

APPENDIX I

BIOLOGICAL ASSESSMENT

APPENDIX I: BIOLOGICAL ASSESSMENT

Introduction

On March 24, 2006, Kiewit filed an application with the Bureau of Land Management (BLM) under the 43 Code of Federal Regulations (CFR) 3425 (Leasing on Application) to lease federal coal reserves in the Hay Creek II lease by application (LBA) tract (Proposed Action). The Hay Creek II LBA tract is located northwest of and immediately adjacent to existing coal leases at the Buckskin Mine, in northern Campbell County, Wyoming (map I-1).

The physical areas discussed in this assessment are defined as follows:

- proposed tract—the Hay Creek II LBA tract as applied for (419 acres)
- BLM study area—proposed tract plus lands added by the BLM for the analysis process (1,883 acres)
- general analysis area—the maximum area of potential surface disturbance (2,847 acres) that would result from leasing the largest possible tract; the entire BLM study area (includes 0.25-mile-wide buffer)¹.

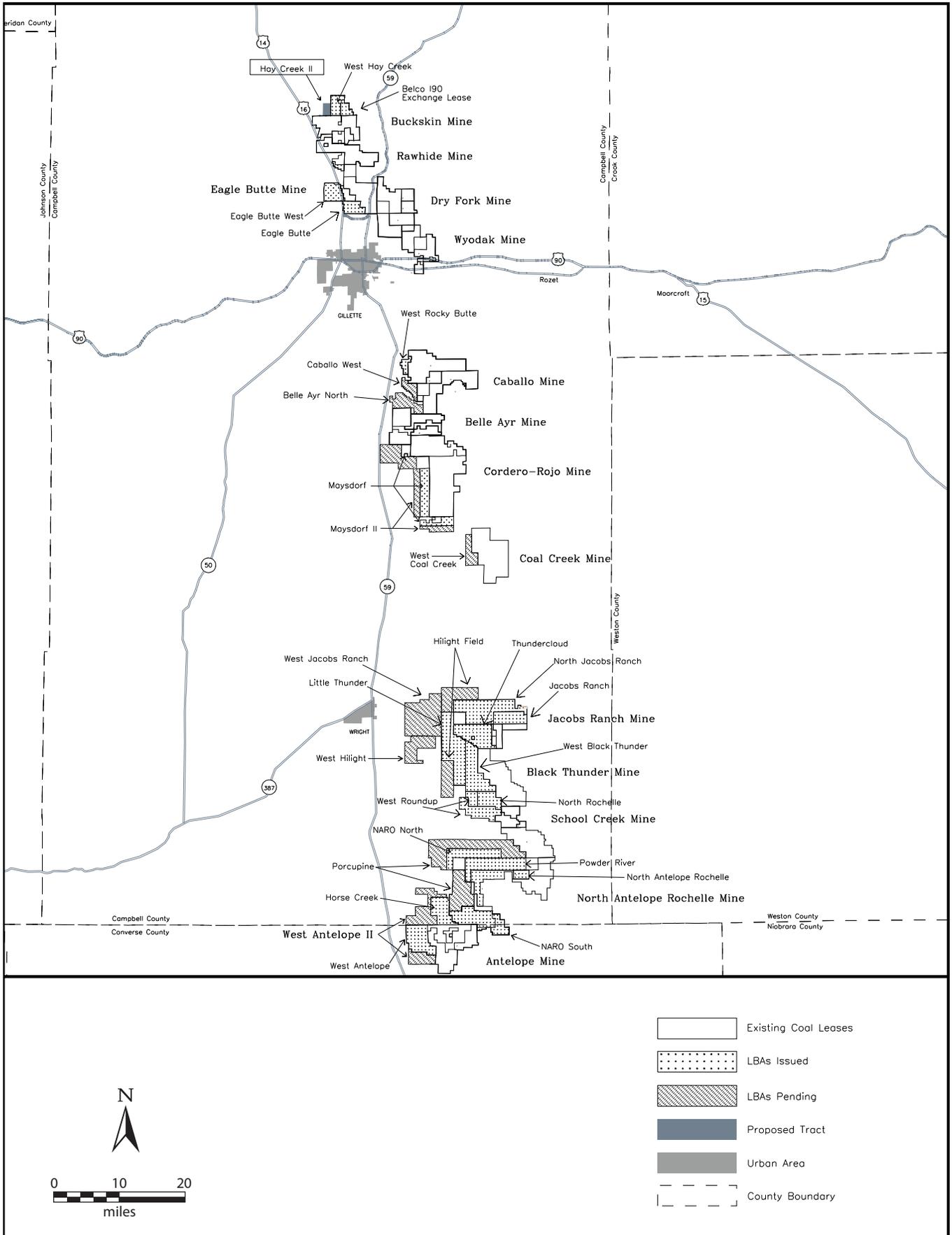
Map I-2 illustrates these three areas.

This biological assessment was prepared in accordance with Section 7 of the Endangered Species Act of 1973 (ESA). Its purpose is to disclose the potential effects on threatened and endangered plant and animal species, managed under the authority of the ESA, that are known to be present or that may be present in the general analysis area. The ESA requires federal agencies to ensure that all actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any federally listed species, or result in the destruction or adverse modification of their critical habitat.

The following are the objectives of this biological assessment:

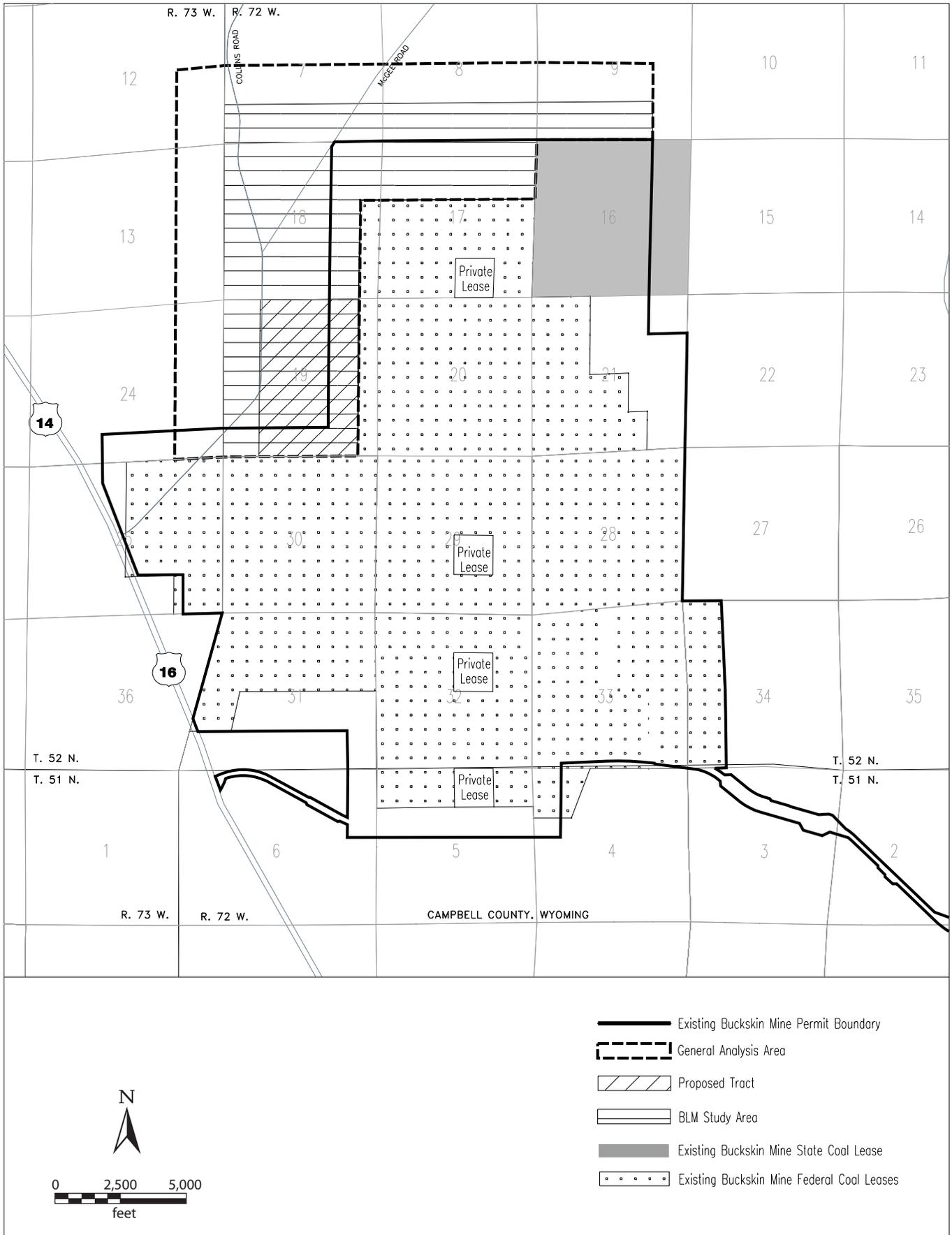
- To comply with the requirements of the ESA that actions conducted or authorized by federal agencies do not jeopardize federally listed species or adversely modify their critical habitat.
- To provide a process and standard to ensure that threatened and endangered species receive full consideration in the decision-making process.

¹ Surface disturbance beyond the final lease boundary is necessary to recover all of the coal resources within the final tract configuration, and would occur due to activities such as overstripping, matching reclaimed topography to premining contours, constructing flood and sediment control structures, and numerous other related actions



No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by BLM.

Map I-1
General Location Map with Federal Coal Leases and LBA Tracts



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Map I-2 General Analysis Area

Consultation and Coordination

The BLM received the Hay Creek II coal lease application on March 24, 2006. The BLM, Wyoming State Office, Division of Minerals and Lands, initially reviewed the application and ruled that the application and lands involved met the requirements of regulations governing coal leasing on application (43 CFR 3425). The Powder River Regional Coal Team reviewed this lease application at a public meeting held in Casper, Wyoming, on April 19, 2006, following Kiewit's presentation about the existing Buckskin Mine and the pending lease application for the proposed tract. That entity recommended that the BLM continue to process this application.

The major land use planning decision that the BLM must make concerning federal coal resources is a determination of which coal reserves are acceptable for further consideration for leasing. The BLM uses four screening procedures to identify these coal reserves. Only those federal coal reserves that pass these screens receive further consideration for leasing. The BLM has applied these coal screens to federal coal reserves in Campbell County several times, beginning in the early 1980s. In 1993, the BLM began the most recent process of reapplying these screens in Campbell, Converse, and Sheridan counties in eastern Wyoming. This screening analysis process, which includes the portion of Campbell County where the proposed tract is located, was adopted in the 2001 *Approved Resource Management Plan for Public Lands Administered by the BLM Buffalo Field Office* (BLM 2001), and the results were included as appendix D of that update. That document can be viewed in the 2001 documents section on the Wyoming BLM website at: <http://www.blm.gov/rmp/WY/application/index.cfm/rmpid=101>. The general analysis area discussed in this biological assessment is included in the area determined to be "acceptable for further consideration for leasing" as part of the coal screening process.

During this screening process, consultation with the U.S. Fish and Wildlife Service (USFWS) occurred in conjunction with the unsuitability findings under Criterion 9 (Critical Habitat for Threatened or Endangered Plant and Animal Species), Criterion 11 (Bald or Golden Eagle Nests), Criterion 12 (Bald and Golden Eagle Roost and Concentration Areas), Criterion 13 (Falcon Nesting Site[s] and Buffer Zone[s]), and Criterion 14 (Habitat for Migratory Bird Species).

The USFWS maintains a list of threatened, endangered, and candidate species, and designated critical habitats for each county in Wyoming on their official website: <http://www.fws.gov/mountain-prairie/species/wyoming>. The agency updates those species lists annually, or more frequently, if any listing changes occur. Posting these species lists on the USFWS website fulfills the obligation of the USFWS, under Section 7 of the ESA, to provide a list of threatened and endangered species upon request for federal actions and National Environmental Policy Act compliance.

According to USFWS information (USFWS 2008a), three federally listed species could occur in the general analysis area: the Ute ladies'-tresses orchid (*Spiranthes diluvialis*) (threatened); black-footed ferret (*Mustela nigripes*) (endangered); and blowout penstemon (*Penstemon haydenii*) (endangered). The effects on these three species are described and analyzed in detail in this biological assessment.

An August 8, 2007, memorandum between the USFWS and BLM provided recommendations for protective measures for threatened and endangered species in accordance with the ESA. Protective measures for migratory birds in accordance with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act and recommendations for the protection of wetlands (under Executive Order 11990 and Section 404 of the Clean Water Act) and for other fish and wildlife resources (under the Fish and Wildlife Coordination Act and the Fish and Wildlife Act of 1956) were also included. The memorandum identified the greater sage-grouse (*Centrocercus urophasianus*) as a species of specific interest and emphasized the importance of identifying grouse habitats within the lease area, as well as appropriate mitigation measures to minimize potential impacts on this species. The memorandum also stated that the USFWS would work with the BLM to ensure that the species-specific protective measures and programs for the conservation and recovery of listed species as required by under Section 7 of the ESA are satisfied and carried out.

The Wyoming Game and Fish Department (WGFD) provided the BLM with scoping comments for the Proposed Action in April 2007 (Emmerich pers. comm.). The WGFD recommended that consideration be given to possible impacts on big game, sage-grouse, raptors, and nongame species and their habitats, and aquatic resources in the general analysis area.

Regulatory Requirements and Mitigation

The BLM leasing process does not authorize mining of federal coal reserves. The lease merely grants the lessee the exclusive right to pursue a mining permit for the leased tract subject to the terms and conditions of the lease, the mining permit itself, and all applicable state and federal laws. However, the impacts of mining the coal are considered at the leasing stage because they are a logical consequence of that process.

The Office of Surface Mining Reclamation and Enforcement and Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) are the federal and state agencies, respectively, responsible for regulating surface coal mining operations in Wyoming. After the BLM has made a leasing decision, a more detailed analysis will be required prior to mining the new coal reserves. As part of that analysis process, the lessee submits an application for a surface mining permit to WDEQ/LQD and other affected state and Federal agencies. The permit application includes detailed descriptions of proposed mining plans, as well as monitoring, reclamation, and mitigation plans designed to address known and potential impacts from mining the coal in the leased tract. Those plans are developed and implemented based on extensive baseline information collected as part of the permitting process, as required by the Surface Mining Control and Reclamation Act of 1977 (SMCRA) and Wyoming law.

If the federal coal reserves adjacent to the Buckskin Mine are leased, it would be considered a maintenance lease for the existing Buckskin Mine, which currently has both an approved Mineral Leasing Act of 1920 mining plan and approved State mining and reclamation permits. Those existing documents must be amended to include any newly leased area before it can be actively mined. To amend the existing mining plan and associated permits, Kiewit would be required to

submit a detailed permit application package to WDEQ/LQD as described above. The proposed mining, monitoring, reclamation, and mitigation plans for the new lease area must be approved by multiple state and federal agencies, including the USFWS, before a permit to mine new coal reserves is issued. Those approval documents are included in WDEQ/LQD's review process to ensure the permit application is complete and complies with the permitting requirements, and that the coal mining operation will meet the performance standards of the approved Wyoming program. If the permit application package does comply with the numerous and stringent requirements, WDEQ/LQD would issue an amended permit to the applicant that would allow the permittee to extend coal mining operations into the newly acquired lease area.

Protection of fish, wildlife, and related environmental values is required under SMCRA regulations at 30 CFR 816.97, which state:

No surface mining activity shall be conducted which is likely to jeopardize the continued existence of endangered or threatened species listed by the Secretary of which is likely to result in the destruction or adverse modification of designated critical habitats of such species in violation of the Endangered Species Act of 1973, as amended.

To comply with this regulation, Section 7 Consultation would be required before amendments to the existing mining and reclamation plan are approved to add the newly acquired lease area. That consultation process occurs at the permitting stage because specific details regarding the actual location of the disturbance areas in the new lease area, how and when they would be disturbed, and how they would be reclaimed are not available at the leasing stage. If the USFWS deems it appropriate, additional measures to ensure compliance with the ESA and SMCRA can be developed at that time based on potential impacts on listed species from proposed mining operations in the new lease area.

The following is a partial list of measures related to federally-protected species that are required as part of the mining and reclamation permits:

- avoiding bald eagle (*Haliaeetus leucocephalus*) disturbance per the Bald and Golden Eagle Protection Act of 1940 and the Migratory Bird Treaty Act;
- restoring bald eagle foraging areas disturbed by mining;
- using raptor safe power lines; and
- surveying for Ute ladies'-tresses and other listed plant species if habitat is present.

In addition to disallowing any surface mining activity that is likely to jeopardize the continued existence of endangered or threatened species, SMCRA regulations at 30 CFR 816.97:

- require the operator to minimize disturbances and adverse impacts on fish, wildlife, and other related environmental values; and
- require that the operator use the best technology currently available to:
 - minimize electrocution hazards to raptors;

- locate and operate haul and access roads to avoid or minimize impacts on important fish and wildlife species; and
- design fences, conveyors, and other potential barriers to permit passage of large mammals.

Description of the Proposed Action and Alternatives

The Proposed Action

Under the Proposed Action, the BLM would hold a competitive sale and would issue a lease for the federal coal reserves included in the proposed tract. The Proposed Action assumes that Kiewit would be the successful bidder and would incorporate the proposed tract into its existing mine operations. The Proposed Action would not expand operations at the Buckskin Mine, but would maintain current levels of production for an additional period of time. The facilities and infrastructure would be the same as those currently identified in the WDEQ/LQD Mine Permit 500 Term T7, approved May 22, 2006, and the *BLM Resource Recovery and Protection Plan*, approved June 16, 2006 (BLM 2006).

The legal description of the proposed tract is provided in table I-1. The entire surface of the existing Buckskin Mine permit area and general analysis area is privately owned by individuals or companies, while most of the subsurface minerals (all of the coal and the majority of oil and gas reserves) are federally owned. All oil and gas production facilities located in the general analysis area are privately owned.

Table I-1. Legal Description of Proposed Tract

Campbell County, Wyoming, Sixth Principal Meridian Township 52 North, Range 72 West		Acres
Section 19:	Lot 5 (W ½)	20.71
	Lot 6	41.42
	Lot 7	42.45
	Lot 10	42.31
	Lot 11	41.68
	Lot 12 (W ½)	20.84
	Lot 13 (W ½)	20.935
	Lot 14	41.75
	Lot 15	41.90
	Lot 18	41.97
	Lot 19	42.01
	Lot 20 (W ½)	21.065
Total Acres		419.04

The proposed tract includes approximately 419.04 acres. As discussed previously, it is assumed that an area larger than the proposed tract would be disturbed to allow recovery of all coal resources. Therefore, approximately 478 acres, including a buffer area north of the proposed tract, would be disturbed to recover the coal reserves within the proposed tract under this alternative. Surface disturbance beyond the proposed lease boundary would be due to activities such as overstripping, matching reclaimed topography to premining contours, constructing flood- and sediment-control structures, and numerous other related operations.

Much of the western boundary of the proposed tract is adjacent to Campbell County Road 23 (Collins Road). In accordance with SMCRA, and as specified under unsuitability criterion 3 (43 CFR 3461), lands within 100 feet of the outside line of the right-of-way of a public road are considered unsuitable for surface coal mining. Consequently, the coal reserves underlying the Collins Road, its right-of-way, and an associated 100-foot buffer zone cannot be accessed under current conditions unless Kiewit pursues an exception to this prohibition and the Campbell County Board of Commissioners allows the public road to be relocated or closed. Neither the applicant nor the commissioners has submitted a proposal to move this road, and Kiewit does not anticipate pursuing that option.

Alternative 1 (No Action)

Under Alternative 1, the No Action Alternative, Kiewit's application to lease the coal included in the proposed tract would be rejected: federal coal reserves adjacent to the existing Buckskin Mine would not be offered for competitive sale, and the additional coal would not be mined. However, selection of this alternative would not preclude Kiewit or another company from submitting a future lease application for these adjacent coal reserves.

Under Alternative 1, currently permitted mining activities associated with existing coal leases at the Buckskin Mine would not be affected. The facilities, infrastructure, employment levels, and reclamation efforts under this alternative would be the same as those currently identified in the WDEQ/LQD Mine Permit 500 Term T7, approved May 22, 2006, and the *BLM Resource Recovery and Protection Plan*, approved June 16, 2006 (BLM 2006). Approximately 182 acres of the proposed tract and 436.5 additional acres of the BLM study area (618.5 total acres) overlap the existing permit boundary. Therefore, under the No Action Alternative, surface disturbance would occur in this overlap area, but would be limited to highwall reduction, topsoil removal, and other mine support activities related to mining under the existing contiguous leases. Average annual production would continue as described under the Proposed Action.

Alternative 2

Under Alternative 2, the BLM would hold a competitive sale and would issue a lease for the federal coal reserves included in an alternative tract configuration. The alternative tract configuration would be defined by the BLM from lands within the BLM study area (map I-2) to be technically, economically, and environmentally preferable to the proposed tract. The alternative tract configuration could be smaller than the proposed tract, or include part or all of the BLM study area.

As under the Proposed Action, Alternative 2 assumes that Kiewit would be the successful bidder and would incorporate the alternative tract configuration into its existing mine operations. Alternative 2 would not expand operations at the Buckskin Mine, but would maintain current levels of production for an additional period of time.

Table I-2 provides the legal description of the BLM study area.

Table I-2. Legal Description of BLM Study Area

Campbell County, Wyoming, Sixth Principal Meridian Township 52 North, Range 72 West	Acres
Section 7: Lots 17 through 20	166.91
Section 8: Lots 13 through 16	162.00
Section 9: Lots 13 through 15	120.58
Section 17: Lots 1 through 4, 5 (N. ½), 6 (N. ½), 7 (N. ½), and 8 (N. ½)	247.39
Section 18: Lots 5 through 11, 12 (N. ½, SW. ¼), 13 (W. ½), 14 through 19, and 20 (W. ½)	612.95
Section 19: Lots 5 (W. ½), 6 through 11, 12 (W. ½), 13 (W. ½), 14 through 19, and 20 (W. ½)	573.27
Total Acres	1,883.10

Not all of the coal included in the proposed tract and BLM study area is considered mineable at present. An occupied residence and a portion of the Collins and McGee roads overlie some of the coal included under Alternative 2. As discussed under the Proposed Action, SMCRA prohibits mining within 100 feet on either side of the right-of-way of any public road (43 CFR 3461); the same prohibition applies to lands within 300 feet of an occupied residence. Kiewit is not considering acquiring the surface rights to the occupied residence, and has not applied to relocate either of the county roads. Consequently, additional coal reserves between the two roads would not be disturbed if the coal under the roads was not mined. Although the federal coal underlying the county road right-of-way and associated buffer zones may not be mined, it is included in the analysis because it would allow maximum recovery of the mineable coal adjacent to, but outside of the rights-of-way and associated buffer zones.

If a decision is made to hold a competitive lease sale, and if the sale has a successful bidder, a lease would be issued for federal coal reserves within the final tract delineation, as determined by the BLM. It is assumed that the applicant would be the successful bidder at the lease sale. The final tract configuration offered for lease would be subject to standard and special lease stipulations developed for the Wyoming Powder River Basin (PRB).

One stipulation developed for the Wyoming PRB relating to threatened and endangered species is presented below:

THREATENED, ENDANGERED, CANDIDATE, or OTHER SPECIAL STATUS
PLANT and ANIMAL SPECIES – The lease area may now or hereafter contain plants,
animals, or their habitats determined to be threatened or endangered under the

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq., or that have other special status. The Authorized Officer may recommend modifications to exploration and development proposals to further conservation and management objectives or to avoid activity that will contribute to a need to list such species or their habitat or to comply with any biological opinion issued by the Fish and Wildlife Service for the Proposed Action. The Authorized Officer will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act. The Authorized Officer may require modifications to, or disapprove a proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species, or result in the destruction or adverse modification of designated or proposed critical habitat.

The lessee shall comply with instructions from the Authorized Officer of the surface managing agency (BLM, if the surface is private) for ground disturbing activities associated with coal exploration on federal coal leases prior to approval of a mining and reclamation permit or outside an approved mining and reclamation permit area. The lessee shall comply with instructions from the Authorized Officer of the Office of Surface Mining Reclamation and Enforcement, or his designated representative, for all ground disturbing activities taking place within an approved mining and reclamation permit area or associated with such a permit.

General Setting

The terrain in the general analysis area consists primarily of gently sloping uplands and relatively level agricultural fields, with more rugged terrain in the northeastern portion of the area. Elevations in the general analysis area range from approximately 4,080 to 4,380 feet above mean sea level.

Predominant wildlife habitat types classified in the general analysis area broadly correspond with the major plant communities defined during the vegetation baseline study. The proposed tract is dominated (approximately 71%) by various upland grassland habitats. Habitats in the general analysis area are comprised primarily (71%) of upland grasslands (approximately 40%) and agricultural lands (croplands and pastures, 31%). No sand dunes or prairie dog colonies are present in the general analysis area.

No major drainages pass through the proposed tract itself, though a closed, unnamed drainage system crosses its northwestern corner. Hay Creek flows from west to east through the northern half of the general analysis area, with a considerable portion passing through the existing Buckskin Mine permit area. Several primary and secondary tributaries are also in that area. Under natural conditions, Hay Creek and all tributaries in the area are considered ephemeral (i.e., respond only to rainfall or snowmelt events). The determination of stream classification was made using the flume monitoring data collected by the Buckskin Mine and reported in the existing permit document.

The National Wetland Inventory (NWI) mapping system shows several wetlands occurring in the general analysis area (USFWS 2007). Many of these areas correspond with wetlands and other waters of the U.S. that were identified during previous wetland delineations of the Buckskin Mine; however, some of the information shown on these maps is relatively old and does not reflect current conditions. Based on the NWI maps, approximately 64.44 acres of wetlands have been identified in the general analysis area. Of these, 30.7 acres were determined to be potentially jurisdictional wetlands based on field observations; the remaining 33.74 acres were initially determined to be nonjurisdictional non-wetlands (e.g., borrow pits, old impoundments) or no longer present. The majority of the potential jurisdictional wetlands were associated with Hay Creek and other ephemeral tributaries in the general analysis area. Some wetlands previously mapped on the NWI may have been altered due to agricultural uses and permitted mine disturbance or water production related to coal bed natural gas (CBNG) production in the general analysis area.

Wetlands occur in a variety of forms in the general analysis area, with palustrine wetlands being the most common and abundant. Palustrine wetlands are defined by their close association with emergent herbaceous marshes, swales, or wet meadows and are supported by saturated soils along the banks of the drainages (Cowardin et al. 1979). Wetlands support a variety of vegetation types and occur mainly along drainages in the general analysis area. Hydrology for these areas is provided primarily by surface runoff from adjacent uplands and discharged CBNG waters.

Hay Creek, which flows primarily from the west to east, and several other tributaries that generally flow into Hay Creek, are waters of the U.S. These tributaries are primarily intermittent stream channels, open water, and other stream channels that carry water but do not meet the criteria for classification as wetlands. The Buckskin Mine's approved mining plan allows disturbance of a portion of the Hay Creek channel. Beginning in 2006, approximately 1.75 miles of the channel were diverted into the Hay Creek Diversion to facilitate mining in the northern extent of the existing Buckskin Mine permit area; the diversion runs through the overlap between the general analysis area and the existing permit area.

Soils in the general analysis area consist mainly of loams, sandy loams, and some clay loams. One hydric soil unit, Felix Clay, is located in the general analysis area (NRCS 2008), on slopes ranging from 0 to 2% and in soils that are developing in alluvium derived from sandstone and shale on gently sloping uplands.

CBNG discharge water has increased the frequency and duration of streamflow events in some portions of the general analysis area. The USFWS NWI maps (2007) show one small wetland (a 0.24-acre diked impoundment) in the extreme northwestern corner of the proposed tract; however, field observations over the years have indicated that it is wet primarily during early spring months. A second NWI inventoried wetland (0.24 acre) in the buffer area north of the proposed tract would be affected by disturbance associated with mine support activities such as topsoil stripping and stockpiling. One playa and one small instream impoundment are in the northwestern portion of the surrounding general analysis area. Those features are also seasonal,

with water typically present in spring but dry by mid- to late summer. The playa is the only water body in the general analysis area that provides habitat for waterfowl, shorebirds, and other aquatic species. Due to its limited availability, it serves primarily as a staging area during spring migrations. Due to the lack of permanent water sources, the general analysis area does not support any fisheries.

A wide variety of existing mine facilities, operations, and reclamation activities are present in the overlap between the general analysis area and existing Buckskin Mine permit area, and throughout the permit area itself. Facilities present include storage silos, coal crushing and preparation plants, a railroad spur and loading facility, among others. Mining activities involve a variety of heavy equipment operations that occur 24 hours per day every day of the year; blasting occurs during daylight hours on a nearly daily basis. Reclamation efforts also involve heavy equipment. Disturbance and reclamation activities occur incrementally through the area. Because the mine operates at night, artificial lighting is present in active pit areas and on haul roads to ensure the safety of mine employees.

General Survey Requirements and History

The BLM Data Adequacy Standards for the Powder River Coal Region (BLM 1987) describe the minimum data requirements needed to make coal leasing recommendations within the PRB Coal Production Region. Because most coal mines in the PRB have collected long-term annual monitoring data for both vertebrates and plants as part of their WDEQ/LQD permit requirements, and because most surveys include lands outside the current permit area, the BLM typically accepts that annual monitoring information as meeting the minimum requirements of these standards. The long-term (25 years) database available for vertebrate species in the Buckskin Mine permit area and surrounding lands meets those minimum requirements. Vegetation monitoring and surveys have also been conducted over multiple years, though such surveys are typically limited to the permit area or proposed expansion area and a 0.25-mile-wide buffer.

Due to their proximity to the existing Buckskin Mine permit area, the entire proposed tract and the southern third (33%) of the general analysis area have been included in annual wildlife surveys for the last 25 years (1984 through 2008). Approximately 95% of the general analysis area has been surveyed annually for the last seven years (2002 through 2008) in conjunction with a previous permit amendment at the mine. The entire general analysis area and expanded adjacent lands were included in targeted baseline surveys conducted for the LBA process from late 2007 through 2008.

Threatened and Endangered Species

No “critical” habitat designated by the USFWS for threatened and endangered species is present in the general analysis area or the surrounding vicinity. The following discussion describes species’ habitat requirements and their occurrence in the general analysis area, and evaluates the potential environmental effects of the action alternatives on federal threatened and endangered species.

Additional detailed information on the affected environment in the general analysis area as well as long-term results from annual monitoring in the vicinity are provided in the Vegetation Data Report and Wildlife Data Report. Those reports can be viewed at the BLM Wyoming High Plains District Office in Casper, Wyoming.

Threatened Species

Ute Ladies'-Tresses Orchid (Spiranthes diluvialis)

The Ute ladies'-tresses, a member of the orchid family, was listed as threatened on January 17, 1992, due to a variety of factors, including habitat loss and modification, hydrological modifications of existing and potential habitat areas, and invasion of exotic plant species. At the time of listing, this species was only known from Colorado, Utah, and extreme eastern Nevada. Ute ladies'-tresses orchids were discovered in Wyoming in 1993. It is currently known from western Nebraska, eastern Wyoming, north-central Colorado, northeastern and southern Utah, east-central and southeastern Idaho, southwestern Montana, and central Washington.

Biology and Habitat Requirements

The Ute ladies'-tresses is a perennial, terrestrial orchid with erect, glandular-pubescent stems 8 to 20 inches tall arising from tuberous-thickened roots. In Wyoming, this species typically blooms from late July or early August to early September, with fruits produced from mid-August to September (Fertig 2000). Ute ladies'-tresses can only be reliably located and positively identified when they are flowering (Heidel 2001). The flowers are white or ivory and clustered into a spike at the top of the stem; however, depending on location and climatic conditions, it may bloom in early July or still be in flower as late as early October (Heidel 2007). Plants probably do not flower every year and may remain dormant below ground during drought years. In general, the species' best flowering years seem to correspond with extreme heat during flowering. Preliminary review of climate data also indicates that growing seasons that start out as relatively cold and wet correspond with low flowering levels (Heidel 2001).

The Ute ladies'-tresses orchid is commonly associated with horsetail, milkweed, verbena, blue-eyed grass, reedgrass, goldenrod, bentgrass and arrowgrass. Wyoming populations often occur in moist meadow communities dominated by redtop, common quackgrass, Baltic rush, foxtail barley, or switchgrass within a narrow vegetative band between emergent aquatic vegetation and dry upland prairie (Fertig 2000). Vegetative cover tends to range from 75% to 90% and is usually less than 45 centimeters tall (Fertig 2000). However, the orchid seems intolerant of shade and is usually found as small scattered groups that occupy relatively small areas of open vegetation within the riparian system. Populations are often dynamic and "move" within a watershed as disturbances create new habitat or succession eliminates old habitat (Fertig and Beauvais 1999). The orchid is well adapted to disturbances from stream movement and is tolerant of other disturbances, such as grazing, that are common to grassland riparian habitats (USFWS 1995). Ute ladies'-tresses colonize early successional riparian habitats such as point bars, sand bars, and low-lying gravelly, sandy, or cobbly edges, persisting in those areas where the hydrology provides continual dampness in the root zone through the growing season. Soils

where the orchid has been found typically range from fine alluvial silt/sand to gravels and cobbles, as well as in highly organic and peaty soil types, or whitish loamy clay with a slightly basic pH. The orchid can also become established in heavily disturbed sites, such as revegetated gravel pits, heavily grazed riparian edges, and along well-traveled foot trails on old berms (USFWS 1995). This species is not found in heavy or tight clay soils or in extremely saline or alkaline soils.

Affected Environment

The total known number of individuals of this species is currently estimated to be 83,000 individuals (Fertig et. al. 2005). Occurrences range in size from one plant to a few hundred individuals. Prior to 2005, four orchid populations had been documented within Wyoming, all discovered between 1993 and 1997 (Fertig and Beauvais 1999). Four additional sites were located in 2005 and one additional site was found in 2006 (Heidel 2007). The new locations were in the same drainages or tributaries as the original four populations. Drainages with documented orchid populations include Antelope Creek and tributaries in northern Converse County, Bear Creek in northern Laramie and southern Goshen Counties, Horse Creek in Laramie County, and Niobrara River in Niobrara County. No occurrences have been recorded in Campbell County. The nearest documented record of Ute ladies'-tresses is the Antelope Creek population, approximately 70 miles southwest of the general analysis area.

Potential habitat for Ute ladies'-tresses within the general analysis area was identified prior to field work using the U.S. Geologic Survey quadrangle map or aerial photographs. The NWI system was also consulted. Typically, individual polygons were created within each polygon representing a logical sampling unit. Habitat Management, Inc. conducted a survey for the Ute ladies'-tresses orchid on August 28, 2008. LandTrak Resources, Inc. conducted another survey for this species on September 9, 2009. Both surveys were conducted during the official flowering period, as determined by BLM and USFWS biologists. Habitat Management, Inc. conducted similar surveys for this species in portions of the general analysis area in 2004, 2006, and 2007.

The Ute ladies'-tresses orchid occurs primarily in areas where vegetation is relatively open and not overly dense, overgrown, or heavily over-grazed. Particular attention was placed on identifying areas where its preferred vegetation canopy and use conditions are met. A 100% pedestrian survey of the vegetation communities with supporting facultative wet or obligatory wetland plant species within the area was performed. Since this species is commonly associated with grasses, sedges, rushes, shrubs, and riparian trees, the presence or absence of these plant species was noted. In addition, the Ute ladies'-tresses orchid is commonly associated with horsetail, milkweed, verbena, blue-eyed grass, reedgrass, goldenrod, bentgrass and arrowgrass. Observations of those species were also noted since the orchid is commonly found growing in association with them. Areas that receive full sunlight or that are only partially shaded are more likely to support populations of this orchid than deeply shaded sites. Such sites were also noted and recorded during the field surveys.

The presence or absence of potential orchid habitat types was physically confirmed through the field surveys. Wetlands in all areas including all stream channels, alluvial terraces, sub-irrigated meadows, and any other locations where the soil has the potential to be at least temporarily saturated within 18 inches of the surface for at least one week during the growing season were identified, located in the field, and plotted on the site map. Highly disturbed or modified sites, upland sites, sites entirely inundated by standing water, sites with heavy clay soils, and very saline sites were noted and excluded from vegetation in soil analysis, since they do not represent a potential Ute ladies'-tresses habitat. Sites with dense stands of reed canarygrass, greasewood, teasel, and common reed were also excluded from further scrutiny. Areas that support facultative wet or obligatory wetland plant species were identified during the survey.

Most of the potentially suitable habitat in the general analysis area is found along Hay Creek. This primary drainage, which flows generally from west to east through the northern portion of the general analysis area, is classified as an ephemeral stream in this area. Limited portions of Hay Creek and its tributary drainages may receive recharge from bank storage making them locally intermittent. In response to recent surface discharge of groundwater associated with CBNG development on or upstream of the general analysis area, streamflow occurrence is now more persistent and some drainage channels are seldom completely dry.

Several unnamed and named ephemeral tributaries drain portions of the general analysis area though, as described above. Only one drainage intersects the proposed tract itself; that drainage does not connect with Hay Creek. One small (0.24 acre) impoundment is present in the northwestern corner of the proposed tract, with additional stock reservoirs present elsewhere in the general analysis area. The stock reservoirs are constructed as earthen berms or dams located on these ephemeral drainages. These ponds generally contain water only in early spring, then dry up in summer.

Environmental Consequences

Mining the federal coal under the Proposed Action or Alternative 2 will have no effect on Ute ladies'-tresses orchids.

No Ute ladies'-tresses orchids were located during surveys conducted in appropriate habitats within the general analysis area in 2004 or annually from 2006 through 2009 (LandTrak Resources 2009). No potential habitat for this species is present within the proposed tract. Previous wetland inventories identified a total of 6.71 acres of nonjurisdictional wetlands and 1.33 acres of other waters of the U.S. within or directly adjacent to Hay Creek as it flows through the overlap between the existing Buckskin Mine permit area and the general analysis area. However, most of these features have already been excavated for the extraction of coal reserves as part of the current Buckskin Mine permit, or are already permitted for disturbance due to their location within the existing permit area. Additionally, coal reserves under and within 100 feet of the Collins and McGee roads, and within 300 feet of an occupied residence, are considered "unsuitable for mining" under BLM coal unsuitability criterion 3. Because Kiewit has not applied to relocate either road and does not intend to obtain surface rights for the occupied residence, the lands between the two roads and west of the Collins Road are operationally

blocked from mining. Consequently, no new potential Ute ladies'-tresses habitat has been added by the Proposed Action or Alternative 2 that is not already approved for disturbance.

Because this species can persist below or above ground without flowering, single season surveys that meet the current USFWS survey guidelines may not detect populations; surveys in the general analysis area have been conducted during the last four consecutive flowering seasons (2006 through 2009).

Potential habitat for Ute ladies'-tresses is extremely limited within the general analysis area and typically is not suitable for this species for a number of key reasons:

- Wet meadow habitat types typically support aggressive rhizomatous graminoid plant species. These potential habitat sites are well-established plant communities that typically have dense under-story cover. This orchid normally does not grow in such conditions.
- Soils trend from moderately to very saline/sodic. A number of the potential habitat sites have visible saline/sodic crusts. Inland saltgrass and foxtail barley are often the only species growing in these areas.
- CBNG dewatering and treatment activities have caused major impacts to all of the watersheds within the proposed amendment area. Areas that have been historically wet are now dry, and new areas are now wet where CBNG waters are discharged/treated. The historic groundwater and soil moisture conditions have been altered or disrupted and major shifts in plant community distribution have occurred or are occurring.
- Livestock grazing has impacted the quality of riparian areas. Livestock use during the wetter times of the year adversely impacts potential Ute ladies'-tresses habitat.

Stormwater runoff varies considerably from year to year. A reliable supply of surface water is not always available during the middle and late summer to support late growth plant species. This serves to further limit the presence of potential Ute ladies'-tresses habitat within the general analysis area; the quality of potential habitats is extremely poor.

Any jurisdictional wetlands that are destroyed by mining operations would be replaced in accordance with the requirements of Section 404 of the Clean Water Act, as determined by the Corps. The replaced wetlands may not duplicate the exact function and landscape features of the premine wetlands. The Corps considers the type and function of each jurisdictional wetland that will be impacted and may require restoration of additional acres if the type and function of the restored wetlands will not completely replace those of the original wetlands. Replacement of nonjurisdictional and functional wetlands may be required by the surface land owner and/or WDEQ/LQD. That agency allows and sometimes requires mitigation of nonjurisdictional wetlands affected by mining, depending on the values associated with the wetland features. WDEQ/LQD also requires replacement of playas with hydrologic significance.

Cumulative Effects

Alterations of stream morphology and hydrology are believed to have extirpated Ute ladies'-tresses from most of its historical range (USFWS 1995). Disturbance and reclamation of

streams by surface coal mining may alter stream morphology and hydrology. The large quantities of water produced with CBNG development and discharged on the surface may also alter stream morphology and hydrology. However, no typical suitable habitat for Ute ladie's-tresses is present within the proposed tract. Additionally, no orchids have been documented during repeated surveys of typical suitable habitat in the portion of the Hay Creek drainage included in the BLM study area. Furthermore, nearly the entire Hay Creek drainage under that alternative has already been approved for disturbance, and most of that disturbance has already occurred. The remaining drainage reach that may provide typical suitable habitat for this species is within one or more areas designated as unsuitable for mining. Therefore, leasing the federal coal reserves is not likely to contribute to cumulative adverse effects for the Ute ladie's-tresses orchid.

Endangered Species

Black-Footed Ferret (Mustela nigripes)

The black-footed ferret is a nocturnal mammal and an obligate associate of prairie dogs (*Cynomys* spp.). It was listed as endangered in March 1967. This species is thought to have historically inhabited a nearly contiguous matrix of prairie dog colonies spanning the short-grass prairies of the eastern and southern Rockies and the Great Plains of North America (Forrest et al. 1985). Since the early 1930s, numerous factors have led to substantial declines in prairie dog colonies in that region. Reductions in some states are estimated as high as 90% from formerly occupied colonies (Rose 1973; Tyler 1968).

The conversion of grasslands to agricultural landscapes, eradication of prairie dogs, and diseases such as the plague and canine distemper have resulted in severe reductions in prairie dog colonies across the west. Many of those colonies provided food, shelter, and habitat for black-footed ferrets. This species of ferret is currently one of the most endangered mammals in North America and was thought to be extinct until a small population was discovered in Meeteetse, Wyoming, in September 1981. Since then, successful captive breeding and reintroduction programs have released black-footed ferrets back into the wild in several western and Great Plains states including Wyoming, Montana, South Dakota, Colorado, Utah, and Arizona.

Biology and Habitat Requirements

Black-footed ferrets rely on prairie dogs to provide both shelter and food (Hillman and Clark 1980). It is estimated that at least 30 acres of an occupied prairie dog colony are required to persistently support individual ferrets, and 123.5 acres are needed to support breeding females (Forrest et al. 1985). Ferrets produce one litter per year, typically giving birth to four or five kits. The decline in ferret populations has been largely attributed to the reduction in the vast prairie dog colonies that historically existed in the western United States. Reintroduction efforts involving captive-bred individuals have successfully established one black-footed ferret population in the Shirley Basin area in south-central Wyoming. Currently, this is the only known black-footed ferret population within the state, though other populations are present

elsewhere in the United States and Mexico. The Buckskin Mine and Hay Creek II general analysis area are beyond the focus area for ferret reintroduction efforts on the nearby Thunder Basin National Grassland and elsewhere in the general region (USDA Forest Service 2002; Grenier 2003).

Existing Environment

Few ferrets have historically been recorded in locations away from prairie dog colonies. Despite extensive surveys conducted throughout the state over the past 20-plus years, no black-footed ferrets have been documented in Wyoming other than the isolated population discovered in Meetetse in 1981 (Miller et al. 1996). Those surveys included numerous USFWS-approved clearances conducted by a variety of agency and contract biologists for coal mining and other development in the Wyoming PRB, as well as USDA Forest Service surveys for ferrets on the Thunder Basin National Grassland in northeast Wyoming.

No black-footed ferrets have ever been documented at the Buckskin Mine or in the surrounding region, and no prairie dog colonies are present within the general analysis area. One black-tailed prairie dog (*Cynomys ludovicianus*) colony of approximately 80 acres is located in a narrow valley on the far side of a ridge that marks the northeastern extent of the general analysis area. Another small (less than 10 acres) colony is located approximately 1 mile north of that area. Both colonies were occupied during recent years, but the local landowner occasionally attempts to eradicate them. No other prairie dog colonies are known to be within a larger surrounding complex at this time. Due to the small size and isolated nature of these two colonies, they are not considered as potential black-footed ferret habitat by the USFWS (1989). On February 2, 2004, the USFWS declared that surveys for black-footed ferrets are no longer required in black-tailed prairie dog colonies throughout Wyoming (USFWS 2004).

Environmental Consequences

Mining the federal coal reserves under the Proposed Action or Alternative 2 would have no effect on black-footed ferrets.

Given the documented absence of this species in the region, including the general analysis area (area of maximum potential surface disturbance associated with the leasing action), the lack of potential habitat (prairie dog colonies) in that area, the isolated nature and small size of the two prairie dog colonies in the vicinity of the area, the block clearance from ferret surveys issued by the USFWS for black-tailed prairie dog colonies throughout the entire state, and the location of the general analysis area beyond future reintroduction sites, surface disturbance within the general analysis area will not result in any direct or indirect effects on black-footed ferrets.

Cumulative Effects

As indicated, coal mining and natural gas development have occurred in the general project area for more than 20 years, with energy extraction activities expected to increase in the immediate future. Potential ferret habitat is also affected by impacts on prairie dog populations due to other factors. Plague can infect and eliminate entire prairie dog colonies. Poisoning and recreational

prairie dog shooting may locally reduce prairie dog populations, but seldom completely eliminate colonies.

Nevertheless, due to the lack of ferrets and prairie dog colonies in the general analysis area, leasing and mining the federal coal reserves in the general analysis area would not contribute to cumulative adverse effects to black-footed ferrets in that area or elsewhere in the region. No black-footed ferret populations exist or have ever been documented within northeastern Wyoming. The USFWS issued a block clearance for this species in black-tailed prairie dog colonies throughout the entire state. The Buckskin Mine and general analysis area are beyond the focus area for future ferret reintroduction efforts in the general region (USDA-Forest Service 2002, Grenier 2003). Furthermore, neither the Proposed Action nor Alternative 2 would conflict with any future objectives to manage the area for, or reintroduce black-footed ferrets into, northeast Wyoming.

Blowout Penstemon (Penstemon haydenii)

The blowout penstemon, a member of the figwort family, was listed as endangered on October 1, 1987. It was added to the list of threatened and endangered species for Campbell County in 2008. This species is narrowly endemic to blowouts in sparsely vegetated, shifting sand dunes. The removal of fire, leveling of dunes, reduction of grazing, and cultivation of stabilizing cover crops drastically reduced the amount of habitat available for this species. Loss of habitat, coupled with impacts from insect outbreaks, drought, inbreeding, and potential over collection, has caused problems for the plant (University of Wyoming 2009). Additional threats to the plant may occur when sand dunes are removed or overly disturbed by vehicular traffic (USFWS 2008b).

The current stronghold for this species is in western Nebraska. Approximately 3,500-5,000 plants are currently found in multiple locations in that region. The plant was first discovered in Wyoming in 1877 and then rediscovered in 1996 (BLM 2008). The Wyoming population is limited to three sites in the Ferris dunes in northern Carbon County that contain several thousand plants (BLM 2008); those dunes are more than 225 miles southwest of the general analysis area.

Biology and Habitat Requirements

The blowout penstemon is a perennial forb with stems less than 12 inches tall. The inflorescence is 2 to 6 inches long and has 6 to 10 compact whorls of milky-blue to pale lavender flowers. Flowers typically bloom from mid-June to early-July.

This species requires an early succession habitat in sand blowouts. The plant's current know range in Wyoming is restricted to two habitat types: steep, northwest-facing slopes of active sand dunes with less than 5% vegetative cover; and on north-facing sandy slopes, on the lee side of active blowouts with 25% to 40% vegetative cover (USFWS 2008b).

Affected Environment

The general analysis area is not within the documented historical range of the blowout penstemon in Wyoming. That area is located approximately 170 miles northwest of the known Nebraska sites and approximately 225 miles northeast of the Wyoming occurrences.

Approximately 16% (455 acres) of the general analysis area is identified as Sandy Prairie Grassland and potentially could contain sand dune and blowout features. Therefore, a survey for blowout penstemon was conducted. Potential habitat for this species was identified and divided into logical polygons or sites. Each of these polygons was surveyed for the attributes listed in the USFWS *Penstemon haydenii* memorandum. These attributes include:

- sand dune or blowout features
- disturbed areas of significantly low ground with sand, sandy loam, or loamy sand soils

Portions of the general analysis area are moderately grazed by livestock and some areas have infestations of weedy species such as Canada thistle. Grazed and weedy areas meeting any of the potential habitat conditions for this species noted above were surveyed regardless of grazing use levels or severity of weed infestation.

Habitat Management, Inc. conducted a survey for potential blowout penstemon habitat in the general analysis area in 2008. LandTrak Resources, Inc. conducted two surveys for *Penstemon haydenii*. The first survey was on June 17, 2009, and the second survey was on July 9, 2009. Both of the 2009 surveys were conducted in Sandy Prairie vegetation communities in section 18 and section 19, T52N R72W.

Results of this survey determined that no suitable blowout penstemon habitat is present in the general analysis area; no sand dunes (whether stable or blown out) are currently present in that area. Likewise, no blowout penstemon specimens were found in any of the seven potential 2009 survey sites. The general analysis area is dominated (71%) by upland grasslands and agricultural lands. The graminoid-dominated Sandy Prairie uplands provide significant ground cover that precludes the development of shifting dune features. The soils in the sites surveyed are stable and no blowout features are present. Blowout penstemon remained undetected in southwest Wyoming for many years. This species can potentially remain dormant below ground for several years and thus be undetectable during surveys. However, the probability appears extremely low that this species is present within the general analysis area.

Environmental Consequences

Mining the federal coal reserves under the Proposed Action or Alternative 2 would have no effect on the blowout penstemon.

No specimens of blowout penstemon were found during surveys conducted in the study area in 2008 and 2009. Typical suitable habitat for this species is non-existent in the general analysis area, which makes it highly unlikely that populations have gone undetected. However, should such populations be present, they could be lost to surface disturbing activities if appropriate

habitat were disturbed. Any potential habitat that has not already been surveyed for blowout penstemon within the project area should be identified and surveyed prior to surface mining activities.

The potential habitat where blowout penstemon could occur within the general analysis area is extremely limited and typically not suitable for a number of key reasons:

- The sites present with either dune-like or blowout features within the general analysis area are extremely limited in size, typically less than 0.1 acre.
- The Sandy Prairie Grassland is dominated by graminoid species which provide substantial ground cover and soil stability.
- Graminoid species typically occur in a more advanced successional and site transitional state than blowout penstemon, which is a pioneering species.

Based on the existing characteristics of the general analysis area, further evaluation of the area for this species is likely unwarranted.

Cumulative Effects

This species is potentially vulnerable to habitat loss and degradation resulting from sand mining, water development, energy development, ORV use, and associated destabilization of its sand dune habitat. It also could be vulnerable to negative effects related to the spread of non-native species within its range. As no potential habitat for this species is present within the general analysis area, leasing the federal coal reserves would not contribute to cumulative adverse effects for the blowout penstemon.

Cumulative Impacts

Cumulative impacts are defined under NEPA as the incremental impacts of past, present, and reasonably foreseeable future actions, including the proposed action, conducted by any entity (e.g., federal, state, private). Cumulative impacts on threatened and endangered species and their habitats can result from both direct (physical) and indirect factors.

The net acreage of surface disturbance associated with energy-related activities in the Wyoming PRB has been increasing in recent years due to greater energy demands throughout the country and increasing prices for local energy resources. Existing habitat-disturbing activities in the PRB include: surface coal mining; conventional oil and gas development; CBNG development; uranium mining; sand, gravel, and scoria mining; ranching; agriculture; road, railroad, and power plant construction and operation; recreational activities; and housing (rural and urban) and business development. Mining, construction, agricultural activities, and urban development tend to have more intense impacts on fairly localized areas, while ranching, recreational activities, and oil and gas development (conventional and CBNG) tend to be less intensive but spread over larger areas. Oil and gas development and mining activities have requirements for reclamation of disturbed areas as resources are depleted.

In the short term, these increased activities can result in the potential loss of individuals due to injuries or mortalities, as well as a reduction in the available habitat for threatened and endangered plant and wildlife species. In the long term, habitats will continue to be impacted, but they are also being and will continue to be restored in several areas as reclamation proceeds.

The BLM is in the process of completing a regional technical study of current and proposed or potential development activity in the PRB to help the agency evaluate the impacts of coal development in that area. The *Powder River Basin Coal Review* consists of three tasks:

- Task 1 updates the BLM's 1996 status check for coal development in the PRB;
- Task 2 develops a forecast of reasonably foreseeable development in the PRB through the year 2020; and
- Task 3 predicts cumulative impacts that would be expected to occur as a result of the projected development.

The information about existing development in the following paragraphs is taken from the *Powder River Basin Coal Review* Task 2 report (BLM 2005) and BLM lease records. The completed PRB Coal Review reports can be accessed from the BLM Wyoming web site at <http://www.wy.blm.gov/minerals/coal/prb/prbdocs.htm>. The project area for Tasks 1 and 2 of the PRB Coal Review encompasses over 8 million acres and includes all of Campbell, Sheridan, and Johnson Counties and the northern portion of Converse County in northeastern Wyoming.

Oil and gas exploration and production have been ongoing in the PRB for more than 100 years. Conventional (non-CBNG) oil and gas fields are, for the most part, concentrated in the central and southern parts of the structural basin. Development of the CBNG resources from the coal beds is a more recent occurrence, with CBNG production in the Wyoming PRB starting in the late 1980s. As of 2003, an estimated 187,761 acres had been disturbed in the coal review project area as a result of oil and gas development activities, but approximately 115,045 acres (61%) of that disturbance has been reclaimed. This includes conventional oil and gas and CBNG wells, and associated facilities and major transportation pipelines.

The BLM estimates that the existing federal coal leases in the Wyoming PRB include approximately 121,185 acres. The currently pending federal coal LBA tracts as applied for (including the proposed tract) include approximately 35,245 additional acres. The majority of the coal in the areas currently permitted for surface coal mining is federal, but state and private leases are also included within some of the existing mine permit areas. All of the current and proposed federal coal leases are concentrated near the outcrop of the Wyodak coal bed, which is located in eastern Campbell County and the extreme northeastern edge of Converse County. That bed includes the Anderson and Canyon coal seams that are within the general analysis area.

As of 2003, the base year for the PRB Coal Review, the surface coal mining operations along the Wyodak outcrop had disturbed approximately 68,794 acres. Approximately 24,097 of those acres of disturbance are occupied by "permanent" mine facilities, such as roads, buildings, coal handling facilities, etc., which are not available for reclamation until after coal mining operations

end. Of the remaining 44,697 acres of disturbance available for reclamation, approximately 21,238 acres (48%) had been reclaimed. The *Powder River Basin Coal Review* identified an estimated 4,891 additional acres of coal-related development disturbance (i.e., coal-fired power plants, railroads, and coal technology projects) as of 2003.

The total estimate of disturbed acreage related to all types of development in the Wyoming PRB in 2003 was 264,704 acres. In addition to coal and oil and gas activities, this total includes disturbance associated with construction of reservoirs and industrial fabrication firms, as well as public and private infrastructure such as highways and roads, government buildings, and residential and commercial real estate development. It should be noted that some of these disturbances overlap one another. In such cases, the disturbance acreage is counted separately under each category, but is not counted twice in determining the total area of disturbance. These disturbances do not have the same reclamation requirements as coal and oil and gas industries.

Cumulative effects would also occur to threatened and endangered plant and wildlife resources as a result of indirect impacts. One factor is the potential import and spread of noxious weeds around roads and facilities. Noxious weeds have the ability to displace native vegetation and hinder reclamation efforts. Control of noxious weeds is addressed in surface coal mining and reclamation plans. If weed mitigation and preventative procedures are applied to all construction and reclamation practices, the impact of noxious weeds on threatened and endangered plants and wildlife would be minimized.

In reclaimed areas, vegetation cover often differs from undisturbed areas. In the case of surface coal mines, re-established vegetation would be dominated by species mandated in the reclamation seed mixtures (to be approved by WDEQ). The majority of the species in the approved reclamation seed mixtures are native to the area. Nevertheless, reclaimed areas may not recreate the ecosystem functions served by undisturbed vegetation communities and habitats for many years after reseeding has occurred. For example, species composition, shrub cover, and other habitat characteristics are likely to differ from pre-disturbance vegetation communities and habitats due to the extended time-frame typically necessary for mature shrub communities to become reestablished in mined areas. Invasion by noxious weeds and alteration of vegetation in reclaimed areas has the potential to alter threatened and endangered plant and wildlife habitat composition and distribution, depending on the species listed and their habitat requirements.

To date, no currently listed threatened and endangered species have been documented at any surface coal mine in the Wyoming PRB. However, some adverse effects to future listed and proposed species that could occur as a result of existing and potential activities in the PRB would include direct loss of habitat, indirect loss of habitat due to human and equipment disturbance, and habitat fragmentation. As described above, all existing coal mines in the Wyoming PRB have agency-approved monitoring and mitigation plans in place to protect threatened and endangered species, per SMCRA (at 30 CFR 816.97) and Wyoming State regulations. If a maintenance coal tract is leased under one of the action alternatives considered in this EIS, these permitting requirements would be extended to include mining operations within the new tract, including the development and approval of detailed plans to mine the coal and reclaim the affected areas.

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