October 2002

A REVIEW OF SAGE-GROUSE HABITAT NEEDS AND SAGE-GROUSE MANAGEMENT ISSUES FOR THE REVISION OF THE BLM'S PINEDALE DISTRICT RESOURCE MANAGEMENT PLAN

PREPARED FOR:

THE WILDERNESS SOCIETY,

WYOMING OUTDOOR COUNCIL,

GREATER YELLOWSTONE COALITION

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Exhibit 2

October 15, 2002

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Re: Scoping Comments for the Pinedale District Resource Management Plan Revision

To Whom It May Concern:

The BLM announced (Federal Register) in February 2002 the intent to revise the existing Pinedale District Resource Management Plan (Pinedale RMP) and that energy development would be a major component considered in preparation of a revised plan. The Wilderness Society, Greater Yellowstone Coalition, and Wyoming Outdoor Council have taken a proactive approach and requested technical comments for submission to the BLM during the scoping phase of the Environmental Impact Statement (EIS) process.

This scoping letter discusses the ecology and habitat needs of sage-grouse, provides a critique of existing conditions and management for sage grouse, discusses what is presently known, and offers recommendations for monitoring and mitigation for incorporation in the revised Pinedale RMP. In preparing this scoping letter I have closely reviewed documents relating to the existing Pinedale RMP, Pinedale Anticline EIS, Wyoming Game and Fish Department materials, and applicable peer reviewed articles, theses, and "gray" literature.

The enclosed comments and recommendations are based on my 25+ years of experience with sage-grouse assessment and management. I have published over 200 technical and solicited review papers on birds and their habitats, especially grouse including sage-grouse. I directed research and management activities for sage-grouse in Colorado from 1973 through 1999. During this period I was the research advisor for 15 M.S. and Ph.D. studies specifically on sage-grouse. My professional experience includes 30 years with the Colorado Division of Wildlife conducting and directing research and management studies on birds. I also have worked with the Montana Game and Fish Department and the USDA Soil Conservation Service in Kansas. I am a Certified Wildlife Biologist and have served on several professional societies as President, elected Representative, Editor, and other positions.

Sincerely,

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Background

Sage-grouse (*Centrocercus* spp.) have been demonstrated to be dependent upon sagebrush (*Artemisia* spp.) steppe habitats throughout all of their life processes (Patterson 1952). See Appendix 1 for an overview of the life history of sage grouse and their habitat. The distribution and abundance of sage-grouse have decreased throughout their formerly occupied range (Connelly and Braun 1997, Braun 1998, Schroeder et al. 1999). The actual size of the overall decrease is unknown but most likely exceeds 50 % in total area occupied and 80 % in abundance (Braun 1998). Sage-grouse have been extirpated in 4-5 states and one Canadian province and have been listed as endangered in Canada. Six petitions have been filed in the United States, covering all populations, to list sage-grouse as threatened or endangered under the Endangered Species Act of 1973. The U. S. Fish and Wildlife Service has not responded to all of these petitions although the Gunnison sage-grouse (*C. minimus)* has been assigned candidate species status and the sage-grouse populations (*C. urophasianus phaios?)* in Washington State have been identified as meriting "warranted but precluded" status. Further, the Wyoming Game and Fish Department has recognized the problems with sage-grouse in Wyoming and, through a statewide working group, prepared and released for review a draft "Wyoming Greater Sage-grouse Conservation Plan" dated July 2002.

Much of the present distribution of sage-grouse is on publicly owned lands administered by the Bureau of Land Management (BLM) and the U. S. Forest Service (USFS). Management of wildlife on public lands is the responsibility of the respective state wildlife agency while management of wildlife habitat on public lands is the responsibility of the land management agency (usually BLM or USFS). Further, multiple use is most frequently prescribed for public lands administered by the BLM and USFS. Multiple uses typically include recreation, watershed, wildlife production and harvest, livestock production, and mineral exploration and development (including oil and gas production).

Energy production on public lands is not recent (Braun et al. 2002) and there has been exploration and development of typical sources such as coal, oil, and, gas dating to the 1880's. While past interest has seemed to be cyclic, depending upon demand, the recent interest in gas, and especially development of gas from coal bed methane and "tight sands" gas deposits, seems to be almost unprecedented. Many areas proposed for gas production in the western United States have been among the most productive for sagebrush-dependent wildlife, especially sage-grouse. Thus, increased development of energy resources in sagebrush steppe habitats has the potential to negatively affect sage-grouse.

The Pinedale District Resource Management Area includes much of the Upper Green River Valley in western Wyoming in an area known to be productive for wildlife and especially sage-grouse (Patterson 1952). Wyoming, in general, has the strongest sage-grouse population in the world. Fragmentation of the habitats upon which this population depends will slowly unravel the entire presently linked sage-grouse population in Wyoming. This has already happened in most other states with disastrous results and has already started in Wyoming -- most noticeably at the periphery of the historical distribution. Once this continuity becomes fragmented, the overall distribution fabric is lost and sage-grouse populations will become disjointed and subject to greatly reduced abundance as well as local extirpation.

Analysis of Upper Green River Valley Sage-grouse Data

Considerable local information is available about sage-grouse use areas (Lyon 2000, M. J. Holloran 2001-02 Study) in the Upper Green River Valley (Sublette County) and in other areas of Wyoming (especially the Farson Area, Sweetwater County -- see: Heath et al., 1997). Most of the available data that have been mapped are those on location of leks (for example, see: map of Pinedale Anticline Sage Grouse Leks prepared by Wyoming Wildlife Consultants, LLC., Pinedale). There is general knowledge about sage-grouse seasonal habitat use areas outside of the lek locations, with Lyon (2000) presenting the best-generalized overview. General maps presented in the Pinedale DEIS (November 1999) for winter and nesting habitat are not sufficiently precise for meaningful use. What follows is an assessment of existing sage grouse data for the Pinedale area -- and recommendations for monitoring -- for the four key habitat types used by sage grouse (winter use areas, leks, nesting habitat, and brood rearing areas):

1. *Winter*—General maps showing the location of sage grouse winter use areas in the Pinedale Resource Area currently exist only in the thesis by Lyon (2000: Fig 3.5). Focus should immediately be placed on locating and mapping sage-grouse winter-use areas throughout the RMP area. This should have the highest priority, as over winter survival is critical to population maintenance. Maps should be prepared for both "average" or "normal" winters and severe winters which, happen every 7-10 years. Once these areas are located and mapped, they should be described using standard measures for live sagebrush canopy cover, height, etc. following the approach of Connelly et al. (2000). Once identified, these areas should receive special attention (for example, designation as "Areas of Critical Environmental Concern") in order to reduce or prevent disturbance during winter, wild fire, and management activities that make them less useful to sage-grouse. Special attention should be given to any disturbance that reduces amount of live sagebrush, leaf surface, canopy cover, and height.

2. *Leks*--The available data on leks suggest that not all active lek sites have been located and that the status (active, inactive [< 2 years. > 2years]) of each site mapped is poorly known. Further, there are gaps (some leks are not counted every year) in the count data and number of counts/lek in a given year varied. The available long-term trend in numbers of cocks appears to be down but the problems identified make data analysis difficult. Since active sage-grouse leks are relatively easy to locate during late March and April, standard surveys of all areas within the proposed project area should be conducted in April 2003 and continuing at 3-year intervals. All known lek sites should be checked for activity in spring 2003. Those classified as active should be counted (number of cocks) 3-4 times each spring at 7-10 day intervals starting in late March-early April, depending upon weather conditions, and continuing into early May. Those classified as inactive should be checked in late April/early May every 2-3 years to ascertain any change in status. UTM (or GIS) coordinates for all lek sites should be taken and plotted on base maps. This appears to have been done.

3. *Nesting*--The Draft EIS and Technical Report (1999) present general data and a modeling exercise that depicts sage-grouse nesting habitats. Lyon (2000) also describes habitats used for nesting. Because sage-grouse have been shown to nest at a variety of distances from active leks and use a variety of micro sites for nest placement, it is difficult to identify all nesting areas. Thus, the Connelly et al. (2000) Guidelines should be followed to offer some protection to habitats useful for nesting at distances up to 3 miles from active leks. Since most actual nesting occurs within this distance (Braun et al. 1977) (with some nests at much greater distances), it is most reasonable to depict nesting habitat as all sagebrush areas with > 10 % live canopy cover of sagebrush (primarily *A. tridentata vaseyana, A. t. wyomingensis, A. tripartita, A. nova,* and *A. cana* depending upon location) and a healthy under story of native grasses and forbs. Since active lek sites can be located, identifying concentric areas within a three-mile radius around each lek site that will include most nesting sites is presently the only reasonable method to map potential nesting areas.

4. *Brood-rearing*--Broods, upon hatching, use areas close to the locations of successful nests and progressively move towards moist areas upon desiccation of vegetation in the uplands. Review of the available data suggests a general knowledge of where broods have been observed. These data appear to not have been mapped in relation to known sources of water (at ground level) or at riparian sites along streams, springs, etc. This should be done so that additional management consideration can be given to these areas. Management that should be in place includes movement of livestock to avoid degradation of plant communities in moist sites and riparian areas and fencing to allow livestock access to water only in sites where erosion and plant community degradation would not be expected or could be controlled. Lyon (2000) suggests that early brood survival is a problem in the area she studied southwest of Pinedale. Early brood survival is most affected by insect and succulent forb availability within secure (good hiding cover provided by grasses and forbs) habitats (Connelly et al. 2000). Late brood rearing habitat is primarily in close proximity (< 1 mile) of sites with moisture and succulent forbs adjacent to escape cover provided by live sagebrush (Connelly et al.,2000).

Upper Green River Valley Sage-grouse Population and Habitat Trends

The data presently available are too limited to conclusively demonstrate the health of the sage-grouse population (s) and trends in quality of the available habitats. The overall trend in number of sage-grouse counted in spring is down. However, these data are relatively short term. Site inspection indicates substantial past and present disturbance in most if not all areas under consideration. In addition to the already substantial gas development impacts, there are the additive effects of livestock grazing, power line and road placement, ranch building placement, and management treatments of sagebrush steppe areas to improve forage for livestock. All of these factors (and many more) have cumulative effects on ecosystem health and trends in numbers of all animals that are dependent upon the

sagebrush steppe. Teasing apart the specific impacts is not possible without replicated studies. What is clear is that continuing practices presently in place will not improve conditions for or knowledge about local populations of sage-grouse. They will only lead to continued decline in health of the sagebrush habitat and in the distribution (the area of useful habitat is decreasing) and abundance of sage-grouse.

Long-term monitoring efforts (20-30 years at the minimum) and research studies to tease apart impacts of energy development and other multiple use activities are critically needed in the Upper Green River Valley. These efforts should focus on public lands (and include immediately adjacent private lands) and be funded by Federal land management agencies and the oil and gas industry. The cumulative effects of all human-induced practices in the sagebrush steppe on sage-grouse need to be fully evaluated and studied.

Understanding Sage-grouse Populations and Minimum Viable Population Size

Sage-grouse are specialists at using widely spaced resources scattered over large (hundreds of miles) expanses. All populations studied make seasonal movements from winter to breeding/nesting areas and then to late brood rearing and fall use sites. Movements can be as short as 5-10 miles to in excess of 60-80 miles. Thus, it can be argued that all populations are migratory with only the distance moved differing. This is true for most grouse species. Data presented by Lyon (2000) demonstrate that some sage-grouse in the Pinedale area make substantial seasonal movements (as long as 60 miles).

The present data in the scientific literature are equivocal about the size of a minimum viable population for most wildlife species and estimates range from 500 to 5,000 breeding individuals (Franklin 1980, Soule 1980). All sage-grouse do not breed every year (for example, only a few dominant males are responsible for most matings and some females do not lay eggs as yearlings). Consequently, effective spring population size (i.e. those individuals actually breeding) is smaller than the total number of individual sage-grouse in a population. For sage-grouse, it is doubtful that 500 individuals in spring would represent a population that would persist > 50 years. However, positive habitat management could reasonably be expected to provide adequate habitats to sustain a population for > 50 years provided all necessary habitat components were available over a contiguous area of not less than 50 mi², given a population density of 10 birds/mi² or at least 100 mi² given a population density of 5 birds/mi². Healthy, apparently sustainable populations, with some emigration and immigration, of > 3,000 total estimated individuals in the spring population are known to occupy "closed" areas (Jackson County, Colorado) of about 400 mi² of agebrush steppe and associated riparian areas.

ıtific study has not identified a minimum viable population size or specific habitat size ement for any population of sage-grouse. Further, habitat quality varies greatly upon soil factors, aspect, elevation, moisture, temperatures, management s, past and present uses, etc. Thus, there is no one definition or description of lity that fits all situations as it is known that some sage-grouse populations xtremely degraded and marginal appearing habitats. It is also hypothesized that lations are at great risk of extirpation as populations in similar habitat conditions

have completely disappeared. Therefore, because of the difficulties in determining minimum viable population size and defining key habitat parameters for sage grouse, it is imperative that a conservative approach is taken towards management of activities that could compromise sage grouse habitat and fragment local populations.

Habitat Quality and Predation

Problems with defining minimum viable population size or describing habitat quality are compounded with the addition of consideration of the effects of predation. Highways, roads, and power lines, for example, degrade habitat quality by increasing fragmentation, noise, and dust while attracting generalist predators and making search (by predators) of more linear areas and smaller habitat patches easier. Further, data on number and type of predators prior to apparent changes in habitat quality are not available nor are past or present predation rates in designed studies with treatments and controls. In general, predation events on birds are believed (reviewed by Cote and Sutherland 1997) to be affected by habitat quality, no matter how it is defined. It is logical that prey animals are more secure in undisturbed habitats that have low fragmentation and better shrub structure coupled with a diverse under story of grasses and forbs. Adding structures such as buildings, power lines, fences, and creating smaller, less diverse patches of habitats within the sagebrush steppe intuitively benefits potential predators of sage-grouse. Replicated studies with treatments and controls have not been conducted because of the difficulty in finding study areas of sufficient size, control of all treatments, and the reluctance of agencies and private interests to make available dedicated resources (including money and land). Management studies should be immediately implemented that focus on possible predation impacts as affected by fragmentation and livestock grazing impacts.

Critique of Past Assumptions/Analyses for Pinedale Area Sage-grouse Management

Review of the Draft Pinedale Anticline EIS and the Technical Report (November 1999) indicates that the BLM has consistently ignored sage-grouse needs and the scientific literature upon which developed guidelines (Braun et al. 1977, Connelly et al. 2000) to maintain sage-grouse populations are based. Most seriously, the BLM has chosen 0.25-mile or 0.50-mile distances from active leks for avoidance of or restrictions on development even though the scientific literature indicates there should be no manipulation of sagebrush habitats within 2 miles of active leks (Connelly et al. 2000). ***The 0.25-mile or 0.50-mile restrictions seem to have been created to justify existing practices and are not based on any reputable science.*** The BLM's own analysis for the Pinedale Anticline Project indicates (Draft EIS 1999: 5-34) that, "of leks with at least one well within a 0.25-mile radius, four times as many are inactive than active" and that "more than three times as many leks with at least one oil or gas well within a 0.50-mile radius are inactive". Oil and gas well site development as well as development of roads, power lines, etc. all cause manipulation of habitat and reduction in area useable to sage-grouse. Further, BLM documents (Wildlife Monitoring Plan-Pinedale Anticline Project 2001: 29) indicate, "exceptions to the surface disturbance restriction may be granted for linear facilities".

As part of its mitigation guidelines and standard practices for surface disturbing activities, the Wyoming BLM has imposed a restriction on activity within 0.25 miles of leks during the 6:00 PM to 9:00 AM interval from 1 February through 15 May which has been extended through 31 July (to benefit nesting females) with an additional 1.75-mi radius from leks (see Pinedale Anticline Draft EIS 1999: A-31). These dates provide minimal mitigation during the breeding and nesting periods as there is little monitoring of adherence to these restrictions and those in place can be modified. In actual practice, there is little protection from physical disturbance of habitats useful to sage-grouse nesting outside of the artificial 0.25 or 0.50 mile radius from active leks. Most critically, there is no recognition of the importance of sage-grouse winter use habitat or any stipulations to help protect these habitats. The BLM also fails to adequately address the cumulative effects on sage-grouse of all treatments (not limited to oil and gas developments).

Nowhere is there mention of the possible negative effects of seismic activities. It appears the BLM has avoided recognition of short-term effects of trails, crushing of vegetation, and direct and indirect impacts to sage-grouse from use of large vehicles involved in this activity. Unfortunately, there apparently have been no studies on the immediate impacts of seismic activities. Until demonstrated otherwise, seismic activities should be considered as factors that are negative for sagebrush habitats as they provide trails for increased predator access, they fragment habitats useful to sage-grouse, they decrease live sagebrush and forbs needed by sage-grouse, and could potentially disrupt breeding activities and nesting activities. BLM should require the oil and gas industry to fund well designed scientific research on the effects of seismic activities on sage-grouse and their habitats.

Mitigation Measures To Protect Sage-Grouse

Present mitigation measures to protect sage-grouse and their habitats in the Pinedale RMP area are minimal (above) and many of the suggested measures (Draft EIS 1999: 4-165 through 4-167) appear to be voluntary. The BLM should endorse and follow the *"Guidelines to manage sage grouse populations and their habitats"* (Connelly et al. 2000). Consideration should also be given to following the concluding comments of Braun et al. (2002) that strongly recommend that it is the responsibility of the oil and gas industry to demonstrate their activities have no negative impacts initially, short-term, or over the long-term. Effective mitigation practices, in addition to those in the *Guidelines* (Connelly et al. 2000), include permanent and seasonal road closures, burial and or modification of power lines, removal or modifications of fences and other structures, fertilization of sage-grouse winter ranges with nitrogen, and reduction or complete permanent elimination of other uses such as livestock grazing, especially on areas where oil and gas production is permitted. Mitigation should also consider those impacts that can be reasonably expected including cumulative (with other factors) effects. Full mitigation would require increasing the number (on a per unit basis) of sage-grouse in non-affected areas to equal the reduction in numbers of sage-grouse in affected areas. Research on developing methodology to enhance sagebrush habitats (to support higher densities of sage-grouse) should also be productive.

To further mitigate the impacts from the significant oil and gas development now occurring in the Upper Green River Valley, the BLM should also designate, as part of the RMP revision process, multiple Areas of Critical Environmental Concern (ACECs) to protect at least 90 % of sage grouse winter use areas. The boundaries of these areas should follow the results of Recommendation # 1 (*Winter)* on page 4. These areas will be critical to maintaining population persistence over time.

Sage-grouse Monitoring Requirements

Assessment of the long-term effects of oil and gas development on sage-grouse and the health of the sagebrush steppe should be based on collection and analysis of population information in spring, collection and analysis of harvest information, and numbers of birds counted in selected winter habitat. Sage-grouse population statistics collected in spring are those related to number of active leks per unit of area and total number of cocks counted on a sample of randomly selected, statistically defensible accessible leks. Harvest data collection should focus on analysis of wings for changes in ratios of chicks/hen and males to females in both adult (including yearlings if not separable) and chick age classes. Once winter use areas are identified, standardized line transects should be established and annually sampled (using aircraft) following current sampling theory to estimate number of birds present. Sampling should occur immediately following fresh snowfall or during maximum snow accumulation. Changes in vegetation "quality" should be monitored at 3-5 year intervals at a statistically valid sampling rate along permanent 0.6-mile belt transects. Measurements desired include live sagebrush canopy cover, sagebrush height, and ground cover of native grasses and forbs. (This should also include measurement of residual grass height.) Modeling of the potential effects of environmental events such as drought (measured by the Palmer Drought Index) and severe winters (length of period of snow cover, depth of snow, temperature) should also be pursued.

It would also be desirable to establish concurrent long-term monitoring in areas of coal bed methane gas development in Campbell County and also within the Wind River Front area where there is currently no oil and gas development (the area is presently prohibited from new leasing) in order to compare with the data collected in Sublette County.

Long-term Effects Assessment for Pinedale Area Sage Grouse Populations

The importance of sustained, long-term monitoring cannot be overstated. It is clear that oil and gas development will negatively affect sage-grouse populations (Braun et al. 2002) and only the magnitude of the impacts is unknown. The oil and gas industry should fund the monitoring and long-term research needed throughout the life of the project and the new RMP should make this a specific requirement in any new oil and gas development projects. This critical monitoring should continue until sage-grouse populations return to pre-disturbance levels, which could exceed 30 years. Cause and effect studies using an active adaptive management approach (Walters 1986) are necessary to fully understand the implications of oil and gas development on sage-grouse. The industry has the responsibility to demonstrate their activities have no negative impacts initially, short-term, or over the long-term on the distribution and abundance of sage-grouse in areas explored and developed for oil and gas production.

Conclusion: Key Recommendations for the Pinedale RMP Revision Process:

Mitigation Measures:

1. The BLM should adopt a policy of no surface disturbance within 3 miles of occupied leks as data clearly show negative impacts to sage-grouse at the present distance of 0.25 or 0.50 miles. Further, adequate data are available to demonstrate that most female sage-grouse nest within 3 miles of active leks.

2. All areas used by sage-grouse during both average or "normal" and severe winters should be located, mapped, and given special protection from wild fire, manipulation of sagebrush, and human-induced disturbance. At least 90% of this newly mapped area should be designated as a network of ACECs as part of the RMP revision process.

3. Adherence to time of use for restriction of activities from 6:00 PM through 9:00 AM during the breeding and nesting periods should be strictly monitored and enforced.

4. Management of mid to late summer brood-rearing areas should encourage forb regrowth while maintaining at least a 6 inch residual grass height with taller (> 24 inches in height), live sagebrush of > 15 % canopy cover in close (< 200 yds) proximity for use as escape cover.

5. Mitigation should be emphasized for all activities known to negatively impact sage-grouse. This could include, but is not limited to: burial or modification of power lines, off set drilling, road closures and time restrictions, removal of livestock grazing, nitrogen fertilization of winter and nesting areas, removal or modification of existing fences, etc. Full mitigation would be to replace the exact number of sage-grouse impacted by development activities by increasing the number per unit of area that the remaining areas can support to equal the number displaced.

Monitoring Requirements:

1. Standardized line transects in identified winter use areas should be established and annually sampled (using aircraft) following current sampling theory to estimate changes in numbers of birds present. Sampling should immediately follow fresh snowfall or during maximum snow accumulation.

2. Standard surveys of all areas to locate active leks should be conducted in spring 2003 and continue at 3-year intervals. This will provide data on lek extinction and recruitment.

3. All potential mid to late summer brood-rearing areas should be mapped based on moisture and green forb availability during the late June through late August interval. As stated above, management of mid to late summer brood-rearing

areas should encourage forb regrowth while maintaining at least a 6 inch residual grass height with taller (> 24 inches in height), live sagebrush of > 15 % canopy cover in close (< 200 yards) proximity for use as escape cover.

4. Leks classified as active should be counted (number of cocks present) 3-4 times each spring at 7-10 day intervals starting in late March-early April and continuing into mid May. Those leks classified as inactive should be checked in late April/early May every 2-3 years to ascertain change in status.

5. The vegetation in areas used by sage-grouse during both average and severe winters should be described as to live sagebrush canopy cover, height, etc.

6. Harvest data based on examination of sage-grouse wings collected from hunters should continue on a well-defined population basis. Statistics needed to measure responses of sage-grouse are those relating to nest success, chicks per hen, and age/gender composition.

7. Research should be initiated to learn if monitoring of insect abundance and forb growth will reliably predict sage-grouse chick survival.

Analysis and Other Management Issues:

1. Habitat guidelines published by Connelly et al. (2000) should be incorporated into preparation of a "desired future condition" to be achieved to improve nest success and early chick sage-grouse survival.

2. Replicated long-term studies are urgently needed to understand the effects of grazing practices and habitat fragmentation on predator numbers and predation rates on sage-grouse. These studies must involve treatments and controls on a landscape basis.

3. Nesting areas, since they are difficult to locate at a population or subpopulation scale should be defined as all area within 3 miles of active leks. This will provide a minimum amount of protection.

4. Early chick survival has been identified as a problem in the Pinedale area (Lyon 2000). Enhancing the forb and grass component in nesting areas (which are also early brood rearing sites) should be a priority.

5. The cumulative impacts of all human-induced activities within a given, describable sage-grouse population unit should be studied over a period sufficiently long (20-30 years) to be able to predict actual long- and short-term effects. When industry is involved in causing the impacts, they should be expected to fully support, financially, all studies as they have the burden to demonstrate their activities are not negative to sage-grouse.

6. Well-designed research on the immediate and short-term effects of seismic activities on sage-grouse and their habitats should be funded and undertaken.

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APPENDIX 1: An Overview of Sage Grouse Life History and Habitat Use

Sage-grouse are sagebrush dependent species and evolved to use sagebrush steppe on a landscape scale. Thus, they may use as little as 10 % (all habitat that might be available) in severe winters (Beck 1977) to as much as 70 + % during late summer and fall. Winter use sites are those with large expanses of sagebrush available above the snow, frequently in drainages, large flats along ridge tops, and on west and southwest exposures (Hupp and Braun 1989). Winter food is the leaves of sagebrush of a variety of species from low sagebrush (*A. arbuscula*), silver sagebrush (*A. cana*), black sagebrush (*A. nova*), three-tip sagebrush (*A. tripartita*), to a variety of subspecies of big sagebrush (*A. tridentata*). Taller and denser sagebrush cover is important during this period (Connelly et al. 2000).

Breeding areas may be adjacent to or far removed from winter use sites. Areas chosen for breeding are those that are open within the sagebrush type with wide visibility and few impediments to hearing acuity. Sage-grouse display areas have low vegetation but with taller live sagebrush within 100-200 yards. Thus, escape and loafing cover is keenly important during the breeding season. Most importantly, sites chosen for use for display are in areas where movement of females searching for nesting sites is common. Nesting may occur as close as within 100 yards of an active lek with most nests being within 3 miles of the lek of mating. However, movements of 20 to 60 miles from lek of capture to actual nest sites have been reported (Connelly et al. 2000, Lyon 2000). During the breeding and pre-nesting period, newly growing green forbs become an important part of the diet for all sage-grouse, but especially for females. Live canopy cover of sagebrush and a diversity of herbaceous plants with taller residual cover are exceedingly important during the nesting period (Connelly et al. 2000).

Nesting areas used by sage-grouse are generally in sagebrush uplands with a live canopy cover of 15 to 25 %. Taller and bushy live sagebrush plants are preferred for nest sites. These sites frequently are in larger patches of sagebrush and nests generally are placed under the tallest live sagebrush bush. Upon hatching sage-grouse move their chicks into more open habitats with live sagebrush where forbs are plentiful and grasses provide cover and heightened insect

availability. Live sagebrush canopy cover can be as little as 10-15 % in early brood rearing areas (Connelly et al. 2000). As broods mature, movements become longer and hens with chicks move to wet meadow or riparian areas within the sagebrush type. Taller, more robust sagebrush continues to be important for loafing and escape cover. In the absence of upland succulent forbs, hen sage-grouse quickly move their broods to moist or wet areas, if available. If these movements are long or fast, chick survival suffers. Maintaining healthy sagebrush uplands is important to chick survival and apparent nest success.

During late brood rearing, movements of broods as well as those of unsuccessful hens and males may be relatively short depending upon moisture and availability of forbs. With advent of fall, broods combine into larger flocks with older birds of both genders. Movements into sagebrush uplands, especially areas with late forb green up, become pronounced, as do distances involved. This continues into late fall and early winter when snow initiates movement to winter ranges. Foraging on sagebrush leaves continues for adults throughout the summer, fall, and winter even though substantial amounts of forbs are taken when available. Chick sage-grouse start using sagebrush leaves in late July and early August when their diets become similar to those of adults.

SAGE-GROUSE HABITAT NEEDS AND MANAGEMENT ISSUES IN THE UPPER GREEN RIVER VALLEY OF WYOMING

By Clait E. Braun (Ph.D)

The author has published over 200 scientific papers (mostly on sage grouse). From 1973-1999 he directed sage grouse research and management activities for the Colorado Division of Wildlife.

Sage Grouse Populations in North America:
With an intricate courtship display and a fascinating dedication to specific mating areas (called "leks"), the sage grouse is a bird admired by many. Once common throughout much of western North America and known as the "icon of the sagebrush steppe," populations of this sensitive species have plummeted across most of its range. It is estimated that in just the last fifty years, there has been a 50% decrease in total area occupied by sage grouse and up to an 80% decrease in total numbers in some areas. Sage grouse are now extinct in at least four states and one Canadian province where populations once existed. Six petitions recently have been filed to list all remaining populations under the federal Endangered Species Act.

Wyoming -- A Core Area for Sage Grouse Recovery:
Wyoming still has one of the strongest sage grouse populations in the world and will have a key role in deciding the fate of this magnificent species. In nearby states habitat loss and fragmentation has largely isolated populations, resulting in significant decreases in sage grouse numbers and local extinctions. Wyoming still has a mostly connected distribution, but if habitat fragmentation continues, the State's presently linked sage grouse population will begin to unravel. Maintaining large, unbroken expanses of effective sage grouse habitat throughout Wyoming thus should be a top priority for land managers.

The Upper Green River Valley and Sage Grouse:
This several million-acre area of predominantly public land (managed by the BLM) provides exceptional habitat for sage grouse. While present data are too limited to conclusively evaluate the overall health of the Upper Green's sage grouse populations and trends in the available habitat, there are worrisome signs. In recent years there has been a local decline in spring counts of sage grouse numbers and site inspections have indicated substantial disturbance in almost all habitat in the Valley. Besides the impacts from the current natural gas development boom, new housing, power line and road corridors, and livestock grazing have all affected sage grouse habitats. While studies are needed to confirm the extent and specifics of how these activities harm local populations, it is clear that continuing with present practices will result in habitat decline and reduced distribution and numbers of sage grouse throughout the Valley.

Life History and Critical Ecological Requirements for Healthy Sage Grouse Populations:
Sage grouse require specific sagebrush conditions, which are generally scattered over large expanses, in order to meet the hiding cover, food, and other needs necessary for survival. So sage grouse make seasonal migrations of 10-80 miles from winter to breeding and nesting areas and then to late brood rearing and fall use sites. Sage grouse winter use areas are especially critical for maintaining local populations and, to be effective, these areas must meet certain requirements for live sagebrush, leaf surface, canopy cover, and height. Also, leks and nearby nesting areas require no nearby disturbances during the spring/summer when they are in use.

Exhibit 3

Oil and Gas Development and Sage Grouse:
Road building, well pad construction, and noise disturbance associated with oil and gas development can fragment effective sage grouse habitat and compromise the quality of seasonal use areas. In addition, by creating more linear areas and smaller habitat patches, energy development can boost predation rates on sage grouse. So, for a variety of reasons, major oil and gas development reduces the area useable by sage grouse, which often leads to greater isolation of populations and a reduced ability to handle droughts, severe winters, or other natural disturbances.

In its current management plan for the Upper Green River Valley (the "Pinedale RMP") and in recent oil and gas project EIS's, the BLM has consistently ignored scientific guidelines developed to protect sage grouse populations. For example, the Pinedale BLM has chosen ¼ - ½ mile distances from active leks for restrictions on development even though the scientific literature indicates there should be no manipulation of sagebrush habitats within **three** miles of active leks. Even this minimum, unsupported distance of ¼ to ½ mile restriction is not guaranteed as BLM documents allow the granting of exceptions to this surface disturbance restriction under certain circumstances. Perhaps most serious is that the Pinedale BLM has completely failed to recognize the importance of sage grouse winter use habitat, since there is no active mapping of these areas and no stipulations to help protect these habitats.

Key Recommendations for the BLM's Revision of the Pinedale RMP:
To minimize the impacts of energy development on the Upper Green's nationally significant sage grouse populations, the Pinedale BLM must follow the latest, most comprehensive guidelines developed for managing sage grouse (Connelly et al. 2000). Effective mitigation practices are needed immediately in the Upper Green and should include: road closures (permanent or seasonal), burial of power lines, modifications of fences and other structures, and elimination of livestock grazing in areas where oil and gas production is permitted. Some of the top priority recommendations for the BLM's upcoming Pinedale RMP revision include:

- The BLM should adopt a policy of no surface disturbance within 3 miles of occupied leks.
- All areas used by sage-grouse during both average and severe winters should be located and given special protection through designation as "Areas of Critical Environmental Concern."
- Standard surveys should be conducted as soon as possible to estimate changes in numbers of sage grouse in identified winter use areas and to locate active leks. Mid to late summer brood rearing areas also should be mapped based on moisture and green forb availability.
- Replicated, long-term studies should be immediately initiated to understand the effects of habitat fragmentation on predator numbers and predation rates on sage grouse.
- Habitat guidelines published by Connelly et al. (2000) should be incorporated into the new RMP's "desired future condition" so that sage grouse nest success and chick survival improve.

This fact sheet—and the selected recommendations-- are adapted from detailed scoping comments on Upper Green sage grouse population trends and management issues prepared by Dr. Braun and submitted to the Pinedale BLM in October, 2002. Contact Linda Baker, Upper Green River Valley Coordinator (307-360-7198) to receive a copy of his 14 page comment letter.