
RECORD OF DECISION AND APPROVED CASPER
RESOURCE MANAGEMENT PLAN

APPENDIX Z

Biological Opinion for the Casper Resource Management
Plan



United States Department of the Interior

FISH AND WILDLIFE SERVICE

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In Reply Refer To:
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Memorandum

To: James K. Murkin, Field Manager, Bureau of Land Management, Casper Field Office, Casper, Wyoming

From: Brian T. Kelly, Field Supervisor, U.S. Fish and Wildlife Service, Wyoming Field Office, Cheyenne

Subject: Biological Opinion for the Casper Resource Management Plan

This correspondence transmits the U.S. Fish and Wildlife Service (Service) programmatic Biological Opinion (BO) in response to the U.S. Bureau of Land Management's (BLM or Bureau) request for consultation for the impacts from the 'Bureau's Casper Resource Management Plan (RMP) and committed conservation measures' (Proposed Action) to federally listed species in Wyoming in accordance with section 7 of the Endangered Species Act (ESA or Act) of 1973, as amended (50 CFR §402.14). Your June 13, 2007, request for formal consultation was received June 14. On July 5, 2007, the Service notified the Bureau that all information necessary to begin consultation had been received or was otherwise accessible

This correspondence addresses potential effects to the black-footed ferret (*Mustela nigripes*), Preble's meadow jumping mouse (*Zapus hudsonius preblei*) and its designated critical habitat, Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*) and its designated critical habitat, blowout penstemon (*Penstemon haydenii*), Ute ladies'-tresses orchid (*Spiranthes diluvialis*), and Platte River downstream listed species and their designated critical habitats from all planned programs of the Casper RMP as well as the Bureau's commitment to the Conservation Measures listed in the Casper RMP BA and commitments in relevant Programmatic Statewide Species BAs. It is expected that those conservation measures presented in the Biological Assessment (BA) (BLM 2007a) but not yet included in the Casper RMP will be incorporated into the RMP by either maintenance action or RMP amendment following the completion of this consultation. The Bureau's June 13, 2007 BA also addressed potential effects to the bald eagle from implementation of the Casper RMP. However on August 8, 2007, the Service removed the bald eagle (*Haliaeetus leucocephalus*) from the list of threatened and endangered species. The Service appreciates the Bureau's commitment to continued protection of the bald eagle (BLM 2007b) as well as its commitment to monitor the status of the bald eagle on Bureau-administered lands. Effects to the bald eagle will not be addressed further in the body of this correspondence.

Management, (4) Fish and Wildlife Resources, (5) Forests, Woodlands, and Forest Products, (6) Health and Safety, (7) Invasive Nonnative Plant Species and Pest control, (8) Lands and Realty, (9) Livestock Grazing, (10) Minerals, (11) Off-highway Vehicles, (12) Paleontology, (13) Recreation, (14) Socioeconomic Resources, (15) Soil, (16) Special Designations, (17) Special Status Species, (18) Transportation, (19) Vegetative Resources, (20) Visual Resources, and (21) Water Resources.

This correspondence includes an informal consultation/conference for “no effect” (NE) and “not likely to adversely affect” (NLAA) determinations for effects to listed species and designated critical habitats and “not likely to jeopardize” (NJ) determinations for an experimental non-essential population of the black-footed ferret, and a programmatic BO for potential adverse effects from Bureau-authorized activities (Appendices I, II, III, and IV) within the Casper Resource Area. The Bureau-administered programs with potentially likely adverse effects include the Fire and Fuels; Lands & Realty Management; Livestock Management; Minerals Management; Water Quality, Watershed and Soils Management; and Wildlife Management Programs. These consultations are based on our review of your BA (BLM 2007a). A complete decision record of all documents and correspondence concerning this consultation are on file in the Wyoming Ecological Services Field Office.

Consultation/Conference History

The Service and the Bureau began informal consultation/conference on impacts of Bureau activities to the black-footed ferret, Preble's meadow jumping mouse, Colorado butterfly plant, Ute ladies'-tresses, blowout penstemon, Platte River downstream listed species in the Casper Resource Area on October 23, 2001. Subsequently, the Service designated critical habitat for the Preble's meadow jumping mouse and the Colorado butterfly plant. The Bureau then initiated consultation on potential effects to those designated critical habitats.

From October 2001 through May 2007, Service personnel met informally with Bureau personnel to discuss potential effects to listed species from activities potentially authorized in the Casper RMP. The Service reviewed two drafts of the Casper RMP BA. The Service received all information necessary to begin formal consultation on this proposed action on June 14, 2007. The Service provided the Bureau with a draft BO on October 26, 2007. On October 31, 2007, the Bureau notified the Service that (1) the delisting of the bald eagle should be more appropriately reflected in the Bureau's committed conservations in Appendices I, II, and III, (2) a conservation measure from Appendix I for the Ute ladies'-tresses orchid and Colorado butterfly plant should be modified to eliminate redundancy, (3) a conservation measure from Appendix I should be added to reflect the Bureau's commitment to place a no surface occupancy (NSO) stipulation on designated critical habitat for listed species, and (4) other minor edits should be made. After receiving the Bureau's concurrence that the changes requested of the draft BO were adequately addressed, the Service then began to finalize this consultation.

Informal Consultation/Conference

In the Casper RMP BA, the Bureau made “not likely to adversely affect (NLAA)”, “no effect (NE)”, and “is not likely to jeopardize” (NJ) determinations for the effect of certain programs on listed species in the Casper Resource Area in Wyoming. These are displayed in Table 1. When the Bureau makes a “no effect” determination, concurrence from the Service is not required, although we do appreciate receiving the information used to make the determination.

Table 1. Listed Species “not likely to adversely affect (NLAA)”, “no effect (NE)”, and “is not likely to jeopardize (NJ)” determinations made by the Bureau.

Species/Critical Habitat Program	Black-footed Ferret Non-reintroduction areas	Black-footed Ferret Shirley Basin Population	Blowout Penstemon	Colorado Butterfly Plant	Colorado Butterfly Plant Critical Habitat	Preble's Meadow Jumping Mouse	Preble's Meadow Jumping Mouse Critical Habitat	Ute ladies'-tresses
Air Quality	NE	NJ	NE	NE	NE	NE	NE	NE
Cultural Resources	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Fire Management and Ecology – Unplanned/Wildland Fire	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Fire Management and Ecology – Planned/Prescribed Fire	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Fish and Wildlife Resources	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Forests, Woodlands, and Forest Products	NE	NJ	NE	NE	NE	NLAA	NE	NE
Health and Safety	NE	NJ	NE	NE	NE	NE	NE	NE
Invasive, Nonnative Plant Species and Pest Control	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Lands and Realty	NLAA	NJ	NE	NLAA	NE	NLAA	NE	NLAA
Livestock Grazing	NLAA	NJ	NLAA	-----	NLAA	NLAA	NLAA	-----
Locatable Minerals	NLAA	NJ	NE	NLAA	NE	NLAA	NE	NLAA
Leasable – Coal	NLAA	NJ	NE	NE	NE	NE	NE	-----
Leasable – Geothermal	NE	NJ	NE	NE	NE	NE	NE	NE
Leasable – Oil and Gas	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	-----
Leasable – Other Solid Leasables	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Salable	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Off-highway vehicle use	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Paleontological Resources	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Recreation	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Socioeconomic Resources	NE	NJ	NE	NE	NE	NE	NE	NE
Soil	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Special Designations	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
National Backcountry Byways	NE	NJ	NE	NE	NE	NE	NE	NE
National Historic Trails and Other Historic Trails	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Special Status Species – Plants	NE	NJ	NLAA	NLAA	NE	NE	NE	NLAA
Special Status Species – Fish and Wildlife	NLAA	NJ	NE	NE	NE	NLAA	NE	NE
Transportation	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Vegetative Resources	NLAA	NJ	NE	NLAA	NE	NLAA	NE	NLAA
Visual Resource Management	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA
Water Resources	NLAA	NJ	NLAA	NLAA	NE	NLAA	NE	NLAA

Black-footed ferret. The BA addressed activities that have no effect, are not likely to adversely affect, and are not likely to jeopardize the black-footed ferret. The Bureau has based its determinations, in part, on the Service's February 2, 2004, letter which informed the Bureau that all black-tailed prairie dog towns and many of the white-tailed prairie dog towns in Wyoming are not likely to be inhabited by black-footed ferrets (USFWS 2004a, 2004b). Additionally, the Casper Bureau is committed to maintaining the integrity of prairie dog complexes in habitat suitable for black-footed ferret reintroduction (if such habitat is identified in the Casper Resource Area). Furthermore, the Bureau has committed to other conservation measures designed to protect black-footed ferrets and their habitat (Appendix I). Based on this information, the

Service concurs with your determinations that certain activities described in the Proposed Action are not likely to adversely affect non-reintroduced black-footed ferrets. In addition, the Service also concurs with your determination that activities authorized under the Casper RMP that may affect the experimental non-essential population of black-footed ferrets in the Shirley Basin of Wyoming will not jeopardize the continued existence of the species. The Service's concurrence is based on the fact that, by definition, any effects to an experimental non-essential population of any species will not jeopardize the continued existence of the species. Additionally, the Bureau has committed to conservation measures and adopted best management practices that will aid in the recovery of this species. This species will not be discussed further in this correspondence.

Preble's meadow jumping mouse and its designated critical habitat. The BA addressed activities (Table 1) that will have no effect or are not likely to adversely affect the Preble's meadow jumping mouse and its critical habitat. The Service concurs with your determinations that activities described in the Proposed Action will not likely adversely affect the Preble's meadow jumping mouse and its designated critical habitat. The Service's concurrence with activities that are not likely to adversely affect the Preble's meadow jumping mouse is based on (1) the limited Preble's meadow jumping mouse habitat managed by the Bureau, and (2) the commitment by the Bureau to implement conservation measures adequate to ensure that if disruptive activities did occur in Preble's meadow jumping mouse habitat, the effects from Bureau activities, with the exception of those activities mentioned above, would be sufficiently minimized by protective buffers, timing restrictions, etc. (Appendix I).

Colorado butterfly plant and its designated critical habitat, Ute ladies'-tresses orchid, and blowout penstemon. The BA addressed activities that are not likely to adversely affect the Colorado butterfly plant and its designated critical habitat, Ute ladies'-tresses orchid, and blowout penstemon. The Service concurs with your determinations that activities described in the Proposed Action with the exception of certain livestock grazing activities will not likely adversely affect these plants and the designated critical habitat of the Colorado butterfly plant. The livestock grazing program may adversely affect the Colorado butterfly plant and its designated critical habitat, the Ute ladies'-tresses orchid, and the blowout penstemon and as such is the subject of the following programmatic BO. The Service's concurrence for activities not likely to adversely affect these species is based on the (1) limited habitat (Ute ladies' -tresses) or no known occupied habitat (blowout penstemon and Colorado butterfly plant) managed by the Bureau's office in Casper, and (2) the commitment by the Bureau to implement conservation measures adequate to ensure that if adverse activities with the exception of certain activities of the livestock grazing program or minerals program did occur in the habitat of these listed plants, the effects from Bureau activities would be sufficiently minimized by protective buffers, timing restrictions, etc. (Appendix I).

Platte River downstream listed species. The Bureau has determined that activities described in the Proposed Action, with the exception of certain (1) fire and fuels management actions, (2) lands and realty management actions, (3) livestock management, (4) minerals management actions, (5) water quality, watershed and soils management actions, and (6) wildlife and fish management actions will have no effect on the downstream listed species of the Platte River systems because water depletions are not expected to occur in conjunction with those authorized activities. When the Bureau makes a "no effect" determination, concurrence from the Service is not required, although we do appreciate receiving the information used to make the determination. The six programs identified above may adversely affect Platte River downstream listed species and as such are discussed in the following programmatic BO.

PROGRAMMATIC BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action examined is the management of U.S. Bureau of Land Management (Bureau) lands according to the revised Casper Resource Management Plan (RMP) as well as the Bureau's commitment to conservation measures (Appendix I) listed in the Biological Assessment (BA) for this RMP (BLM 2007a). The objective of the Casper RMP is to provide specific management direction to prevent or address potential conflicts among oil and gas development, recreational activities, livestock management, important wildlife habitat, and other important land and resource uses in the Casper Resource Area, as well as to determine the appropriate levels and timing of these activities. Decisions made as a result of the ROD for the Casper RMP will result in amending the existing Platte River RMP (BLM 1985).

RMPs are used by the Bureau to guide and control future actions and set standards upon which future decisions on site-specific activities are based. RMPs only establish general management policy on a broad scale. RMPs are not used to make decisions that commit resources on a small scale. RMPs also identify desired outcomes, also known as "desired future conditions". These outcomes are expressed in RMPs as goals, standards, objectives, and allowable uses and actions needed to achieve desired outcomes, often referred to as RMP decisions or resource allocations. It is these decisions or resource allocations that the effects determinations in this BO are based.

The Casper RMP incorporates current laws and regulations and public land resource management initiatives to guide long-range land management decisions for public lands and resources in Goshen, Platte, Niobrara, and Converse in eastern Wyoming and includes approximately 8.5-million acres of land. The Bureau administers about 1.4 million acres of public land surface and 4.7 million acres of mineral estate within the planning area. The Casper RMP does not include land management decisions where land surfaces and minerals are both privately owned, or owned by the State of Wyoming, or local governments, or those lands that are managed by other federal agencies.

This formal consultation only addresses adverse effects to listed species which are likely-to-occur as a result of the Casper RMP (1) Fish and Wildlife Resources, (2) Livestock Grazing, (3) Mineral Resources – Leasable Coal, (4) Mineral Resources – Leasable Oil and Gas, (5) Water Resources programs. Informal consultation on other actions identified in the RMP were covered previously in this document.

The activities of the Casper RMP that may affect, and are likely to adversely affect the Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*), the Ute ladies'-tresses orchid (*Spiranthes diluvialis*), and the Platte River downstream listed species and their designated critical habitats are presented in Table 2 and discussed in detail below (BLM 2007a). Conservation measures were included in the Casper BA (BLM 2007a) to address potential adverse effects. The Bureau has committed to implementing the conservation measures listed in that conservation strategy as part of their proposed action (RMP) (Appendix I). Therefore, the Service has evaluated the implementation of these conservation measures as part of the proposed action.

Table 2. Listed species "likely to adversely affect" determinations made by the Bureau.

Species/Critical Habitat Program	Platte River Downstream Species and Critical Habitat	Colorado Butterfly Plant	Ute ladies'-tresses
Fish and Wildlife Resources	LAA	-----	-----
Livestock Grazing	LAA	LAA	LAA
Leasable – Coal	-----	-----	LAA
Leasable – Oil and Gas	LAA	-----	LAA
Water Resources	LAA	-----	-----

Fish and Wildlife Resources. Through wildlife and fisheries habitat management, the Bureau seeks to maintain and enhance habitats for a diversity of fish and wildlife species and provide habitats for threatened, endangered, candidate, proposed, and special status species in compliance with the Act, approved species recovery plans, and BLM Manual 6840. The Bureau’s wildlife habitat management program supports population objective levels in the Wyoming Game and Fish Department (WGFD) strategic plan. Wildlife program actions may include inventory and monitoring, habitat improvement projects, developing habitat management plans (HMPs), developing stipulations and protective measures, and acquiring land and easements. Generally, the goal of the HMPs is habitat protection and improvement for all wildlife and fisheries, but some focus on particular wildlife groups, such as waterfowl and upland game.

The Bureau develops stipulations and protective measures for fish and wildlife resources, including the authorization of withdrawals of some areas from mineral entry; limiting access of OHV use, snowmobiles, horseback riders, and pedestrians; prohibiting surface development; and implementing road closures. Habitat improvement projects include, but are not limited to, developing water sources; constructing and maintaining fences; managing other resource programs to conserve forage and protect habitats; improving forage production and quality of rangelands; and treating vegetation (e.g., prescribed fires; mechanical, chemical, and biological treatments; and cutting, thinning, planting, seeding, and pitting). Other wildlife management actions include monitoring habitats; developing habitat islands; managing access; authorizing agricultural entry and disposal; using surface protection mitigations; modifying existing projects; constructing artificial nesting structures (ANSs); using heavy equipment and hand tools; documenting resource damage; allowing new prairie dog towns to become established; improving aquatic and riparian habitat; reestablishing willows; implementing stream improvement practices; developing cooperative agreements to facilitate species transplants; chemically controlling pests; exotic fish removal; construction of instream barriers to protect species from non-native invaders; installation of revetments and fish passage structures; installation of log overpours; macroinvertebrate sample analysis; cabling of junipers; gabion baskets; and placement of large boulders for instream fish habitats. The Bureau’s wildlife educational programs include the distribution of information to landowners, the public, and lessees, and developing public education programs.

Livestock Management. Approximately 1.4 million surface acres of public land is available for grazing within 514 grazing allotments on the planning area. Grazing allotments typically contain

a combination of federal, state, and private lands and range in size from approximately 12 acres to 116,538 acres, with the average allotment size being approximately 8,768 acres. The Bureau administers 462 grazing leases, allowing approximately 182,479 AUMs (Animal-Unit-Months) of livestock forage. Actual AUM use in the planning area is considered to correspond with authorized AUM use. A 1 percent decrease in the amount of AUMs authorized in the current plan is expected under the Proposed Plan. Currently, approximately 6,016 acres of Bureau-administered public land are not available for grazing and will remain so under the Proposed Plan.

Grazing systems used on public lands within the planning area fall into the following six categories: yearlong, season long, early season, late season, split season, and rotation (i.e., deferred rotation, rest rotation, and time-controlled grazing systems). Most grazing leases authorize yearlong use, which is a reflection of the intermingled land pattern that exists across the planning area, as well as the small percentage of public land found in the majority of allotments. Cattle are the predominant class of livestock grazed on the planning area, but sheep, horses, goats, and bison also are authorized.

A number of categories of actions make up the Bureau's livestock management program. These categories are livestock management actions, range management, fencing, water management, detrimental impacts management, and lease management.

Livestock management includes converting to new types of livestock and authorizing livestock grazing, and adjusting season of use, distribution, kind, class, and number of livestock. One method that livestock producers can use to change the distribution of livestock is to provide salt or mineral supplements in specified areas. Range management actions include using prescribed fire, vegetation manipulation projects, changing composition of existing vegetation, using noxious weed control, using mechanical or biological vegetative treatments to improve forage production, using heavy equipment, and herbicide treatment of sagebrush. Fencing actions include fence construction and repair, designing and implementing grazing systems, and building livestock exclosures for important riparian habitats. Water management actions include developing reservoirs, springs, pipelines, and wells, and providing access to these developments. Managing detrimental impacts include documenting, treating, and preventing resource damage. Potential detrimental impacts include the degradation of streambanks, the introduction and spread of INPS, increasing soil erosion, and a reduction in cottonwood tree recruitment. Lease management actions include conducting monitoring studies, performing project work to enhance and improve riparian zones, designating stock trails, managing leases, developing management plans and agreements, and canceling or changing livestock driveways.

Minerals. The Bureau's mineral development program is divided into three categories: locatable, leasable, and salable. Leasable minerals are further divided into coal, geothermal, oil and gas, and other solid leasable minerals.

Leasable Mineral Resources. *Coal.* Wyoming produces approximately one-third of all coal produced in the United States. The Powder River Basin, which extends into the planning area in northern Converse County, contains some of the largest low-sulfur coal deposits in the world. Two other coal fields, the Goshen Hole Coal Field of the Denver Basin and the Wind River Coal Field of the Wind River Basin, also extend into the planning area; however, neither of these is currently producing in the planning area. The Proposed Plan will consider coal leasing on all

Bureau-administered lands outside the coal development potential area, if coal development potential is shown to exist on these lands.

The leasable minerals resource program allows coal exploration on all federal mineral lands within the planning area. Exploration on federal mineral lands is subject to the requirements and conditions of the coal exploration license process, the result being a set of project-specific stipulations and conditions designed to limit impacts from exploration on other resources. Before the area can be considered for leasing, the amount of overburden, volume and quality of coal, and other information needed to plan a mine must be gathered. The Casper Solid Minerals Group manages all leasing and administrative activity related to federal coal reserves in the Wyoming portion of the Powder River Basin, including inspection and enforcement.

Coal in the Casper Resource Area generally is extracted using surface mining methods, although some coal may be mined underground. Surface mining involves the use of large equipment, such as draglines, shovels, and haul trucks. Small drill rigs are used for exploration to determine the location and thickness and to obtain cores (for determining quality). Extracting coal using surface mining methods often results in large areas of surface disturbance from road construction, removal of topsoil and overburden, and stock piling of these materials. Once an area is mined out, reclamation begins and includes recontouring as closely to the original landscape as possible, reconstruction of drainages, and reseeded and monitoring to ensure the habitats are useable.

Oil and Gas. The Mineral Leasing Act of 1920 provides that all public lands are open to oil and gas leasing unless a specific order has been issued to close an area. Oil and gas exploration and development is one of the major industries in the planning area. Under the Proposed Plan, 1,080,935 acres of federal oil and gas lease mineral estate are open to leasing consideration with standard constraints; 2,506,530 acres are open with moderate constraints; 843,139 acres are open with major constraints; and 226,568 acres are administratively unavailable for oil and gas leasing for the life of the plan.

Geophysical exploration is a tool of the oil and gas industry that bounces shock waves off subsurface rock layers to determine their thickness and geometry. Shock waves are produced by an energy source and instruments record the waves when they return to the surface. The energy typically comes from the detonation of explosives in a shallow drill hole or from a heavy weight either dropped or vibrated on the ground surface. Sensors pick up the resulting shock waves through a line of sensors, or geophones, connected to a recording truck. Seismic operations use existing roads when feasible, but also require off-road travel. Geophysical exploration (primarily three-dimensional) is expected to continue through the life of the plan.

The Bureau is responsible for authorizing and administering geophysical exploration operations on all public surface lands within the planning area, while the Wyoming Oil and Gas Conservation Commission (WOGCC) is responsible for authorizing all operations on state and private surface land. Once acreage in the planning area is nominated by the public to be included in an oil and gas lease sale, the acreage description is sent to the Casper Field Office via the parcel list to be reviewed and stipulated by the Casper Field Office for protection of wildlife and other sensitive resources. These stipulations become part of the lease.

After an oil and gas lease is acquired, and prior to development, an application-for-permit-to-drill (APD) must be filed with the WOGCC and the Casper Field Office if the well is located on

a federal oil and gas lease in the planning area. Within the planning area, Natrona County has the largest number of APDs filed—8,508 as of mid-February 2005, followed by Converse County with 4,357 applications filed, Goshen County with 249 filings, and Platte County with 97 applications filed since the WOGCC began keeping records (WOGCC 2005 as cited in BLM 2007a). Once the permit is approved, the company may proceed with drilling according to the conditions of the permit's approval. A total of 170 oil and gas fields have been found and named within the planning area. At the end of 2004, 119 of these fields were still producing.

Although the majority of the development is to the north of the planning area, coalbed natural gas (CBNG) has become one of the largest contributors to the total natural gas production in Wyoming and the coals of the Powder River Basin are the largest source of CBNG. Of the 336 billion cubic feet (Bcf) of natural gas produced in the Powder River Basin in 2004, 298 Bcf (almost 89%), was CBNG. Development of CBNG resources in the planning area is limited, with 6 wells completed on federal land and 33 completed on state or fee (private) acreage.

Ancillary development involves allowing the construction of roads, pads, and other facilities and allowing the construction of new aboveground power lines. Stipulations involve implementing leases with no surface occupancy (NSO) or controlled surface use (CSU) restrictions, timing limitation stipulation (TLS), or with other standard surface protection restrictions; negotiating mitigated impacts between lessees and the Authorized Officer; and deciding mitigation measures and limitations, as well as reclamation. Reclamation involves correcting any disturbance made by the oil and gas operation. Reclamation actions take place following the expiration of the lease. Reseeding, reshaping, or road destruction are all actions involved with oil and gas reclamation.

Surface-disturbing and other activities associated with the minerals program include, but are not limited to, the following actions: applying dust-control measures; restricting flaring of natural gas; controlling or limiting emissions; constructing and reclaiming well pads, access roads, and reserve pits; constructing reservoirs associated with water disposal; constructing compressor stations, product enhancements, and disposal facilities; building pipelines associated with leases or units; installing power lines associated with leases or units; building wind-power facilities and turbines associated with leases or units; and conducting geophysical exploration.

Water Resources. The Bureau's Watershed and Water Resources Program conducts data collection, resource monitoring, and analysis in support of other management actions, such as range management, forest management, and mineral extraction. Watershed management actions include evaluating proposed projects, applying soil management practices, applying seasonal closures, monitoring public drinking water, and completing groundwater studies. Some of these field actions involve the use of heavy machinery and hand tools. Field actions can involve developing riparian exclosures and constructing stream crossings. Other actions can involve imposing restrictions on actions such as mineral exploration and development, pipelines, power lines, roads, recreational sites, fences, and wells.

Through water resource management the Bureau seeks to maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards, provides for the availability of water to facilitate authorized uses, and to minimize harmful consequences of erosion and surface runoff. Water resources are also to be protected or enhanced through site-specific mitigation guidelines.

During watershed management actions, the Bureau develops pollution prevention plans, ensures rights to water-related projects are filed, delineates no chemical use buffer zones, designs actions to promote reduction of channel erosion, and restores damaged wetlands or riparian areas. The Bureau also provides technical expertise on other actions such as livestock ponds, water quality monitoring actions, and provides impact analyses of oil and gas development or any surface disturbance projects.

Surface disturbing and other activities associated with the Watershed and Water Resources Program include, but are not limited to: (1) allowing for surface discharges of produced water; (2) restricting surface disturbance near water resources and sensitive soils; (3) closing areas, including roads, where accelerated erosion is occurring; (4) installing stream crossings for appropriate sediment and flow passage (e.g., culverts and bridges); (5) developing riparian/wetland exclosures; (6) channeling restoration using heavy equipment; and (7) cutting, planting, and seeding to restore function in riparian or wetland areas.

STATUS OF THE SPECIES

Colorado Butterfly Plant Description

The Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*) is a semelparous, perennial herb. It has one or a few reddish, hairy stems that are 2-3 feet tall. The lower leaves are lance-shaped with smooth or wavy-toothed margins and average 2-6 inches long, while those on the stem are smaller and reduced in number. Flowers are arranged in a branched, elongate pattern above the leaves. Only a few flowers are open at any one time and these are located below the rounded buds and above the mature fruits. Individual flowers are 0.25-0.5 inches long with four reddish sepals (modified leaves surrounding the flower) and four white petals that turn pink or red with age. The hard, nutlike fruits are 4-angled and have no stalk. Non-flowering plants consist of a stemless, basal rosette of oblong, hairless leaves 1-7 inches long (Marriott 1987, Fertig 1994, Fertig *et al.* 1994).

Colorado Butterfly Plant Life History

The Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*) occurs on sub-irrigated, alluvial (stream deposited) soils on level or slightly sloping floodplains and drainage. Colonies are often found in low depressions or along bends in wide, active, meandering stream channels a short distance upslope of the actual channel. The plant requires early-to-mid succession riparian habitat. It commonly occurs in communities dominated by *Agrostis stolonifera* (redtop) and *Poa pratensis* (Kentucky bluegrass) on wetter sites, and *Glycyrrhiza lepidota* (wild licorice), *Cirsium flodmanii* (Flodman's thistle), *Grindelia squarrosa* (curlytop gumweed), and *Equisetum laevigatum* (smooth scouring rush) on drier sites. Both these habitat types are usually intermediate in moisture between wet, streamside communities dominated by sedges (*Carex* spp.), rushes (*Juncus* spp.), and cattails (*Typha* spp.), and dry, upland shortgrass prairie. Typical Colorado butterfly plant habitat is open, without dense or overgrown vegetation. *Salix exigua* (coyote willow) and *Cirsium arvense* (Canada thistle) may become dominant in Colorado butterfly plant habitats that are not periodically flooded or otherwise disturbed.

The Colorado butterfly plant is an early successional (although probably not a pioneer) plant adapted to use stream channel sites that are periodically disturbed. Historically, flooding was

probably the main cause of disturbances in the plant's habitat, although wildfire and grazing by native herbivores also may have been important. Although flowering and fruiting stems may undergo increased mortality because of these events, vegetative rosettes appear to be little affected (Mountain West Environmental Services 1985). The survival of vegetative rosettes appears to be related to available soil moisture. Heidel (2004, 2005), for example, found a significant correlation between census number and summer precipitation two years prior in populations at the U.S. Department of Defense F. E. Warren Air Force Base (WAFB). Because the long-term viability of this plant relies on successful flowering and fruiting, as well as the difficulty in identifying small rosettes, only the flowering plants typically are counted to estimate population size and trends. The establishment and survival of seedlings appears to be enhanced at sites where tall and dense vegetation has been removed by some form of disturbance. In the absence of occasional disturbance, the plant's habitat can become choked out by dense growth of willows (*Salix* spp.), grasses (including red top (*Agrostis stolonifera*)), baltic rush (*Juncus balticus*), and exotic plants (such as Canada thistle [*Cirsium arvense*] and leafy spurge [*Euphorbia esula*]), which prevents new seedlings from becoming established and replacing plants that have died (Floyd 1995a).

Colorado Butterfly Plant Population Dynamics

The Colorado butterfly plant is distributed throughout its occupied range into patchy groups of subpopulations, some of which are isolated with little or no possibility of interbreeding with other local populations. The spatial structuring of this subspecies is commonly referred to as a metapopulation. Local populations exist on a patch of suitable habitat, and although each has its own, relatively independent population dynamics, the long-term persistence and stability of the metapopulation arise from a balance of population extinctions and colonization to unoccupied patches through dispersal events (USFWS 2004c).

Balancing local population extinction with new colonization events is problematic for the Colorado butterfly plant since naturally occurring disturbance associated with creation of suitable habitat for colonization, such as seasonal floods, has been largely curtailed by water development and flood control. Consequently, what once may have been a dynamic, but stable, metapopulation, may now be characterized by a series of local populations with a very low probability of colonizing new patches, and little opportunity to replace extirpated populations. Biological characteristics that may serve to reduce these negative consequences at least in the short-term for the Colorado butterfly plant include seed banks, delay of stage transition from rosette to flowering adults under poor habitat conditions, and self-compatibility. However, the regional persistence of a metapopulation has been shown to be possible only when the rate of colonization exceeds the local rate of extinction. Consequently, the removal of opportunities for future colonization events poses a significant threat to long-term metapopulation persistence and species viability. This highlights the importance of maintaining viability of as many local populations as possible through conservation (USFWS 2004c).

Most of what is known about the Colorado butterfly plant and its conservation is based on surveys and research conducted on populations located on the WAFB in Cheyenne, Wyoming, from 1984 to 2003. Floyd and Ranker (1998) studied three Colorado butterfly plant subpopulations at WAFB from 1992 to 1994. The purpose of their study was to examine population growth, demographic variability, demographic stage transition dynamics and the probability of population extinction. Results suggested that each of the three subpopulations was not stable but exhibited significant demographic variability both spatially and temporally, and

population growth values were not useful parameters to describe long-term population dynamics (Floyd and Ranker 1998, USFWS 2004c).

Annual census of flowering plants at WAFB began in 1986, and continued from 1988 to 2004, within subpopulations located at Crow Creek, Diamond Creek, and Unnamed Drainage. Census summaries provided by Heidel (2004) based on these data show that subpopulations within these three drainages are characterized by dramatic fluctuations in size (USFWS 2004c).

Most populations of the Colorado butterfly plant for which census or demographic data have been collected exhibit substantial demographic uncertainty. Some of the observed temporal variation in subpopulations at WAFB has been correlated with unpredictable environmental factors such as temperature and precipitation (Floyd and Ranker 1998, Heidel 2004), and spatial variation may be attributable, in part, to fine-scale microhabitat differences in light availability or competition with other herbaceous vegetation or noxious weeds (Munk *et al.* 2002, Heidel 2004). Similar factors may be correlated with some of the observed demographic variability in less-well-studied populations throughout the subspecies' range. However, even for the well-studied subpopulations at WAFB, no clear cause-and-effect relationships have been found to explain the observed fluctuations in population numbers, and studies have not accounted for the majority of the observed demographic uncertainty (USFWS 2004c).

Colorado Butterfly Plant Status and Distribution

On October 18, 2000, the Colorado butterfly plant was designated as threatened throughout its entire range under the Act (65 FR 62302; USFWS 2000), and on January 11, 2005, critical habitat was designated along 51 stream miles within Platte and Laramie Counties in Wyoming (70 FR 1940; USFWS 2005). It is a short-lived, perennial herb endemic to moist soils in mesic or wet meadows of floodplain areas in southeastern Wyoming, north-central Colorado, and extreme western Nebraska. This early to mid-seral stage species occurs primarily in habitats created and maintained by streams active within their floodplains with vegetation that is relatively open and not overly dense or overgrown.

Little is known about the historical distribution of the Colorado butterfly plant. Prior to 1984, no extensive documentation of the plants' range had been conducted. The plant was known from several historical (and presumably extirpated) locations in southeastern Wyoming and in northern Colorado, as well as from three extant populations in Laramie County in Wyoming and Weld County in Colorado. The total known population size was estimated in the low hundreds (Dorn 1979). Intensive range-wide surveys from 1984 to 1986 resulted in the discovery or relocation of more than 20 populations in Wyoming, Colorado, and Nebraska, containing approximately 20,000 flowering individuals (Marriott 1987). Additional surveys since 1992 have resulted in the discovery of additional populations in Wyoming and Colorado (Fertig 1994; Floyd 1995b). However, other historically known populations in Wyoming and Colorado have not been relocated in recent years and may no longer be extant (Fertig 1994).

Extensive surveys were conducted during 1998 to document the status of previously known populations at 14 sites in Wyoming and Colorado (Fertig 1998). All 14 sites supported populations of the Colorado butterfly plant. Repeated survey information led Fertig (1998) to conclude that 10 of these populations were either relatively stable or increasing over the long-term. Fertig (1998) estimated the entire population of this taxon to contain between 47,000 and 50,000 reproductive plants. Twelve previously known populations were not surveyed. Three of

these populations were surveyed from 1989 until 1992 and were found to contain a limited number of plants. However, four populations in Colorado and five in Wyoming have not been relocated since 1986 and may be extirpated.

Surveys were conducted by the Service in 2004 during which approximately 80 percent of all habitat occupied by the Colorado butterfly plant was surveyed. Of 77 known locations at least 0.2 miles apart previously identified by Wyoming Natural Diversity Database (WYNDD), 59 locations along 94 stream miles were surveyed. A total of 17,891 reproductively mature plants were counted throughout the survey area. While 23 of the previously known 59 locations contained no plants, 23 new locations 0.2 miles apart with adult plants were identified. All plants located during the survey were within Laramie County in Wyoming and Weld County in Colorado: neither plants, nor suitable habitat, were found in Nebraska likely because of habitat deterioration associated with 5 years of continuous drought.

These 2004 survey results on both private and state land, as well as updated surveys conducted by the Service in 2005, suggest that the Colorado butterfly plant occurs only in southeast Wyoming and northern Colorado, and is likely extirpated from Nebraska. Populations of the Colorado butterfly plant occur in two locations in Colorado, both currently owned by the City of Fort Collins: the Meadow Springs Ranch in northern Weld County where the plant has been known historically; and the Soapstone Prairie Natural Area in northern Larimer County where a new population was discovered in 2005.

Three additional populations, comprised of a total of 7,322 reproductively mature plants according to recent surveys, occur on F.E. Warren Air Force Base (Heidel 2005). Survey results suggest that two of these populations appear relatively stable or increasing, while one appears to be declining (Heidel 2005). Annual monitoring of these three populations by Wyoming Natural Diversity Database has continued for the past 18 years and is ongoing.

Colorado Butterfly Plant Threats

Of the known populations of Colorado butterfly plant, the vast majority occur on private lands managed primarily for agriculture and livestock. Haying and mowing at certain times of the year, water development, overgrazing, land conversion for cultivation, competition with exotic plants, non-selective use of herbicides, and loss of habitat to urban development are the main threats to these populations (Mountain West Environmental Services 1985, Marriott 1987, Fertig 1994). Because of the small, isolated nature of populations and few numbers present in many of them, the subspecies is much more susceptible to random events such as fires, insect or disease outbreaks, or other unpredictable events that could easily eliminate local populations. In nonagricultural, undeveloped areas, a significant threat to Colorado butterfly plant populations may result from natural succession of the plant community.

One major threat on agricultural lands may be the application of broadleaf herbicides for control of Canada thistle, leafy spurge, and other non-native plants (Marriot 1987). Although competition from weedy species may have negative impacts on Colorado butterfly plant populations, observations have indicated that the Colorado butterfly plant is highly susceptible to commonly used herbicides (especially if no special precautions are taken during application). Alternative (and presumably more Colorado butterfly plant-friendly) methods of weed control involving the release of bio-control insects, mowing, and new chemical application techniques, are currently being investigated (Fertig 1998).

While excessive grazing can lead to changes in essential habitat conditions (e.g., increases in soil temperature resulting in loss of moisture, decreases in plant cover, and increases in non-native species), managing for appropriate levels of grazing provides an important management tool with which to maintain open habitat needed by the Colorado butterfly plant. Grazing by cattle may be a threat at some sites, especially if animals are not periodically rotated or if use is concentrated in small areas during the summer flowering period. The habitat of the Colorado butterfly plant is often heavily used by livestock which tend to concentrate near water sources. In an instance of two adjacent pastures, Marriott (1987) observed that the more heavily grazed pasture supported far fewer individuals. Studies have shown that the Colorado butterfly plant may persist and thrive in habitats that are winter grazed or managed on a short-term rotation cycle (Fertig 1994, Mountain West Environmental Services 1985). Although reproductive individual Colorado butterfly plants may be grazed (the plant is quite palatable to a wide range of herbivores), the establishment and survival of seedlings and rosettes may be enhanced by the reduction of competing vegetative cover (Fertig 1994, 1996). Due to their low stature, rosettes do not appear to be regularly grazed (Mountain West Environmental Services 1985). Grazing by horses also occurs in many privately owned Colorado butterfly plant sites, but does not appear to negatively impact Colorado butterfly plant populations under normal stocking rates (Fertig 1998).

Fertig (1998) observed that mowing an area for hay production is rarely a threat to Colorado butterfly plant populations unless cutting is done before fruits are able to mature. Once fruits have ripened they are protected by a hard, woody fruit wall that is not readily damaged by machinery. Mowing in mid-summer may actually stimulate extra flower and fruit production through increased branching and the release of apical dominance in cut stems. Colorado butterfly plants may also benefit from decreased competition and enhanced moisture availability in mowed environments. Late summer and fall mowing may also facilitate seed dispersal, provided that fruits have already ripened (Fertig 1998).

The three largest private land populations of Colorado butterfly plant observed in 1998 were all found in areas that had been mowed in mid summer or late fall (Fertig 1998). Furthermore, Munk (1999) observed that Colorado butterfly plant regeneration may be increased with removal of heavy grass cover. Munk (1999) also observed increased branching of floral stems when the terminal bud was removed and apical dominance released with grazing of Colorado butterfly plant by pronghorn antelope. Although bolted plants (those plants where the flowering stalk has emerged and is actively growing) are frequently grazed by cattle (Munk 1999), rosettes receive little defoliation by grazing cattle, most likely due to the fact that rosettes "hug" the ground and cattle are not able to reach them.

Construction of stock ponds and reservoirs, conversion of rangeland to crop cultivation, and the loss of habitat to residential and urban development are also important threats in agricultural areas. The cities of Cheyenne, Wyoming and Fort Collins, Colorado contain areas of formerly suitable Colorado butterfly plant habitat that have been lost to urbanization. The protection or continued agricultural management of suitable private land habitat may also be critical to the long-term survival of the Colorado butterfly plant (Fertig 1998).

In non-agricultural settings, the greatest threat to the Colorado butterfly plant may be the changes in habitat suitability resulting from natural succession. Without periodic disturbance events, the semi-open habitats, preferred by this subspecies may become choked by tall and dense growth of

willows, graminoids, and exotic weeds (Fertig 1994). Natural disturbance events such as flooding, fire, and ungulate grazing, may have been sufficient in the past to create favorable conditions. In the absence of such events today, managed disturbance may be necessary to maintain and create areas of habitat (Fertig 1994, 1996, 1998)

Because of the small, isolated nature of populations and few numbers present in many of them, the subspecies is much more susceptible to random events such as fires, insect or disease outbreaks, or other unpredictable events that could easily eliminate local populations (USFWS 2004c). High recreational use by campers, motorists, and fishermen is a threat to populations on state park lands in Nebraska.

Alterations of stream hydrology could also threaten Colorado butterfly plant. The plant is supported by moist soil throughout the growing season, and by wet habitats that are dominated by grass/forb/sedge communities. During the past 150 years, and continuing today, water developments, diversions, stream channel alterations for flood control or other purposes (including oil and gas development and mining), and changes in hydrograph have altered hydrology, floodplain geomorphology, and vegetation composition and trends. While in some streams and reaches this may have provided improved conditions for the plant, in many cases, it has resulted in the loss of suitable habitat and likely fragmentation of the habitat or loss of the plant within watersheds (USFWS 2004c).

Ute Ladies'-tresses Species Description

Ute ladies'-tresses (*Spiranthes diluvialis*) is a perennial, terrestrial orchid with stems 20 to 50 centimeters (cm) tall arising from tuberously thickened roots measuring up to 1 cm in diameter. It has narrow leaves about 28 cm long and 1.5 cm wide at the base of the stem and becomes reduced in size going up the stem. The flowers, in an inflorescence (flowering spike) of 3 to 30 or more flowers, are small white to ivory arranged in a spiral. The species is characterized by stout flowers that are gaping at the mouth. The sepals and petals, except for the lip, are straight, although the lateral sepals are variably oriented. These lateral sepals spread abruptly from the base of the flower and are free to the base. The rachis is densely pubescent with the longest trichomes, or hairs, 0.2 millimeters long or longer (Sipes and Tepedino 1994, USFWS 1992, 1995).

Ute Ladies'-tresses Life History

Very little is known about the life history of Ute ladies'-tresses (USFWS 1995). Much of what is presumed about the species' life history is drawn from knowledge of other orchids. Orchids generally have very small seeds that require symbiotic associations with mycorrhizal fungi for germination. Many species of orchids are saprophytic, underground plants that may persist for many years underground before emerging above ground. The mycorrhizal stage is reported to last 8 years in *S. spiralis* and green leaves are first produced up to 11 years after germination in that species (Wells 1967). Studies of *S. magnicamporum* in western Kansas and Nebraska report that that species may bloom as rarely as once in 20 years. The mean life expectancy of *S. spiralis* plants studied over a nine year period was calculated to be more than 50 years (USFWS 1995).

Throughout its range, reproduction of the Ute ladies'-tresses orchid appears to be strictly sexual, with bumblebees (*Bombus* spp.) as the primary pollinators (Arditti 1992, Sheviak 1984). Flowers are protandrus (functionally male first and then female). As with other orchid species,

it is thought that Ute ladies'-tresses does not reach sexual maturity for 5 to 10 years (USFWS 1995). Each orchid fruit can have several hundred to 10,000 seeds with an average of around 2,000 (Sipes and Tepedino 1994). These seeds may be dispersed by water (Carroll, *pers. comm.*) or wind (Wells 1967). The flowers, seed heads, and vegetative parts of the Ute ladies'-tresses orchid are palatable and can be incidentally eaten by grazing livestock. The possibility that grazers could disperse the seeds of this species has not been evaluated. The blooming period is from early August to early September, with fruits produced in mid-August to September (Fertig 2000a). Not all individual mature Ute ladies'-tresses orchids bloom every year and some may remain dormant beneath the ground surface and not show any above ground parts for at least one growing season (Arft 1995).

Populations of Ute ladies' tresses may do well under a regime of somewhat heavy use, i.e., livestock grazing and hay mowing. Grazing may have beneficial effects to the plants, especially in early summer prior to flowering or fruit production (Arft 1995, Moseley 1998). Grazing may mimic the effects of flooding, fire, or other disturbances in maintaining low vegetative cover or reducing weed cover (Moseley 1998). Mowing may be beneficial by reducing competing vegetation cover, but can be detrimental if done before fruits ripen or if hay is cut too low (Arft 1995; Hazlett 1996, 1997). Ute ladies'-tresses does not tolerate dense competition of vegetation, although a few populations are found in riparian woodlands.

The Ute ladies'-tresses orchid inhabits early successional riparian habitats such as moist stream beds, wet meadows, point bars, sand bars, abandoned stream channels, and low lying gravelly, sandy, or cobbly edges (Fertig *et al.* 1994, USFWS 1995, Fertig 2000a). Ute ladies'-tresses appears to have a close affinity with floodplain areas where the water table is near the surface throughout the growing season and into early autumn. The species is found in open riparian, floodplain areas where the competing vegetation has been removed by livestock grazing, mowing or by flooding events approximately one month prior to flowering. Ute ladies'-tresses is known to grow in agricultural lands managed for grazing in the winter and hay production in spring and summer, where mowing occurs in mid-July (USFWS 1995). The elevational range of known Ute ladies'-tresses occurrences is 1800-6800 feet (Arft and Ranker 1998), while the known Wyoming populations range from 4650-5420 feet (Fertig 2000a).

Ute Ladies'-tresses Population Dynamics

Ute ladies'-tresses population levels and viability are, at least in part, determined by habitat conditions created and maintained by natural water processes. Therefore, the significance of population size and distribution within a watershed can, at least partially, be assessed in terms of the ability of the watershed factors to perpetuate it. However, the linkages between watershed processes, habitat conditions, and Ute ladies'-tresses population response are complex and not completely understood.

The locations of populations within a watershed vary with the availability of suitable habitat. Sizes of populations fluctuate naturally. Some years not a single Ute ladies'-tresses individual appears above ground. The number of flowering adults does not give an accurate picture of population size nor tell us anything about population structure. More information is necessary regarding population viability (USFWS 1995).

If estimated population size is based on the number of Ute ladies'-tresses flowering spikes, then populations appear to fluctuate dramatically in size from year to year (USFWS 1992). For example, the primary site for the Boulder, Colorado population contained 5,435 plants in 1986,

200 plants in 1987, 131 plants in 1988, 1,137 plants in 1989, 1,894 plants in 1990, and at least 80 plants in 1991 (USFWS 1992). This variability in apparent population size is consistent with other observations made of other orchid species.

However, Wells (1967) questions that apparent fluctuations in orchid numbers are accurate descriptions of the actual dynamics of the orchid populations. According to Wells (1967), the criterion adopted for judging whether the number of orchids at a site has changed or not has been the number of flowering spikes displayed at the time of visit. This may be an unsatisfactory criterion for measuring a quantitative change in population because, as has been demonstrated, plants may spend several years as vegetative rosettes or as underground tubers (as many as 11 years) with no above-ground parts. Furthermore, according to Wells (1967), the autumn ladies'-tresses orchid (*S. spiralis*) grows mainly in short grassland which is typically maintained in that condition by some kind of grazing which can damage some of the flowering spikes making a visual estimate of number based on count of flowering spikes unreliable. Arft's (1995) work on Ute ladies'-tresses supports this theory as well.

At the time of listing of Ute ladies'-tresses, most of the species' historic western populations on the Wasatch Front and in the Great Basin were believed to have been extirpated by urbanization. Most known populations contained fewer than 1,000 plants when counted in 1990 and 1991. Eastern Utah populations were also typically small in size. Local extirpations may have taken place in currently unoccupied potential habitat similar to extirpations which occurred along the Wasatch Front, the Great Basin, and certain historic populations in Colorado (USFWS 1992).

In 1992, when the species was listed, the total known population size of Ute ladies'-tresses was fewer than 6,000 individuals from 11 known populations in Colorado, Utah, and Nevada (USFWS 1992). The January 17, 1992, listing of Ute ladies'-tresses resulted in an increase in surveys for the species. Since that time, additional populations have been located in Utah, Montana, Idaho, Nevada, Colorado, Nebraska, Washington, and Wyoming. In 1995, the total known population size of Ute ladies'-tresses was approximately 20,500 individuals (USFWS 1995). Since 1995, another 24 populations have been discovered, including several large occurrences along the Green River in Colorado and Utah, the Snake River in Idaho, and Niobrara River in Wyoming and Nebraska. Ute ladies'-tresses are now known to occupy 674-783 acres of habitat. The highest number of plants recorded in any one year was 38,438 in 1998, based on sampling 23 of 55 populations known at that time. Since these populations were not selected randomly, no useful extrapolations can be made to estimate rangewide numbers based on annual counts (Fertig *et al.* 2005).

Ute Ladies'-tresses Status and Distribution

On January 17, 1992, the Service listed Ute ladies'-tresses as threatened in its entire range under the Act (57 FR 2053). The Ute ladies'-tresses was first described as a species in 1984 by Dr. Charles J. Sheviak from a population discovered near Golden, Colorado (Sheviak 1984). At the time of its listing, Ute ladies'-tresses was known from 11 populations occurring in Colorado, Utah, and Nevada. Critical habitat has not been designated at this time. To date, no recovery plan has been approved for this species. However, a draft recovery plan has been written (USFWS 1995).

Ute ladies'-tresses was first discovered in Wyoming by the University of Wyoming, Rocky Mountain Herbarium in 1993. Formal surveys for Ute ladies'-tresses then began in Wyoming in 1994, one year after B. Ernie Nelson, manager of the Rocky Mountain Herbarium, discovered

the state's first population in Goshen County. Nelson along with other researchers conducted general floristic surveys in southeast Wyoming, the Green River Basin, and Laramie Basin from 1994-1999, finding an additional new colony along Antelope Creek in Converse County in 1994 (Hartman and Nelson 1994). The population on Antelope Creek occurs on Bureau-administered land in the Casper Resource Area north of the Casper Resource Area. This population has been censused several times and has remained small (11-35 plants seen during various years). The habitat there is considered marginal and the Antelope Creek population is considered the least viable of the populations within Wyoming (Fertig 2000a).

Hartman and Nelson (1994) found that populations discovered in Wyoming occurred on terraces, low slopes, and oxbows adjacent to small streams on sandy to coarse gravelly alluvium or alkaline clays in wet meadow communities (Nelson and Hartman 1995). Based on short-term observation data, the populations that they found were thought to be stable or increasing. The sites were on lands managed for livestock grazing or hay production. Current land uses at the time appeared compatible with the habitat needs of Ute ladies'-tresses orchid populations. The timing of grazing and mowing was thought to be critical for successful seed production (Fertig 2000a).

Surveys since 1992 have expanded the number of vegetation and hydrology types occupied by Ute ladies'-tresses to include seasonally flooded river terraces, subirrigated or spring-fed abandoned stream channels and valleys, and lakeshores. In addition, 26 populations have been discovered along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside barrow pits, reservoirs, and other modified wetlands. New surveys have also expanded the elevational range of the species from 720-1830 feet (220-558 meters) in Washington to 7000 feet (2134 meters) in northern Utah (Fertig *et al.* 2005).

Through coordination with and cooperation from a private landowner, permission was granted in 1996 to search an area along the Niobrara River in Sioux County, Nebraska. Hazlett (1996) counted several thousand Ute ladies'-tresses (Hazlett 1996). The area was previously mown in July of that year for hay and thousands of Ute ladies'-tresses were flowering in the pasture apparently flourishing from the reduced competition following the mowing and baling. The discovery was the first reported case of *S. diluvialis* in the State of Nebraska. Future plans for that area are to maintain it as a working ranch or as a youth camp/nature preserve for young people (Hazlett 1996).

The Wyoming Natural Diversity Database (WYNDD) surveyed public lands in Jackson Hole and the lower Green River Basin in 1999, but did not find any new *S. diluvialis* sites. Staff of the WYNDD also conducted unsuccessful searches in the Powder River Basin, National Elk Refuge, and F.E. Warren Air Force Base from 1995-1997.

Various environmental consulting firms (e.g., ERO Resources 1994) have searched for *S. diluvialis* across Wyoming since 1994. These efforts have not documented any new colonies (Fertig 2000a). Because of the plant's irregular flowering pattern, sites which have been surveyed in the past could still harbor populations (Fertig 2000a).

Since their discovery in Wyoming, Ute ladies'-tresses populations have been located in Goshen, Converse, Laramie, and Niobrara counties of southeastern Wyoming. The Ute ladies'-tresses orchid is currently known from a small population along a tributary to Antelope Creek (a tributary to the Cheyenne River) in northwest Converse County; a population along Bear Creek

in southwestern Goshen County; a population along the Niobrara River near McMaster's Reservoir in southeastern Niobrara County; a population along Sprager Creek in Laramie County, and a recently discovered population along Horse Creek in Laramie County. These populations are monitored on a limited basis and appear to be stable (USFWS 2002).

To date, no populations have been discovered on land administered by the Bureau in the Casper Resource Area (BLM 2005b). However, surveys have yet to be conducted on all potential existing orchid habitat on Bureau-administered lands within the Casper Resource Area. The variability of Ute ladies'-tresses emerging and flowering every year, makes it difficult to effectively locate populations and inventory them. Future surveys in the Casper Resource Area may find populations of Ute ladies'-tresses on Bureau-administered surface and/or split-estate lands on potential habitat along streams, rivers, and riparian areas with sandy or loamy clay soils.

Ute Ladies'-tresses Threats

In 1992, the Service identified habitat loss and alteration (through urbanization, water development, residential development, conversion of open space to parks, agricultural activities); overutilization for commercial, recreational, scientific, or educational purposes; excessive livestock grazing (although mild to moderate grazing may be beneficial); inadequacy of existing regulatory mechanisms; and other factors including localized catastrophic events, competition with invasive plant species, and indiscriminate use of herbicides as the primary threats to the long term conservation of this species. These activities historically have likely been a primary cause of the fragmentation of populations now currently observed. Fertig *et al.* (2005) identified additional threats including ecological succession, road and other construction, recreation, flooding, haying/mowing, natural herbivory, loss of pollinators, and drought. There is increasing pressure for urban, residential, and recreational development in these wetland and riparian areas, especially along the Front Range of Colorado and the Wasatch Front in Utah. As these areas are typically in private ownership, and the projects are often privately funded, there is very little regulatory protection for the orchid there, even though it is a federally-listed species.

Incompatible agricultural or other land management practices could also threaten the Ute ladies'-tresses orchid. The orchid is quite tolerant of grazing and other forms of land and vegetation disturbance. However, continuous grazing during the flowering season, severe trampling and soil compaction, untimely herbicide applications, proliferation of aggressive native and exotic plant species indicative of site degradation, and practices that result in habitat alteration from grass/forb/sedge to shrub/tree dominance, can result in loss of vigor and eventual demise of the orchid and/or orchid pollinators. Many riparian and other wetland and wetland/upland habitats suffer from these impacts, as well.

Alterations of stream hydrology could also threaten Ute ladies'-tresses. The orchid is supported by moist soil throughout the growing season, and by wet habitats that are dominated by grass/forb/sedge communities. During the past 150 years, and continuing today, water developments, diversions, stream channel alterations for flood control or other purposes (including oil and gas development and mining), and changes in hydrograph have altered hydrology, floodplain geomorphology, and vegetation composition and trends. While in some streams and reaches this may have provided improved conditions for the orchid, in many cases it has resulted in the loss of suitable habitat and likely fragmentation or loss of the orchid within watersheds (USFWS 2004d). Although some Bureau-authorized activities may affect stream

hydrology, the Bureau in the Casper Resource Area is committed to not authorizing activities that might affect the hydrology of occupied Ute ladies'-tresses habitat (Appendix I).

ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed state or federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation process.

The action area is defined at 50 CFR 402 to mean “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action”. For the purposes of this consultation, the Service defines the action area as all lands within the Casper Resource Area in Wyoming that could potentially be impacted by decisions made in the Casper RMP (BLM 2006) to include approximately 1.4 million acres of Bureau-administered public land surface in the Casper Resource Area in Wyoming, and the approximately 4.7 million acres of split-estate land (federal subsurface/non-federal surface).

Historic activities within or adjacent to the action area include residential, urban, commercial, industrial, and agricultural development; road construction; development for recreational use; mining; oil and gas development and its associated infrastructure; airport construction; ski area development; levee construction and maintenance; and dam construction.

Colorado Butterfly Plant Environmental Baseline

The Colorado butterfly plant could occur on floodplains in the Casper Resource Area, where the habitat conditions are suitable and support this plant. Most of these areas are located in Platte and Goshen Counties, Wyoming (the southernmost portion of the Casper Resource Area). The land holdings of the Bureau in these areas are mostly scattered, isolated parcels [section 15 parcels as defined by the Taylor Grazing Act of 1934 (43 USC 315)] surrounded by private lands. Many of the parcels do not have legal public access. Often these Bureau-administered parcels are not fenced from the surrounding private property and livestock are permitted to travel freely across the property boundaries (J. Carroll, Bureau of Land Management, Pers. Comm.). However, the Bureau may have discretionary authority of grazing management of these isolated parcels through the management plans of allotments containing such parcels.

The primary past and present impacts to Colorado butterfly plant in the action area may have included indiscriminate spraying of broadleaf herbicides and the disturbance of riparian areas that contain native grasses due to agricultural conversions, water diversions, channelization, and urban development (USFWS 2000) and/or vegetative succession in the absence of periodic disturbances which makes habitat unsuitable for seedling establishment (Fertig 2001). Modification of Colorado butterfly plant habitat suitability may also be due to irrigation developments and other human-caused changes to stream hydrology.

Livestock grazing and hay production are the predominant land uses in Colorado butterfly plant habitat within its distributional range. Grazing, haying and mowing activities are normally undertaken by private land owners as part of their agricultural operations. These activities may

be beneficial to Colorado butterfly plants through the maintenance of habitat, or they may be detrimental in that these activities, if not timed properly, may reduce the reproductive success of individual Colorado butterfly plants.

Numerous other existing actions, including construction of electricity transmission lines, mining operations, and erection of telecommunication towers are present in the action area. These have been considered as part of the environmental baseline for this action.

Formal section 7 consultations with potential adverse effects identified for the Colorado butterfly plant include a burning project on the FE Warren Air Force Base which identified 0.01 acres of temporary disturbance (ES-6-WY-01-F010, WY4648) and the Medicine Bow Lateral Loop (ES-6-WY-01-F003, WY4352) which documented potential temporary disturbance of six Colorado butterfly plant sites. Neither of these formal consultations were within the action area.

Status of the Colorado Butterfly Plant Within the Action Area

One population of the Colorado butterfly plant is in Platte County within the Casper Resource Area. This population, along Teepee Ring Creek, was surveyed in 2001. No other populations of the Colorado butterfly plant are known to occur in the Casper Resource Area. It is possible that undiscovered populations do exist on Bureau-administered lands in the Casper Resource Area; however, the majority of Bureau-administered lands in the range of this species are confined to the uplands with limited wetland habitats. The most suitable areas of habitat for the Colorado butterfly plant are either in private ownership or as state trust lands. However, without surveys of all Bureau-administered land with suitable habitat in the planning area, the Bureau has taken the conservative approach and assumed the species is present in those habitats.

Factors Affecting the Colorado Butterfly Plant Within the Action Area

Factors that could affect this plant in the action area include irrigation developments and other human-caused changes to stream hydrology, introduction of invasive species, herbicide use, urban development (USFWS 2000), vegetative succession in the absence of periodic disturbances which makes habitat unsuitable for seedling establishment (Fertig 2001), forage production, or stochastic events.

Changes to stream hydrology. Human-caused changes to stream hydrology may take the form of channelization of streams, construction and use of irrigation canals, water impoundment (pond) construction, increased water discharges to surface waters, and water removal from surface flows. These activities are widespread across the Casper Resource Area and many historical projects exist that have changed stream hydrology.

Construction of stock ponds and reservoirs has inundated some Colorado butterfly plant habitat and made it unsuitable for the subspecies. The development of irrigation canals to move water to croplands may remove moisture from occupied or potentially suitable habitat leaving it in a drier, unsuitable condition. Additionally, the management of water resources for domestic and commercial uses, coupled with encroaching agricultural land use, has had a tendency to channelize and isolate water resources and fragment, realign, and reduce riparian and moist lowland habitat that could otherwise serve as potential Colorado butterfly plant habitat (USFWS 2000).

Introduction of invasive species/herbicide use. Invasive plant species do occupy much of the Casper Resource Area and herbicide use to control these invasive species may be undertaken by private citizens or performed by County Weed and Pest Districts. A serious threat on agricultural lands and along roads is non-selective use of broadleaf herbicides for the control of *Cirsium arvense* (Canada thistle), *Euphorbia esula* (leafy spurge), and other exotic plants (Marriott 1987). Although competition from these subspecies may have serious negative implications for populations of Colorado butterfly plant, the plant appears to be highly susceptible to commonly used herbicides when they are applied non-selectively. Biological control agents have been used, but have not yet been fully effective in controlling Canada thistle or leafy spurge. Introduced gall-forming flies have slowly become established at some localities and have reduced the vigor, height, and reproductive ability of small patches of Canada thistle. The first evidence of successful establishment of flea beetles, a biocontrol agent for leafy spurge, was documented in 1997 (Fertig 1998).

Urban development. Residential and urban development around the cities of Cheyenne and Fort Collins has converted areas of formerly suitable Colorado butterfly plant habitat (USFWS 2000).

Vegetative succession in the absence of periodic disturbances. In nonagricultural, undeveloped areas, a significant threat to Colorado butterfly plant populations is habitat degradation resulting from succession of the plant community. Without periodic disturbance events, the semi-open habitats preferred by this subspecies can become choked by tall and dense growth of willows, grasses, and exotic weeds (Fertig 1994). Natural disturbances, such as flooding, fire, and native ungulate grazing, were sufficient in the past to create favorable habitat conditions for the plant. However, the natural flooding regime within the subspecies' floodplain habitat has been altered by construction of flood control structures and by irrigation and channelization practices. In the absence of such natural disturbances, managed disturbance may be necessary to maintain and create areas of suitable habitat (Fertig 1994, 1996). Many federal programs, such as those administered by the USDA Natural Resources Conservation Service, focus on enhancing or protecting riparian areas by removing the types of disturbance the plant needs, increasing vegetative cover, and pushing the habitat into later successional stages.

Forage production. Livestock grazing and hay production are the predominant land uses in Colorado butterfly plant habitat within the Casper Resource Area. Grazing activities on Bureau-administered lands are authorized by the Bureau through a permitting process. Grazing, haying and mowing activities are normally undertaken by private land owners as part of their agricultural operations. These activities may be beneficial to Colorado butterfly plants through the maintenance of habitat or they may be detrimental in that these activities if not timed properly may reduce the reproductive success of individual Colorado butterfly plants. At some sites, habitat degradation resulting from plant succession and noxious weed competition is the main threat to the long-term survival of populations (USFWS 2000).

Conversion of moist, native grasslands to commercial croplands is evident through portions of the action area. Since much of the agricultural lands are irrigated hay fields, mowing of Colorado butterfly plant habitat for hay production has been suggested as a potential threat if conducted at an inappropriate time of year. Although this threat can be significant if cutting occurs before the plant's fruits have ripened, if cutting is delayed until late in the growing season when a hard fruit wall is developed, the seeds are not damaged by cutting and may actually be dispersed in the process. Likewise, early season mowing (before the flower stalks have bolted)

may provide some advantages to the plant by reducing the cover of competing vegetation (Fertig 1994).

There are no known diseases affecting Colorado butterfly plant populations, although the subspecies is occasionally affected by insect galls. Colorado butterfly plant is highly palatable to a variety of insect and mammalian herbivores (e.g., cattle, horses, and pronghorn [*Antilocapra americana*]). Livestock grazing can be a threat at some sites if grazing pressures are high due to animals are not being rotated among pastures or concentrated use during the summer flowering period. Additionally, plants are occasionally uprooted or trampled by livestock and wildlife grazing in the vicinity. In at least one location where a population of Colorado butterfly plants was divided by a fence, the heavily-grazed side of the fence had few or no Colorado butterfly plants. However, in a similar situation, the more heavily-grazed side of the fence had numerous rosettes, but the side with no grazing had dense willow cover and no Colorado butterfly plants. In addition to the intensity of grazing, the timing of grazing is key to Colorado butterfly plant survival. Based on surveys conducted by the Service in 2004 and 2005, observations have shown that the plant can persist and thrive in habitats that are winter-grazed or managed on a short-term rotation cycle. Light to medium grazing can provide additional benefits by reducing the competing vegetative cover and allowing Colorado butterfly plant seedlings to become established (USFWS 2000).

Stochastic Events. Because of the small, isolated nature of the populations and the few individuals present in many of them, the Colorado butterfly plant also is more susceptible to random events, such as fires, insect or disease outbreaks, or other events that can easily cause the extirpation of small populations. Although the plant evolved with and even depended upon the disturbance associated with various types of events, they may now pose a threat to the Colorado butterfly plant. Individual plants may not survive such events, and because of low numbers and the now highly restricted range of the subspecies, events such as fires and floods pose a threat.

Ute Ladies'-tresses Environmental Baseline

Ute ladies'-tress may occur on floodplain areas in the Casper Resource Area. These areas are located where the water table is near the surface throughout the Ute ladies'-tresses growing season. The past and present impacts to Ute ladies'-tresses in the action area may have included increases, and decreases, in habitat suitability due to irrigation developments and other human-caused changes to stream hydrology. Human-caused changes to stream hydrology have taken the form of channelization of streams, construction and use of irrigation canals, water impoundment (pond) construction, increased water discharges to surface waters, and water depletions from surface waters. These activities were and continue to be widespread across the Casper Resource Area.

Invasive plant species do occupy much of the resource area with resulting herbicide control by private citizens and/or the County Weed and Pest Districts. It is not known if any invasive plants may be adversely affecting Ute ladies'-tresses within the action area.

Grazing, haying and mowing activities are normally undertaken by private land owners as part of their agricultural operations. Grazing activities on Bureau-administered lands are authorized by the Bureau through a permitting process. These activities may be beneficial to Ute ladies'-tresses plants through the maintenance of habitat or they may be detrimental in that these activities if not timed properly may reduce the reproductive success of individual Ute ladies'-tresses plants.

Another impact to Ute ladies'-tresses plants in the action area may be herbivory by wildlife. Herbivory of the flowering spikes of *S. diluvialis* by voles (Arft 1994), deer (Fertig 2000a), and moose (Moseley 1998) has been documented at some locations. Wells (1967) documented significant flowering stalk herbivory of the autumn ladies'-tresses orchid (*S. spiralis*) by rabbits. Arft (1994) speculated that vole herbivory could be the greatest single threat to the long-term survival of Ute ladies'-tresses at one study site. It is plausible that similar damage to Ute ladies'-tresses plants in the action area could be attributed to wildlife as well.

Numerous other existing actions including construction of electricity transmission lines, mining operations, and erection of telecommunication towers are present in the action area. These have been considered as part of the environmental baseline for this action.

Status of the Ute Ladies'-tresses Within the Action Area

Ute ladies’-tresses is currently known from five sites within the Casper Resource Area (Table 3). These Ute ladies’-tresses populations are monitored on a limited basis and appear to be stable.

Table 3. Known Ute ladies’-tresses locations in the Bureau’s Casper Resource Area.

Location	County	Land Ownership
A tributary to Antelope Creek	Converse	BLM
North Wind Creek (Antelope Creek drainage)	Converse	BLM
Stinking Creek (Antelope Creek drainage)	Converse	BLM
Bear Creek	Goshen	State Trust Lands
Near McMaster’s Reservoir	Niobrara	Private

The Ute ladies’-tresses populations located within the Antelope Creek drainage in Converse County are the only populations presently known to occur on Bureau-administered land or on lands overlying Bureau-administered subsurface. Ute ladies’-tresses were originally discovered within the Antelope Creek drainage in 1994 and have been censused several times since their discovery and determined to have low but stable numbers in that drainage (Fertig 2000b).

Grazing activities may positively benefit Ute ladies’-tresses by reducing competing vegetation; however, if not timed properly, they can reduce the reproductive success of individual Ute ladies’-tresses plants. Wildlife herbivory of the flowering spikes of Ute ladies’-tresses orchids by voles (Arft 1994), deer (Fertig 2000b), and moose (Moseley 1998) does occur at some locations across the species’ range. Wells (1967) documented significant flowering stalk herbivory of the autumn ladies'-tresses orchid by rabbits.

Coal mining and coalbed natural gas development activities are present in the northern portions of the Bureau’s Casper Resource Area and may become more widespread during the life of the proposed RMP. Coalbed natural gas development may adversely affect Ute ladies’-tresses if this activity were to occur adjacent to, upstream from, or downstream from populations. It is possible that the water produced by more than 9,000 coalbed natural gas wells may have significantly altered the hydrology (USFWS 2002). Hydrological changes could in turn affect Ute ladies’-tresses occupying those same areas. In 2001, approximately 6,400 coalbed natural gas wells produced 182 acre-feet per day (Litwartz 2002). The produced water was discharged

into surface waters (streams, ephemeral draws, impoundments) or into closed basin containment impoundments for disposal.

Five formal section 7 consultations have been completed which analyzed potential adverse effects to Ute ladies'-tresses orchids in Wyoming. One of these consultations analyzed potential adverse effects for livestock grazing in the Bureau's Newcastle Resource Area (ES-6-WY-04-F025; October 5, 2004) which is adjacent to the Casper Resource Area. Two of these analyzed potential adverse effects associated with coalbed natural gas development in the Powder River Basin (WY4287, March 9, 2001; ES-6-WY-02-F006, December 2002) of Wyoming. The remaining two formal section 7 consultations analyzed surface disturbance in Ute ladies'-tresses habitat associated with pipeline construction (WY2567, July 16, 1999) and railroad expansion (ES-6-WY-01-F008, October 26, 2001), respectively.

The Bureau supports efforts to locate the orchid on Bureau-administered or nearby state or private lands (Hazlett 1995, 1997, 1999). Surveys have been conducted in what appeared to be suitable habitat in some parts of the action area but no Ute ladies'-tresses have been found to date. Future surveys may reveal that additional populations occupy Bureau-administered surface lands, or on private lands where the Bureau may have some discretionary authority of grazing management through the allotment management plans of allotments containing isolated Bureau-administered grazing parcels [section 15 parcels as defined by the Taylor Grazing Act of 1934 (43 U.S.C 315)] in the action area.

Within the Casper Resource Area, potentially suitable habitat exists along creeks, streams, and riparian areas that may support Ute ladies'-tresses. Locations where population of Ute ladies'-tresses may be discovered in the Casper Resource Area include but are not limited to moist meadows along streams. Surveys on private lands in southeast Wyoming located populations in Niobrara County (Hazlett 1995, 1997, 1999).

Factors Affecting the Ute Ladies'-tresses Within the Action Area

Factors that could affect this orchid in the action area include irrigation developments and other human-caused changes to stream hydrology, introduction of invasive species, herbicide use, haying, mowing, or livestock grazing (USFWS 1995).

EFFECTS OF THE ACTION

Direct and Indirect Effects

Direct effects are effects that result directly or immediately from the proposed action on the species. For example, actions that would immediately remove or destroy habitat or displace the species from its habitat or an area would be considered direct effects. Indirect effects are effects that are caused by, or result from, the proposed action and occur later in time after the proposed action is completed, e.g., grazing over the life of the RMP (10-15 years) may maintain habitat for listed plants that may occupy the area 15 years from present.

The Proposed Action is the management of the Casper Resource Area in Wyoming for up to 10-15 years. Given the length of the proposed action and the difficulty in distinguishing direct from indirect effects, the two types of effects are not differentiated here but instead are discussed

jointly.

Effects on Colorado Butterfly Plant

The Casper RMP BA for the Colorado butterfly plant describes activities in the Livestock Grazing program that may affect and are likely to adversely affect the Colorado butterfly plant over the life of the Casper RMP. These effects are (1) the trampling, consumption, or destruction of individual Colorado butterfly plants by livestock grazing and (2) any manipulation of the timing or intensity or cessation of grazing of the habitat of this plant. The potential effects of these activities on the Colorado butterfly plant are described here.

Potential effects could result from direct damage to individual Colorado butterfly plants from grazing, trampling of the flowering parts of the plant or from grazing of the flowering parts of the surrounding vegetation. Loss of habitat could also occur if the Bureau did not permit livestock grazing activities and Colorado butterfly plant habitat was not maintained in suitable condition.

Analysis for Effects of the Action on Colorado Butterfly Plant

Habitat alterations resulting from agricultural use (grazing) may be beneficial, neutral, and/or detrimental to the Colorado butterfly plant depending on when it occurs (Fertig 2001, Munk *et al.* 2002). Grazing by cattle may be a threat at some sites, especially if animals are not periodically rotated or if use is concentrated in small areas during the summer flowering period. Potential effects could result from direct damage to individual Colorado butterfly plants from grazing and/or trampling. Studies have shown that the Colorado butterfly plant may persist and thrive in habitats that are winter grazed or managed on a short-term rotation cycle (Fertig 1994, Mountain West Environmental Services 1985). Although reproductive individual Colorado butterfly plants may be grazed (the plant is quite palatable to a wide range of herbivores), the establishment and survival of seedlings and rosettes is enhanced by the reduction of competing cover (Fertig 1994, 1996; Munk 1999). Due to their low stature, rosettes do not appear to be regularly grazed (Fertig 2000b, Mountain West Environmental Services 1985).

Fruit dissemination of the Colorado butterfly plant is poorly understood, although flooding and transport by muddy animals may be important dispersal mechanisms (Fertig 2000b). Long distance dispersal (possibly by muddy waterfowl), may occur frequently enough to account for the relatively homogenous structure across widely spaced populations (Fertig 2000b). It is also plausible that grazing herbivores (including livestock) could also incidentally ingest Colorado butterfly plant seeds and introduce the seeds to unoccupied areas. No other documentation has been found in the literature relative to the topic of livestock acting as a potential seed disperser of Colorado butterfly plants.

The Bureau intends to continue grazing activities and survey (Hazlett 1999) for the Colorado butterfly plant. If populations are discovered, grazing activities will be managed to maintain Colorado butterfly plant populations (BLM 2005a). The Bureau in the Casper Resource Area has committed to conservation measures to protect Colorado butterfly plants (Appendix I). The use of these conservation measures will reduce or eliminate the effects by ensuring that (1) populations are discovered prior to any surface disturbing activities, (2) excessive surface disturbances do not take place in occupied habitat, (3) invasive plant species infestations are controlled in a manner conducive to the survival of Colorado butterfly plants, (4) the hydrologic regime of the plant's habitat is maintained and studied, and (5) grazing activities are conducted in

a manner that will maintain the habitat of the Colorado butterfly plant while minimizing any removal of the plant's flowering parts (BLM 2005a).

Summary of Effects on Colorado Butterfly Plant

Colorado butterfly plant populations in Wyoming are typically found in areas where livestock grazing, mowing, or haying has maintained the habitat by removing competing vegetation. However, activities authorized in the livestock grazing program may damage individual plants. The degree to which the plants can sustain damage and not be "adversely affected" is currently unknown but it is suspected that the activities authorized in the livestock grazing program may affect individual Colorado butterfly plant's reproductive success.

It is anticipated that livestock grazing actions authorized under the Casper RMP could result in negative impacts to the Colorado butterfly plant from harm, destruction, or reduced reproductive success of individual plants. Livestock Grazing Management according to the aforementioned RMP and the Bureau-committed conservation measures (Appendix I) could lead to harm, destruction, or reduced fitness of individual Colorado butterfly plants by trampling, crushing, or grazing of the flowering parts and less frequently, the basal rosettes. However, beneficial effects of grazing, if conducted during appropriate times, are also known to maintain the habitat for the Colorado butterfly plant.

Effects on Ute Ladies'-tresses

The Bureau's Casper RMP describes activities in the Livestock Grazing program that may affect and are likely to adversely affect the Ute ladies'-tresses orchid. These effects are (1) the trampling or destruction of the inflorescences (flowering spikes) of individual Ute ladies'-tresses plants by livestock grazing, and (2) any manipulation of the timing or intensity or cessation of grazing of the habitat of this plant.

Hydrologic changes to Ute ladies'-tresses habitat may render that habitat unsuitable by flooding or complete inundation, or by drying of the stream on which the plants depend for moisture. Similarly, a change in chemical composition, for example the sodium absorption ratio, of the soil inhabited by Ute ladies'-tresses could increase the salt content of the soil making the area unsuitable for Ute ladies'-tresses as well as other native plant species.

Coalbed natural gas produced water often contains high concentrations of dissolved salts, making it toxic to plants. Soil saturated with high salinity water will have the soil structure destroyed and water uptake by plants will be inhibited leading to plant stress or death. Bartos and Ogle (2002) characterized groundwater samples from coalbed aquifers in the Powder River Basin of northeastern Wyoming in the medium to very high salinity hazard classes.

Analysis for Effects of the Action on Ute Ladies'-tresses

Analysis for effects of Livestock Grazing Management on Ute ladies'-tresses. Habitat alterations resulting from agricultural use (grazing) may be beneficial, neutral, and/or detrimental to Ute ladies'-tresses orchid depending on when it occurs (McClaren and Sundt 1992, USFWS 1995). The Ute ladies'-tresses orchid is edible to livestock and depressed inflorescence (flowering spike) and fruit production has been observed at sites that are grazed in late summer (Arft 1995). However, populations still capable of reproduction in the presence of long-term grazing, but may experience short-term impacts (Arft 1995).

Livestock management activities have variable effects on Ute ladies'-tresses. Grazing livestock could reduce competition with other grasses and forbs thereby allowing Ute ladies'-tresses to take advantage of sunlight, water, and nutrients that might otherwise be deprived of the plant.

In a 4-year study of a separate species of ladies'-tresses orchid (*S. spiralis*) in Great Britain, Wells (1967) discussed damage done by herbivores to that species (autumn ladies'-tresses). Wells (1967) found that herbivores did very little damage to the leaves of that species even under years of heavy grazing by sheep. Wells (1967) speculated that this unusually small amount of damage indicated how well-adapted ladies'-tresses orchid is to an open habitat in which the turf is kept short by grazing animals.

In contrast, according to Wells (1967) damage to the flowering spike of some of those plants was observed in every year of the 4-year study. The number of plants with damage to the flowering spike varied in each year according to the type and intensity of grazing during the period of flowering. Wells (1967) reports that when sheep were removed in early June, less than 1 percent of the flowering spikes were recorded as damaged that year.

It can be presumed that similar damage could occur to Ute ladies'-tresses as it was recorded to occur to the autumn ladies'-tresses in Great Britain. The Bureau office in Casper does permit sheep and cattle grazing on the surface lands which they administer. Therefore, the livestock grazing program administered by the Bureau may influence the reproductive potential of any given Ute ladies'-tresses plant. Seed number is not thought to be limiting to populations of *S. diluvialis* as flowering spikes have the potential to produce 5 to 30 fruits per flowering spike and each fruit can contain between 100 to 10,000 seeds (Sipes and Tepedino 1994). Therefore, even under heavy grazing pressure as described by Wells (1967), even a small population of *S. diluvialis* has the potential to produce tens of thousands of seeds.

Arft (1994) studied the effects of cattle grazing on Ute ladies'-tresses orchids. The data suggested that the large fluctuations in population size reported in monitoring counts may actually be fluctuations in number of flowering individuals, with many individual plants remaining vegetative (non-flowering) or subterranean. During Arft's (1994) study, the proportion of flowering individuals fluctuated greatly between survey years, indicating flowering plants alone may not be a good indicator of population size.

It is plausible that livestock could also incidentally ingest Ute Ladies'-tresses seed heads and act as seed dispersal mechanisms to introduce the seeds to unoccupied areas and actually improve the reproductive fitness of any given plant although Wells (1967) did not mention any such documented occurrences in his study of the autumn ladies'-tresses. In that study, most of the damage done by cattle in his study was due to trampling and treading on the flowering spikes. No other documentation has been found in the literature relative to the topic of livestock acting as a potential seed disperser of Ute ladies' tresses orchids.

It is currently accepted that grazing activities generally benefit the habitat necessary for Ute ladies'-tresses populations if these activities are timed to occur up to one month prior to flowering. Fencing, changes in livestock seasons of use or type of livestock, and riparian improvement projects may be used to protect the flowering spikes of individual plants from crushing or removal.

The Bureau intends to continue grazing activities and surveys for Ute ladies'-tresses and if populations are discovered, grazing activities will be managed to maintain Ute ladies'-tresses populations (BLM 2005b). The Bureau in Casper has committed to conservation measures to protect Ute ladies'-tresses (Appendix I). The use of these conservation measures will reduce or eliminate the effects by ensuring that (1) populations are discovered prior to any surface disturbing activities, (2) surface disturbances do not take place in occupied habitat, (3) invasive plant species infestations are controlled in a manner conducive to the survival of Ute ladies'-tresses, (4) the hydrologic regime of the plant's habitat is maintained and studied, and (5) grazing activities are conducted in a manner that will maintain the habitat of the species while minimizing any removal of the plant's flowering spikes (BLM 2005b).

Effects from Mineral Development. The extraction of natural gas from coal seams has become a significant energy source in the Powder River Basin of northeastern Wyoming (USFWS 2005). From 1976 to 1996, 1,169 coalbed natural gas wells were drilled in the Powder River Basin. In 2001, the Powder River Basin of northeastern Wyoming had 4,000 coalbed natural gas wells in production. Over 39,000 coalbed natural gas wells are scheduled to be drilled in the Powder River Basin by 2012. Extensive coalbed natural gas development as seen in the Powder River Basin has now expanded to include northern portions of the Casper Resource Area. This expansion is expected to continue

In Wyoming, coalbed natural gas is extracted by drilling wells into a coal seam and removing water to release the gas. As surveys for Ute ladies'-tresses have not been conducted over much of the area where coalbed natural gas development is and will be occurring, this form of energy development may affect undiscovered populations of these plants.

Coalbed natural gas wells dewater aquifers and discharge an average of 10 gallons of water per minute with a maximum of 100 gallons per minute. Coalbed natural gas discharged water is disposed of by direct discharge to surface drainages, passive treatment prior to surface discharge, discharge to upland and bottomland infiltration impoundments, discharge to containment impoundments, and deep well injection. Untreated discharge to surface drainages is the primary method of disposal provided that the coalbed natural gas well discharged water meets Wyoming water quality standards. It is the dewatering of aquifers or discharging of water to surface drainages which could potentially affect Ute ladies'-tresses by inundation, desiccation, erosion, sedimentation, or chemical manipulation of the habitat.

Coalbed natural gas water with lower water quality standards may be discharged into closed containment ponds for infiltration and evaporation. Soils irrigated with high salinity water will adversely impact vegetation and soils. Soils irrigated with high sodium absorption ratio water will alter the soils, creating hard pans and adversely affect vegetation. The sodium absorption ratio of produced water typically is 10-12 times the level beyond which soil will maintain structure to support plant productivity. While there is debate over absolute values for acceptable limits for the sodium absorption ratio, there is consistent agreement that a high sodium absorption ratio for water can significantly impair many soils, particularly irrigated soils and soils located in arid or semi-arid regions (Bauder 2002). Consequently, important Ute ladies'-tresses habitat could be severely impacted or eliminated by surface discharge of coalbed natural gas water.

The construction of reservoirs and associated facilities for disposal of water produced during the development of coalbed natural gas wells can also adversely affect groundwater and surface water. Infiltration or percolation from reservoirs or other facilities of coalbed natural gas water

containing high levels of salts or trace elements can reach groundwater and eventually seep out and reach surface waters. Additionally, groundwater could seep into low areas or basins in upland sites. Reservoirs typically raise the level of the water table of shallow aquifers. This raised water table level can extend a considerable distance down gradient within the water table (Winter *et al.* 1998). If site conditions are suitable, a shallow, underground water aquifer can surface downstream of coalbed natural gas water reservoir. Infiltration of coalbed natural gas produced water from a treatment reservoir through the underlying strata can leach salts and trace elements.

Based on the reasonable foreseeable development of coalbed natural gas wells in the Casper Resource Area, it is likely that some of these coalbed natural gas wells may adversely affect some, as of yet, undiscovered Ute ladies'-tresses populations either on Bureau-administered lands or on private or state-owned lands downstream.

Under the Bureau's current management scenario, it can be expected that coalbed natural gas produced water will be discharged into perennial, ephemeral, or dry drainages, increasing flows and changing the dynamics of the drainage systems. Some of this discharged water may be high in trace elements, and/or sodium, causing death, lack of vigor, or reduced reproductive capacity of Ute ladies'-tresses orchids and other plants. High volumes of discharged water may also cause significant erosion or sedimentation of the habitat leaving Ute ladies'-tresses populations buried under sediment, covered by water, or washed downstream. Lowering of the water table could result in significant drying of the stream bed and vegetative changes in some areas.

The Bureau is committed to conducting surveys for Ute ladies'-tresses orchids in suitable Ute ladies'-tresses habitat on the lands they administer prior to beginning potentially disturbing projects (Appendix I) and if necessary will modify the action to protect the habitat and/or the species. However, even surveys performed according to protocol may not be able to detect the presence of the plant in all cases. Due to the ability of Ute ladies'-tresses to persist below ground for years before emerging, negative survey results in suitable habitat do not guarantee that the plant is not present. Thus, direct impacts to Ute ladies'-tresses plants from coalbed natural gas development could occur on Bureau-administered lands. In addition, direct impacts from Bureau-authorized coalbed natural gas development could also occur on private and state-owned lands downstream from Bureau-administered lands. The Bureau may have no legal access or authority for performing surveys on those lands. If the plant is present on those lands downstream, loss of the entire population or some part of it may occur if surface disturbance from streambank erosion, habitat inundation, or changes to hydrology or water quality occurs.

Although the Bureau has committed to (1) avoidance of Ute ladies'-tresses orchid habitat where known populations exist, and (2) surveying in suitable habitat; complete avoidance of all Ute ladies'-tresses populations is not likely to occur, given that surveys do not detect all plants present in any given location. The plant spends much of its life below ground in a non-flowering state. Reclamation of drill pads, roads, and pipelines also involves ground disturbing activities possibly leading to undocumented Ute ladies'-tresses plants in an area. Reclamation activities may result in the loss of undetected individual plants or populations of this orchid as well.

Interrelated and Interdependent Effects: The highly interspersed surface and mineral ownership of coalbed natural gas development occurring in the Powder River Basin creates challenges for protection of the Ute ladies'-tresses orchid and suitable habitat. There will be some actions regarding non-federal surface and/or minerals that would not occur but for a federal action (i.e.,

they are interrelated or interdependent to the federal action). Rights-of-way for access to non-federal in-holdings is an example of a common federal action leading to interrelated and interdependent actions on non-federal lands.

Development of coalbed natural gas on non-federal lands as a result of a Bureau action could have the same effects on the Ute ladies'-tresses orchid as coalbed natural gas development on federal lands. To the extent that these actions are interrelated or interdependent to a federal action, any effects to this orchid associated with development of non-federal minerals must be considered prior to permit issuance or other authorization by the Bureau.

Summary of Effects on Ute Ladies'-tresses

Grazing. Ute ladies'-tresses populations in Wyoming are typically found in areas where livestock grazing has maintained the habitat in areas where competing vegetation has been removed and there is a fair amount of bare ground surface (Fertig 2004) characteristic of an area that has been partially grazed regularly. However, activities authorized in the livestock grazing program may damage individual plants. The degree to which the plants can sustain damage and not be "adversely affected" is currently unknown but it is suspected that the activities authorized in the livestock grazing program may affect individual Ute ladies'-tresses orchid's reproductive success. The Bureau has made a "may affect, likely to adversely affect" determination for the potential effect that Bureau-authorized livestock grazing activities may have on Ute ladies'-tresses that may exist on Bureau-administered surface acreage in the Casper Resource Area.

Coalbed Natural Gas Development. Ute ladies'-tresses populations in Wyoming are currently not known to occupy areas coinciding with or downstream from locations where coalbed natural gas development is occurring. However, surveys for Ute ladies'-tresses populations adjacent to and downstream from on-going coalbed natural gas development are lacking. Given the lack of surveys in coalbed natural gas development areas in the past and the potential for plants to go undetected during survey efforts, it is possible that Ute ladies'-tresses are present in areas of coalbed natural gas development. With the large quantity and sometimes poor quality of coalbed natural gas produced water discharged into streams, the potential for adversely affecting Ute ladies'-tresses plants, if they do occur in those areas, remains high.

Coalbed natural gas development may cause dewatering of subterranean aquifers, drying of riparian habitat, desiccation of Ute ladies'-tresses plants and habitat, increased erosion rates, discharge of poor quality water, or direct habitat removal. The dewatering of subterranean aquifers underneath any Ute ladies'-tresses plant populations could cause major shifts in hydrologic regimes which could cause drying of the riparian areas upon which riparian plants such as Ute ladies'-tresses depend. Drying of the streams could cause desiccation of the plants and their habitat and could cause local extirpation of populations of this federally threatened plant species. Likewise, inundation of the habitat by increased water discharge could make it difficult or impossible for some populations to persist. Increased erosion rates may cause the soil comprising the habitat of the species and the plants themselves to wash downstream leading to death of the Ute ladies'-tresses plants and loss of their habitat. Discharge of poor quality water into the drainages with Ute ladies'-tresses plants could similarly result in death of plants and extirpation of populations as the habitat becomes too extreme in certain chemical parameters such as a high sodium absorption ratio which would make the plant unable to persist in its habitat. Direct habitat removal or destruction of Ute ladies'-tresses plants or habitat for well pad, access road, powerline, or pipeline construction activities may occur if surveys are implemented

but fail to identify the presence of the plants even though a population of plants is present. This could occur since Ute ladies'-tresses orchids may remain underground for years with no identifying above-ground parts.

The Bureau determined that coalbed natural gas development on their lands "may affect and is likely to adversely affect" the Ute ladies'-tresses based on the potential for changes in habitat and hydrology, sedimentation, and erosion. However, currently there are no known populations of this plant known to be adversely affected by these activities.

Minimization of Effects to the Species

To minimize the effects to listed species, the Bureau will implement the conservation measures listed in Appendix I. For all listed species, the Bureau will ensure that surveys are conducted in suitable habitat prior to implementation of potentially disturbing project activities. The Bureau's implementation of the conservation measures of Appendix I will reduce human and project disturbance to riparian areas for the protection of individual Colorado butterfly plants and Ute ladies'-tresses orchids. The Bureau's implementation of the conservation measures will also minimize the potential for inadvertent spraying of herbicides or introduction of noxious weeds into the habitats of federally listed plants of the Casper Resource Area. The Bureau's application and enforcement of buffer restrictions for spraying of insecticides near listed plants will help ensure that populations of necessary insect pollinators of listed plants will be maintained.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Non-federal activities which may cumulatively affect Ute ladies'-tresses across the Casper Resource Area include oil and gas (including coalbed natural gas) development, uranium mining, sand, gravel, and scoria mining, road and railroad construction, and rural and urban housing development, hard rock mining (including coal, trona, and phosphates), subdivision development along rivers, recreation along rivers and river corridors (including camping, rafting, hunting, and golf course development), municipal solid waste landfill expansions, housing developments, stockyard operations for livestock grazing, and farming near and within riparian corridors. Other potential effects from non-federal actions in the planning area could include increases in urbanization (although this is not thought to be a significant impact in the planning area at this time).

Impacts to Ute ladies'-tresses orchids or Colorado butterfly plant could result from livestock operations on private lands in the Bureau's resource areas in Wyoming. These impacts could be beneficial (maintaining habitat through grazing), or detrimental (limiting individual orchid reproductive fitness by removal of fruiting parts through trampling or ingestion). The nature of the impacts from livestock operations is likely to be fairly similar across land ownerships (BLM 2005b).

Mowing and haying on private and state lands could be beneficial to Ute ladies'-tresses or Colorado butterfly plant populations. However, these activities could also be detrimental if done before fruits have ripened, or if the height of hay cutting is too low. In many current management situations, the timing of mowing is related to growth conditions of the hay crop and weather patterns rather than the biological needs of these threatened plants.

A substantial amount of the surface ownership within the project area is private and many of the oil and gas rights are privately owned. Many new wells and many miles of roads and pipelines are reasonably certain to occur on private lands in the Bureau's resource areas. This is evidenced by the current and historic rates of coalbed natural gas development on private land throughout the Powder River Basin of the Buffalo Resource Area. The number of coalbed natural gas wells already drilled or permitted for drilling on private surface/private minerals within the Powder River Basin project area has risen to 14,116 coalbed natural gas wells (Litwartz 2002). Therefore, it can reasonably be expected that future coalbed natural gas development will continue. Also, four to six new coal-fired power generation plants have been proposed for the Powder River Basin in northeastern Wyoming. The construction of power plants and associated infrastructure could result in additional loss of some Ute ladies'-tresses habitat.

Finally, the data are not adequate to determine the distribution and abundance of all Ute ladies'-tresses or Colorado butterfly plant populations and suitable habitats on private or state-owned lands in the Bureau's resource areas. Of the roughly 8.5 million acres within the Casper Resource Area, 1.4 million surface acres are managed by the Bureau with most available to livestock operations. The Bureau in Casper also oversees the use of approximately 4.7 million subsurface acres within the resource area. The exact cumulative effects of many of these species are not known at this time due to a lack of specific information on future, state, local, or private actions in the Casper Resource Area over the life of the RMP.

CONCLUSION

After reviewing the current status of the Colorado butterfly plant and the Ute ladies'-tresses orchid; the environmental baseline for the action area; the effects of the Casper Resource Management Plan; and the cumulative effects, it is the Service's biological opinion that the direct and indirect effects of the implementation of the Casper Resource Management Plan, as proposed, are not likely to jeopardize the continued existence of the Colorado butterfly plant or the Ute ladies'-tresses orchid. No critical habitat has been designated for the Ute ladies'-tresses; therefore, none will be affected.

The Service has reached this conclusion by considering the following.

Colorado Butterfly Plant

1. It appears that this species is more widespread and numerous than was previously known. When this taxon was originally designated as a candidate for listing, it was known from only three small populations. Surveys in 1984-86 and 1992-93 resulted in the discovery or relocation of 22 populations, many of which are reasonably large. More importantly, studies have indicated that this species may be less threatened by certain agricultural practices (e.g., grazing) than originally suspected. In particular, populations may continue to thrive in winter-grazed or rotationally grazed pastures and can persist in

hayed meadows, especially if haying is delayed until after the plants fruiting period (Marriott 1987; Fertig 1994, 1996).

2. The Bureau has no known populations of this species under its direct management as no populations are currently known to exist on Bureau-administered surface lands in the RMP planning area.
3. The Bureau is not proposing to implement any significant changes to the management of any Colorado butterfly plant potential habitat that may cause detrimental impacts to any populations.
4. The Bureau is committed to implementing protective measures (Appendix I) to minimize potential impacts to Colorado butterfly plant and its designated critical habitat if these plants or critical habitat are located on lands over which the Bureau has discretionary authority through the approval of allotment management plans for isolated "section 15 parcels".
5. Finally, although individuals can be adversely impacted by livestock grazing activities (trampling, ingestion, etc.) and livestock may cause some degree of soil disturbance or compaction, the population seems to withstand some grazing pressure and may actually benefit from these activities for maintenance of their habitat.
6. The Service believes that the take, resulting from the Casper Resource Management Plan, is tied to the use of livestock grazing which may result in harm, or death of Colorado butterfly plants. Any actions implemented under the RMP that may adversely affect Colorado butterfly plant would require separate formal section 7 consultation at the project level. At the project level, there will be an analysis of effects and measures will be implemented to minimize adverse effects, as appropriate, for each particular project.

Ute Ladies'-tresses

7. It appears that this species is more widespread and numerous than was previously known. At the time of listing, the total known Ute ladies'-tresses population numbered approximately 6,000 individuals. Extensive census efforts between 1991-1995 revealed that known population size was approximately 20,500 individuals. Since 1995, several new populations have been located adjacent to the action area, one of which contained several thousand individuals. Between 1992-1999, the total known population of the Ute ladies'-tresses orchid observed across its range reached over 60,000 individuals (USFWS 2004e). It is expected that new populations will continue to be discovered as not all potential habitat has been surveyed. As a response to the plant's more widespread distribution, the Service has undertaken a 5-year status review and has begun preparing a 12 month finding on a petition to delist the species (USFWS 2004d).
8. The Bureau is not proposing to implement any significant changes to the management of any Ute ladies'-tresses potential habitat that may cause detrimental impacts to any populations.
9. The Bureau is committed to implementing protective measures (Appendix I) to minimize potential impacts to Ute ladies'-tresses.

10. Although individuals can be adversely impacted by livestock grazing activities (trampling, ingestion, etc.), the population seems to withstand some grazing pressure and may actually rely on these activities for maintenance of their habitat.

ACTIONS AFFECTING PLATTE RIVER FLOWS

The Platte River River Recovery Program provide a programmatic, streamlined, process for section 7 consultation under the Act to expedite section 7 compliance on water projects in these river basins, respectively. Participation in this recovery program provides section 7 compliance for the vast majority of new and existing water projects in this basin. Depletion consultations under section 7 are tiered to the June 2006 Biological Opinion on the Platte River Recovery Implementation Program, facilitating the streamlined consultation process for all such future depletion consultations.

Platte River Depletions

Since 1978, the Service has consistently taken the position in its section 7 consultations that federal agency actions resulting in water depletions to the Platte River system may affect, and are likely to adversely affect, one or more federally-listed threatened or endangered species and their critical habitat. Currently, it is recognized that federal agency actions resulting in water depletions to the Platte River System are likely to adversely affect the whooping crane (*Grus americana*) and designated critical habitat, interior least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), bald eagle (*Haliaeetus leucocephalus*), and western prairie fringed orchid (*Platanthera praeclara*).

While the proposed Casper RMP does not authorize site-specific or project-level actions, leading to depletions in the Platte River Basin, the Casper RMP identifies several potential types of projects that would result in annual average depletions to the Platte River (Table 3 of BLM 2007a), including: conventional oil and gas drilling (27 acre-feet); livestock water impoundments (51 acre-feet), livestock water wells and springs, (< 1 acre-feet), and fish and wildlife water impoundments (192 acre-feet). The proposed Casper RMP does not authorize these projects. Implementation of these projects, or any other projects leading to depletions to the Platte River, will require individual or separate section 7 consultation for effects of depletions to downstream federally listed species of the Platte River and their designated critical habitat.

INCIDENTAL TAKE STATEMENT

Section 4(d) and 9 of the Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the federal agency or the applicant. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and

not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed plants or the malicious damage of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of state law or regulation or in the course of any violation of a state criminal trespass law.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations (CR) are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's section 7(a)(1) responsibility for these species.

- CR1. The Service recommends that the Bureau follow all best management practices as identified in the Bureau's Casper RMP Biological Assessment (BLM 2007a) and the Bureau's Statewide Programmatic Colorado Butterfly Plant Biological Assessment (BLM 2005a) and the Bureau's Statewide Programmatic Ute ladies'-tresses Biological Assessment (BLM 2005b).
- CR2. In known occupied Ute ladies'-tresses and Colorado butterfly plant habitat, the Service recommends that the Bureau use management actions that are compatible with protection and conservation of pollinators of these species.
- CR3. The Service recommends that the Bureau monitor and manage invasive species so these do not impact the Ute ladies'-tresses orchid or Colorado butterfly plant or their habitats.
- CR4. The Service recommends that the Bureau not authorize herbicide use in known or occupied Ute ladies'-tresses or Colorado butterfly plant habitat without prior review by Service biologists.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

RE-INITIATION NOTICE

This concludes formal consultation on the Casper Resource Management Plan Revision as outlined in your March 17, 2005 request for formal consultation. As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing take must cease pending re-initiation.

Thank you for your assistance in the conservation of this endangered, threatened, and candidate species. In future communications regarding this Biological Opinion, please refer to consultation number ES-6-WY-07-F0309. If we may be of further assistance, please contact Alex Schubert of my staff at (307) 772-2374, ext. 238.

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APPENDIX I – CONSERVATION MEASURES FOR THE CASPER RESOURCE MANAGEMENT PLAN

These conservation measures are taken from the Casper Resource Management Plan (RMP) Biological Assessment (BA) (BLM 2007). Implementation of the following conservation measures are intended to minimize, or eliminate, adverse impacts to Threatened, Endangered, Candidate, and Proposed (T&E) species that are likely to result from implementation of the management actions provided in the Casper Resource Area. The U.S. Bureau of Land Management (Bureau or BLM) has committed to implementing the following conservation measures. The Bureau has been active in conservation of listed and candidate species, and is committed to playing a key role in the recovery effort for these species.

The binding T&E species conservation measures that follow will reduce potential effects to those species and their habitats and highlight the steps the Bureau can take to work towards recovery of the species. The following conservation measures will be implemented within the Casper Resource Area where there is potential for listed species to occur. Conservation measures are binding measures which the Bureau will implement to facilitate the conservation of all T&E species.

Platte River Conservation Measure

1. For actions projected to deplete water from the Platte River watershed, the Bureau will initiate formal consultation with the Service prior to activity approval. The Bureau will continue to participate in the Platte River Recovery Implementation Program (USBR and USFWS 2006) or current Platte River recovery process.

General Conservation Measures

Management of listed threatened and endangered species is addressed in four primary ways:

1. Through conservation measures identified as part of a species listing package, as reasonable and prudent measures recommended in the BO from the Service in response to a BA, and through species protection measures determined through collaborative interagency and multidiscipline efforts.
2. The Bureau's Wyoming Field Offices incorporate the Wyoming BLM Mitigation Guidelines for Surface-Disturbing and Disruptive Activities. These guidelines state that prior to conducting activities in known or suspected habitats, the lessee or permittee is required to conduct inventories or studies in accordance with the BLM and (or) USFWS guidelines to verify the presence or absence of federally listed threatened and endangered species. In the event the presence of one or more of these species is verified, the operation plans of a proposed action will be modified to include the protection of the species and its habitat, as necessary. Possible protective measures may include seasonal or activity limitations, or other surface management and occupancy constraints.
3. The Bureau incorporates the Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming (BLM 1998). As stated, the "standards apply to all resource uses on public lands," while the "guidelines apply specifically to livestock

grazing management practices on the BLM-administered public lands.” The development and application of these standards and guidelines are intended to achieve the following four fundamentals of rangeland health: (1) proper functioning of air and watersheds; (2) proper cycling of air, water, soil nutrients, and energy; (3) attainment of state water quality standards; and (4) sustained maintenance and management of the native fauna and flora of the area, including federally listed threatened and endangered species. These fundamental goals are achieved through inventory of the natural resources, appropriate management actions aimed at these resources, monitoring and evaluation of the effectiveness of these management actions, and land management adjustments as necessary.

4. Special Status Species Management, BLM Manual 6840, directs field office managers to implement special status species programs within their area of jurisdiction by (1) conducting and maintaining current inventories, including surveys for occupancy of special status species on public lands; (2) providing for the conservation of special status species in the preparation and implementation of recovery plans with which the Bureau has concurred, interagency plans, and conservation agreements; (3) ensuring that all actions comply with the ESA, its implementing regulations, and other directives associated with conserving special status species; (4) coordinating field office activities with federal, state, and local groups to ensure the most effective program for special status species conservation; (5) ensuring actions are evaluated to determine if special status species objectives are being met; (6) ensuring all actions authorized, funded, or carried out by the Bureau follow the interagency consultation procedures as outlined in 50 CFR, Part 402; and (7) ensuring results of formal section 7 consultations including terms and conditions in incidental take statements are implemented. Implementation will ensure that actions authorized by the Bureau do not contribute to the need for a species to become listed.

Conservation measures can take three forms: first, the existing conservation measures in the Casper Proposed RMP (Proposed Protections); second, BLM-implementation of additional conservation measures that would reduce impacts to listed species; and third, an additional group of measures that the Bureau will consider implementing that include any appropriate BMPs to further protect the species and its habitats. In the event new populations of the species are discovered, these measures would apply until such time that further investigation and subsequent consultation with the Service results in more appropriate management prescriptions.

The following general conservation measures for all listed threatened and endangered species will be applied under all resource programs.

5. The Wyoming BLM Mitigation Guidelines for Surface Disturbing Activities (Appendix I in BLM 2007) requires any lessee or permittee to conduct inventories or studies in accordance with BLM and USFWS guidelines to verify the presence or absence of threatened or endangered species before any activities can begin onsite. In the event the presence of one or more of these species is verified, the operation plans of a proposed action will be modified to include the protection of the species and its habitat, as necessary. Possible protective measures may include seasonal or activity limitations or other surface management and occupancy constraints.

6. Grazing management will consider threatened and endangered species and their habitats. Grazing management practices will incorporate the kinds and amounts of use that will restore, maintain, or enhance habitats to assist in the recovery of federally threatened and endangered species or the conservation of federally listed species of concern and other state-designated special status species. Grazing management practices will maintain existing habitats or facilitate vegetation change toward desired habitats by considering the hydrology, physical attributes, and potential for the watershed and the ecological site (BLM 1998).
7. When project proposals are received, the Bureau shall initiate coordination with the Service at the earliest possible date so the Service can advise on project design. This will minimize the need to redesign projects at a later date to include conservation measures determined appropriate by the Service.
8. The Bureau will manage all public lands in the planning area to conserve and (or) improve the habitats of special status species. The objectives are to prevent the need for listing of species under the ESA and to maintain or improve conservation of special status species habitats.
9. Water developments and placement of salt, mineral, and forage supplements for livestock will not be allowed on areas inhabited by special status plant species.
10. Proposed habitat expansion, introductions, reintroductions, and translocations of native (including special status species) and nonnative fish and wildlife species would be considered on a case-by-case basis.
11. To avoid collision and electrocution of raptors and other avifauna, power lines will continue to be constructed in accordance with standards outlined in the Avian Protection Plan Guidelines (APLIC 2006).
12. Wetland and riparian habitats will be maintained, enhanced or preserved to provide wildlife habitat, improve water quality, and enhance forage conditions. When planting or seeding vegetation in areas identified as threatened and endangered or special status species habitat, only native species will be selected.
13. In areas where power lines go over wetland habitats, the observability of the lines will be enhanced for avian species, including bald eagles and whooping cranes, through the addition of “flappers” or other visibility enhancing devices attached to the lines.
14. New power line construction or communication towers with guy lines over or adjacent to wetland habitats will not be allowed.
15. The Bureau will participate with the development of species specific recovery plans in coordination with the USFWS and other agencies. Populations and habitats on Bureau-administered lands will be monitored to determine if recovery objectives are being met.
16. In the event a dead or injured threatened or endangered species is discovered during project activities the Bureau would notify the Service’s Ecological Field Office (307-772-2374) or Law Enforcement Office (307-261-6365) within 24 hours of the discovery.

17. Bureau-administered public lands that contain identified habitat for threatened and endangered Species will not be exchanged or sold, unless it benefits the species.
18. The Statewide Programmatic Biological Assessments and Biological Opinions authorized for each species, including all reasonable and prudent measures and terms and conditions, will be implemented for the Casper planning area.

Air Quality Conservation Measure

1. Site selection is initiated by the Air Quality Specialist in the Bureau's Wyoming State Office. BLM specialists in the Casper Field Office are contacted by the Air Quality Specialist and the preferred site undergoes a preliminary analysis to determine if there will be a significant impact to important resource values. Concurrent with the preliminary analysis, a records check will be performed to identify any concerns relating to listed species or habitat that may be in the area of the proposed location. If there is no indication of the presence of species or habitats that will be affected, a clearance will be issued for the project by the Bureau.

Fire Management and Ecology – Unplanned/Wildland Fire Conservation Measures

1. Due to the immediacy of fire suppression operations, site-specific ESA section 7 consultation prior to a wildland fire is not performed. Moreover, effects determinations for species are made after the emergency fire suppression action has occurred. Emergency consultation with the USFWS is initiated as soon as practicable during or following a wildland fire to determine if necessary measures need to be implemented to avoid adverse impacts to listed species both during suppression efforts, and during rehabilitation efforts. The Bureau uses the "Emergency Consultations for Wildfire Activities" memorandum (USFWS 2004a) when establishing operating guidelines for emergency consultation.
2. Coordination between BLM biologists and fire-suppression crews through the fire resource advisor will help promote exchanges of knowledge regarding known threatened and endangered species and their habitats at a fire location.

Fire Management and Ecology – Planned/Prescribed Fire Conservation Measures

1. Coordination will take place between the Fire Management Officer and BLM biologists during the planning process to ensure the most desirable effects for wildlife habitats will be realized and to reduce possible negative results to wildlife or habitat values.
2. Prescribed burning is implemented to meet resource management objectives, but is not permitted from November 1 to March 31 within bald eagle winter roost areas.
3. Prescribed fire is prohibited within 1 mile of known or discovered occupied nests from February 1 to August 15. Prescribed fire is allowed ½ mile from a bald eagle nest outside of the nesting season.
4. Surface disturbing activities are not allowed within ½ mile of delineated feeding concentration areas (North Platte River) from November 1 through March 31.

5. Prior site selection for water collection locations will be conducted with BLM biologists for the conservation of threatened and endangered species and their habitats.
6. If reseeded is necessary for rehabilitation, native grass and forb species will be used for reclamation.

Fish and Wildlife Resources Conservation Measures

1. In addition to the conservation measures identified throughout this document, all projects will be evaluated for the presence of threatened and endangered species and the associated impacts.
2. In the event a dead or injured threatened or endangered species is discovered during project activities the Bureau would notify the USFWS Ecological Field Office (307-772-2374) or Law Enforcement Office (307-261-6365) within 24 hours of the discovery.
3. Each year the Bureau shall verify the status of known threatened and endangered species habitats on lands administered by the Bureau within the planning area. As a matter of maintaining inventory information the Bureau shall coordinate annually with the USFWS, WGFD, and other appropriate entities to determine the status. Known threatened and endangered species habitats will be assumed active if the status has not been verified.

Forests, Woodlands, and Forest Products Conservation Measures

1. Coordination occurs between BLM forestry personnel and BLM biologists on forestry management plans and projects.
2. The speed limit on all project roads will not exceed 35 miles per hour (mph), where possible.
3. Timing stipulations to reduce the impacts to species during nesting, roosting, or flowering seasons will be used.

Health and Safety Conservation Measures

1. Due to the immediacy of hazardous materials (HAZMAT) emergency incident operations, site-specific ESA section 7 consultations prior to an incident will not be performed. Effects determinations for species will be made after the emergency HAZMAT incident action has occurred. Emergency consultation with the Service will be initiated as soon as practicable during or following an incident to determine if necessary measures need to be implemented to avoid adverse impacts to listed species both during cleanup efforts and during rehabilitation efforts.
2. For HAZMAT sites that are not addressed as emergency actions under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), routine ESA section 7 consultations are required, in addition to adherence to other federal and state regulatory procedures.

3. If revegetation is necessary after a HAZMAT cleanup activity, species native to the adjacent area will be seeded.

Invasive, Nonnative Plant Species and Pest Control Conservation Measures

1. Application of chemicals will be in accordance with EPA guidelines and follow the U.S. Department of the Interior's (USDI) restricted chemical use list. Only chemicals approved by the USDI for use on public land will be authorized.
2. Chemical applications will be timed so that they will not occur during nesting, brooding, or roosting seasons.
3. Where possible, chemicals will be chosen that will have no effect (NE) to other species in the area, such as birds or mammals.
4. Buffer zones along waterways and riparian areas will preclude the use of herbicides unless the chemical is safe for use in these areas.
5. The Casper Field Office manager will meet annually with the local USDA-APHIS Wildlife Services supervisor to review the proposed animal damage management program actions for the coming year and assure they are in compliance with the RMP.
6. The Bureau requires the local USDA-APHIS wildlife services supervisor to provide the Casper Field Office manager with a report of the actions conducted for the prior year. The Casper Field Office manager is responsible for reviewing this document and assessing whether actions are in compliance with applicable laws, regulations, and agreements.
7. The Casper Field Office manager is responsible for ensuring that the USDA-APHIS wildlife service is consulting with the Service for animal damage control actions on public lands within the planning area.

Lands and Realty Conservation Measures

1. Coordination will take place between BLM realty staff and BLM biologists to identify land exchanges that will benefit listed species or their habitats.
2. The Bureau must conduct surveys for threatened and endangered species prior to disposal of any Bureau-administered lands.

Livestock Grazing Conservation Measures

1. Use stipulations will be applied when grazing permits come up for renewal.
2. Grazing management practices will restore, maintain, or improve plant communities. Grazing management strategies consider hydrology, physical attributes, and potential for the watershed and the ecological site (Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the BLM in the State of Wyoming [BLM 1998]).

3. Grazing management practices will incorporate the kinds and amounts of use that will restore, maintain, or enhance habitats to assist in the recovery of federally threatened and endangered species or the conservation of federally listed species of concern and other state-designated special status species. Grazing management practices will maintain existing habitats or facilitate vegetation change toward desired habitats. Grazing management will consider threatened and endangered species and their habitats (Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the BLM in the State of Wyoming [BLM 1998]).
4. The Bureau will utilize livestock grazing, mowing/haying, and prescribed burning as management tools to maintain favorable habitat conditions for Ute ladies'-tresses, where feasible. Mowing and grazing, with proper timing and intensity, reduces the native and exotic plant competition for light and possibly for water, space, and nutrients.
5. Salt, mineral, or forage supplements will not be allowed within ¼ mile of water, wetlands, and riparian areas, unless written analysis shows that watershed, riparian, wetlands, wildlife, and vegetative values will not be adversely affected. Forage supplements will be required to be certified weed-free.
6. Coordination will occur between BLM biologists and range conservationists prior to authorizing grazing actions.

Mineral Resources – Locatable Conservation Measures

1. All bald eagle roosts are withdrawn from location and appropriation under mining laws.
2. To protect bald eagle feeding areas, surface development is prohibited within ¼ mile of the North Platte River on a year-round basis.
3. To protect bald eagle foraging areas, surface disturbing activities within ½ mile of the river are not allowed from November 1 through March 31.

Mineral Resources – Leasable – Oil and Gas Conservation Measures

1. Ensure the completion of oil and gas conditions of approval prior to authorizing an APD and enforcement of site-specific APD condition of approval.
2. All bald eagle roosts are protected by an NSO stipulation.
3. Surface development is prohibited from ½ to 1 mile of known or discovered bald eagle nests.
4. To protect feeding concentration areas, surface development is prohibited within ¼ mile of the North Platte River on a year-round basis.
5. Surface-disturbing activities within ½ mile of the North Platte River are not allowed from November 1 through March 31.

6. All new power lines must be constructed in conformance with APLIC standards (APLIC 2006).

Mineral Resources – Leasable – Salable Conservation Measures

1. Stipulations or conditions will be included in the terms of the contract to ensure protection of the natural resource found there and reclamation of the land following project completion.
2. Reclamation plans will be developed to restore disturbed areas to conditions as close to pre-disturbance conditions as possible.
3. If crucial wildlife habitats are disturbed, these disturbed areas will be reclaimed to approximate original conditions (i.e., topography, vegetation, hydrology, etc.) after completion of actions in the area, in part to ensure suitable habitats are present on the reclaimed landscape. Reclamation will attempt to return the plant community to the pre-existing condition as soon as possible.
4. All reclamation proposals must conform to federal and state agency permit requirements and be approved by the Bureau.
5. Prohibit the sale and disposal of salable minerals in areas occupied by threatened and endangered species.
6. Within bald eagle roost areas, mineral materials are not available for disposal.
7. Surface development is prohibited from ½ to 1 mile of known or discovered bald eagle nests.
8. To protect feeding concentration areas, surface development is prohibited within ¼ mile of the North Platte River on a year-round basis.
9. Surface-disturbing activities within ½ mile of the North Platte River are not allowed from November 1 through March 31.

Off-Highway Vehicles and Travel Management Areas Conservation Measures

1. If relatively high OHV use is documented in any location on public land, an analysis to determine if the area needs special designation to protect listed species or their habitats will be performed.
2. Site management plans will be developed for high-intensity OHV use areas.
3. Areas will be closed to off-road travel if sensitive areas are identified that require this protective measure.
4. No new roads or other surface developments will be authorized in bald eagle roost areas.

Recreation Conservation Measures

1. To conserve and protect natural areas, planned trails are created to control human traffic.
2. No SRP will be issued for organized prairie dog shooting competitions or other commercial activities involving the shooting of prairie dogs.
3. No preprinted maps indicating the location of prairie dog colonies shall be provided to the public for the purpose of recreational shooting.
4. Recreational use will be monitored as an aid in deciding what level of management is needed, as well as what development opportunities could be pursued. Coordination with other federal and state agencies to determine where recreational uses are occurring will take place to monitor Intensity and season of use in potential listed species habitats.
5. Public land areas with the potential for water-based recreation will be monitored to determine intensity and season of use in potential listed species habitats.

Special Designations – Areas of Critical Environmental Concern and Other Management Areas Conservation Measure

1. Surveys for the Ute ladies'-tresses orchid will be conducted in potential habitat according to the current USFWS survey guidelines within MAs and ACECs. The surveys will be conducted for three consecutive years in potential orchid habitat. If the first survey shows that suitable habitat doesn't exist, even though streams occur in an area to be impacted, these areas may be dropped from further surveys. In suitable Ute ladies'-tresses habitat in these MAs, current actions will cease and the authorization of new actions will be held until surveys are completed.

Special Status Species – Fish and Wildlife Conservation Measures

1. No surface disturbance or wildlife disturbing activities will be allowed seasonally (April 10 through July 10) within ¼-mile of all potential mountain plover nesting areas. Exceptions to this seasonal restriction require mountain plover surveys (BLM 2004).
2. Additional conservation measures currently committed to by the Bureau for special status wildlife species are listed under the individual species.

Visual Resource Management Conservation Measures

1. Stipulations will be applied to projects to insure that the resulting action does not distract from the visual character of the area to the extent that the character of the viewshed will be compromised.

Water Resources Conservation Measures

1. Any actions occurring in riparian or wetland areas will be surveyed and water quality monitored as a safeguard to protect potential Ute ladies'-tresses habitat.

2. Coordination between BLM hydrologists and BLM biologists will take place before any planned water resource management-related actions take place on the ground. Coordination will occur between BLM biologists and other BLM activity planners to ensure exchange of information regarding threatened, endangered, proposed, and candidate species, their location, restrictions, and conservation measures.

SPECIES-SPECIFIC CONSERVATION MEASURES

Implementing the following species-specific conservation strategies is intended to minimize adverse impacts that are likely to result from implementing the management actions provided in the RMPs. Specific to each species, this section discusses (1) existing protections, (2) conservation measures committed to by the Bureau, and (3) best management practices (BMPs). In the event new populations of the species are discovered, these measures will apply until such time that further investigation and subsequent consultation with the Service result in more appropriate management prescriptions.

Black-footed ferret

1. Information on black-footed ferret identification shall be posted in common areas and circulated in a memorandum among all employees and service providers. This information shall illustrate the black-footed ferret and its sign; describe morphology, tracks, scat, skull, habitat characteristics, behavior, current status, and causes of decline; and the relationship between project development and impacts to black-footed ferrets.
2. Operators, contractors, project proponents, and BLM field staff shall be shown how to identify a black-footed ferret and its sign and will be provided with information about its habitat requirements, natural history, status, threats, possible impacts of project development actions, and ways to minimize these impacts.
3. If suitable prairie dog town/complex avoidance is not possible, surveys of towns/complexes for black-footed ferrets shall be conducted in accordance with USFWS guidelines and requirements. This information shall be provided to the Bureau and the Service in accordance with section 7 of the ESA, and the Interagency Cooperation Regulations.
4. If any black-footed ferrets or their sign are found within a prairie dog town or complex previously determined to be unsuitable for, or free of, ferrets, all previously authorized, project-related actions (or actions on any future application that may directly, indirectly, or cumulatively affect the colony/complex) on-going in such towns or complexes shall be suspended immediately and section 7 consultation re-initiated with the Service.
5. Observations of black-footed ferrets, their sign, or carcasses on a project area and the location of the suspected observation, however obtained, shall be reported within 24 hours to the appropriate local Bureau wildlife biologist and Field Supervisor of the Service's office in Cheyenne, Wyoming, (307) 772-2374. Observations will include a description including what was seen, time, date, exact location, suspected cause of death, and observer's name and telephone number. Carcasses or other "suspected" ferret

remains shall be collected by the Service or Bureau employees, and deposited with the Service's Wyoming Field Office or the Service's law enforcement office. This type of specimen collection is authorized as described in 50 CFR 17.21(c)(3-4). It is imperative that any fresh black-footed ferret carcass be salvaged and immediately transported to the Service so pertinent information concerning the cause of death can be gathered, including photographs in order to document an accurate depiction of the fatality.

6. The Bureau shall monitor and restrict, if necessary, recreational opportunities and other uses on Bureau-administered lands within 1 mile of formally proposed and active reintroduction sites for black-footed ferrets.
7. The Bureau shall ensure that black-footed ferret surveys are conducted at prairie dog towns and complexes where any evidence of black-footed ferrets is found, such as skeletal material or hair.
8. The Bureau and Operators shall conduct educational outreach to employees regarding the nature, hosts, and symptoms of canine distemper, and its effects on black-footed ferrets, focusing attention on why employees should not have pets on work sites during or after hours. The Bureau shall encourage Operators to develop policies to prohibit dogs from operation sites within black-footed ferret reintroduction areas.
9. Operators and contractors shall prohibit or discourage dogs from being brought to black-footed ferret reintroduction sites by project employees. The Bureau shall require current distemper vaccinations on any dogs that will be entering the Shirley Basin black-footed ferret management area and any new black-footed ferret reintroduction sites. Vaccinated puppies shall not be allowed until one month after their final distemper vaccination due to effects of the modified live virus vaccine.
10. As part of an overall wildlife inventory program, the Bureau shall conduct periodic field surveys for black-footed ferrets on public lands in potential habitat, as appropriate.
11. When project proposals are received for areas that still require black-footed ferret surveys [i.e., non-block-cleared (Map 3 of the black-footed ferret biological assessment (BLM 2005a)) or the U.S. Fish and Wildlife Service's (Service) block clearance letter of February 2, 2004) (USFWS 2004)] and meet potential habitat criteria as defined by the Service's guidelines, the Bureau shall initiate coordination with the Service at the earliest possible date so that the Service can provide input. This should minimize the need to redesign projects at a later date to include black-footed ferret conservation measures, determined as appropriate by the Service.
12. Discovery of a live black-footed ferret outside of the Experiment Non-essential population areas in Wyoming would have profound importance to the species' recovery. Reporting of such a discovery by staff, contractors, permittees, etc. will be fully encouraged by Bureau Staff and Management.
13. If black-footed ferrets or their sign are found on public lands outside of the Non-essential Experimental population areas in Wyoming, all previously authorized surface disturbing activities (or actions on any future application that may directly, indirectly, or cumulatively affect the colony/complex ongoing) in the complex in which black-footed

ferrets are found shall temporarily cease until further direction is developed by a task force consisting of the Bureau Field Office Manager, the Service Field Office Supervisor, the WGFD Non-game Coordinator, and other potentially affected parties. This task force will be formed within 48 hours of the find to determine appropriate conservation/protection actions. The Bureau shall coordinate with these affected parties to ensure that ferret surveys or appropriate actions are conducted as deemed necessary. The Bureau will also re-initiate section 7 consultation with the Service. An emergency road closure limiting access to the site will be enacted by the Bureau within 48 hours of the find to protect the newly discovered black-footed ferrets. This emergency road closure will be for all non-paved roads within at least one mile of the find. On a case-by-case basis and with approval of the Service, certain surface disturbing activities within the town or complex may be allowed to continue.

14. New prairie dog towns shall be allowed to become established on public lands in all circumstances where they would not interfere with other previously established activities.
15. The Bureau shall work with respective State Game and Fish agencies and Service offices to ensure that enough reintroduction sites are maintained to successfully recover the black-footed ferret. If areas available for reintroduction are removed through the Bureau's authorized actions below a threshold level, so that the black-footed ferret can no longer be recovered, then those actions reducing availability of reintroduction sites will be modified or discontinued until the black-footed ferret has been recovered.
16. The Bureau shall work with the Service and the WGFD to identify and select Management Areas for potential reintroduction sites for black-footed ferrets. These areas will be selected based upon a number of factors including the Bureau's ability to protect and manage them, their size (5,000 to 10,000 acre sites, optimally), and potential utility to black-footed ferrets. Because of the need to manage reintroduction sites (of prairie dog complexes) on a landscape scale, and because plague is a significant but unpredictable event, Management Areas may be selected that are currently "plagued out", but may recover in time. Complexes can be selected from, but not necessarily restricted to, those shown in block cleared areas (Map 3 of BLM 2005). Protective measures will be drawn up for these Management Areas, and may include being withdrawn from leasing and protected from commercial development (i.e., land disposal through R&PP actions, etc.).

Blowout Penstemon

1. Place mineral supplements, or new water sources (permanent or temporary), for livestock, wild horses, or wildlife at least 1.0 mile from known blowout penstemon populations. Do not place supplemental feed for livestock, wildlife, or wild horses within 1.0 mile of known blowout penstemon populations. Straw or other feed must be certified weed-free. These restrictions are intended to keep free-ranging livestock away from blowout penstemon populations and subsequent grazing on the blowout penstemon plants. Surveys for blowout penstemon will be conducted in potential blowout penstemon habitat prior to livestock operations projects.
2. The Bureau will not increase permitted livestock stocking levels in any allotment with pastures containing known blowout penstemon populations without consulting with the

- Service. It is unknown to what extent overall impacts due to livestock grazing have on the blowout penstemon, whether it is detrimental due to actual grazing and trampling of plants or beneficial due to livestock removal of adjacent competing vegetation.
3. The preceding two conservation measures (1 and 2) will be added to grazing permit renewals in allotments with known blowout penstemon populations.
 4. Biological control of noxious plant species will be prohibited in blowout penstemon habitat until the impact of the control agent has been fully evaluated and determined not to adversely affect the plant population. The Bureau will monitor biological control vectors.
 5. Except in cases of extreme ecological health (insect or weed outbreaks/infestations), herbicide treatment of noxious plants/weeds will be prohibited within 0.25 mile of known blowout penstemon populations and insecticide/pesticide treatments will be prohibited within 1.0 mile of known blowout penstemon populations to protect pollinators.
 6. Where insect or weed outbreaks have the potential to degrade area ecological health inside the buffers listed above, at the discretion of the Bureau's authorized officer and with concurrence by the Service, the following will apply: where needed, and only on a case-by-case basis, pesticide use within 1.0 mile of known blowout penstemon populations will be applied by hand and herbicides applied by hand within 0.25 mile of blowout penstemon populations, with care taken not to spray blowout penstemon plants.
 7. Aerial application of herbicides will be carefully planned to prevent drift in areas near known blowout penstemon populations (outside of the 0.25 mile buffer). The Bureau will work with APHIS, USFWS, and County Weed and Pest Agencies to select pesticides and methods of application that will most effectively manage the infestation and least affect the blowout penstemon.
 8. If revegetation projects are conducted within 0.25 miles of known penstemon habitat, only native species will be selected. However, no revegetation projects will be done in known or potential blowout penstemon habitats as the plants requires open non-vegetated to sparsely vegetated sand dunes due to the early seral stage nature of the plant and shifting sand dune habitat substrate. This conservation measure will be applied within 0.25 miles of known blowout penstemon habitat and will be done to keep non-native species from competing with the blowout penstemon.
 9. Limit the use of off road vehicles (OHVs) to designated roads and trails within 1.0 mile of known blowout penstemon populations, with no exceptions for the “performance of necessary tasks” other than fire fighting and hazardous material cleanup allowed using vehicles off of highways. No OHV competitive events will be allowed within 1.0 mile of known blowout penstemon populations. Roads that have the potential to impact blowout penstemon plants and are not required for routine operations or maintenance of developed projects, or lead to abandoned projects will be reclaimed as directed by the Bureau.
 10. Apply a condition of approval (COA) on all applications for permit to drill (APDs) oil and gas wells for sites within 0.25 miles of any known blowout penstemon populations. This condition will prohibit all authorized surface disturbance and OHV travel from sites

containing blowout penstemon populations. Operations outside of the 0.25 mile buffer of the blowout penstemon population, such as “directional drilling” to reach oil or gas resources underneath the blowout penstemon habitat would be acceptable.

11. For known blowout penstemon populations, the Bureau will place a CSU stipulation prohibiting all surface disturbances on new oil and gas leases, buffering the area within a 0.25 mile of known blowout penstemon populations. For existing oil and gas leases with known blowout penstemon populations, the Bureau will require the COA in conservation measure number 10 above including the same 0.25 mile buffer area around those known blowout penstemon populations.
12. The disposal (sale and removal) of salable minerals, which includes sand, is a discretionary BLM action and is prohibited within a 0.25 mile buffer area of known blowout penstemon populations.
13. To prevent loss of habitat for the blowout penstemon, the Bureau “shall retain in federal ownership all habitats essential for the survival and recovery of any listed species, including habitat that was used historically, that has retained its potential to sustain listed species, and is deemed to be essential to their survival” (BLM 2001). Prior to any land tenure adjustments in known blowout penstemon habitat, the Bureau will survey to assess the habitat boundary and retain that area in federal ownership. Bureau-administered public lands that contain identified habitat for the blowout penstemon will not be exchanged or sold, unless it benefits the species.
14. All proposed ROW projects (powerlines, pipelines, roads, etc.) will be designed and locations selected at least 0.25 mile from any known blowout penstemon habitat to minimize disturbances. If the avoidance of adverse affects is not possible, the Bureau will re-initiate consultation with the Service.
15. All proposed projects will be designed and locations selected to minimize disturbances to known blowout penstemon populations, and if the avoidance of adverse affects is not possible, the Bureau will re-initiate consultation with the Service. Projects will not be authorized closer than 0.25 miles from any known blowout penstemon populations without concurrence of the Service and the Bureau’s authorized officer. No activities will be authorized within 0.25 miles of any known blowout penstemon populations during the essential growing season time period (from April 15 to September 15, the growing, flowering and fruiting stages) to reduce impacts to this species.

Colorado Butterfly Plant

1. Grazing will be intensively managed within known habitat containing populations from June through September, to allow plants to bloom and go to seed.
2. Recreational site development will not be authorized in known Colorado butterfly plant habitat.
3. The Bureau will manage stream habitats with known populations of Colorado butterfly plant to retain, re-create, or mimic natural hydrology, water quality, and related vegetation dynamics. Projects that may alter natural hydrology or water quality, change

- the vegetation of the riparian ecosystem and cause direct ground disturbance will be evaluated and redesigned to ensure that adverse effects to populations of the Colorado butterfly plant do not occur.
4. The Bureau will add the following two conservation measures to grazing permit renewals in allotments with known Colorado butterfly plant populations.
 - A. The Bureau will ensure the placement of mineral supplements, or new water sources (permanent or temporary), for livestock, wild horses, or wildlife at least 1.0 mile from known Colorado butterfly plant populations. Supplemental feed for livestock, wildlife, or wild horses will not be authorized within 1.0 mile of known Colorado butterfly plant populations. Straw or other feed must be certified weed-free. These restrictions are intended to keep free-ranging livestock away from Colorado butterfly plant populations and potential overgrazing of the areas occupied by the Colorado butterfly plant. Surveys for the Colorado butterfly plant will be conducted in potential Colorado butterfly plant habitat prior to livestock operations-related construction projects.
 - B. The Bureau will not increase permitted livestock stocking levels in any allotment with pastures containing known Colorado butterfly plant populations without consulting with the Service.
 5. Biological control of noxious plant species will be prohibited within 1.0 mile from known Colorado butterfly plant habitat until the impact of the control agent has been fully evaluated and determined not to adversely affect the plant population. The Bureau will monitor biological control vectors.
 6. Except in cases of extreme ecological health (insect or weed outbreaks/infestations), herbicide treatment of noxious plants/weeds will be prohibited within 0.25 miles of known Colorado butterfly plant populations and insecticide/pesticide treatments will be prohibited within 1.0 mile of known Colorado butterfly plant populations to protect pollinators.
 7. Where insect or weed outbreaks have the potential to degrade area ecological health inside the buffers listed above, at the discretion of the Bureau's authorized officer and with concurrence by the Service, the following will apply: where needed, and only on a case-by-case basis, pesticide use within 1.0 mile of known Colorado butterfly plant populations will be applied by hand and herbicides applied by hand within 0.25 miles of Colorado butterfly plant populations, with care taken not to spray Colorado butterfly plants.
 8. Aerial application of herbicides will be carefully planned to prevent drift in areas near known Colorado butterfly plant populations (outside of the 0.25 mile buffer). The Bureau will work with APHIS, USFWS, and County Weed and Pest Agencies to select pesticides and methods of application that will most effectively manage the infestation and least affect the Colorado butterfly plant.
 9. If revegetation projects are conducted within 0.25 miles of known Colorado butterfly plant habitat, only native species will be selected. This conservation measure will reduce

the possibility that non-native species will be introduced and will compete with the Colorado butterfly plant.

10. The Bureau will limit the use of off-road vehicles (OHVs) to designated roads and trails within 0.5 mile of known Colorado butterfly plant populations, with no exceptions for the “performance of necessary tasks” other than fire fighting and hazardous material cleanup allowed using vehicles off highways. No OHV competitive events will be allowed within 1.0 mile of known Colorado butterfly plant populations. Roads that have the potential to impact Colorado butterfly plants and are not required for routine operations or maintenance of developed projects, or lead to abandoned projects will be reclaimed as directed by the Bureau.
11. The Bureau will apply a condition of approval (COA) on all applications for permit to drill (APDs) oil and gas wells for sites within 0.25 miles of any known Colorado butterfly plant populations. This condition will prohibit all authorized surface disturbance and OHV travel from sites containing Colorado butterfly plant populations. Operations outside of the 0.25-mile buffer of the Colorado butterfly plant population, such as “directional drilling” to reach oil or gas resources underneath the Colorado butterfly plant populations/habitat would be acceptable.
12. For known Colorado butterfly plant populations, the Bureau will place a CSU stipulation prohibiting all surface disturbances on new oil and gas leases, buffering the area within 0.25 mile of known Colorado butterfly plant populations. For existing oil and gas leases with known Colorado butterfly plant populations (these would be for newly discovered populations not currently documented), the Bureau will require the COA in conservation measure 11 above, including the same 0.25 mile buffer area around those known Colorado butterfly plant populations.
13. The disposal (sale and removal) of salable minerals is a discretionary Bureau-authorized action and is prohibited within a 0.25-mile buffer area of known Colorado butterfly plant populations.
14. To prevent loss of habitat for the Colorado butterfly plant, the Bureau “shall retain in federal ownership all habitats essential for the survival and recovery of any listed species, including habitat that was used historically, that has retained its potential to sustain listed species, and is deemed to be essential to their survival.” Prior to any land tenure adjustments in known Colorado butterfly plant habitat, the Bureau will survey to assess the habitat boundary and retain that area in federal ownership. Bureau-administered public lands that contain identified habitat for the Colorado butterfly plant will not be exchanged or sold, unless it benefits the species.
15. All proposed ROW projects (powerlines, pipelines, roads, etc.) will be designed and locations selected at least 0.25 miles from any known Colorado butterfly plant habitat to minimize disturbances. If the avoidance of adverse affects is not possible, the Bureau will re-initiate consultation with the Service.
16. All proposed projects will be designed and locations selected to minimize disturbances to known Colorado butterfly plant populations, and if the avoidance of adverse effects is not possible, the Bureau will re-initiate consultation with the Service. Projects will not be

authorized closer than 0.25 miles from any known Colorado butterfly plant populations without concurrence of the Service and the Bureau authorized officer. No ground disturbing construction activities will be authorized within 0.25 miles of any known Colorado butterfly plant populations during the essential growing season time period (from June through September, the growing, flowering and fruiting stages) to reduce impacts to the species.

Colorado Butterfly Plant Designated Critical Habitat

1. The Bureau will place a No Surface Occupancy (NSO) stipulation on all parcels occurring in designated critical habitat areas for the Colorado butterfly plant.
2. The Bureau will apply a condition of approval (COA) on all applications for permit to drill (APDs) oil and gas wells for sites within 0.25 miles of any Colorado butterfly plant designated critical habitat. This condition will prohibit all authorized surface disturbance and OHV travel from sites containing Colorado butterfly plant designated critical habitat. Operations outside of the 0.25-mile buffer of Colorado butterfly plant designated critical habitat, such as “directional drilling” to reach oil or gas resources underneath the Colorado butterfly plant designated critical habitat, would be acceptable.
3. The Bureau will place a CSU stipulation prohibiting all surface disturbances on new oil and gas leases, buffering the area within 0.25 miles of Colorado butterfly plant designated critical habitat. For existing oil and gas leases with Colorado butterfly plant designated critical habitat, the Bureau will require the COA in conservation measure number 1 above including the same 0.25 mile buffer area around Colorado butterfly plant designated critical habitat.
4. Grazing will be intensively managed within designated critical habitat containing populations of Colorado butterfly plants from June through September, to allow plants to flower and go to seed.
5. Recreational site development will not be authorized in designated critical habitat for the Colorado butterfly plant.
6. The Bureau will ensure the placement of mineral supplements, or new water sources (permanent or temporary), for livestock, wild horses, or wildlife at least 1.0 mile from known Colorado butterfly plant designated critical habitat. Supplemental feed for livestock, wildlife, or wild horses will not be authorized within 1.0 mile of Colorado butterfly plant designated critical habitat. Straw or other feed must be certified weed-free. These restrictions are intended to keep free-ranging livestock away from Colorado butterfly plant designated critical habitat and potential over-utilization of these designated critical habitats.
7. Projects that alter the natural hydrology, change the vegetation of the riparian ecosystem, or may cause direct ground disturbance will be redesigned to ensure that adverse effects to Colorado butterfly plant designated critical habitat do not occur.

Preble's Meadow Jumping Mouse and Critical Habitat

1. The Bureau will place an No Surface Occupancy stipulation on all parcels occurring in designated critical habitat areas for the Preble's meadow jumping mouse.
2. If habitat is suitable, conduct a survey for Preble's meadow jumping mouse before beginning any potentially disturbing actions or assess the potential for species presence.
3. Where needed, fence riparian habitat near areas of high recreational use when the riparian vegetation is being thinned due to the activity.
4. Evaluate burned areas with consideration of the following objectives:
 - A. Within two growing seasons an equal or greater amount of live willow stems will be present as compared to existing unburned willow patches in the vicinity; and
 - B. Within two growing seasons 60 percent or more of grass/forb cover will be present as compared to the existing unburned areas in the vicinity.
5. Reinitiate formal consultation if the success criteria for burned areas are not met within two growing seasons.
6. Restrict new trail or road development within the 100-year floodplain plus 100 meters within Preble's meadow jumping mouse habitat on Bureau-administered lands. Existing roads in designated critical habitat will be reviewed for possible closure or relocation.

Ute Ladies'-tresses

1. Grazing will be intensively managed within known habitat containing populations from July through September, to allow plants to bloom and go to seed.
2. Recreational site development will not be authorized in known Ute ladies'-tresses habitat.
3. The Bureau will manage stream habitats with known populations of Ute ladies'-tresses to retain, re-create, or mimic natural hydrology, water quality, and related vegetation dynamics. Projects that may alter natural hydrology or water quality, change the vegetation of the riparian ecosystem and/or cause direct ground disturbance, will be evaluated and redesigned to ensure that adverse effects to populations of Ute ladies'-tresses do not occur.
4. The Bureau will add the following two conservation measures to grazing permit renewals in allotments with known populations of Ute ladies'-tresses.
 - A. The Bureau will ensure the placement of mineral supplements, or new water sources (permanent or temporary), for livestock, wild horses, or wildlife at least 1.0 mile from known Ute ladies'-tresses populations. Supplemental feed for livestock, wildlife, or wild horses will not be authorized within 1.0 mile of known Ute ladies'-tresses populations. Straw or other feed must be certified weed-free. These restrictions are intended to keep free-ranging livestock away from Ute ladies'-tresses populations and potential overgrazing of the areas occupied by

these orchids. Surveys for Ute ladies'-tresses will be conducted in potential Ute ladies'-tresses prior to livestock operations-related construction projects.

- B. The Bureau will not increase permitted livestock stocking levels in any allotment with pastures containing known Ute ladies'-tresses populations without consulting with the Service.
5. Biological control of noxious plant species will be prohibited within 1.0 mile from known Ute ladies'-tresses orchid habitat until the impact of the control agent has been fully evaluated and determined not to adversely affect the plant population. The Bureau will monitor biological control vectors.
 6. Except in cases of extreme ecological health (insect or weed outbreaks/infestations), herbicide treatment of noxious plants/weeds will be well-regulated within 0.25 miles of known populations of the orchid and insecticide/pesticide treatments will be well-regulated within 1.0 mile of known populations of Ute ladies'-tresses orchids to protect pollinators.
 7. Where insect or weed outbreaks have the potential to degrade area ecological health inside the buffers listed above, at the discretion of the Bureau's authorized officer and with concurrence by the Service, the following will apply: where needed and only on a case-by-case basis, a pesticide use proposal or other site specific plan will address concerns of proper timing, methods of use, and chemicals. Pesticides specific to dicots will be preferred where these are adequate to control the noxious weeds present.
 8. Aerial application of herbicides will be carefully planned to prevent drift in areas near known populations of Ute ladies'-tresses orchids (outside of the 0.25 mile buffer). The Bureau will work with APHIS, USFWS, and County Weed and Pest Agencies to select pesticides and methods of application that will most effectively manage the infestation and least affect Ute ladies'-tresses orchids.
 9. If revegetation projects are conducted within 0.25 miles of known habitat for Ute ladies'-tresses orchids, only native species will be selected. This conservation measure will reduce the possibility that non-native species will be introduced and will compete with Ute ladies'-tresses orchids.
 10. The Bureau will limit the use of off road vehicles (OHVs) to designated roads and trails within 0.5 mile of known Ute ladies'-tresses populations, with no exceptions for the "performance of necessary tasks" other than fire fighting and hazardous material cleanup allowed using vehicles off of highways. No OHV competitive events will be allowed within 1.0 mile of known Ute ladies'-tresses populations. Roads that have the potential to impact Ute ladies'-tresses orchids and are not required for routine operations or maintenance of developed projects, or lead to abandoned projects will be reclaimed as directed by the Bureau.
 11. The Bureau will apply a condition of approval (COA) on all applications for permit to drill (APDs) oil and gas wells for sites within 0.25 miles of any known populations of Ute ladies'-tresses orchids. This condition will prohibit all authorized surface disturbance and OHV travel from sites containing populations of Ute ladies'-tresses

- orchids. Operations outside of the 0.25 mile buffer of orchid populations, such as “directional drilling” to reach oil or gas resources underneath the orchid’s habitat, would be acceptable.
12. For known Ute ladies’-tresses populations, the Bureau will place a CSU stipulation prohibiting all surface disturbances on new oil and gas leases, buffering the area within 0.25 miles of known Ute ladies’-tresses populations. For existing oil and gas leases with known Ute ladies’-tresses populations (these would be for newly discovered populations not currently documented), the Bureau will require the COA in conservation measure 11 above, including the same 0.25 mile buffer area around those known Ute ladies’-tresses orchid populations.
 13. The disposal (sale and removal) of salable minerals is a discretionary Bureau action and is prohibited within a 0.25 mile buffer area of known populations of Ute ladies’-tresses orchids.
 14. To prevent loss of habitat for the orchid, the Bureau “shall retain in federal ownership all habitats essential for the survival and recovery of any listed species, including habitat that was used historically, that has retained its potential to sustain listed species, and is deemed to be essential to their survival” (BLM 2001). Prior to any land tenure adjustments in known habitat for Ute ladies’-tresses orchids, the Bureau will survey to assess the habitat boundary and retain that area in federal ownership. Bureau-administered public lands that contain identified habitat for the orchid will not be exchanged or sold, unless it benefits the species.
 15. All proposed ROW projects (powerlines, pipelines, roads, etc.) will be designed and locations selected at least 0.25 miles from any known Ute ladies’-tresses orchid habitat to minimize disturbances. If avoidance of adverse effects is not possible, the Bureau will re-initiate consultation with the Service.
 16. All proposed projects will be designed and locations selected to minimize disturbances to known Ute ladies’-tresses orchid populations, and if the avoidance of adverse effects is not possible, the Bureau will re-initiate consultation with the Service. Projects will not be authorized closer than 0.25 miles from any known Ute ladies’-tresses populations without concurrence of the Service and the Bureau authorized officer. No ground disturbing construction activities will be authorized within 0.25 miles of any known Ute ladies’-tresses orchid populations during the essential growing season time period (from July through September, the growing, flowering and fruiting stages) to reduce impacts to the species.

APPENDIX I - REFERENCES

- Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.
- United States Bureau of Land Management (BLM). 1998. Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming. U.S. Department of the Interior, Bureau of Land Management. January.
- . 2001. Manual 6840 – Special Status Species Management. United States Department of the Interior Bureau of Land Management. January 19, 2001. 41 pp. + Glossary.
- . 2004. Instruction Memorandum No. WY-2004-035. Exception Requests for Activities Involving Mountain Plover (MP). USDI, Bureau of Land Management, Wyoming State Office. Cheyenne, Wyoming.
- . 2003. Final Statewide Programmatic Bald Eagle Biological Assessment. Prepared for the Wyoming Bureau of Land Management by Greystone Consultants. August 2003.
- . 2005. Final Statewide Programmatic Biological Assessment: Black-footed Ferret (*Mustela nigripes*). Submitted to U.S. Department of Interior, Bureau of Land Management. Wyoming State Office. Cheyenne, Wyoming.
- . 2007. Casper Biological Assessment. Bureau of Land Management. Casper Field Office.
- U.S. Bureau of Reclamation and U.S. Fish and Wildlife Service (USBR and USFWS). 2006. Platte River Recovery Implementation Program Final Environmental Impact Statement. Bureau of Reclamation. April 2006.
- U.S. Fish and Wildlife Service (USFWS). 2004a. Emergency for Wildlife Suppression Activities (WY8130). Memorandum dated June 16, 2004, from U.S. Fish and Wildlife Service, Cheyenne, Wyoming Ecological Service Field Office. 3 pp. + Attachment.
- . 2004b. Block clearance letter (ES-61411/BFF/WY7746) indicating that black-footed ferret surveys are no longer required in all black-tailed prairie dog colonies statewide or in white-tailed prairie dog towns except those noted in an attachment. February 2, 2004. Wyoming Field Office.

APPENDIX II – PROPOSED PROTECTIONS FOR THE CASPER RESOURCE MANAGEMENT PLAN

These Proposed Protections are taken from the Casper Resource Management Plan (RMP) Biological Assessment (BA) (BLM 2007a). In the BA, the U.S. Bureau of Land Management (Bureau) initiated consultation on listed species including the bald eagle (*Haliaeetus leucocephalus*). On August 8, 2007, the Service removed the bald eagle from the list of threatened and endangered species. However, the Bureau remains committed to the protection and monitoring of the bald eagle on Bureau-administered lands (BLM 2007b).

Proposed Protections - Wildland Fire

1. No heavy equipment use is allowed in the following areas without first consulting a resource advisor: areas of cultural resource sensitivity, riparian and wetland habitats, big game crucial winter ranges, greater sage-grouse leks, bald eagle nests or roosts, other habitats occupied by threatened or endangered species, and areas of highly erosive soils.
2. Fire retardant or foam will be prohibited within 300 feet of surface-water sources.
3. No trees will be cut during fire suppression activities within 200 yards of bald eagle nests or roosts.
4. In areas that are neither unlimited nor limited, suppression tactics will be determined based on threats to values and resources at risks. In areas with high values, heavy equipment will be limited to or immediately adjacent to existing roads and trails.
5. In regards to rehabilitation and stabilization following wildland fires, the Bureau will evaluate all fires and rehabilitate as needed for suppression and fire-severity impacts. Rehabilitation will include chemical treatment where invasive non-native plant species (INPS) (e.g., cheatgrass) are present.

Proposed Protections - Bald Eagle

1. Restore 33 miles of incised streams for fisheries by using various methods including in-stream structures.
2. Develop 100 acres of surface water for fish, waterfowl, and special status species waterfowl.
3. Allow no surface development on all crucial big game winter ranges from November 15 to April 30. The Authorized Officer is able to grant exceptions on a case-by-case basis.
4. Within big game crucial winter ranges, The Bureau will evaluate use by all livestock and wildlife and require adjustment to herd/flock size, length of grazing season, season of use, and extent of use, which benefits desired future conditions in crucial winter ranges.
5. Develop utilization plans in future activity level management plans (e.g., Habitat Management Plans [HMPs] or Allotment Management Plans [AMPs]) within the Bates Hole and Rattlesnake Hills big game crucial winter ranges.

6. Implement timing limitation stipulations (TLS) to protect sage and sharp-tailed grouse and raptors.
7. Continue the existing management of the Bureau and the Wyoming Game and Fish Department (WGFD) cooperatively managed Table Mountain, Springer/Bump-Sullivan, and Rawhide wildlife habitat areas. These areas will be turned over to the WGFD by disposal within 5 years. If these lands are not disposed of to the WGFD within this 5-year period, these areas will then be available for disposal to other agencies/ organizations, which will manage the lands for upland game birds and waterfowl habitat/production. The existing Classification and Multiple Use (C&MU) classification on Table Mountain and Springer/Bump-Sullivan will be terminated and minerals will be withdrawn from locatable mineral entry.
8. Revise and consolidate the Bates Creek Reservoir, Bates Creek Aquatic Plan/Kerfoot Creek, and Bolton Creek HMPs into a consolidated Bates Hole HMP.
9. Revise and consolidate the Railroad Grade Reservoir, Camel Hump Reservoir Wildlife and Recreation Area, Teal Marsh Reservoir, and 33-Mile Reservoir HMPs into a consolidated 33-Mile HMP. The Bureau will evaluate future reservoirs in the 33-Mile area for fishery/riparian potential. High potential reservoirs meeting the criteria for fishery/riparian habitats will be incorporated into the consolidated 33-Mile HMP.
10. Portions of the authorized use area legally described as (legal description) are known or suspected to be essential habitat for the bald eagle, which is a BLM Sensitive Species. Prior to conducting any onsite actions, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and USFWS guidelines to verify the presence or absence of this species. In the event that bald eagle occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).
11. No surface occupancy will be allowed on the following described lands (legal subdivision/area) because of (resource value) – (c) Other management areas (e.g., ACEC), known threatened and endangered species habitat, wild and scenic rivers).
12. All federal lands within or adjacent to roosts will be designated priority full suppression zones. Priority full suppression can include suppression of wildland fires with all available resources, including vehicle use on existing roads and trails, air support, or construction of roads and grading of firebreaks using heavy equipment. To the extent possible, trees will not be cut within 200 yards of the bald eagle roosts during fire suppression.
13. No surface development will be permitted on the winter roosting areas for bald eagles - a total of 17,684 acres. No disturbance to trees or improvement in roads or legal access will be allowed in these bald eagle winter ranges except as needed for fire suppression or for control of pine beetle infestations. Pine beetle control efforts within bald eagle winter habitat will be conducted only from April 1 to October 31.

14. For the Cole Creek Roost only: The public lands in this roost will be available for disposal to entities that will manage the land to maintain the resource values present, in accordance with RMP decisions identifying the parcel as one of ten 'downstream' parcels available for disposal. Acquisition of lands or access easements will not be pursued. Neither legal nor improved road access will be provided to the North Platte River in this bald eagle roost.
15. For all roosts including the Cole Creek Roost: No new roads or other surface developments will be authorized in the bald eagle winter roosting areas. No disturbance to trees, or improvements of roads or legal access will be allowed except as needed for fire suppression or for bald eagle habitat improvement or maintenance. Habitat improvements or maintenance efforts will not be allowed from November 1 through March 31. Continued use or improvement (i.e., upgrading) of existing roads in bald eagle roost areas from November 1 through March 31 will be analyzed on a case-by-case basis.
16. The Bureau will pursue cooperative agreements with private landowners and other fire and land management agencies so that an initial attack plan may be established. That plan will be used for an escaped fire situation analysis plan when needed. These plans will include identification of areas where grading of roads and/or firebreaks are most needed for fire suppression, and will identify those areas where protection from wildland fires is most critical (e.g., bald eagle roosts). Prescribed burning will be implemented where necessary to meet range and timber resource management objectives, but it will not be allowed from November 1 through March 31.
17. All Bureau-administered lands and mineral estate will remain open to oil and gas leasing and development subject to the stipulation that no surface occupancy (NSO) or development within the bald eagle roost areas will be allowed at any time. The no surface occupancy stipulation will apply to maintenance and operation of producing wells, and modifications to this limitation will not be approved. The NSO restriction, unless currently a condition of an existing lease or authorization, does not apply to maintenance and operation of existing lease facilities. All Bureau-administered lands and mineral estate in bald eagle roost areas has been withdrawn from location and appropriation under the mining laws. Mineral materials will not be available for disposal.
18. On public lands, surface development will be prohibited on an area from ½ to 1 mile of known or discovered bald eagle nests. The specific distance and dimensions of the area on which surface development will be prohibited will be determined on a case-by-case basis after coordination with the Service.
19. Activities and habitat alterations that may disturb bald eagles will be restricted within suitable habitats that occur within bald eagle buffer zones (see Appendix II for further descriptions of buffer zones and see Appendix Table F-2 of BA [BLM 2003] for estimation of activity levels as they correspond to buffer guidelines). Deviations may be made after coordination with the Service.

Zone 1 (within ½ mile, year round) is intended to protect active and alternative nests. For active nests, minimal human activity levels are allowed during the period of first occupancy to two weeks after fledging.

Zone 2 (from ½ mile to 1 mile from the nest, February 1 to August 15) is intended to protect bald eagle primary use areas and permits light human activity levels.

Zone 3 is designated to protect foraging/concentration areas year-round 2½ miles from the nest.

20. The Bureau will attempt to acquire riverfront land along the North Platte River upstream of Casper and dispose of Bureau-administered lands along the North Platte River downstream of Casper. The downstream lands will be available for disposal to entities that will manage the land to maintain the resource values present.
21. Activities that may disturb bald eagles will be restricted within 1 mile of known communal winter roosts during the period of November 1 to March 31, annually. No ground disturbing activities will be permitted within 0.5 mile of active roost sites year round. Deviations may be made after coordination with the Service.
22. Surface development will be prohibited within ¼ mile of the North Platte River on a year-round basis, except as specified in the following paragraph. This limitation will not apply to recreational or habitat improvement projects. In addition, mineral material or other surface development on specific parcels of land within ½ mile of the river will not be allowed from November 1 through March 31. Modifications to the seasonal limitation, in any year, may be approved in writing by the Authorized Officer. The seasonal limitation does not apply to maintenance and operation of existing or producing mineral facilities.
23. On approximately 240 acres of federal mineral estate located in the NE¼, and W½SE¼, of section 11, T. 31 N., R. 82 W., mineral material or other surface development will be allowed within ¼ mile of the North Platte River, subject to the restriction that no surface occupancy will be allowed from November 1 through March 31.
24. The Bureau will improve bald eagle feeding habitat along the river upstream of Casper by planting cottonwood trees or by placing suitable structures along the river for use by bald eagles during feeding activity.
25. No bald eagle seasonal or occupancy restrictions, except as may be identified on a site-specific basis to protect wildlife or other resource values present, will be applied to rangeland feeding areas.
26. The Bureau will develop a public education program for bald eagle feeding areas along the North Platte River and on public rangelands. Under the program, information will be distributed to landowners, grazing lessees, and the general public. Information will be designed to identify ways land users can avoid hazards to bald eagles, and benefit bald eagles using the feeding areas where possible.
27. Actions proposed on public lands in known or other discovered bald eagle flyways will be analyzed on a case-by-case basis. Coordination with the Service will be initiated if applicable. On approximately 2,640 acres of public lands in the Emigrant Gap flyway, located in T. 33 N., R. 81 W., sections 14, 15, 23, 24, 25, and 26, new power distribution /transmission lines will have to be designed to reduce hazards to raptors from collisions

with the proposed facilities in order to be authorized. Other proposed development or land use proposals will be subject to analysis on a case-by-case basis, with coordination with the USFWS initiated if applicable.

28. The Jackson Canyon ACEC contains 3,600 federal surface acres and 11,150 federal mineral acres, for a total of 13,760 acres in the ACEC. The Bureau will control pine beetle infestations in this area through a more active forest management program, designate bald eagle roosts as priority full suppression areas for wildland fire control, evaluate whether or not oil and gas leases should be renewed, and incorporate fire suppression as part of the HMP. The Bureau also will install signs and road closures and monitor conflicts between recreational use and eagles. No rights of way will be permitted in this ACEC. OHV use will be allowed only on designated roads and only from April 1 through October 31. There will be no increase or improvement in roads or legal access. Administrative access may be necessary to maintain bald eagle habitat. The ACEC will be managed in accordance with the ACEC Wildlife Habitat Management Plan. Fire suppression will be conducted as needed. Beetle control will be conducted only between April 1 and October 31.
29. Appropriately timed surveys in bald eagle habitats shall be conducted prior to any activities and subsequent authorization of activities that may disturb bald eagles or their habitats. A qualified biologist would be approved by the Bureau to conduct such bald eagle surveys. All nest surveys should be conducted using standard procedures (BLM 2003, Appendix C) that minimize the potential for adverse effects to nesting raptors.
30. In the event species occurrence is verified, the proponent may be required to modify operational plans, at the discretion of the authorized officer, to include the appropriate measures for minimization of effects to the bald eagle and its habitats.
31. The Bureau will conduct site-specific coordination with the Service prior to authorization of any actions authorized under the Casper RMP which “may impact” bald eagles. This future coordination will provide a means for site-specific analysis and documentation of levels of any potential disturbance of bald eagles.
32. Power lines must be built to standards identified by the Avian Power Line Interaction Committee (APLIC 2006).
33. In the event a dead or injured bald eagle is observed, the Service Wyoming Field Office (307) 772-2374 and the Service Law Enforcement Office (307) 261-6365 will be notified within 24 hours of the discovery.
34. The Bureau will monitor and restrict, when and where necessary, authorized or casual use activities that may adversely impact bald eagles or their habitats, including, but not limited to, recreational mining and oil and gas activities. Monitoring results should be considered in the design and implementation of future projects.
35. Each year the Bureau shall verify the status (active vs. inactive) of known bald eagle nests, communal winter roosts, and concentration areas on lands administered by the Bureau within the RMP area. As a matter of maintaining inventory information, the Bureau shall coordinate annually with the Service, WGFD, and other appropriate entities

to determine the status of known and new bald eagle nests, communal winter roosts, and other concentration areas.

36. Known bald eagle nests, communal winter roosts, and concentration areas will be assumed active if status has not been verified.

Proposed Protections - Forests, Woodlands, and Forest Products

1. During management of ponderosa pine, mixed conifer, and lodgepole pine stands, selected snags will be left for wildlife nesting, perches, and sources of food and cover.
2. Wherever silvicultural practices, road construction, or any other surface-disturbing activities occur, the Wyoming silvicultural Best Management Practices (BMPs) will be utilized to prevent, limit, and mitigate erosion, sedimentation, and water degradation, and, as needed, to control spread of INPS.

Proposed Protections - INPS and Pest Control

1. Management actions will comply with Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming (BLM 1998).
2. The Bureau will cooperate with other agencies in the prevention, control or eradication of diseases which threaten the health of humans, wildlife, livestock, and vegetation.
3. The Bureau will cooperate with other agencies in establishing, controlling, or eradicating unauthorized nonnative animals that pose a threat to the health of natural ecosystems.
4. The Bureau will continue to develop a comprehensive INPS management program.
5. The Bureau will inventory and develop a treatment plan to reduce or eliminate salt cedar stands over the life of the plan.
6. The Bureau Authorized Officer may require a 72-hour flush period for livestock if the livestock are likely carrying ingested Invasive Non-native Plant Species (INPS) seeds in a Level I weed management area.

Proposed Protections - Lands and Realty

1. Parcels identified for restricted disposal may be disposed of under the Recreation and Public Purposes (R&PP) Act by exchange, may limit the disposal to a particular type of entity capable of preserving the resource values, or may include the use of covenants in the deed or land sale patent to ensure the resource values are protected.
2. Retention lands are intended to remain in public ownership. However, retention lands may be disposed of under the R&PP Act or through land exchange to meet public needs or to enhance management of the public lands and resources in these areas. Land sales within retention areas will be considered on a case-by-case basis to meet community expansion or other public needs, or to resolve resource management concerns.

3. Future corridor adjustments and new corridor designations will be made only when facility placement within an existing designated corridor is incompatible, unfeasible, or impractical, and when the environmental consequences can be adequately mitigated. Problems of technical compatibility between facilities and spacing of facilities in corridors will be solved on a case-by-case basis.

Proposed Protections - Livestock Grazing

1. The Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the BLM in the State of Wyoming, approved August 12, 1997 (BLM 1998), will be implemented when authorizing livestock grazing use and related actions in the planning area. BLM staff work closely with operators to determine the most appropriate guidelines for achieving the standards.
2. Rangeland monitoring will follow the guidelines laid out in the Casper Field Office Monitoring Plan.
3. The Bureau will keep existing management plans (i.e., AMPs, HMPs, etc.) current and will implement new management plans where and when needed.
4. Water developments and placement of salt, mineral, and forage supplements for livestock will not be allowed on areas inhabited by special status plant species or other sensitive areas.
5. Maintenance feeding of forage will not be authorized on public lands.
6. Water developments will be constructed by the Bureau and maintained by the user on a case-by-case basis.
7. Grazing will continue to be authorized on 1.4 million acres, unless identified for closure to grazing due to specific resource values.
8. Livestock grazing will be managed to maintain a protective cover of vegetation and litter with emphasis on the condition of allotments with significant acreage of highly erosive soils.
9. Yearling conversions will be consistent with management objectives and wildlife, watershed, riparian, vegetative values, and other resource values.

Proposed Protection - Locatable Minerals

1. The Bureau will manage locatable minerals on all Bureau-administered lands within the planning area while minimizing impacts to other resources.

Proposed Protection - Coal Resources

1. The Bureau will manage coal leasing and exploration on Bureau-administered land within the planning area, while minimizing impacts to other resource values.

Proposed Protections - Oil and Gas

1. Manage oil and gas leasing, exploration, operation, and development within the planning area, while minimizing impacts to other resource values.
2. The Bureau will consider lease applications on a case-by-case basis. Leases will be issued with the least restrictive stipulations needed to protect other resource values. Stipulations to protect important resource values will be based on interdisciplinary review of individual proposals and environmental analysis.
3. Federal oil and gas lease mineral estate administratively unavailable for leasing encompasses 226,568 acres.
4. Off-highway vehicle use (OHV) for geophysical use on public land is subject to OHV designations unless determined to be acceptable through site-specific National Environmental Policy Act (NEPA) analysis.

Proposed Protections - Other Solid Leasables

1. Manage the leasing and development of other minerals on acquired lands within the planning area, while minimizing impacts to other resource values.
2. Base stipulations to protect sensitive resource values on interdisciplinary review of individual proposals and environmental analysis.

Proposed Protections - Salable Minerals

1. Manage salable mineral permitting and development on Bureau-administered lands within the planning area, while minimizing impacts to other resource values.
2. Base stipulations to protect important resource values on interdisciplinary review of individual proposals.

Proposed Protections - OHVs and Travel Management Areas (TMAs)

1. Specific roads are seasonally closed to motor vehicles to protect important resource values (November 15 to April 30), except Jackson Canyon is closed November 1 to May 31.
2. Motor vehicle travel in the majority of the planning area will be limited to existing roads and trails (1,162,244 acres).
3. Motor vehicle travel will be limited to designated roads and trails in the following areas (196,824 acres): Sand Hills, Jackson Canyon, North Platte River, Alcova Fossil Management Area (MA), South Bighorns, and Bates Hole.

4. In Muddy Mountain Environmental Education Area (EEA), snowmobiles will be limited to 4.5 miles of designated trails. Roads and trails may be developed for forest management, but will be closed and reclaimed following harvest.

Proposed Protection - Paleontological Resources

1. For paleontological resource use permits, stipulations will protect other resources on a case-by-case basis.

Proposed Protections - Recreation

1. Areas heavily impacted by concentrated recreational use will be closed as necessary for restoration or development of the site, whichever is deemed most appropriate.
2. The goal of the Goldeneye Wildlife and Recreation Area is to protect wildlife habitats and future recreational opportunities. The Goldeneye Wildlife and Recreation Area Management Plan will be carried forward.
3. The Muddy Mountain EEA focuses on environmental education, diverse recreational opportunities, and ecosystem health. A primary objective is to preserve the natural character and wildlife habitats within the EEA. The Muddy Mountain EEA will be withdrawn from the 1872 Mining Law.

Proposed Protections - Soil

1. On Bureau-administered surface, conduct onsite soils investigations on highly controversial projects, or in areas of highly erosive soils, to evaluate the impacts of surface-disturbing activities. Onsite soil investigations may include mapping the soils to a series level, evaluating current erosion conditions, and prescribing mitigation and reclamation practices.
2. Conduct assessment of soil limitations analysis using automated soil survey or field investigations on any surface-disturbing activity causing more than 20 acres of disturbance per year.
3. Inspect disturbed and reclaimed areas for signs of accelerated erosion on projects disturbing more than 20 acres per year.
4. Minimize the disturbance to highly erosive soils (256,240 acres). Proposed surface-disturbing activities will be modified (located) to avoid areas of highly erosive soils to the greatest extent practicable.
5. No Surface Occupancy (NSO) or other surface disturbance restrictions are allowed on slopes of more than 25 percent without permission from the Authorized Officer. When development is proposed on slopes of more than 25 percent, engineered drawings for construction, drainage design, and final contours proposed after rehabilitation will be required.

6. Limit the use of prescribed fire on highly erosive soils to seasons and fire intensity that limit impacts.
7. Complete reclamation actions (final contouring, replacing topsoil, reseeding, and surface treatment) on all disturbed areas within three growing seasons.
8. Reseed all disturbed areas with native species adapted to the site conditions and capable of providing protective soil cover. All seed must be weed-free certified. Nonnative species may be used on a case-by-case basis when resource objectives will not be met through the use of native species and the nonnative plants have no invasive properties.
9. Re-treat reclaimed areas that do not have at least 30 percent of predisturbance vegetative cover three growing seasons after final reclamation. Re-treating will vary by site and initial reclamation success, but may include invasive species control or re-seeding the site with other native species or the same native species under more favorable environmental conditions. Re-treatment also may involve additions of fertilizers or soil amendments and protective cover, such as mulch, matting, or netting. Livestock grazing also may be limited until reclamation success has been established. Grazing controls will vary by site, but could include herding, fencing, deferred use, or supplemental feeding. Reclaimed areas that do not have at least 50 percent of predisturbance vegetative cover five growing seasons after final reclamation will be re-treated.
10. New roads and trails will avoid areas of highly erosive soils.

Proposed Protections - Special Designations in the Casper Proposed RMP and Final EIS

Alcova Fossil Area of Critical Environmental Concern (ACEC)

1. The Alcova Fossil Area will be designated as an ACEC. Proposed surface-disturbing activities will be analyzed to assess potential adverse effects on paleontological resources. Mitigation may include prohibition, avoidance, or onsite monitoring, based on the assessment. A mineral withdrawal will be pursued. OHV use in the area will be limited to designated roads and trails. Visitor interpretation and education facilities will be minimal, using offsite or nearby signs or kiosks. A management plan will be written for any development and to identify long-term goals for management.

Bates Hole MA

1. Greater sage-grouse habitat will be managed as a priority resource. Management actions to conserve and (or) improve this habitat are described in the special status species section of this document.
2. Surfacing-disturbing and disruptive activities will be subject to a CSU stipulation, restricting or prohibiting surface occupancy unless the proponent and surface management agency arrive at an acceptable plan for mitigation for impacts.
3. To meet watershed management goals, the Bates Hole MA will be intensively managed.

4. No new corridor designations will be made. When placement of a major right-of-way (ROW) facility within a designated corridor is not possible, and for smaller ROW and other linear facilities, placement will be adjacent to existing facilities or disturbances. Cross-country placement of ROW and other linear facilities will be allowed only when placement in a designated corridor or adjacent to an existing facility is not practical or feasible. The extent of all surface disturbances will be minimized.

Jackson Canyon ACEC

1. The existing boundary will be revised by enlarging it beyond the township line between range 79 and 80 west.
2. The ACEC is closed to the disposal of mineral materials.
3. The existing federal mineral estate in the ACEC, and any additional mineral estate that may be acquired in the ACEC, has been withdrawn from location and appropriation under the mining laws.
4. Forest harvesting will be allowed to reduce fuel loads and disease while meeting bald eagle management objectives. All constructed roads will be closed and reclaimed.
5. All federal lands within or adjacent to the ACEC will be designated priority full suppression. Priority full suppression may include full suppression of wildland fires with all available resources, including vehicle use on existing roads and trails, air support, construction of roads, and grading of firebreaks using heavy equipment. Any surface disturbance resulting from suppression efforts will be restored and reclaimed immediately after the fire is suppressed. To the extent possible, trees will not be cut within 200 yards of bald eagle roosts during fire suppression.
6. Prescribed fire will be used to meet bald eagle habitats, livestock grazing, fuels management, and forestry objectives. Exceptions to the existing seasonal restriction of November 1 through March 31 to protect bald eagle roosting habitats will be granted on a case-by-case basis after coordination with the USFWS.

North Platte River SRMA

1. A Special Recreation Management Area (SRMA) Plan will be completed.
2. The SRMA will include (1) a transportation plan, limiting OHV use to designated roads and trails, (2) guidelines for signage, and (3) specific recreational site designs and restoration projects.
3. The existing North Platte River protective withdrawal on 3,226 acres will continue.
4. Lands acquired by purchase or donation are segregated from operation of the public land laws, including the mining laws.
5. Restoration projects will focus on improving wildlife habitats and recreational opportunities.

6. Lands within the SRMA will be subject to (1) an NSO restriction, except for recreational facilities, and (2) closed to disposal of mineral materials.
7. Lands acquired along the river to enhance public access by purchase, donation, or exchange will not be available for livestock grazing.

Salt Creek MA

1. No proposed protections for Salt Creek MA that would benefit threatened and endangered species are identified.

Sand Hills MA

1. The area will be administratively unavailable for oil and gas leasing and geophysical exploration will not be allowed. Surface-disturbing activities will be subject to a controlled surface use (CSU) stipulation, minimizing surface disturbance to meet management objectives.
2. The area will be withdrawn from locatable mineral entry.
3. The area will be closed to disposal of mineral materials.
4. No new corridor designations will be made. The area will be an ROW exclusion area.
5. Pursue obtaining legal public access and limit use to non-motorized.

South Bighorns/Red Wall MA

1. The following protections are proposed in the Casper Proposed RMP and Final EIS:
2. The area will be withdrawn from the operation of the public land laws (locatables).
3. The MA will be administratively unavailable for new oil and gas leasing and geophysical operations on public surface. Actions on existing leases will be intensively managed to meet the objectives of the MA. To minimize surface-disturbing activities, oil and gas exploration and development will use directional drilling techniques and well twinning whenever practicable.
4. The MA will be closed to disposal of mineral materials. Existing rights will be allowed to expire without renewal or expansion. Disturbed areas will be rehabilitated to achieve visual resource and vegetative standards.
5. No corridors will be designated; however, ROW will be allowed on a case-by-case basis when management objectives for the area can still be achieved.

Proposed Protection – National Historic Trails (NHTs) and Other Historic Trails

1. A protective zone will be established around all NHTs. The zone will extend outward ¼ mile from either side of the physical trail remains or the visual horizon, whichever is closer. Surface-disturbing activities will be limited within that zone.

Proposed Protections - Special Status Plant Species

1. On a case-by-case basis, project proponents will complete surveys for federally listed and BLM sensitive plants before beginning any surface disturbance.
2. Design placement of water developments and placement of salt and mineral supplements at least 500 feet away from known locations of special status plants. Consider the concentration of browsing or grazing animals on the known locations of special status plants. Exception could be granted when site-specific analysis determines there will be no adverse impacts to special status

Proposed Protections - Special Status Fish and Wildlife Species

1. Proposed habitat expansion, introductions, reintroductions, and translocations of native and non-native fish and wildlife species will be considered on a case-by-case basis.
2. Evaluate and adopt the local Sage-Grouse Working Group recommendations for improving and managing sage-grouse habitat and the Sage-Grouse Conservation and Assessment Strategy.
3. Power lines will continue to be constructed in accordance with standards outlined in “Avian Power Lines Interaction Committee. Suggested practices for Raptor Protection on Power Lines – the State of the Art 2006. Edison Electric Institute and the Raptor Research Foundation, Washington, DC.”
4. On a case-by-case basis, project proponents will complete special status surveys (federally listed and BLM sensitive animals) before any surface disturbance begins.
5. The Final Bald Eagle Habitat Management Plan for the Platte River Resource Area and Jackson Canyon ACEC (BLM 1992) will be carried forward.
6. No surface occupancy or use is allowed in designated critical habitat for threatened and endangered species.
7. The Bates Hole area is proposed as a MA wherein sage-grouse and their habitats will be a priority resource. Leks will have a ¾-mile Controlled Surface Use (CSU) buffers to protect breeding habitat. Leks, which are currently displayed as points, will be displayed as polygons. Nesting habitat will have 4-mile buffers. Within these buffers, surface development or wildlife disturbing activities will be restricted March 1 through June 30. Also, within these 4-mile buffers, surface disturbance will avoid sagebrush stands (of greater than 10 percent canopy cover) where possible. Within these 4-mile buffers, mitigate for power poles and other high profile structures that may provide raptor perches. Avoid placement of these structures if possible, or install devices to preclude raptor perching on the structures. As sage-grouse winter habitat is designated, a Timing Limitation Stipulation (TLS) will restrict actions from November 15 to March 14. Within the designated winter habitat, CSU restrictions for surface-disturbing activities would be implemented in sagebrush stands of greater than 20 percent canopy cover. The Bates Holes area will have priority for vegetative treatments to improve sage-grouse habitats and for vegetation monitoring to insure residual herbaceous vegetation is

maintained for nesting cover on public lands within the two areas. Throughout the planning area, vegetative treatments to meet sage-grouse habitat objectives will be excluded from the above distance and seasonal restrictions.

8. All other sage-grouse leks will be protected by CSU within a radius of ¼-mile from the lek and a seasonal 2-mile buffer during March 1 through July 15. In accordance with the BLM National Sage-Grouse Habitat Conservation Strategy, a seasonal timing stipulation may be applied on contiguous sagebrush habitat up to 4 miles on a case-by-case basis.
9. The size of a buffer zone to protect raptor nests will be determined case-by-case by the BLM Authorized Officer, who will consider topography and raptor prey habitat surrounding the nest site. Usually the buffer zone will be ¼ to ½ mile. The general dates of restriction for all raptor species are February 1 through July 31 (or until the young have fledged).
10. Bald eagle nests are protected by a 1-mile, year-long buffer zone.
11. Artificial Nest Structures (ANS) for raptors are placed as long-term (20 to 40 years) mitigation for displaced raptor pairs. To provide the long-term protection of these ANS sites, apply a combination of NSO restrictions and seasonal buffer zones around the nesting structures. ANS will have a ½-mile NSO buffer. An additional ½-mile seasonal buffer will be applied (total of a 1-mile buffer) for golden eagle. This restriction is intended to preclude the placement of permanent facilities within the NSO buffers.

Proposed Protection - Transportation

1. Roads or trails that are eroding beyond a reasonable level will be fixed or closed.

Proposed Protections - Vegetative Resources

1. Utilize an integrated management technique approach (mechanical, chemical, biological, or livestock grazing) to manipulate seral stages within vegetative communities to achieve objectives defined by the range, forestry, wildlife, watershed, and INPS programs.
2. Apply, where surface development or disturbance occurs, appropriate mitigation measures to minimize impacts to vegetative resources. Emphasize the use of native plants appropriate to the site for reclamation actions. Nonnative species may be used on a case-by-case basis when resource objectives will not be met through the use of native species.
3. Manage vegetative communities to allow optimal live vegetative basal cover and ground litter within the potential of the ecological site (soil type, landform, climate, and geology).
4. Manage all riparian and wetland areas toward Proper Functioning Condition (PFC). Utilize Wyoming BMPs.

5. The BLM National Sage-Grouse Habitat Conservation Strategy guidelines will be followed until specific greater sage-grouse conservation measures are incorporated into the land use plan.
6. Areas currently identified with low development potential for coal and oil and gas resources with public surface ownership greater than 50 percent, will be managed to retain intact blocks of native vegetation where contiguous acreage of greater than 10,000 acres is present.
7. Apply vegetative treatments where and when needed to achieve desired future conditions which may include, but is not limited to, improving age class diversity, plant vigor, and forage quality. Vegetative treatments may include the use of prescribed fire, chemical, mechanical, biological, or combination of these methods to reach specified objectives.
8. Actively manage those ecological sites that provide optimal physical conditions for growing aspen. Manage aspen toward Desired Plant Community (DPC) based upon criteria in Aspen Ecosystems: Objectives for Sustaining Biodiversity. Utilize aspen communities to the greatest extent possible as natural fuel breaks in urban interface areas and wildlife habitat.
9. Create vegetation mosaics within woodlands that provide a preferred ratio of woodlands and adjacent habitats.
10. Treat woodland encroachment in grassland, sagebrush, aspen, and other vegetative communities where it is determined to be detrimental to other resource values or uses.
11. Silvicultural treatments will be applied as needed to achieve objectives.

Proposed Protections - Water Resources

1. Provide, where authorized uses are fenced out, an alternative or “off source” water supply (i.e., piping water to troughs, tanks, or ponds).
2. Evaluate the impacts and mitigate the adverse impacts of all proposed and existing oil- and gas- produced water discharge on stream channel and stream bank stability on all Bureau-administered lands.
3. An NSO restriction within 500 feet of perennial streams, springs, riparian and wetland habitats, or water bodies is implemented on Class 1 and Class 2 waters, as well as a CSU restriction from 500 feet to ¼ mile of these areas, on a case-by-case basis.
4. Analyze all management actions on Class 1 and Class 2 waters to prevent degradation of water quality. All other waters will be considered on a case-by-case basis.
5. For streams on Bureau-administered lands that are rated non-functional or functional at risk, these areas may require special management including, but not limited to fencing, development of alternative water supplies, livestock herding, placement of supplements (feed and mineral), pasture boundary adjustments, and season of use.

6. For areas damaged due to concentrated ungulate use, the Bureau will drill new water supply wells, develop new seeps and springs, and construct new reservoirs to BLM and state standards to disperse livestock and wildlife use on all BLM-administered lands in consultation with WGFD personnel. This will apply only to areas with management and project plans; exceptions will be granted on a case-by-case basis.
7. To protect water sources and associated investments, fence all wells (new and existing) and developed springs. Fencing of reservoirs will be considered on a case-by-case basis.
8. For well or spring developments producing 10 gallons per minute or more, rehabilitate and (or) re-develop Bureau-authorized well and spring developments and upgrade to new development practices. New development practices include, but are not limited to, protection of the well/spring and facilities (fencing), provision for off-source water distribution (pipelines, troughs, tanks), water conservation measures (timers, flow control devices, preferential use of tanks and troughs over unlined pits and ponds), and use of alternative energy where possible. Developments producing less than 10 gallons per minute will be considered on a case-by-case basis.
9. Convert suitable abandoned oil and gas development water-supply wells and suitable abandoned oil and gas wells where there is a need for additional water supplies to livestock and wildlife water supply use on Bureau-administered lands.

Proposed Protection – Black-footed Ferret

1. Habitats managed for reintroductions of black-footed ferrets will be addressed on a case-by-case basis.

APPENDIX II - REFERENCES

- United States Bureau of Land Management (BLM). 1992. Final Bald Eagle Habitat Management Plan for the Platte River Resource Area and Jackson Canyon ACEC. Casper District. U.S. Department of the Interior, Bureau of Land Management. Casper, Wyoming.
- , 1998. Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the State of Wyoming. U.S. Department of the Interior, Bureau of Land Management. January.
- , 2007a. Biological Assessment for the Casper Resource Management Plan. Casper Field Office.
- , 2007b. Bald Eagle Delisting Guidance. Instruction Memorandum No. WY-2007-037 from U.S. Bureau of Land Management dated September 4, 2007. Wyoming State Office. Cheyenne, Wyoming. 2 pp.

APPENDIX III – BEST MANAGEMENT PRACTICES FOR THE CASPER RESOURCE MANAGEMENT PLAN

These Best Management Practices (BMPs) are taken from the Casper Resource Management Plan (RMP) Biological Assessment BA (BLM 2007a). Implementation of the following best management practices are intended to minimize, or eliminate, adverse impacts to Threatened, Endangered, Candidate, and Proposed (T&E species) that are likely to result from implementation of the management actions provided in the Casper RMP. The Bureau has been active in conservation of listed and candidate species, and is committed to playing a key role in the recovery effort for these species. On August 8, 2007, the Service removed the bald eagle (*Haliaeetus leucocephalus*) from the list of threatened and endangered species. However, the Bureau remains committed to the continued protection and monitoring of the bald eagle on Bureau-administered lands (BLM 2007b). The use of the following recommended Best Management Practices will reduce potential effects to species and their habitats.

Platte River Depletions

1. When developing or improving water sources in the North Platte River watershed, the Bureau considers best management practices (BMPs) such as development designs, including water wells and guzzlers, rather than surface impoundments to minimize impacts to surface water hydrology.

General

1. Utilize Minimum Impact Suppression Tactics
2. The Bureau should continue monitoring game, non-game, raptor, and special status species and their habitats on an annual basis.
3. The Bureau should continue prairie dog town inventory on at least a 10-year cycle.
4. The Bureau should continue to monitor for the occurrence of sylvatic plague, West Nile virus, and other epizootic disease outbreaks.
5. Wyoming silvicultural BMPs will be utilized to prevent, limit, and mitigate erosion, sedimentation, and water degradation, and, as needed, to control spread of INPS.
6. Speed limits on access roads will be limited to 35 mph, where possible.
7. Riparian corridors should be surveyed for cottonwood regeneration; areas where grazing is impacting the regeneration of cottonwoods should be fenced.
8. When developing or improving water sources for livestock in the North Platte River watershed, the Bureau should consider development designs, such as water wells and guzzlers, rather than surface impoundments to minimize impacts to surface water hydrology resulting from attenuation of flood peaks and evaporative loss.

9. Regular removal of road-killed animals along project roads will be encouraged.
10. BLM Instruction Memorandum No. 2004-194 regarding Integration of BMPs into APD Approvals and Associated ROWs will be considered in all NEPA documents and on-the-ground actions to mitigate anticipated impacts to surface and subsurface resources. Oil and gas operators will be actively encouraged to consider adopting acceptable BMPs as part of their application and operations.
11. BLM programs will strive to protect Ute ladies'-tresses habitats and prevent new trails from being constructed through known orchid occurrences.
12. Coordination between BLM soil scientists and BLM biologists will occur before any planned soils-related actions take place on the ground.
13. Coordination between BLM recreational planners, BLM biologists, and other resource group managers will take place during the planning stage for actions occurring in these MAs and ACECs.
14. For all actions occurring in riparian and wetland areas, the BMPs presented in the following documents will be considered in an effort to generate the most ecologically sound management program: "Birds in Green Ribbons – Best Management Practices for Riparian Areas to Benefit Birds in Wyoming" – Wyoming Partners in Flight (PIF); "Grazing Management for Riparian-Wetland Areas" –; and "Effective Cattle Management in Riparian Zones – A Field Survey and Literature Review" (as cited in BLM 2007a)
15. Riparian areas will receive special attention.
16. In any proposed new access, wetland and riparian areas will be avoided where possible (18 CFR 725.2 – Floodplain Management and Protection of Wetlands).
17. The Bureau will consider the effects of actions it authorizes on the visual quality and character of the area in which it takes place and will not permit or authorize actions that detract from the character of the landscape.
18. Consideration for the effect a project has on the visible landscape, or viewshed, should be taken into account for all actions permitted or authorized by the Bureau.

SPECIES-SPECIFIC MEASURES

The Bureau will also consider implementing any appropriate BMPs to further protect the species and its habitat. In the event new populations of the species are discovered, these measures will apply until such time that further investigation and subsequent consultation with the Service result in more appropriate management prescriptions.

Bald Eagle

1. Proponents of Bureau-authorized actions should be advised that roadside carrion can attract foraging bald eagles and potentially increase the risk of vehicle collisions with bald eagles feeding on carrion. When large carrion occurs on the road, appropriate officials should be notified for necessary removal.
2. The Bureau should coordinate with APHIS - Wildlife Services Division to minimize potential impacts to the bald eagle and its habitats from pest/predator control programs that may be included in the local animal damage control plan. The Service should also be included in this coordination.
3. Proposed and future water projects should not be designed to discharge into drainages or reservoirs occurring within 500 feet of county roads and highways. This measure is intended to minimize vehicle collisions with wildlife, using the water source and subsequent eagle-vehicle collisions.
4. The Bureau should provide educational information to project proponents and the general public pertaining to the following topics: appropriate vehicle speeds and the associated benefit of reduced vehicle collisions with wildlife; use of lead shot (particularly over water bodies); use of lead fishing weights; and general ecological awareness of habitat disturbance.
5. The Bureau should coordinate with other agencies and private landowners to identify voluntary opportunities to modify current land stewardship practices that may impact the bald eagle and its habitats.
6. The Bureau should monitor and restrict, when and where necessary, authorized or casual use actions that may impact bald eagles or their habitats, including, but not limited to, recreational mining and oil and gas actions.
7. The Bureau should periodically review existing water quality records (e.g., Wyoming DEQ, WGFD, USGS, etc.) from monitoring stations on, or near, important bald eagle habitats (i.e., nests, roosts, concentration areas) on public land for any conditions that could potentially adversely affect the species. If water quality problems are identified, the Bureau should contact the appropriate jurisdictional entity to cooperatively monitor the condition and/or take corrective action.
8. Projects with the potential to disturb bald eagles should be implemented in the least amount of time and during periods least likely to affect the bald eagle.
9. Projects with the potential to disturb bald eagles or their habitats should be monitored, and the monitoring results should be considered in the design and implementing future projects.

Black-footed Ferret

1. Develop prairie dog management plans with ongoing monitoring and protection of prairie dog towns and complexes.

2. Encourage and support research on the effect of shooting and oil and gas development on prairie dogs.
3. Follow the guidelines outlined in the Wyoming Black-tailed Prairie Dog Management Plan (Wyoming Black-tailed Prairie Dog Working Group 2001) and the White-tailed Prairie Dog Conservation Assessment (Seglund *et al.* 2004).
4. Encourage Wyoming Game and Fish Commission to remove unprotected status on prairie dogs; provide regulatory mechanisms, require permits, and monitor the take of prairie dogs by use of questionnaires.
5. Establish land stewardship agreements with other agencies and/or private landowners where large (1,000 acres) prairie dog towns or complexes exist. These agreements can control potential uses that may be detrimental to prairie dogs and their habitats, while preserving the landowner's intent for use.
6. Avoid sale or exchange of lands with potential for black-footed ferret reintroductions and attempt to acquire parcels with suitable prairie dog complexes on them, especially those parcels that could potentially be part of a black-footed ferret reintroduction effort.
7. Initiate, to the extent feasible, land exchanges in the Thunder Basin and Shirley Basin in areas with potential for black-footed ferrets, in order to increase the land area in federal ownership.
8. Livestock grazing practices that degrade prairie dog habitat should be eliminated in prairie dog colonies: grazing should be reduced or eliminated during drought; practices should avoid vegetation conversions; and reduce or eliminate any other suspected ecosystem-degrading grazing practices.
9. Natural fire regimes should be restored in prairie dog habitats: "Let burn" policies for prairie dog towns; no mechanical or chemical fuel treatments allowed in prairie dog towns.
10. The Bureau will encourage, support, and/or establish an aggressive prairie dog research program, addressing issues such as: The effect of shooting and oil and gas development on prairie dogs, sylvatic plague control, and population viability analysis.
11. Because knowledge of the effects of resource extraction on white-tailed prairie to populations is limited, monitoring at sites before, during, and after energy development should be required (Seglund *et al.* 2004).
12. If geologically and technically feasible, drill multiple wells from the same pad using directional (horizontal) drilling technologies (up to 16 wells per pad, as technologically feasible).
13. Salvage topsoil from all facilities construction and re-apply during interim and final reclamation.

14. For BLM project-related actions, vehicle speed limits shall not exceed 35 mph at night when in black-footed ferret reintroduction areas.

Blowout Penstemon

1. When project proposals are received, the Bureau will initiate coordination with the Service at the earliest possible date so that both agencies can advise on project design. This should minimize the need to redesign projects at a later date to include blowout penstemon conservation measures, determined as appropriate by the USFWS.
2. Designate Areas of Critical Environmental Concern (ACECs) for the known populations of blowout penstemon (will add future populations to the ACEC as they are found) within all four affected Field Offices, beginning with the Rawlins FO. If these known populations of blowout penstemon are designated as an ACEC, they will require a plan of operations to be completed for any operations causing surface disturbance greater than causal use and a NEPA review before locatable mineral claims can be explored, mined and developed (43 CFR 3809 regulations).
3. The Bureau will participate in the development of both, a conservation agreement, assessment and strategy and a species specific recovery plan for the blowout penstemon in coordination with the Service and other agencies as appropriate. Populations and habitat of the blowout penstemon on Bureau-administered lands will be monitored to determine if recovery/conservation objectives are being met.
4. Limit the use of off highway vehicles (OHVs) to designated roads and trails within 1.0 mile of potential blowout penstemon habitat, with no exceptions for the performance of necessary tasks other than fire fighting and hazardous material cleanup allowed using vehicles off road. No OHV competitive events will be allowed within 1.0 mile of potential blowout penstemon populations.
5. Coordinate with the Service, the National Resource Conservation Service, and private landowners to ensure adequate protection for the blowout penstemon and its habitat when new activities are proposed, and to work proactively to enhance the survival of the plant.
6. To prevent grazing of blowout penstemon plants by livestock, keep livestock at least 0.25 mile away from known blowout penstemon populations during the essential growing season (from April 15 to September 15 – the growing, flowering and fruiting stages) through herding of livestock away from known blowout penstemon populations or by excluding livestock from pastures with known blowout penstemon populations.
7. Known blowout penstemon habitat should be fenced to keep livestock from grazing blowout penstemon plants. However, this is usually not practicable due to the difficulty in placing fences in a sandy substrate and high maintenance costs or the inability to maintain the fences at all. Placement of permanent fencing, or temporary electric fences around blowout penstemon populations and habitat could be done on a larger scale by fencing off a much larger area around sand dunes. Generally the sand dune complexes that comprise blowout penstemon habitat are very extant, sometimes running for dozens of miles, making fencing

difficult to impossible. In the unlikely event that permanent fencing is placed around known blowout penstemon populations or habitats during the essential growing season, mineral supplements and water sources may be placed outside of the fences closer than the 1.0 mile specified in the conservation measures, to the known blowout penstemon habitat at the discretion of the Bureau's authorized officer.

8. In the event that a new population of blowout penstemon is found, the Service's Cheyenne Wyoming Field Office (307-772-2374) will be notified within one week of discovery.
9. Initiate land tenure adjustments to acquire lands with populations of blowout penstemon or potential habitat to ensure a higher level of protection under the ESA on federal lands for the blowout penstemon.
10. To prevent loss of habitat for the blowout penstemon, the Bureau "shall retain in federal ownership all habitats essential for the survival and recovery of any listed species, including habitat that was used historically, that has retained its potential to sustain listed species, and is deemed to be essential to their survival" (BLM 2001). Prior to any land tenure adjustments in potential blowout penstemon habitat, the Bureau will survey to assess the potential for the existence of blowout penstemon. While it is difficult to assess whether the blowout penstemon was historically present on such sites, the Bureau should try and retain in federal ownership all habitats essential for the survival and recovery of the blowout penstemon, including habitat that was used historically, that has retained its potential to sustain this listed species, and is deemed to be essential to their survival (BLM 2001). Potential blowout penstemon habitat may be used for reintroduction efforts and is important for the recovery and enhancement of the species.
11. Form a steering committee to develop and prioritize management practices and assist the Bureau and the Service with research projects.
12. A comprehensive inventory of the Dune Pond Conservation Management Area (CMA) for blowout penstemon should be completed (Rawlins FO).
13. Conduct inventories for blowout penstemon in areas with potential habitat in the Rawlins, Casper, Rock Springs, and Lander Field Offices (The University of Wyoming, WYNDD recently completed a "Survey of *Penstemon haydenii* (Blowout Penstemon) in Wyoming 2004," which documented all known locations of blowout penstemon in Wyoming through 2004).
14. Maintain a database of all searched, inventoried, or monitored blowout penstemon sites.
15. Analyze vegetation treatments (mowing, prescribed fire, mechanical treatments, etc.) in known or potential blowout penstemon habitat for impacts to the species.
16. Monitor blowout penstemon sites for invasion by noxious and invasive plant species.
17. Establish monitoring, biological, ecological, and life history studies as funding and staffing allow, such as, monitoring current populations each year for trends, studies regarding

identification of pollinators, genetics, life history, effects of pesticides and herbicides, seed viability and germination, and studies regarding monitoring the success of reintroduction efforts. The Rawlins FO is currently conducting pollination studies through Utah State University, USDA Agricultural Research Service (ARS) Bee Biology & Systematics Laboratory.

18. Collect and bank blowout penstemon seeds at local, regional, national, and international arboreta, seed banks, and botanical gardens as insurance against catastrophic events, for use in biological studies, and for possible introduction/reintroduction into potential habitat.
19. Train law enforcement personnel on protections for the plant and its habitat, its status, and current threats to its existence.
20. Educate resource specialists, rangers, and fire crews about the blowout penstemon and its habitat to help with project design for the general area and for fire suppression actions occurring in potential habitat for the blowout penstemon and on the habitat characteristics and plant identification for the plant, so that if they encounter a penstemon occurring in sandy habitats, they can report it to their office threatened and endangered species specialist.
21. The Bureau should work towards developing reintroduction sites in coordination with the Service and to maintain the integrity of these sites for the survival of the blowout penstemon. The objective would be to reintroduce populations of blowout penstemon into areas of historic occurrence and introduce new populations in suitable habitat within the plant's historic range.
22. Develop propagation techniques and use them to reintroduce/introduce the blowout penstemon and to repopulate known populations in the event population recovery becomes necessary.

Colorado Butterfly Plant and Critical Habitat

1. When project proposals are received, the Bureau will initiate coordination with the Service at the earliest possible date so that both agencies can advise on project design. This should minimize the need to redesign projects at a later date to include Colorado butterfly plant conservation measures, determined as appropriate by the Service.
2. The Bureau will participate in the development of both, a conservation agreement, assessment strategy and a species specific recovery plan for the Colorado butterfly plant in coordination with the Service and other agencies as appropriate. Habitat of the Colorado butterfly plant on Bureau-administered lands will be monitored to determine if recovery/conservation objectives are being met.
3. Coordinate with the Service, the National Resource Conservation Service (NRCS), and private landowners to ensure adequate protection for the Colorado butterfly plant and its habitat when new activities are proposed, and to work proactively to enhance the survival of the plant.

4. In the event that a new population of Colorado butterfly plant is found, the Service's Wyoming Field Office (307-772-2374) will be notified within one week of discovery.
5. Initiate land tenure adjustments to acquire lands with potential Colorado butterfly plant habitat to ensure a higher level of protection under the ESA on federal lands for the Colorado butterfly plant.
6. To prevent loss of habitat for the Colorado butterfly plant, the Bureau "shall retain in federal ownership all habitats essential for the survival and recovery of any listed species, including habitat that was used historically, that has retained its potential to sustain listed species, and is deemed to be essential to their survival" (BLM 2001). Prior to any land tenure adjustments in potential Colorado butterfly plant habitat, the Bureau will survey to assess the potential for the existence of the Colorado butterfly plant. While it is difficult to assess whether the Colorado butterfly plant was historically present on such sites, the Bureau should try and retain in federal ownership all habitats essential for the survival and recovery of the Colorado butterfly plant, including habitat that was used historically, that has retained its potential to sustain this listed species, and is deemed to be essential to their survival (BLM 2001). Potential Colorado butterfly plant habitat may be used for reintroduction efforts and is important for the recovery and enhancement of the species.
7. Maintain and restore the dynamics of stream systems, including the movement of streams within their floodplains, which are vital for the life cycle of this plant. Flow timing, flow quantity, and water table characteristics should be evaluated to ensure that the riparian system is maintained where these plants occur.
8. Maintain and restore the natural species composition and structural diversity of plant communities in riparian zones and wetlands.
9. For the protection of the Colorado butterfly plant and its potential habitat, surface-disturbing activities should be avoided in the following areas: (a) identified 100-year flood plains; (b) areas within 500 feet from perennial waters, springs, wells, and wetlands, and; (c) areas within 100 feet from the inner gorge of ephemeral channels.
10. Recreational foot trails that may be located adjacent to Colorado butterfly plant habitat should be constructed to reduce impacts to this species.
11. Form a steering committee to develop and prioritize management practices and assist the Bureau and the Service with research projects.
12. Conduct inventories for the Colorado butterfly plant in areas with potential habitat in the Rawlins and Casper Field Offices.
13. Maintain a database of all searched, inventoried, or monitored Colorado butterfly plant sites.
14. Analyze vegetation treatments (mowing, prescribed fire, mechanical treatments, etc.) in known or potential Colorado butterfly plant habitat for impacts to the species.

15. Monitor Colorado butterfly plant sites for invasion by noxious and invasive plant species.
16. Establish monitoring, biological, ecological, and life history studies as funding and staffing allow, such as, monitoring current populations each year for trends, studies regarding identification of pollinators, genetics, life history, effects of pesticides and herbicides, seed viability and germination, and studies regarding monitoring the success of reintroduction efforts.
17. Collect and bank Colorado butterfly plant seeds at local, regional, national, and international arboreta, seed banks, and botanical gardens as insurance against catastrophic events, for use in biological studies, and for possible introduction/reintroduction into potential habitat.
18. Train law enforcement personnel on protections for the plant and its habitat, its status, and current threats to its existence.
19. Educate resource specialists, rangers, and fire crews about the Colorado butterfly plant and its habitat to help with project design for the general area and for fire suppression actions occurring in potential habitat for the Colorado butterfly plant and on the habitat characteristics and plant identification for the plant, so that if they encounter a Colorado butterfly plant occurring in riparian habitat, they can report it to their office threatened and endangered species specialist.
20. The Bureau should work towards developing reintroduction sites in coordination with the Service and to maintain the integrity of these sites for the survival of the Colorado butterfly plant. The objective would be to reintroduce populations of the Colorado butterfly plant into areas of historic occurrence and introduce new populations in suitable habitat within the plant's historic range.
21. Develop propagation techniques and use them to reintroduce/introduce the Colorado butterfly plant and to repopulate known populations in the event population recovery becomes necessary.

Preble's Meadow Jumping Mouse and Critical Habitat

1. The Bureau should coordinate with other agencies and private landowners to identify voluntary opportunities to modify current land stewardship practices that may impact the Preble's meadow jumping mouse and its habitat.
2. BLM biologists should stay updated on Preble's meadow jumping mouse research that indicates other appropriate conservation measures that may be utilized to enhance Preble's meadow jumping mouse habitat.
3. Gather additional information on potential long-term impacts of weeds, weed control, and plant species composition on Preble's meadow jumping mouse populations.

Ute Ladies'-tresses

1. When project proposals are received, the Bureau will initiate coordination with the Service at the earliest possible date so that both agencies can advise on project design. This should minimize the need to redesign projects at a later date to include orchid conservation measures, determined as appropriate by the Service.
2. The Bureau will participate in the development of both, a conservation agreement/assessment strategy and a species-specific recovery plan for the orchid in coordination with the USFWS and other agencies as appropriate. Orchid habitat on Bureau-administered lands will be monitored to determine if recovery/conservation objectives are being met.
3. The Bureau will coordinate with the Service, the National Resource Conservation Service (NRCS), and private landowners to ensure adequate protection for the orchid and its habitat when new activities are proposed, and to work proactively to enhance the survival of the plant.
4. In the event that a new population of the orchid is found, the USFWS Wyoming Field Office (307-772-2374) will be notified within one week of discovery.
5. Livestock grazing, mowing/haying, and some burning are specific management tools that the Bureau may use to maintain favorable habitat conditions for the orchid where feasible. Mowing and grazing, with proper timing and intensity, reduce the native and exotic plant competition for light and possibly for water, space and nutrients.
6. To prevent loss of habitat for the orchid, the Bureau “shall retain in federal ownership all habitats essential for the survival and recovery of any listed species, including habitat that was used historically, that has retained its potential to sustain listed species, and is deemed to be essential to their survival” (BLM 2001). Prior to any land tenure adjustments in potential orchid habitat, the Bureau will survey to assess the potential for the existence of the orchid. While it is difficult to assess whether the orchid was historically present on such sites, the Bureau should try and retain in federal ownership all habitats essential for the survival and recovery of the orchid, including habitat that was used historically, that has retained its potential to sustain this listed species, and is deemed to be essential to their survival (BLM 2001). Potential orchid habitat may be used for reintroduction efforts and is important for the recovery and enhancement of the species.
7. Maintain and restore the dynamics of stream systems, including the movement of streams within their floodplains, which are vital for the life cycle of the orchid. Flow timing, flow quantity, and water table characteristics should be evaluated to ensure that the riparian system is maintained where these plants occur.
8. Maintain and restore the natural species composition and structural diversity of plant communities in riparian zones and wetlands.
9. For the protection of the orchid and its potential habitat, surface-disturbing activities listed above, should be avoided in the following areas when they occur outside of the protective

- 0.25 buffer from populations of the orchid: (a) identified 100-year flood plains; (b) areas within 500 feet from perennial waters, springs, wells, and wetlands, and; (c) areas within 100 feet from the inner gorge of ephemeral channels.
10. Form a steering committee to develop and prioritize management practices and assist the Bureau and the Service with research projects.
 11. Conduct inventories for the orchid in areas with potential habitat.
 12. Maintain a database of all searched, inventoried, or monitored orchid sites.
 13. Analyze vegetation treatments (mowing, prescribed fire, mechanical treatments, etc.) in known or potential habitat for the orchid to determine impacts to the species.
 14. Establish monitoring, biological, ecological, population demographics, and life history studies as funding and staffing allow, such as, monitoring current populations each year for trends, studies regarding identification of pollinators, genetics, life history, effects of pesticides and herbicides, seed viability and germination, and studies regarding monitoring the success of reintroduction efforts. Monitor orchid population sites for invasion by noxious and invasive plant species.
 15. Perform monitoring and analysis pertaining to flow timing, flow quantity, and water table characteristics with the goal of ensuring that riparian vegetation, in areas of known and potential habitat for the orchid, is maintained.
 16. If possible, collect and bank orchid seeds at local, regional, national, and international arboreta, seed banks, and botanical gardens as insurance against catastrophic events, for use in biological studies, and for possible introduction/reintroduction into potential habitat.
 17. Train law enforcement personnel on protections for the orchid and its habitat, its status, and current threats to its existence.
 18. Educate resource specialists, rangers, and fire crews about the orchid and its habitat to help with project design for the general area and for fire suppression actions occurring in potential habitat for the orchid and on the habitat characteristics and plant identification for the plant, so that if they encounter the orchid occurring in riparian habitat, they can report it to their office threatened and endangered species specialist.
 19. The Bureau should work towards developing reintroduction sites in coordination with the Service and to maintain the integrity of these sites for the survival of the orchid. The objective would be to reintroduce populations of the orchid into areas of historic occurrence and introduce new populations in suitable habitat within the plant's historic range.
 20. Develop propagation techniques and use them to reintroduce/introduce the orchid and to repopulate known populations in the event population recovery becomes necessary.

APPENDIX III - REFERENCES

- Seglund, A. E., A. E. Ernst, M. Grenier, B. Luce, A. Puchniak, and P. Schnurr. 2004. White-tailed Prairie Dog Conservation Assessment. 152 pp.
- United States Bureau of Land Management (BLM). 2001. Manual 6840 – Special Status Species Management. United States Department of the Interior Bureau of Land Management. January 19, 2001. 41 pp. + Glossary.
- . 2007a. Casper Biological Assessment. Bureau of Land Management. Casper Field Office.
- . 2007b. Bald Eagle Delisting Guidance. Instruction Memorandum No. WY-2007-037 from U.S. Bureau of Land Management dated September 4, 2007. Wyoming State Office. Cheyenne, Wyoming. 2 pp.
- Wyoming Black-tailed Prairie Dog Working Group. 2001. Final Draft Wyoming Black-tailed Prairie Dog Management Plan. Technical assistance in developing this plan was provided by Martin Grenier, Non-game Mammal Biologist, and Bob Oakleaf, Non-game Coordinator, Wyoming Game and Fish Department Non-game Program, June 15, 2001.

APPENDIX IV - DESCRIPTION OF PROGRAM ACTIVITIES FOR THE CASPER RMP

These program descriptions are summarized from the Casper Biological Assessment (BLM 2007) and Draft Environmental Impact Statement (BLM 2007). It is expected that the activities described here will be implemented in the Casper Resource Area over the life of the approved Casper RMP (10-15 years).

Air Quality. The Bureau's air quality program includes monitoring efforts in cooperation with the USFS, Wyoming Department of Environmental Quality (DEQ) and the U.S. Environmental Protection Agency (USEPA), and evaluating and restricting surface development. Monitoring for air quality components (i.e., carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone, particulate matter, visibility, and atmospheric deposition) is conducted from various facilities around Wyoming. Regional air quality is influenced by the interaction of several factors, including meteorology, climate, the magnitude and spatial distribution of local and regional air pollutant sources, as well as the chemical properties of emitted air pollutants. Air quality management actions typically are associated with limiting, reducing, and monitoring pollutant levels and dust during other Bureau management actions.

The State of Wyoming maintains air quality standards and determines whether it is necessary to regulate emissions. When necessary, the State of Wyoming regulates emissions through its State Implementation Plan (SIP) for air quality by promulgating the appropriate rule. Objectives of the State of Wyoming SIP include the protection of public health and safety and the well-being of sensitive natural resources. Thus, the Bureau minimizes, within the scope of its authority, any emissions that may add to atmospheric deposition, cause violations of air quality standards, or degrade visibility. The Environmental Protection Agency (EPA) provides oversight responsibility during this process and approves the State of Wyoming SIP, if appropriate.

The Casper planning area is located in a semi-arid mid-continental climate typified by dry windy conditions, limited rainfall, and long cold winters (Trewartha and Horn 1980 as cited in BLM 2007). Air quality in the planning area generally is considered to be good based on the limited amount of air quality monitoring currently being conducted in the area. The planning area has no regions designated as nonattainment for the National Ambient Air Quality Standards (NAAQS) or the Wyoming Ambient Air Quality Standards (WAAQS).

Pollutant concentration refers to the mass of pollutant present in a volume amount of air. The Bureau supports ambient air quality monitoring programs within Wyoming for criteria pollutants, visibility, and air quality-related values in Class I pristine areas. The Bureau works cooperatively with several other federal agencies to measure visibility with the Inter-Agency Monitoring of Protected Visual Environments (IMPROVE) network. The IMPROVE station operating in the Class I area nearest to the planning area, approximately 90 miles to the west, is in the Bridger Wilderness Area. Atmospheric deposition refers to processes in which air pollutants are removed from the atmosphere and deposited into terrestrial and aquatic ecosystems. Much of the concern about deposition is due to secondary formation of sulfur and nitrogen compounds, which may contribute to acidification of lakes, streams, and soils and affect other ecosystem characteristics, including nutrient cycling and biological diversity.

Hazardous Air Pollutants (HAPs) include air pollutants that can produce serious illnesses or increased mortality, even in low concentrations. HAPs are compounds that do not have established federal ambient standards, but they may have thresholds established by some states and are typically evaluated for potential chronic inhalation and cancer risks. Existing sources of HAPs within the planning area include (1) fossil fuel combustion that emits HAPs, such as formaldehyde, and (2) oil and gas operations that emit volatile organic compound (VOCs) and may emit hydrogen sulfide (H₂S). These data show that the main contributors to emissions include oil and gas development and production, salable minerals, locatables, and coal mines.

Cultural Resources. The Bureau normally conducts cultural resource inventories in response to other surface-disturbing activities, such as the following. From 1967 to 2003, approximately 4,029 cultural resource investigations or other similar projects were conducted within the planning area (BLM 2004a). Surveys have been conducted on approximately 192,000 acres, or about 5 percent of the planning area. In addition to 3,841 Class I, Class II, and Class III inventories, 85 monitoring projects, 59 testing and evaluation projects, and 17 major excavations or other mitigation projects have occurred. Most recently, the Bureau completed a Class I regional overview of the planning area that reviewed and summarized past cultural resources investigations, the numbers and kinds of recorded resources, and cultural resources management directions. Currently, 7,844 known cultural resources and one Native American traditional cultural property known as the Cedar Ridge complex exist in the planning area.

The Bureau performs a variety of actions to preserve, protect, and restore cultural and historical resources. During inventory actions, the Bureau inventories, categorizes, and preserves cultural resources, conducts field actions, performs excavations, maps and collects surface materials, researches records, and photographs sites and cultural resources. Data collection actions are used for documenting and developing mitigation plans prior to surface-disturbing activities of other resource programs. Inventory actions commonly entail the use of hand tools, power tools, or heavy machinery. Land management actions associated with cultural resources involve managing sites for scientific, public, and sociocultural use; developing interpretive sites; restricting certain land uses; closing certain areas to exploration; prohibiting some surface-disturbing activities; and preparing interpretive materials. The Bureau also seeks listing of eligible sites on the National Register of Historic Places, installs protective fencing of trail segments, stabilizes deteriorating buildings, acquires access to sites when necessary, performs certain surface-disturbing activities, pursues withdrawal of areas from exploration and development of locatable minerals, designates avoidance areas, pursues cooperative agreements, and identifies and interprets historic trails.

Surface-disturbing and other activities associated with the cultural resource program include, but are not limited to, the following actions: record cultural resources; inventory cultural resources; develop interpretive sites; use hand tools, power tools, and heavy machinery; stabilize deteriorating buildings and resources; fence cultural resources; and construct temporary campgrounds.

Fire Management and Ecology. The Bureau coordinates its fire management program with the USFS, Wyoming State Forestry Division (WSFD), County Fire Departments, and local fire protection districts. The Bureau fire management program focuses on two categories of fires: unplanned (or wildland fire) and planned (or prescribed fire). Unplanned or wildland fire occurs as the result of an act of nature, such as lightning, human accident, or by intent to cause damage. Unplanned fires in the planning area from 1990 to 2003 affected an average of 1,936 acres per year.

Vegetative communities and their respective fire regimes vary throughout the planning area. Planned or prescribed fire is used in a controlled manner for specific purposes, such as improving habitats and plant community health and reducing hazardous fuels. From 1985 to 2003, prescribed fires in various vegetation types burned approximately 408 acres per year.

Unplanned/Wildland Fire. An essential component of the fire management program in the planning area is protection of the public and property from the adverse impacts of wildland fires. Fire suppression on public lands is guided by objectives in the existing plan and clarified by the annually updated Fire Management Plan for the Wyoming Eastern Zone (BLM 2004b). The 2003 Risk Assessment and Mitigation Strategy (RAMS) exercise recently refined the Fire Management Plan. The Healthy Forests Initiative, Healthy Forest Restoration Act (USC 2003 as cited in BLM 2007), and the National Fire Plan 2000 also influence the Bureau's approach to forest health and fire management in the planning area.

The Bureau has identified site-specific fire management practices for multiple sites within the planning area. These practices vary from site to site, but generally identify the acreage designated for full fire suppression, limited fire suppression, and sites designated for prescribed burns. Full suppression is a strategy requiring immediate and aggressive attack of the fire and typically relies heavily on mechanized equipment on or off roads. In contrast, limited suppression is a less aggressive strategy, generally used to keep a fire within a specified area.

Fire suppression activities depend on the severity and size of the fire and the resources determined to be in danger from the fire. Initial attack of a wildland fire will consist of a ground crew (or smoke-jumper crew if the fire was in a remote location) dispatched to the site to evaluate the fire and estimate the suppression requirements needed. Ground access to the site may be by road or trail, cross-country, by vehicle, or on foot. If the fire is small, the crew will immediately extinguish the fire using hand and power tools (e.g., pulaskis, shovels, and chainsaws), and sometimes water from an engine pumper unit, or backpack pumps. If additional firefighting resources are needed, more personnel and equipment will be dispatched to the site. Additional work may include building fire lines by scraping a line down to mineral soil around the fire with hand tools. Hand-built fire lines (hand lines) typically are about 2-feet wide and generally surround the fire perimeter. If the fire increases in size or burns across the hand line, additional measures may be taken, including cutting trees, constructing wider fire lines with mechanized equipment, filling water pumper trucks from water bodies and spraying the water onto burning vegetation, water drops from helicopter buckets with water obtained at the nearest source accessible to helicopters, or air tanker drops of chemical retardant (a slurry of water, chemical fertilizers, and a binding agent, such as clay). If additional personnel are required to fight the fire, a camp will be established in a safe location close enough to the fire to allow efficient movement of personnel and equipment. Camps may require areas large enough to accommodate personnel, cooking facilities, equipment areas, and sufficient area for storage of supplies and equipment needed to suppress the fire. Following containment and control of the fire, "mop-up" operations will begin and continue until the fire is declared extinguished. Mop-up is a tactic to extinguish burning materials that could cause a fire to spread beyond the control lines. During mop-up operations, hazardous snags within the fireline are felled, and all remaining burning embers are extinguished until cold. Rehabilitation currently is conducted on a case-by-case basis in the planning area.

Planned/Prescribed Fire. Prescribed, or planned, fire (as well as some wildland fires) is a management tool used to maintain or increase age-class diversity within vegetative types (e.g., big sagebrush/grassland); rejuvenate fire-dependent vegetative types (e.g., true mountain mahogany/ponderosa pine); maintain or increase vegetation productivity, nutrient content, and palatability; and maintain or improve wildlife habitats, rangeland, and watershed conditions. Fire also is considered a management tool for disposal of timber slash, seedbed preparation, reduction of hazardous fuel, control of disease or insects, grazing management, thinning, or plant species manipulation.

Prior to conducting a prescribed burn, fuel loads are identified and a burn plan is developed as to how the burn will be conducted and what safeguards must be in place to keep the fire under control. Vegetation thinning is sometimes used to reduce the fuel levels before a prescribed fire. Prescribed fire sites are usually accessed by road. The burn site is typically prepared prior to the actual prescribed fire by construction of firebreaks (often by black lining) and sometimes the windrowing or piling of the fuels to be burned within the firebreak. Fire engines generally are stationed on the site for emergency fire control if needed, and for mop-up operations. Qualified fire personnel conduct the prescribed fire under stringent guidelines of temperature conditions, humidity, and wind speed and direction to minimize the chance of the fire escaping. If all site conditions are favorable, and the weather forecast for the time of the burn is favorable, the fuels to be burned are ignited and burned in small increments until the desired area is burned over. Once the fire burns out, or is extinguished, the area is monitored to be sure the fire is out and will not start up again or spread to areas not included in the burn plan.

Fish and Wildlife Resources. Through wildlife and fisheries habitat management, the Bureau seeks to maintain and enhance habitats for a diversity of fish and wildlife species and provide habitats for threatened, endangered, candidate, proposed, and special status species in compliance with the ESA, approved species recovery plans, and BLM Manual 6840. The Bureau's wildlife habitat management program supports population objective levels in the WGFD strategic plan. Big game crucial winter range is an important component of habitat management in the planning area. There are 1,124,830 acres of designated crucial winter range in the planning area, 25 percent (281,158 acres) of which are on Bureau-administered lands.

Wildlife program actions may include inventory and monitoring, habitat improvement projects, developing habitat management plans (HMPs), developing stipulations and protective measures, and acquiring land and easements. The goal of the HMPs is habitat protection and improvement for all wildlife and fisheries; some HMPs focus on particular wildlife groups, such as waterfowl and upland game.

The Bureau develops stipulations and protective measures for fish and wildlife resources, including the authorization of withdrawals of some areas from mineral entry; limiting access of OHV use, snowmobiles, horseback riders, and pedestrians; prohibiting surface development; and implementing road closures. Habitat improvement projects include, but are not limited to, developing water sources; constructing and maintaining fences; managing other resource programs to conserve forage and protect habitats; improving forage production and quality of rangelands; and treating vegetation (e.g., prescribed fires; mechanical, chemical, and biological treatments; and cutting, thinning, planting, seeding, and pitting).

Other wildlife management actions include monitoring habitats; developing habitat islands; managing access; authorizing agricultural entry and disposal; using surface protection mitigations; modifying existing projects; constructing artificial nesting structures (ANSs); using heavy equipment and hand tools; documenting resource damage; allowing new prairie dog towns to become established; improving aquatic and riparian habitat; reestablishing willows; implementing stream improvement practices; developing cooperative agreements to facilitate species transplants; chemically controlling pests; exotic fish removal; construction of instream barriers to protect species from non-native invaders; installation of revetments and fish passage structures; installation of log overpours; macroinvertebrate sample analysis; cabling of junipers; gabion baskets; and placement of large boulders for instream fish habitats. The Bureau's wildlife educational programs include the distribution of information to landowners, the public, and lessees, and developing public education programs.

Forests, Woodlands, and Forest Products. In the Casper planning area, the Bureau administers approximately 66,005 acres of forests and 98,999 acres of woodlands. Forest species include lodgepole pine (*Pinus contorta*), ponderosa pine (*Pinus ponderosa*), and Douglas-fir (*Pseudotsuga menziesii*). Woodlands encompass quaking aspen (*Populus tremuloides*), limber pine (*Pinus flexilis*), and Rocky Mountain juniper (*Juniperus scopulorum*). Commercial harvest primarily occurs in the forest communities; however, no active forest management occurred from 1990 to 2001, except in the Muddy Mountain Environmental Education Area (EEA).

The Bureau manages its forest resources to achieve optimal stand health, productivity, and biological diversity, while also providing a balance of natural resource benefits and uses, including a sustainable flow of wood products, watershed health and stability, wildlife, recreation, and livestock grazing. Under the proposed Casper RMP, the Bureau will manage for desired forest conditions where all age classes are represented, insects are endemic rather than epidemic, and sanitation cuts are used to remove trees infected with mistletoe and blister rust. Silvicultural treatments could include thinnings, clearcutting, shelterwood, seed tree cutting, release cutting, improvement and salvage cuttings, prescribed fire, chemical treatments, and planting/seeding. Clearcuts will be limited to 20 acres or less with meandering boundaries. Ponderosa pine stands will be managed to achieve a sustainable flow of wood products. Forest treatments will be allowed within bald eagle roost areas to manage the stands for old growth; any constructed roads and trails will be closed and reclaimed following harvest. Within the Muddy Mountain EEA, 100 thousand board feet annually will be allowed where wildlife and recreation objectives are met.

Forest management involves timber harvesting, cutting and removal of diseased trees, disease treatment by spraying, and the spraying of grasses and shrubs. The Bureau allows precommercial thinning, chaining, and shearing. The Bureau allows timber harvesting, permits clearcuts, ensures slash disposal, and allows commercial thinning, logging, and skidder-type yarding, as well as cable yarding. The Bureau permits the construction of roads and landings for use in timber harvesting operations. Slash is lopped and scattered, roller chopped, or burned. The Bureau also permits helicopter logging. Noncommercial timber harvest involves collecting and cutting of firewood, Christmas trees, posts, poles, and wildlings. During restoration efforts following forest management, the Bureau ensures site regeneration and stand replacement, fences regeneration areas, and conducts rehabilitation surveys. The Bureau also assesses effects of prescribed burning and grazing and manages forests for recreation, livestock grazing, and wildlife habitats. Forest management actions that the Bureau engages in that involve all uses of the forest include acquiring

easements, pursuing legal access, allowing road development, and installing drain culverts and water bars.

Health and Safety. The Bureau is required to address hazards that create safety risks to visitors to BLM lands. The Hazard Management and Resource Restoration Program (HMRRP) is designed to manage hazards on public lands to reduce risks to visitors and employees, restore contaminated lands, and carry out emergency-response actions. Actions directed toward health and safety concerns in the planning area primarily encompass the following three main areas: Abandoned Mine Lands (AML), Airports and Formerly Used Defense Sites (FUDS), and hazardous materials and waste. The Bureau coordinates with appropriate regulatory agencies to reduce hazards associated with AML. The six FUDS on Bureau-administered lands in the planning area are managed in cooperation with the U.S. Army Corps of Engineers (USACE).

The HMRRP provides warnings; secures and disposes of hazardous waste discharged on public lands; reports, secures, and cleans up public lands contaminated with hazardous wastes; uses precautionary measures; establishes precautions; and responds to emergencies. HMRRP seeks to protect public and environmental health and safety on Bureau-administered public lands, comply with federal and state laws, prevent waste contamination due to any Bureau-authorized actions, minimize federal exposure to the liabilities associated with waste management on public lands, and integrate hazardous materials and waste management policies and controls into all Bureau programs. Hazardous waste sources may be from illegal dumping, mine tailings, and abandoned waste.

Invasive, Nonnative Plant Species (INPS) and Pest Control. The Bureau works cooperatively with the State of Wyoming and the Converse, Goshen, Natrona, and Platte County weed control districts through the cooperative weed and pest management program to conserve and enhance all resources within the planning area. The Animal and Plant Health Inspection Service (APHIS) is currently the Bureau's agent for pest control.

INPS are plants that are invasive and not indigenous to the planning area. Typically, INPS are detrimental to native ecosystems and human welfare. Noxious weeds are undesirable native or nonnative plants that have either been "designated" by the State of Wyoming or "declared" by the county weed control districts. For the purpose of this discussion, nonnative noxious weeds are a subset of INPS.

With the exception of vascular plants classified as INPS, a pest can be any biological life form that poses a threat to human or ecological health and welfare. To date, and only occasionally, the Bureau's Casper Field Office has dealt with grasshoppers, Mormon crickets, prairie dogs, and predator control. There are 24 designated and prohibited noxious weeds on the State of Wyoming Weed and Pest Control Act Designated List. Bureau resource users prepare pesticide-use proposals incorporating district INPS control guidelines. The primary species targeted in the planning area include Russian knapweed (*Acroptilon repens*), spotted knapweed (*Centaurea maculosa*), diffuse knapweed (*Centaurea diffusa*), leafy spurge (*Euphorbia esula*), dalmation toadflax (*Linaria genistifolia* ssp. *dalmatica*), Canada thistle (*Cirsium arvense*), Scotch thistle (*Onopordum acanthium*), musk thistle (*Carduus nutans*), houndstongue (*Cynoglossum officinale* L.), field bindweed (*Convolvulus arvensis*), and puncturevine (*Tribulus terrestris*). These species are typically found in sagebrush and grassland, desert shrub, and riparian and wetland community types.

INPS often out-compete native plant species and, therefore, are considered a detriment to native vegetation. Spread of INPS in the planning area has contributed to economic loss and the loss of rangeland productivity, reduced structural and species diversity, and degraded and fragmented wildlife habitats. Based on observations and reports by county weed control districts, INPS control measures are limiting population sizes in some cases, but not in others. Inventory and monitoring for INPS have been initiated, but currently the data are insufficient to project the rate or spread of INPS in the planning area.

The Bureau is participating fully with five Coordinated Resource Management (CRM) working groups formed to address INPS. Four of these are located in Natrona County (South Bighorns Weed CRM, Bates Hole Weed CRM, Badwater Weed CRM, and Rattlesnake Hills Weed CRM) and one is located in Goshen County (Goshen County Weed CRM). The CRM groups are initiating educational efforts, contemplating preventative measures, applying for outside funding, and increasing organized control efforts.

Methods used to control INPS population size and reduce density across the planning area include chemical or a combination of chemical and biological treatments. With the exception of insects that target musk thistle, spotted knapweed and diffuse knapweed, biocontrol agents exhibited limited success, especially when used exclusively. Some nonnative organisms introduced as biological control agents are known to diminish native biological diversity and may adversely affect populations of special status species, such as federally listed threatened or endangered species, species proposed or candidates for listing under the ESA, or Wyoming Bureau's Sensitive Species List. Biological control agents that diminish native biological diversity and (or) may adversely affect populations will not be used within the planning area.

Pest control primarily includes controlling prairie dogs and outbreaks of insects, particularly Mormon crickets and grasshoppers. The U.S. Department of Agriculture (USDA)-APHIS is the only authorized agent for controlling predators, treating epizootic outbreaks, and controlling prairie dogs and insect infestations. These actions are subject to established procedures and policies as outlined in the national and state level Memoranda of Understanding (MOUs) between the Bureau and USDA-APHIS. The Bureau cooperates with USDA-APHIS to assist with inspections of Bureau-administered lands where potential outbreaks may occur and assists in developing and implementing control plans. When outbreaks occur, USDA-APHIS conducts control operations and is reimbursed for its expenses on Bureau lands when these expenses exceed funding available to USDA-APHIS for this work. Prairie dogs may be controlled where public health and safety risks are documented; the Bureau works with adjacent landowners on a case-by-case basis to prevent prairie dog degradation of private land.

Lands and Realty. The Casper Field Office lands and realty program is aimed at managing the underlying land base that hosts and supports all resources and management programs. The key actions of the lands and realty program include (1) land use authorizations (e.g., leases and permits, airport leases); (2) land tenure adjustments (e.g., sales, exchanges, donations, purchases); and (3) withdrawals, classifications and other segregations. The Bureau works cooperatively to execute the Casper Field Office lands and realty program with federal agencies, the State of Wyoming, counties and cities, and other public and private landholders.

Land sales are disposals or transfers of public lands through desert land entry, public sale, exchange, State of Wyoming indemnity selection, or recreation and public purposes (R&PP) leases or patents. The Bureau administers 12 R&PP conveyances covering approximately 2,849 acres and 14 R&PP leases covering approximately 626 acres. Under the Proposed Plan, approximately 1,131,290 acres are identified for retention, 224,834 acres are identified for disposal, and 5,453 acres are identified for restricted disposal.

In its lands and realty management program, the Bureau implements stipulations and protective measures. These actions include processing stock driveway withdrawals and locatable mineral entry withdrawals; establishing protective withdrawals; and developing stipulations.

Under the lands and realty program, the Bureau pursues cooperative agreements, develops recreation site facilities, considers offsite mitigation, minimizes access in wildlife habitats, fences revegetation sites, blocks linear ROW to vehicle use, considers temporary use permits, considers new withdrawals, and leases acres for landfills.

Withdrawals are used to preserve sensitive environmental values, protect major federal investments in facilities, support national security, and provide for public health and safety. Withdrawals segregate a portion of public lands and suspend certain operations of the public land laws, such as desert land entries or mining claims. Numerous withdrawals are in place throughout the planning area, many of which transferred federal land to other agencies for specific purposes

In addition, the lands and realty program authorizes renewable energy development, primarily wind and solar energy. In the planning area, wind-energy development will be allowed on 1,145,597 acres rated as outstanding/superb and fair/good/excellent for wind-energy potential. Wind turbines authorized by the Bureau typically are up to 180 feet in height with an 80-foot turbine diameter. Each turbine will encompass about 1.2 acres. Ancillary uses will include meteorological towers, roads, and power lines. Although the demand for solar energy is currently low in the planning area, the Bureau will evaluate solar energy development on a case-by-case basis.

Most ROWs granted by the Bureau for access roads, pipelines, communication sites, irrigation ditches, and electrical distribution lines are associated with oil and gas wells and production facilities. These ROWs may be temporary or extended for 2 years or longer. At the end of 2002, there were more than 1,000 existing ROWs in the planning area, 8 designated ROW corridors, and 1 designated communication site window with three sites. The Bureau currently administers one special land use permit on 200 acres issued to the Wyoming Army National Guard for military training near Camp Guernsey. Under the Proposed Plan, five new communication site windows will be designated in accordance with 43 CFR 2806.

Livestock Management. Approximately 1.4 million surface acres of public land is available for grazing within 514 grazing allotments on the planning area. Grazing allotments typically contain a combination of federal, state, and private lands and range in size from approximately 12 acres to 116,538 acres, with the average allotment size being approximately 8,768 acres. The Bureau administers 462 grazing leases, allowing approximately 182,479 acres of livestock forage. Actual AUM use in the planning area is considered to correspond with authorized AUM use. A 1 percent decrease in the amount of AUMs authorized in the current plan is expected under the Proposed Plan.

Currently, approximately 6,016 acres of BLM-administered public land are not available for grazing and will remain so under the Proposed Plan.

Grazing systems used on public lands within the planning area fall into the following six categories: yearlong, season long, early season, late season, split season, and rotation (i.e., deferred rotation, rest rotation, and time-controlled grazing systems). Most grazing leases authorize yearlong use, which is a reflection of the intermingled land pattern that exists across the planning area, as well as the small percentage of public land found in the majority of allotments. Cattle are the predominant class of livestock grazed on the planning area, but sheep, horses, goats, and bison also are authorized. A number of categories of actions make up the Bureau's livestock management program. These categories are livestock management actions, range management, fencing, water management, detrimental impacts management, and lease management.

Livestock management includes converting to new types of livestock and authorizing livestock grazing, and adjusting season of use, distribution, kind, class, and number of livestock. One method that livestock producers can use to change the distribution of livestock is to provide salt or mineral supplements in specified areas. Range management actions include using prescribed fire, vegetation manipulation projects, changing composition of existing vegetation, using noxious weed control, using mechanical or biological vegetative treatments to improve forage production, using heavy equipment, and herbicide treatment of sagebrush. Fencing actions include fence construction and repair, designing and implementing grazing systems, and building livestock enclosures for important riparian habitats. Water management actions include developing reservoirs, springs, pipelines, and wells, and providing access to these developments. Managing detrimental impacts include documenting, treating, and preventing resource damage. Potential detrimental impacts include the degradation of streambanks, the introduction and spread of INPS, increasing soil erosion, and a reduction in cottonwood tree recruitment. Lease management actions include conducting monitoring studies, performing project work to enhance and improve riparian zones, designating stock trails, managing leases, developing management plans and agreements, and canceling or changing livestock driveways.

Minerals. The Bureau's mineral development program is divided into three categories. These categories are locatable, leasable, and salable. Leasable minerals are further divided into coal, geothermal, oil and gas, and other solid leasable minerals.

Locatable Mineral Resources. All public lands are open to exploration for locatable minerals, except those withdrawn to protect other resource values and uses or those lands with acquired mineral status. The Bureau has limited management authority and discretion over mining claim operations for locatable minerals conducted under the General Mining Law of 1872. These operations are managed using the surface regulations in 43 CFR 3809. Activity authorized under the General Mining Law is not subject to many of the special stipulations that are used in the salable and leasable mineral programs to protect sensitive resources from surface disturbance caused by mineral development. Under the Proposed Plan, 458,661 acres are withdrawn from locatable mineral entry. Of these 458,661 acres, 409,707 acres are Bureau-administered withdrawals and 48,954 acres are other federal agency withdrawals.

Potentially locatable metallic (e.g., gold, silver, lead, platinum, copper, uranium, and chromite), and nonmetallic (e.g., talc, mica, white marble, building stone, flourspar, chemical-grade limestone,

gypsum, and bentonite) minerals exist in the planning area. Precious and semiprecious stones that exist or potentially exist include jade, diamond, iolite, ruby, sapphire, helidor beryl, and kyanite. The Bureau considers common varieties of sand, gravel, stone (e.g., decorative stone, limestone, and gypsum), clay (e.g., shale and bentonite), limestone aggregate, borrow material, clinker (scoria), and leonardite (weathered coals) to be salable minerals.

The 12 permitted mining operations on federal mineral estate include uranium (five mines in Natrona and Converse counties), chemical-grade limestone (Bass and Brush Creek quarries in Platte County), marble (White Marble and Silvergreen quarries in Platte County), bentonite (two mines in Natrona County), and jade (Lone Tree Mine in Natrona County). Converse County with 3,954 claims has most of the 5,766 active claims (as of February 2006). Natrona County has 1,972, Platte County has 45, and Goshen County has 16. In FY 2004, claimants filed 6 notices and 18 plans of operation to work on their claims.

Actions associated with commercial locatable minerals include surface disturbance for mining, reclamation, and construction of access roads, buildings, and utility lines. Small scale mining may occur in the planning area, but individual casual use actions do not require an environmental assessment unless actions become significant. All lands must be reclaimed after closure of the mine.

Leasable Mineral Resources. *Coal.* Wyoming produces approximately one-third of all coal produced in the United States. The Powder River Basin, which extends into the planning area in northern Converse County, contains some of the largest low-sulfur coal deposits in the world. Two other coal fields, the Goshen Hole Coal Field of the Denver Basin and the Wind River Coal Field of the Wind River Basin, also extend into the planning area; however, neither of these is currently producing in the planning area. The Proposed Plan will consider coal leasing on all Bureau-administered lands outside the coal development potential area, if coal development potential is shown to exist on these lands.

The leasable minerals resource program allows coal exploration on all federal mineral lands within the planning area. Exploration on federal mineral lands is subject to the requirements and conditions of the coal exploration license process, the result being a set of project-specific stipulations and conditions designed to limit impacts from exploration on other resources. Before the area can be considered for leasing, the amount of overburden, volume and quality of coal, and other information needed to plan a mine must be gathered. The Casper Solid Minerals Group manages all leasing and administrative activity related to federal coal reserves in the Wyoming portion of the Powder River Basin, including inspection and enforcement.

Coal in Wyoming generally is extracted using surface mining methods, although in the past, some coal was mined underground. Surface mining involves the use of large equipment, such as draglines, shovels, and haul trucks. Small drill rigs are used for exploration to determine the location and thickness and to obtain cores (for determining quality). Extracting coal using surface mining methods often results in large areas of surface disturbance from road construction, removal of topsoil and overburden, and stock piling of these materials. Once an area is mined out, reclamation begins and includes recontouring as closely to the original landscape as possible, reconstruction of drainages, and reseeding and monitoring to ensure the habitats are useable.

Geothermal. The oldest and most widespread geothermal resource is water in hot springs, where groundwater migrates downward through the rock, becomes warm, and returns to the surface in springs before it can release its heat to the cooler rocks near the surface. The water may return to the surface as steam where the rocks are particularly hot, such as in volcanic areas. Using this naturally generated hot water or steam is considered a direct use of the resource.

Geothermal energy in the form of hot water is often utilized by drilling a well to an aquifer containing hot water and bringing this water to the surface for use. Another way to harness geothermal energy is to pump liquid, usually water, down a well, let the warmer rock heat the water, and then pump the heated water to the surface for use. This use of low temperature geothermal resources is most common in traditional warm-water heating systems in homes and businesses. Although not yet widespread, low temperature geothermal use is increasing as prices for other types of energy increase.

Geothermal resources found on federal lands are considered leasable minerals. As such, the same laws and regulations governing other leasable minerals cover exploration and development of these resources. There are three areas of natural thermal springs in the planning area: the Alcova Hot Springs in southern Natrona County (now under Alcova Reservoir), the Douglas Warm Spring south of the town of Douglas in southeastern Converse County, and Immigrants Washtub in east central Platte County. A bathing facility constructed in 1961 near the Douglas Warm Spring is the only commercial use of thermal waters in the planning area. In addition, the Bureau has authorized a thermal water well and associated pond under the Recreation and Public Purposes (R&PP) Act in the Salt Creek area for year-round scuba diving use.

There are no identified geothermal resources within the planning area with sufficiently high temperatures to produce steam to generate electricity. Several areas of anomalously high geothermal gradients have the potential for producing hot water for direct use. Because the most likely use of geothermal resources will be in direct use applications, usage is likely to be local to the project and will probably not result in large areas of additional surface disturbance.

Oil and Gas. The Mineral Leasing Act of 1920 provides that all public lands are open to oil and gas leasing unless a specific order has been issued to close an area. Oil and gas exploration and development is one of the major industries in the planning area. Under the Proposed Plan, 1,080,935 acres of federal oil and gas lease mineral estate are open to leasing consideration with standard constraints; 2,506,530 acres are open with moderate constraints; 843,139 acres are open with major constraints; and 226,568 acres are administratively unavailable for oil and gas leasing for the life of the plan.

Geophysical exploration is a tool of the oil and gas industry that bounces shock waves off subsurface rock layers to determine their thickness and geometry. Shock waves are produced by an energy source and instruments record the waves when they return to the surface. The energy typically comes from the detonation of explosives in a shallow drill hole or from a heavy weight either dropped or vibrated on the ground surface. Sensors pick up the resulting shock waves through a line of sensors, or geophones, connected to a recording truck. Seismic operations use existing roads when feasible, but also require off-road travel. Geophysical exploration (primarily three-dimensional) is expected to continue through the life of the plan.

The Bureau is responsible for authorizing and administering geophysical exploration operations on all public surface lands within the planning area, while the Wyoming Oil and Gas Conservation Commission (WOGCC) is responsible for authorizing all operations on state and private surface land. Once acreage in the planning area is nominated by the public to be included in an oil and gas lease sale, the acreage description is sent to the Casper Field Office via the parcel list to be reviewed and stipulated by the Casper Field Office for protection of wildlife and other sensitive resources. These stipulations become part of the lease.

After an oil and gas lease is acquired, and prior to development, an application for permit to drill (APD) must be filed with the WOGCC and the Casper Field Office if the well is located on a federal oil and gas lease in the planning area. Within the planning area, Natrona County has the largest number of APDs filed—8,508 as of mid-February 2005, followed by Converse County with 4,357 applications filed, Goshen County with 249 filings, and Platte County with 97 applications filed since the WOGCC began keeping records (WOGCC 2005 as cited in BLM 2007). Once the permit is approved, the company may proceed with drilling according to the conditions of the permit's approval. A total of 170 oil and gas fields have been found and named within the planning area. At the end of 2004, 119 of these fields were still producing.

Although the majority of the development is to the north of the planning area, coalbed natural gas (CBNG) has become one of the largest contributors to the total natural gas production in Wyoming and the coals of the Powder River Basin are the largest source of CBNG. Of the 336 billion cubic feet (Bcf) of natural gas produced in the Powder River Basin in 2004, 298 Bcf (almost 89%), was CBNG. Development of CBNG resources in the planning area is limited, with 6 wells completed on federal land and 33 completed on state or fee (private) acreage.

Ancillary development involves allowing the construction of roads, pads, and other facilities and allowing the construction of new aboveground power lines. Stipulations involve implementing leases with no surface occupancy (NSO) or controlled surface use (CSU) restrictions, timing limitation stipulation (TLS), or with other standard surface protection restrictions; negotiating mitigated impacts between lessees and the Authorized Officer; and deciding mitigation measures and limitations, as well as reclamation. Reclamation involves correcting any disturbance made by the oil and gas operation. Reclamation actions take place following the expiration of the lease. Reseeding, reshaping, or road destruction are all actions involved with oil and gas reclamation.

Surface-disturbing and other activities associated with the minerals program include, but are not limited to, the following actions: applying dust-control measures; restricting flaring of natural gas; controlling or limiting emissions; constructing and reclaiming well pads, access roads, and reserve pits; constructing reservoirs associated with water disposal; constructing compressor stations, product enhancements, and disposal facilities; building pipelines associated with leases or units; installing power lines associated with leases or units; building wind-power facilities and turbines associated with leases or units; and conducting geophysical exploration.

Other Solid Leasables. Other leasable minerals include sodium (trona), phosphates, and oil shale. Uranium, bentonite, gypsum, limestone, and any other “hardrock minerals” occurring on acquired public lands that are not closed to mineral leasing can be developed under a leasing system only. Access to Bureau-administered leasable minerals is at the Bureau's discretion.

Under the Proposed Plan, federal mineral estate is open to leasing of other solid leasable minerals, except in areas identified as necessary for the protection of specific resource values or uses. At this time, there are no federal leases for other solid leasable minerals in the planning area, and future development of these minerals is anticipated to be infrequent.

Salable Mineral Resources. Salable mineral mining is authorized under the Materials Act of 1947, as amended, and, as such, are discretionary actions. Salable minerals, also known as mineral materials, include common variety materials, such as sand, gravel, stone, (e.g., decorative stone, limestone, and gypsum), clay (e.g., shale and bentonite), limestone aggregate, borrow material, clinker (scoria), and leonardite (weathered coal). Lapidary quality agates and jaspers are found in Platte and Natrona counties. Access to federal salable mineral estate is at the Bureau's discretion and by either free use permit or sales contract. Much of what the Bureau sells in the planning area is from established community pits. From time to time, a proposal is received requesting an exclusive sale or exclusive free use permit.

Under the Proposed Plan, all Bureau-administered mineral estate is open to the disposal of mineral materials, except areas identified as necessary for the protection of specific resource values or uses. Under the preferred alternative, 257,017 acres are not available for disposal of mineral materials. The areas closed to disposal of mineral materials include within ¼ mile of the North Platte River between Pathfinder Dam and the Natrona/Converse county line; South Bighorns/Red Wall Management Area (MA); Cedar Ridge Traditional Cultural Property (TCP); habitat fragmentation blocks 3, 5, 8, 11, 13, 14, 15, and 16; and the Sand Hills MA.

In terms of volume produced and value, borrow material was the most important mineral material in the planning area in fiscal year 2003, followed by sand and gravel, leonardite, and specialty stone. Other salable minerals produced include riprap and shale (clay).

In the planning area, borrow material is used primarily for remediation cleanup. Sand, gravel, limestone aggregate, and riprap are used as construction materials. Leonardite is used as an additive to drilling mud. Specialty stone can include flagstone, moss rock, and landscape boulders. Riprap is used in soil stabilization projects.

Most salable minerals are common construction materials; demand for these materials is linked to the area's economy. Planning area demand generally coincides with activity in the oil and gas industry, highway construction, and urban use near Casper, Douglas, and smaller towns. Additional demand for construction materials is tied to activity associated with any future proposals for new mines (e.g., coal and uranium). Leonardite demand depends on oil and gas drilling activity. The Bureau maintains three "community" mineral material pits to provide sand, moss rock, flagstone, and boulders to the public.

Before issuing contracts or free use permits for salable minerals, the Bureau conducts appropriate environmental assessments. These include studies or inventories of threatened or endangered plant and wildlife species. Stipulations or conditions may be included in the terms of the contract to ensure protection of the natural resource found there and reclamation of the land following project completion. Site reclamation is required following any surface-disturbing mining activity for salable minerals. Reclamation of disturbed sites is important to be sure that the land can later be used productively for other purposes. Reclamation includes removing all surface debris, recontouring,

reducing steep slopes, and planting vegetation. All reclamation proposals must conform to state agency requirements and be approved by the Bureau.

Off-Highway Vehicles and Travel Management Areas. For legislative purposes, 42 CFR 480 defines an OHV “any motorized vehicle capable of or designated for, travel on or immediately over land, water, or other terrain.” Travel Management Areas (TMAs) are delineated for those areas with an OHV designation of Limited to Designated Roads and Trails, Open, and Closed. Comprehensive Travel and Transportation Management Plans will be completed for each TMA within five years of signing the Record of Decision for the RMP.

Road networks within the planning area include a series of county roads, Bureau-maintained roads, two-track trails, and snowmobile trails. The use of these travel ways is an integral part of public land management, as these roads are used for both recreational and nonrecreational purposes. Typical recreational OHV actions within the planning area include enduro races, trial competitions, all-terrain vehicle (ATV) and motorcycle trail riding, and snowmobiling. OHVs also provide access for nonmotorized recreational purposes, such as fishing, hiking, mountain biking, horseback riding, and primitive camping. Nonrecreational OHV use of the planning area includes agricultural management, energy development, and land management activity.

The OHV use designations for the majority of public lands within the planning area are either “limited to existing roads and trails” or “limited to designated roads and trails.” While these designations provide for a wide variety of OHV use and there are a number of travel routes on public lands throughout the planning area, the majority of recreational OHV use occurs in areas with legal and physical access in conjunction with large blocks of public lands. In the planning area, the majority of OHV use is currently located in the South Bighorns Mountains, in and around the Muddy Mountain EEA, along the North Platte River, and in areas of Bates Hole. The Poison Spider OHV Park is popular for local OHV enthusiasts and is open to all forms of OHVs. In some areas, seasonal closures are often used to protect important resource values (e.g., big game crucial winter range). The Proposed Plan designates 1,162,244 acres as limited to existing roads and trails, 196,824 acres as limited to designated roads and trails, 285 acres as open, and 2,224 acres as closed to OHV use.

Bureau actions concerning OHV use include designating closed, limited, or open areas for OHV use; posting signs and developing maps or brochures; permitting OHV rallies, cross-country races, and outings; monitoring OHV use; and performing necessary tasks requiring OHV use. Under normal conditions and when OHV travel is limited, there is no significant surface disturbance associated with OHV use. However, excessive use, cross-country travel, or use in sensitive habitats (e.g., wet soils) can result in soil compaction and erosion, increased stream sedimentation, increase and spread of INPS, habitat fragmentation, and disruption to visual resources.

Paleontology. Paleontological resources, usually thought of as fossils, include the bones, teeth, body remains, traces, or imprints of plants and animals preserved in the earth through geologic time. Within the planning area, rocks as old as 3 billion years are exposed, but presently known fossil deposits date to about 200 million years. Nearly all the major fossil-bearing formations identified within Wyoming have been found in the planning area, but they are not as extensively distributed as in other areas. The major formations known to produce dinosaur or marine reptile remains in the planning area include the Chugwater (including the Alcova Limestone), Sundance, Morrison,

Cloverly, and Lance formations. The Wind River and White River formations are the main units that produce mammal fossils and other small nonmammalian vertebrates.

The Bureau performs a variety of actions to preserve, protect, and restore paleontological resources. During inventory actions, the Bureau inventories, categorizes, and preserves paleontological resources, conducts field actions, performs excavations, maps and collects surface materials, researches records, and photographs sites and paleontological resources. Inventory data-collection actions are used for documentation and development of mitigation plans prior to surface-disturbing activities of other resource programs. Inventory actions commonly entail the use of hand tools, power tools, or heavy machinery. Management actions involve managing sites for scientific and public use, developing interpretive sites, restricting certain land uses, closing certain areas to exploration, prohibiting some surface-disturbing activities, stabilizing erosion (e.g., bury exposed sites), preparing interpretive materials, allowing hobby collection of common invertebrate or plant fossils, and permitting collecting for scientific research.

Presently, 17 active paleontology permits (16 survey permits and 1 excavation permit), representing 15 different researchers, have been granted for the planning area. Ten of these active permits were issued for statewide research and may not reflect work presently occurring in the planning area. Five paleontological permittees principally work in the planning area.

Surface-disturbing and other activities associated with the paleontology program include, but are not limited to, the following actions: (1) surface-disturbing activities to collect specimens, including the use of hand tools, power tools, and heavy machinery; (2) collecting invertebrate and plant fossils; (3) inventorying paleontological resources; (4) developing interpretive sites; and (5) stabilizing erosion.

Recreation. Categories of recreation management actions include allowing recreational access and use by the public, administering special recreational permits, developing recreational areas and campsites, imposing restrictions, acquiring recreational access, and assessing effects of recreational use to the environment. The Bureau allows recreational actions, including sightseeing, touring, photography, wildlife viewing, floating, mountain biking, camping, fishing, and hunting. Large recreational events may include organized group hikes, motocross competitions, or horse endurance rides. Recreational land and access acquisition actions involve maintaining public access, pursuing ROW, providing continued access, and pursuing land acquisition. Recreational site development includes maintaining or developing recreational sites and facilities, developing campgrounds, providing fishing and floating opportunities, maintaining developed and undeveloped recreational sites, adding developments as opportunities arise, adding interpretive markers, and constructing roads and interpretive sites.

Development and enforcement of stipulations and protective measures include designating OHV use, enforcing recreational-oriented regulations, patrolling high-use areas, and contacting users in the field. The Bureau places boundary signs, identifies hazards on rivers, restricts recreational uses, limits motorized vehicles to existing trails, designates road use and recreational areas, requires facilities to blend with the natural environment, and conducts field inventories. Special recreation permits (SRP) are processed on a case-by-case basis; categories include competitive, vending, individual or group use in identified areas, organized group activity, and event use.

Four SRMAs have been identified in the planning area: Muddy Mountain EEA, Goldeneye Wildlife and Recreation Area, North Platte River Resource Area, and a portion of the Middle Fork SRMA (most of this SRMA is located in and managed by the Bureau's Buffalo and Worland Field Offices).

While assessing adverse effects of recreational actions to the environment, the Bureau analyzes actions that increase human activity, especially in riparian areas. The Bureau monitors recreational use, develops management plans, and evaluates and updates recreational potential in the planning area.

Surface disturbance and other activities associated with the recreational resources program include, but are not limited to, the following actions: (1) managing recreational use, (2) permitting competitive recreational events, (3) developing recreation trails, (4) constructing recreational sites, (5) maintaining developed and undeveloped recreational sites (campgrounds), (6) placing boundary signs and interpretive markers, (7) allowing commercial recreational uses, and (8) developing public water sources for recreational facilities.

Socioeconomic Resources. In this discussion, socioeconomic resources include social and economic conditions, environmental justice, and tribal treaty rights. The Bureau has the capacity, through its decision making responsibilities, to manage resource development in the planning area and thereby influence the economy of the wider region. Industries most affected by Bureau land management policies and programs are agriculture (especially livestock grazing), mining and mineral development, and recreation and tourism. Impacts to special status species from these management actions are discussed in the respective management sections (i.e., Livestock Grazing, Minerals, and Recreation).

Environmental justice pertains to fair treatment and meaningful involvement of minority and low-income populations. Where the impacts of a proposed federal action may involve such populations, an analysis of the potential for disproportionate impacts and meaningful community outreach and public involvement is required.

It is the policy of the USDI to recognize and fulfill its legal obligation to identify, protect, and conserve the trust resources of federally recognized Indian tribes and tribal members, and to consult with tribes on a government-to-government basis whenever plans or actions affect tribal trust resources, trust assets, or tribal health and safety. No known American Indian treaty rights or trust responsibilities or issues currently exist for the planning area.

Soil. The primary regional or national demand placed on soils in the planning area results from surface-disturbing actions. Extraction of minerals generally involves surface-disturbing activities, including road building, well pad construction, pipeline installation, and vegetation treatments. Other actions that affect soils are a variety of surface uses that loosen topsoil and remove vegetation or other ground cover, such as mining and energy development, grazing and browsing by animals, OHV use, development of trails and campgrounds, ROW, fire-suppression activities, and the use of prescribed fire. Soil compaction resulting from surface-disturbing activities and associated development can reduce infiltration, increase runoff, and hamper reclamation.

Protection of soil resources is accomplished through the application of use restrictions or preferred management practices intended to limit soil erosion and loss of soil productivity. Some restrictions

may be general, such as programmatic constraints, which are applied to all surface-disturbing activities, including limitations during periods of wet or frozen soils or prohibition of operations on steep slopes. Typically, the protection of soil resources is accomplished through the application of site-specific management techniques. These mitigation measures are designed to conserve topsoil, minimize erosion, and reestablish vegetation on disturbed areas with a long-term goal of maintaining soil productivity. Examples of site-specific mitigation measures include exclusion of mechanized vehicle use on highly erodible soils, use of water bars or diversion channels to control surface water runoff around a disturbed area or off a road, or development of a specific seed mixture or seeding technique appropriate to the area and soil type being reclaimed. Additional mitigation measures typically are required on highly erodible soils to achieve adequate erosion control.

Actions associated with soil resources may include the identification and interpretation of existing soil resources and conditions; conducting soil inventories; identifying highly erosive soils; utilizing soil use limitation rating for land use actions; evaluating current erosion condition of the soils in the planning area; preventing accelerated soil erosion from disturbed areas; utilizing effective BMPs; establishing successful reclamation or rehabilitation on disturbed areas within the planning area; restoring disturbed areas to pre-disturbance conditions; managing actions to maintain or improve soil chemical, physical and biotic properties and maintain long-term soil stability; controlling the extent of surface disturbance in the planning area by establishing acreage limits for total surface disturbance; and periodically monitoring, evaluating, and adapting management actions.

Special Designations. Special designations include Management Areas (MAs), Areas of Critical Environmental Concern (ACECs), National Back Country Byways, National Historic Trails (NHTs) and Other Historic Trails. Areas managed under special designations are regulatory or congressionally mandated and are designed to protect or preserve certain qualities or uses. The Bureau currently manages three types of special designations, as well as two ACECs, NHTs, and one national back country byway. A second national back country byway is cooperatively managed with the Bureau's Rawlins Field Office.

Areas of Critical Environmental Concern and Other Management Areas. Pursuant to the Federal Land Policy Management Act (FLPMA) of 1976, Section 103(a), an ACEC is defined as an area "within public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards." These areas are managed pursuant to BLM Handbook Section 1613. Two ACECs exist (Jackson Canyon and Salt Creek Hazardous) in the planning area. The Salt Creek Hazardous Area ACEC will not be retained under the Proposed Plan.

MAs are generally areas with unique characteristics that warrant managing the area in a manner that is different than standard management actions. While an ACEC or MA may emphasize one or more unique resources, other existing multiple-use management can continue within an ACEC, as long as the uses do not impair the values for which the ACEC was designated or the MA was established.

Types of surface-disturbing activities that may occur under the special designations program include closing areas where accelerated erosion is occurring; implementing logging and heavy equipment use restrictions; evaluating INPS and grasshopper control measures; applying restrictions on ground-

disturbing activities; developing recreational trails; guiding supervised tours; protecting petroglyphs, artifacts, and cultural deposits from weathering and vandalism; and pursuing land exchanges.

The following discussion covers proposed or existing special designations within the planning area.

Alcova Fossil Area ACEC (Proposed). The Alcova Fossil Area near Alcova Reservoir in southwest Natrona County has been proposed for ACEC designation based on the paleontological resources known to exist within the proposed boundaries. Under the Proposed Plan, the ACEC will encompass 5,963 acres, 5,282 of which are Bureau-administered surface land. Unique values associated with the site include the Alcova Pterodactyl Trackway (originally designated as an ACEC in 1980, but ACEC designation was removed in the 1985 RMP), one of only four such trackway occurrences known worldwide. The individual tracks in the proposed ACEC are larger than any others found in North America and suggest the animals had a wingspan of 10 feet. Recent research has revealed the presence of additional trackways in the area. In addition, exposed outcrops of the Morrison and Sundance formations in the area contain numerous fossilized remains of marine and terrestrial species from the Triassic and Jurassic periods, including plesiosaurs, ichthyosaurs, Allosaurus and Camarasaurus. The potential for discovery of additional significant paleontological resources in the area is high. The U.S. Bureau of Reclamation has developed the Dinosaur Trail, a hiking trail with interpretive signs explaining the geology and paleontology, on adjacent lands.

Bates Hole MA (Proposed). Bates Hole is a collective term for the area with boundaries of the Bates Creek and North Platte River-Bolton Creek watersheds. The proposed Bates Hole MA is located in southwestern Natrona County and extends into northern Carbon County beyond the planning area; however, management decisions apply only to the 375,221 acres within the planning area, not the portions of the watersheds that are outside the planning area. Approximately 288,504 acres of public land, including 158,023 public surface acres, fall within the MA boundary.

The Bates Hole MA will protect highly erosive soils, fragile watersheds, and crucial wildlife habitats, including portions of the Shirley Basin black-footed ferret reintroduction site, within the proposed boundary. Approximately 51,617 acres of highly erosive soils occur on public land within the boundary, which represents nearly 15 percent of all the high-water erosion potential soils on public land in the entire planning area. Soils with a high wind-erosion potential within the MA are not a significant feature (1,330 acres), and comprise less than 1 percent of the high wind-erosion potential soils on public land in the planning area. The dominant vegetation types in the area include sagebrush, forests, woodlands, and shrublands. Sagebrush complexes comprise nearly 40 percent of the area and represent the best quality greater sage-grouse habitats in the planning area and some of the finest in Wyoming. Portions of the North Platte River also fall within the proposed boundary and include some of the highest quality recreational and fishing opportunities in the planning area. Portions of the private lands within the proposed MA have been converted to agricultural and urban development. In addition, the public lands in the area will be managed to conserve and (or) improve special status species habitats. Portions of the areas will maintain unfragmented vegetative communities. The area proposed as the MA currently encompasses portions of the Jackson Canyon ACEC and Muddy Mountain EEA, which are managed under the decisions for those areas. Portions of the proposed North Platte River SRMA and Alcova Fossil Area ACEC also fall within the proposed boundaries and will be managed under the decisions for those areas.

Ninety-six percent of the proposed MA is located in a low oil and gas development potential area, with the other 4 percent rated as having no development potential. Oil and gas leases on 3,478 acres of federal mineral estate are held by production at Government Bridge, Schrader Flats, and Bates Creek oil and gas fields. An additional 13,174 acres are presently leased. The proposed Bates Hole MA has high potential for locatable minerals, such as uranium, bentonite, limestone, and jade. Numerous mining claims exist in the area, as well as numerous active mineral material pits.

Jackson Canyon ACEC (Existing). The Jackson Canyon ACEC is in south-central Natrona County at the western end of Casper Mountain. The ACEC encompasses 14,025 acres, of which 3,938 acres are public surface and 11,104 acres are federal. Most private lands within the ACEC are subject to easements held by The Nature Conservancy, generally designed to preserve resources in a natural state and limit development.

The ACEC consists of mountainous topography with steep partially wooded slopes, escarpments, and deeply incised drainages and canyons. The ACEC was designated to protect crucial bald eagle habitats and two winter roost sites, one in Jackson Canyon and the other in Little Red Creek. Given the sensitive habitats for which the Jackson Canyon ACEC was designated, specific decisions were made in the existing plan to restrict uses that were not compatible with bald eagle use. In general, these included uses that involved surface disturbance. Bald eagle management prescriptions are further defined within the Bald Eagle Habitat Management Plan for the Platte River Resource Area and Jackson Canyon ACEC (BLM 1992). Forest issues related to pine beetles, wildland fire, and dense unmanaged forest stands have contributed to a decline in the quality of forests in the roosting areas.

North Platte River SRMA (Proposed). The North Platte River supports numerous species of both flora and fauna. These riparian habitats are important in a cold desert environment, as they represent only 1 percent of Wyoming's land area. The river corridor provides year-round habitat for pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), and white-tailed deer (*Odocoileus virginianus*). Many species of birds are also found here. Important winter feeding grounds for bald and golden eagles are located downstream from Gray Reef. The river also provides for high quality aquatic-based recreation within its corridor.

The North Platte River supports at least eighteen species of fish. Stocked with rainbow trout (*Oncorhynchus mykiss*), it is a destination fishery and is one of only twelve Blue Ribbon streams in Wyoming. The river section, from Gray Reef Dam to Goose Egg Bridge ranks second only to the Miracle Mile, some distance upstream outside the planning area. Latest estimates rank the Gray Reef section as the largest trout population in Wyoming, with the stretch of river near Bessemer Bend ranking fourth (WGFD, ACEC Letter). Blue Ribbon streams have been identified as a WGFD "vital habitat" which is defined as:

"habitat [that] directly limits a community, population, or subpopulation, and restoration or replacement may not be possible. The [Wyoming Game and Fish] Department is directed by the Commission to recommend no loss of habitat function. Some modifications of habitat characteristics may occur, provided habitat function is maintained (i.e., the location, essential features, and species supported are unchanged)."

In addition to its regional importance as a recreational resource, the North Platte River Corridor is historically significant because of its use as a main conduit for settlers heading west during the mid 1800s. The Oregon, Mormon Pioneer, California, and Pony Express trails all follow the river from the Nebraska state line to Bessemer Bend just west of Casper.

Within the North Platte River valley there is a high potential for river-laid gravel deposits to occur. For river-deposited aggregate, the North Platte River valley is the predominate source for this important commodity within the planning area.

Under the Proposed Plan, lands on the North Platte River upstream from the Natrona/Converse County line will be managed as a SRMA. Specifically, this encompasses the Trapper's Route Landing sites and public land parcels within ¼ mile either side of the river from the high-water mark between Pathfinder Reservoir and County Line.

Salt Creek MA (Proposed). The Salt Creek MA falls completely within the boundary of the existing Salt Creek Hazardous ACEC and facilitates oil and gas exploration and development in the Salt Creek oil field area. It will be established on 23,912 acres. Although all development will comply with the ESA, discretionary timing stipulations for greater sage-grouse and crucial winter range will not be considered.

The drilling of No. 1 Salt Creek (or No. 1 Dutch) in October 1908 opened Salt Creek as one of the most significant fields in the Rocky Mountains. Based on data from the WOGCC, the Salt Creek oil field has produced about 671 million barrels of oil and 723-billion cubic feet of gas as of October 2003 (BLM 2005). Salt Creek is the oldest and largest oil field in the southern Powder River Basin, the largest sweet oil-producing field in the world, and is currently the third largest oil producer in Wyoming (BLM 2005). In 2002, Salt Creek Field produced 36 percent of the total oil produced in the planning area, and well over half of the original oil-in-place in Salt Creek is still there. In addition, implementing a carbon dioxide flood began in Salt Creek field in 2002 and will continue for the next 10 years.

Sand Hills MA (Proposed). The approximately 17,633 acre Sand Hills area in east-central Natrona and west-central Converse counties is identified for special management to protect the integrity of the soils and vegetation and to protect highly erosive soils. Soils in the area are susceptible to moderate to severe wind and water erosion. Sand dunes are a dominant feature in the area and provide visual relief from the surrounding landscape. Although the area contains examples of both active and inactive dunes, the majority of the area is stabilized by vegetation. The sand dunes vary in length from 100 to 500 yards; some reach a height of 300 feet. Pioneer native grasses can be observed on many of the dunes.

While a number of sand hills and sand dunes occur in other areas of Wyoming and the Rocky Mountain System, the Sand Hills area occurs in close proximity to Casper and mostly comprises public lands (both surface and mineral estate) within the boundary of the proposed MA. The Sand Hills area is a system that provides habitats for big game and nongame species. Livestock grazing is a traditional and historic land use in the area and oil and gas development has occurred in this area since the late 1950s. The area has low-to-moderate development potential for oil and gas. No roads provide legal public access to the Sand Hills. Bladed and gravel roads, as well as unimproved two-track roads, are present in the Sand Hills and these serve oil facilities and local ranches.

Oil and gas leases in a portion of the area (3,172 acres) are held by production from development at Cole Creek and South Cole Creek. Other portions of the area are leased (10,265 acres) and approximately 42 percent are unleased (7,368 acres). Ninety-eight percent of the proposed MA is identified as having low oil and gas development potential; however, a multimillion-dollar three-dimensional geophysical project was recently completed in this area, which could lead to further development and leasing of the area.

South Bighorns/Red Wall MA (Proposed). The South Bighorns/Red Wall complex includes wildlife habitats, unique vegetation, cultural and historic values, and is a high value recreational area. Under the Proposed Plan, an MA will be established on 93,352 acres, 55,945 of which is Bureau-administered surface land.

The area encompasses mule deer and elk crucial winter range, and greater sage-grouse habitats. The area also contains a unique plant community, curl-leaf mountain mahogany (*Cercocarpus ledifolius*), which is a component of big game crucial winter ranges. Curl-leaf mountain mahogany is an important fall and winter forage for mule deer and elk and is utilized by livestock. Forests and woodlands provide hiding, escape, and thermal cover for wildlife and provide a small commercial source of wood products. Mountain big sagebrush communities present in the area support a wide variety of wildlife species, as an important food source and as hiding and nesting cover. In addition, the area provides habitats for a variety of wildlife, such as the mountain lion (*Puma concolor*), swift fox (*Vulpes velox*), marmot (*Marmota* spp.), greater sage-grouse, Hungarian partridge (*Perdix perdix*) and various migratory bird species.

The South Bighorns/Red Wall area exhibits a dense and diverse range of cultural and historical resources rivaling that found anywhere within Wyoming, including portions of the Cedar Ridge TCP and the Hole-in-the-Wall region. Evidence that supports Native American use in the South Bighorns includes numerous temporary camps, stone-tool manufacturing localities, and food preparation and processing sites. Native American religious practitioners have identified stone circles found on exposed ridges as having religious significance. The South Bighorns provided several important travel routes used by Native Americans, pioneers, and outlaws. The area is traversed by the South Bighorns/Red Wall National Back Country Byway.

Oil and gas leases in a small portion of the area (1,102 acres) are held by production from development at the Madden (Deep) oil and gas field primarily in Fremont County, which is administered by the Bureau's Lander Field Office. Other portions of the area are leased. Presently, a well is being drilled in the Hitchcock Draw Unit (8,277 acres are within the proposed MA). If this well is productive, the leases in this unit also are held by production.

Numerous mining claims occur in the area. An increased interest in uranium has increased filings of new mining claims in the area. There are three active sand and gravel permits in the area; two are free-use permits and the other is a negotiated contract. In addition, there are talc and soapstone claims, with some copper exploration, in the area west of Grave Springs Campground along the EK Trail.

Wind River Basin MA (Proposed). The proposed Wind River Basin MA lies in the western portion of Natrona County. The area has been proposed as an MA to facilitate oil and gas production. It will be established on portions of the Wind River Basin with high and moderate potential for oil and

gas acres (54,575 acres, of which 18,277 acres are Bureau-administered surface and 44,302 acres are Bureau-administered minerals).

Improvements in hydraulic fracturing technology have encouraged the extensive oil and gas development in parts of the Wind River Basin lying within the planning area. Although gas production in the planning area has declined from 100- to 63-billion cubic feet per year since 1999, drilling in the eastern Wind River Basin portion of the planning area may reverse or at least flatten the decline during the next few years. In addition, the eastern portion of the Wind River Basin is prospective for additional discoveries of natural gas.

Estimates for the gas-in-place resource for the portion of the Wind River Basin lying within the planning area range from 228-trillion cubic feet to 268-trillion cubic feet. The estimate for deep gas-in-place is approximately 72-trillion cubic feet present within that part of the Wind River Basin lying within the planning area.

The Wind River Basin provides a diversity of habitats for numerous plant and wildlife species, including mule deer, pronghorn, and various special status species such as the mountain plover, white-tailed prairie dog, raptors, and greater sage-grouse. Portions of the Wind River Basin contain crucial winter ranges for both mule deer and pronghorn. The basin also contains sagebrush habitats for greater sage-grouse and other sagebrush obligates.

The proposed Wind River Basin MA is managed for energy development. By not applying discretionary timing restrictions for big game crucial winter ranges, and raptor, mountain plover, and greater sage-grouse nesting habitats within the proposed boundaries of the proposed MA, larger windows of time are provided not only for drilling of new wells, but also for reclamation operations. Compliance with federal laws, such as the ESA and Migratory Bird Treaty Act, are still required throughout the MA area.

National Backcountry Byways. The Bureau began a byway program in 1989 with a focus of enhancing recreational opportunities. A National Scenic Byway System was created 2 years later, under Section 1047 of the Intermodal Surface Transportation Efficiency Act of 1991. This act recognized the Bureau Back Country and Scenic Byways as a component of the National Scenic Byway System (Section 1032, eligible projects). The objectives of this program are to do the following:

- Enhance opportunities for the American public to see and enjoy the unique scenic and historical opportunities on public lands.
- Foster partnerships at local, state, and national levels.
- Contribute to local economies.
- Enhance the visitor's recreational experience and communicate the multiuse management message through effective interpretative programs.
- Manage visitor use along the byway to minimize impacts to the environment and to provide protection for the visitor.
- Contribute to the National Scenic Byway Program in a way that is uniquely suited to national public lands managed by the Bureau.

There are two national back country byways in the planning area: the South Bighorns/Red Wall National Back Country Byway and a portion of the Seminoe/Alcova National Back Country Byway.

National Historic Trails (NHT) and Other Historic Trails. In 1968, the National Trails System Act provided for the development of a national system of trails in urban, rural, and wilderness settings. The National Trails System does not manage trail resources on a day-to-day basis; rather, the responsibility for managing trail resources remains in the hands of current trail managers at the federal, state, local, and private level. Four NHTs and other historic trails of regional and national significance cross the planning area. The four NHTs are formally known as the “Oregon-California-Mormon Pioneer-Pony Express Trail,” but generically as the Oregon Trail because the routes overlap in many areas.

Because NHTs are unique cultural resources with high public interest they warrant special management consideration within the planning area. Guidelines have been developed specifically for the trails that allow more precise management planning than is possible for other broad categories of historic or prehistoric cultural resources. The Oregon/Mormon Pioneer National Historic Trails Management Plan was prepared in 1986 to guide Bureau management of the NHTs and cutoffs.

Actions conducted by the Bureau concerning the management of NHTs includes, but is not limited to, surveying, developing management plans, developing and maintaining interpretive sites, installing trail markers, managing the viewshed, and restricting surface development.

Special Status Species. Plants. Special status plants are those listed as threatened or endangered, those proposed for listing, or are candidates for listing under the provisions of the ESA, or those designated by the Bureau state director as sensitive. Nine special status plants are known to or may occur within the planning area. Blowout penstemon is endangered, and Colorado butterfly plant and Ute ladies'-tresses are threatened. In addition, the western prairie fringed orchid, a threatened species, is known to occur in riparian areas in watersheds downstream of the planning area and beyond the Wyoming border. However, this species could be affected by management actions in the planning area. Bureau sensitive plants include Laramie columbine (*Aquilegia laramiensis*), Porter's sagebrush (*Artemisia porteri*), Nelson's milkvetch (*Astragalus nelsonianus*), many-stemmed spider flower (*Cleome multicaulis*), William's wafer-parsnip (*Cymopterus williamsii*), and Laramie false sagebrush (*Sphaeromeria simplex*).

The Bureau manages public lands to conserve and (or) improve the habitats for special status plants. During special status species management actions, the Bureau provides habitat, protects known populations, enforces timing stipulations, conducts surveys, closes known locations to surface-disturbing activities, mineral material sales, off-road vehicle use, and monitors and restricts the use of explosives and blasting.

Fish and Wildlife. Special status fish and wildlife species are those listed as threatened or endangered, are proposed for listing, or are candidates for listing under the provisions of the ESA; or those designated by the Bureau State Director as sensitive. The Bureau manages public lands to conserve and (or) improve the habitats for special status fish and wildlife. Greater sage-grouse and its habitats are a priority for management in the planning area. The Bureau will manage Bureau-

administered lands to provide for populations as determined by the local Sage-Grouse Working Group.

During special status species management actions, the Bureau provides habitat; protects known populations; enforces timing stipulations; conducts surveys; closes known locations to surface-disturbing activities, mineral material sales, and off-road vehicle use; and monitors and restricts the use of explosives and blasting.

Transportation. The Bureau's transportation program is aimed at providing means for legal access to public lands and maintenance and development of various transportation facilities. The primary goals of the Bureau transportation and access program are (1) acquiring access, and (2) managing the transportation system to meet resource management objectives.

Under this program, the Bureau rehabilitates access roads no longer needed; proposes easement negotiations; pursues access across private lands; acquires ROW or easements; and exchanges lands.

Vegetative Resources. The convergence of two physiographic regions (Interior Plains and Rocky Mountain System) and a wide range of topography result in a diversity of vegetative types in the planning area. Grasslands and sagebrush types, followed by desert shrubs and saltbush-greasewood flats and woodlands, dominate vegetation in the planning area. Lodgepole pine and ponderosa pine forests are limited to approximately 5 percent of the planning area at higher elevations.

Vegetative resources management objectives for the Bureau include actively managing vegetation communities for a complete range of seral stages; restoring fire to its appropriate place in the ecological process; using mechanical, chemical, biological methods, and livestock grazing to achieve objectives; managing all lotic and lentic wetland/riparian systems toward proper functioning condition (PFC); conducting rangeland health evaluations; regenerating aspen communities and managing aspen toward desired plant community (DPC); actively managing vegetation communities for sustainable levels of forage for livestock and habitat for wildlife; implementing guidelines on allotments that do not meet rangeland health standards; and conducting vegetation treatment in areas to achieve desired future condition.

As part of the vegetation management program, the Bureau designs vegetation treatments; conducts prescribed fires; implements INPS control programs; implements planting and seeding; allows precommercial tree thinning; provides buffer zones; allows actions which increase human presence; allows the use of machinery or fire; improves riparian habitat; pursues the acquisition of additional riparian areas; allows spraying, burning, and mechanical disturbances; uses species-specific biological control insects, livestock grazing, mechanical methods, or chemical methods; and conducts plant species surveys.

Visual Resource Management. Visual Resource Management (VRM) involves applying methodologies for evaluating landscapes and determining appropriate techniques and strategies for maintaining visual quality and reducing adverse impacts. The Bureau completed a VRM inventory in 2004. The inventory process evaluated landscapes based on scenic quality, public perception (sensitivity), and location from key observation points (distance). VRM class recommendations were made based on the inventory process, with final class determinations being set by the RMP.

Results from the 2004 VRM inventory illustrate that the majority of the planning area should be classified as VRM Class III and Class IV. This allows for moderate- to large-scale visual intrusions, while striving to preserve the characteristic landscapes. Areas warranting more protections were delineated as Class II and include the South Bighorns, the Southern Bighorns/Red Wall and the Seminoe/Alcova National Back Country Byways, Fremont Canyon, the Laramie Range, portions of the Rattlesnake Hills, and along the North Platte River. These locations ranked higher in the scenic quality and are much higher in visual sensitivity. Special recommendations also were made concerning the NHT and other historic trail corridors.

Water Resources. The Bureau's Watershed and Water Resources Program conducts data collection, resource monitoring, and analysis in support of other management actions, such as range management, forest management, and mineral extraction. Watershed management actions include evaluating proposed projects, applying soil management practices, applying seasonal closures, monitoring public drinking water, and completing groundwater studies. Some of these field actions involve the use of heavy machinery and hand tools. Field actions can involve developing riparian exclosures and constructing stream crossings. Other actions can involve imposing restrictions on actions such as mineral exploration and development, pipelines, power lines, roads, recreational sites, fences, and wells.

Through water resource management the Bureau seeks to maintain or improve surface and groundwater quality consistent with existing and anticipated uses and applicable state and federal water quality standards, provides for the availability of water to facilitate authorized uses, and to minimize harmful consequences of erosion and surface runoff. Water resources are also to be protected or enhanced through site-specific mitigation guidelines.

During watershed management actions, the Bureau develops pollution prevention plans, ensures rights to water-related projects are filed, delineates no chemical use buffer zones, designs actions to promote reduction of channel erosion, and restores damaged wetlands or riparian areas. The Bureau also provides technical expertise on other actions such as livestock ponds, water quality monitoring actions, and provides impact analyses of oil and gas development or any surface disturbance projects.

Surface disturbing and other activities associated with the Watershed and Water Resources Program include, but are not limited to: (1) allowing for surface discharges of produced water; (2) restricting surface disturbance near water resources and sensitive soils; (3) closing areas, including roads, where accelerated erosion is occurring; (4) installing stream crossings for appropriate sediment and flow passage (e.g., culverts and bridges); (5) developing riparian/wetland exclosures; (6) channeling restoration using heavy equipment; and (7) cutting, planting, and seeding to restore function in riparian or wetland areas.

APPENDIX IV – REFERENCES

- United States Bureau of Land Management (BLM). 1992. Final Bald Eagle Habitat Management Plan for the Platte River Resource Area and Jackson Canyon ACEC. Casper District. U.S. Department of the Interior, Bureau of Land Management. Casper, Wyoming.
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