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**Bureau of Land Management
Buffalo Field Office
Cross H Creek and Robinson Draw Allotments Grazing Lease Transfer
WY-070-EA11-143**

1.0 Introduction

PROJECT TITLE: Cross H Creek and Robinson Draw Allotments 10-Year Term Grazing Lease Transfer and Issuance

LOCATION: **Cross H Creek Allotment (22206)**; T55N, R77W, Section 25: W $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$. T55N, R76W, Section 19: Lot 16; Sec. 20: NE $\frac{1}{4}$ SW $\frac{1}{4}$; Sec. 29: W $\frac{1}{2}$ NW $\frac{1}{4}$. **Robinson Draw Allotment (22205)**; T55N, R77W, Section 35: Lot 2, NWNE (*See maps*)

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CASEFILE NUMBER: 4907338 and 4907336, to be consolidated as 4907338.

APPLICANT: PK Ranch, LLC

This site-specific Environmental Assessment (EA) is tiered to and incorporates by reference the Buffalo Resource Management Plan (RMP) dated October 4, 1985, and the 2001 amendment. This EA follows the format recommended in Chapter 8 of BLM Manual H-1790-1, National Environmental Policy Act Handbook.

1.1 Background

Don C. and Betty Ann Malli have transferred their base property to the PK Ranch, LLC. The PK Ranch has applied for transfer of the grazing privileges attached to this property and a new lease authorizing grazing on the Cross H Creek Allotment. The Carol Ann Malli Trust (hereafter referred to as “Malli Trust”) has also transferred their base property to the PK Ranch, LLC. PK Ranch, LLC applied for transfer of the grazing privileges attached to this property and a lease authorizing grazing on the Robinson Draw Allotment. As outlined in 43 CFR 4110, the PK Ranch should have preference in obtaining the grazing privileges attached to these properties. Because the base property for each of these allotments is now held by the same entity, the two allotments will be combined into a single grazing lease, #4907338.

1.2 Purpose and Need for the Proposed Action

The purpose of the proposed action is to allow livestock grazing on public land through the exercise of grazing preference attached to controlled base property while considering multiple use objectives (43 CFR 4110). The BLM promotes healthy sustainable rangeland ecosystems and provides for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands while complying with land use plans and multiple use objectives, including environmental and economic values, as provided in 43 CFR 4100, the Taylor Grazing Act of 1934 and the Federal Land Policy and Management Act of 1976.

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The need for the action is the requirement that an individual or group desiring to graze livestock on public land must hold a valid grazing authorization in the form of a permit or lease; this lease may be balanced with other uses of public land. The current grazing lessee has a preference to receive the authorization, if grazing is to continue on the associated allotment. The current grazing leases were issued in 2009 under Public Law 106-291 allowing for authorization of grazing leases until completion of environmental analysis.

1.3 Decision to be Made

The BLM will decide whether or not to transfer the grazing preference on the Cross H Creek and Robinson Draw Allotments from Don C. & Betty Ann Malli and the Malli Trust, respectively, to the PK Ranch, whether or not to issue a single grazing lease with no change in terms and conditions to the PK Ranch for the Cross H Creek and Robinson Draw Allotments, and how to balance the proposed action with multiple public uses.

1.4 Conformance with Land Use Plan and Other Laws, Regulations, and Policies

The Proposed Action is in conformance with the Record of Decision for the Buffalo Resource Management Plan approved October 4, 1985, the 2001 amendment, and with the land use plan terms and conditions as required by 43 CFR 1610.5-3(a). The Buffalo RMP EIS analyzed the impacts of grazing.

This Environmental Analysis fulfills the 1969 National Environmental Policy Act (NEPA) requirement for site-specific analysis. The Proposed Action is in accordance with the following laws and/or regulations, other plans, and is consistent with Federal, State, and local laws, regulations:

- Taylor Grazing Act of June 30, 1934, as amended
- Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.)
- Public Rangelands Improvement Act of 1978
- Endangered Species Act of 1973 as amended
- 43 CFR § 4100 Grazing Administration-Exclusive of Alaska
- Clean Water Act Section 303d
- Section 106 of the National Historic Preservation Act of 1966 as amended
- National Environmental Policy Act of 1969
- Sikes Act of 1969, as amended (Habitat Improvement on Public Land)
- Fish and Wildlife Improvement Act of 1978
- Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds
- Grazing Regulations as codified in 43 CFR § 4100 as amended in 2005
- BLM Instruction Memorandum No. WY-2010-012, Greater Sage-Grouse Habitat Management Policy on Wyoming BLM Administered Public Lands including the Federal Mineral Estate
- DOI Secretarial Order No.3310—Protecting Wilderness Characteristics on Lands Managed by the BLM, Dec. 2010.

1.4.1 Wyoming Standards for Rangeland Health

Particularly applicable to livestock grazing management by the BLM, the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management were developed and approved by the Secretary of the Interior on August 12, 1997. They address watersheds, ecological

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condition, water quality and habitat for special status species. These policies and guidelines are critical to achieving ecologically sustainable range management.

The regulation at 43 CFR 4180.1 details four fundamentals of rangeland health. They are:

1. Watersheds are in or are making progress toward properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support water infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.
2. Ecological processes including the hydrologic cycle, nutrient cycle, and energy flow are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.
3. Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving established BLM management objectives such as meeting wildlife needs.
4. Habitats are, or are making significant progress toward, being restored or maintained for Federal threatened and endangered species, Federal Proposed, Category 1 and 2 Federal Proposed Candidate and other special status species.

The BLM developed the Wyoming Standards for Healthy Public Rangelands and Guidelines for Livestock Grazing Management (S&Gs) to achieve the four fundamentals of rangeland health detailed above. These Standards relate the minimal acceptable conditions for BLM administered public rangelands, including the health, productivity, and sustainability of the land. The achievement of a Standard is determined by observation, measuring, and monitoring conditions in the field and is measured on a watershed scale. If livestock grazing practices are found to be among factors contributing to a failure to meet a Standard, corrective action must be developed and implemented before the next grazing season in accordance with the grazing regulations. Guidelines provide reasonable, responsible, and cost-effective management practices at the grazing allotment and watershed levels to attain and maintain rangeland Standards. These management practices either maintain existing desirable conditions or move rangelands toward statewide Standards within reasonable timeframes.

The six Standards for Healthy Rangelands are:

Standard 1: Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.

Standard 2: Riparian and wetland vegetation have structural, age, and species diversity characteristic of the state of channel success and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide for ground water recharge.

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Standard 3: Upland vegetation on each ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance.

Standard 4: Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.

Standard 5: Water Quality meets state standards.

Standard 6: Air Quality meets state standards.

The Buffalo RMP has been amended to adopt the Wyoming Standards for Healthy Rangelands. An assessment of the Wyoming Standards for Healthy Rangelands has not been conducted for the Cross H Creek Allotment or the Robinson Draw Allotment.

1.5 Scoping and Issues

The BLM decision-making process is conducted in accordance with the requirements of the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA), and the United States Department of Interior (USDI) and BLM policies and procedures implementing NEPA. NEPA and the associated regulatory and policy framework require federal agencies to involve the interested public in their decision-making.

Internal scoping was conducted on this EA. The following issues were identified:

- How would the proposed action affect current livestock grazing management?
- Would the proposed action impact invasive species?
- Would and how would the proposed action affect any special status species, particularly sage-grouse (candidate species)?
- Would the proposed action impact migratory bird habitats or populations?
- Would the proposed action impact cultural resources and/or lands with wilderness characteristics?

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative A – No Livestock Grazing

Under this alternative no livestock grazing would be permitted on the Cross H Creek and Robinson Draw Allotments. The previous grazing leases would be cancelled in accordance with 43 CFR parts 4100 and 1600 to eliminate grazing on the allotments.

2.2 Alternative B - Proposed Action – Transfer of Grazing Preference and Renewal of Lease without Modification

The proposed action is for the BLM to transfer grazing privileges from Don & Betty Ann Malli and the Carol Ann Malli Trust to the PK Ranch, and to issue a new 10-year term grazing lease (#4907338) to the PK Ranch for the Cross H Creek and Robinson Draw Allotments. There would be no modifications to the current terms and conditions outlined in the existing leases held by Don

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C. and Betty Ann Malli and the Malli Trust. The details of these BLM grazing leases are listed below in Table 1.

Table 1

| Allotment | Livestock | | Season of Use | % PL | AUMs | Type Use | Existing Lease # |
|-----------------------|-----------|--------|---------------|------|------|----------|------------------|
| | Number | Kind | | | | | |
| Cross H Creek (22206) | 82 | Cattle | 3/1 – 2/28 | 5 | 49 | Active | 4907338 |
| Robinson Draw (22205) | 75 | Cattle | 3/1 – 2/28 | 1 | 9 | Active | 4907336 |

*BLM recognizes that these allotments consist primarily of non-federal lands. As such, BLM will not limit the season of use or number of livestock as long as grazing use is not to the detriment of the public lands. The lease schedule shown is primarily for billing purposes.

The proposed action would transfer grazing privileges to the PK Ranch from Don & Betty Ann Malli and the Malli Trust and issue a new 10-year term grazing lease combining the previous leases to the PK Ranch, LLC. Both applicants are currently in good standing with the Bureau of Land Management (BLM) and meet all mandatory qualifications for obtaining a grazing lease as specified in 43 CFR 4110.1 and 4110.2. In accordance with Title 43 CFR 4130.2(a), “Grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans.”

No projects or other surface disturbing activities are proposed in connection to this lease transfer and issuance. Any range improvement projects associated with these allotments would be analyzed under separate, site-specific Environmental Assessments.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

3.1.1 Location

The Cross H Creek Grazing Allotment is about 50 miles east of Sheridan, Wyoming. The allotment is a mixture of public, private, and state lands (lands managed by the Office of State Lands and Investments). Private lands compose the majority of the allotment and contain most of the water courses or springs in the allotment. There are four parcels of BLM scattered throughout the allotment, and no legal public access to these parcels.

The Robinson Draw Grazing Allotment adjoins the Cross H Creek allotment to the west. The allotment is a mixture of public and private land. Private lands compose the majority of the allotment, with two parcels of BLM land in the southern portion of the allotment. There is no legal public access to the public lands.

3.1.2 General Description

The Cross H Creek and Robinson Draw Allotments are typical of the land forms, soils, and vegetation in the area of influence for the Lower Powder River drainage system. Differences in dominant vegetation species within the allotments vary with soil type, aspect, topography, and water availability. Annual precipitation is the principal factor limiting forage production. Flood

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plains are the most productive sites and steep upland ridges, escarpments and slopes are the least productive. There are no wetlands or riparian areas found on public lands in the allotments.

The public lands in these allotments are clearly lacking in wilderness characteristics.

The soils within the Cross H Creek and Robinson Draw Allotments vary greatly depending on topographic location, slope, elevation, and precipitation. The climate of the area is characterized by relatively low amounts of precipitation, averaging between 10 and 14 inches annually. The majority of soils within these allotments are loams and shallow loams.

Wyoming big sagebrush is a significant component of the plant community associated with loamy sites, with densities ranging from 2-12% throughout the allotments. Cool-season mid-grasses make up the majority of the understory with the balance made up of short warm-season grasses, introduced annual grasses, and miscellaneous forbs. The dominant cool season mid-grass species include green needlegrass (*Nassella viridula*), needleandthread (*Hesperostipa comata*), and rhizomatous wheatgrasses. Grasses can account for up to 75% of the vegetation in this type of ecological site. With an elevation of approximately 3700 feet, the growing season is short, consisting of the months of April through mid-August.

Shallow loams often occur on steep slopes and ridges. Sites dominated by shallow loamy soils are dominated by cool-season grasses such as western wheatgrass (*Pascopyrum smithii*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and needleandthread (*Hesperostipa comata*). Grasses are predominant in the ecological site, accounting for 80% of the vegetation.

Historically, native plants in northeastern Wyoming evolved under prehistoric conditions which included grazing and browsing by bison and other native ungulates, and an associated low frequency of fire. This community is well suited to grazing by both domestic livestock and wildlife year round.

3.1.3 Energy Development

The BLM permits federal mineral development (coal bed methane, conventional oil, and coal) in the Powder River Basin. This includes federal minerals below federal and/or private (split estate) surface. EAs are prepared, as required by the National Environmental Policy Act of 1969 (NEPA), for this federal mineral development. Companies generally submit proposals in the form of Plans of Development (PODs) that may consist of one to 200 wells.

The Cross H Creek and Robinson Draw Allotments are within an area that has been approved for CBM development. No producing wells are currently located on BLM surface lands. The details of this development are outlined below in Table 2.

Table 2

| POD NAME | OPERATOR | APPROVED |
|-----------------|-----------------|-----------------|
| N Wildhorse 1 | Devon | yes |
| Tincom Butte N | Lance | yes |
| Robinson Draw | StormCat | no |

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The environmental impacts from federal mineral development associated with these PODs are analyzed in an EA specific to each POD, and are incorporated into this document by reference. These documents are held on record at the Buffalo Field Office and are available for public review at any time.

The following are not affected and will not be further analyzed:

- Air Quality
- Areas of Critical Environmental Concern (ACEC)
- Environmental Justice
- Prime or Unique Farmlands
- Flood Plains
- Hazardous or Solid Wastes
- Mineral Resources
- Native American Religious Concerns
- Paleontology
- Recreation
- Soils
- Traditional Cultural Properties
- Visual Resource Management
- Water Quality and Prime or Sole Source of Drinking Water
- Wetlands and Riparian Zones
- Wild and Scenic Rivers
- Wilderness Values

3.2 Cultural Resources

Class III inventory for cultural resources has occurred on over one half of the Cross H Creek allotment. A search of the Wyoming Cultural Records Office database revealed that inventories related primarily to oil and gas development discovered cultural sites. The allotment contains 28 known cultural sites, 17 of which are eligible for the National Register of Historic Places and 11 are unevaluated. Site types include prehistoric lithic scatters, stone circles, stock herder camps, historic trash scatters and a historic homestead. There may be many more unrecorded cultural sites, some which may be eligible for listing on the National Register, within the allotment.

Class III inventory for cultural resources has also occurred on the approximately half of the Robinson Draw allotment, where a search of the Wyoming Cultural Records Office database revealed that inventories related primarily to oil and gas development discovered no known cultural sites. There may be unrecorded cultural sites, some which may be eligible for listing on the National Register, within the allotment.

3.3 Livestock Grazing

In 1985, BLM established three categories for allotments to identify areas where management was potentially needed, as well as to prioritize workloads and the use of range improvement funds. Allotments were classified as Improve Existing Resource Conditions (I), Maintain Existing Resource Conditions (M), or Custodial Management (C) (USDI 2008). The Cross H Creek and Robinson Draw Allotments are classified as category “C” allotments, meaning their management is minimal in nature, due to the small amount of public land within the allotments. The BLM’s rationale for this classification is that there are no identified resource problems, and the size and continuity of the public land is not conducive to more intensive management. The allotments have

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a low potential for yielding a positive return on public investment in management or rangeland project development.

The Cross H Creek Allotment consists of 311.58 total acres of public land, 600 acres of state land, and around 4,039 acres of deeded land. There are 49 AUMs associated with the federal lands in the allotment. The Robinson Draw Allotment consists of 68.52 acres of public land and around 890 acres of deeded land. There are 9 AUMs associated with the federal lands in the allotment. Public land parcels are grazed in conjunction with deeded lands.

3.4 Invasive Species/Noxious Weeds

Invasive species and noxious weeds are known to exist in the affected environment. The species with the highest populations are Leafy spurge (*Euphorbia esula*), Downy brome (*Bromus tectorum*) and Japanese brome (*Bromus Japonicus*). These *Bromus* species occur in such high densities and numerous locations throughout Northeast Wyoming that a control program is not considered feasible at this time. Salt cedar (*Tamarisk ramosissima*) and Russian knapweed (*Acroptilon repens*) are also present in the natural drainages near the Powder River and around water holding facilities. The Sheridan County Weed and Pest Program is periodically applying herbicide to areas infested with these species.

3.5 Wildlife

Wildlife evaluations were conducted to assess the occurrence of selected wildlife species and their habitats, as well as to evaluate the anticipated effects associated with the transfer of this grazing lease on the Cross H Creek and Robinson Draw Allotments. The evaluations included selected individual species or species groupings that are considered ecologically, economically, or socially important.

Evaluation methods included comparison of aerial imagery (1994 to 2009) and review of wildlife geospatial datasets (available at the Buffalo BLM Field Office). Datasets included occurrence information for big game, raptors, bald eagles, sage-grouse, sharp-tailed grouse, mountain plover, black-tailed prairie dogs, and sagebrush in the project area.

Wildlife habitats occurring on these allotments resulted from a complex history of natural and man-caused influences. Important natural influences included short- and long-term climate variation, infrequent wildfire (Baker 2006), and ungulate grazing; especially by bison (Mack and Thompson 1982). From about 1880 to 1910 the Powder River Basin (including the Cross H Creek Allotment) was influenced by bison removal and replacement with “vast numbers” of cattle (Cassity 2007) and excessive numbers of sheep (Patterson 1952). The compounding impacts of cattle and sheep overstocking with climate may have initiated the ongoing epicycle of gully erosion that is evident throughout the Basin including these allotments (Leopold and Miller 1954). Early range degradation and reduced wildlife populations recovered following enactment of the Taylor Grazing Act of 1934 (Patterson 1952).

The following tables summarize the affected environment relative to selected wildlife.

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Table 3. Summary of Sensitive Species Habitat and Project Effects.

| Common Name (scientific name) | Habitat | Presence | Project Effects | Rationale |
|--|---|----------|-----------------|--|
| Amphibians | | | | |
| Northern leopard frog (<i>Rana pipiens</i>) | Beaver ponds, permanent water in plains and foothills (SS Policy). Swampy, cattail marshes on the plains (WGFD CWCS). | NS | NI | Habitat may be present near reservoirs on private lands within the allotment. |
| Columbia Spotted frog (<i>Rana pretiosa</i>) | Breeds in the shallows of lakes, ponds, marshes, and small streams (NatureServe). | NS | NI | Habitat may be present near reservoirs on private lands within the allotment. |
| Birds | | | | |
| Baird's sparrow (<i>Ammodramus bairdii</i>) | Grasslands, weedy fields (SS Policy). Un- or lightly grazed mixed-grass prairie, wet meadows, tallgrass prairie. Prairie w/ scattered low bushes and matted vegetation (NatureServe). In dry years, grassy slough bottoms, alkali flats, and depressions in low lying grasslands. | NS | BI | May prefer lightly grazed areas, but some trampling of nests is possible. |
| Bald eagle (<i>Haliaeetus leucocephalus</i>) | Mature forest cover often within one mile of large water body (SS Policy). Nests near large lakes and rivers in forested habitat where adequate prey and old, large-diameter cottonwood or conifer trees are available for nesting (WGFD CWCS). Migrating and wintering eagles congregate near open water areas where concentrations of prey are available, such as carcasses of ungulate species, and spawning areas for kokanee, trout, and other fish (WGFD CWCS). | S | NI | Roosting and nesting habitat is present within the Robinson Draw allotment. Bald eagles may use the area for foraging. At least twenty individuals have been observed less than one mile away. Activities associated with ongoing livestock grazing operations are not likely to occur to such an extent that foraging behavior will be disrupted. |
| Brewer's sparrow (<i>Spizella breweri</i>) | Basin-prairie shrub (SS Policy). Closely associated with sagebrush shrublands that have abundant, scattered shrubs and short grass (WGFD CWCS). | S | MIIH | Trampling of nests may occur. Sensitive to cowbird parasitism, so may be more susceptible to higher parasitism pressure. |
| Burrowing owl (<i>Athene cunicularia</i>) | Grasslands, basin-prairie shrub (SS Policy). Prefers open prairie, grassland, desert, and shrub-steppe habitats, and may also inhabit agricultural areas. It depends on mammals that dig burrows, which it uses for nesting, roosting, and escape (WGFD CWCS). | K | MIIH | There are two identified burrowing owl nests on state land in the Cross H Creek allotment. Owls prefer grazed areas and use cow manure to line nests, but nests and eggs may be trampled by livestock. |
| Ferruginous hawk (<i>Buteo regalis</i>) | Basin-prairie shrub, grasslands, rock outcrops (SS Policy). Semi-arid open country, primarily grasslands, basin-prairie shrublands, and badlands (WGFD CWCS). Requires large tracts of relatively undisturbed rangeland and nests in rock outcrops, the ground, cutbanks, cliff ledges, or trees (WGFD CWCS). | NS | NI | Ferruginous hawks may forage in the area. The nearest nest is approximately 5 miles away. Ongoing livestock operations should not affect foraging habitat. |
| Loggerhead shrike (<i>Lanius ludovicianus</i>) | Basin-prairie shrub, mountain-foothill shrub (SS Policy). Grasslands interspersed with scattered trees and shrubs that provide nesting and perching sites. | S | MIIH | Ongoing livestock operations will not result in reduced shrub cover or habitat fragmentation. Nests not likely to be affected because they are placed above-ground. |

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| Common Name (scientific name) | Habitat | Presence | Project Effects | Rationale |
|--|---|----------|--------------------|--|
| Long-billed curlew (<i>Numenius americanus</i>) | Grasslands, plains, foothills, wet meadows (SS Policy). Inhabits a variety of grassland types ranging from moist meadow grasslands to agricultural areas to dry prairie upland, usually near water. Prefers a complex of shortgrass prairies, agricultural fields, wet and dry meadows and prairies, and grazed mixed-grass and scrub communities. Nests on the ground in habitat that includes grass <12", bare ground, shade, abundant invertebrate prey, and a minimum on 40 acres of suitable habitat (WGFD CWCS). | NS | NI | Marginally suitable habitat may be present in the allotments. |
| Northern goshawk (<i>Accipiter gentilis</i>) | Conifer and deciduous forests (SS Policy). Mixed coniferous habitat of a wide variety of ages, structural conditions, and successional stages. Nests in mature stands with multilayered canopies with open understory, small openings, and water within 0.25 miles. Nest stands often on slopes with northerly exposures or in drainages or canyon bottoms protected by such slopes. Post-fledging area is a mosaic of forest types that provide hiding cover and abundant prey. Foraging area may include a variety of forest types and structures but most often consists of forests with a high density of large trees, high canopy closure, high basal area, and relatively open understories, interspersed w/ shrublands and openings with perching trees to observe prey. Winter habitat probably includes a variety of vegetation types, such as forests, woodlands, shrublands, and forested riparian strips (WGFD CWCS). | NP | NI | Forested habitat not present. |
| Peregrine falcon (<i>Falco peregrinus</i>) | Cliffs (SS Policy). Forages in open woodlands and forests, shrub-steppe, grasslands, marshes, and riparian habitats. Nests in cliffs that are usually proximate to habitats with abundant prey (WGFD CWCS). | NP | NI | Nest substrate not present. No known breeding pairs in proximity. |
| Sage sparrow (<i>Amphispiza billineata</i>) | Basin-prairie shrub, mountain-foothill shrub (SS Policy). Considered a sagebrush obligate. Inhabits prairie and foothills shrubland habitat where sagebrush is present. Prefers shrublands with tall shrubs and low grass cover, where sagebrush is clumped in a patchy landscape. Requires a large block of unfragmented habitat to successfully breed and survive (WGFD CWCS). | NP | NI | Not documented in Sheridan or Campbell Counties. |
| Sage thrasher (<i>Oreoscoptes montanus</i>) | Basin-prairie shrub, mountain-foothill shrub (SS Policy). Considered a sagebrush obligate. Inhabits prairie and foothills shrubland habitat where sagebrush is present. Prefers shrublands with tall shrubs and low grass cover, where sagebrush is clumped in a patchy landscape (WGFD CWCS). | S | MIIH | Nests may be trampled. Uncommon cowbird host, which are associated with cattle. May be more susceptible to higher parasitism pressure. |
| Trumpeter swan (<i>Cygnus buccinator</i>) | Lakes, ponds, rivers (SS Policy). Inhabits shallow marshes, ponds, lakes, and river oxbows. Prefers stable, quiet, and shallow waters where small islands, muskrat houses, or dense emergent vegetation provide nesting and loafing sites. | NP | NI | Habitat not present. |

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| Common Name (scientific name) | Habitat | Presence | Project Effects | Rationale |
|--|--|----------|--------------------|--|
| | Nutrient-rich water, with dense aquatic plant and invertebrate growth, provide the most suitable habitat. Winter habitat must provide extensive beds of aquatic plants that remain ice-free. In Wyoming, cold temps and ice restrict trumpeters to sites where geothermal waters, springs, or outflow from dams maintain ice-free areas (WGFD CWCS). | | | |
| White-faced ibis (<i>Plegadis chihi</i>) | Marshes, wet meadows (SS Policy). Inhabits marshes, wet-moist meadows, lakes, and irrigated meadows. Nests on the ground in bulrushes, cattails, or reeds; on a floating mat; or in a low tree. | NS | NI | Habitat not present on public lands in the allotments, but marginal habitat may be found on private lands. |
| Yellow-billed cuckoo (<i>Coccyzus americanus</i>) | Open woodlands, streamside willow and alder groves (SS Policy). Nests primarily in large stands of cottonwood-riparian habitat below 7000 feet, including such habitats that occur in urban areas. It is a riparian obligate species that prefers extensive areas of dense thickets and mature deciduous forests near water, and requires low, dense, shrubby vegetation for nest sites. | NS | NI | Marginally suitable habitat may be present on private lands in the allotments, but not on the public lands. |
| Migratory bird species (Various) | Multiple vegetation types are used for breeding, foraging and wintering, with habitat types ranging from grasslands and shrub-steppe to woodlands and riparian areas. | K | MIIH | Trampling of nests may occur. Negligible impacts from livestock or humans disrupting breeding, dislodging nests, or causing adult to leave eggs or chicks unattended. Ongoing livestock operations should not create significant additional impacts. |
| Fish | | | | |
| Yellowstone cutthroat trout (<i>Oncorhynchus clarki bouvieri</i>) | Mountain streams and rivers in Tongue River drainage | NP | NI | Habitat not present. |
| Mammals | | | | |
| Black-tailed prairie dog (<i>Cynomys ludovicianus</i>) | Prairie habitats with deep, firm soils and slopes less than 10 degrees (SS Policy). Inhabits dry, flat, open, shortgrass and mixed-grass grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle. Constructs burrows in fine to medium soils (WGFD CWCS). | K | BI | Prairie dogs often prefer habitats grazed by livestock. |

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| Common Name (scientific name) | Habitat | Presence | Project Effects | Rationale |
|--|---|----------|--------------------|--|
| Fringed myotis (<i>Myotis thysanodes</i>) | Conifer forests, woodland chaparral, caves and mines (SS Policy). Found in a wide range of habitats, including coniferous forests, woodlands, grasslands, and shrublands. Probably most common in xeric woodlands, such as juniper, ponderosa pine, and Douglas-fir. Typically forages over water, along forest edges, or within forests and woodlands. During summer, uses a variety of roosts, including rock crevices, tree cavities, caves, abandoned mines, and buildings. During winter, it hibernates in caves, abandoned mines, and buildings (WGFD CWCS). Must remain within commuting distance of drinking water. Roosts in rock crevices that typically face southeast or southwest and are in low elevation forests or woodlands (WGFD Bat Conservation Plan). | S | MIIH | Nearby reservoirs and the Powder River provide adjacent water source. Roost sites are likely available. Roosting individuals may occasionally be trampled. |
| Long-eared myotis (<i>Myotis evotis</i>) | Conifer and deciduous forest, caves and mines (SS Policy). Primarily inhabits coniferous forest and woodland, including juniper, ponderosa pine, and spruce-fir. Typically forages over rivers, streams, and ponds within the forest-woodland environment. During summer, it roosts in a wide variety of structures, including cavities in snags, under loose bark, stumps, buildings, rock crevices, caves, and abandoned mines. During winter, it probably hibernates primarily in caves and abandoned mines (WGFD CWCS). Occasionally found in cottonwood riparian areas, basins, and sagebrush grasslands where roost sites are available (WGFD Bat Conservation Plan). Most likely found in areas close to a water source. May also occur more frequently in suitable habitat near rock outcroppings or cliffs. Primarily forages over rivers, streams, and ponds within the forest-woodland environment. Also forages over open areas such as campgrounds, small forest openings, and edges, although foraging areas are most likely to be close to a water source. Large-diameter conifer snags provide primary roosting habitat (WGFD Bat Conservation Plan). | NP | NI | Forested habitat not in proximity. |
| Spotted bat (<i>Euderma maculatum</i>) | Cliffs over perennial water (SS Policy). Occupies a wide variety of habitats, from desert scrub to coniferous forest. Most often observed in low deserts and basins and juniper woodlands. Roosts in cracks and crevices in high cliffs and canyons. May occasionally roost in buildings, caves, or abandoned mines, although cliffs are the only roosting habitat in which reproductive females have been located (WGFD CWCS). Often occurs in association with canyons, prominent rock features, and permanent water sources. In desert environments, it forages in canyons, in the open, or over riparian vegetation. All recorded occurrences of spotted bats in WY were close to a permanent water source (WGFD Bat Conservation Plan). | S | MIIH | Nearby reservoirs and river provide adjacent water sources. Roost sites likely available. Roosting individuals may occasionally be trampled. |

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| Common Name (scientific name) | Habitat | Presence | Project Effects | Rationale |
|--|---|----------|-----------------|---|
| Swift fox (<i>Vulpes velox</i>) | Grasslands (SS Policy). Inhabits shortgrass and mixed-grass prairies. Often uses highway and railroad ROWs, agricultural areas, and sagebrush-grasslands. Closely associated w/ prairie dog colonies and uses underground dens year-round. Selects habitat with low-growing vegetation, relatively flat terrain, friable soils, and high den availability (WGFD CWCS). | S | MIIH | Inappropriate grazing could reduce hiding cover and increase susceptibility to predation. |
| Townsend's big-eared bat (<i>Corynorhinus townsendii</i>) | Caves and mines (SS Policy). Occupies a variety of xeric to mesic habitats, including coniferous forests, juniper woodlands, deciduous forests, basins, and desert shrublands, and is absent only from the most extreme deserts and highest elevations. Requires caves or abandoned mines for roost sites during all seasons and stages of its life cycle, and its distribution is strongly correlated with the availability of these features (WGFD CWCS). May be limited to areas with reliable, accessible sources of drinking water. Forages primarily along forest and woodland edges, riparian corridors, and in open areas near wooded habitat. May avoid open, grazed pasture land. | S | NI | Nearby reservoirs and streams provide adjacent water sources. Availability of roost sites is unknown, but foraging habitat is present. Ongoing livestock grazing unlikely to affect prey abundance or availability of foraging habitat. |
| Plants | | | | |
| Limber Pine | | NP | NI | Habitat not present. |
| Porter's sagebrush (<i>Artemisia porterii</i>) | Sparsely vegetated badlands of ashy or tuffaceous mudstone and clay slopes 5300-6500 ft. | NP | NI | Outside of range |
| William's wafer parsnip (<i>Cymopterus williamsii</i>) | Open ridgetops and upper slopes with exposed limestone outcrops or rockslides, 6000-8300 ft. | NP | NI | Habitat not present |
| <p>Presence K - Known, documented observation within project area. S - Habitat suitable and species suspected, to occur within the project area. NS - Habitat suitable but species is not suspected to occur within the project area. NP - Habitat not present and species unlikely to occur within the project area.</p> <p>Project Effects NI - No Impact. MIIH - May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal listing or a loss of viability to the population or species. WIPV - Will Impact Individuals or Habitat with a consequence that the action may contribute to a trend towards Federal listing or cause a loss of viability to the population or species. BI - Beneficial Impact</p> | | | | |

Table 4. Summary of Threatened and Endangered Species Habitat and Project Effects

| Common Name (scientific name) | Habitat | Presence | Project Effects | Rationale |
|---|---|----------|-----------------|--|
| Endangered | | | | |
| Black-footed ferret (<i>Mustela nigripes</i>) | Black-tailed prairie dog colonies or complexes > 1,000 acres. | NP | NE | Habitat not present. No prairie dog colonies of sufficient size. |

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| Threatened | | | | |
|---|---|----|-----|---|
| Blowout penstemon (<i>Penstemon haydenii</i>) | Unstable, sandy blow-outs and active sand dunes | NP | NE | Habitat not present |
| Ute ladies'-tresses orchid (<i>Spiranthes diluvialis</i>) | Riparian areas with permanent water | NP | NE | Habitat not present |
| Candidates for listing | | | | |
| Greater sage-grouse (<i>Centrocercus urophasianus</i>) | Basin-prairie shrub, mountain-foothill shrub (SS Policy). Also includes wet-moist meadows, and alfalfa and irrigated meadows when adjacent to sagebrush (WGFD CWCS). | S | MIH | Four leks are within six miles of BLM land. BLM land provides suitable nesting and wintering habitat. Incubating female, eggs, and/or chicks may occasionally be trampled. Ongoing livestock operations are not likely to change current use of this area by nesting sage-grouse. |
| Proposed for listing | | | | |
| Mountain plover (<i>Charadrius montanus</i>) | Short-grass prairie with slopes < 5% (SS Policy). Low, open habitats such as arid shortgrass and mixed-grass prairies dominated by blue grama and buffalo grass with scattered clumps of cacti and forbs, and saltbush habitats of the shrub-steppe. Prefers to nest in large, flat grassland expanses with sparse, short vegetation (<=4") and bare ground. Adapted to areas that have been disturbed by prairie dogs, heavy grazing, or fire (WGFD CWCS). | S | NLJ | Suitable plover habitat is present. Birds may prefer grazed areas. |
| <p>Presence</p> <p>K - Known, documented observation within project area. S - Habitat suitable and species suspected, to occur within the project area. NS - Habitat suitable but species is not suspected to occur within the project area. NP - Habitat not present and species unlikely to occur within the project area.</p> <p>Project Effects</p> <p>LAA - Likely to adversely affect NE - No Effect NLAA - May Affect, not likely to adversely affect individuals or habitat. NLJ - Not likely to jeopardize continued existence</p> | | | | |

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3.5.1 Candidate Species

Greater sage-grouse are being discussed in detail in this environmental assessment because they have been classified as a Candidate Species, currently warranted for listing under the Endangered Species Act (USFWS 2010) and are thus of heightened management concern in the Buffalo Field Office. Sage-grouse are also a Wyoming BLM sensitive species, and are listed as a Wyoming Game & Fish Department Species of Greatest Conservation Need.

Greater sage-grouse habitat is present on BLM lands in the Cross H Creek and Robinson Draw allotments. Habitat models (Doherty et al. 2007, Doherty 2008) indicate that BLM lands within the allotments contain both high quality winter and nesting habitat. There are no known leks within the allotment, but the Weller, Barton North, Kendrick, and Larey Draw leks are located within six miles of the allotment boundaries. A 120 acre parcel of private land in the northern part of the Robinson Draw allotment lies within a BLM Sage-grouse focus area.

4.0 ENVIRONMENTAL EFFECTS

This section describes the environmental consequences of the no action alternative (Alternative A), and those of the proposed action, Alternative B. The effects analysis addresses the direct and indirect effects of implementing the proposed action, the cumulative effects of the proposed action combined with reasonably foreseeable Federal actions, identifies mitigation measures, and discloses any residual effects.

4.1 Direct and Indirect Effects

4.1.1 Cultural Resources

Alternative A—No Grazing

The absence of grazing will not result in impacts to cultural resources.

Alternative B—Preference Transfer & Lease Issuance

Any activity that removes vegetation or leads to soil erosion can cause impacts to cultural resources. Livestock concentration areas (such as those that form near water sources, supplemental feeding areas, fence corners, etc.) and livestock trail formation may result in impacts to cultural resources. According to the State Protocol Agreement between the Wyoming BLM and the Wyoming SHPO, grazing lease renewals that do not include seasonal grazing changes or changes in livestock types are exempt from case-by-case review. As per Appendix B item #27 and following section IV(A)(3) of the Wyoming State Protocol, on 11/17/10 the Bureau electronically notified the Wyoming State Historic Preservation Office (SHPO) of this grazing lease renewal.

4.1.2 Livestock Grazing

Alternative A—No Grazing

The Federal Land Policy and Management Act of 1976 (FLPMA) requires the BLM to manage public lands and resources according to the principals of multiple use and sustained yield, including recognizing the Nation's need for domestic sources of minerals, food, timber, and fiber. In addition, FLPMA also requires the BLM to give two years' prior notification whenever a permit or lease for grazing domestic livestock is cancelled in whole or in part, in order to

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devote the lands covered by the permit or lease to another public purpose; including disposal, except in an emergency.

The Buffalo RMP states as a resource management decision that *livestock grazing is allowed on all public lands in the resource area except on about 6,000 acres where it has been determined to be incompatible with other resource uses or values.*

There are no fences or natural barriers separating BLM and non-BLM lands. It would not be practical or cost effective to fence out the public lands at this time. Should extraordinary circumstances arise, such as the identification of an endangered plant or damageable cultural resource on the site, fencing may be a greater priority, and would be addressed in a separate EA. If the public lands are not leased, and subsequently not fenced, any livestock use occurring on them would be unauthorized. This alternative would affect how the adjacent private and state lands are grazed since the operator would have to keep livestock off of public lands either through herding or fencing, or be in violation of federal grazing regulations. Herding would be difficult, due to the mixed ownership pattern and still would not assure public lands would not be grazed. A rider would have to be kept with livestock at all times. Because it would not be economically feasible for the BLM to fence all federal land parcels, fences would most likely be constructed on private land, fragmenting the area and making BLM unable to stipulate wire spacing to facilitate wildlife movement. Most four-strand fences on private land have a top wire of 46-48 inches with 10-12 inch wire spacing and all wires are barbed. In the absence of fences, the BLM would have to constantly supervise the public lands to assure they are not being grazed.

No adverse resource impacts resulting from livestock grazing have been identified which would warrant cancellation of all grazing on these allotments. Denying the renewal of this grazing lease would not be in compliance with FLPMA or in conformance with the Buffalo RMP and would require an RMP amendment to remove the grazing preference from the RMP grazing base. The Buffalo RMP allows for adjustment of forage allocation based on an evaluation of monitoring, field observations, or other data as needed. Additionally, changes in grazing practices can be effective in mitigating impacts without a corresponding reduction in forage allocation.

Alternative B—Preference Transfer & Lease Issuance

Rangeland vegetation inventory (MRB, 1957) data indicates an adequate amount of forage is available to support the proposed number of livestock and for wildlife use and the effects of that use within these allotments. The new grazing lease would authorize the same numbers and kind of livestock, and season of use as the existing lease. No changes to grazing management are proposed with this lease transfer and renewal. Therefore the issuance and transfer of the proposed grazing lease is not expected to have any effects on range management.

4.1.3 Invasive Species/Noxious Weeds

Alternative A—No Grazing

The removal of livestock grazing on the public land could promote growth and potential overgrowth of perennial grasses and forbs thus crowding out or reducing the potential for invasion of noxious and/or invasive species. Overgrowth of vegetation would provide for an

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increase in fine fuels, which, in the case of wildfire, could then allow noxious and invasive species to move to the public lands.

Alternative B—Preference Transfer & Lease Issuance

Grazing use as prescribed in the Proposed Action along with ongoing cooperative weed control efforts would benefit the health of the native plant community. A healthy native plant community often provides competition against the establishment and/or spread of noxious weeds. The issuance of the grazing lease would not result in any additional impacts in relation to the spread of noxious weeds.

4.1.4 Wildlife

Alternative A—No Grazing

Removing grazing from the allotments would have “no effect” on black-footed ferret, blowout penstemon, and Ute ladies’-tresses orchid, because there is no suitable habitat for these species. Cancelling grazing may have a negative impact on mountain plover, burrowing owls, and black-tailed prairie dogs by reducing the number of grazed areas, which provide preferred habitat for these species.

Alternative B—Preference Transfer & Lease Issuance

(See tables in Section 3.5)

The proposed action will have “no effect” on black-footed ferret, blowout penstemon, and Ute ladies’-tresses orchid, as suitable habitat for these species is not present in the allotments. The proposed action is “not likely to jeopardize”—and may benefit—mountain plover, because the birds prefer areas with little vegetative cover.

4.1.4.1 Candidate Species

Alternative A—No Grazing

Under the no grazing alternative, no benefits to sage-grouse habitat as a result of grazing management would occur. Exclusion of livestock does not necessarily cause an area to return to the ecological condition it was in prior to introduction of livestock grazing. Some habitats reach a threshold where livestock exclusion does not have an effect on the current trend (Wambolt and Payne 1986, Sanders and Voth 1983). Other research suggests that in Wyoming big sagebrush habitats, rest from livestock grazing may improve understory production while decreasing sagebrush cover (Wambolt and Payne 1986). On Wyoming big sagebrush sites with dense sagebrush and annual grass understory, eliminating livestock grazing can increase fire risk which results in habitat degradation (Peters and Bunting 1994, West 1999).

Alternative B—Preference Transfer & Lease Issuance

The proposed action “will impact” greater sage-grouse. Livestock grazing can benefit or degrade sage-grouse habitat on the allotments, depending on the timing, stocking rate, and habitat affected. Fall grazing may favor upland forb production, and spring grazing may be used to remove herbaceous cover and make forbs more accessible (Smith et al. 1979, Fulgham et al. 1982). Spring and early summer grazing may help to control invasive weeds and remove woody plants (Mosley 1996, Olson and Wallander 2001, Meritt et al. 2001, Riggs and Urness 1989), thereby decreasing risk of wildfire that could remove large areas of habitat.

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Excessive or poorly managed grazing causes degradation of sagebrush ecosystems, and, therefore, sage-grouse habitat (BLM 2002). Inappropriate grazing management in uplands can result in a reduction in perennial grasses and forbs while favoring annual grasses and increasing sagebrush cover (Branson 1985, Tisdale 1994, Beck and Mitchell 2000, Bork et al. 1998). This may impact sage-grouse, because they rely upon perennial grasses for escape cover and residual herbaceous cover for screening cover in nesting habitat, while forbs are positively associated with survival and recruitment of sage-grouse chicks. Inappropriate grazing in meadows and riparian areas may also cause a decline in the condition of these areas that are critical for sage-grouse in late summer. Livestock may occasionally trample sage-grouse nests or cause sage-grouse to abandon their nests (Call 1979, Patterson 1952).

Livestock grazing has occurred historically on these allotments, and no additional impacts, other than those that have already taken place as a result of long-term use, are expected to occur as a result of implementation of the proposed action.

4.2 Cumulative Effects

Cumulative effects are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions. Identified actions include noxious weed control and sage-grouse protection. If negative impacts are identified during implementation of the grazing lease, which result in rangeland health standards not being met, they are required to be addressed before the start of the next grazing season under 43 CFR 4180.

The Cross H Creek and Robinson Draw Allotments will continue to be managed to achieve the Wyoming Standards for Rangeland Health. All elements of the environment would benefit from rangelands in good health. No projects are proposed in connection to this lease transfer, and the terms and conditions of the lease will remain the same. Therefore cumulative impacts from the proposed action should be minor, if there are any.

4.2.1 Noxious Weeds

Noxious weeds/invasive non-native plants are present within the assessment area to varying degrees. Livestock grazing may benefit certain weeds by reducing competition with grasses but may also help control other species through defoliation. Currently the BFO is addressing the situation by mapping weed locations and treating them with herbicides or bio-controls, in conjunction with the local Weed and Pest organizations.

4.2.2 Sage-grouse

The sage-grouse population within northeast Wyoming is exhibiting a steady long term downward trend (Figure 1) (WGFD 2008a, USFWS 2010). The figure below illustrates a ten-year cycle of periodic highs and lows. Each subsequent population peak is lower than the previous peak. Long-term harvest trends are similar to that of lek attendance (WGFD 2008b). Declines can be primarily attributed to habitat fragmentation (USFWS 2010). Three of the four leks within six miles of the allotments (Weller, Barton North, and Larey Draw) show a similar downward trend.

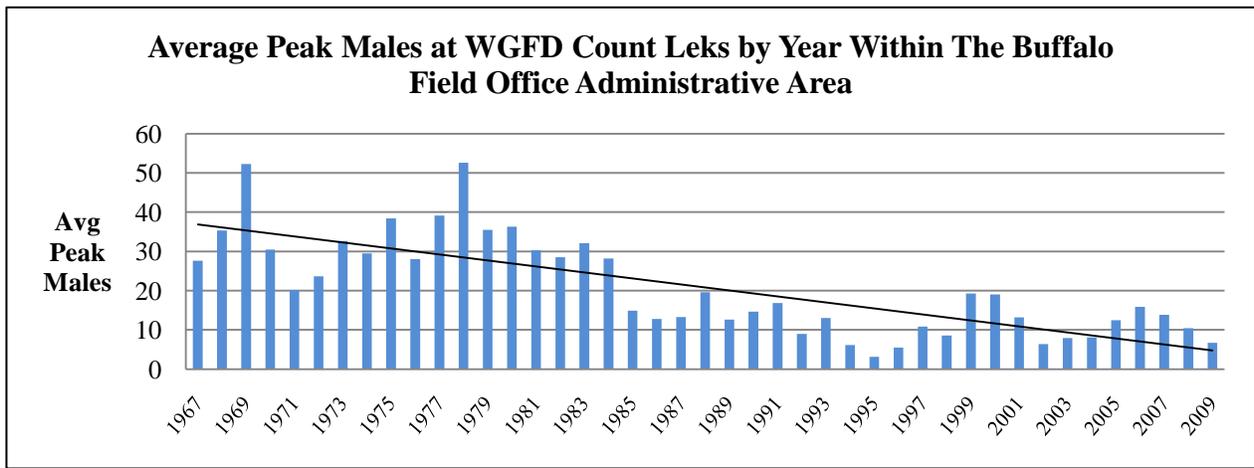


Figure 1. Average peak number of male sage-grouse per active lek and trend line within the BFO 1967-2009

4.3 Mitigation Measures Considered

The terms and conditions included as part of the term grazing lease would mitigate anticipated impacts. No additional mitigation measures are proposed.

4.4 Residual Effects

No residual impacts are associated with the proposed action.

5.0 Tribes, Individuals, Organizations or Agencies Consulted

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6.1 List of Reviewers, BLM Buffalo Field Office

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| Kay Medders | Rangeland Management Specialist | Range, Vegetation, Soils |
| Jennifer Morton | Wildlife Biologist | Wildlife, Migratory Birds |
| G.L. "Buck" Damone III | Archaeologist | Cultural Resources |
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| Chris Durham | Assistant Field Manager, Resources | Resources |

7.0 References

Baker, W. L. 2006. Fire and restoration of sagebrush ecosystems. *Wildlife Society Bulletin* 34:177-185.

Beck, J.L. and D.L. Mitchell. 2000. Influences of livestock grazing on sage grouse habitat. *Wildl. Soc. Bull.* 28:993-1002.

DRAFT

- Bork, E.W., N.E. West, and J.W. Walker. 1998. Cover components on long-term seasonal sheep grazing treatments in three-tip sagebrush steppe. *J. Range Manage.* 51:293-300.
- Branson, F. A. 1985. Vegetation changes on western ranges. The Society for Range Management (Range Monograph Number 2). Denver, CO.
- Bureau of Land Management. 2002. Instruction Memorandum No. WY-2001-147, Change 1: Framework Assessment of Sage-grouse Habitat on Public Lands in Wyoming. Bureau of Land Management, Wyoming State Office, Cheyenne, WY.
- Call, M.W. 1979. Habitat requirements and management recommendations for sage grouse. USDI-BLM Denver Serv. Center Tech. Note 330.
- Cassity, M. 2007. Stock raising, ranching, and homesteading in the Powder River Basin historic context study. Prepared for the USDI Bureau of Land Management by Historical Research and Photography. Broken Arrow, OK.
- Doherty, K.E. 2008. Population density model provided to BFO BLM as GIS data. Personal Communication.
- Fulgham, K.O., M.A. Smith, and J.C. Malechek. 1982. A compatible grazing relationship can exist between domestic sheep and mule deer, p. 458–478. *In*: J.M. Peek and P.D. Dalke (eds.) Proc. of the Wildlife-Livestock Relationships Symp. Idaho For., Wildl. and Range Exp. Sta., Univ. Idaho, Moscow, ID.
- Harniss, R.O., and H.A. Wright. 1982. Summer grazing of sagebrush-grass range by sheep. *J. of Range Management* 35:13-17.
- Leopold, L. B., and J. P. Miller. 1954. A postglacial chronology for some alluvial valleys in Wyoming. USDI Geological Survey. Geological Survey Water Supply Paper 1261.
- Mack, R.N. and J.N. Thompson. 1982. Evolution in steppe with few large, hooved mammals. *American Naturalist* 119: 757-773.
- Merritt, S., C. Prosser, K. Sedivec, and D. Bangsund. 2001. Multi-species grazing and leafy spurge. U.S.D.A.-ARS Team Leafy Spurge, Sidney, MT.
- Missouri River Basin Investigations (MRB). 1957. Land Planning and Classification Project.
- Mosley, J. C. 1996. Prescribed sheep grazing to suppress cheatgrass: A review. *Sheep and Goat Res. J.* 12:74-81.
- Olson, B.E. and R.T. Wallander. 2001. Sheep grazing spotted knapweed and Idaho fescue. *J. Range Manage.* 54:25–30.
- Patterson, R.L. 1952. The sage grouse in Wyoming. Sage Books, Inc., Denver, CO.

DRAFT

Peters, E.F. and S.C. Bunting. 1994. Fire conditions pre- and post- occurrence of annual grasses on the Snake River Plain, p. 31–36. *In: Proceedings-Ecology and Management of Annual Rangelands*. Gen. Tech. Rep. INT-GTR 313. USDA Forest Service, Intermountain Research Station, Ogden, UT.

Riggs, R.A. and P.J. Urness. 1989. Effects of goat browsing on Gambel oak communities in northern Utah. *J. Range Manage* 42:354–360.

Sanders, K.D. and A.S. Voth. 1983. Ecological changes of grazed and ungrazed plant communities, p. 176–179. *In: S.B. Monsen and N. Shaw (eds.) Managing Intermountain Rangelands - Improvement of Range and Wildlife Habitats*. U.S.D.A. For. Serv., Gen. Tech. Rept. INT-157.

Smith, M.A., J.C. Malechek and K.O. Fulgham. 1979. Forage selection by mule deer on winter range grazed by sheep in spring. *J. Range Manage*. 32:40–45.

State wildlife agencies' ad hoc committee for sage-grouse and oil and gas development. 2008. Using the best available science to coordinate conservation actions that benefit greater sage-grouse across states affected by oil and gas development in Management Zones I-II (Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming). Unpublished report. Colorado Division of Wildlife, Denver; Montana Fish, Wildlife and Parks, Helena; North Dakota Game and Fish Department, Bismarck; Utah Division of Wildlife Resources, Salt Lake City; Wyoming Game and Fish Department, Cheyenne.

Tisdale, E. W. 1994. Great Basin region: sagebrush types. T.N. Shiflet ed. *Rangeland Cover Types*. Society for Range Management. Denver, CO. 40-46.

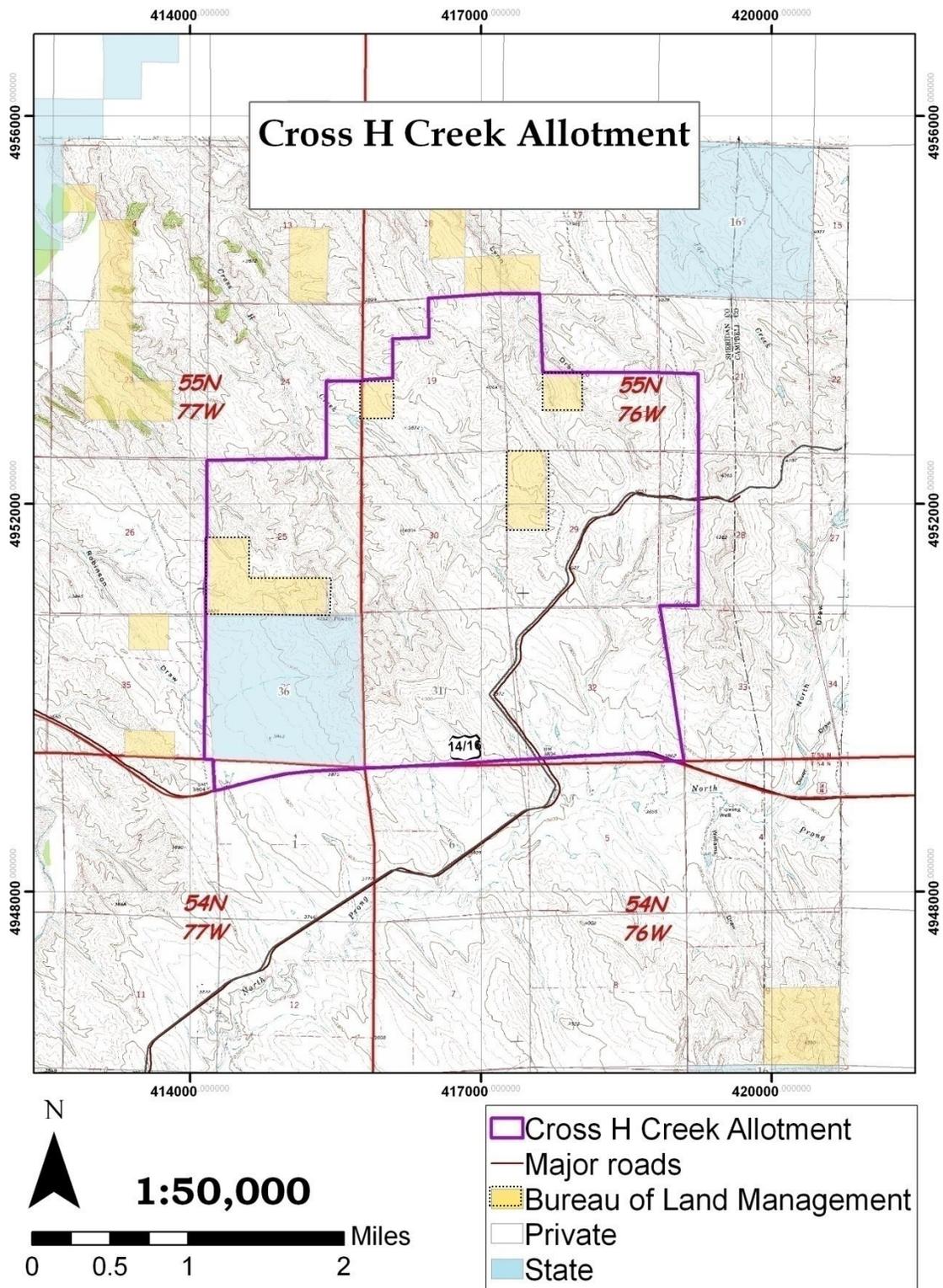
U.S. Fish and Wildlife Service (USFWS). 2010. 12-Month Findings for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered. Denver, CO.

Wambolt, C.L. and G.F. Payne. 1986. An 18-year comparison of control methods for Wyoming big sagebrush in southwestern Montana. *J. Range Manage*. 39:314–319.

West, N.E. 1999. Managing for biodiversity of rangelands, p. 101–126. *In: W.W. Collins and C.O. Qualset (eds.) Biodiversity in Agrosystems*. CRC Press, Boca Raton, FL.

Wyoming Game and Fish Department (WGFD). 2008. Sheridan Region Wyoming Game and Fish Department: Annual Sage-Grouse Completion Report for 2008. Wyoming Game and Fish Department. Gillette, WY.

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