches for predators. (See Risk Tables Appendix 5-10)

Objectives: **2.1:** Maintain or increase present populations for the short term (e.g., trend over ten years).
2.2: Provide favorable conditions for the expansion of Sage Grouse populations into historic range in healthy and sustainable numbers.
3.1: Maintain and improve existing sagebrush plant communities.
3.2: Where appropriate, restore dynamic sagebrush plant communities throughout each PMU.

Action/Strategy: 2.1.1: Examine population viability and identify high priority sub-populations for protection in each PMU.
2.1.7: Remove pinyon/juniper trees that are invading areas within 0.5 miles of currently active strutting grounds.
2.2.4: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.
3.3.11: Remove pinyon/juniper trees that are invading areas within 0.5 miles of currently active strutting grounds.
3.3.2: Use all appropriate means (e.g., fire, mechanical, and chemical, etc.) to treat pinyon-juniper sites that have the potential to support sagebrush habitats.

Project Area Location:

Cave PMU: 1) Gardner Ranch lek

Lincoln PMU: 1) Little Spring Valley lek;
2) Table Mountain lek;
3) Eightmile lek;
4) Grassy Mountain lek;
5) Fogliani Ranch lek

Project Description: Remove all trees within 0.5 mile of lek site including pinyon, juniper, and other tree species with exception of riparian species.

Legal Authority: Bureau of Land Management Caliente and Schell Management Framework Plans, future Ely District Resource Management Plan

Procedural Requirements: NEPA

Funding Source: To be determined

Implementation Process: 1) contract work crews;
2) monitoring of vegetation and bird activity

Project 2: Conversion of Pinyon/Juniper to Historic Sagebrush Grassland

Risk: 5 (0 = No Risk, 5 = High Risk); Pinyon/Juniper encroachment reduces quality and quantity of available habitat. (See Risk Tables Appendix 5-10)

Objectives:

- 1.2:** Develop an ecological understanding of sagebrush dominated plant communities and the role of disturbances or disturbance regimes in the dynamics of those systems.
- 2.2:** Provide favorable conditions for the expansion of Sage Grouse populations into historic range in healthy and sustainable numbers.
- 3.1:** Maintain and improve existing sagebrush plant communities.
- 3.2:** Where appropriate, restore dynamic sagebrush plant communities throughout each PMU.
- 3.3:** Restore disturbance regimes, especially fire.

Actions/Strategies:

- 1.2.1: Conduct a retrospective study of the effects of past fires and other disturbances such as seedings and chainings and describe vegetative succession in these areas.
- 1.2.2: Design and implement habitat research projects to identify adaptive management strategies beneficial to Sage Grouse.
- 2.2.3: Identify all sagebrush communities that are now dominated by pinyon-juniper or where pinyon-juniper is becoming established and prioritize for projects.
- 2.2.3: Identify all sagebrush communities that are now dominated by pinyon-juniper or where pinyon-juniper is becoming established and prioritize for projects.
- 2.2.4: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.
- 2.2.7: Use prescribed fire to reduce heavy fuel loads in late seral stage P-J and sagebrush communities.
- 3.1.3: Develop new grazing areas to draw grazing ungulates away from Sage Grouse leks and nesting habitats at critical times.
- 3.1.11: Remove pinyon/juniper trees that are invading areas within 0.5 miles of currently active strutting grounds.
- 3.2.1: Identify all sagebrush sites that have become dominated by pinyon-juniper and prioritize for projects.
- 3.3.2: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.
- 3.3.3: Use all appropriate means (e.g., fire, mechanical, and chemical, etc.) to treat pinyon-juniper sites that have the potential to support sagebrush habitats.

Project Area Location:

Cave PMU: 1) East and West benches of northern Cave Valley

Lincoln PMU:

- 1) West side of Hamlin Valley
- 2) East side of Mount Grafton
- 3) East and West benches of Little Spring Valley
- 4) East and West benches of Patterson Wash
- 5) East and West benches of Lake Valley
- 6) East Slope and benches of White Rock Range
- 7) North Slope and benches of Wilson Creek Range
- 8) E and W benches of Fortification Range.

Project Description: Remove large areas of pinyon/juniper from sites dominated by such and seed with appropriate grass/brush mixtures to reach desired plant community. Convert sites that are transitioning, or have transitioned to pinyon/juniper dominated sites back into sagebrush grassland sites.

Legal Authority: Bureau of Land Management Caliente and Schell Management Framework Plans, future Ely District Resource Management Plan, Ely District Fire Plan.

Procedural Requirements: NEPA, BLM permitting

Funding Source: To Be Determined.

Implementation Process:

- 1) work with land management agencies to develop a let-burn policy
- 2) modify fire plans as needed to facilitate a natural fire regime
- 3) coordinate actions with Cool Season Burns
- 4) identify areas suitable for prescribed fire;
- 5) identify sequence of fires to create desired mosaic;
- 6) write fire prescription;
- 7) conduct mechanical pre-treatment, if necessary
- 8) conduct prescribed fire;
- 9) where possible, rail burnt trees to reduce perches and aid vegetative recovery
- 10) monitor vegetation recovery after fire;

Project 3: Cool Season Prescribed Fires

Risk: 5 (0 = No Risk, 5 = High Risk); (See Risk Tables Appendix 5-10)

Objectives: **1.2:** Develop an ecological understanding of sagebrush dominated plant communities and the role of disturbances or disturbance regimes in the dynamics of those systems
3.2: Where appropriate, restore dynamic sagebrush plant communities throughout each PMU.
3.3: Restore disturbance regimes, especially fire.

Actions/Strategies: 1.2.1: Conduct a retrospective study of the effects of past fires and other disturbances such as seedings and chainings and describe vegetative succession in these areas.
1.2.2: Design and implement habitat research projects to identify adaptive management strategies beneficial to Sage Grouse.
3.2.1: Identify all sagebrush sites that have become dominated by pinyon-juniper and prioritize for projects.
3.2.2: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.
3.2.3: Use all appropriate means (e.g., fire, mechanical, and chemical, etc.) to treat pinyon-juniper sites that have the potential to support sagebrush habitats
3.3.1: Properly implement the Ely BLM District Managed Natural and Prescribed Fire Plan to benefit the ecological processes and systems associated with healthy sagebrush communities.
3.3.2: Identify and recommend full-suppression, managed natural, and prescribed fire areas for fire management activities in the plan area as relates to Sage Grouse habitat (across all jurisdictions, e.g., NDOW, NSP, USFS).
3.3.3: Use prescribed fire to reduce heavy fuel loads in identified areas.

Project Area Location(s):

Lincoln PMU: 1) East and West benches of Lake Valley;
2) East and West benches of Little Spring Valley;
3) West bench of Hamlin Valley

Project Description: Identify areas along benches suitable for restoration using prescribed fire. In order to prepare for the fire, mechanical treatment may be appropriate to reduce fuel loads. Conduct prescribed cool season burns in areas of pinyon/juniper encroachment (mostly young trees - R3).

Legal Authority: Bureau of Land Management Caliente and Schell Management Framework Plans, future Ely District Resource Management Plan, Ely District Fire Plan.

Procedural Requirements: NEPA

Funding Source: To be determined

Implementation Process: 1) identify areas suitable for prescribed fire;
2) identify sequence of fires to create desired mosaic;
3) write fire prescription;
4) conduct mechanical pre-treatment, if necessary
5) conduct prescribed fire;
6) monitor vegetation recovery after fire;

Project 4: Reach and maintain AML's in Herd Management Areas and remove all wild horses not in Herd Management Areas.

Risk: 4 (0 = No Risk, 5 = High Risk); Wild horse numbers are above AML at present. Excessive numbers of wild horses cause habitat degradation. (See Risk Tables Appendix 5-10)

Objectives: 3.1: Maintain and improve existing sagebrush plant communities.

Action/Strategy: 1.2.4: Explore the role of herbivores in affecting sagebrush ecosystem health.
2.2.2: Develop alternative grazing areas to draw grazing animals away from Sage Grouse leks and nesting habitats.
3.1.2: Identify and reduce the detrimental effects of inappropriate grazing on Sage Grouse habitats at critical times.
3.1.6: Examine use by wild horses in Sage Grouse habitat and make recommendations for management, including using the CRM process. 1.2.4 Explore the role of herbivores affecting sagebrush ecosystem health.

Project Area Location: 1) Areas of or adjacent to Sage Grouse habitat within Lincoln County.

Project Description: Examine use by wild horses in Sage Grouse habitat and make recommendations for management, including using the CRM process. Reduce wild horse numbers where they are causing damage to sage grouse or sage grouse habitat.

Legal Authority: Bureau of Land Management Caliente and Schell Management Framework Plans, future Ely District Resource Management Plan.

Procedural Requirements: Wild Horse and Burro Act, NEPA

Funding Source: To be determined

Implementation Process: 1) TBD

Project 5: Survey to determine location and abundance of Sage Grouse and availability of suitable habitat.

Risk: 4 (0 = No Risk, 5 = High Risk); cumulative risk. (See Risk Tables Appendix 5-10)

Objectives: 1.1: Increase knowledge of existing Sage Grouse populations, distribution, and use patterns.

Actions/Strategies:

- 1.1.3: Expand and evaluate program to monitor populations of Sage Grouse in order to make recommendations for management through lek counts, brood surveys, trapping and marking, and wing collection in hunting areas.
- 1.1.4: Use radio telemetry to identify seasonal use areas and migratory/non-migratory birds.
- 1.1.5: Initiate research projects, which will benefit management and provide additional needed information on population/habitat dynamics.
- 1.1.6: Design and coordinate a survey program for leks and late brooding areas, which will provide scientifically sound data tailored for each PMU.

Project Area Location(s):

Quinn PMU:

- 1) White River Valley
- 2) Garden Valley
- 3) Coal Valley
- 4) Railroad Valley
- 5) Upper Cherry Creek drainage, North of Troy Peak, Upper Pine Creek drainage; other areas of suitable habitat within the Grant/Quinn Range.

Lincoln PMU:

- 1) Lake Valley
- 2) Little Spring Valley
- 3) Hamlin Valley
- 4) All areas with significant areas of sagebrush.

Cave PMU:

- 1) Cave Valley

Project Description: Determine the approximate number and age/sex distribution of Sage Grouse in the PMU and the location, extent, and condition of various habitat types required by Sage Grouse on a year-long basis. Conduct surveys using most efficient and practical techniques. Determination of limiting factors (including availability of riparian grasslands) to survival of Sage Grouse.

Legal Authority: Nevada Department of Wildlife (Sage Grouse surveys), Bureau of Land Management Schell Management Framework Plans, and future Ely District Resource Management Plan.

Procedural Requirements: NDOW approval of Sage Grouse survey protocol.

Funding Source: NDOW currently performs annual lek counts and Summer surveys. Additional surveys may be needed.

Implementation Process:

- 1) Identify areas to be surveyed for Sage Grouse and appropriate techniques;
- 2) Identify process for assessing habitat quality and quantity;
- 3) Conduct habitat surveys.

Project 6: Mechanical treatment of sagebrush and subsequent seeding of grasses and forbs:

Risk: Rank 3-4. (0 = No Risk, 5 = High Risk) (See Risk Tables Appendix 5-10)

Objectives: **1.2:** Develop an ecological understanding of sagebrush dominated plant communities and the role of disturbances or disturbance regimes in the dynamics of those systems.
2.2: Provide favorable conditions for the expansion of Sage Grouse populations into historic range in healthy and sustainable numbers.
3.2: Where appropriate restore dynamic sagebrush plant communities throughout each PMU.

Actions/Strategies: 1.2.2: Design and implement habitat research projects to identify adaptive management strategies beneficial to Sage Grouse.
2.2.4: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.
2.2.9: Identify sagebrush plant communities where there is a uniform age stand of decadent sagebrush that could provide better quality habitat, and investigate methods for remedy.

Project Area Location(s):

Cave PMU: 1) Cave Valley bottom lands and adjacent sagebrush dominated bajadas.

Lincoln PMU: 1) Sagebrush dominated bottoms lands of Lake Valley
2) Little Spring Valley
3) Hamlin Valley
4) South Spring Valley.

Project Description: Use mechanical treatment (brush beater, chaining, drag-rail, etc. with seeding attachment) to reduce cover of decadent sagebrush and re-establish native grasses and forbs as part of the sagebrush plant community.

Legal Authority: Bureau of Land Management Caliente and Schell Management Framework Plans, future Ely District Resource Management Plan, Ely District Fire Plan.

Procedural Requirements: NEPA

Funding Source: To be determined

Implementation Process: 1) identify areas of sagebrush suitability for mechanical treatment;
2) identify pattern of treatment to create mosaic;
3) determine appropriate seed mix and available of same;
4) conduct treatment;
5) Monitor vegetation recovery after treatment.

Project 7: Exploration of impacts of predators (including corvids) and benefits of control projects.

Risk: 3 (0 = No Risk, 5 = High Risk); (See Risk Tables Appendix 5-10)

Objectives: **1.1:** Increase knowledge of existing Sage Grouse populations, distribution, and use patterns.
2.1: Maintain or increase present populations Sage Grouse for the short term (e.g., trend over ten years).

Actions/Strategies: 1.1.5: Initiate research projects, which will benefit management and provide additional needed information on population/habitat dynamics.
2.1.1: Examine population viability and identify high priority sub-populations for protection in each PMU.
2.1.4: To augment recovery or management efforts, use predator control in Sage Grouse habitats where appropriate, e.g., where high numbers of predators are found, congregate, or where high predation rates are known.

Project Area Location(s):

Cave PMU: 1) Cave Valley; Gardner Ranch and Patterson Pass lek areas.

Lincoln PMU: 1) Patterson Wash
2) Little Spring Valley

Project Description: Survey areas around strutting grounds and adjacent nesting/early brood-rearing areas. Areas would be considered candidate areas for predator control if predators observed in these areas present a threat to existing Sage Grouse populations. Populations of Sage Grouse would be monitored and compared to previous years when predator control efforts were not done.

Legal Authority: Nevada Department of Wildlife Predator Management Plan.

Procedural Requirements: 1) Monitor densities of predators.
2) Use licensed applicators for use of corvicides (when applicable).

Funding Source: To Be Determined.

Coyote control projects designed for Mule Deer are ongoing in Lincoln County at this time, which should result in some benefit for Sage Grouse.

Implementation Process:

- 1) Identify areas for control efforts.
- 2) Justify control efforts with scientific data (dates, numbers, type of predator, etc)
- 3) Propose projects through Region, Bureau, and Wildlife Commission.
- 4) Contract Wildlife Services to perform predator control efforts.
- 5) Monitor populations of Sage Grouse and predators.

Project 8: Restoration of historic spring sites (e.g., clearing of pinyon-juniper)

Risk: 3 (0 = No Risk, 5 = High Risk); (See Risk Tables Appendix 5-10)

Objectives: **3.4:** Assure that the availability of water is not a limiting factor in otherwise suitable habitat in accordance with Nevada Water Law.

Actions/Strategies: 3.4.3: Cooperate with water rights owners to leave water at all spring sources for wildlife use in accord with Nevada water law.
3.4.5: Cooperate with water rights owners to restore and maintain previously available water sources where feasible.
3.4.7: Remove pinyon-juniper in vicinity of springs to improve spring flow and water availability plus improve spring outflow wetlands habitat.

Project Area Location:

Cave PMU: 1) At and around existing spring sites in Cave Valley PMU.

Lincoln PMU: 1) At and around existing spring sites in Lincoln PMU.

Project Description: Identify spring sites with adjacent pinyon-juniper woodland. Determine land ownership, identify area appropriate for tree removal by either mechanical or prescribed fire or both. Conduct mechanical treatments and or prescribed fire to remove pinyon-juniper woodlands around springs.

Legal Authority: Bureau of Land Management Schell Management Framework Plan, future Ely District Resource Management Plan, Ely District Fire Plan. Private property owner permission and cooperation where appropriate.

Procedural Requirements: NEPA; written permission and agreement with private owner (where applicable).

Funding Source: To Be Determined.

Implementation Process:

- 1) identify springs suitable for restoration;
- 2) work with land and/or water rights owner to secure agreement to do restoration project;
- 3) write plan and delineate area for restoration;
- 4) conduct mechanical and/or prescribed burn tree removal plan;
- 5) Monitor vegetation recovery and spring flows after treatment.

Project 9: Seeding of forbs into historic crested wheat seedings.

Risk: 3-4 (0 = No Risk, 5 = High Risk); (See Risk Tables Appendix 5-10)

- Objectives:** **2.2:** Provide favorable conditions for the expansion of Sage Grouse populations into historic range in healthy and sustainable numbers.
3.1: Maintain and improve existing sagebrush plant communities.
3.2: Where appropriate, restore dynamic sagebrush plant communities throughout each PMU.

- Actions/Strategies:** 2.2.4 Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.
3.1.5: Examine permitted grazing areas in Sage Grouse habitat and make recommendations for management, including using the CRM process.
3.1.8: Encourage re-seeding of disturbed areas (e.g., resulting from chainings, fires, etc.) with appropriate native seed mixes.
3.2.2: Increase the amount and improve condition of sagebrush habitats by implementing projects suggested by and agreed to by local planning groups.

Project Area Location(s):

Cave PMU: 1) Cave Valley crested wheat seedings

Lincoln PMU: 1) Lake Valley crested wheat seedings
2) Little Spring Valley crested wheat seedings

Project Description: Project would involve various methods (aerial, drilling, etc.) of planting seeds of forbs into crested wheat seedings where sagebrush is re-invading site, but forbs are lacking.

Legal Authority: Bureau of Land Management

Procedural Requirements: NEPA,

Funding Source: To be determined

- Implementation Process:** 1) Identify areas within seedings where forbs are lacking
2) Conduct mechanical or other means of seed dispersal
3) Monitor vegetation to determine effect
4) Survey areas to determine presence of Sage Grouse

Project 10: Improve Availability of Water

Risk: 3 (0 = No Risk, 5 = High Risk). Limited water availability and distribution limits use of otherwise suitable habitat by Sage Grouse. (See Risk Tables Appendix 5-10)

Objectives: **2.2:** Provide favorable conditions for the expansion of Sage Grouse populations into historic range in healthy and sustainable numbers.
3.4: Ensure that the availability of water is not a limiting factor in otherwise suitable habitat in accordance with Nevada Water Law.

Actions/Strategies: 3.4.1: Install water developments in areas of otherwise suitable habitat.
3.4.4: Cooperate with water rights owners to explore the possibility of using infrequently used wells as water sources for Sage Grouse.

Project Area Location:

Cave PMU: 1) Cave Valley – 4 water development projects

Lincoln PMU: 1) Hamlin Valley – 4 water development projects
2) South Spring Valley – 4 water development projects
3) Lake Valley – 2 water development projects
4) Lake Valley (Patterson Wash) – Numerous wells

Project Description: Installation of water catchments that collect and store precipitation for use by wildlife.

Legal Authority: Bureau of Land Management Caliente and Schell Management Framework Plans, future Ely District Resource Management Plan

Procedural Requirements: NEPA

Funding Source: To be determined

Implementation Process: 1) Location of project sites
2) Completion of NEPA requirements
3) Purchase of materials
4) Installation of development
5) Maintenance of development

Project 11: Sage Grouse Marking/Monitoring Project

Risk: N/A Project would be done to learn about the movement patterns of Sage Grouse in Lincoln and Eastern Nye Counties.

Objectives: **1.1:** Increase knowledge of existing Sage Grouse populations, distribution, and use patterns.
2.1: Maintain or increase present populations Sage Grouse for the short term (e.g., trend over ten years).

Actions/Strategies: 1.1.4 Use radio telemetry to identify seasonal use areas and migratory/non-migratory birds.
1.1.5 Initiate research projects, which will benefit management and provide additional needed information on population/habitat dynamics.
1.2.2 Design and implement habitat research projects to identify adaptive management strategies beneficial to Sage Grouse.

Project Area Location:

Lincoln PMU: 1) Hamlin Valley – In conjunction with Utah Division of Wildlife Resources, if possible.
2) Table Mountain
3) North Lake Valley

Quinn PMU: Anywhere birds could be captured and marked would be beneficial.

Project Description: Project would require capture, radio-collaring, and monitoring of marked Sage Grouse.

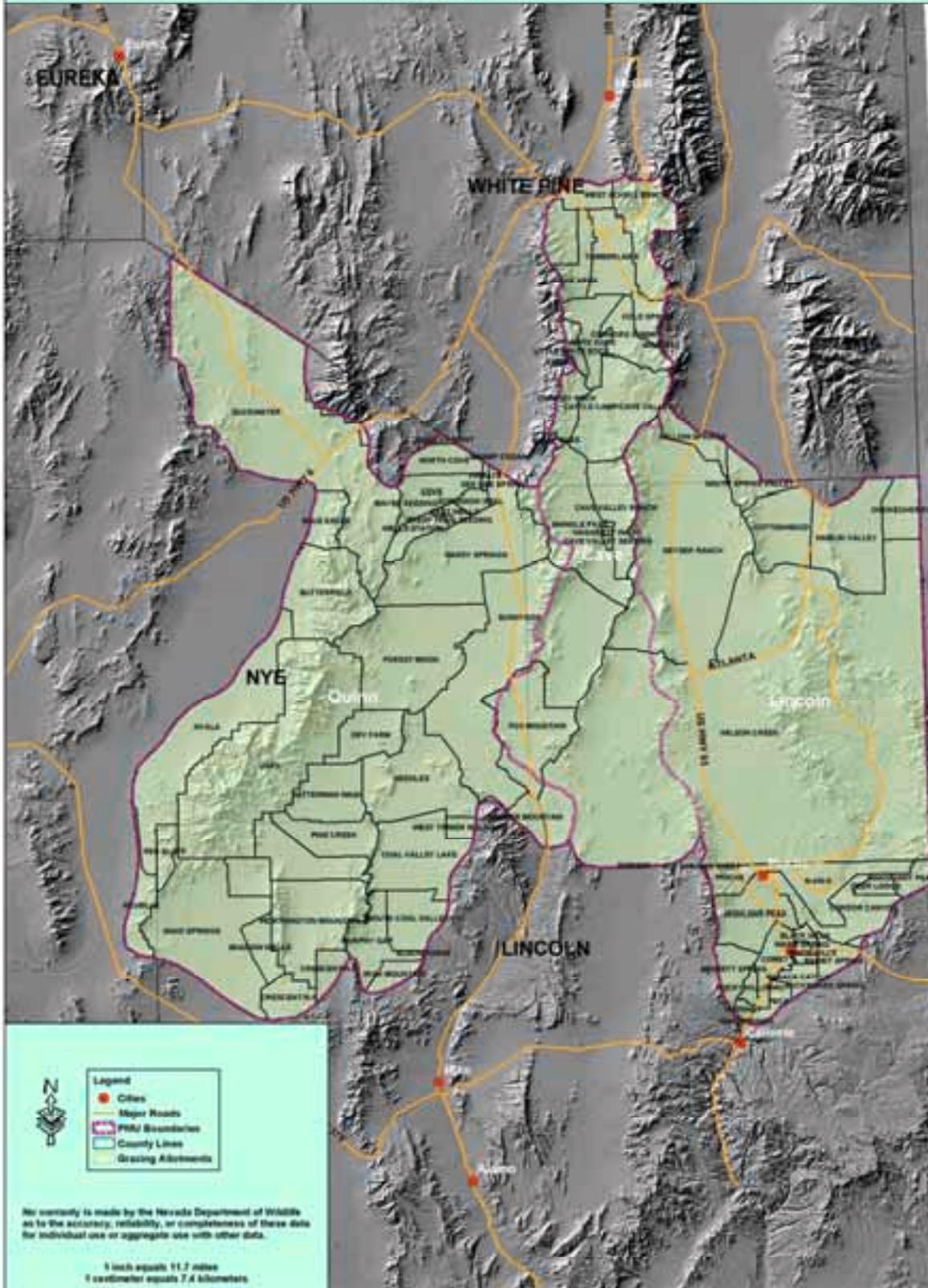
Legal Authority: Nevada Department of Wildlife.

Procedural Requirements:

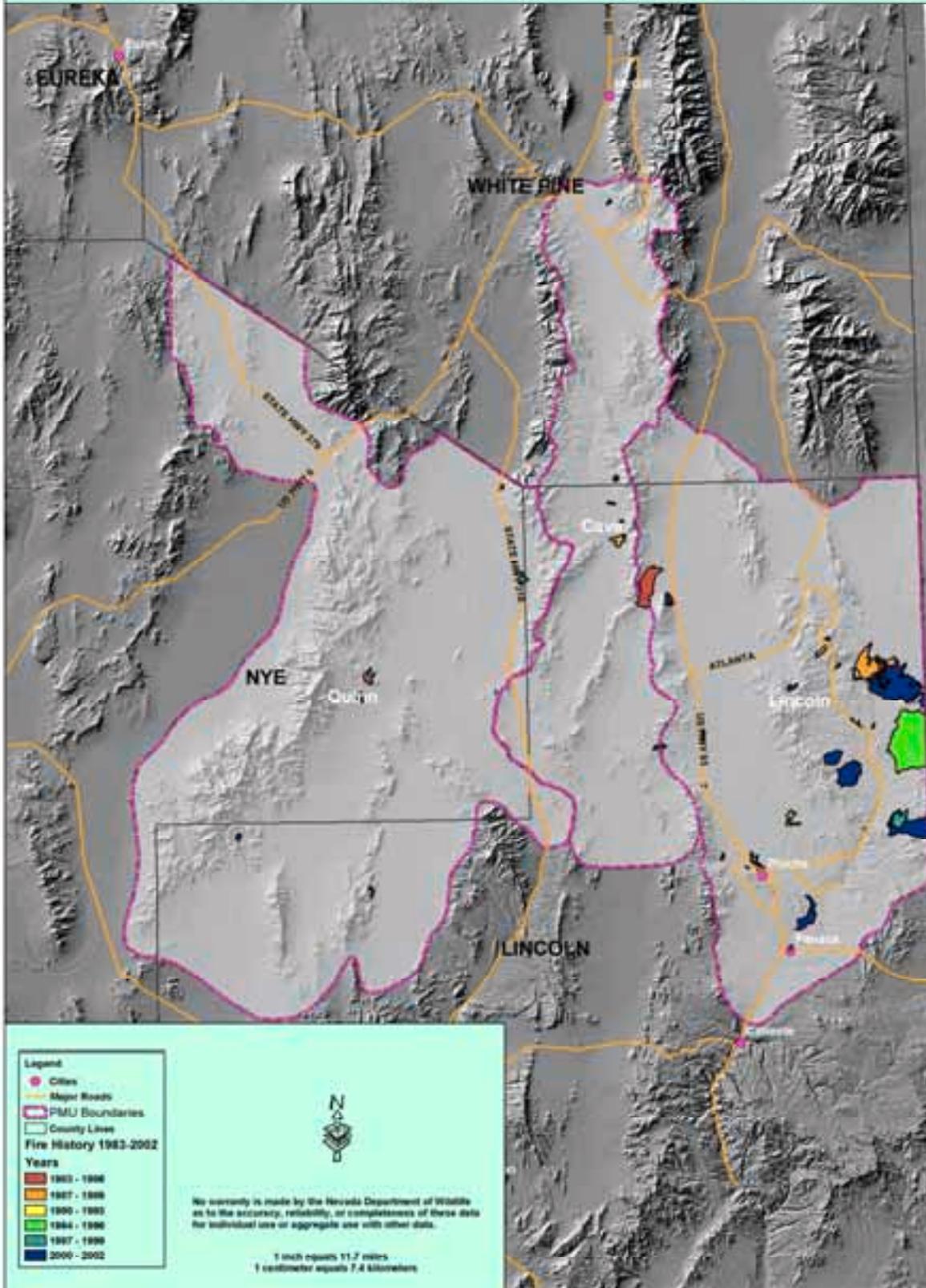
Funding Source: To be determined

Implementation Process: 1) Capture and marking of Sage Grouse.
2) Monitoring marked birds to determine seasonal movement patterns.
3) Reporting and mapping of movement patterns.

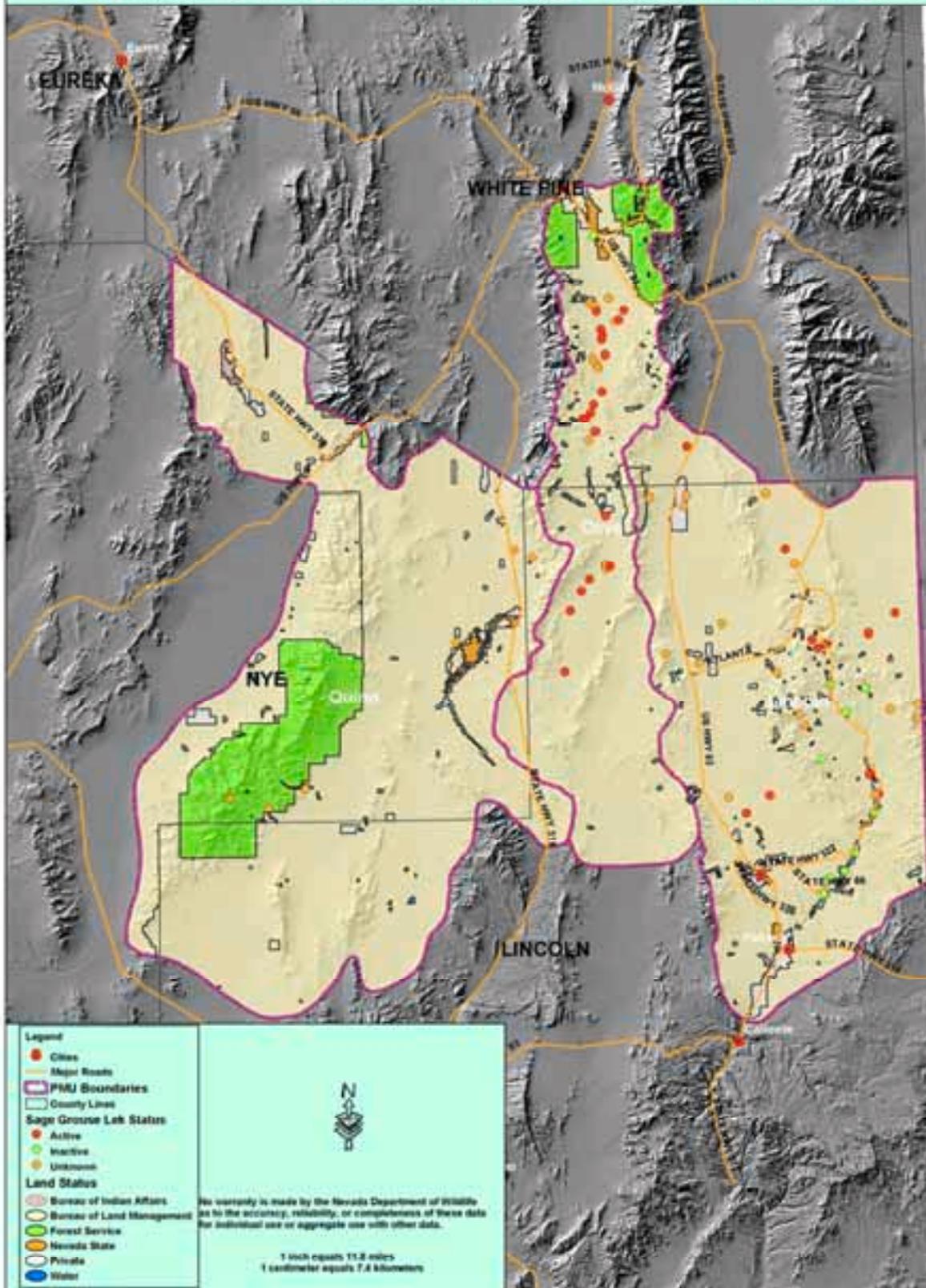
Lincoln County Local Area Planning Group with Grazing Allotments



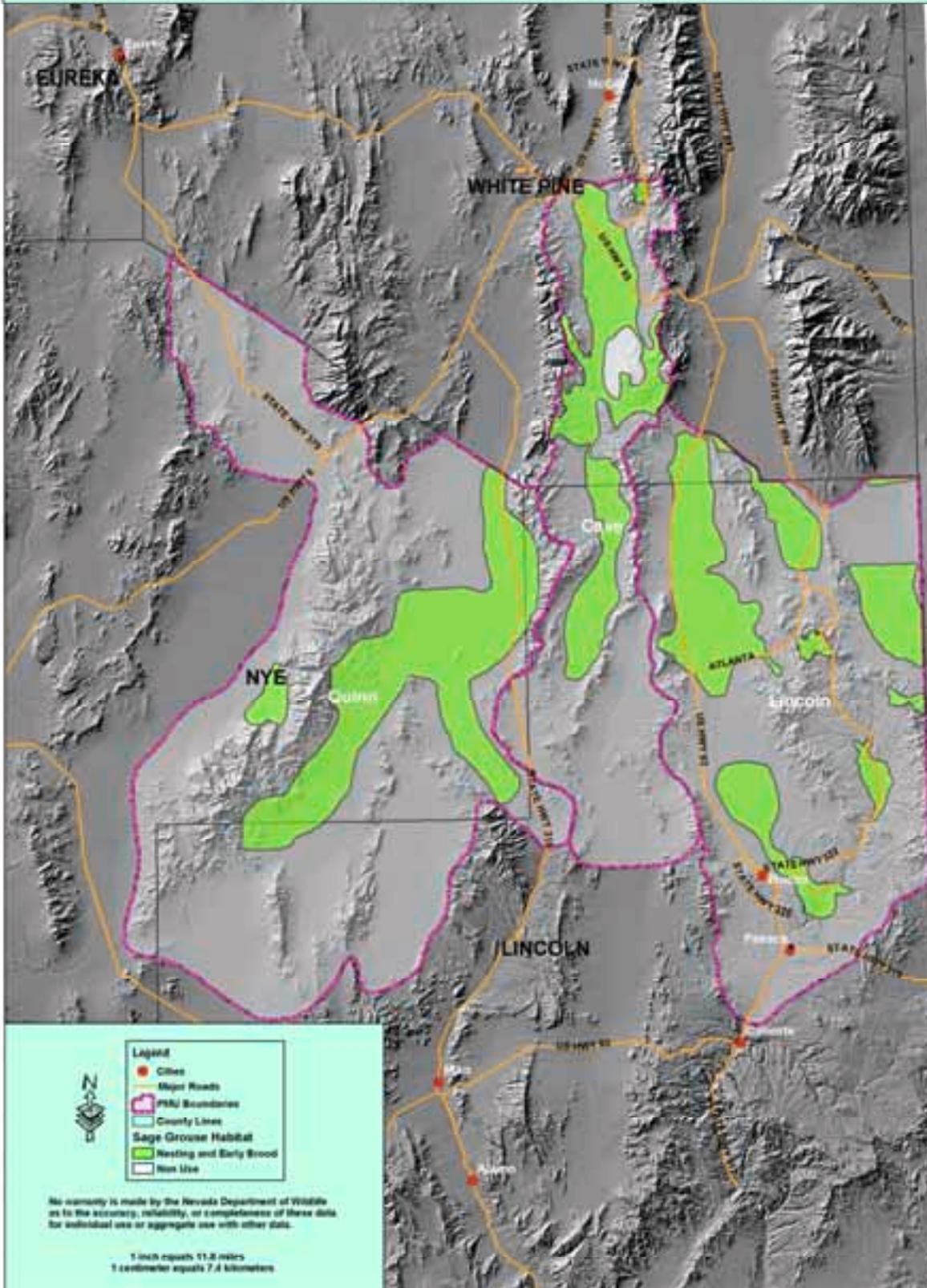
Lincoln County Local Area Planning Group with Fire History from 1983 to 2002



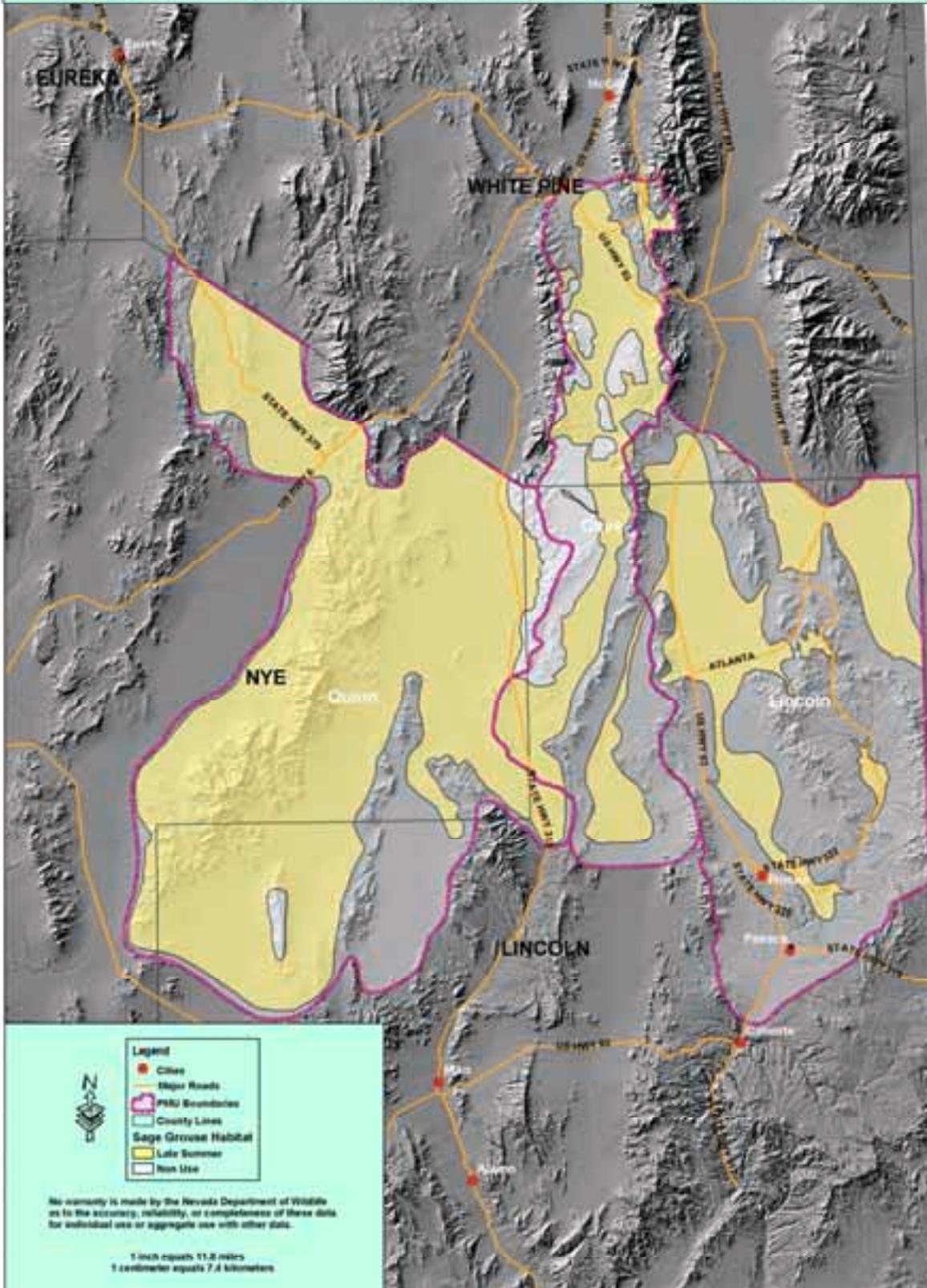
Lincoln County Local Area Planning Group with Land Status and Sage Grouse Leks



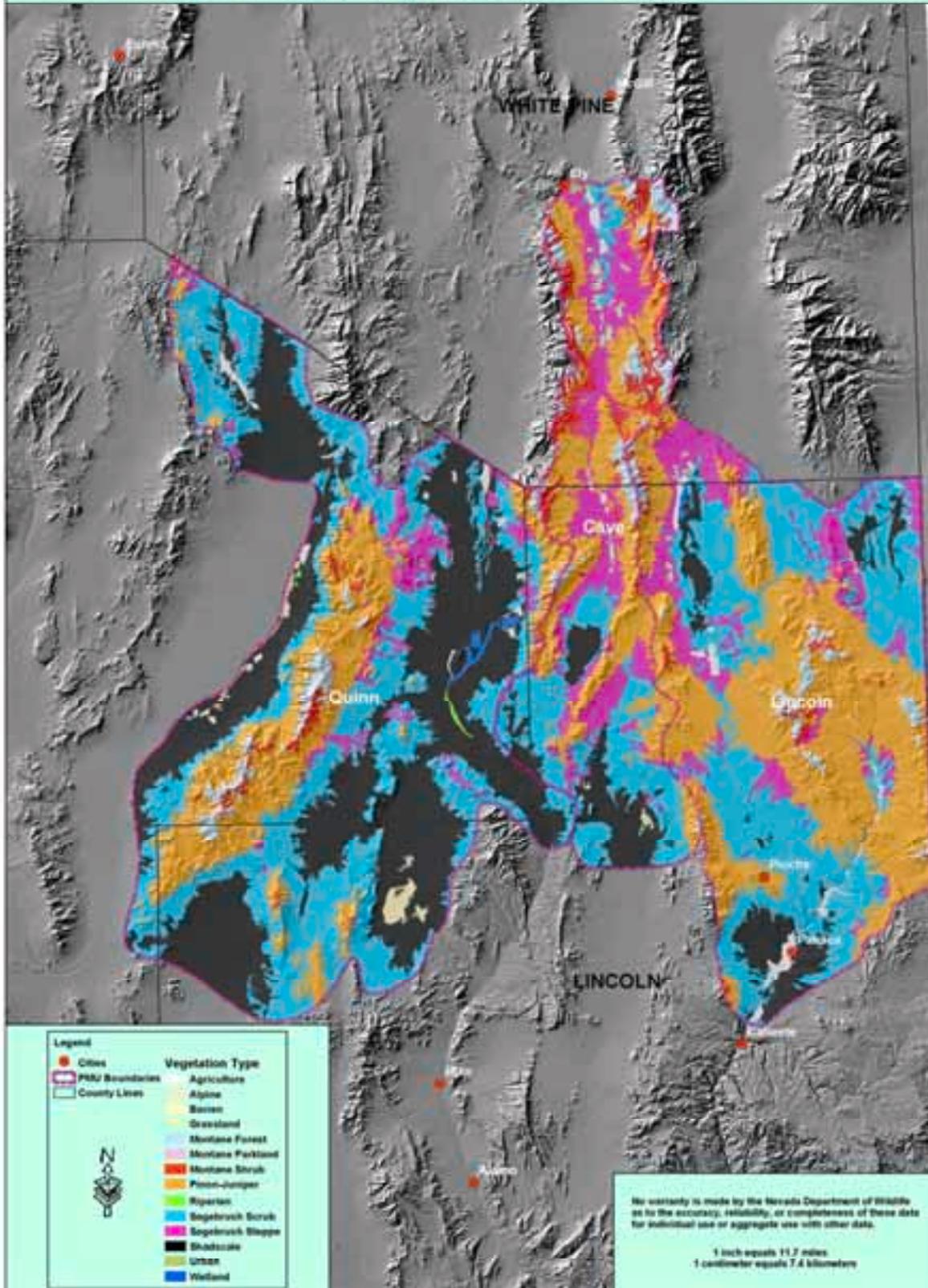
Lincoln County Local Area Planning Group with Sage Grouse Nesting Habitat



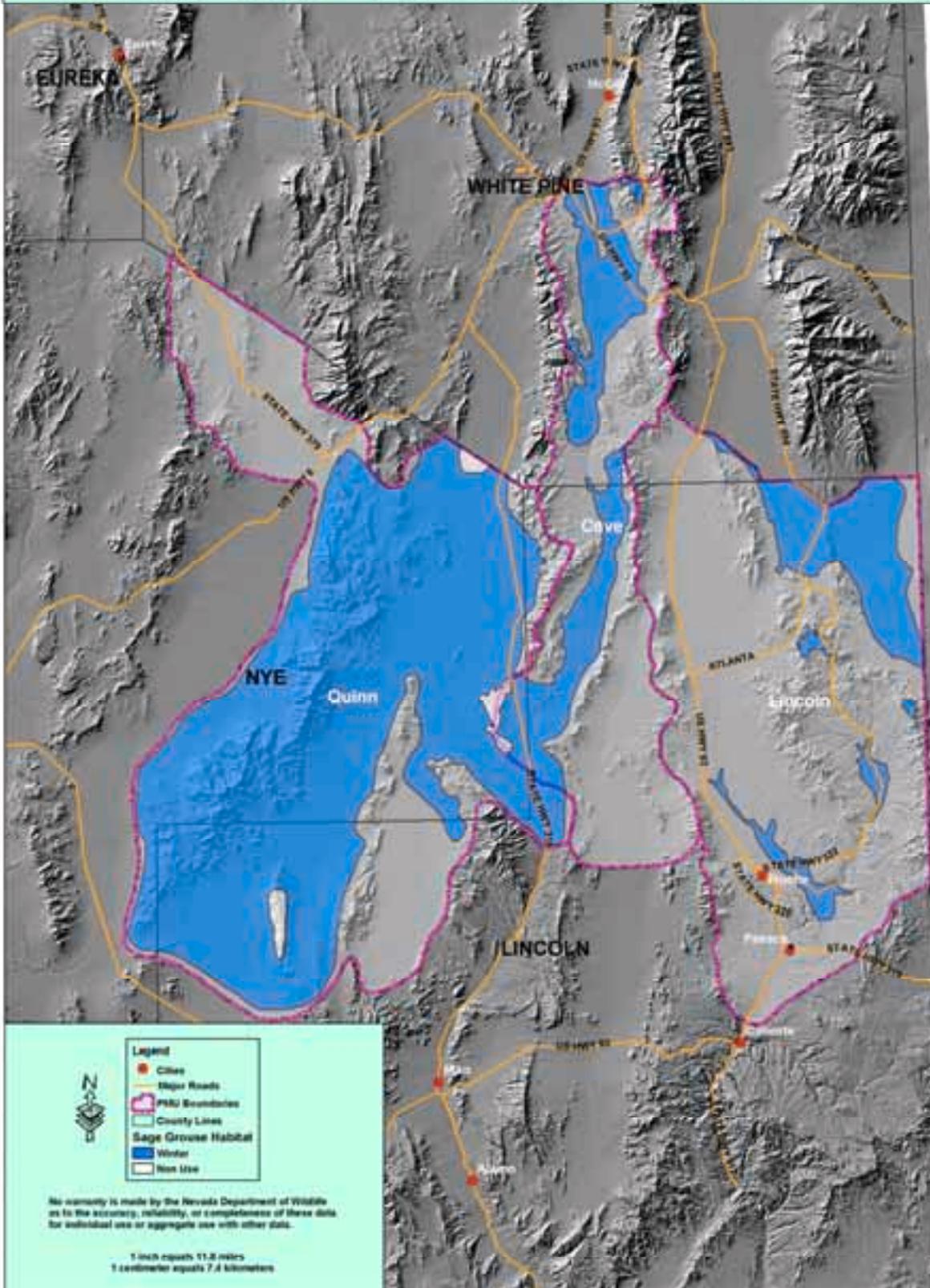
Lincoln County Local Area Planning Group with Sage Grouse Summer Habitat



Lincoln County Local Area Planning Group with Major Vegetation Types



Lincoln County Local Area Planning Group with Sage Grouse Winter Habitat



Lincoln County Local Area Planning Group with WSA's and HMA's

