Greater Sage-Grouse

Conservation Plan

Northern Eagle County
and
Southern Routt County

Final – September 1, 2004

Prepared by Northern Eagle/Southern Routt Work Group

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Copies of the Plan may be obtained from:

Colorado Division of Wildlife, Wildlife Research Center Library, 317 West Prospect Road, Fort Collins, CO 80526 (970)-472-4353

Colorado Division of Wildlife, Steamboat Springs Service Center, 925 Weiss Drive, Steamboat Springs, CO 80487 (970)-870-2197

Colorado Division of Wildlife, Glenwood Springs Service Center, 50633 Highway 6 & 24, Glenwood Springs, 81601 (970)-947-2920

The Work Group may be contacted via the Colorado Division of Wildlife at:

Colorado Division of Wildlife, Steamboat Springs Service Center, 925 Weiss Drive, Steamboat Springs, CO 80487 (970)-870-2197

Literature citation should read as follows:

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EXECUTIVE SUMMARY

The Greater Sage-Grouse (*Centrocercus urophasianus*), a species restricted to sagebrush rangelands in western North America, is declining across much of its range. In 1995, the Colorado Division of Wildlife (CDOW) signed a Memorandum of Understanding with the USFWS to develop local conservation plans for species not yet listed under the Endangered Species Act. Conservation plans provide unique opportunities for Work Groups involving resource agencies, private groups and individual landowners to work jointly for more effective conservation of declining species. As a result, the CDOW convened local Work Groups in several population areas in sage-grouse habitat with the goal of developing local conservation plans for sage-grouse. Conservation Plans for Greater Sage-Grouse have been completed for Middle Park and North Park, and a Moffat County Plan is being completed as well.

A local Work Group made up of stakeholders in Northern Eagle and Southern Routt was convened in September 1998. The Group identified several issues affecting Greater Sage-Grouse in the area, decided on a population goal, and began developing possible conservation actions before participation dwindled in 2000. The local Work Group was reconvened in April 2003 to develop a conservation strategy and finalize the Northern Eagle/Southern Routt Greater Sage-Grouse Conservation Plan. This Conservation Plan describes and sets forth a strategy for long-term management of the Greater Sage-Grouse in concert with other resource values and land uses at a landscape scale. Participation by private landowners in this Conservation Plan is strictly voluntary.

The Northern Eagle/Southern Routt Conservation Plan applies to an area that includes the sagebrush rangelands and interspersed vegetation communities north of Interstate 70 west of Edwards to Garfield County and north into Routt County to just north of Phippsburg. The Plan area is largely bounded on the east and west by National Forest. The Greater Sage-Grouse population in the area is small (<500 birds) and current lek count data indicate that both the high count of males and the number of active leks have decreased since lek counts began in the late 1950s. Local landowners also say that they are seeing fewer sage-grouse today than in the past.

Preparation of this Plan has been founded on open communication and discussion to reach agreement on the conservation actions. Since the Work Group reconvened in April 2003, the meetings have been well attended with many local landowners participating. Other members include the affected public land management agencies (BLM and USFS), the NRCS, CSU Extension, and the Nature Conservancy, as well as multiple stakeholders who were invited to discuss specific issues. The Work Group made an effort to notify affected stakeholders interested in single issues. Issues included Utilities, Habitat Change, Disease and Pesticides, Land Use Changes and Residential Development, Reservoir Development and other Water-Related Issues, Recreation and Travel Management, Predation, and Grazing (both domestic and wild ungulate). The Plan also outlines future monitoring and evaluation efforts. Monitoring and evaluation are necessary to assess sage-grouse population and habitat trends in the area, assist in planning cooperative efforts to improve sage-grouse habitats, continually inform affected parties and USFWS, and review additional issues as the landscape context changes. As such, this Plan should be viewed as flexible and dynamic, subject to review and revisions as new information becomes available.

Finally, this Plan is intended as the beginning of a cooperative effort between private landowners and state and federal agencies to conserve Greater Sage-Grouse and their habitats in Northern Eagle and Southern Routt counties. Voluntary participation by the private landowners is crucial for successful implementation of this Plan. Resource agencies will participate as funds and staff time allow. We believe that the partnerships developed throughout the conservation planning process will positively affect sage-grouse and their habitats.

I. STATUS UPDATE

The United States Fish and Wildlife Service (USFWS) has received multiple petitions to list the Greater Sage-Grouse as threatened or endangered. On April 21, 2004 the USFWS published a "90-Day Finding For Petitions To List the Greater Sage-Grouse as Threatened or Endangered" in the Federal Register (69 FR 21484). In this finding, the USFWS determined that substantial biological information exists to warrant a more in-depth examination of the status of Greater Sage-Grouse and are in the process of a full status review. A final 12-month petition finding is expected early in 2005.

Region 2 of the U.S. Forest Service updated the Regional Forester's Sensitive Species List in November 2003. Greater Sage-Grouse are now on the Region 2 Sensitive Species List and by U.S. Forest Service Policy must be evaluated and impacts to the species or its habitat must be considered in any decision that could affect a sensitive species. The Forest Service is required to conduct these evaluations and could use mitigations similar to the conservation actions in this Plan to meet the policy of conserving sensitive species. In addition, The Greater Sage-Grouse is a BLM Sensitive Species. The BLM is therefore required to consider the impacts to the species or its habitat in any decision that could affect the Greater Sage-Grouse. Finally, the Greater Sage-Grouse is listed as a Species of Special Concern by the Colorado Division of Wildlife.

II. INTRODUCTION

A. Purpose

This document (the Plan) establishes a process and a framework that will guide management efforts directed at improving sage-grouse habitat and increasing numbers of Greater Sage-Grouse (sage-grouse) in the Northern Eagle/Southern Routt County area. The Plan's components include the Work Group's guiding principles, descriptions of the environment of Northern Eagle and Southern Routt counties, a section on biology of Greater Sage-Grouse and their habitat requirements, the conservation strategy developed by the Work Group, and an outline of conservation actions and an implementation schedule.

The purpose of the Plan is to provide for coordinated management across jurisdictional/ownership boundaries and to develop the wide community support that is necessary to assure the survival and increase in numbers of Greater Sage-Grouse. Designed to be dynamic, the Plan will be flexible enough to include new information and issues, as well as results from previous conservation efforts. It is also designed to answer questions and collect data necessary for future resource management decisions.

B. Guiding principles

- Involve the public in the planning and decision process.

- Maintain an atmosphere of cooperation and participation among public land and wildlife managers, private landowners, and other participants while respecting individual views and values.

- Implement conservation actions in a way that meets the needs of Greater Sage-Grouse while also considering and encouraging the maintenance of a stable, productive, and profitable agricultural base in Eagle and Routt counties.

- Make every effort to seek efficiency and integration of efforts, especially between agencies, in the implementation of conservation actions.

- Participation in Plan implementation and Work Group activities is strictly voluntary.

C. Process

In September 1998 two public meetings were held, one in Gypsum and one in Yampa, to inform the public about the status of the Greater Sage-Grouse and solicit interest in preparing a local conservation plan for sage-grouse in northern Eagle and southern Routt counties. Following the group decision to develop a Conservation Plan, every effort was made to identify and invite all potential stakeholders to participate in the process. A mailing list was developed and meeting announcements distributed to inform interested parties of Work Group meetings.

From October 1998 – May 2000 the Work Group identified the multiple issues that might have a detrimental effect on sage-grouse or their habitats. The Work Group defined the area to which the Plan would apply and developed a draft conservation assessment. The Work Group also began developing population and habitat objectives as well as gathering example conservation actions relating to the various issues affecting sage-grouse in the area. By summer 2000 participation had dwindled and the Work Group stopped meeting.

In April 2003, the Work Group reconvened to determine if there was interest in finalizing a Conservation Plan. All parties agreed to work together to finalize a Plan. The Work Group further refined the list of issues affecting sage-grouse in the area and worked through consensus to develop a Conservation Strategy. A facilitator was hired to conduct the meetings and to help build consensus. This person had no vested interest in the outcome of the Plan and was there to build trust among the stakeholders and insure that all stakeholders had equal input into the Plan. The process was based on the recognition of mutual benefits, which were expressed in the goals, objectives, and actions. The Work Group agreed to use a four step process in designing the Conservation Strategy: #1: Issues were discussed and Conservation Actions proposed at a monthly meeting of the Work Group. #2: At each monthly meeting, the Work Group reviewed and modified draft Conservation Actions. #3: The modifications were mailed out to everyone on the mailing list to review. #4: At the subsequent meeting the Conservation Actions were

adopted. A tentative schedule was developed to discuss the different issues and the Work Group made every effort to invite key stakeholders for specific issues of interest. For example, recreation groups were contacted prior to the meeting in which conservation actions relating to recreation were developed. The same was done for issues including power lines, land use changes and development, reservoir development, grazing and predation. Meeting notices and summaries were mailed to all interested parties throughout the process. Although every stakeholder who expressed an interest was included in the mailing list, many of the interested parties did not attend the meetings.

III. THE NORTHERN EAGLE/SOUTHERN ROUTT ENVIRONMENT

A. Area Boundary

The Work Group considered possible boundaries for the Greater Sage-Grouse population that historically and presently occurs in Northern Eagle and southern Routt counties. Since the sage-grouse population south of the Eagle-Colorado Rivers has apparently been extirpated, the work group decided to focus north of the Eagle River. Delineation of a boundary for the area was based on known historic use sites and sage-grouse observations, as well as the present potential of the remaining sagebrush-dominated habitats. Substantial areas with rural dwellings and town sites as well as agricultural areas, especially hay fields, are included within the boundary. Further, the area within the boundary includes large tracts of pinyon/juniper forests and high elevation (>9400 ft) sites that were not and will not be sage-grouse habitat. While it was necessary to include all areas with potential for habitat development to maintain and enhance the sage-grouse population, no inferences on future changes in present land uses are inferred by the boundary delineated. Participation in this Plan by landowners within or adjacent to the boundary is entirely voluntary.

The Northern Eagle/Southern Routt plan area (Fig. 1) is bounded on the south by the Eagle River from the U.S. Forest boundary 2 miles west of Edwards west to the Eagle/Garfield County line; then north to the U.S. Forest boundary; then east and north along the Forest boundary into Routt County north to the section line between Sections 9 and 16 (T3N, R86W); then east about 1/2 mile north of Phippsburg to the Forest boundary; then south and east to the Routt/Grand County boundary; then west of the county line south (and following the Forest boundary starting 1 mile northwest of Muddy Pass) to the Eagle River west of Edwards.

B. Description of Eagle and Colorado Valleys (Northern Eagle County)

The Eagle and Colorado River valleys are characterized by fairly rugged mountainous terrain cut by numerous canyons. Castle Peak is the highest point in the area between the rivers, at 11,275 feet. The lowest elevation is at the confluence of the Colorado and Eagle rivers at Dotsero, 6,160 feet. Major tributaries to the Eagle River within the Plan boundary are Alkali, Milk, Eby, and Cottonwood creeks. The major tributaries of the Colorado River within the Plan area are Derby, Cabin, Sunnyside, Big Alkali, and Rock creeks, and the Piney River. The upper portion of Egeria Creek, a tributary of Rock Creek, is not included in this discussion because it is more closely related physiographically and ecologically to the upper Yampa Valley.

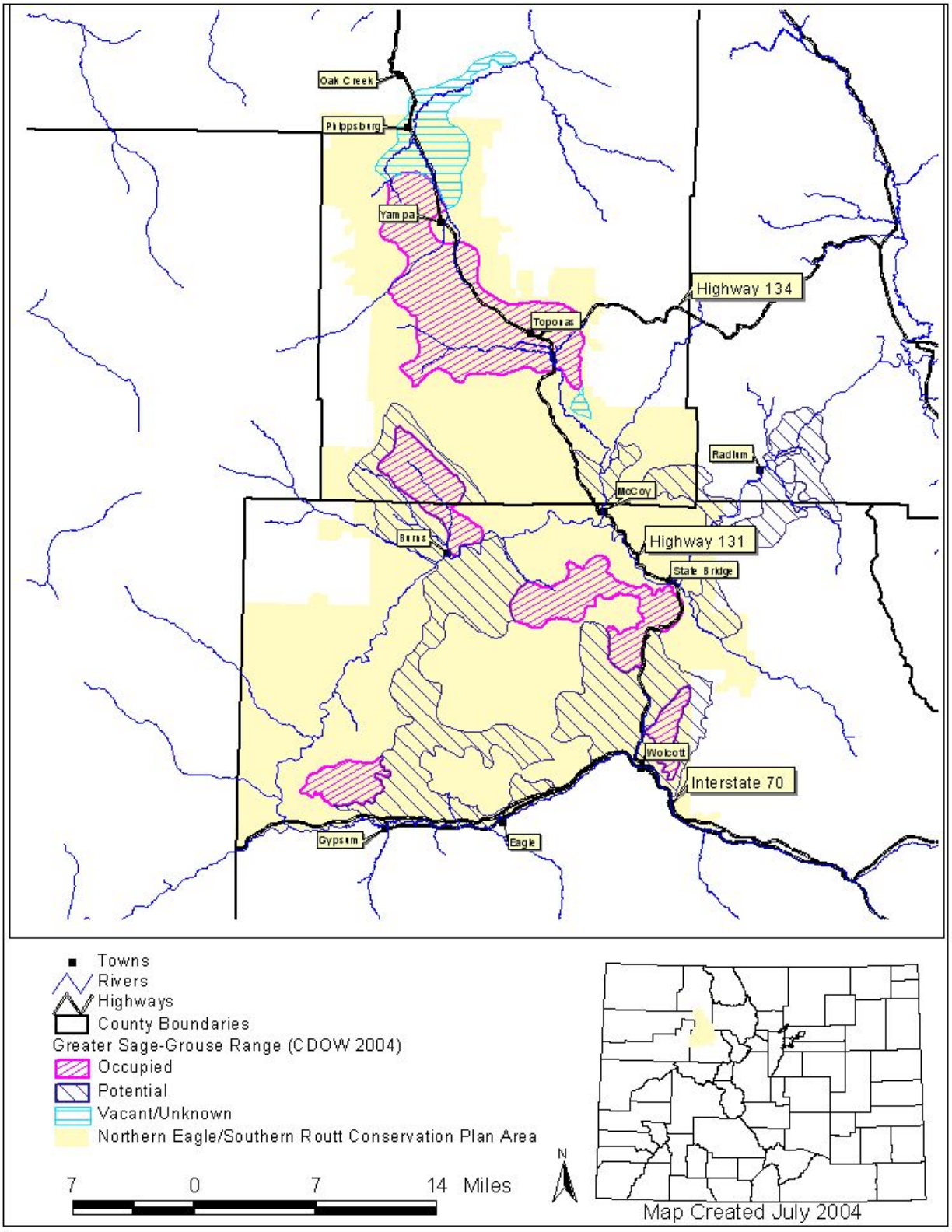

Figure 1. Northern Eagle/Southern Routt Greater Sage-Grouse Conservation Plan Area.

The dominant vegetation type north of the Eagle River is a sagebrush-grassland mixed-shrub rangeland. This type is composed of sagebrush, serviceberry, mountain mahogany, chokecherry, and Gambel's oak. The next two prominent types, by acreage, are pinyon-juniper woodlands and sagebrush rangelands. Other vegetation types found at higher elevations toward Castle Peak and Greenhorn Mountain are Gambel's oak, aspen, coniferous forest and combinations of all of the above. Irrigated hay meadows are primarily along the Eagle River, with smaller areas along its tributaries.

To the north in the Colorado River Valley, the pinyon-juniper acreage exceeds other types, closely followed by sagebrush-grassland and other mixed-shrub rangelands which include sagebrush, serviceberry, Gambel's oak and other shrubs. Aspen and coniferous forests cover the higher elevations of Castle Peak, Wolcott Divide, and King, Black, Greenhorn, and Pisgah mountains.

Precipitation varies by elevation. Average annual precipitation ranges from less than 12 inches at Gypsum to over 30 inches around Castle Peak (Colorado Average Annual Precipitation Map 1951-1980). Typical sagebrush-grass communities receive 12-20 inches annually.

Land use in both valleys historically centered on livestock ranching. This has changed rapidly in the last 30 years in the Eagle River Valley, due to the development of ski resorts in the upper Eagle River Valley and the subsequent construction of Interstate 70 through the valley. Few ranches in the Eagle River Valley derive the majority of their income from livestock operations. The Colorado River Valley has not experienced the same extent of change, probably because of poor roads and geographic isolation. Subdivision of ranches for residential and second-home development will increase as the Eagle Valley reaches "build out" and becomes increasingly expensive. The ratio of public (mostly BLM) to private land in both valleys is 2:1 (Fig 2-3). Much of the private land is contained in four fairly large parcels in the Greenhorn Mountain, Derby Creek, Sunnyside Creek, and Willow Creek/Wolcott Divide/Piney River areas.

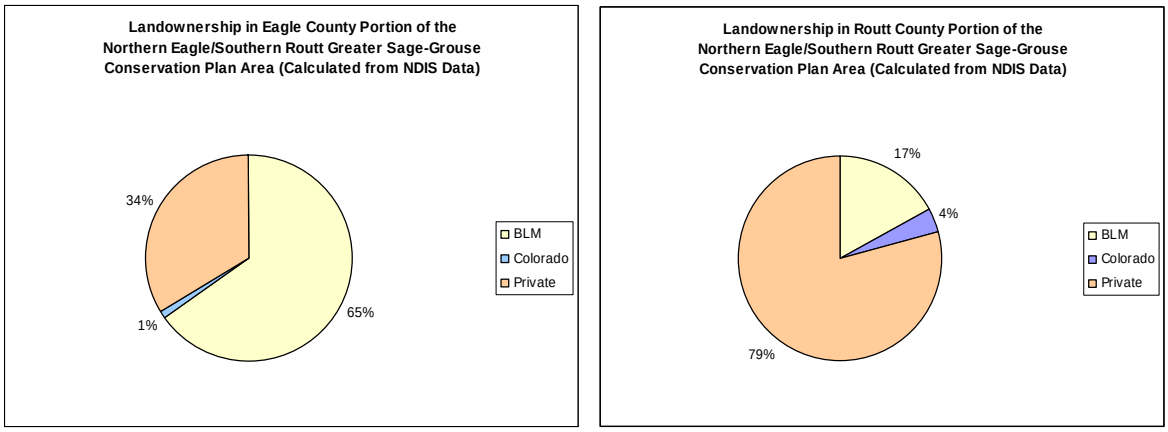

Figure 2. Percentage of public and private land in Northern Eagle/Southern Routt Greater Sage-Grouse Conservation Plan Area.

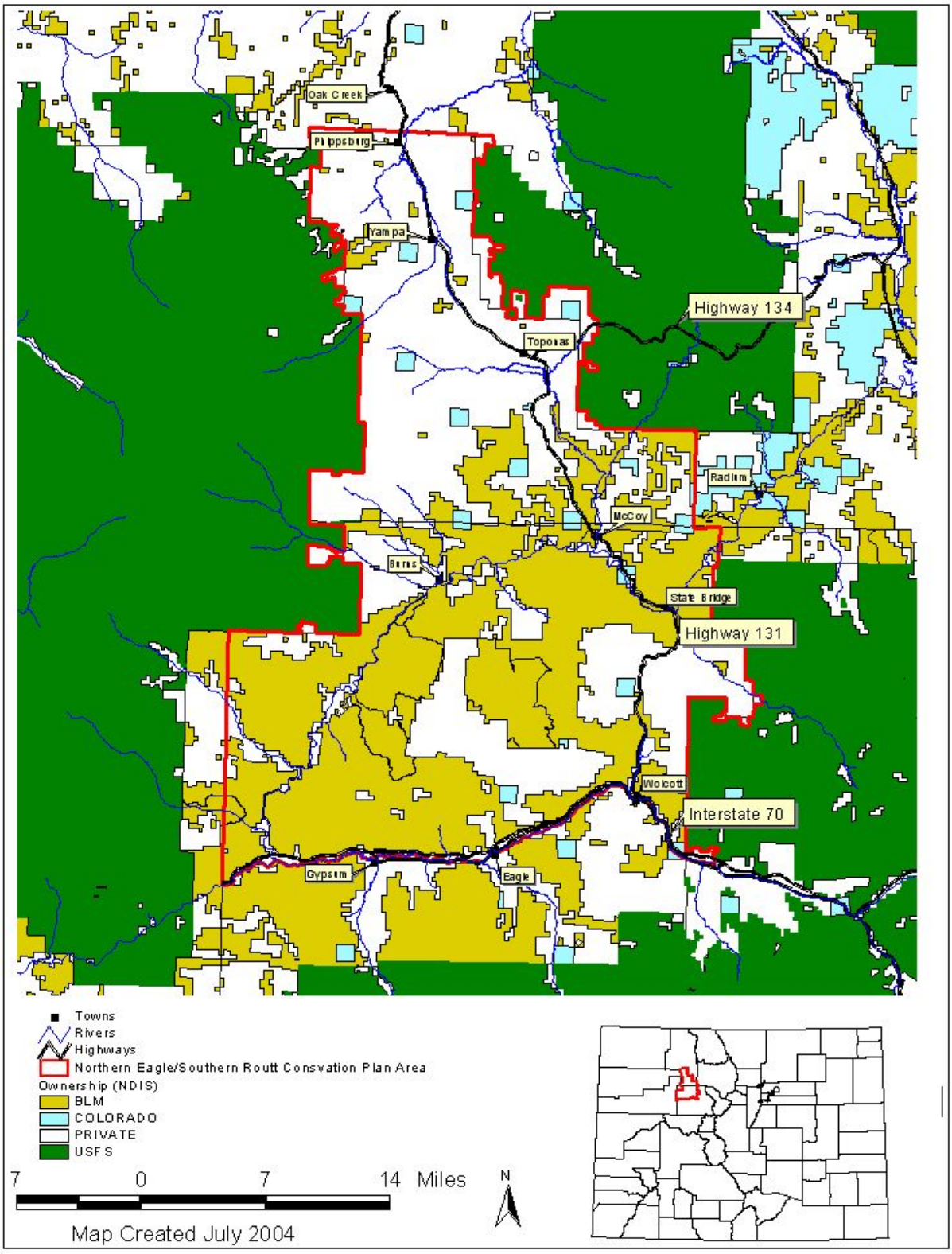

Figure 3. Landownership pattern in northern Eagle and southern Routt Counties.

C. Description of Upper Yampa Valley Area (Southern Routt County)

In contrast to the Eagle and Colorado River valleys, the Upper Yampa Valley south of Phippsburg and including Egeria Park (part of the Colorado River drainage) is relatively flat, with rolling hills and low mesa terrain. Elevations range from 7,424 feet at Phippsburg to 8,247 feet at Toponas, which is in the upper Egeria Creek drainage that flows into Rock Creek and the Colorado River. The drainage divide between the Colorado and Yampa rivers lies between Yampa and Toponas. The White River Plateau (Flat Tops) and the northern Gore Range form the western and eastern sides of the valley respectively. King Mountain, Red Dirt Pass, and Egeria and Rock Creek canyons separate the upper Yampa from the Colorado River Valley. Elevations in the surrounding mountains rise to 12,172 feet at Dome Peak to the west, 9,872 at Green Ridge to the east, and to the south, King Mountain at 10,094 feet.

Sagebrush-grass rangelands comprise the largest proportion of the vegetation in southern Routt County area within the conservation plan boundary. Aspen dominate at higher elevations (above approximately 8,500 ft., depending upon slope and aspect) around the western, southern, and eastern margins of the area. At higher elevations, coniferous forests dominate. There is virtually no pinyon-juniper present in this part of the conservation plan area, and considerably less of the mountain shrub type (oak, serviceberry, etc.) than in the Colorado and Eagle River valleys. This is most likely due to the higher elevation, gentle relief and cooler climate in the upper Yampa/upper Egeria Creek areas. Also, there is considerably more acreage in the Yampa Valley devoted to irrigated crops, primarily grass and alfalfa hay, than in Eagle County.

Annual precipitation varies from 12-16 inches in the lowest valley floor to over 50 inches in the Flat Tops to the west. King Mountain and higher areas of the Gore Range receive over 30 inches. Most of the sagebrush vegetation type probably receives at least 16-25 inches per year, depending upon elevation. This contrasts with the Colorado and Eagle valleys, where most of the sagebrush-grass type probably receives 12-20 inches annually.

Like the Colorado and Eagle River valleys, land use in the Toponas-Phippsburg areas historically centered on livestock ranching. Unlike the Eagle River Valley, ranching remains viable in this area. Earlier in the century there was more farming, including crops such as lettuce. The towns of Phippsburg, Toponas, and Yampa are small and have grown relatively little, if at all in recent years, although new residences are beginning to appear in the area. These towns are relatively close (40 miles or less) to Steamboat Springs and the tourist/resort economy found there. Therefore, there is potential for increased development in the area as a “bedroom community” as the cost of living rises in Steamboat Springs. In addition, the area is a gateway to the Flat Tops and is experiencing increasing pressure from second home development. The relative isolation of the upper Yampa, harsh winters, and relatively poor highway access (compared to I-70 in the Eagle River Valley; Colorado Highways 131 & 134 are not high-speed roads) may have a somewhat dampening effect on this potential. The vast majority (80%) of sage-grouse habitat in the upper Yampa/Egeria area is privately owned; there are small isolated tracts of BLM surrounded by private land (Fig. 2-3).

IV. SPECIES DESCRIPTION, DISTRIBUTION, AND POPULATION MONITORING

A. Species Description

Greater Sage-Grouse *(Centrocercus urophasianus)* are large (2.4 – 7.2 lbs.) brown/gray chicken-like birds with conspicuous black (belly, underthroat) and white (breast of males, undertail coverts) markings. They are brown/gray above, barred with black, with rounded brown wings with some black barring. Males during the breeding season (March-May) have conspicuous neck plumes, white upper breast with yellow-green air sacs, and prominent long spiked tail feathers. Both sexes have yellow-green eye combs, which are less prominent in females, and a fringe of pectinations along the toes that are most noticeable in winter and early spring. Males weigh from 3.5 to 7.2 lbs., while females weigh from 2.4 to 4.0 lbs.

Figure 4. Distribution of sage-grouse in North America (Schroeder et. al. 2004).

B. Sage-grouse Distribution

Greater Sage-Grouse are restricted to sagebrush rangelands in western North America and occur nowhere else in the world (Fig. 4). Their distribution and abundance have markedly decreased and the species has been extirpated from at least five states and one province, and their long-term existence in at least six states and two provinces is uncertain. This uncertainty has resulted in public discussion of classifying Greater Sage-Grouse as a federally threatened or endangered species.

Greater Sage-Grouse are known to occur in 6 populations in scattered localities in northwest Colorado (Fig. 5). The largest area of contiguous distribution and, consequently, population size of this species is in Moffat and western Routt counties. Greater Sage-Grouse in Colorado occur roughly north of the Colorado River from the Utah state line up to Dotsero, and north of the Eagle River. Further up the Colorado River, populations exist in Middle Park, along with North Park in the North Platte River drainage. By county, populations are found in western Garfield and Rio Blanco counties (Roan Plateau/Piceance Creek), Moffat County, western and southern Routt County, Jackson County, Grand County (Radium, Kremmling, and Granby areas) and northern Eagle County. The Northern Eagle/Southern Routt population, while small (<500 birds), probably has, or had, a relationship with the larger population in Moffat, Rio Blanco and western Routt counties, and probably with the Middle Park population to the east. Sage-grouse are still present in the Radium area between State Bridge and Kremmling.

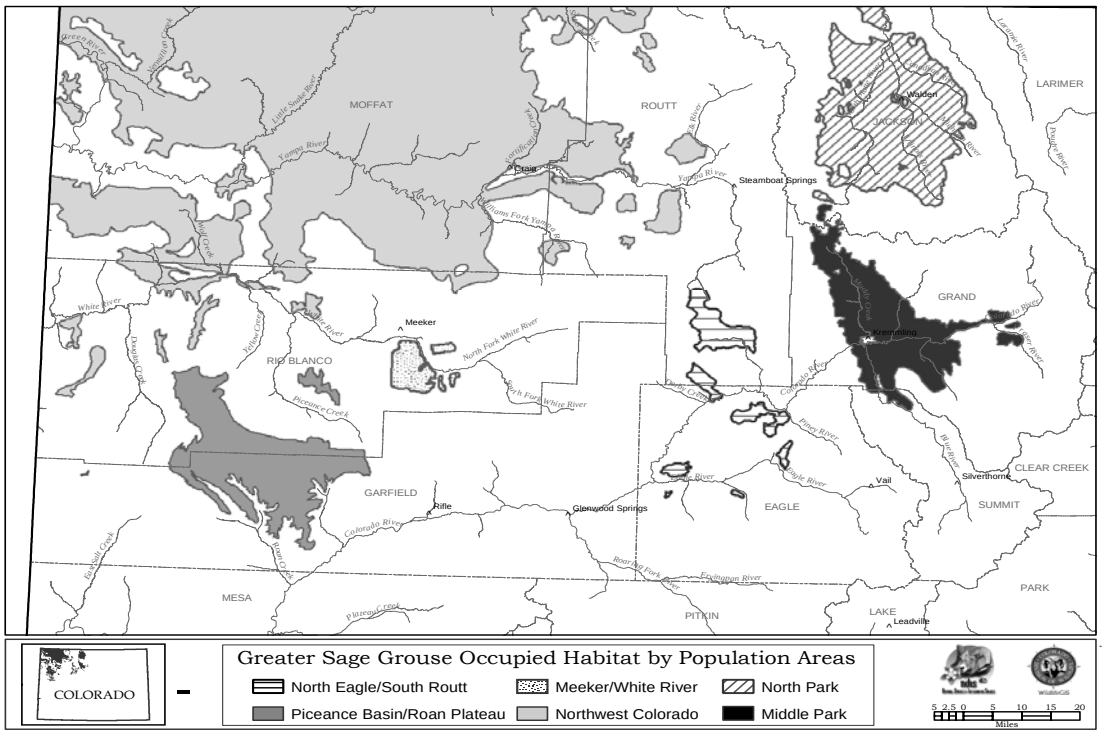

Figure 5. Greater Sage-Grouse distribution in Colorado.

C. Population Monitoring

Counts of male sage-grouse on leks provide managers with an estimate of minimum population size. Harvest information across western North America indicates that there are about 2 females for each male in the spring population. Thus, if the number of males is known it is possible to calculate a minimum population size. It is important to recognize that a count will never represent all males in the population and that any calculated population estimate will be lower than the actual population size.

Area and District personnel of the CDOW were requested, starting in the 1950's, to document sage-grouse presence and general trend within specific areas of western Colorado. Thus, locations of active leks and counts of males on leks were recorded. Generally, only accessible leks were counted and intensive searches for new or relocated leks were not made because of personnel and equipment priorities. Searches and counts were sporadic, as firm procedures were not in place. Counts of male sage-grouse on leks were initiated in 1978 under existing protocols (3 counts/spring). These counts were conducted 1983 through 1993 (though gaps exist for some years) and were intensified in 1998. (See graph, Fig. 6). See Appendix E and Appendix F for more detailed information on lek count data.

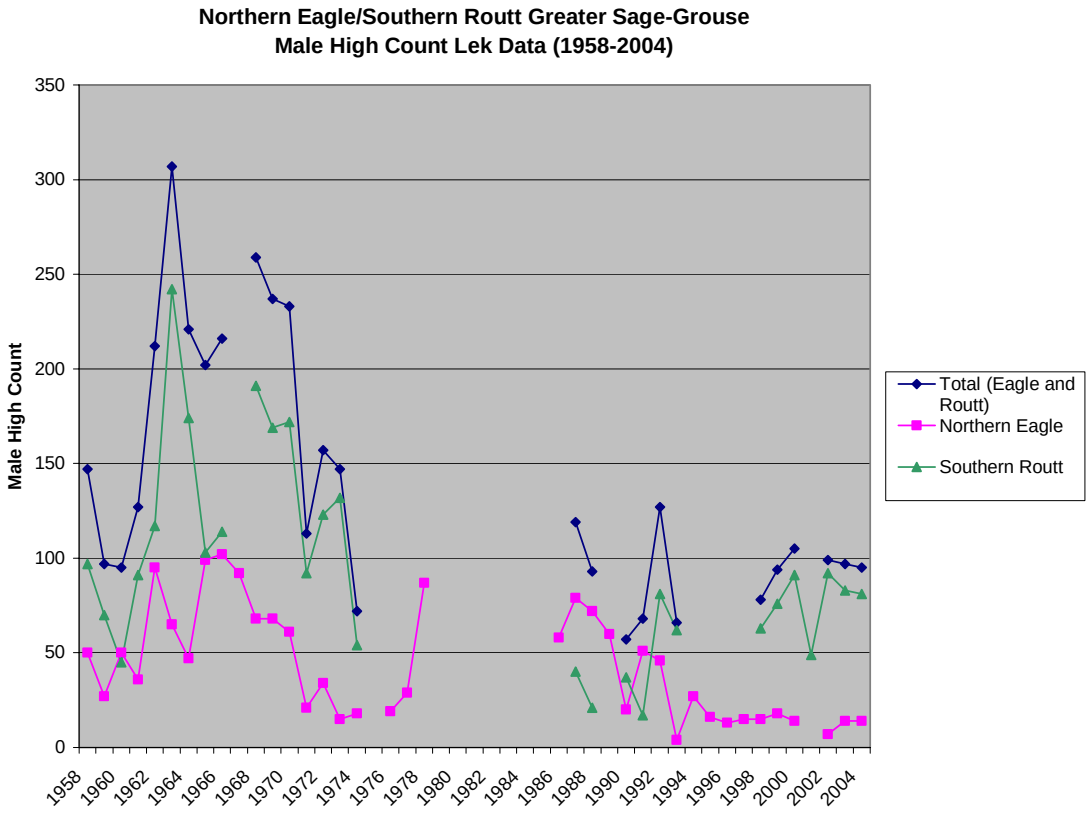

Figure 6. Northern Eagle/Southern Routt Greater Sage-Grouse male high count lek data 1958-2004.

The current population index for sage-grouse in the Northern Eagle/Southern Routt area is somewhere between 304 and 489 birds, based on spring 2004 lek high counts totaling 95 males. This total was derived by using an index derived from Walsh et al. 2004. The number of males is indexed using 3 factors: 1) male lek attendance; 2) fraction of leks counted; and 3) number of females is assumed to be 2.2 twice the number of males (female:male ratio = 2.2 to 1). For more details, see Appendix G.

In 1991, the CDOW initiated a study of sage-grouse in northern Eagle County and southern Routt County. Seven male and two female sage-grouse were trapped, banded and fitted with radio transmitters at three leks, two in Eagle County and one in Routt County. The most significant finding of this study was that two grouse trapped in the Sunnyside Creek area of Eagle County moved north, one to a plateau southwest of Yampa, the other near Lone Spring Butte. Five of the nine radioed birds were depredated the year they were captured (1991). Coyote and Great-Horned Owl accounted for one each of the five losses, with raptors the likely cause of the others. More details and recommendations of this study are contained in Appendix D.

V. LIFE HISTORY AND HABITAT REQUIREMENTS

A. Introduction

Greater Sage-Grouse use extensive landscapes throughout the year and can move great distances or can have annual migratory patterns (Beck 1975, Wallestad 1975, Hulet 1983, Berry and Eng 1985, Connelly et al. 1988, Wakkinen 1990, Fischer 1994). Sage-grouse are wide ranging because they require a diversity of habitats seasonally (Connelly et al. 2000), and have specialized dietary requirements (see Schroeder et al. 1999 for numerous citations). Greater Sage-Grouse may use small portions of many different landscape types during different life stages (Connelly et al. 2000) or movements between small seasonal ranges may be extensive. Habitat requirements may differ by season (Connelly et al. 2000). Connelly et al. (2000) segregated habitat requirement into 4 seasons, breeding habitat, summer-late brood-rearing, fall habitat, and winter habitat. In some situations, fall and summer-late brood-rearing habitats are indistinguishable, but this depends on the population movements and habitat availability. Breeding habitat includes lekking, prelaying, nesting, and early brood-rearing habitat. Summer-late brood-rearing habitat includes male, unsuccessful female and brood habitat. Fall habitat is essentially “transition” range from late-summer to winter and can include a variety of habitats. These include habitats used by males and females with and without broods. Winter habitat is used by segregated flocks of males and females (Beck 1977). Management of Greater Sage-Grouse habitats should include all habitat types necessary for fulfillment of life history needs.

B. Breeding Habitat

Strutting Grounds

In the spring, Greater Sage-Grouse gather on traditional breeding areas commonly referred to as "strutting grounds," but are more generally referred to as "leks" (Patterson 1952, Gill 1965). In Colorado, this occurs from mid-March through early June depending on elevation (Rogers 1964).

Lek sites can be very traditional and sage-grouse can display in the very same location from year to year. Some Northwest Colorado leks are known to have been in use since the 1950's (Rogers 1964). Leks are usually located in small open areas adjacent to stands of sagebrush with canopy cover of 20% or greater (Klott and Lindzey 1989). Openings may be natural or human created, including but not limited to small burns, drill pads and roads (Connelly et al. 1981, Gates 1985).

Males establish territories on leks in early March, but the timing varies annually 1-2 weeks and depends on weather condition and snow melt. Males assemble on the leks approximately one hour before dawn, and strut until approximately one hour after sunrise each day for about six weeks (Scott 1942, Lumsden 1968, Wiley 1973a, Wiley 1973b, Hartzler 1972, Eng 1963, Gibson and Bradbury 1985, and Gibson et al. 1991). The Greater Sage-Grouse mating system is polygamous (one male mates with several females). Most females visiting the lek are bred by a few males occupying the most advantageous sites near the center of the lek (Scott 1942, Lumsden 1968, Wiley 1973b, Hartzler and Jenni 1988). Most females arrive on leks after the males each morning and depart while the males are still displaying. When a hen is ready to mate she invites copulation by spreading her wings and crouching on the lek (Scott 1942, Hartzler 1972, Wiley 1978, Boyce 1990).

Superficially, lek sites do not appear limiting (Schroeder et al. 1999) in Northern Eagle/Southern Routt, but solitude, escape cover, and quality sagebrush (Patterson 1952, Gill 1965, Connelly et al. 1988, Connelly et al. 2000) may be limiting in areas. The amount of land needed for males to strut can vary greatly. Sites chosen for display are typically close to sagebrush > 6 inches tall with canopy cover >20% (Wallestad and Schadweiler 1974). Usually leks are located in the vicinity of nesting habitat (Wakkinen et al. 1992) and are in areas intersected by high female traffic (Bradbury and Gibson 1983, Bradbury et al. 1986, Gibson et al. 1990, Gibson 1992, 1996). These sagebrush areas are used for feeding, roosting and escape from inclement weather and predators. Lek sites are usually flat to gently sloping areas of <15% slope in broad valleys or on ridges (Hanna 1936, Patterson 1952, Hartzler 1972, Giezentanner and Clark 1974, Wallestad 1975, Dingman 1980, Autenrieth 1981, Klott and Lindzey 1989). Lek sites have good visibility and low vegetation structure (Tate et al. 1979, Connelly et al. 1981, Gates 1985) for predator detection and acoustical qualities so sounds of breeding displays will carry (Patterson 1952, Hjorth 1970, Hartzler 1972, Wiley 1973b, 1974, Bergerud 1988, Phillips 1990). The absence of taller shrubs/trees or other obstructions appears to be important for continued use of these sites by displaying male Greater Sage-Grouse. Daytime movements of adult males during the breeding season range between 0.2 and 0.9 mi. from leks, with a maximum cruising radius of 0.9 to 1.2 mi. (Wallestad and Schladweiler 1974). Males are usually found roosting in sagebrush stands with canopy cover of 20-30% (Wallestad and Schladweiler 1974).

Prelaying Habitat

Connelly et al. (2000) recommended that breeding habitat should include prelaying habitat. Little is known or understood about prelaying habitat. It has been suggested that prelaying habitats should provide a diversity of vegetation to meet the nutritional needs of females during the egg development period. For prelaying females in Oregon, Barnett and Crawford (1994) suggest that the habitats should contain a diversity of forbs that are rich in calcium, phosphorous and protein.

Nesting Habitat

Greater Sage-Grouse prefer to nest under tall sagebrush plants (11 – 31 inches) (Connelly et al. 2000). Petersen (1980) found in North Park Colorado that nest bushes averaged approximately 20 ininces In Moffat County this value is slightly higher and ranges from 30 – 32 inches (Hausleitner 2003). Often, the actual nest bush is taller than the surrounding sagebrush plants (Keister and Willis 1986, Wakkinen 1990, Apa 1998). In Moffat County, the nest bush was nearly 10 inches taller than surrounding shrubs. The canopy cover of sagebrush around the nest ranges from 15 - 38% (Patterson 1952, Gill 1965, Gray 1967, Wallestad and Pyrah 1974, Connelly et al. 1991, Keister and Willis 1986, Wakkinen 1990, Apa 1998, Connelly et al. 2000). Measurements in Moffat County are similar and sagebrush canopy cover averages approximately 27% (Hausleitner 2003).

Nests are not uniformly distributed within nesting habitat (Bradbury et al. 1989a, Wakkinen et al. 1992) although some research indicates that 70-80% of all nests often occur within 2 miles of an active lek (Bradbury et al. 1989a, Wakkinen et al. 1992). This number may vary depending upon an active lek or lek of capture measurement and by area. From 2001-2002 in Moffat County, 169 female grouse were captured and radio-tagged. Female movements were more extensive than those earlier reported with 46% (n = 78/169) of the radio-tagged females nesting within 1.8 miles of the lek of capture. Seventy six percent (n = 128/169) nested within 4 miles and 88% (n = 148/169) nested within 5.8 miles of the lek of capture (Hausleitner 2003, A. D. Apa unpublished data). In Moffat County, female grouse have been documented moving as far as 15-20 miles from the lek site (assumed to be the lek upon which they bred). Good quality nesting habitat consists of live sagebrush of sufficient canopy cover, with substantial grasses and forbs in the understory (Connelly et al. 2000). Few herbaceous plants are growing in April when nesting

begins, so residual herbaceous cover from the previous growing season is important for nest success in most areas (Connelly et al. 2000), although the level of herbaceous cover depends largely on the potential of the sagebrush community (Connelly et al. 2000). Local woody and herbaceous requirements need to be developed that are reasonable and ecologically defensible (Connelly et al. 2000).

Nearly all sage-grouse nests are located beneath sagebrush plants (Patterson 1952, Gill 1965, Gray 1967, Wallestad and Pyrah 1974) and sage-grouse nesting under sagebrush plants have greater nest success than those that nest under plants other than sagebrush (Connelly et al. 1991). Herbaceous vegetation is also an important component at sage-grouse nest sites. (Connelly et al. 2000). Grass heights are variable and have been measured across the west and range from 5-13 inches (Connelly et al. 2000). In addition, grass cover measurements are also variable and range from 4-51% cover. These measurements are also similar to Moffat County data. Hausleitner (2003) reported grass heights at nests ranging from 5-6 inches and grass cover averaged approximately 4% while forb cover averaged about 7% (Hausleitner 2003)

Clutch size ranges from 6 to 10 eggs with 7 to 9 being the most common (Wallestad and Pyrah 1974, Connelly et al. 1993, Gregg et al. 1994, Schroeder 1997). In Moffat County, clutch size is typical and ranges from 5.7 eggs for yearling females to 7.0 eggs for adult females (overall average was 6.7 eggs) (Hausleitner 2003). Incubation does not start until the last egg is laid and eggs are incubated 27 to 28 days (Patterson 1952). Greater Sage-Grouse have one of the lowest nest success rates of all the upland game bird species (Schroeder 1997). Reported nest success rates vary from 63% in Montana to 10% in Oregon (Drut 1994, Connelly et al. 2000). In Moffat County, nest success in 2001-02 ranged from 45% - 60% (Hausleitner 2003, A. D. Apa unpublished data). Greater Sage-Grouse nest abandonment is not uncommon if the hen is disturbed. While re-nesting is infrequent, it does occur (Patterson 1952, Eng 1963, Hulet 1983, Connelly et al. 1991). Clutch size of re-nesting attempts varies from 4 to 7 eggs (Schroeder 1997). Hatching begins around mid-May and usually ends by July. Most eggs hatch in June, with a peak between June 10 and June 20. In Moffat County the mean clutch initiation date was 26 April in 2001 and 21 April for 2002 (Hausleitner 2003).

Early Brood-rearing

Early brood-rearing habitat is generally found relatively close to nest sites (Connelly et al. 2000), but individual females with broods may move large distances (Connelly 1982, Gates 1983). Early brood-rearing habitat is typically characterized by sagebrush stands with 10-25% canopy cover (Martin 1970, Wallestad 1971) with herbaceous understories that exceed 15% cover (Sveum et al. 1998a, Lyon 2000). In Moffat County, sagebrush stands average about 11% canopy cover with herbaceous understories averaging about 14% (Hausleitner 2003). High plant species diversity (richness) is also a typical characteristic (Dunn and Braun 1986, Klott and Lindzey 1990, Drut et al. 1994a, Apa 1998). Sagebrush heights ranged from 6 to 18 inches in Montana (Sveum et al. 1998b, Lyon 2000) and about 23 inches in Moffat County (Hausleitner 2003). Adjacent shrub areas of 20-25% canopy cover are preferred for escape and roosting (Wallestad 1971, Dunn and Braun 1986), but night roosting sites in Moffat County had only 4% sagebrush canopy cover and were only 20 inches tall.

In early summer, the size of the area used appears to depend on the interspersion of sagebrush types that provide an adequate amount of food and cover. Females and broods can select riparian habitats in the sagebrush type that have abundant forbs and moisture (Gill 1965, Klebenow 1969, Savage 1969, Connelly and Markham 1983, Gates 1983, Connelly et al. 1988, Fischer et al. 1996b). Hens with broods remain in sagebrush uplands as long as the vegetation remains succulent, but move to wet meadows as vegetation desiccates (Fischer et al. 1996b). Hens with broods use these areas from mid-May to September. Depending on precipitation and topography, some broods may stay in sagebrush/grass communities all summer while others shift to lower areas (riparian areas, hay meadows or alfalfa fields) as upland plant communities desiccate (Wallestad 1975).

C. Summer - Late Brood-rearing Habitats

As sagebrush communities begin to dry out and many forbs complete their life-cycle, sage-grouse typically respond by moving to a variety of more appropriate habitats (Patterson 1952). Sage-grouse can begin movements in late-June and early July (Gill 1965, Klebenow 1969, Savage 1969, Connelly and Markham 1983, Gates 1983, Connelly et al. 1988, Fischer et al. 1996b). By late summer and into the early fall sage-grouse with broods and unsuccessful hens, and groups of males become more social and flocks are more concentrated (Patterson 1952). Late brood-rearing habitat is likely limited in most of Eagle County due to drier conditions.

From mid-September into November, Greater Sage-Grouse prefer areas with more dense sagebrush (>15% canopy cover) and late green succulent forbs before moving to early transitional winter range where sexual segregation of flocks becomes notable (Wallestad 1975, Beck 1977, Connelly et al. 1988). During periods of heavy snow cover in late fall and early winter, use of mountain and Wyoming big sagebrush stands is extensive.

D. Winter

Seasonal movements by Greater Sage-Grouse can be modified by local weather conditions. Greater Sage-Grouse winter range in Northwest Colorado varies according to snowfall, wind conditions, and suitable habitat (Rogers 1964). Greater Sage-Grouse may travel short distances or many miles between seasonal ranges. Movements in fall and early winter (September-December) can be extensive with some movements exceeding 20 miles. In North Park, Colorado, Schoenberg (1982) documented female Greater Sage-Grouse moving more than 18 miles from winter to nesting areas. Winter movements and winter range use in Northwest Colorado have not been extensively studied and were poorly understood until recently. General seasonal movements were identified in a portion of Northwest Colorado. Hausleitner (2003) found that female Greater Sage-Grouse moved an average of 6 miles from nesting areas to winter sites. The range of movements was extensive and some female grouse moved as little as less than ½ mile to over 19 miles from nesting areas to winter habitat. The extent of movement varies with severity of winter weather, topography, and vegetation cover.

Winter habitat use depends upon snow depth and availability of sagebrush, which is used almost exclusively for both food and cover. Although no specific research has been conducted on habitat characteristics or food habitats of Greater Sage-Grouse in Northern Eagle/Southern Routt,

information collected in other parts of Colorado and throughout their range can be helpful. Sites used are typically characterized by canopy cover greater than 25% and sagebrush greater than 12 - 16 inches tall (Schoenberg 1982) associated with drainages, ridges, or southwest aspects with slopes less than 15% (Gill 1965, Wallestad 1975, Beck 1977, Robertson 1991). In Colorado, Greater Sage-Grouse have been documented using as little as 10% of available sagebrush habitat in severe winter conditions (Beck 1977, Hupp and Braun 1989 (for Gunnison Sage-Grouse)). When snow is more than 12 inches deep and covers over 80% of the winter range, Greater Sage-Grouse have been shown in Idaho to rely on sagebrush greater than 16 inches in height in valleys for foraging (Robertson 1991). Lower flat areas and shorter sagebrush along ridge tops provide roosting areas.

During extreme winter conditions, Greater Sage-Grouse will spend nights and portions of the day (when not foraging) burrowed into "snow roosts." Sage-grouse dig snow roosts by scratching with their feet or using wing movements when the snow has the proper texture.

Flock size in winter is variable (15-100+ birds), with flocks frequently being unisexual (Beck 1977, Hupp 1987). Many, but not all, flocks of Greater Sage-Grouse males can over-winter in the vicinity of their strutting grounds and by March are usually within 2-3 miles of breeding areas used the previous year. These movements depend on whether or not the population is non-migratory or 1 or 2-stage migratory (Connelly et al. 2000). Connelly et al. (2000) define three types of sage grouse populations based on seasonal movements: 1) non-migratory, grouse do not make long-distance movements (i.e., >10 km one way) between or among seasonal ranges; 2) one-stage migratory, grouse move between 2 distinct seasonal ranges; and 3) 2-stage migratory, grouse move among 3 distinct seasonal ranges.

Table 1. Characteristics of sagebrush rangeland needed for productive Greater Sage-Grouse habitat (after Connelly et al. 2000, Hausleitner 2003).

CONNELLY ET AL. 2000 GUIDELINES	Breeding (April – June)		Brood-rearing (June – August)		Winter[e]	
	Height	**Canopy**	**Height**	**Canopy**	**Height**	**Canopy**
MESIC SITES[a]:						
-***sagebrush***	15.7-31.5 inches (40-80 cm)	15-25%	15.7-31.5 inches (40-80 cm)	10-25%	9.8-13.8 inches (25-35 cm)	10-30%
-***grasses and forbs***	>7.1[c] inches (>18 cm)	≥25%[d]	variable	>15%	N/A	N/A
ARID SITES[a]:						
-***sagebrush***	11.8-31.5 inches (30-80 cm)	15-25%	15.7-31.5 inches (40-80 cm)	10-25%	9.8-13.8 inches (25-35 cm)	10-30%
-***grasses and forbs***	>7.1[cf]	≥15%	variable	>15%	N/A	N/A
% Area[b]	>80		>40		>80	

[a] Mesic and arid sites should be defined on a local basis; annual precipitation, herbaceous understory, and soils should be considered (Tisdale and Hironaka 1981, Hironaka et al. 1983).
[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 a growth form that provides little lateral cover (Schroeder 1995).
[e] Values for height and canopy coverage are for shrubs exposed above snow.
[f] Specific to nest sites.

Table 1 Continued:

MOFFAT COUNTY DATA (Hausleitner 2003)	**Breeding (April – June)**		**Brood-rearing (June – August)**		**Winter[e]**	
	Height	**Canopy**	**Height**	**Canopy**	**Height**	**Canopy**
MESIC SITES[a] (Danforth Hills) -***sagebrush*** (nest and brood sites)	31.1 inch (79 cm) avg. nest bush height	26% (nest sites)	22.9 inch (58 cm) height at brood sites	10.6% at brood sites	No Winter Data	No Winter Data
-***sagebrush*** (random sites)	22.9 inch (58 cm) avg. random sagebrush height	32% (random sites)	17.3 inch (44 cm) height at random sites	14% at random sites		
-***grasses and forbs*** (nest and brood sites)	5.9-7.1 inch (15-18 cm) avg. grass height at nests	3.7% grass 7.7% forbs 11.4% total canopy at nest sites	8.0 inch (20.3 cm) grass height, 4.4 inch (11.2 cm) forb height at brood sites	6.5% grass 8.0% forb 14.5% total canopy at brood sites	No Winter Data	No Winter Data
-***grasses and forbs*** (random sites)	7.3 inch (18.6 cm) avg. grass height at random sites	7.9% grass 8.1% forbs 16.0% total canopy at random sites	6.7 inch (17.1 cm) grass height, 3.2 inch (8.2 cm) forb height at random sites	5.9% grass 3.8% forb 9.7% total canopy at random sites		

Table 1 Continued:

MOFFAT COUNTY DATA (Hausleitner 2003)	**Breeding (April – June)**		**Brood-rearing (June – August)**		**Winter[e]**	
	Height	**Canopy**	**Height**	**Canopy**	**Height**	**Canopy**
ARID SITES[a] (Axial Basin)						
-***sagebrush*** (nest and brood sites)	31.1 inch (79 cm) avg. nest bush height	26% at nest sites	As for mesic sites above	As for mesic sites above	No Winter Data	No Winter Data
-***sagebrush*** (random sites)	17.7 inch (45 cm) avg. random sagebrush height	23% at random sites				
-***grasses and forbs*** (nest and brood sites)	5.9-7.1 inch (15-18 cm) avg. grass height at nests	3.7% grass 7.7% forbs 11.4% total canopy at nest sites	As for mesic sites above	As for mesic sites above	No Winter Data	No Winter Data
-***grasses and forbs*** (random sites)	5.1 inch (13 cm) grass heights at random sites	4.8% grass 4.7% forbs 9.5% total canopy at random sites				

E. Food Habits

Breeding Habitats

Yearlings/Adults/Juveniles
Food and cover are key factors related to chick and juvenile survival. During the first 3 weeks after hatching, insects (beetles, ants, grasshoppers) are the primary food of Greater Sage-Grouse chicks (Patterson 1952, Trueblood 1954, Klebenow and Gray 1968, Savage 1968, Peterson 1970, Johnson and Boyce 1990, Johnson and Boyce 1991, Drut et al. 1994b, Pyle and Crawford 1996, Fischer et al. 1996a). Diets of 4 to 8 week old chicks were found to have more plant material (approximately 70% of the diet), of which 15% was sagebrush (Peterson 1970). Succulent forbs are predominant in the diet until chicks exceed 3 months of age, at which time sagebrush becomes a major dietary component (Gill 1965, Klebenow 1969, Savage 1969, Connelly and Markham 1983, Gates 1983, Connelly et al. 1988, Fischer et al. 1996a).

Insects are consumed by adult sage-grouse although forbs and sagebrush provide the majority of the diet (Rasmussen and Griner 1938, Moos 1941, Knowlton and Thornely 1942, Patterson 1952, Leach and Hensley 1954). Fringed sagebrush is often a transitional food as sage-grouse shift from summer to winter diets. Highly used forbs include common dandelion, prickly lettuce, hawksbeard, salsify, milkvetch, sweet clover, balsamroot, lupine, Rocky Mountain bee plant, alfalfa, and globemallow (Girard 1937, Knowlton and Thornley 1942, Batterson and Morse 1948, Patterson 1952, Trueblood 1954, Leach and Browning 1958, Wallestad et al. 1975, Barnett and Crawford 1994). During the pre-egg laying period, hens select forbs that are generally higher in calcium and crude protein than sagebrush (Barnett and Crawford 1994).

Summer - Late Brood-rearing

Yearlings/Adults/Juveniles
Unlike many other game birds, Greater Sage-Grouse do not possess a muscular gizzard and therefore lack the ability to grind and digest seeds and only occasionally, by accident, consume grit (Griner 1939). With the exception of some insects in the summer, the year round diet of adult Greater Sage-Grouse consists of leafy vegetation (Wallestad 1975). The amount of forbs in adult Greater Sage-Grouse diets in summer varies with location.

Winter

Yearlings/Adults/Juveniles
Sagebrush is essential for survival throughout the year, but especially during the winter. Greater Sage-Grouse increase use of sagebrush in the fall after the first killing frost eliminates most forbs. The late-autumn through early spring diet of Greater Sage-Grouse is almost exclusively sagebrush (Girard 1937, Rasmussen and Griner 1938, Bean 1941, Batterson and Morse 1948, Patterson 1952, Leach and Hensley 1954, Barber 1968, Wallestad et al. 1975). Many species of sagebrush can be consumed and include big, low, silver, and fringed sagebrush (Remington and Braun 1985, Welch et al. 1988, 1991, Myers 1992).

Greater Sage-Grouse have been shown to select differing subspecies of sagebrush for their higher protein levels and lower concentrations of monoterpenes (Remington and Braun 1985,

Myers 1992). In fact, individual grouse have been shown to gain weight over the winter (Beck and Braun 1978, Remington and Braun 1988). In exceptionally harsh winters, fat reserves have been shown to decrease (Hupp and Braun 1989).

F. Survivorship and Life Span

The survival rate of Greater Sage-Grouse varies by year, sex, and age (Zablan 1993). It is generally believed, and there is reasonable evidence to suggest, that female Greater Sage-Grouse have higher survival rates than males (Swenson 1986). It is believed that this differing survival rate may be due to sexual dimorphism and the cryptic plumage of females and their more secretive nature versus more elaborate plumage and display activities of males (Schroeder et al. 1999). The annual survival rate for banded females in Colorado has been estimated at 55%. More specifically, the survival rate for yearling males was 52% and 38% for adult males (Zablan 1993). Survival rates from radio-marked females and males in Idaho has been estimated at 75% and 60%, respectively (Connelly et al. 1994). Wyoming estimated survival rate of banded females at 67% and 59% for males. (June 1963). From April 2001 – 2002, Hausleitner (2003) found that the annual survival rate for adult females was 65% and 71% for yearling females in Moffat County. From April 2002 – 2003, adult survival rate for adult females was 48% (this included females from the previous year) and 78% for yearling females (Hausleitner 2003). The survival rate of juveniles (between hatching and fall) is relatively unknown, although information is becoming available due to improved radio-telemetry technology. Survival of juveniles from hatch to fall has been estimated to be 38% in Wyoming (June 1963).

VI. POSSIBLE FACTORS CONTRIBUTING TO SAGE-GROUSE DECLINE

A wide variety of factors have been identified as potential causes for the decline of Greater Sage-Grouse in Colorado over the last 10-20 years. Colorado Division of Wildlife data shows a decline of about 80% statewide over the last 20 years. Incomplete data for the Northern Eagle/Southern Routt area are more difficult to interpret. It seems clear, however, that Eagle county sage-grouse numbers have declined and remain relatively low, while as of spring 2000, Southern Routt numbers were higher than they had been in the previous 15 years (based on counts of males on leks). 2003-2004 male sage-grouse lek count data are slightly lower, but remain high compared to counts in the 1980s.

Identifying possible factors that may be responsible for increases or decreases in sage-grouse numbers is easy; determining and assigning relative significance to them is far more difficult. Vegetation succession, weather, predation, habitat changes (amount and/or quality), fragmentation, land treatments, grazing practices, unknowns about grouse population cycles, etc. all have some effect, and the interactions between them confound attempts to point to cause and effect.

The following issues were identified by the Work Group in 1998 and 1999 as factors that could have contributed to the decline of the Greater Sage-Grouse or affect their habitat quantity or quality in the Northern Eagle/Southern Routt area. The list also includes issues that the Work Group participants felt were important to the local community and therefore warranted consideration in the development of the Plan.

- Vegetative Habitat – more important in Eagle County – drier conditions
- Poor habitat quality and quantity
- Lack of grasses and forb understory
- Condition of winter habitat
- Land Treatments – too many in wrong places or too few in the right places
- Effects of land treatments on winter habitat
- Poor management of land treatments
- Fire suppression
- Land Use Planning/Mitigation
- Fragmentation
- Maintaining Agriculture
- Subdivision/Ranchette development, Changes in land uses
- Utilities, including power lines, pipelines
- Roads, highways
- Fence designs
- Loss of Topsoil and Productivity – drier, steeper conditions in Eagle County
- Poor Nest and Brood Survival
- Timing, intensity and duration of livestock and/or big game grazing
- Weather/climatic factors
- Drought, hard winters, timing of snow/rain in spring and early summer (effect on brood survival)
- Predators (coyotes, ground squirrels, badgers, eagles and other raptors, crows, ravens, magpies)
- Scientific Lek Harassment
- Wildlife Impacts
- Conflicting Uses During Critical Biological Activity Periods
- Recognition of Private Landowners Rights
- Monitoring/Research
- Reservoirs
- Recreational Uses
- Hunting
- Disease and Body Parasites
- Local Business
- Illegal harvest of sage-grouse
- Incentives for Landowners – availability of funding for habitat work
- Conflicts with management practices directed to benefit other wildlife species
- County Regulations
- County Participation – concern about use of Plan by counties as regulatory tool

After the Work Group reconvened in April 2003, the above issues were consolidated into the following list of issues to develop conservation actions.

- Power Lines/Utilities
- Habitat Change
- Disease
- Pesticides
- Land Use Changes and Residential Development

- Reservoir Development and Other Water-Related Issues
- Recreation
- Predation
- Grazing (both wild and domestic)
- Hunting

VII. CONSERVATION STRATEGY

A. Northern Eagle/Southern Routt Area Goals and Objectives

The following goals and objectives were developed to more clearly guide management efforts of the Work Group in securing the long-term status of Greater Sage-Grouse while also meeting the needs of the other resources and involved groups and individuals.

Greater Sage-Grouse Population Goal:

- Maintain the current population and increase to a population of 500 birds during the breeding season.

Five-hundred breeding individuals is considered to be the minimum long-term level to maintain a persistent population (Franklin 1980, Soule 1980, Braun 1995). The present 2004 estimate of the breeding population of Greater Sage-Grouse in the Plan area is 304-489 birds based on 95 males counted on 6 active leks. Three-year averages of counts of males on leks will be used to assess population trend (2002-03-04, 2003-04-05, etc.). Three-year averages are used to dampen annual fluctuations so that we do not overreact to variables such as weather, expertise of lek observers, and lek accessibility. Three-year averages show that the total male high count has increased from 92 (1998-2000) to 97 (2002-2004). The goal is based on the absence of catastrophic weather and other events that may alter sage-grouse habitat. Further, as new information is obtained, changes in these goals may be necessary. The work group will review this goal every year.

Greater Sage-Grouse Habitat Goal:

- Maintain on suitable sites across the Northern Eagle/Southern Routt landscape relatively large, contiguous stands of sagebrush with a variety of vegetative conditions interspersed throughout, in the desired arrangement with good connectivity to provide the quantity and quality of sage-grouse habitat to support the desired population of 500 birds.

The long-term (beyond 20-50 years) survival of this population depends on connections to and exchange of individuals with other nearby populations to supplement the size of the population as well as increase or maintain genetic diversity. These connections almost certainly existed within the last 50 years. In the near future, the Work Group should consider population and habitat matters beyond the Plan boundaries in the direction of Radium and Kremmling to establish connections with the Middle Park population, and from Phippsburg to Twentymile Park and the Hayden area to connect with the northwest Colorado/Wyoming population. The most likely reason for separation of the population from Radium is pinyon-juniper encroachment; the

separation from the Hayden area is likely a combination of crop cultivation and coal mining. Many of these reasons can be overcome with time and vegetation management as long as there are no permanent land use changes (i.e., developments).

VIII. CONSERVATION ACTIONS AND IMPLEMENTATION

Goals and objectives make up the backbone of the Northern Eagle/Southern Routt Greater Sage-Grouse Conservation Plan and establish a framework for developing conservation actions. Conservation actions are designed to meet the Plan's goals and accomplish one or more of the objectives. These actions address issues that affect sage-grouse and/or their habitat. Due to the interrelationship of the habitat components, resource values, and issues, many actions may apply to more than one objective. Any additional actions identified at a later date will be analyzed by the Work Group for application and designed to ensure the appropriateness and compliance with the goals and objectives set forth in this Plan. Following Work Group agreement, they will be added to the Plan.

Plan implementation will start with actions the Work Group believes will be most effective at accomplishing the conservation goals. The group recognizes the need to act opportunistically to carry out specific conservation actions. For example, a particular conservation action might be implemented sooner if funding becomes available, or if a group or individual steps forward to help with completing a task.

Some actions have already begun, or are ongoing. Other actions will need to be done continually throughout the Plan. These are normally a matter of policy or require small changes in the way resources are managed and land use activities take place. The adoption of these Conservation Actions is the responsibility of the Work Group. Specific steps or tasks needed to carry out a conservation action will be developed as needed. Every effort to leverage money and resources will be made. Many actions, such as vegetation treatments, are costly and will likely be dependent upon seeking cooperative funding from partners.

A. Utilities

Issues Related to Utilities

There are few rigorous published research data on the response of sage-grouse to electric transmission or distribution lines. Therefore, the Work Group felt that it was very important to stress the need for increased information on the impacts of utility lines on sage-grouse. Some of the concerns regarding utility lines and sage-grouse include the following. Utility lines may serve as perches for raptors, which then may increase predation rates on grouse or deter use of the immediate area by grouse. Mortality rates may also increase due to grouse colliding with utility lines. The above considerations caused Work Group members to be concerned with the potential impacts of utility lines on the local sage-grouse population. Several large utility lines run through sage-grouse habitat in Eagle and South Routt counties. Therefore the Work Group felt it was important to develop conservation actions relating to utility lines. In addition, as gas line construction and maintenance may also impact the sage-grouse, the conservation actions listed below also apply to gas utility companies.

Several representatives from the Utility Industry were invited to participate and help develop

conservation actions for Utilities. The Utility Industry representatives felt that it was important that they were involved in the development of the conservation actions in order to insure that the recommended actions would actually be achievable. The representatives noted that they had not been present during the development of other sage-grouse conservation plans, and therefore some of the plans developed actions that are impossible or not agreeable for the Utility Companies. The Utility representatives also discussed several projects they are initiating that are intended to benefit wildlife and noted that they would like to increase communication with the CDOW and the Work Group. Finally, Utility representatives pointed out that the actions should address the need for both new construction and maintenance of existing power lines. The Utility representatives, with the concurrence of the Work Group members present, developed the following conservation actions

Conservation Actions Relating to Utility Companies (Electric Transmission, Electric Distribution, and Gas)

Goal:	Objectives:	Actions:	Who:	When:
Provide utility access to residents in northwest Colorado while minimizing the adverse impacts to Greater Sage-Grouse populations in the area.	1. Minimize potential impacts to sage-grouse populations from utility construction and maintenance.	1a. Consult with the Colorado Division of Wildlife (CDOW) during transmission and distribution line siting and new gas line projects to minimize impacts to Greater Sage-Grouse populations. Utility construction will avoid critical periods and sensitive areas where technically and economically feasible.	Utility Companies, CDOW	Ongoing
		1b. Schedule regular maintenance to minimize impacts to sage-grouse populations during critical periods. Maintenance in emergency situations will be unrestricted.	Utility Companies	Ongoing
		1c. Avian protection devices, which include raptor perch deterrents, will be utilized when deemed appropriate to protect sage-grouse populations. CDOW will be consulted to determine appropriate measures to be taken.	Utility Companies, CDOW	Ongoing

	2. Improve communication between Utility Companies, CDOW, and Public to better accommodate sage-grouse needs.	2a. Share new lek/habitat/biology information as it becomes available with members of the Colorado Rural Electric Association, other electric transmission/distribution and gas utilities, the CDOW, and the Work Group. The information will be handled under the terms of existing or future confidentiality agreements. 2b. Seek input from affected landowners and the CDOW on power line modifications proposed for Greater Sage-Grouse protection.	CDOW, Utility Companies, Work Group Utility Companies, CDOW	Ongoing When necessary

B. Habitat Change

Issues Related to Habitat Change

The Work Group identified goals, objectives, and conservation actions for the issue of habitat change to move toward the desired quantity of and quality of sage-grouse habitat in areas appropriate for sagebrush-grassland plant communities. The goal is to improve or sustain the quantity and quality of habitats to benefit both sage-grouse and livestock. Work Group members participated in a field tour to view various sage-grouse habitats and discussed habitat changes they had noticed over the years. The habitat changes differ for Northern Eagle and Southern Routt counties (as discussed below).

"Habitat" and the vegetation that composes it change constantly in response to short-term influences such as annual precipitation and long-term influences such as gradual ecological succession (aging and eventual replacement of a plant community). In addition, events such as drought, storms, fire (or lack thereof), flooding, landslides, and human management activities may have long–term influences as well. Though we do not have detailed information and mapping on specific changes, some of the following events are known to have happened over the last 100-120 years.

- Changes from one vegetation type to another; in particular, changes from sagebrush-grassland communities to mixed sage-grass/pinyon-juniper woodland types in the Eagle and Colorado watersheds. Sagebrush-grass communities across the conservation plan area result in different "climax" plant communities. Valley bottoms, ridges and mesas in the upper Yampa and upper Egeria Creek areas in all likelihood would tend to stabilize as

a sagebrush-grass dominated community given cooler, wetter climate conditions. In the absence of periodic fire in Eagle County, and with a drier, warmer climate, mountain shrub and pinyon-juniper woodlands tend to replace sagebrush-grassland communities. Pinyon-juniper encroachment is not an issue in much of the Southern Routt area because this type is not present.

- The abandonment or change of hay meadows and lettuce fields to native range.
- The loss of wet meadow riparian areas due to stream channel down cutting and water diversions. Loss of native wet meadows important to sage-grouse may have been offset in some areas by the presence of irrigated hay meadows, which are used by sage-grouse.
- Changes in age, structure, and density of sagebrush.
- Changes in the understory (grasses and forbs) in sagebrush communities.
- The invasion of noxious weeds.
- Changes in climactic conditions.

Characterizing specific areas as good, poor, or mediocre in terms of sage-grouse habitat is a site-specific exercise and will need to be completed in the field. Some areas with poor understory vegetation or poor sagebrush growth may be a result of naturally poor site conditions and, thus, are not likely to respond to habitat manipulation. On the other hand, some areas may be productive sites that have been preferred by wild and/or domestic livestock resulting in modified plant communities. Some of these potentially productive sites may benefit from active vegetation management. All conservation actions listed below are voluntary. However, the hope is that landowners and land managers will take action to improve or sustain the quantity and quality of sage-grouse habitat in northern Eagle and southern Routt counties. Appendix B lists some possible funding sources to cost-share with landowners on habitat improvement projects.

<u>Conservation Actions Relating to Habitat Change</u>

Goal:	Objectives:	Actions:	Who:	When:
Develop sagebrush community goals that provide the desired quantity and quality sage-grouse habitat on a landscape level that benefits both livestock and sage-grouse.	1. Define healthy sagebrush communities for the local environment and develop management practices to achieve healthy sagebrush communities.	1a. Develop a list of best management practices that will help achieve the sagebrush community goals. The list will be adaptive to allow for practices, as new information becomes available.	CDOW, BLM, USFS	Following Monsen document 2004

		1b. Encourage landowners and land managers to use the best management practices for sagebrush communities	Landowners, CSU Extension, NRCS, CDOW, BLM, USFS	Ongoing
		1c. At request of landowner, provide expert assistance on management recommendations. If acceptable to landowner, provide opportunity for Work Group to participate in site visit.	CSU Extension, NRCS, CDOW, Partners for Wildlife, USFS	Ongoing
		1d. Monitor effectiveness of best management practices as they are applied. Provide updates and results of best management practices to Work Group.	CDOW, BLM, USFS	Ongoing
		1e. Develop Mapping database (GIS) with specific information on soils (where possible), sagebrush type and condition, historical habitat treatments, etc.	CDOW, BLM	Beginning 2004
	2. Develop goals for healthy sagebrush communities for the different seasonal needs of sage-grouse. Use local knowledge and available research to define the seasonal needs and habitat requirements. Take appropriate voluntary actions to improve sage-grouse habitats.	2a. In areas of poor quality nesting habitat i. Seed area with grasses and forbs, go heavy on forbs if brood-rearing occurs in the area. Light disking & interseed, or drill seed	CDOW, BLM, USFS, Landowners	Ongoing
		ii. If sage is too dense, consider thinning by roller-chopping, light disking, Dixie Harrow, Lawson Aerator or other methods. Apply best management practices on a case by case basis. Use Connelly et al. (2000) guidelines as reference-page 19.	CDOW, BLM, USFS, Landowners	Ongoing

		iii. Remove smooth brome where there is a preponderance of smooth brome in the understory and interseed more suitable grasses and forbs.	CDOW, BLM, USFS, Landowners	Ongoing
		iv. Retain residual cover through fall and winter into nesting season.	CDOW, BLM, USFS, Landowners	Ongoing
		2b. Brood-rearing i. Restore riparian systems.	CDOW, BLM, USFS, Landowners	Ongoing
		ii. Raise water table – raise channel bottom from deeply incised gullies.	CDOW, BLM, USFS, Landowners	Ongoing
		iii. Restore old ponds/Construct new ponds in areas lacking water.	CDOW, BLM, USFS, Landowners	Ongoing
		iv. Preserve irrigated hay meadows.	CDOW, BLM, USFS, Landowners	Ongoing
		2c. Lek Areas i. Mechanically treat historic lek areas where sagebrush density has increased.	CDOW, BLM, Landowners	Ongoing
		ii. Clear new lek sites.	CDOW, BLM, Landowners	Ongoing
		2d. Winter Habitat i. Manage for vigorous stands of sagebrush in known critical winter range (based on current knowledge, telemetry study may provide more detailed information).	CDOW, BLM, USFS, Landowners	Ongoing
		2e. Identify and map key seasonal habitat areas.	CDOW, BLM, Work Group	As part of telemetry study (2004)
	3. Manage for interconnected	3a. Plan proposed treatments in context of past treatments	Landowners, BLM,	Ongoing

	sagebrush communities that minimize habitat loss.	and other proposals on adjacent ownerships to maintain continuity of sagebrush communities.	CDOW, NRCS	
	4. Identify limiting habitats within the South Routt/Eagle landscape. If any of the following are found to be limiting, the recommended actions are suggested.	4a. Lack of quantity or quality of sagebrush cover from past events or actions (e.g., drought, diseases, spraying, brush beating, intentional burning, or wildfire, excessive herbivory (any animal that eats plants) etc.) i. Carefully consider further reduction in sagebrush acreage in key seasonal habitat areas (would not necessarily preclude thinning or other treatments if appropriate)	Landowners, BLM, CDOW, NRCS	Ongoing
		ii. Restore Sagebrush –allow re-establishment over time if underway.	Landowners, BLM	Ongoing
		iii. Manage for interconnection of sagebrush stands – some degree of interspersion of sage with grass areas is desirable, as is interspersion of sagebrush stands of different ages, but the landscape needs to remain predominantly a sagebrush community.	Landowners, BLM, CDOW, NRCS, USFS	Ongoing
		iv. Allow for adequate sagebrush recovery to meet sage-grouse habitat requirements.	Landowners, BLM	Ongoing
		4b. Large expanses of old dense sagebrush with little understory. i. Consider thinning by roller-chopping, light disking, Dixie Harrow, Lawson Aerator, spraying or other methods.	Landowners, BLM, CDOW, NRCS, USFS	Ongoing

		ii. Consider treatments of varying patch sizes to create a mosaic of open areas interspersed with sagebrush. iii. When planning sagebrush treatments, treat older more dense sagebrush while allowing sagebrush regeneration in other areas. Sagebrush treatments in winter range areas may not be appropriate.	Landowners, BLM, CDOW, NRCS, USFS Landowners, BLM, CDOW, NRCS, USFS	Ongoing Ongoing
		4c. Sagebrush is giving way to another vegetation type (e.g. pinyon-juniper (P-J) and noxious or invasive weeds). i. Remove P-J mechanically while retaining the sagebrush community. a. Chainsaw if widely scattered or rough terrain (draws) b. Roller-chop – destroys/mulches P-J, some larger sage, thins sage, can seed simultaneously c. Hydro-Axe – mulches P-J more finely than roller-chopping d. May require continuous management every 10-15 yrs, unless seedling/saplings shorter than sage are hand cut ii. Prescribed Burning a. Probably solves P-J problem longer term, but sage does not resprout and will not recover for 15-20 years or more. b. Burns should be planned for small areas to allow for continued dominance of sagebrush in landscape. For example, small burns up draws may help restore some	Landowners, BLM, CDOW, NRCS, USFS Landowners, BLM, CDOW, NRCS, USFS	Ongoing Ongoing

		riparian vegetation and water table while retaining sagebrush on uplands.		
		iii. Consider and mitigate the potential for weed invasion when planning and implementing habitat treatments.	Landowners, BLM, CDOW, NRCS, USFS	Ongoing
		iv. Encourage landowners to seek assistance from local weed board and extension when treating noxious weeds.	Landowners, BLM, CDOW, NRCS, USFS, CSU Extension	Ongoing

C. Disease and Pesticides

Issues Related to Disease and Pesticides

At the present time, disease and pesticides are not known to be a problem for sage-grouse in the Northern Eagle/Southern Routt Plan area.

Very little information is known on diseases affecting sage-grouse populations. Known diseases include Mycoplasma, Avian Influenza, Salmonella, West Nile Virus, Exotic Newcastle Disease and some parasites. However, most of these diseases have not been found to be a problem in Colorado. The potential threat from West Nile Virus became real in 2003 as the virus arrived in western Colorado and was confirmed to have caused the death of numerous Greater Sage-Grouse in Wyoming, Montana, and Alberta. Although the Work Group acknowledges that there is very little this group can do to prevent West Nile Virus, the group developed some conservation actions to address gathering more information on West Nile Virus.

Threats from pesticides come from both insecticides and herbicides. Direct affects from insecticides could come from the actual application, but little is known about the direct effect of insecticides on sage-grouse. Insecticides could also indirectly affect sage-grouse by decreasing the availability of insects to young sage-grouse during their rapid growth period following hatching. The most important consequence of herbicides could be loss of sagebrush and forbs. Herbicides have been used to remove sagebrush from areas, which can have a dramatic effect on sage-grouse habitat. Well planned treatments that consider sage-grouse habitat requirements can be used to benefit sage-grouse. Herbicide application may cause a reduction of forbs that are important grouse foods. Many perennial weeds are best controlled with late-summer/early fall herbicide applications, and this timing minimizes impact to most forbs that are important for young grouse. The Work Group's overall goal is to increase awareness of potential problems of herbicides, encourage proper use of pesticides, and respond to problems that could occur. Most pesticide effects can be avoided by following label directions and considering the application timing and location in relation to sage-grouse activity.

Conservation Actions Relating to Disease and Pesticides

Goal:	Objectives:	Actions:	Who:	When:
Monitor the impacts of disease and pesticides on sage-grouse populations.	1. Disease	1a. Publicize information on West Nile Virus. Request that people bring dead sage-grouse (fresh carcasses) to CDOW for testing. 1b. Monitor radio-collared sage-grouse more frequently during mosquito season.	CDOW, CSU Extension CDOW	Beginning 2004 Beginning 2004
	2. Pesticides	2a. Coordinate with CSU Extension, Animal and Plant Health Inspection Services (APHIS), and CDOW on recommendations for insecticide and herbicide treatments to minimize impacts to sage-grouse.	Work Group	Ongoing

D. Land Use Changes and Residential Development

Issues Related to Land Use Changes and Residential Development

Changes from agricultural and open rangeland to residential, commercial and industrial areas result in permanent loss of sage-grouse habitat. Southern Routt and Northern Eagle counties are experiencing increasing development pressure from Steamboat Springs from the north and Vail from the south. Short term pressure stems mostly from subdivision of large acreages into 35 acre parcels. However, it is likely that increasing development pressure will result in increasing growth of local towns, including pressure to split 35 acre parcels and to increase commercial and industrial development.

The Northern Eagle/Southern Routt Greater Sage-Grouse Work Group encourages the CDOW to continue to identify sage-grouse issues in land use planning processes to help achieve the objectives listed below. In addition, the Work Group may decide to become involved if members feel it is necessary.

Conservation Actions Relating to Land Use and Residential Development

Goal:	Objectives:	Actions:	Who:	When:
A. Develop conservation actions relating to residential development that will	1. Minimize the loss of critical sage-grouse habitats due to development.	1a. Map and monitor leks and other critical sage-grouse habitats in jeopardy due to development. 1b. Identify and map areas where development could	CDOW Counties and CDOW	Ongoing Ongoing

allow for healthy Greater Sage-Grouse populations and habitat while also allowing for residential and community growth.		potentially fragment existing populations.		
		1c. Encourage incentives for landowners to avoid, minimize, or mitigate loss of sage-grouse habitat (i.e. conservation easements, transfer of development rights, land exchanges, etc.).	Counties	Ongoing
		1d. If habitat loss occurs through development, encourage developers to protect, enhance or restore sage-grouse habitat onsite or offsite to offset the loss.	Counties and CDOW	Ongoing
	2. Minimize fragmentation of sage-grouse habitats due to development.	2a. Encourage clusters, density credits (e.g. Planned Unit Developments and Land Preservation Subdivisions), development rights transfers and other mechanisms to minimize the loss or fragmentation of sage-grouse habitat.	Counties	Ongoing
	3. Minimize impacts to sage-grouse through the County Land Use Planning Process.	3a. Encourage counties to develop a consistent process for sending development proposals relevant to sage-grouse, including roads, to CDOW and Work Group members.	Counties and CDOW	Ongoing
		3b. Work with County planners and County Commissioners on development and modification of land use and zoning plans to protect critical sage-grouse habitats.	CDOW	Ongoing
		3c. Provide testimony at County Commission and planning meetings to avoid,	CDOW and Work Group	Ongoing

		minimize, rectify, or mitigate impacts of development on sage-grouse.		
		3d. Provide information to planners, County Commissioners, developers, and home owners regarding sage-grouse habitat requirements.	CDOW	Ongoing
		3e. Create and periodically update sage-grouse distribution maps to be used by planners to determine if development activities are occurring in critical sage-grouse habitats.	CDOW	Ongoing

E. Reservoir Development and other Water-related Issues

Issues Related to Reservoir Development and other Water-related Issues

Construction of large reservoirs in sage-grouse habitat represents a potential for permanent loss of habitat. Potential reservoir sites could inundate low elevation areas dominated by sagebrush vegetation communities in Northern Eagle and Southern Routt counties. In particular, Denver Water holds a conditional storage right for a 350,000 acre foot impoundment on Alkali Creek north of Wolcott. This reservoir would inundate the majority of the larger, contiguous sagebrush communities in the lower Alkali Creek basin, which at one time had significant sage-grouse activity. The potential for grouse returning to the area on their own or through transplant efforts exists, but would be lost if a large reservoir was built.

Other water issues of concern or opportunity relate to hay meadows, riparian areas and opportunities for water rights holders to voluntarily provide water for sage-grouse habitat needs. Riparian areas and meadows could be enhanced to provide improved brood-rearing habitat for grouse. Such actions would be voluntary and within constraints of existing water rights.

Conservation Actions Relating to Reservoir Development and other Water-related Issues

Goal:	Objectives:	Actions:	Who:	When:
Develop conservation actions relating to water development that will allow for continued persistence of sage-grouse populations and habitat while also allowing for water use in the local area.	1. Work with water development interests to consider sage-grouse habitat when planning future projects.	1a. Work with water development interests to seek avoidance, changes to, or mitigation for water projects that could displace sage-grouse and their habitat.	CDOW, Work Group, Water Development Community	As necessary
		1b. If a large reservoir project appears likely, work towards a cooperative partnership that considers mutual benefits. For example, potential benefits for sage-grouse might be improved brood rearing habitat in wet areas, conservation easements to protect habitat, or habitat mitigation banking.	CDOW, Work Group, Water Development Community	As necessary
		1c. If a large reservoir project appears likely, convene Northern Eagle/Southern Routt Work Group to represent sage-grouse concerns and address conservation actions relating to reservoir development.	CDOW, Work Group	As necessary
		1d. If a large reservoir project appears likely, consider the potential impacts to sage-grouse from indirect effects such as recreation, real estate development, and road realignment.	CDOW, Work Group, Water Development Community, County Planning Departments	As necessary
	2. Work with willing local interests to ensure sufficient water is available annually in key sage-grouse brood rearing habitat.	2a. Work with willing landowners to continue to irrigate hay meadows that provide brood rearing habitat.	Landowners, CDOW, BLM, USFS	Ongoing
		2b. Work with willing landowners to keep water rights tied to the local areas.	Landowners, CDOW, BLM, USFS	Ongoing

		2c. If possible, work with willing landowners to provide late summer irrigation in critical brood rearing areas.	Landowners, CDOW, BLM	Ongoing
		2d. Work with willing land managers to provide livestock impoundments, guzzlers, and spring developments, for improved sage-grouse habitat.	Landowners, CDOW, BLM, USFS	Ongoing

F. Recreation/Travel Management

Issues Related to Recreation/Travel Management

Although the Work Group recognized that recreation is not the sole reason for decline in sage-grouse in Northern Eagle/Southern Routt counties, the Work Group identified the following issues pertaining to recreation. Human population growth and increased resort development in Eagle and Routt counties have resulted in an associated increase in recreational activity. Recreational activities in the area include, but are not limited to, hiking, mountain biking, horseback riding, OHV use, hunting, dispersed camping, cross-country skiing, snowshoeing, and snowmobiling. When recreational activities occur on a recurring basis in sage-grouse habitat during critical periods, such activities have the potential to disturb or alter sage-grouse habitat use. Critical periods include the breeding period, which includes strutting and nesting, and during the winter months. In addition to direct disturbance, various recreational activities also cause habitat degradation such as soil erosion and damage to plant communities.

The Bureau of Land Management manages large portions of Northern Eagle County lands. These areas are open to motorized vehicles unless otherwise noted though formal travel management planning. Boco Mountain, Greenhorn Mountain, and West Hill areas, which have historic sage-grouse habitat, are all areas of high motorized recreational use. Other recreational uses also occur in these areas including mountain biking, hiking, horseback riding, snowshoeing, and cross-country skiing. Continued access in these areas is important to the recreational user groups. Organized recreational user groups wish to work collaboratively with public land administrative agencies to pro-actively support conservation efforts and mitigate users' conflicts. Sage-grouse habitat in Southern Routt County is largely on private lands where public recreation is more limited.

Lek viewing was also identified as a possible activity that might affect sage-grouse. However, many of the currently active leks are on private land where access would depend on permission from the private landowner. In Eagle County, most of the historic leks occur on BLM lands.

Conservation Actions Relating to Recreation/Travel Management

Goal:	Objectives:	Actions:	Who:	When:
Conduct recreational activities in a manner that is not disruptive to sage-grouse and their habitat.	1. Work with recreational interests to identify and compare critical sage-grouse areas and preferred seasonal recreational areas.	1a. Identify and map areas of high recreational use within sage-grouse habitat for use in guiding management decisions.	CDOW, Recreation Groups	Beginning 2004
	2. Provide information to recreationists and interested public about the potential impacts of recreational activity on sage-grouse, including recommendations to minimize disturbance.	2a. Prepare and distribute educational materials about sage-grouse to recreational groups, tourists, pet owners, private landowners, and lek viewers.	CDOW, Recreation Groups	Beginning 2005
		2b. Provide information and signage at areas where management actions relating to sage-grouse are in effect (e.g., designated trails, seasonal closures).	CDOW, USFS, BLM, Recreation Groups	Beginning 2005
	3. Minimize the negative impacts of recreational activities on sage-grouse.	3a. Map critical habitat (see below) while also managing recreation on public lands on a case-by-case basis allowing protection while also considering recreational users' interests. Critical habitat: Breeding habitat defined as mapped potential breeding habitat near all lek sites (active and historic). Winter habitat defined as mapped for the local population.	CDOW, USFS, BLM	Ongoing
		3b. Encourage land managers to manage human recreation activities on land critical to sage-grouse during the breeding seasons and on	Private Landowners, Land Management Agencies	Ongoing

		winter range to benefit sage-grouse.		
		3c. Advocate for increased monitoring and enforcement of existing regulations where conflicts have been identified or may arise.	CDOW, BLM, USFS, Recreation Groups	Ongoing
	4. Incorporate sage-grouse needs into BLM and USFS planning.	4a. Seek the development of a realistic and enforceable travel management plan to protect lek, nesting, brood rearing, and winter habitats.	BLM, USFS Recreation Groups, Work Group, CDOW	Next plan revision
		4b. Consider the impacts to sage-grouse when designing new roads and trails or modifying roads and trails.	CDOW, BLM, USFS, Recreation Groups	Ongoing
		4c. When existing roads/trails conflict with sage-grouse habitat requirements, consider management options such as seasonal use restrictions, closure, removal, realignment, etc.	BLM, USFS, Private Landowners	Ongoing
		4d. Revegetate closed roads in sage-grouse habitat with plant species beneficial to sage-grouse.	BLM, USFS, CDOW	Ongoing
	5. Minimize disturbance from recreational lek viewing.	5a. Treat lek locations as vital information. The Work Group discourages widely publishing lek location information.	CDOW, USFS, BLM	Ongoing
		5b. Develop and distribute protocols for ethical lek viewing to potential lek viewers.	CDOW, Landowners, Birding Groups, Guides	Beginning 2005

		5c. At leks with recreational viewing, monitor and quantify effects of viewing on lek attendance patterns, especially for females.	CDOW, Landowners, Birding Groups, Guides	As necessary

G. Predation

Issues Related to Predation

Although the Work Group recognizes that no one factor is likely the cause for the decline of sage-grouse in Routt and Eagle counties, many Work Group members believe that predation is one of the most important issues to consider. Some Work Group members believe that predator numbers have increased dramatically in the area coinciding with the decline in domestic sheep numbers. Sheep ranchers historically killed many predators in the area. Work Group members also note that regulations have changed, which make it more difficult to kill (control) predators (e.g. banning the use of 1080 and a statewide ballot initiative that banned most forms of trapping).

Some members of the Work Group note that sage-grouse are killed by predators and have always been killed by predators. These Work Group members believe that predation is not a limiting factor in sage-grouse populations provided that adequate cover is available. In addition, some Work Group members believe that predator control over broad geographic areas is impractical and will not be effective without habitat improvement. Predator control to increase production and recruitment in bird populations has been used in extreme cases such as endangered species, but has been effective and incorporated only on small, intensively managed areas.

Sage-grouse and other ground nesting birds have developed effective strategies for hiding from predators when they occupy habitat of sufficient quality. Schroeder and Baydack (2001) suggest that predation has the potential to affect the annual life cycle of sage-grouse in three primary ways 1) success of nests, 2) survival of juveniles, and 3) annual survival of breeding-age birds. However, little is known about the relative importance of predation on the viability of grouse populations.

Documented nest predators include ground squirrel, weasel, badger, elk, coyote, common raven, American crow, red fox, striped skunk, black-billed magpie and various species of snakes. Numerous species have also been documented killing and/or consuming adult sage-grouse and include Cooper's, ferruginous, red-tailed and Swainson's hawks, northern goshawks, coyote, red fox, bobcat, and golden eagle. Numerous predator species are also known to kill juvenile sage-grouse. Because of the small size of juvenile grouse, additional predators have been documented and include American kestrels, merlin, northern harrier, common raven, and weasel. Some Work Group members also feel that birds such as great horned owl, screech owl, short-eared owl, loggerhead shrike, and northern shrike might kill sage-grouse in the area.

Some of the Work Group members are particularly concerned with the increased diversity of predators in local sagebrush communities. For example raccoons, striped skunk, and red fox are not believed to have inhabited sagebrush communities prior to human settlement. However,

humans have introduced additional food supplies (grain, garbage, carrion) and places for such predators to over-winter and rear their young (abandoned buildings, barns, haystacks). Long-term Routt County ranchers note that raccoons only began showing up in the area in the 1960s. Red fox are common in Routt County, but are not believed to be common yet in Northern Eagle County. In addition, raptors, eagles, and ravens now have more places to nest and perch in the form of planted trees and artificial structures built by humans. Connelly et al. (2000) suggest that as habitat has become more fragmented, the addition of nonnative predators (red fox, domestic dogs and cats) and the increased abundance of native predators (i.e. common ravens and crows) can result in decreased nest success. Red fox have been implicated in affecting nest success and the annual survival of breeding age birds. Researchers in Utah's Strawberry Valley area suggest that red fox are responsible for preying upon the sage-grouse population in that area (Flinders 1999). Red fox have been implicated in other areas, but rigorous field studies are needed to support or refute these hypotheses (Connelly et al. 2000).

Landowners are also concerned with increasing numbers of Wyoming ground squirrels. Routt County poisoned ground squirrels until 1991 and landowners believe many more ground squirrels exist today. Ground squirrels have been documented as a sage-grouse nest predator, however, it is not known if ground squirrel nest predation significantly impacts sage-grouse populations. Connelly et al. (2000) suggested that several studies on nest success have found nest success to be greater than 40% and that nest predation does not appear to be a problem across the range of sage-grouse. In contrast, Gregg (1991) and Gregg et al. (1994) suggested that nest predation may be limiting grouse numbers in Oregon. Research in Moffat County has found nest success between 45-60% (Hausleitner 2003, A. D. Apa unpublished data).

Most of the Work Group believes that we need more information on specific sage-grouse predators in the local area. More information is needed on whether predators are having a negative impact on the viability of the sage-grouse population in Northern Eagle and Southern Routt Counties. Research could help determine if specific predators are having a negative impact during specific periods of sage-grouse survival (e.g., nest success, juvenile survival, and adult survival). Research is necessary before the Work Group recommends specific predator control. Any recommended control will be species and site specific. In addition, it is important to consider unanticipated effects of predator control. For example, controlling red fox and coyotes might have the unanticipated effect of increasing ground squirrel numbers, which in turn may increase sage-grouse nest predation. On the other hand, reducing ground squirrels, which are common prey for some of the predators that also prey on sage-grouse, could possibly increase predation pressure on sage-grouse.

Conservation Actions Relating to Predation

Goal:	Objectives:	Actions:	Who:	When:
Minimize predation of sage-grouse to enhance production, recruitment, and survival while also maintaining a balance of native predators.	1. Move toward a better understanding of local predator/prey relationships relating to sage-grouse.	1a. Obtain funding for and initiate research to monitor local predator populations and how they affect the sage-grouse population.	CDOW, Work Group, BLM, USFS, CDOW, CSU Extension	Beginning 2005
		1b. Obtain funding for and initiate research to identify if specific predators are negatively impacting specific periods of the sage-grouse life cycle.	Work Group, BLM, USFS, CSU Extension	Beginning 2005
		1c. If research documents that predation is having a significant negative effect on the local sage-grouse population, obtain funding and implement appropriate site and species-specific predator practices in accordance with CDOW and USDA predator management plans and policies.	CDOW, USDA	As necessary
	2. Maintain high quality sage-grouse habitat to reduce predation opportunities.	2a. Use best management practices in habitat management to improve or maintain vegetation in sage-grouse habitats (see Conservation Actions for Habitat Change, and Conservation Actions for Grazing).	CDOW, Work Group, BLM, USFS	Ongoing
		3a. Follow Conservation Actions for Power lines in order to reposition new power lines and install		

	3. Reduce or modify factors that facilitate predation.	raptor deterrents when applicable and feasible. 3b. Selectively remove trees, remove/modify raptor perches, and maintain quality sagebrush habitat, where predation concerns on sage-grouse have been identified.	Utility companies, CDOW, Work Group CDOW, BLM, Work Group	Ongoing Ongoing

H. Grazing

Issues Related to Grazing

Grazing animals are part of the landscape. Some grazers are wild and some are domestic. The animals can have positive or negative effects on the landscape, depending on desired conditions. In considering grazing and sage-grouse, the effects of wild and domestic grazers cannot easily be separated, so the Work Group is addressing both in this section.

The Work Group does not believe that any one factor, including grazing, is the sole reason for sage-grouse decline in the area. There is a lack of credible scientific evidence that directly links grazing (wild or domestic) with declines in sage-grouse numbers (Crawford et al. 2004). Having said that, the Work Group does not desire to see this species disappear from the area and will work with the CDOW and other interested parties to make sure that grazing practices are compatible with sage-grouse to the extent possible.

Domestic and wild ungulate grazing are dominant land uses on public and private lands in Routt and Eagle counties. Sound grazing management promotes the use of forage resources, while having a neutral or positive effect on plant vigor. The Work Group recognizes that drought is a critical factor in grazing management as it relates to pounds of available forage for both domestic and wild ungulates. Proper livestock grazing and wildlife management can maintain and perhaps enhance desirable plant communities by preventing the invasion of noxious weeds, improving vegetation palatability, and promoting residual cover. Proper grazing can also increase plant diversity and improve riparian areas. Improper grazing has the potential to reduce the availability of food and cover for sage-grouse by affecting the composition and structure of grasses, forbs, and shrubs. It is important to consider sage-grouse habitat needs when evaluating big game population objectives and livestock stocking rates.

Currently, the primary grazers in the conservation plan area are deer, elk, cattle, and domestic sheep. (For purposes of this discussion, “grazing” includes browsing unless otherwise

specified.) Over the last 50 years, numbers of deer, cattle, and sheep have declined or remained stable in varying proportions, while elk numbers have increased.

The CDOW manages deer and elk populations toward objectives set in herd management plans, also known as Data Analysis Unit Plans (DAU Plans). The purpose of a herd management plan is to provide objectives for managing a big game species in a specific geographic area that includes the species' seasonal movements. These objectives are based on biology, as well as the desires of landowners, residents, land management agencies and other interested publics. Herd management plans must ultimately be approved by the Colorado Wildlife Commission and are reviewed every 5 to 10 years and changes are made if warranted. A traditional herd management plan contains two primary goals: the number of animals the area should contain and the sex ratio of males to females in that herd. Population estimates are derived using computer model simulations that involve estimations for mortality rates, hunter harvest, wounding loss and annual production. These simulations are then adjusted to align on measured post-hunting season age and sex ratio classification counts. A draft revised elk DAU plan covering much of the Northern Eagle/Southern Routt area is on hold because of concerns about chronic wasting disease (CWD), a fatal neurological disease in deer and elk. The most recent population estimate is higher than the revised plan's proposed population objective. The CDOW is managing the herd to decrease elk numbers toward the proposed draft objective.

Cattle and sheep numbers are determined by private landowners on their own lands, and in conjunction with BLM or U.S. Forest Service on public lands. Current domestic sheep activity is primarily in the State Bridge/Wolcott/Castle Peak area.

Wild and domestic grazing animals follow the same general pattern, that is, they use lower elevations in winter, moving to wetter, more productive ranges as spring turns to summer, and back to lower elevations in the fall as winter approaches. Sage-grouse generally occupy the lower to mid elevations areas grazed more heavily in fall, winter and spring. Grazing animals are at least passing through sage-grouse areas in spring and fall, and may be cohabitating with sage-grouse habitat during the winter months. Domestic livestock are usually fed hay in winter and early spring in pasture areas; deer and elk move freely unless restricted by snow depth.

Two key issues relate to grazing and sage-grouse: 1) the potential impact of herbivores on grouse nesting and hiding cover depending on the timing of grazing; (grazing in grouse nesting areas from late summer through early spring can remove grasses that could provide nesting cover in the spring) and 2) the potential for wild herbivores to negate the benefits of a domestic livestock grazing plan intended to leave cover for grouse.

Domestic Livestock Grazing

Healthy and productive public and private rangelands are the foundation of a profitable and sustainable ranching industry and abundant wildlife. Many ranches depend on public land grazing for economic viability, just as many species of wildlife, including sage-grouse, depend on lower elevation private lands during their annual lifecycle. Private ranches contribute some of the highest quality sage-grouse habitat in Southern Routt and Northern Eagle counties. The lek with the highest number of sage-grouse in the area is on private ranch land in Southern Routt County. The largest lek counts in Eagle County are also on private land.

Emphasis should be placed on maintaining these lands as viable economic units to preserve large and significant areas of privately owned habitat. The alternative is habitat fragmentation and increased human impacts when agricultural lands are sold for development. It is important to recognize that many ranches with significant private land holdings depend on public land grazing allotments for the viability of their operations. Therefore management decisions on public land can influence private land use patterns.

Wild Ungulate Grazing

This issue is closely related to the issue of domestic livestock grazing. The question revolves around whether or not the extent and timing of grazing by wild ungulates, (particularly elk) can negatively affect sage-grouse and their habitat. First, are elk eating vegetation that might otherwise provide food, hiding, or nesting cover for sage-grouse? Second, could foraging elk negate positive grazing management actions taken on public or private lands meant to leave cover for sage-grouse?

Many agree that these scenarios are possible, and there are areas where the first occurs. There may be other areas where elk are not a problem (case by case basis). The second point arises from the concerns of ranchers that altering domestic grazing practices at inconvenience and expense to their operation may yield no positive effect for sage-grouse habitat if elk negate the benefit.

In addition to being closely related to the livestock grazing issue, the issue of elk management and herd numbers is particularly contentious. Various attempts and efforts have not lead to large reductions of the elk herd. This year (winter 2003-2004) has seen a decrease in elk numbers so some of the efforts may be working. Reducing elk numbers is beyond the scope of this conservation plan. The Northern Eagle/Southern Routt Conservation Plan area overlaps several different deer and elk DAUs, but the primary DAU of interest is elk unit E-6, which comprises the entire White River Plateau and the Danforth Hills area southwest of Craig.

It is difficult to quantify specific issues related to grazing of wild and domestic animals. On one hand sage-grouse have adapted to existing ranching and livestock grazing systems because the grouse still exist at these sites. However it will never be known whether the pre-domestic grazing (prior to 1870) bird populations were less or more thus making the issues and impacts of grazing an important part of the strategy for sage-grouse conservation. Few studies have directly addressed the effect of livestock or wildlife grazing on habitat use by sage-grouse. Thus, rangeland and wildlife must rely on indirect evidence as it relates to grazing and sage-grouse (Crawford et al. 2004). This leaves the central issue of what it is about ranching production, i.e., grazing that is good, neutral or detrimental towards sage-grouse recovery. The Conservation Actions Related to Livestock Grazing are meant to address this issue, and the Conservation Actions relating to Wild Ungulates are intended to address the wildlife component of the grazing issue.

<u>Conservation Actions Relating to Domestic Livestock Grazing</u>

Goal:	Objectives:	Actions:	Who:	When:
Continue to foster a	1. Maintain and enhance large	1a. Encourage local, state, and federal policy makers to	Work Group	Ongoing

sustainable and economically viable ranching community while also providing high quality sage-grouse habitat.	scale open range habitats to provide both sage-grouse habitat and livestock forage.	consider the importance of the economic viability of ranching (both public and private land) in providing sage-grouse habitat. Examples include: managing elk populations, county planning.		
		1b. Educate stakeholders about grazing systems and grazing strategies for improved grouse habitat and survivability.	Work Group	Ongoing
		1c. Document (monitor) residual grass cover before and after domestic livestock grazing to determine if the removal of the residual grass is a result of elk grazing.	BLM, USFS, CDOW, Private Landowners	Ongoing
		1d. Continue to enhance and improve rangeland (public and private) by using all available tools to land managers. These tools include, but are not limited to, timing and intensity of domestic grazing, weed control, fire, water development, vegetation management, and wildlife population management.	CSU Extension, CDOW, Private landowners, BLM, USFS	Ongoing
	2. Improve, if possible, livestock management for sage-grouse habitat and livestock forage sustainability.	2a. Fund further research that scientifically shows how or if domestic grazing and wild ungulate grazing affects grouse populations during breeding and nesting.	Universities, CDOW, CSU Extension	Beginning 2005
		2b. Develop small watering systems away from riparian areas on both private and public land to better disperse livestock and wildlife while	Private Landowners, BLM, USFS, CDOW, HPP, NRCS	Ongoing

		also providing moist areas for broods.		
		2c. Manage livestock movement through use of salt or minerals to benefit sage-grouse.	Private Landowners, BLM, USFS	Ongoing
		2d. If research and/or range conditions show that grazing system changes would benefit sage-grouse, propose those changes to grazing systems on a case-by-case basis. If grazing changes are needed, consider elk numbers first before adjusting livestock numbers.	CSU Extension, BLM, USFS, CDOW	As necessary
		2e. Identify and develop cost-share programs to help landowners implement actions to benefit sage-grouse.	NRCS, CDOW, BLM, USFS, Non-Profits, Partners for Wildlife	Ongoing

Conservation Actions Relating to Wild Ungulate Grazing

Goal:	Objectives:	Actions:	Who:	When:
In conjunction with sustainable livestock and sport hunting industries, ensure that grazing by wild ungulates is not adversely affecting sage-grouse habitats.	1. Determine the extent of the effects elk may be having on sage-grouse habitat.	1. Identify, monitor, and map potential big game/sage-grouse conflict areas.	CDOW, BLM, Private Landowners, Work Group,	Beginning 2005
	2. Manage wild ungulate populations to meet desired sustainable plant communities that provide sage-grouse habitat.	2a. Strive to maximize elk harvest opportunities on public and private land.	CDOW, BLM, Private Landowners, Work Group,	Ongoing
		2b. Review and encourage coordination of big game herd objectives in future DAU plans and modify as necessary to improve conditions for sage-grouse.	CDOW, Work Group	Within DAU planning schedule

		2c. Manage big game population levels and habitat to minimize or avoid resource conflicts on grouse habitats. This could include enhancing big game habitat elsewhere to attract big game off certain grouse habitats. Examples: burning, seeding, water development, etc.	CDOW, BLM, USFS, Private Landowners, Work Group	Ongoing

I. Hunting

Issues Related to Hunting

The Colorado Division of Wildlife closed the sage-grouse hunting season in Eagle County (Game Management Units 25, 26, 35, 36, and 44) in 1995 because of declining sage-grouse numbers. Units 15, 131, and 231 in Routt County remained open in 1995 with a reduced bag limit, and were closed in 1996. The Work Group discussed the issue of hunting briefly. Some members of the Work Group would like to see sage-grouse hunting opened once the population reaches an adequate number. Other members discussed sage-grouse hunting in relation to blue grouse and had concerns that sage-grouse might be mistaken for blue grouse and harvested. The CDOW acknowledges that this happens occasionally, but does not believe the number to be significant.

The Work Group did not address the issue of hunting in detail nor develop conservation actions because there is a sage-grouse hunting closure currently in place. If and when the Northern Eagle/Southern Routt sage-grouse population reaches the population objective, then the Work Group will reconvene to decide on conservation actions relating to hunting.

IX. MONITORING AND EVALUATION OF CONSERVATION PLANNING EFFORTS

This Plan contains 88 conservation actions relating to 10 different issues that the Work Group identified as factors that have the potential to affect sage-grouse populations or sage-grouse habitat in Northern Eagle and Southern Routt counties, Colorado.

A radio telemetry study was initiated in October 2003 to gain a better understanding of seasonal habitat use and migratory patterns in the area as well as migratory overlap between the Eagle County birds and the Routt County birds. The CDOW, with the help of BLM partnership funding, will continue to monitor the collared birds and will report back to the Work Group to assist in management planning. This radio telemetry study will provide essential information on the specific habitats that the birds are using. The CDOW will conduct habitat measurements in the areas used by the radio-collared sage-grouse to gain a better understanding of sagebrush communities in the area.

Management efforts will focus on evaluating, enhancing, and protecting breeding, brood-rearing, and wintering sage-grouse habitats. Conservation actions and management efforts relating to sage-grouse and their habitats will be monitored and adaptive management applied. Adaptive management is characterized by management that monitors results of policies and/or management actions, and then integrates these results into future actions to adapt policy and management actions as necessary.

The Work Group members recognize the need to continue to gather information and report on efforts to improve conditions for sage-grouse. Therefore, the working group will use a GIS database maintained and operated by CDOW to document habitat treatments designed to improve sage-grouse habitat in the area. The Work Group will also work with Eagle and Routt counties to document land use changes in sage-grouse habitat. In addition, the Work Group will work with the Counties and local Land Conservation Organizations to document the number of acres of sage-grouse habitat protected through conservation easements, etc.

The primary population data that will be collected includes total number of active and inactive leks, average number of males per lek, and number of new leks located annually. The CDOW will provide an annual report of these population data to the Work Group and U.S. Fish and Wildlife Service (USFWS).

Annual meetings will be held to review and discuss the population data, to discuss and compile information on the habitat treatments completed, as well as to discuss any new information regarding sage-grouse and their habitats. Annual meetings will also serve as a forum to discuss and develop a yearly Annual Work Plan for the Eagle/South Routt Greater Sage-Grouse Work Group. The CDOW will provide the Annual Work Plans as well as a yearly status report detailing management efforts relating to sage-grouse to the USFWS.

<u>Conservation Actions Relating to Monitoring and Evaluation</u>

Goal:	Objectives:	Actions:	Who:	When:
Continue to foster public/private partnerships to benefit sage-grouse, monitor and evaluate such actions, share information relating to sage-grouse, and provide pertinent information to the USFWS.	1. Continue to work within the sage-grouse Work Group context.	1a. Convene annual Work Group meetings.	CDOW	Beginning 2004
		1b. Develop yearly Annual Work Plan outlining planned efforts to benefit sage-grouse.	Work Group	Beginning 2005
	2. Use the concepts of Adaptive Management to maximize understanding and insure that efforts will benefit sage-grouse.	2a. Monitor the effects of treatments to benefit sage-grouse.	CDOW, BLM, Work Group	Ongoing
		2b. Integrate monitoring results to modify management actions as necessary.	CDOW, BLM, Work Group	Ongoing
	3. Document	3a. Communicate	Work Group	Ongoing

	management actions completed to benefit sage-grouse.	management actions and results to other members of the Work Group.		
		3b. Develop GIS database to document sagebrush habitat treatments in the area.	CDOW	Beginning 2004
		3c. Provide outreach to new and current landowners to increase awareness of the local Conservation Plan and best management practices.	CSU Extension, CDOW, NRCS, Work Group, Conservation Districts	Ongoing
	4. Document other impacts (positive and negative) to sage-grouse habitat as part of an overall habitat assessment.	4a. Work with Routt and Eagle counties to be proactive in land-use planning (for the benefit of sage-grouse) and monitor land-use changes in the area.	CDOW, County Planners, Land Trusts	Ongoing
	5. Provide documentation of Work Group efforts to benefit sage-grouse and their habitat.	5a. Provide annual status report to the USFWS.	CDOW	Beginning 2005

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XI. GLOSSARY

Canopy Cover - The percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of plants. Small openings within the canopy are included.

Chronic wasting disease - a fatal neurological disease found in deer and elk. It belongs to a family of diseases known as transmissible spongiform encephalopathies or prion diseases. The disease attacks the brains of infected deer and elk, causing the animals to become emaciated, display abnormal behavior, lose bodily functions and die. Besides being found in wild deer and elk, the disease has been found in captive deer and elk in eight states and two Canadian provinces.

DAU Plan – "Data Analysis Unit Plan," also known as a herd management plan. The purpose of a herd management plan is to provide objectives for managing a big game species in a specific geographic area. These objectives are based on biology, as well as the desires of landowners, residents, land management agencies and other interested publics. Herd management plans must ultimately be approved by the Colorado Wildlife Commission and are reviewed every 5 to 10 years and changes are made if warranted. A traditional herd management plan contains two primary goals: the number of animals the area should contain and the sex ratio of males to females in that herd. Most population estimates are derived using computer model simulations that involve estimations for mortality rates, hunter harvest, wounding loss and annual production. These simulations are then adjusted to align on measured post-hunting season age and sex ratio classification counts.

Distribution Lines - the portion of the electric power line system used, or capable of being used, in serving the ultimate consumer. The voltage on distributions lines is usually less than 69kV.

Ecological Site - A kind of land which differs from other kinds of land, in its potential natural community and physical site characteristics and, thus, differs also in its ability to produce vegetation and in its response to management.

Ecological Status - The present state of vegetation and soil protection of an ecological site in relation to the potential natural community (PNC) for the site. The vegetation rating is an expression of the relative extent to which the kinds, proportions and amounts of plants in a community resemble that of the potential natural community. The four ecological status classes correspond to 0-25, 26-50, 51-75, or 76-100% similarity to the PNC and are called early seral, mid seral, late seral, and PNC, respectively. Soil status is a measure of present vegetation and litter cover relative to the amount of cover needed on the site to prevent accelerated erosion.

Integrated Weed Management - a strategy using a comprehensive, interdisciplinary approach to weed management. The purpose of integrated weed management (IWM) is to achieve healthy and productive natural and agricultural ecosystems through a balanced program. This program includes, but is not limited to, education, prevention measures, and good stewardship and control methods.

Lek - An arena where male sage-grouse display for the purpose of gaining breeding territories and attracting females. These arenas are usually open areas with short vegetation within

sagebrush habitats, usually on broad ridges, benches, or valley floors where visibility and hearing acuity are excellent.

Lek Area - The geographic area that includes all closely allied lek sites within 1 mile. This geographic area is usually stable overtime.

Lek Count -The high count of males from all lek sites on the same day; which are taken at 7-10 day intervals between late March and mid May.

Lek Site - A particular site where sage-grouse gather for display and mating in spring (Mar-May). The actual site used can vary daily, seasonally, and yearly.

Noxious Weeds - Non-native plant species which have been introduced into an environment with few, if any, natural biological controls, thus giving them a distinct competitive advantage in dominating and crowding out native plant species. They have the ability to dominate plant communities to the extent plant diversity and ecosystem integrity is threatened. Noxious weeds are aggressive, spread rapidly, possess a unique ability to reproduce profusely, and resist control.

Population Model - Most elk and deer population estimates are derived using computer model simulations that involve estimations for mortality rates, hunter harvest, wounding loss and annual production. These simulations are then adjusted to align on measured post-hunting season age and sex ratio classification counts.

Potential Natural Plant Community (PNC) - The biotic community that would become established if all successional sequences were completed without interference by man under the present environmental conditions. The potential natural plant community of an ecological site is the assumed end point of natural succession for that site in the absence of disturbances and physical site deterioration. It is the plant community that is best adapted to a unique combination of environmental factors and that is in dynamic equilibrium with the environment. Natural disturbances, such as drought, wild fires, grazing by native fauna, and insects are inherent in the development of any natural plant communities.

Sagebrush - As referred to in this plan, includes the following species: **Basin Big** - *Artemisia tridentata tridentata;* **Mountain Big** - *Artemisia tridentata vaseyana;* **Wyoming Big** - *Artemisia tridentata wyomingensis;* and **Black** - *Artemisia nova.*

Strutting Ground - See Lek.

Transmission Lines - the portion of the electric power line system used, or capable of being used, to transfer electrical energy from the generating source to the facility or substation for distribution at a nominal voltage of less than 69kV.

Uncommon - A term used by bird watchers, in reference to sightings or observations and may be defined as seeing sage-grouse or recent sign 20% of the time in the field in suitable habitat, for example one in five days.

XII. APPENDICES:

Appendix A: List of Work Group Participants

Note: The participants included below are those people who attended one or more meetings or indicated interest in receiving Work Group mailings.

NAME		AFFILIATION
VERN	ALBERTSON	LANDOWNER
FRANK	ALBERTSON	LANDOWNER
TONY	APA	CDOW
TOM	BACKHUS	4 EAGLE RANCH
BLAIR	BAKKEN	LANDOWNER
TOM	BOWERS	
CLAIT	BRAUN	GROUSE INC.
RON	BRAVE	
JOHN	BRIDGES	WESTERN AREA POWER ADMINISTRATION
DICK	BROOKS	INTERESTED INDIVIDUAL
SUZY	BRUCE	LANDOWNER
GERI	BRUGGINK	
VINCE	CARNAHAN	
ELLIE	CARYL	ECO-TRAILS
MEAGHAN	CASTOR	GRAND RIVER CONSULTANTS
MIKE	CHAMAS	
LARRY	CLAXTON	XCEL ENERGY
RICHARD	CLYNCKE	LANDOWNER
CINDY	COHAGEN	EAGLE VALLEY LAND TRUST
CHRIS	COLLINS	RANCH MANAGER
STEVE	CONLIN	SIBBCO
DENNIS	DAVIDSON	USDA – NRCS EAGLE COUNTY
HANK	DE GANAHL	LANDOWNER
DOUG	DECOSTA	
JOE	DOERR	USFS – EAGLE RANGER DISTRICT
WALT	DORMAN	HOLY CROSS ENERGY
KIRK	EBERL	
DAN	ELLISON	ROUTT COUNTY COMMISSIONER
CLARK	EWING	LANDOWNER
RICK	FISHER	MOTORIZED RECREATION
WENDY	FISHER	STEAMBOAT BOARD OF REALTORS
TOM	FRESQUES	BLM - GLENWOOD SPRINGS FIELD OFFICE
MIKE	GALLAGHER	EAGLE COUNTY COMMISSIONER
BUD/KIP	GATES	LANDOWNERS
RUSS	GEHL	BUSINESS OWNER
LIZA	GRAHAM	CDOW
PATRICIA	HAMMON	
GREG	HANSEN	YAMPA VALLEY ELECTRIC
JOAN	HARNED	VAILBOARD OF REALTORS
JOEL	HARRIS	INTERESTED INDIVIDUAL
DAN	HARRISON	PINEY VALLEY RANCH
MERRILL	HASTINGS	LANDOWNER

RANDY	HATFIELD	
CARL	HEROLD	LANDOWNER
JIM	HICKS	CDOW
STEVE	HILL	
BRITTA & GARY	HORN	LANDOWNER
TERRY	IRELAND	U. S. FISH AND WILDLIFE SERVICE
LORI	JAZWICK	USDA - NRCS ROUTT COUNTY
WILLIAM	JOHNSON	
MIKE	JONES	
GEORGE	JOUFLAS	LANDOWNER
DAVE	KIEPER	COLORADO RURAL ELECTRIC ASSOCIATION
LEROY	KIRBY	
BERNARD	KNOTT	LANDOWNER
CAP	KUNEY	TIMBERLINE TRAILRIDERS
MERV	LAPIN	
REBECCA	LEONARD	EAGLE COUNTY PLANNING DEPT.
PAT	LUARK	LANDOWNER
DAVID	LUCERO	PINEY VALLEY RANCH
NOWELL	MAY	BLACK MTN RANCH
DEENA	MCMULLEN	IPAMS
ARN	MENCONI	EAGLE COUNTY COMMISSIONER
MATT	MERLINO	OUTFITTER
KAY	MEYRING	LANDOWNER
LIBBIE	MILLER	CDOW
PAUL	MILLER	MOTORIZED RECREATION
MELISSA	MILLER	USFS - YAMPA RANGER DISTRICT
JOHN	MILLIGAN	
KEITH	MONTAG	EAGLE COUNTY PLANNING DEPT.
C. J.	MUCKLOW	CSU COOPERATIVE EXTENSION, ROUTT CO.
CATHY	NEELAN	NORTH AMERICAN MEDIATION ASSOCIATES
MIKE & MERILEE	NEELIS	LANDOWNERS
ED	NEILSON	NRCS
WAYNE	NELSON	USFS - WHITE RIVER NF SO
SUSAN	NOTTINGHAM	LANDOWNER
ANN	OLIVER	THE NATURE CONSERVANCY
JIM	PEARCE	COLO. R. WATER CONSERVATION DISTRICT
MARY JEAN	PERRY	INTERESTED INDIVIDUAL
CHUCK	PERRY	
JEANIE	PETERSON	INTERESTED INDIVIDUAL
VERN	PHINNEY	USFS - HOLY CROSS RANGER DISTRICT
WILLIAM	POST	PINEY VALLEY RANCH
CHUCK	POWERS	
BILL AND VIRGINIA	REDMOND	LANDOWNERS
JOHN AND SARA	REDMOND	LANDOWNERS
DEAN	ROSSI	LANDOWNER
JOE	ROSSI	LANDOWNER
JIM	ROSSI	LANDOWNER
JERRY	SCHALNUS	LANDOWNER
RANDY	SCHLEGEL	LANDOWNER
JILL	SCHLEGEL	LANDOWNER
ROD	SCHLEGEL	LANDOWNER

TODD	SCHLEGEL	LANDOWNER
KEITH	SCOTT	LANDOWNER
JENNIFER	SEIDENBERG	COLORADO WILDERNESS NETWORK
KIRK	SHINER	LANDOWNER
WAYNE	SHOEMAKER	BAR A RANCH
BRUCE	SIGLER	CDOW
DENNIS	SLUNAKER	COLORADO BOWHUNTER'S ASSOCIATION
WILLIAM	STEPHENS	
KEN	STROM	AUDUBON COLORADO
NICK	STRUBI	LANDOWNER
KERRY	SUNDEEN	GRAND RIVER CONSULTANTS
JACK	TAYLOR	STATE SENATOR – DISTRICT 8
BOB	TIMBERMAN	USFWS – PARTNERS FOR WILDLIFE
JOHN	TOOLEN	CDOW
PAT	TUCKER	CDOW
KEVIN	URIE	DENVER WATER
SUSAN	WERNER	CDOW
CRAIG	WESCOATT	CDOW
LINDA	WESCOATT	VAIL BOARD OF REALTORS
DENNIS	WINN	PINEY VALLEY RANCH
PETE	WITHER	ROUTT COUNTY RIDERS - CYCLYST
BEN	WURTSMITH	LANDOWNER
DAYNA	WURTSMITH	LANDOWNER
CHRIS	WYPYCH	YAMPA VALLEY ELECTRIC
	STEAMBOAT PILOT	MEDIA
	SAWMILL RANCH LLC	
	ROARING FORK AUDUBON SOCIETY	
	ROUTT COUNTY PLANNING DEPARTMENT	
	COMMUNITY AGRICULTURE ALLIANCE	
	UPPER YAMPA WATER CONSERVANCY DISTRICT	
	WEST EAGLE RANCH LLC	
	DOUBLE J LAND & CATTLE CO	
	TIMBERLINE TRAILRIDERS	

Appendix B: Possible funding sources for Greater Sage-Grouse habitat improvement projects

Available Funding Opportunities for Greater Sage-Grouse Habitat Conservation in Eagle County and Routt County

Agency/ Organization	Grant / Program	What land is eligible?	Length of agreement	Rental Payments	Easements	Cost share	Applicant obligations	Contact Information
Colorado Division of Wildlife (CDOW)	*Habitat Partnership Program*	All land is eligible where wildlife/human interactions occur - empahsis is on big game conflicts and habitat management.	Variable			Variable	Contact local District Wildlife Manager and develop proposal. Must be able to evaluate the success of project based on objectives.	***Local District Wildlife Manager*** http://wildlife.state.co.us/
	Cooperative Habitat Improvement Program (CHIP)	All private land for which the habitat improvement has been approved by the area habitat biologist	10 years			85%	Applicant must provide 15% of cost of habitat improvement and must ensure practice is maintained through the term of the contract.	***Mike Grode (970)255-6185*** http://wildlife.state.co.us/
Natural Resources Conservation Service (NRCS)	*Conservation Reserve Program (CRP)*	Highly erodible cropland that has been planted for 4 of the 6 years preceding enactment of the 2002 law. Marginal pastureland is also eligible.	10-15 years	Payment based on length of agreement		50%	Develop and follow a plan for the conversion of cropland to a less intensive use. Also, assist with the cost, establishment, and maintenance of conservation practices.	Routt County and Eagle County NRCS offices www.nrcs.usda.gov
	Conservation Reserve Program Continuous Sign-up	Highly erodible cropland that has been planted for 4 of the 6 years preceding enactment of the 2002 law. Marginal pastureland is also eligible.	10-15 years	Payment based on length of agreement		50% to 90%	Develop and follow a plan to implement riparian buffers, wildlife habitat buffers, wetland buffers, filter strips, grass waterways, shelterbelts, living snow fences, contour grass strips, salt tolerant vegetation, or shallow water areas for wildlife. Also, assist with the cost, establishment, and maintenance of conservation practices.	Routt County and Eagle County NRCS offices www.nrcs.usda.gov
	Environmental Quality Incentives Program (EQIP)	All private land in agricultural production is eligible ; includes cropland, grassland, pastureland and non-industrial private forestland.	1-10 years	Payment based on length of agreement		up to 75%	Develop and follow an EQIP plan that describes the conservation and environmental purposes to be achieved; assist with installation costs.	Routt County and Eagle County NRCS offices www.nrcs.usda.gov
	Farm and Ranchland Protection Program (FRPP)	Private land that contains prime farmland or other unique resources and is subject to a pending easement from an eligible entity.	Perpetual		one-time, up-front payment		Continue to use the land for agricultural purposes. Develop a conservation plan and comply with the terms of the easement.	Routt County and Eagle County NRCS offices www.nrcs.usda.gov
	Grassland Reserve Program (GRP)	Private land that includes grassland, forbs, or shrubs (including rangeland and pastureland); and land that historically was dominated by grasses, forbs, and shrubs and has significant value for plants and animals.	30 year or perpetual easement, or 10-30 year agreement	annual payment based on length of agreement	one-time, up-front payment on perpetual	up to 100%	Develop and follow a plan for the restoration and maintenance of grasslands. If necessary, assist with the cost of restoration. Can maintain agricultural use with development of a conservation plan.	Routt County and Eagle County NRCS offices www.nrcs.usda.gov
	Wetlands Reserve Program (WRP)	Most private wetlands converted to agricultural use prior to 1985 are eligible. Wetland must be restorable and suitable for wildlife benefits.	30 year or perpetual easements, or restoration agreements		one-time, up-front payment	up to 100%	Develop and follow a plan for the restoration and maintenance of the wetland. If necessary, assist with the cost of restoration. Also, must give up agriculture production rights.	Routt County and Eagle County NRCS offices www.nrcs.usda.gov
	Wildlife Habitat Incentives Program (WHIP)	All private land is eligible, unless it is currently enrolled in CRP, WRP, or a similar program	5-15 years			up to 75%	Prepare and follow a wildlife habitat development plan; assist with installation costs.	Routt County and Eagle County NRCS offices www.nrcs.usda.gov
U.S. Fish and Wildlife Service (USF&WS)	*Landowner Incentive Program (LIP)*	All private and tribal land	Variable	Yes	Short and long term	up to 75%	Personnel from state agency will need to submit application, USF&WS will approve, and CDOW will administer grant in cooperation with the landowner.	***Ken Morgan (303)291-7404*** http://wildlife.state.co.us/
	North American Wetland Conservation Act	State, private, Tribal, Federal?	Variable	No	Long-term	50%	Work with local USF&WS office, but grant is administered through USFWS Migratory Bird Office	Local Fish and Wildlife Service office or http://www.iwjv.org/

Agency/ Organization	Grant / Program	What land is eligible?	Length of agreement	Rental Payments	Easements	Cost share	Applicant obligations	Contact Information
U.S. Fish and Wildlife Service (continued)	*North American Wetland Conservation Act, Small Grants*	State, private, Tribal, Federal	Variable	No	Long-term	50%	Work with local USF&WS office, but grant is administered through USFWS Migratory Bird Office (Up to $50K/grant)	Local Fish and Wildlife Service office or http://www.iwjv.org/
	Partners for Fish and Wildlife	All private land, wetland and riparian habitat has been a primary focus along with some treatment of sagebrush.	Variable, most projects delivered in 1-3 months			75-100%	Work with FWS Biologist to develop project plan. Follow management actions for duration of wildlife extension agreement.	***Bob Timberman (970)-723-4926*** www.coloradopartners.fws.gov
	Private Stewardship Grants Program	Private land	Variable	Yes	No	Variable	The contract and plan must provide quantifiable measures to evaluate the success of the project. The grant is administered through USFWS Ecological Services.	Local Fish and Wildlife Service office http://grants.fws.gov/ (applications due 12/03 or 1/04)
	Section 6 Conservation Grants	State, private, Tribal, Federal	Variable			up to 75%	Work with local USF&WS office, but grant is administered through USFWS Ecological Services	Local Fish and Wildlife Service office http://grants.fws.gov/
	State Wildlife Grants	State, private, Tribal, Federal	Variable	Yes	Short term and long term	75% planning, 50% implementa-tion	States, but not Tribes, must develop comprehensive wildlife management plans	***Jim.Guthrie@co.state.us*** or Local Fish and Wildlife Service office http://grants.fws.gov/
	Tribal Wildlife Grants	Tribal	Variable			100%	Up to $250,000 / tribe	Local Fish and Wildlife Service office http://grants.fws.gov/
U.S. Department of Agriculture	*Western Region Sustainable Agriculture Research and Education (SARE)*	Private land. Any farmer or rancher may apply.	Grant is funded for up to two years				Contact CSU Extention to develop grant proposals. Projects include research, demonstration, or educational projects related to sustainable agriculture. One of the goals of SARE is to enhance environmental quality and the natural resource base upon which the agricultural economy depends.	wsare@mendel.usu.edu http://wsare.usu.edu
Non-Governmental Organization Funds								
Great Outdoors Colorado (GOCO)	*Legacy Initiative/ Open Space/ Wildlife Grants*	All private and public land where state agencies, non-profict conservation organizations, local governments, or private land owners are interested in conservation and land protection.	Variable		Possible	Variable, usually requires a minimum 25% match	Personnel from local governments, non-profit land conservation organizations, CO Div. of Wildlife, and CO State Parks need to be submit proposal and manage contract.	www.goco.org (303)863-7522 info@goco.org
Mule Deer Foundation		All land that is critical to wildlife	Variable		Possible	Variable	Must go through FS, BLM or one of their corporate partners	www.muledeer.org 1-888-375-3337
Quail Unlimited		All land that potentially provides habitat for quail and (sometimes) sage grouse	Variable		Possible	Variable	Must go through FS, BLM or one of their corporate partners	www.qu.org
Rocky Mountain Elk Foundation		All land that is critical to wildlife	Variable		Possible	Variable	Must go through FS, BLM or one of their corporate partners	www.rmef.org
National Fish and Wildlife Foundation		Special grants for research on all land that potentially provides habitat for fish and wildlife.	Variable		Possible	Minimum 1:1	Non-federal partners, community-based organizations, tribes, educational institutions, and other non-profit organizations.	www.nfwf.org
National Forest Foundation		On or adjacent to National Forests or Grasslands	Variable			1:1 ratio with private	Non-federal partners, community-based organizations, tribes, educational institutions, and other non-profit organizations.	www.natlforests.org

Appendix C: Listing factors considered by the U.S. Fish and Wildlife Service in evaluating possible action under the Endangered Species Act.

Factor 1. Present or threatened destruction, modification, or curtailment of its habitat or range.

Factor 2. Overutilization for commercial, recreational, scientific, or educational purposes.

Factor 3. Disease or predation.

Factor 4. Authorities and existing regulatory mechanisms.

Factor 5. Other natural or manmade factors affecting its continued existence.

Appendix D: Summary of Schneider and Braun 1991 Report

In 1991, the CDOW initiated a study of sage-grouse in northern Eagle County and southern Routt County. The objectives of the study were to:

- check all traditional lek areas for activity
- search all suitable habitat for new leks
- radio-mark a sample of sage-grouse
- map sagebrush distribution in Eagle County
- locate all radio-marked birds at least once/week
- describe vegetative characteristics at observation sites
- test power line avoidance hypothesis
- locate unmarked sage-grouse.

The study was conducted in 1991. Information gained from the study includes:

- Four active leks were found in Eagle County, out of 22 traditional leks (this includes areas south of the Eagle River. The four active leks were north of the Eagle River). No new or previously unknown leks were discovered.
- Nine sage-grouse (seven males) were radio-marked, 2 at Willow, 3 at Watson (Routt County), and 4 at Sunnyside. Two of the Sunnyside birds, both males, moved to the Watson Creek area during the course of the study (March-August). The other seven birds stayed relatively close to the leks where they were captured.
- By the end of the study, 5 of the radio-marked birds suffered mortality from predation. A coyote killed one, two were killed by raptors, and two were taken in a manner consistent with raptors.
- Sagebrush distribution mapping showed nine relatively small areas of sagebrush steppe within the area bordered by the Eagle River, Colorado River, and Colorado Hwy. 131, and the Sunnyside area north of Burns. These areas ranged in size from 1433 to 13,121 acres but were intermixed with pinyon-juniper. The study report states that the intermix area "could theoretically be altered to expand the size of pure sagebrush stands."
- Eight of the nine radio-marked birds were always in areas greater than 1500 meters (4921 ft.) from pinyon-juniper stands. The other bird spent 54% of its time less than 400 m (1312 ft.) from pinyon-juniper.
- Vegetative cover characteristics of locations of 4 intensively followed males were: 12.3%

sagebrush, 29.2% grasses, 22.2% forbs, 29.1% bare ground, 5.1% dead sage, and 2% other shrubs. They were typically (74%) on north to east facing slopes averaging 10.4 degrees.

- Sage-grouse appeared to avoid power lines in the Sunnyside area.

The study presented the following recommendations:

- More intensive searching for strutting grounds should be done in spring. We believe small (2-4 strutting males) leks are being overlooked. Soliciting help from the public could possibly improve chances of finding these smaller leks.
- Vegetative characteristics of the Sunnyside, Willow Creek, and Watson Creek areas should be described to learn if differences occur among the areas which may influence sage-grouse use.
- Sage-grouse should be followed during winter to locate wintering areas in Eagle County.
- Lighter transmitters should be tried in an attempt to decrease the mortality rate of radio-marked birds.
- Hunting sage-grouse is still permitted in Eagle County. Until the CDOW can determine how to halt the apparent population decline, closure of sage-grouse hunting should be considered in Eagle County. [NOTE: sage-grouse hunting in this area was suspended in 1995.]
- The Eagle County sage-grouse population appears to be in serious trouble. Actions need to be taken NOW to keep sage-grouse in Eagle County from being extirpated.

(From Movements and Habitat Use By sage-grouse, Eagle County, Colorado March-August 1991. Schneider, J. W. and C. E. Braun, CDOW, Ft. Collins. 1991.)

Appendix E: Northern Eagle County Male High Count Greater Sage-Grouse Lek Count Data

Lek Name	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
#301																							
Agnew																							
Alkali Creek																				2			
Alkali Creek #1																							
Alkali Creek #3																							
Alkali Creek West																							
Big Alkali Creek																						38	
Bowen Ranch	20	19	31	36	50	22	14	38	36	56		40	43	21	20					20		35	
Burns Rodeo #1																							
Burns Rodeo #2																							
Burns Rodeo #3	7	2	3																				
Castle Creek																							
Catamount School																							
Greenhorn Gulch																	10			6	15	6	9
Hales Flat #1																					6	6	
Hales Flat #2	5	5	7		16	0	1	1				0									15	39	9
Los Amigos Ranch																					1		
Milk Creek North #1											29		18		14	15	8		19	1		13	
Milk Creek North #2																							
Milk Creek South											0											9	
Newcomer					29	37	32	51	57	36	32	0	0										
Pump Gulch #1																					1		
Pump Gulch #2																							
Rukestrue Rd. #1																							
Rukestrue Rd. #2																							
State Bridge #1																							
State Bridge #2																							
State Bridge #3																							
New State Bridge																							
Sunnyside Creek #1	18	1	9			6		9			7	28									2	28	6
Sunnyside Creek #2									9												7		
Sunnyside Creek #3																					40		
Sunnyside Creek #4																							
West Hill																							
West Hill #2																							1
Willow Creek #1																							
Willow Creek #2																							
Willow Creek #3																							
Willow Creek #4																							
Willow Creek - Upper																							
Total	50	27	50	36	95	65	47	99	102	92	68	68	61	21	34	15	18		19	29	87		

Appendix E: Northern Eagle County Male High Count Greater Sage-Grouse Lek Count Data **Continued:**

Lek Name	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
#301											0				0					0				
Agnew										0	0	0			0	0						0		
Alkali Creek									0	s	0				0	0				s		0		
Alkali Creek #1						3			0	s	0	0			0					0				
Alkali Creek #3																				s				
Alkali Creek West							0				0	0			0									
Big Alkali Creek								s		0	0									2		0	0	
Bowen Ranch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0				
Burns Rodeo #1							10	0	1	s			s				s		0	0		0	0	
Burns Rodeo #2						4	9	2	5	s			s				s		0	0		0	0	
Burns Rodeo #3						0	0	0	0	s	0		s				s			0		0		
Castle Creek									0		0									0		0		
Catamount School						s		s			0									0		0		
Greenhorn Gulch						1	7	0		0	0	0	0		0							0	0	
Hales Flat #1						1	0	0		0	0	0			0	0	0					0	0	
Hales Flat #2					5	0	0				0	0			0			0	0	0		0	0	
Los Amigos Ranch																								
Milk Creek North #1	s		11	s		10	6		17	15	7	0	0	2	4	0	0	0	0	0	0	0	0	
Milk Creek North #2						0			0	5	4	4	0	0	0		0	0	0	0		0		
Milk Creek South				0	0	0		0	0	0	0	0			0	0								
Newcomer				s	8	4	7	2								0			0	0				
Pump Gulch #1									0	0														
Pump Gulch #2										0														
Rukestrue Rd. #1							2	3		0										0				
Rukestrue Rd. #2							3	0	0	0										0				
State Bridge #1						1					s	0	0			2		0	5	2		1		
State Bridge #2											s	0												
State Bridge #3											s	0				0								
New State Bridge																							3	7
Sunnyside Creek #1							s		0		0				0	0	0			1			0	
Sunnyside Creek #2						0	0		3	s	s	4			s								0	
Sunnyside Creek #3						0	0		3	s	11	4			s					0			0	
Sunnyside Creek #4									3	s	s					1	0	0	0	0		0		
West Hill						1		0		0	0				3	0	0	0					0	
West Hill #2										0	4	s				0				0				
Willow Creek #1						17	9	25	17	15	s	17		17		5	15	15	13	7		6	11	7
Willow Creek #2						26	15	25	21	s		15		10										
Willow Creek #3											0	0								0				
Willow Creek #4											32	0			13	5				2				
Willow Creek - Upper																								
Total						58	79	72	60	20	51	46	4	27	16	13	15	15	18	14		7	14	14

s=sage-grouse sign

Appendix F: Southern Routt County Male High Count Greater Sage-Grouse Lek Count Data

Lek Name	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Egeria Creek #1	20	20	9	11	3	96	68	28	23		15	21	28	23	20	20	16						
Egeria Creek #2																							
Finger Rock #1																							
Finger Rock Creek	26	18	2	2	8	3	22	6	4		45	22	28	2	2	10	0						
Five Pines	12	2			0	14	8	15	8		8	9	0	0	0	0							
Five Pines Mesa #1									23						5	0							
Five Pines Mesa #2															8	0							
Grumprecht's Dam											45	22			1	39	15						
Grumprecht's Meadow																							
King Creek																							
Klumpkers Pond(Kelly)																							
Stillwater																							
Toponas #1			10	25	7	39	22	17			0	6	2		24	25	10						
Toponas #2	19	13	13	43	30	14	0	10	12		19	40	44	31	14	35							
Toponas #3	3				34	39					0	0	0	0	0	0							
Toponas #4																							
Watson Creek	17	17	11	10	35	37	54	27	44		59	49	70	36	49	3	13						
Total	97	70	45	91	117	242	174	103	114		191	169	172	92	123	132	54						

Lek Name	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Egeria Creek #1							0	0				0	0						0	0		0		
Egeria Creek #2							0					0							0	0		0	0	
Finger Rock #1																			12	0	11	16	13	7
Finger Rock Creek							0	0		0		0	0						0	16		0	0	
Five Pines							0	0		0		0							0	0		5	0	7
Five Pines Mesa #1							0	0		0	17								0	0		0	0	
Five Pines Mesa #2							0	0		0		0							0	0		0	0	
Grumprecht's Dam							3	1		0		0	25						0	0		0	0	
Grumprecht's Meadow							0	0		0		0	0						0	0		0	0	
King Creek																		9	10	8	0	0	0	
Klumpkers Pond(Kelly)							0	0											0	0		0	0	
Stillwater																		20	24	31	8	18	25	28
Toponas #1							0	0		0		0	0						0	0		2	0	
Toponas #2							0	0		0		0	0						0	0		0	0	
Toponas #3							0	0		0		0	0						0	0		0	0	
Toponas #4							0	0		0		0	0						0	0		0	0	
Watson Creek							37	20		37		81	37					34	30	36	30	51	45	39
Total							40	21		37	17	81	62					63	76	91	49	92	83	81

Appendix G: Explanation of Population Index Calculations

The population index used in the Northern Eagle/Southern Routt (NE/SR) Greater Sage Grouse Conservation Plan is calculated by the formula below:

Index = (#males/0.53 **X** 2.2) + #males

Where:

#males is the total of the high counts from each lek during the spring mating season;

0.53 is a correction factor to correct for the percent of males seen (53%), from Walsh et al. 2004;

2.2 is the assumed female:male ratio (2.2 females to 1 male), from Walsh et al., 2004.

The **number of females** is derived by dividing the number of males by 0.53, and multiplying by 2.2. The **number of males** is then added to the number of females to get the total.

Walsh et al. (2004) found that they were only finding 53% of the males from lek high counts in Middle Park, Colorado. They also conclude that there were 2.2 females per male in Middle Park. They number could vary between populations, but since Middle Park is close to NE/SR, these numbers seem reasonable to use here.

Using the above calculation formula, one can generate an index for the Northern Eagle/Southern Routt area using the 2004 male high count of 95:

Index = (95/0.53 X 2.2) + 95 = 489 grouse.

One could also be conservative and make the assumption we are seeing all the males and use a correction factor of 1.0 instead of 0.53. This calculation yields an index of 304 grouse (95x2.2+95).

Therefore we can be relatively certain that there are at least 304 birds in the NE/SR area, and possibly as many as 489 in 2004.

It is interesting to apply the calculations to high counts from the past. Using high male counts from the 1960's (242 in Yampa/Toponas, 1963; and 102 in Burns/Wolcott, 1966), a conservative estimate can be derived:

344 X 2.2 + 344 = 1101 grouse

Using Walsh et al., a higher estimate can be derived: 344/0.53 X 2.2 = 1772 grouse.

In the 1960's, there were probably between 1100 and 1800 grouse, compared to 300-500 in 2004.

Walsh, D. P., G. C. White, T. E. Remington, and D. C. Bowden. 2004. Evaluation of the lek count index for greater sage-grouse. Wildlife Society Bulletin 32(1):56-68.

XIII. SIGNATURES

Private Sector and Individual Signature Page

Signatories to this plan have participated and concur with the plan development. They support the mission of the Plan to conserve and enhance the Greater Sage-Grouse population and habitats in Routt and Eagle Counties in ways that are compatible with existing and future land uses, thereby insuring the opportunity for people to enjoy this wildlife resource in perpetuity. Any actions undertaken by the signatories are strictly voluntary. Signing this plan shall in no way be construed to reduce or deprive the signatories of any rights or privileges they enjoy. Any party to this agreement can terminate with a written notice to the Workgroup via the Colorado Division of Wildlife Office in Steamboat Springs, CO. If the species is listed it is the signatories' option to withdraw from this agreement at anytime.

Name	Affiliation
[illegible] Micklow	Routt County Extension
[illegible] CEO	Holy Cross Energy
[illegible]	Land owner N. Eagle County & Board member Horse Mnt. Metro Dist.
" "	
Paul H. Vaillancourt	Yampa Valley Electric
Dennis L. Shumaker	Colo bowhunters Ass.
Rita Herold	Land Owner Yampa
[illegible]	Landowner Yampa
[illegible]	BLM
Frederick Hackbarth	Eagle Park Reservoir Company
[illegible]	
Rich A. Shaner Jr.	Toponas
Bruce Ziegler	Yampa resident
[illegible]	Denver Water
[illegible]	Eagle Valley Sport Riders Club
Steven Hill	Eagle Valley Sport Riders
Linda Wescott	Individual
Linda Wescott	Representative for Vail Board of Realtors
Melissa Miller	USFS Yampa R.D.
[illegible]	USFS Holy Cross RD
Elizabeth K Miller	DWM-CDOW
Larry K. Clayton Jr.	Xcel Energy
Jill Schlegel	Landowner Burns
Niki R. Quark	Landowner Burns
[illegible]	Gypsum Citizen

Private Sector and Individual Signature Page

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Name	Affiliation
[illegible]	Ranch Burns
[illegible]	Rancher Burns Colo.
Wayne L. [illegible]	Bar A Ranch
Susan M. Werner	CDOW
[illegible]	CDOW
[illegible]	PRIVATE
[illegible]	CDOW

Private Sector and Individual Signature Page

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Name	Affiliation
Julie Iacovetto	land user
Hondra Scott	land user
[illegible]	land user
[illegible]	land user
[illegible]	" "
[illegible]	land user
[illegible]	land user
Casey Wood	land user
[illegible]	
Bud Jaeger	land user
[illegible]	land owner
[illegible]	" "
[illegible]	

Private Sector and Individual Signature Page

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Name	Affiliation
	Land Owner
Andrea Schaffner	"
	"
	"
	"
	"
	"
	Public Land User
	Land owner
	Land Owner
	Hunter
	landowner
	LAND USER
	Land user
	hunter
	Land Owner
	Land owner
	sportsman
	LAND OWNER
	land owner
	sportsman
	Land user
	Land user
	Land owner
	Land owner
Doug DeCosta	Rancher

Private Sector and Individual Signature Page

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Name	Affiliation
Diane Bakken	Wolcott Post Office / INDIV

Private Sector and Individual Signature Page

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Name	Affiliation
Mary Jean Perry	Colorado Rural Electric Assn.
Dean Rossi	landowner
Gary & Brita HORN	LANDOWNERS & RANCHERS

Private Sector and Individual Signature Page

Signatories to this plan have participated and concur with the plan development. They support the mission of the Plan to conserve and enhance Greater Sage-grouse population and habitats in Routt and Eagle Counties in ways that are compatible with existing and future land uses thereby insuring the opportunity for people to enjoy this wildlife resource in perpetuity. Any actions undertaken by the signatories are strictly voluntary. Signing this plan shall in no way be construed to reduce or deprive the signatories of any rights or privileges they enjoy. Any party to this agreement can terminate with a written notice to the Workgroup via the Colorado Division of Wildlife Office in Steamboat Springs, CO. If the species is listed it is the signatories' option to withdrawal from this agreement at anytime.

Name	Affiliation
Robert C. Bemmerlon for D. M. Shafer, Exec. V.P. & General Manager	Tri-State Generation & Transmission Association, Inc.

Private Sector and Individual Signature Page

Signatories to this plan have participated and concur with the plan development. They support the mission of the Plan to conserve and enhance the Greater Sage-Grouse population and habitats in Routt and Eagle Counties in ways that are compatible with existing and future land uses, thereby insuring the opportunity for people to enjoy this wildlife resource in perpetuity. Any actions undertaken by the signatories are strictly voluntary. Signing this plan shall in no way be construed to reduce or deprive the signatories of any rights or privileges they enjoy. Any party to this agreement can terminate with a written notice to the Workgroup via the Colorado Division of Wildlife Office in Steamboat Springs, CO. If the species is listed it is the signatories' option to withdraw from this agreement at anytime.

Name	Affiliation
Wendy Fisher 2004 Presid	Steamboat Springs Board of Realtors

Private Sector Signature Page

The Nature Conservancy's Colorado Program (hereafter referred to as the Conservancy) was a participant in the development of this plan and concurs that the process used in the plan's development was inclusive and comprehensive. We support the purpose of the Plan, to conserve and enhance the Greater Sage-Grouse population and habitats in Routt and Eagle counties in ways that are compatible with existing land uses, thereby insuring the opportunity for people to enjoy this wildlife resource in perpetuity. By way of this signature the Conservancy agrees to consider the recommendations of this Plan in the implementation of strategies used to accomplish the Conservancy's mission, to preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. Any actions undertaken by the Conservancy in support of this plan are strictly voluntary. Signing this plan shall in no way be construed to reduce or deprive the Conservancy of any rights or privileges it enjoys. The Conservancy reserves the right terminate its inclusion as signatories to this plan at any time with a written notice to the Work Group via the Colorado Division of Wildlife Office in Steamboat Springs, CO.

Ann S. Oliver Yampa River Project Director, 9/1/04

Name, Title, Date

ANN S. OLIVER YAMPA RIVER PROJECT DIRECTOR

Colorado State University
Knowledge to Go Places

Cooperative Extension
Colorado State University
Office of the Director
1 Administration Building
Fort Collins, Colorado 80523-4040
(970) 491-6281
FAX: (970) 491-6208

COLORADO STATE UNIVERSITY COOPERATIVE EXTENSION (CSUCE)
SIGNATURE PAGE

Colorado State University Cooperative Extension has participated in the development of the Greater Sage-grouse Conservation Plan and concurs with the findings and direction. This organization supports the mission of the Plan to conserve and enhance Greater Sage-grouse population and habitats in Routt and Eagle counties in ways that are compatible with existing and future land uses, thereby, insuring the opportunity for people to enjoy this wildlife resource and private land stewardship in perpetuity. Any actions undertaken by CSUCE is strictly voluntary, however Cooperative Extension is dedicated to following the plan items as part of our educational mission to the citizens of Colorado. Signing this plan shows CSUCE's support, but does not forever commit the Cooperative Extension to any particular action.

Milan Rewerts
Director
Cooperative Extension
Colorado State University

9-22-04
Date

OFFICE OF THE
BOARD OF COMMISSIONERS
(970) 328-8605
FAX: (970) 328-8629
TDD (970) 328-8797
Email: eagleadmin@eaglecounty.us
www.eaglecounty.us

EAGLE COUNTY

TOM C. STONE
MICHAEL L. GALLAGHER
ARN M. MENCONI

July 29, 2004

Chris Nolin, Chief
Division of Conservation and Classification
U.S. Fish and Wildlife Service
4401 North Fairfax Drive, Room 420
Arlington, VA 22203

RE: Greater Sage-Grouse Conservation Plan

Dear Chief Nolin:

Eagle County is supporting the Greater Sage-Grouse Conservation Plan developed by a working group made up of Eagle County and Routt County residents, special interests and the Division of Wildlife. This has been a thorough process and has resulted in a very focused plan.

We respectfully ask that the U.S. Fish and Wildlife Service give the local conservation plans an opportunity to work as opposed to taking action on the listing of the Greater Sage-Grouse. The locals have worked hard on the plans that show every sign of being exactly what is needed to protect the species.

Sincerely,
EAGLE COUNTY BOARD OF COMMISSIONERS

Tom C. Stone, Chairman

Cc:
Susan Linner
Field Supervisor
U. S. Fish and Wildlife Service
P.O. Box 25486, DFC
Lakewood, Colorado 80225-0046

Al Pfister
Assistant Field Supervisor
U. S. Fish and Wildlife Service
764 Horizon Drive, South Annex A
Grand Junction, Colorado 81506-3904

Field Supervisor
Wyoming Ecological Services Office
U. S. Fish and Wildlife Service
4000 Airport Parkway
Cheyenne, Wyoming 82001

John Toolen
Wildlife Biologist
Department of Natural Resources
Division of Wildlife
711 Independent Avenue
Grand Junction, CO 81505-7126

TCS/rl

Commissioner Menconi moved adoption of the following:

BOARD OF COUNTY COMMISSIONERS
COUNTY OF EAGLE, STATE OF COLORADO

Resolution No. 2004-094

RESOLUTION IN SUPPORT OF THE
GREATER SAGE-GROUSE CONSERVATION PLAN

WHEREAS, Eagle County, Colorado ("County") is a political subdivision of the State of Colorado, duly organized and existing pursuant to the laws and the Constitution of the State; and

WHEREAS, the County has participated in the development of the Greater Sage-Grouse Conservation Plan and the County concurs with the findings and direction of said plan; and

WHEREAS, the County desires to show its support for the Greater Sage-Grouse Conservation Plan by way of this Resolution; and

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF THE COUNTY OF EAGLE, STATE OF COLORADO:

THAT, the Board of County Commissioners ("Board") hereby acknowledges that Eagle County has participated in the development of the Greater Sage-Grouse Conservation Plan and concurs with the findings and direction of said plan.

THAT, the Board supports the mission of the Greater Sage-Grouse Conservation Plan to conserve and enhance Greater Sage-Grouse population and habitats in Routt and Eagle Counties in ways that are compatible with existing and future land uses, thereby insuring the opportunity for people to enjoy this wildlife resource in perpetuity.

THAT, any actions taken by the County are strictly voluntary and signing this Resolution demonstrates the County's support, but shall in no way bind the County to any particular action.

THAT, the Board finds, determines and declares that this Resolution is necessary for the public health, safety and welfare of the citizens of the County of Eagle, State of Colorado.

MOVED, READ AND ADOPTED, by the Board of County Commissioners of the County of Eagle, State of Colorado, at its regular meeting, held this 31 day of August, 2004.

COUNTY OF EAGLE, STATE OF COLORADO, by and through its BOARD OF COUNTY COMMISSIONERS

ATTEST:

Teak J. Simonton, Clerk to the
Board of County Commissioners

By: _____
Tom C. Stone,
Chairman

By: _____
Michael L. Gallagher,
Commissioner

By: _____
Arn M. Menconi,
Commissioner

Commissioner Gallagher seconded adoption of the foregoing resolution. The roll having been called, the vote was as follows:

Commissioner Tom C. Stone aye
Commissioner Michael L. Gallagher aye
Commissioner Arn M. Menconi aye

This Resolution passed by 3/3 vote of the Board of County Commissioners of the County of Eagle, State of Colorado.

EAGLE COUNTY SIGNATURE PAGE

Eagle County has participated in the development of the Greater Sage Grouse Conservation Plan and concurs with the findings and direction. The Eagle County Board of County Commissioners support the mission of the Plan to conserve and enhance Greater Sage-grouse population and habitats in Routt and Eagle Counties in ways that are compatible with existing and future land uses thereby insuring the opportunity for people to enjoy this wildlife resource in perpetuity. Any actions undertaken by the county are strictly voluntary. Signing this plan shows the county's support, but shall in no way bind the county to any particular action.

COUNTY OF EAGLE, STATE OF COLORADO, By and Through Its BOARD OF COUNTY COMMISSIONERS

ATTEST:

Teak J. Simonton
Clerk to the Board of
County Commissioners

Tom C. Stone
Chairman

Michael L. Gallagher
Commissioner

Arn M. Menconi
Commissioner

ROUTT COUNTY SIGNATURE PAGE

Routt County has participated in the development of the Greater Sage Grouse Conservation Plan and concurs with the findings and direction. The Routt County Board of County Commissioners support the mission of the Plan to conserve and enhance Greater Sage-grouse population and habitats in Routt and Eagle Counties in ways that are compatible with existing and future land uses, thereby, insuring the opportunity for people to enjoy this wildlife resource and private land stewardship in perpetuity. Any actions undertaken by the county are strictly voluntary, however the county is dedicated to following the plan items designated as county actions to the best of its ability. Signing this plan shows the county's support, but doesn't forever commit the county to any particular action.

COUNTY OF ROUTT, STATE OF COLORADO, By and Through Its BOARD OF COUNTY COMMISSIONERS

ATTEST:

Kay Weinland
Kay Weinland
Clerk to the Board of
County Commissioners

by: Judy Wiegand
Deputy Clerk

ROUTT COUNTY SEAL 1877 COLORADO

Nancy J. Stahoviak
Nancy J. Stahoviak
Commissioner, Chairperson

Daniel R. Ellison
Commissioner

Douglas B. Monger
Commissioner

Conservation Agreement

The **Colorado Division of Wildlife** hereby states its intent and commitment to assist with and participate in the implementation of the ***Northern Eagle/Southern Routt Greater Sage-Grouse Conservation Plan*** as prepared by the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group. Specific commitments made hereby are as follows:

1. To provide one staff person to coordinate the implementation of this plan and represent the Division on the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group, which consists of representatives from state and federal agencies, local government, conservation organizations, landowners, private industry, and interested members of the local community.

2. To assume lead responsibility for the inventory and monitoring of Greater Sage-Grouse in Northern Eagle and Southern Routt counties, and to annually compile and report inventory and monitoring information.

3. To assume lead responsibility for the reintroduction of Greater Sage-Grouse into formerly occupied habitats in Colorado.

4. To implement and enforce specific State statutes and Wildlife Commission Regulations (Colorado Revised Statutes, Title 33, Articles 3 and 6, and Colorado Wildlife Commission Regulations Chapter 3) that control the taking and possession of Greater Sage-Grouse in Colorado.

5. To make recommendations to, and cooperate with, other state and federal agencies, local governments, private landowners, and land developers to avoid, minimize, or mitigate negative impacts of development and other land uses on Greater Sage-Grouse populations and their habitats in Northern Eagle and Southern Routt counties.

6. To make recommendations to, provide some funding for, and cooperate with, other state and federal agencies, local governments, private landowners, and conservation organizations to conserve and enhance Greater Sage-Grouse habitats in Northern Eagle and Southern Routt counties.

7. To continue to support and conduct research on the population dynamics and habitat relationships of Greater Sage-Grouse in Colorado.

Performance of the commitments described above is contingent on adequate funding being made available and allocated to the signatory agency. This agreement shall not prohibit the signatory agency from engaging in management actions regarding Greater Sage-Grouse beyond those described in this agreement and in the Conservation Plan. This agreement shall become effective on the date of signing by the participating party and shall remain in effect until the signatory party chooses to terminate the agreement. The agreement may be terminated by providing 90 days written notice to the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group.

Bruce McCloskey
Director, Colorado Division of Wildlife

9/1/04
Date

CONSERVATION AGREEMENT

The U.S. Fish and Wildlife Service-Western Colorado Ecological Services Field Office hereby states it intent to assist with and participate in the implementation of the Northern Eagle County and Southern Routt County Conservation Plan, as prepared by the Working Group. Signing of this agreement does not constitute a review under the Policy on Evaluating Conservation Efforts (PECE). The Service's endorsement of the Plan is not an indication that it will determine, under PECE, the Plan should be considered when the Service makes a listing determination for the greater sage-grouse, nor does the existence of this Plan necessarily result in the Service determining that listing is not warranted. By signing this agreement the Service shows support for the purpose, guiding principles, and scope of the conservation actions as stated in the Conservation Plan. Specific commitments made by the USFWS hereby are as follows:

1. To pursue funding opportunities through available grants or funding sources for implementation of the Conservation Plan.

2. To attempt to provide a representative to as many of the Working Group meetings as possible.

3. To use our authorities to review Federal projects and recommend measures to avoid or minimize impacts to the greater sage-grouse and its habitat.

4. To provide technical assistance for proposed projects as needed and requested.

5. To provide recommendations to address any issues of concern during future Conservation Plan revisions.

Performance of all activities described above is contingent on adequate funds and staff being made available and allocated to the signatory agency. This agreement shall not prohibit the signatory agency from engaging in management actions regarding greater sage-grouse conservation beyond those described in this agreement and in the Conservation Plan. However, such management actions should be coordinated with the Working Group.

This agreement shall become effective on the date of signature by the participating party, and shall remain in effect until the signatory party chooses to terminate the agreement, or the agreement is terminated by consent of the Working Group. Either the signatory party or the Working Group may terminate the agreement by providing 90 days written notification to the other party

Allan R. Pfister — 9/1/04

Allan R. Pfister, Western Colorado Supervisor
U.S. Fish and Wildlife Service-Ecological Services

Date

CONSERVATION AGREEMENT

The USDA/Natural Resources Conservation Service hereby states its intent to assist with and participate in the implementation of the Northern Eagle/Southern Routt Greater Sage-Grouse Conservation Plan, as prepared by the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group.

Performance of all activities described in the PLAN pertaining to the NRCS is contingent on adequate funds and staff being made available and allocated to the agency. This agreement shall become effective on the date of signature by the participating parties, and shall remain in effect until the parties choose to terminate the agreement, or the agreement is terminated by consent with the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group.

Lori Jazwick — 08/30/04

Lori Jazwick
District Conservationist, NRCS
Routt County

Date

Dennis Davidson — 9-1-04

Dennis Davidson
District Conservationist, NRCS
Eagle County

Date

CONSERVATION AGREEMENT

The **USDA Forest Service, Medicine Bow-Routt National Forests** hereby states its intent and commitment to assist with and participate in the implementation of the ***Northern Eagle County and Southern Routt County Greater Sage Grouse Conservation Plan*** as prepared by the Northern Eagle-Southern Routt Sage Grouse Work Group. Specific commitments made hereby are as follows:

1. To implement conservation measures identified in the Northern Eagle and Southern Routt County Greater Sage Grouse Conservation Plan on Greater sage grouse habitat on the Routt National Forest.

2. To exercise authority for maintenance of biological diversity on the Routt National Forest and for the conservation and management of Regional Forester's identified sensitive species, which includes the Greater sage grouse.

3. To consider and address, if applicable, the issues identified in the Northern Eagle and Southern Routt County Greater Sage Grouse Conservation Plan in NEPA planning documents for activities proposed within Greater sage grouse habitat on the Routt National Forest.

Performance of all activities described above is contingent on adequate funds made available and allocated to the signatory agency. This agreement shall not prohibit the signatory agency from engaging in management actions regarding Greater sage grouse conservation beyond those described in this Conservation Plan. Such management actions should be coordinated with the Colorado Division of Wildlife.

This agreement shall become effective on the date of signature by the participating party, and shall remain in effect until the signatory party chooses to terminate the agreement, or the agreement is terminated by consent of the Working Group. Either the signatory party or the working group may terminate the agreement by providing 90 days written notification to the other party.

Mary J Peterson

Mary Peterson
Forest Supervisor, Medicine Bow-Routt National Forests

8-26-04
Date

Conservation Agreement

The U.S. Forest Service, White River National Forest, hereby states its intent and commitment to assist and participate in the implementation of the *Northern Eagle County and Southern Routt County Greater Sage-Grouse Conservation Plan* as prepared by the Northern Eagle/Southern Routt Working Group. This agreement is in no way meant to be construed as a Forest Plan decision. All projects or management actions implemented through this plan will be subject to all laws, regulations, policies and procedures in effect at the time the action is implemented. Specific commitments made hereby are as follows:

1. To manage, as outlined in the Conservation Plan, historic and currently occupied Greater Sage-Grouse habitats within the Eagle and Holy Cross Ranger Districts as a desirable objective of land management activities within the constraints of decisions of the White River National Forest Plan (2002) as revised.
2. To consider information including conservation actions identified in the Northern Eagle County and Southern Routt County Greater Sage-Grouse Conservation Plan on Greater Sage-Grouse habitat on the Eagle and Holy Cross Ranger Districts.
3. To exercise authority for maintenance of biological diversity on the White River National Forest and authority for the conservation and management of the Regional Forester's identified sensitive species, which includes the Greater Sage-Grouse.
4. To consider and address, if applicable, the issues identified in the Northern Eagle County and Southern Routt County Greater Sage-Grouse Conservation Plan in the NEPA planning documents for activities proposed within Greater Sage-Grouse habitat on the Eagle and Holy Cross Ranger Districts.

Performance of all activities described above is contingent on adequate funds being made available and allocated to the U. S. Forest Service. This agreement is neither a fiscal nor a funds obligating document. All other parties and their respective agencies or organizations will handle their own activities and utilize their own resources in pursuing these objectives. This agreement shall not prohibit the Forest Service or the cooperators in this plan from participating in similar activities with other public or private agencies, organizations, or private citizens. This agreement shall not prohibit the Forest Service from engaging in management actions regarding Greater Sage-Grouse conservation beyond those described in this conservation plan. Such management actions should be coordinated with the Colorado Division of Wildlife.

This agreement shall become effective on the date of signature by the participating parties and shall remain in effect until signatory party chooses to terminate the agreement, or the agreement is terminated by consent of the Working Group. Either the signatory agency or the working group may terminate the agreement by providing 90 days written notice to the other party.

Don Carroll, Acting Forest Supervisor
White River National Forest

Sept 01, 2004
Date

Conservation Agreement

The U.S. Bureau of Land Management (Little Snake Field Office) hereby states its intent and commitment to assist with and participate in the implementation of the ***Northern Eagle/Southern Routt Greater Sage-Grouse Conservation Plan***. This plan was prepared by a work group of affected stakeholders and is designed to conserve and enhance populations and habitats of Greater Sage-Grouse, a BLM sensitive species. This plan is in no way meant to be construed as a Resource Management Plan Decision. All projects or management actions implemented through these guidelines will be subject to site specific environmental analysis required under the National Environmental Policy Act. Specific commitments made hereby are as follows:

1. All proposed projects or actions funded, implemented or authorized by the BLM will be analyzed with respect to impacts on Greater Sage-Grouse and their habitats in accordance with the guidelines set forth in this plan.

2. To implement the guidelines, conservation actions, and intent set forth in this plan within the constraints of existing laws, policies, regulations and management plans, and while considering the needs or implications to other species and multiple uses.

3. To work with private landowners, companies, organizations and other state or federal agencies to implement necessary conservation actions to enhance Greater Sage-Grouse habitat as outlined in this plan.

4. To protect or mitigate any Greater Sage-Grouse populations and suitable habitat which may be located on BLM lands from negative impacts which may be caused by other land use activities. Authority for the protection of the Greater Sage-Grouse and its habitat is pursuant to provisions in the BLM Policy Manual and the Federal Land Policy and Management Act.

Performance of all activities described above is contingent on adequate staff and funding being allocated to the signatory agency. This agreement shall not prohibit the signatory agency from engaging in management actions regarding Greater Sage-Grouse conservation beyond those described in the agreement and in the Conservation Plan. Such management action should be coordinated with the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group.

This agreement shall become effective on the date of signature by the participating party and shall remain in effect until the signatory party chooses to terminate the agreement, or the agreement is terminated by consent of the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group. The agreement may be terminated by providing 90 days written to the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group.

John E. Husband, Little Snake Field Office Manager
Bureau of Land Management, USDI

Date 9/1/04

Conservation Agreement

The U.S. Bureau of Land Management (Glenwood Springs Field Office) hereby states its intent and commitment to assist with and participate in the implementation of the ***Northern Eagle/Southern Routt Greater Sage-Grouse Conservation Plan***. This plan was prepared by a work group of affected stakeholders and is designed to conserve and enhance populations and habitats of Greater Sage-Grouse, a BLM sensitive species. This plan is in no way meant to be construed as a Resource Management Plan Decision. All projects or management actions implemented through these guidelines will be subject to site specific environmental analysis required under the National Environmental Policy Act. Specific commitments made hereby are as follows:

1. All proposed projects or actions funded, implemented or authorized by the BLM will be analyzed with respect to impacts on Greater Sage-Grouse and their habitats in accordance with the guidelines set forth in this plan.

2. To implement the guidelines, conservation actions, and intent set forth in this plan within the constraints of existing laws, policies, regulations and management plans, and while considering the needs or implications to other species and multiple uses.

3. To work with private landowners, companies, organizations and other state or federal agencies to implement necessary conservation actions to enhance Greater Sage-Grouse habitat as outlined in this plan.

4. To protect or mitigate any Greater Sage-Grouse populations and suitable habitat which may be located on BLM lands from negative impacts which may be caused by other land use activities. Authority for the protection of the Greater Sage-Grouse and its habitat is pursuant to provisions in the BLM Policy Manual and the Federal Land Policy and Management Act.

Performance of all activities described above is contingent on adequate staff and funding being allocated to the signatory agency. This agreement shall not prohibit the signatory agency from engaging in management actions regarding Greater Sage-Grouse conservation beyond those described in the agreement and in the Conservation Plan. Such management action should be coordinated with the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group.

This agreement shall become effective on the date of signature by the participating party and shall remain in effect until the signatory party chooses to terminate the agreement, or the agreement is terminated by consent of the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group. The agreement may be terminated by providing 90 days written to the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group.

James E Connell — Sept 1, 2004

Jamie Connell, Glenwood Springs Field Office
Bureau of Land Management, USDI

Date

Conservation Agreement

The U.S. Bureau of Land Management (Kremmling Field Office) hereby states its intent and commitment to assist with and participate in the implementation of the ***Northern Eagle/Southern Routt Greater Sage-Grouse Conservation Plan***. This plan was prepared by a work group of affected stakeholders and is designed to conserve and enhance populations and habitats of Greater Sage-Grouse, a BLM sensitive species. This plan is in no way meant to be construed as a Resource Management Plan Decision. All projects or management actions implemented through these guidelines will be subject to site specific environmental analysis required under the National Environmental Policy Act. Specific commitments made hereby are as follows:

1. All proposed projects or actions funded, implemented or authorized by the BLM will be analyzed with respect to impacts on Greater Sage-Grouse and their habitats in accordance with the guidelines set forth in this plan.

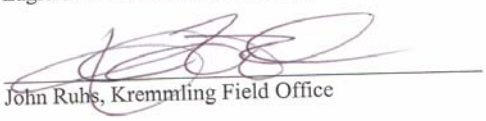
2. To implement the guidelines, conservation actions, and intent set forth in this plan within the constraints of existing laws, policies, regulations and management plans, and while considering the needs or implications to other species and multiple uses.

3. To work with private landowners, companies, organizations and other state or federal agencies to implement necessary conservation actions to enhance Greater Sage-Grouse habitat as outlined in this plan.

4. To protect or mitigate any Greater Sage-Grouse populations and suitable habitat which may be located on BLM lands from negative impacts which may be caused by other land use activities. Authority for the protection of the Greater Sage-Grouse and its habitat is pursuant to provisions in the BLM Policy Manual and the Federal Land Policy and Management Act.

Performance of all activities described above is contingent on adequate staff and funding being allocated to the signatory agency. This agreement shall not prohibit the signatory agency from engaging in management actions regarding Greater Sage-Grouse conservation beyond those described in the agreement and in the Conservation Plan. Such management action should be coordinated with the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group.

This agreement shall become effective on the date of signature by the participating party and shall remain in effect until the signatory party chooses to terminate the agreement, or the agreement is terminated by consent of the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group. The agreement may be terminated by providing 90 days written to the Northern Eagle/Southern Routt Greater Sage-Grouse Work Group.



John Ruhs, Kremmling Field Office

9/10/04
Date