APPENDIX G

BIOLOGICAL ASSESSMENT
FOR THE NARO NORTH AND NARO SOUTH LBA TRACTS,
SOUTH POWDER RIVER BASIN COAL EIS

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G-1.0 INTRODUCTION

In 2000, operators of four coal mines in Campbell and Converse Counties, Wyoming applied to lease five tracts of federal coal as maintenance leases under the Leasing on Application regulations at 43 CFR 3425. The environmental impacts of leasing these five Lease by Application (LBA) tracts are being evaluated in one environmental impact statement (EIS), the South Powder River Basin (SPRB) Coal EIS. The five tracts, which are shown in Figure G-1, and applicant mines are:

- NARO North LBA Tract adjacent to and north of the North Antelope/Rochelle Complex;
- NARO South LBA Tract adjacent to and south of the North Antelope/Rochelle Complex;
- Little Thunder LBA Tract adjacent to and west of the Black Thunder Mine;
- West Roundup LBA Tract adjacent to and southwest of the North Rochelle Mine; and
- West Antelope LBA Tract adjacent to and west of the Antelope Mine.

The purpose of this Biological Assessment is to provide information about the potential environmental effects that leasing two of the tracts listed above, the NARO North and South LBA Tracts, would have on federally Endangered, Threatened, Proposed, and Candidate Species.

Threatened and endangered (T&E) species are managed under the authority of the Endangered Species Act (ESA) of 1973 (PL 93-205, as amended). The ESA requires federal agencies to ensure that all actions which they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of their critical habitat.

This Biological Assessment was prepared to display the possible effects to endangered, threatened, proposed, or candidate wildlife or vegetative species (terrestrial and aquatic) known to occur, or that may occur within the area influenced by the Proposed Action and Action Alternatives of the Bureau of Land Management (BLM) and the U.S. Department of Agriculture-Forest Service (USDA-FS). It was prepared in accordance with Section 7 of the ESA.

Biological Assessment objectives are:

1. To comply with the requirements of the ESA that actions of federal agencies not jeopardize or adversely modify critical habitat of federally listed species.

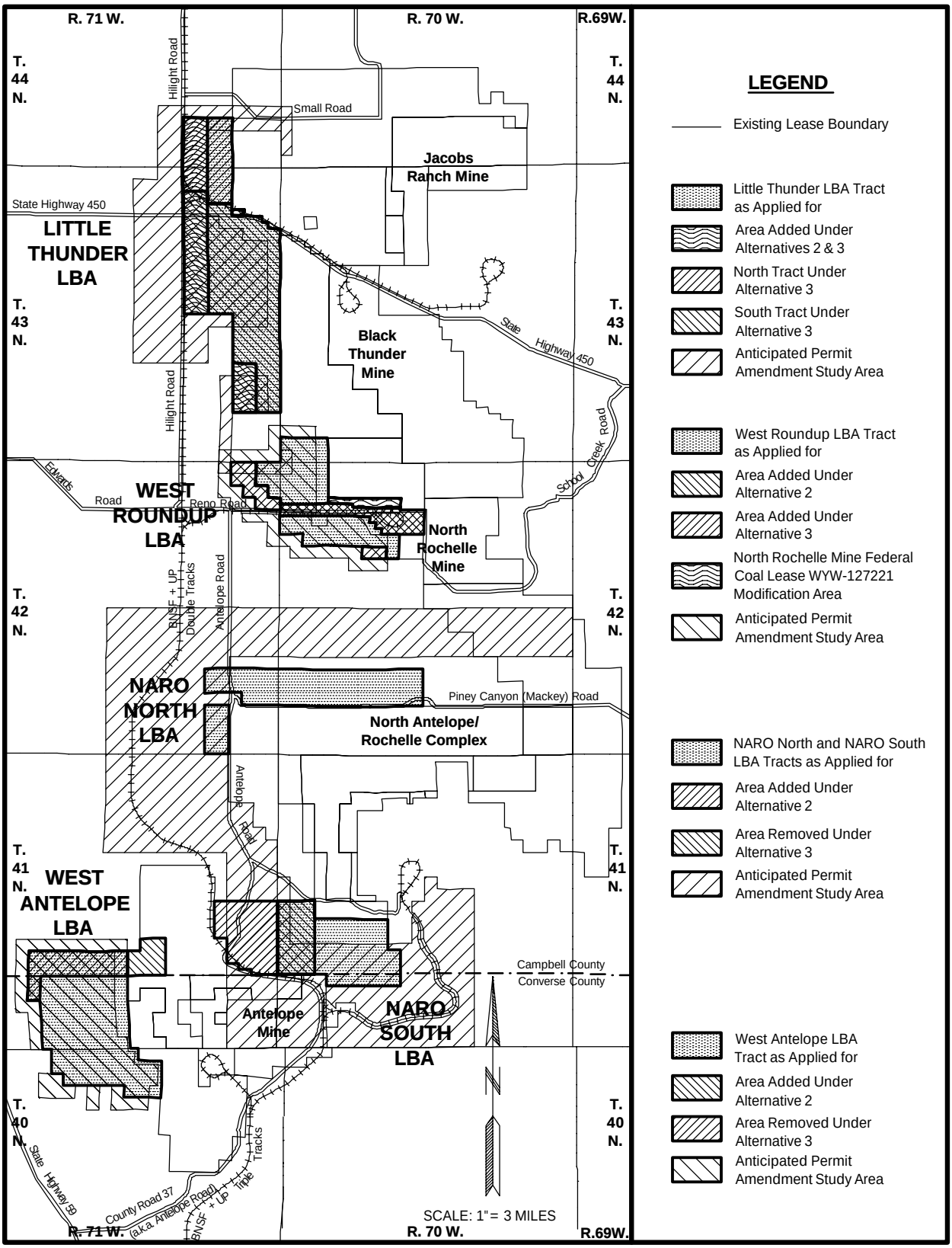

Figure G-1. General Analysis Area for the SPRB Coal EIS.

2. To provide a process and standard by which to ensure that threatened, endangered, and proposed species receive full consideration in the decision making process.

G-2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

G-2.1 The Proposed Action

On March 10, 2000, Powder River Coal Company (PRCC) filed an application with the BLM for two separate LBA tracts (NARO North and NARO South) located immediately adjacent to the North Antelope/Rochelle Complex. Each tract will be evaluated separately and if a decision is made to lease both of these tracts, a separate competitive lease sale will be held for each tract.

G-2.1.1 NARO North LBA Tract

Under the Proposed Action for the NARO North LBA Tract, the tract as applied for by PRCC would be offered for lease at a separate, sealed-bid, competitive lease sale. The boundaries of the tract would be consistent with the tract configuration proposed in the NARO North LBA Tract lease application (Figure G-2). The Proposed Action is the Preferred Alternative of the BLM for the NARO North LBA Tract (Figure G-2). The Proposed Action assumes that PRCC will be the successful bidder on the NARO North LBA Tract if it is offered for sale.

The legal description of the proposed NARO North LBA Tract as applied for by PRCC under the Proposed Action is as follows:

T.42N., R.70W., 6th P.M., Campbell County, Wyoming

	Acres
Section 28: Lots 5 through 16;	495.59
Section 29: Lots 5 through 16;	495.89
Section 30: Lots 9 through 20;	443.67

T.42N., R.71W., 6th P.M., Campbell County, Wyoming

	Acres
Section 25: Lots 5 through 15;	447.19
Section 26: Lots 7 through 10;	162.22
Section 35: Lots 1, 2, 7 through 10, 15 and 16;	324.82

Total Acreage:	2,369.38

The coal estate underlying this tract is owned by the federal government and administered by the BLM. The surface estate on this tract is privately and federally owned. The federal surface estate is administered by the USDA-FS as part of the Thunder Basin National Grassland (TBNG).

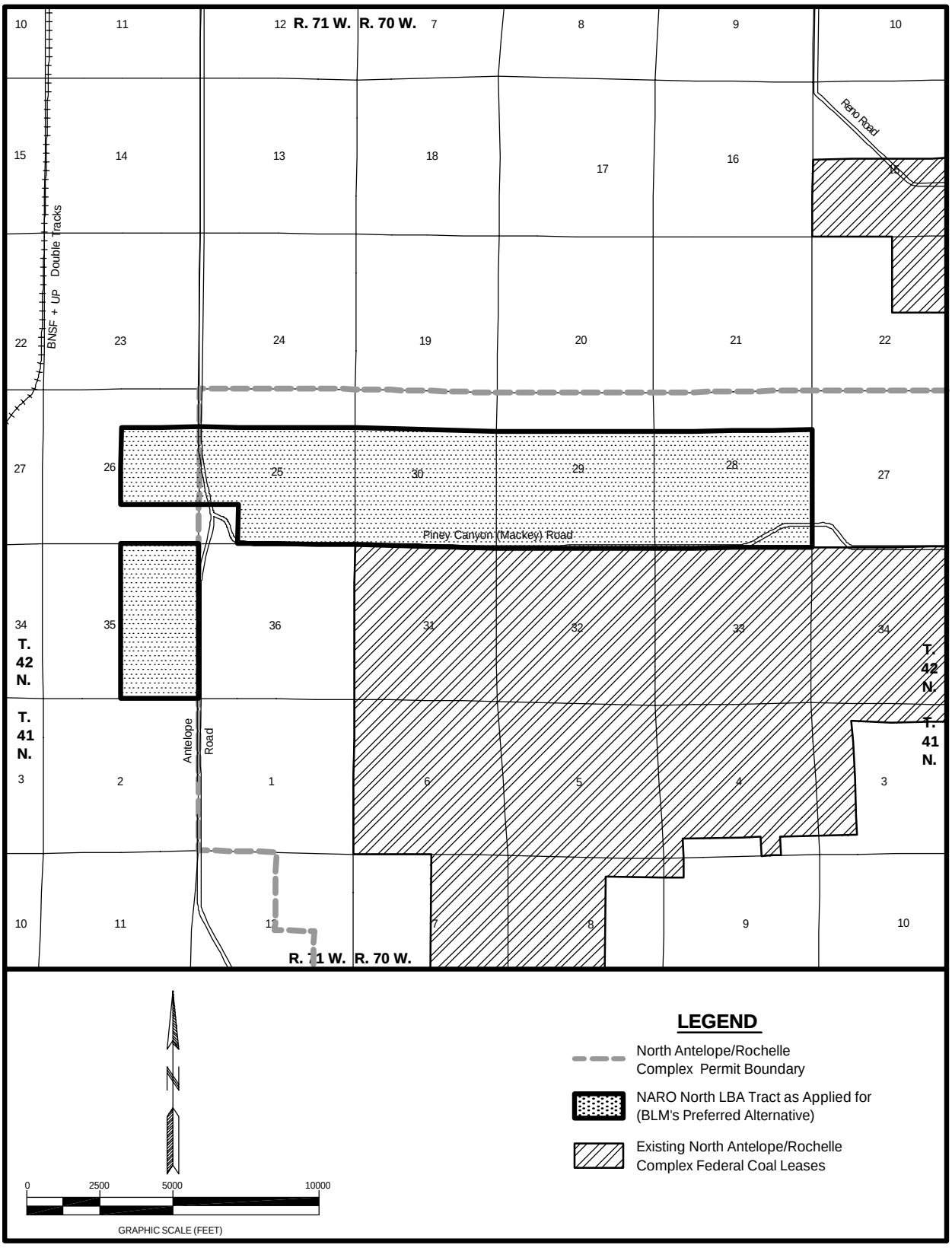

Figure G-2. NARO North LBA Tract Configuration.

The coal mining unsuitability criteria listed in the federal coal management regulations (43 CFR 3461) have been applied to high to moderate coal development potential lands in the Wyoming Powder River Basin (PRB) (see Section G-3.0 for further discussion). No lands in the NARO North Tract were found to be unsuitable for mining. The NARO North LBA Tract as applied for includes approximately 2,369.38 mineable acres. It is assumed that an area larger than the LBA tract would have to be disturbed in order to recover all of the coal in the tract. The disturbances outside the coal removal area would be due to activities like overstripping, matching undisturbed topography, and construction of flood control and sediment control structures.

G-2.1.2 NARO South LBA Tract

Under the Proposed Action for the NARO South LBA Tract, the tract as applied for by PRCC would be offered for lease at a separate, sealed-bid, competitive lease sale, subject to standard and special lease stipulations developed for the PRB (Appendix D in this EIS). The boundaries of the tract would be consistent with the tract configuration proposed in the NARO South LBA Tract lease application (Figure G-3a). The Proposed Action assumes that PRCC will be the successful bidder on the NARO South LBA Tract if it is offered for sale.

The legal description of the proposed NARO South LBA Tract as applied for by PRCC under the Proposed Action is as follows:

T.41N., R.70W., 6th P.M., Campbell and Converse Counties, Wyoming

	Acres
Section 19: Lots 6 through 11, 12(S½), 13 through 20;	584.555
Section 20: Lots 5(S½), 6(S½), 7(S½), 8(S½), 9 through 16;	402.645
Section 21: Lots 5(S½), 12, and 13	99.695
Section 28: Lots 3 through 6, 11, and NE¼ SW¼	238.62
Section 29: Lots 1 through 12;	484.08
Section 30: Lots 5 through 12;	324.04
Total Acreage:	2,133.635

The coal estate underlying this tract is owned by the federal government and administered by the BLM. The surface estate on this tract is privately owned.

The coal mining unsuitability criteria listed in the federal coal management regulations (43 CFR 3461) have been applied to high to moderate coal development potential lands in the Wyoming PRB (see Section G-3.0 for additional discussion). Some of the above-described lands in the NARO South LBA Tract are unsuitable for mining due to the presence of the Burlington Northern Santa Fe and Union Pacific (BNSF & UP) railroad right-of-way (ROW). There are also partially burned areas included in the tract where the coal is not recoverable. Although these lands would not be mined, they are included in the tract to allow maximum recovery of all the mineable coal outside of the

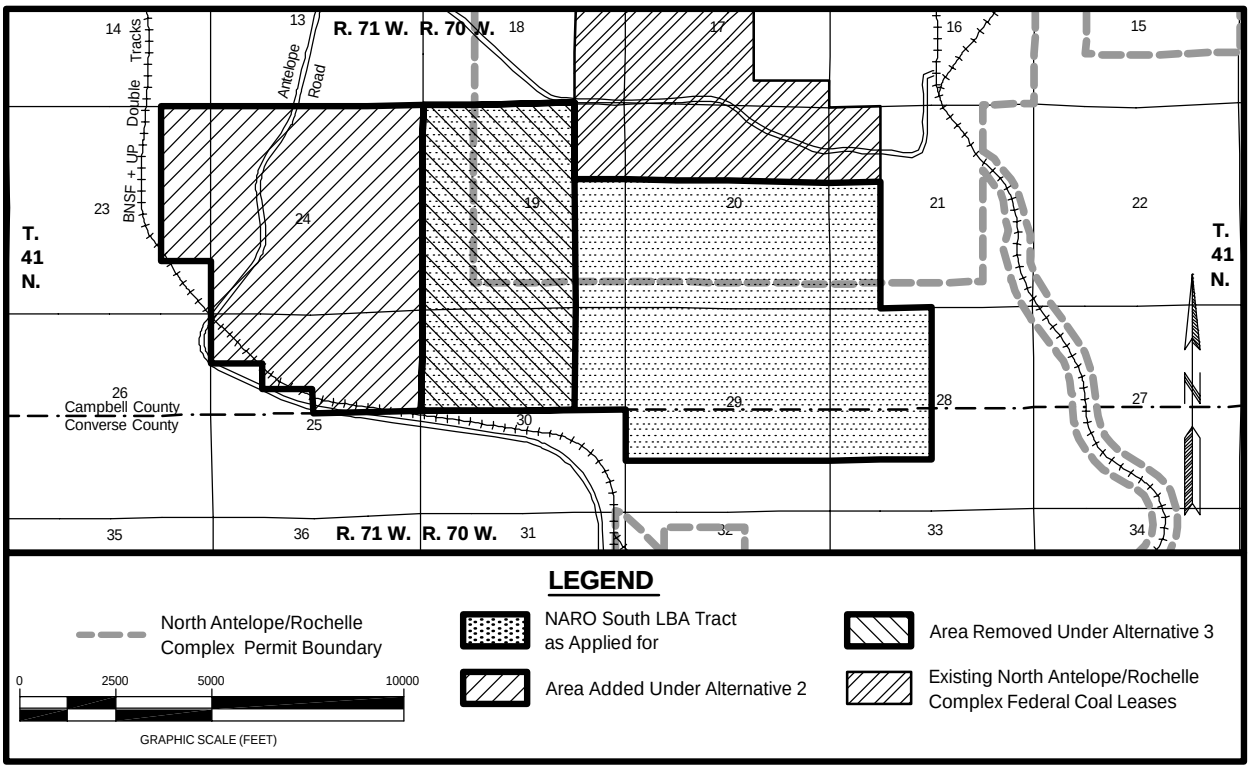

Figure G-3a. NARO South LBA Alternative Tract Configurations.

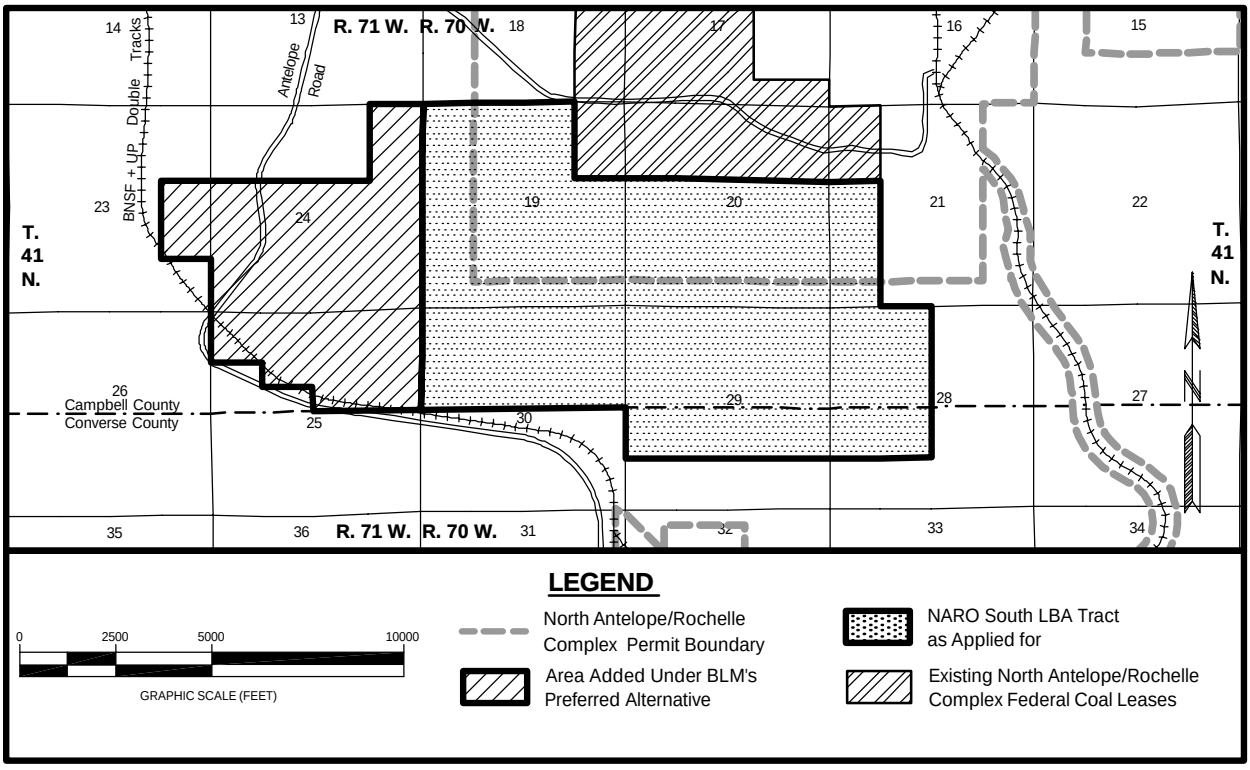

Figure G-3b. NARO South LBA Preferred Alternative Tract Configuration.

railroad ROW and associated buffer zones and the partially burned areas, and to comply with the coal leasing regulations, which do not allow leasing of less than 10-acre aliquot parts. The NARO South LBA Tract as applied for includes approximately 2,133.635 mineable acres. It is assumed that an area larger than the tract would have to be disturbed in order to recover all of the coal in the tract. The disturbances outside the coal removal area would be due to activities like overstripping, matching undisturbed topography, and construction of flood control and sediment control structures.

Under the Proposed Actions for the NARO North and NARO South LBA Tracts, if a decision is made to hold a separate competitive lease sale and there is a successful bidder at each sale, a lease would be issued for each tract of federal coal as applied for. Under each Proposed Action, it is assumed that each LBA tract would be developed as a maintenance lease to extend the life of the adjacent existing North Antelope/Rochelle Complex. As a result, under each Proposed Action, existing facilities, roads and employees would be used to mine the coal included in each tract.

BLM does not authorize mining by issuing a lease for federal coal, but the impacts of mining the coal are considered at the leasing stage because it is a logical consequence of issuing a lease.

G-2.2 Alternatives to the Proposed Action

G-2.2.1 NARO North Alternative 1

Under the NARO North LBA Tract Alternative 1, the No Action Alternative, the application to lease the coal included in the NARO North LBA Tract would be rejected, the tract would not be offered for competitive sale, and the coal included in the tract would not be mined. This would not affect permitted mining activities and employment on the existing leases at the North Antelope/Rochelle Complex and would not preclude an application to lease the coal included in the NARO North LBA Tract in the future. Portions of the surface of the NARO North LBA Tract could be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

G-2.2.2 NARO South Alternative 1

Under the NARO South LBA Tract Alternative 1, the No Action Alternative, the application to lease the coal included in the NARO South LBA Tract would be rejected, the tract would not be offered for competitive sale, and the coal included in the tract would not be mined. This would not affect permitted mining activities and employment on the existing leases at the North Antelope/Rochelle Complex and would not preclude an application to lease the coal included in the NARO South LBA Tract in the future. Portions of the surface of the NARO South LBA Tract could be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

G-2.2.3 NARO South Alternative 2

In evaluating the NARO South coal lease application, BLM identified a study area shown in Figure G-3a as the "area added under Alternative 2", that includes unleased federal coal adjacent to the tract as applied for that BLM is considering adding to the tract to potentially increase competitive interest in the tract and/or to reduce the potential that some of the remaining unleased federal coal in this area would be bypassed in the future. Under Alternative 2 for the NARO South LBA Tract, the lands that BLM is considering adding lie between the western edge of the tract as applied for and the BNSF & UP railroad ROW. This study area includes approximately 1,068 acres. BLM's Preferred Alternative for the NARO South LBA Tract is to add a portion of the Alternative 2 study area to the tract as applied for, as shown in Figure G-3b.

The legal description of the NARO South LBA Tract under the BLM's Preferred Alternative is as follows:

T.41N., R.70W., 6th P.M., Campbell and Converse Counties, Wyoming

	Acres
Section 19: Lots 6 through 11, 12(S½), 13 through 20;	584.555
Section 20: Lots 5(S½), 6(S½), 7(S½), 8(S½), 9 through 16;	402.645
Section 21: Lots 5(S½), 12, and 13;	99.695
Section 28: Lots 3 through 6, 11, and NE¼ SW¼	238.620
Section 29: Lots 1 through 12;	484.080
Section 30: Lots 5 through 12;	324.040

T.41N., R.71W., 6th P.M., Campbell County, Wyoming

	Acres
Section 23: Lots 8(S½) and 9;	61.075
Section 24: Lots 1, 5(S½), 6(S½), 7(S½), 8 through 16;	493.375
Section 25: Lots 1 through 4, 9, 10, and 12(N½);	268.640
Total Acreage:	2,956.725

G-2.2.4 NARO South Alternative 3

Under Alternative 3 for the NARO South LBA Tract, BLM would remove some of the lands applied for in the western portion of the tract from consideration for leasing and offer a smaller tract for competitive sale (Figure G-3a). The lands that BLM would remove from the tract are:

T.41N., R.70W., 6th P.M., Campbell County, Wyoming

	Acres
Section 19: Lots 6 through 11 and 14 through 19;	483.74
Section 30: Lots 6 through 11;	243.01
Total Acreage:	726.75

As under the Proposed Action, if an alternative tract configuration is selected BLM would hold a competitive coal sale and issue a lease to the successful bidder. The modified tract would be subject to standard and special lease stipulations developed for the PRB and the tract if it is offered for sale (Appendix D in this EIS). Alternatives for the NARO South LBA Tract assume that PRCC would be the successful bidder on the tract if a lease sale is held and that the tract would be mined as a maintenance lease for the North Antelope/Rochelle Complex. Other assumptions are the same as for the Proposed Action.

G-3.0 CONSULTATION TO DATE

The location of the existing North Antelope/Rochelle Complex coal leases, the existing approved mine permit area, and the NARO North and NARO South LBA Tracts are shown in Figure G-4.

The North Antelope/Rochelle Complex and NARO North and South LBA Tracts are included in the area evaluated for acceptability for further lease consideration as part of the coal screening process. The coal screening process is a four part process that includes application of the coal unsuitability criteria, which are defined in 43 CFR 3461.5 and listed in Appendix B of this EIS. The coal unsuitability criteria were applied to federal coal lands in Campbell and Converse Counties in the early 1980s by the BLM and USDA-FS. The NARO North and NARO South LBA Tracts are located in the area covered by the USDA-FS screening analysis published as Appendix F of the 1985 *Thunder Basin National Grassland Land and Resource Management Plan*. 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). In 1993, BLM, USDA-FS, and USFWS began the process of reapplying these criteria to federal coal lands in Campbell, Converse, and Sheridan Counties. The results of this analysis are included as Appendix D in the 2001 *Approved Resource Management Plan for Public Lands Administered by the Bureau of Land Management Buffalo Field Office*. This analysis is referenced in the *Final Environmental Impact Statement (FEIS) for the Northern Great Plains Management Plans Revision* (USDA-FS 2001a) and adopted in the *Land and Resource Management Plan (LRMP) for the Thunder Basin National Grassland* (USDA-FS 2001b). The Record of Decision for the

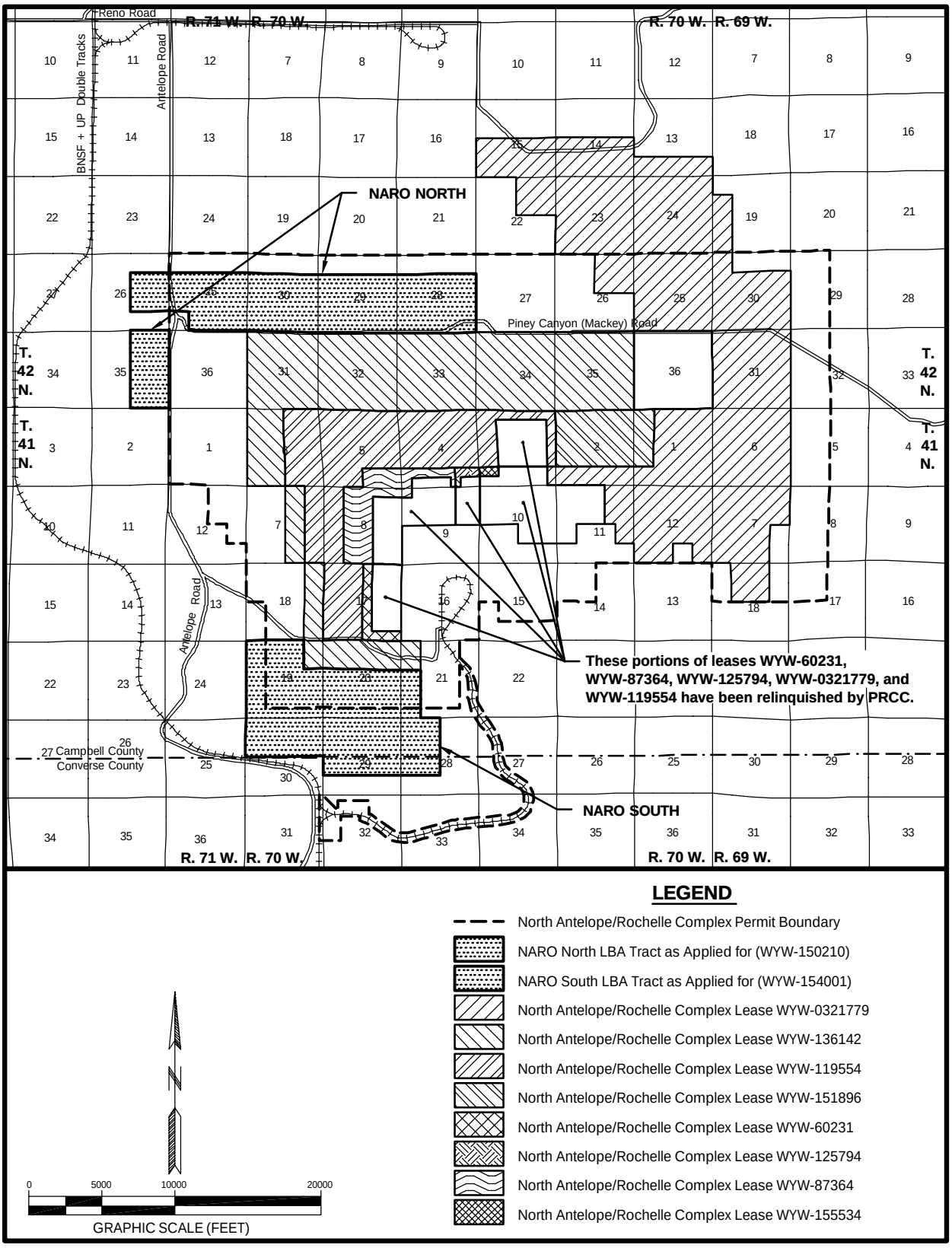

Figure G-4. North Antelope/Rochelle Complex Federal Coal Leases and NARO North and NARO South LBA Tracts as Applied for.

Thunder Basin National Grassland FEIS and LRMP was signed on July 31, 2002 (USDA-FS 2002). The NARO North and NARO South LBA Tracts fall within Management Area 8.4, as identified in the 2002 Thunder Basin National Grassland LRMP, which is to be managed for mineral production and development. Consultation with USFWS was conducted as part of the 2002 LRMP.

Appendix B of this EIS summarizes the unsuitability criteria, describes the general findings for the previous screening analyses discussed above, and presents the findings for the NARO North and NARO South LBA Tracts based on the current information.

Consultation with USFWS has also previously been conducted for the area included within the North Antelope/Rochelle Complex's existing approved mining permit area (Figure G-4) as part of the mining and reclamation permit approval process. This process began when the North Antelope Mine and the Rochelle Mine were initially permitted in 1982 and 1983. Most recently, the mine permit State Decision Document for PRCC's North Antelope/Rochelle Complex, dated December, 1999, includes a letter dated August 19, 1999, from Michael Long, USFWS, Cheyenne, Wyoming to Georgia Cash, Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD), Cheyenne, Wyoming documenting approval of the Raptor and Migratory Birds of High Federal Interest (MBHFI) plans for the North Antelope/Rochelle Complex. Also included, as Condition No. 2 of the North Antelope/Rochelle Complex State Decision Document, was a requirement for completion of conferencing and consultation with USFWS by the Office of Surface Mining Reclamation and Enforcement (OSM) by February 1, 2000. The incorporation of species-specific protective measures drafted by the Wyoming Field Office of the USFWS and commitment to report/tabulate dead or impaired listed species into the mining permit satisfied the permit condition for completion of conferencing and consultation with USFWS. These items were reviewed with WDEQ/LQD and PRCC in a meeting on January 6, 2000 and documented in a letter dated January 28, 2000, from Michael Long, USFWS to Georgia Cash, WDEQ/LQD.

USFWS provided BLM a listing of the threatened, endangered, and proposed species that may be present in the project area in a letter dated June 7, 2002 (USFWS 2002a). The following list of species that was provided by USFWS represents the federally listed T&E species, species proposed for listing, and candidate species that may occur in the SPRB Coal EIS General Analysis Area.

Birds

Bald eagle (*Haliaetus leucocephalus*): Threatened (Proposed for Delisting)
Mountain plover (*Charadrius montanus*): Proposed Threatened

Mammals

Black-footed ferret (*Mustela nigripes*): Endangered

Black-tailed prairie dog (*Cynomys ludovicianus*): Candidate

Plants

Ute ladies'-tresses (*Spiranthes diluvialis*): Threatened

The Draft SPRB Coal EIS was distributed in January 2003. USFWS submitted comments on the Draft SPRB Coal EIS on April 11, 2003.

G-4.0 SPECIES HABITAT AND OCCURRENCE AND EFFECTS OF THE PROPOSED PROJECT

The North Antelope Mine, operated by Powder River Coal Company (PRCC), began producing coal in 1983. The adjacent Rochelle Mine, also operated by PRCC, began producing coal in 1984. In 1999, the two mines were merged to form the North Antelope/Rochelle Complex. Wildlife monitoring has been conducted annually for the two mines since 1984. Because the areas covered in the wildlife surveys include the mine permit area and a two-mile perimeter, most of the area in the NARO North and NARO South LBA Tracts has been included in annual wildlife surveys conducted for the North Antelope and Rochelle Mines and North Antelope/Rochelle Complex since 1984. The wildlife monitoring is designed to meet the WDEQ/LQD and federal requirements for annual monitoring and reporting of wildlife activity on coal mining areas. Detailed procedures and site-specific requirements have been carried out as approved by Wyoming Game and Fish Department (WGFD) and USFWS. The monitoring program is conducted in accordance with Appendix B of WDEQ/LQD Coal Rules and Regulations.

Background information on T&E species in the vicinity of the NARO North and NARO South LBA Tracts was drawn from several sources, including: the Final EIS for the Horse Creek Coal Lease Application (BLM 2000), the Final EIS for the Powder River Coal and Thundercloud Coal Lease Applications (BLM 1998), WGFD and USFWS records, and personal contacts with WGFD and USFWS biologists.

Site-specific data for the proposed lease areas were obtained from sources including WDEQ/LQD permit applications and annual reports for the North Antelope/Rochelle Complex. As discussed above, most of the area included in the NARO North and South LBA Tracts has been surveyed during annual wildlife monitoring for the North Antelope/Rochelle Complex because monitoring surveys cover large perimeters around each mine's permit area. PRCC also conducted baseline wildlife investigations on the NARO North and South LBA study area, which includes the LBA tracts as applied for, the area included under Alternative 2, the North Antelope/Rochelle Complex's anticipated permit amendment study area, and a two-mile radius (Figures G-5 and G-6), in 2000 (Thunderbird Wildlife Consulting, Inc. [TWC] 2000). The objectives of this baseline survey were to collect both qualitative and

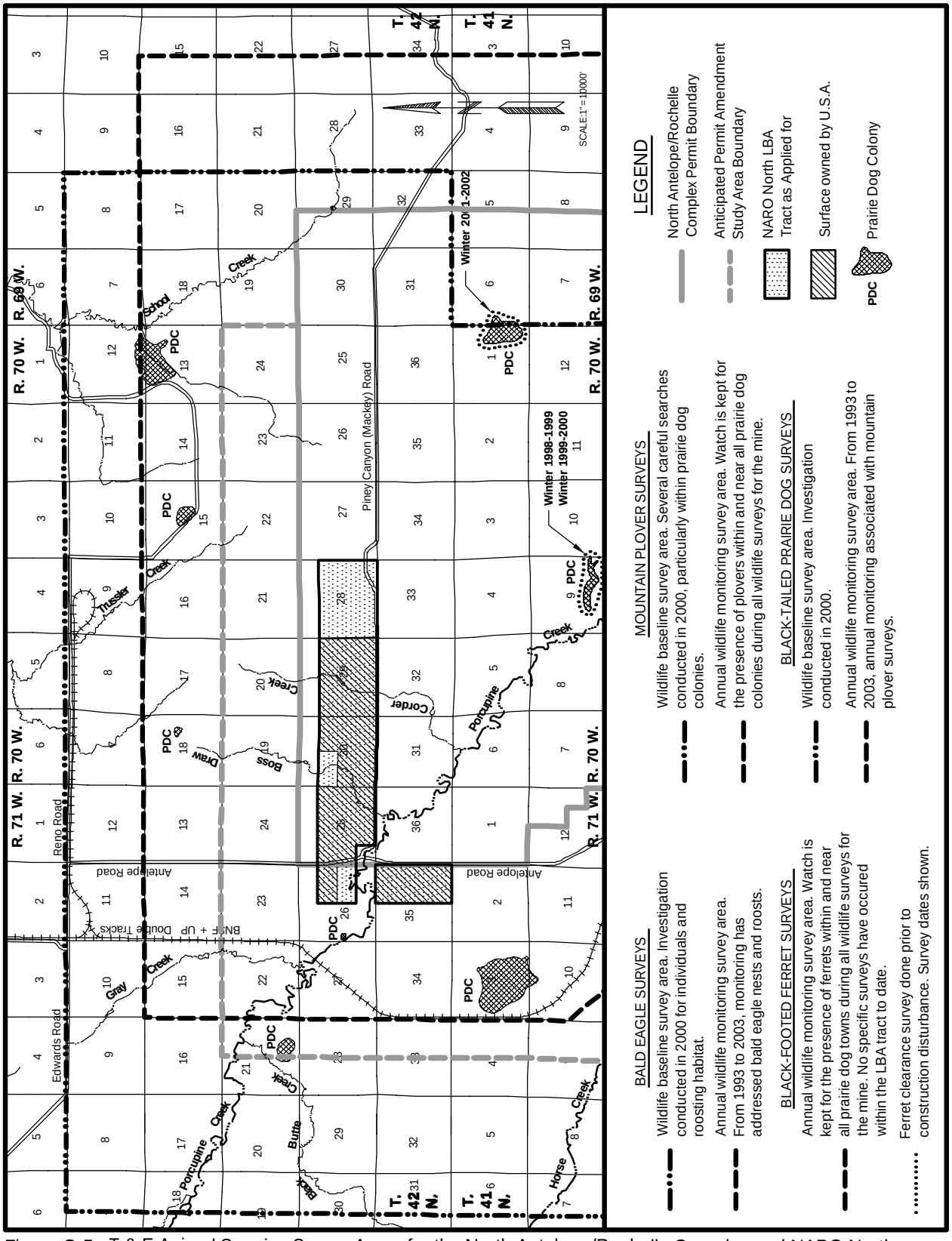

Figure G-5. T & E Animal Species Survey Areas for the North Antelope/Rochelle Complex and NARO North LBA Tract.

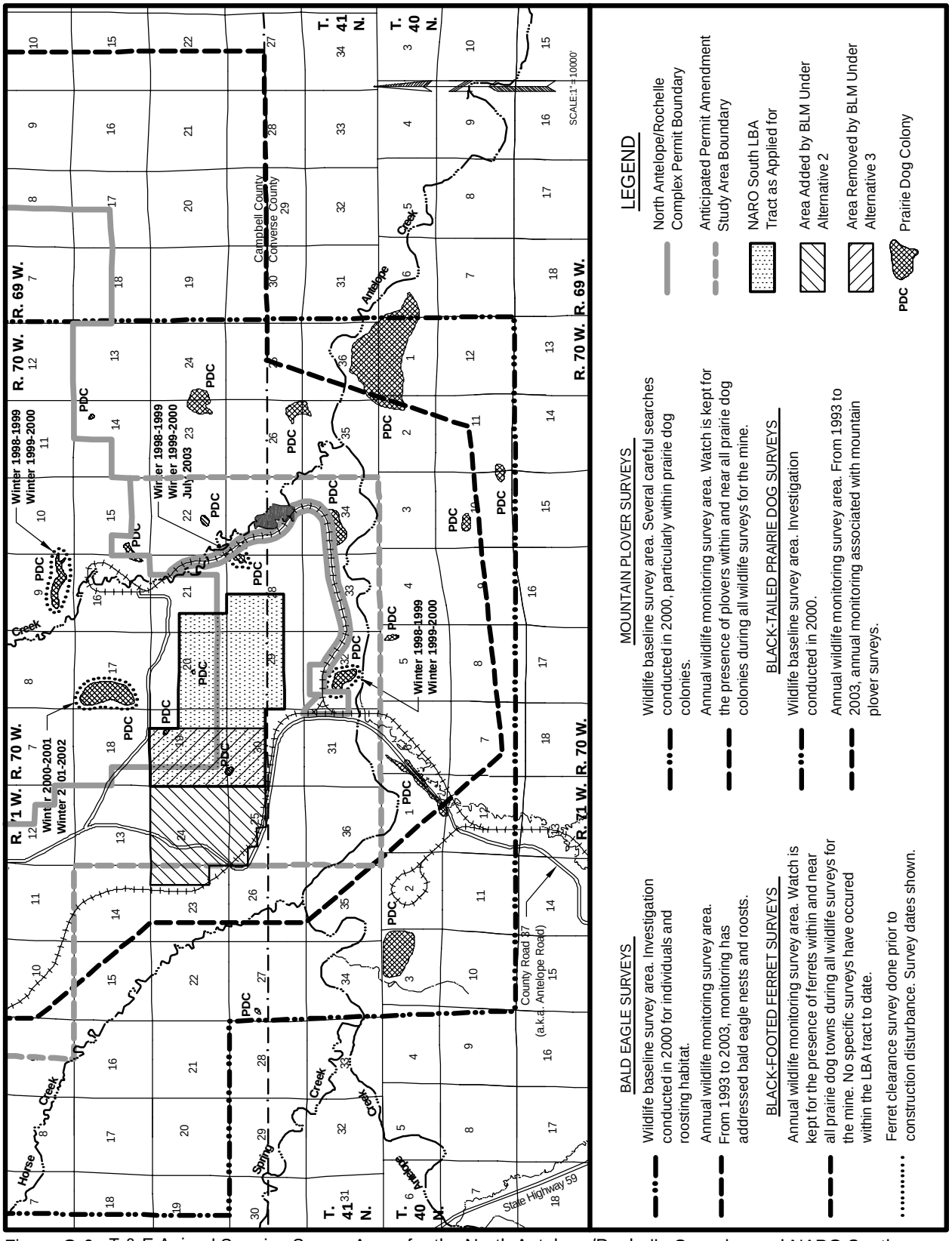

Figure G-6. T & E Animal Species Survey Areas for the North Antelope/Rochelle Complex and NARO South LBA Tract.

quantitative data on vertebrate occurrence, abundance and habitat affinity on the study area.

The LBA tracts and adjacent areas consist primarily of uplands. The topography of the NARO North LBA Tract is relatively level to rolling, while the topography of the NARO South LBA Tract is generally more sloping to steeply sloping. Predominant wildlife habitat types within the two LBA tracts and proposed permit area include big sagebrush and mixed shrubland, upland grassland, breaks grassland and bottomland grassland. Bottomland or riparian habitat in the two tracts and proposed permit area is limited to narrow corridors along Antelope Creek, Porcupine Creek, Corder Creek and Boss Draw. The NARO North LBA Tract includes a small portion of the valley of Porcupine Creek and portions of the tributary drainages of Boss Draw and Corder Creek (Figure G-5). All streams on the NARO North and South LBA wildlife baseline study area are ephemeral with the exception of Antelope Creek, an intermittent stream located along the southern edge of the study area. Numerous cottonwood trees occur along the Antelope Creek and lower Porcupine Creek valleys. A small number of stock ponds and isolated cottonwood trees exist on the NARO North tract. No creeks, draws, ponds, or trees are located on the NARO South tract.

Within the area of the baseline wildlife survey conducted for the NARO North and NARO South LBA Tracts, there is no "Critical" habitat designated by USFWS for threatened or endangered species. The following discussion describes species' habitat requirements and their occurrence in the area of the NARO North and South LBA Tracts and evaluates the potential environmental effects of the Proposed Action and Action Alternatives on federally endangered, threatened, proposed, and candidate species.

The NARO North LBA Tract includes surface lands that are part of the TBNG, administered by the USDA-FS. These lands are shown in Figure G-5. The remainder of the surface estate on the NARO North LBA Tract and all of the surface estate on the NARO South LBA Tract are privately owned.

G-4.1 Threatened Species

G-4.1.1 Bald eagle (*Haliaetus leucocephalus*)

Biology and Habitat Requirements: On February 14, 1978, the bald eagle was listed as endangered in all of the coterminous United States except Minnesota, Wisconsin, Michigan, Oregon, and Washington, where it was classified as threatened (43 F.R. 6233). The USFWS reclassified the bald eagle from endangered to threatened throughout its range in the lower 48 states on July 12, 1995 (60 F.R. 36000). The bald eagle was proposed for delisting on July 6, 1999 (64 F.R. 36454). Currently, the proposal has not been finalized or withdrawn.

Bald eagles nest primarily in remote areas free of disturbance, containing large trees that are within one mile of water bodies containing reliable fisheries. In Wyoming, this species builds large nests in the crowns of large mature trees such as cottonwoods or pines. Typically, there are alternate nests within or in close proximity to the nest stand. Snags and open-canopied trees near the nest site and foraging areas provide favorable perch sites. Old-growth stands with their structural diversity and open canopies are an important habitat for bald eagles. This species is a common breeding resident in some areas of Wyoming. Bald eagles utilize mixed coniferous and mature cottonwood-riparian areas near large lakes or rivers as nesting habitat (Luce et al. 1999).

Food availability is probably the single most important determining factor for bald eagle distribution and abundance (Steenhof 1976). Fish and waterfowl are the primary sources of food. Big game and livestock carrion, as well as larger rodents (e.g., prairie dogs) also can be important dietary components where these resources are available (Ehrlich et al. 1988). Bald eagles are opportunistic foragers. They prefer to forage in areas with the least human disturbance (USFWS 1978, McGarigal et al. 1991).

Bald eagles that have open water or alternate food sources near their nesting territories may stay for the winter; other eagles migrate southward to areas with available prey. During migration and in winter, eagles often concentrate on locally abundant food resources and tend to roost communally. Communal roosts usually are located in stands of mature old growth conifers or cottonwoods. Large, live trees in sheltered areas provide a favorable thermal environment and help minimize the energy stress encountered by wintering eagles. Communal roosting also may facilitate food finding (Steenhof 1976) and pair bonding. Freedom from human disturbance is also important in communal roost site selection (Steenhof et al. 1980, U.S. Bureau of Reclamation 1981, USFWS 1986, Buehler et al. 1991). Continued human disturbance of a night roost may cause eagles to abandon an area (Hansen et al. 1981, Keister 1981). The proximity of night roosts to the other habitats required by wintering eagles, such as hunting perches and feeding sites, is important (Steenhof et al. 1980). Roosts may be several miles from feeding sites. The absence of a suitable roost may limit the use of otherwise suitable habitat.

Existing Environment: Bald eagles are relatively common winter residents and migrants in northeastern Wyoming's PRB. During annual wildlife surveys for the North Antelope Mine, the Rochelle Mine, the North Antelope/Rochelle Complex, and for other mines in this area, this species has been seen foraging in the general vicinity of North Antelope/Rochelle Complex and perched in cottonwood trees along Antelope Creek, south of the North Antelope/Rochelle Complex. Bald eagles were reported perching in a group of cottonwood trees in the SE¼ SE¼, Section 24, T.42N., R.71W., in annual wildlife reports for the North Antelope Mine, the Rochelle Mine, and the North Antelope/ Rochelle Complex from 1995 through 1999. These cottonwood trees are located outside

of the NARO North LBA tract but within the anticipated permit amendment study area north of the NARO North LBA Tract under the Proposed Action. No unique or concentrated sources of carrion or prey occur in the study area for the NARO North and NARO South LBA Tracts, so foraging bald eagles would not be attracted to the area in great numbers. A few isolated bald eagle nesting attempts have been recorded in the region, but none have been near the NARO North and South LBA Tracts.

The NARO North and South LBA Tracts, the anticipated permit amendment study area and a two-mile perimeter were searched for bald eagles and roosting habitat on February 28, 2001 by Thunderbird Wildlife Consulting, Inc. (TWC). During the survey, three adult bald eagles were seen perching in a small cottonwood tree along Horse Creek in the NE¼ of Section 22, T.41N., R.71W., about one mile west of the NARO South anticipated permit amendment study area under the Proposed Action. Because of the small stature of the tree and the small number of eagles, this was not classified as a bald eagle roost. Bald eagles were also observed on four occasions during baseline wildlife surveys conducted in 2000 by TWC. On February 23 and March 23, 2000, adult bald eagles were observed in the SE¼ of Section 35, T.42N., R.71W., within the NARO North LBA Tract. Two sub-adult bald eagles were observed on April 18, 2000 perched on a rock in Porcupine Reservoir in Section 27, T.41N., R.70W. One adult was seen on December 11, 2000 perched on a fence post in the NE¼ of Section 11, T.41N., R.71W. Both of these observations were within the anticipated permit amendment area for the North Antelope/Rochelle Complex under the Proposed Action and Action Alternatives.

Effects of the Proposed Project: **Mining the NARO North and South LBA Tracts, if the tracts are leased under the Proposed Actions or Action Alternatives, may affect, but is not likely to adversely affect bald eagles and their habitat.** Freedom from disturbance is important in forage, nest, and roost site selection. Disturbance to nesting eagles can cause nest failure, nest abandonment, and unsuccessful fledging of young. If the federal coal in the NARO North and NARO South LBA Tracts is leased, there would be an expansion in the area of human disturbance on the tracts that could impact wintering bald eagles in the area. There have been and currently are no nests on the NARO North or NARO South LBA Tract or within the anticipated mine permit area for the North Antelope/Rochelle Complex under the Proposed Action or Action Alternatives, including the Preferred Alternative, for either tract. Bald eagle foraging habitat would be lost on the tracts during mining and before final reclamation. The loss of any potential prey habitat would be short-term. Foraging habitat that is lost during mining would be replaced as reclamation continues on already mined out areas. Eagles may alter foraging patterns as they fly around areas of active mining activity. The potential for bald eagles to collide with or be electrocuted by electric power lines on the mine site would be minimal due to the use of raptor-safe power lines, which is required under SMCRA (30 CFR 816.97). Use of the roads accessing North Antelope/Rochelle Complex by mine-related traffic would continue when the

NARO North and NARO South LBA Tracts are mined, which may result in vehicular collisions and roadside carcasses. This could result in bald eagle foraging along roads in this area, which increases the potential for road kills of foraging bald eagles to occur.

Cumulative Effects: Mineral development, including coal bed methane (CBM) development, conventional oil and gas development, and surface coal mining, is a leading cause of habitat loss within the PRB. CBM development has occurred and is proposed in this area. Surface coal mining has been going on at the North Antelope/Rochelle Complex for approximately 20 years and at adjacent surface coal mines for more than 20 years.

G-4.1.2 Ute ladies'-tresses (*Spiranthes diluvialis*)

Biology and Habitat Requirements: 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, Ute ladies'-tresses was only known from Colorado, Utah, and extreme eastern Nevada. It was then discovered in Idaho in September 1996. It is currently known from western Nebraska, southeastern Wyoming, north-central Colorado, northeastern and southern Utah, east-central Idaho, southwestern Montana, and central Washington.

Ute ladies'-tresses is a perennial herb with erect, glandular-pubescent stems 12 to 50 centimeters tall arising from tuberous-thickened roots. This species flowers from late July to September. Plants probably do not flower every year and may remain dormant below ground during drought years. The total known population of this species is approximately 25,000 to 30,000 individuals. Occurrences range in size from one plant to a few hundred individuals.

Ute ladies'-tresses occurs primarily on moist, subirrigated or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers, or perennial streams at elevations between 1,780 and 6,800 feet (ft) in elevation (Fertig and Beauvais 1999). Suitable soils vary from sandy or coarse cobbley alluvium to calcareous, histic or fine-textured clays and loams. Populations have been documented from alkaline sedge meadows, riverine floodplains, flooded alkaline meadows adjacent to ponderosa pine, Douglas-fir woodlands, sagebrush steppe, and streamside floodplains. Some occurrences are also found on agricultural lands managed for winter or early season grazing or hay production. Known sites often have low vegetative cover and may be subjected to periodic disturbances such as flooding or grazing. 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 cobbley edges, persisting in those areas where the hydrology provides continual dampness in the root zone through the growing season. The orchid establishes in heavily disturbed sites, such as revegetated gravel pits, heavily grazed riparian edges, and along well-traveled foot trails on old berms (USFWS 1995). The species occurs primarily in areas where the vegetation is relatively open and not overly dense, overgrown, or overgrazed. Ute ladies'-tresses orchid is commonly associated with horsetail, milkweed, verbena, blue-eyed grass, reedgrass, goldenrod, and arrowgrass.

This species is known from four occurrences in Wyoming, within Converse, Goshen, Laramie, and Niobrara Counties, all discovered between 1993-1997 (Fertig and Beauvais 1999). One of these occurrences is recorded from northwestern Converse County, within the Antelope Creek watershed.

Existing Environment: Potential suitable habitat in the NARO North and NARO South LBA Tracts has been surveyed during the time of actual flowering of the known population of the Ute ladies'-tresses orchid on Antelope Creek in northern Converse County. Suitable habitat was traversed on foot and the survey involved walking the entire lengths of ephemeral drainages, documenting locations of potential habitat, and searching for this species. Prefield work involved a visit to a known population of the orchid to verify the correct phenological state (flowering) of the orchid. Topographical and wetland delineation maps for the study area were reviewed to identify all significant drainages that may contain the orchid. Suitable habitat factors that were considered include less steep stream banks, light soil texture and well drained soils, close lateral or vertical distance to a perennial water source during the flowering period, lack of plant competition, lack of general soil alkalinity/salinity, and current or historical management practices that did not promote overgrazing and extensive use of riparian areas.

All streams on the NARO North and South LBA tracts are ephemeral. There are several stock reservoirs on the ephemeral drainages in the study area and all are constructed earthen berms or dams. These ponds generally contain water in early spring, and then dry up in the summer. A total of 18.58 acres of waters of the U.S. (12.68 acres of jurisdictional wetlands and 5.9 acres of non-jurisdictional wetlands consisting of playas) have been identified within the NARO North LBA Tract as applied for and a buffer area around the tract sufficient to mine and reclaim the tract as a part of the existing North Antelope /Rochelle Complex mining operation. A total of 28.33 acres of waters of the U.S. (5.73 acres of jurisdictional wetlands and 22.6 acres of non-jurisdictional wetlands consisting of playas) have been identified within the NARO South LBA Tract as applied for, the area added by Alternative 2, and a buffer area around

the tract sufficient to mine and reclaim the tract as a part of the existing North Antelope/Rochelle Complex mining operation.

Surveys were conducted for the orchid during the blooming season in different portions of the LBA tracts during three separate years. Potentially suitable habitat areas within the NARO North and NARO South LBA Tracts that are inside the currently approved North Antelope/Rochelle Complex permit area were surveyed for Ute ladies'-tresses by BKS Environmental Associates (Paige Wolken) on August 28 and September 2, 1997. Potentially suitable habitat areas within the LBA tracts that are outside the currently approved North Antelope/Rochelle Complex permit area were surveyed by BKS Environmental Associates (Paige Wolken, Heidi Smith, and Brenda Schladweiler) in August of 1999 and August of 2000.

No individuals of the Ute ladies'-tresses orchid were located during these surveys or during surveys done for other mines in this area.

Effects of the Proposed Project: **Mining the federal coal included in the NARO North and South LBA Tracts, if the tracts are leased under the Proposed Actions or Action Alternatives, may affect, but is not likely to adversely affect Ute ladies'-tresses.** No individuals have been located during surveys of potentially suitable habitat on the two tracts during blooming seasons in 1997, 1999, and 2000. Although single season surveys that meet the current USFWS survey guidelines may not detect populations because of the ability of this species to persist below ground or above ground without flowering, surveys over several blooming seasons have not detected the orchid. Undetected populations could be lost to surface disturbing activities.

Cumulative Effects: Alterations of stream morphology and hydrology are believed to have extirpated Ute ladies'-tresses from most of its historical range (USFWS 2002b). Disturbance and reclamation of streams by surface coal mining may alter stream morphology and hydrology. The large quantities of water produced with CBM development and discharged on the surface may also alter stream morphology and hydrology. Jurisdictional wetlands located in the NARO North and NARO South LBA Tracts 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 U.S. Army Corps of Engineers (COE). The replaced wetlands may not duplicate the exact function and landscape features of the pre-mine wetlands. COE 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 the type and function of the original wetland.

G-4.2 Endangered Species

G-4.2.1 Black-footed ferret (*Mustela nigripes*)

Biology and Habitat Requirements: The black-footed ferret is a federally-listed endangered species. The black-footed ferret historically occurred throughout Texas, Oklahoma, New Mexico, Arizona, Utah, Kansas, North and South Dakota, Montana, Wyoming, Nebraska, and Colorado. The black-footed ferret, a nocturnally active mammal, is closely associated with prairie dogs, depending almost entirely upon the prairie dog for its survival. The decline in ferret populations has been attributed to the reduction in the extensive prairie dog colonies that historically existed in the western United States. Ferrets may occur within colonies of white-tailed or black-tailed prairie dogs. The USFWS has determined that, at a minimum, potential habitat for the black-footed ferret must include a single white-tailed prairie dog colony of greater than 200 acres, or a complex of smaller colonies within a 4.3 mile (7 kilometers) radius circle totaling 200 acres (USFWS 1989). Minimum colony size for black-tailed prairie dog is 80 acres (USFWS 1989). The last known wild population was discovered in Meeteetse, Wyoming. Individuals from this population were captured and raised in protective captive breeding facilities in an effort to prevent the species' extinction (Clark and Stromberg 1987).

Recent survey efforts in the Shirley Basin have identified a population at this former re-introduction site. This is the only known population in Wyoming.

Existing Environment: The NARO North and NARO South LBA Tracts are within the historical range of the black-footed ferret, although no black-footed ferrets are presently known to occur in northeastern Wyoming. Surveys to identify any populations of this species within the area administered by the BLM Buffalo Field Office (Campbell, Johnson, and Sheridan Counties, Wyoming), including multiple years of wildlife surveys covering the North Antelope/Rochelle Complex and surrounding area, have been unsuccessful. This endangered species is found almost exclusively living in prairie dog colonies. The Bureau of Sport Fisheries and Wildlife estimated that there were approximately 49,000 remaining acres of black-tailed prairie dog colonies in Wyoming in 1961. Strychnine and 1080 poisoning of prairie dog colonies was banned in 1972, but colonies had declined to less than the estimated 1961 levels in Wyoming in the intervening time. Increases in occupied black-tailed prairie dog habitat did occur following the ban of strychnine and 1080, but the black-tailed prairie dog population has been declining recently due to the impacts of sylvatic plague (USFWS 2000b). During the 1980s, the WGFD, in cooperation with other agencies, conducted searches for black-footed ferrets in Wyoming in the places they were most likely to be found, but these searches were not successful, according to Martin Grenier with the WGFD. The State of Wyoming is in the process of recommending to the USFWS that most of the state be cleared for black-footed ferrets, and that no further black-footed ferret

surveys be required in the remaining black-tailed prairie dog ranges in Wyoming (Martin Grenier, personal communication, 10/14/2003).

Prairie dog towns were surveyed by TWC on the current permit area for the North Antelope/Rochelle Complex and the NARO North and South wildlife baseline study area, which includes the NARO North and South LBA Tracts as proposed, the area added by Alternative 2, the North Antelope/Rochelle anticipated permit amendment study area, and areas within a two-mile radius in 2000. Within this area, 27 black-tailed prairie dog colonies totaling 1,148 acres were inventoried. Six of these prairie dog towns are located on or within one-half mile of the two LBA tracts. As shown on Figures G-5 and G-6, no colonies were observed on the NARO North LBA Tract and three colonies were observed on the NARO South LBA Tract. These three colonies occupy a total of 8.38 acres. An additional three colonies were found within one-half mile of the two LBA tracts.

In ferret surveys that have been conducted on the North Antelope/Rochelle Complex and surrounding areas since the early 1980s, qualified biologists have not observed any evidence of ferret activity. Although no black-footed ferret surveys were conducted for the 2000 wildlife baseline study, numerous ferret clearance surveys following procedures outlined by the USFWS (USFWS 1989) have been completed at many prairie dog colonies for North Antelope/Rochelle Complex mine-related disturbances. Recent ferret surveys include snow-tracking surveys for ferret sign conducted between January and early April of 1999 and between December 1999 and February 2000 at three small prairie dog colonies located in Sections 9, 27, 28, and 32, T.41N., R.70W. (North Antelope/Rochelle Complex 2000, Addendum J1) and a ferret clearance survey conducted by TWC in advance of mining on a 103 acre black-tailed prairie dog complex in the W½ of Section 17, T.41N., R.70W. in December 2000 and January 2001 (North Antelope/Rochelle Complex 2001, Addendum J1). The prairie dog colony that spans the NW¼ NW¼ of Section 27 and NE¼ NE¼ of Section 28, T.41N., R.70W. was surveyed again in July 2003 (North Antelope/Rochelle Complex 2003). The locations of these prairie dog colonies are shown in Figure G-6. No black-footed ferret sign was detected during these surveys, which were all conducted by TWC (formerly Powder River Eagle Studies).

A ferret reintroduction area has been designated in an area of larger concentrations of prairie dog colonies, located east of the coal burnline, outside of the area of surface coal mining. Based on USDA-FS observations, the scoria or clinker that forms the Rochelle Hills in this area serves as at least a partial barrier to prairie dogs (Tim Byer, personal communication, 9/29/03). This is evidenced by the fact that the prairie dog colonies east of the burnline have been drastically affected by sylvatic plague, which has not affected the prairie dog colonies west of the burnline.

Effects of the Proposed Project: **Mining the federal coal included in the NARO North and South LBA Tracts, if the tracts are leased under the Proposed Actions or Action Alternatives would have no effect on black-footed ferrets.** As discussed above, this endangered species is found almost exclusively living in prairie dog colonies. Black-tailed prairie dog occupied habitat in Wyoming has declined significantly from historic estimates and the species is scattered throughout its historic range in eastern Wyoming. Prior to 1972, use of strychnine and 1080 to poison black-tailed prairie dogs contributed to substantial declines in their population in Wyoming. Recent declines are largely attributed to sylvatic plague and are likely to continue (USFWS 2000b). An outbreak of plague in the TBNG east of the coal burnline has drastically affected the prairie dog population in that area, but the prairie dog towns west of the burnline, in the area of surface coal mining have not yet been affected by plague. Reductions in black-tailed prairie dog populations due to poisoning prior to 1972 and due to recent plague outbreaks reduced the potential for black-footed ferret survival in northeastern Wyoming. Searches of the best remaining black-footed ferret habitat in Wyoming conducted in the 1980s were not successful in finding any ferrets. Baseline wildlife studies and annual wildlife monitoring of prairie dog towns have been conducted for approximately 20 years for the North Antelope Mine, the Rochelle Mine, and the North Antelope/Rochelle Complex and other mines in the area of the NARO North and NARO South LBA Tracts. No black-footed ferrets or signs of black-footed ferrets have ever been observed during these surveys. Prairie dog towns of more than 80 acres in area, the typical suitable habitat for this species, are not currently located on either tract.

Cumulative Effects: Mineral development within black-tailed prairie dog colonies is a leading cause of ferret habitat loss in the PRB. Surface coal mining tends to have more intense impacts on fairly localized areas, while oil and gas development tends 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 reclaimed areas, vegetation cover may differ 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 approved plant species are native to the area; however, reclaimed areas may not serve ecosystem functions presently served by undisturbed vegetation communities and habitats, particularly in the short-term, when species composition, shrub cover, and other environmental factors are likely to be different. Shifts in habitat composition or distribution following reclamation could increase or decrease potential habitat for prairie dogs in this area.

Plague can infect and eliminate entire prairie dog colonies (see prairie dog discussion below). Poisoning and recreational prairie dog shooting may locally reduce prairie dog populations, but seldom completely eliminate colonies.

G-4.3 Proposed Species

G-4.3.1 Mountain plover (*Charadrius montanus*)

Biology and Habitat Requirements: USFWS published a proposed rule to list the mountain plover as threatened on February 16, 1999 (USFWS 1999a). The USFWS announced public hearings and published a 60-day extension to the comment period on April 19, 1999 (USFWS 1999b). In October 2001, the USFWS designated the mountain plover as a proposed threatened species (USFWS 2001). On December 5, 2002, USFWS published a notice of new information and reopening of the comment period on the proposed rule to list the mountain plover as threatened (USFWS 2002c). On September 9, 2003, USFWS published a withdrawal of the proposed rule to list the mountain plover as threatened (USFWS 2003). The USFWS has advised BLM that they will no longer be reviewing project impacts to the mountain plover under the Endangered Species Act; however, they encourage provisions that would provide protection for this species, as it continues to be protected under the Migratory Bird Treaty Act.

The mountain plover is a migratory species of the shortgrass prairie and shrub-steppe eco-regions of the arid West. This species utilizes high, dry, shortgrass prairie with vegetation typically shorter than four inches tall. Within this habitat, areas of blue grama (*Bouteloua gracilis*) and buffalograss (*Buchloe dactyloides*) are most often utilized, as well as areas of mixed-grass associations dominated by needle-and-thread (*Stipa comata*) and blue grama (Dinsmore 1983).

Mountain plovers often use black-tailed prairie dog towns for breeding, nesting, and feeding. Not all prairie dog towns offer suitable habitat for mountain plover, mostly due to topographic incompatibility. There are habitats other than prairie dog towns that provide nesting, feeding, and breeding habitat for mountain plover.

The nest of the mountain plover consists of a small scrape on flat ground in open areas. Most nests are placed on slopes of less than five degrees in areas where vegetation is less than three inches tall in April. More than half of identified nests occurred within 12 inches of old cow manure piles and almost twenty percent were found against old manure piles in similar habitats in Colorado. Nests in similar habitats in Montana (Dinsmore 1983) and other areas (Ehrlich et al. 1988) were nearly always associated with the heavily grazed shortgrass vegetation of prairie dog colonies.

Mountain plovers arrive on their breeding grounds in late March with egg-laying beginning in late April. Breeding plovers show close site fidelity, often returning to the same territory in subsequent years. Clutches are hatched by late June and chicks fledge by late July. The fall migration begins in late August and most birds are gone from the breeding grounds by late September.

Existing Environment: The BLM Buffalo Field Office contracted two mountain plover nesting surveys in 2001 (Good et al. 2002, Keinath and Ehle 2001). Both contracted surveys conclude mountain plover habitat within the PRB may be sparse and fragmented (Good et al. 2002, Keinath and Ehle 2001). Much of the PRB is dominated by rolling sagebrush. Good et al. (2002) believe that bare ground and vegetation height are the limiting habitat components in the basin's prairie communities; the areas they detected mountain plovers within the PRB appeared to receive less precipitation and have greater amounts of short grass prairie than the rest of the basin. However, both surveys caution more suitable mountain plover habitat exists than they were able to survey, as they were limited to public roads (Good et al. 2002, Keinath and Ehle 2001).

There are no black-tailed prairie dog towns located on the NARO North LBA tract and one colony is located approximately one-half mile west of the tract. Three small black-tailed prairie dog towns occupying approximately 8.38 acres are present on the NARO South LBA Tract and two more are present within one-half mile of the tract. The NARO South tract is characterized by relatively steep topography of the headwaters of several unnamed Antelope Creek tributaries; however, typical breeding habitat for mountain plovers is in areas of relatively flat topography (less that five percent slope). As discussed above, in 2000 a total of 27 prairie dog towns were observed on the current permit area for the North Antelope/Rochelle Complex and the NARO North and South wildlife baseline study area, which includes the NARO North and South LBA Tracts as proposed, the area added by Alternative 2, the North Antelope/Rochelle Complex anticipated permit amendment study area, and areas within a two-mile radius.

Mountain plovers have regularly nested at the Antelope Mine, located south of and adjacent to the NARO South LBA Tract, but few have been sighted in the NARO North and South LBA study area. Monitoring for Migratory Birds of High Federal Interest (MBHFI) began in 1993 for the North Antelope and Rochelle Mines. No plovers were observed in 1993 and 1999 through 2001. Each year from 1994 through 1998, adult plovers were seen in a black-tailed prairie dog colony in the SE¼ NW¼ of Section 17, T.41N., R.70W., which is on an existing North Antelope/Rochelle Complex federal coal lease. All of those sightings were made in the spring by qualified biologists with Powder River Eagle Studies. The USDA-FS also has documented the presence of mountain plover in the prairie dog colony located in the S½ of Section 3, T.41N., R.71W. during black-footed ferret night surveys done before 1992. In the fall of 2003, Gwyn McKee with TWC identified approximately 20 mountain plover staging in this prairie dog colony, which is a little more than a mile southwest of the NARO North LBA Tract.

Numerous searches of the prairie dog colonies in the area of the NARO North and NARO South LBA Tracts have failed to locate any plover nests and no young have ever been seen. No plovers were observed in any prairie dog colonies or elsewhere during the 2000 baseline surveys of the NARO North and

South LBA Tracts wildlife study area, which includes the NARO North and South LBA Tracts as proposed, the area added by Alternative 2, the North Antelope/Rochelle anticipated permit amendment study area, and areas within a two-mile radius.

Effects of the Proposed Project: **Mining the federal coal included in the NARO North and South LBA Tracts, if the tracts are leased under the Proposed Actions or Action Alternatives, is not likely to jeopardize the continued existence of mountain plovers.** There are currently no prairie dog towns located on the NARO North LBA Tract and there are three small prairie dog towns located on the NARO South LBA Tract, but the topography of the tract is relatively steep. No plover were observed during the 2000 wildlife baseline survey for the NARO North and South LBA Tracts. Plover have sporadically been observed in a prairie dog town on an existing North Antelope/Rochelle Complex lease near the NARO South LBA Tract, but during 10 years of annual surveys conducted for MBHFI on the North Antelope/Rochelle Complex, no nesting plovers have ever been documented in the vicinity of the mine.

Cumulative Effects: Mineral development is likely to have both beneficial and detrimental effects on mountain plover. Mining activities tend to have more intense impacts on fairly localized areas, while oil and gas development tends to be less intensive but spread over larger areas. Surface disturbance within suitable habitat will likely result in short term habitat loss in areas to be reclaimed, and permanent or long-term loss where roads and permanent or long-term facilities are located. Power poles, conveyors, and other structures are likely to provide perch sites and hiding cover for mountain plover predators. Vehicle traffic may occasionally run over mountain plovers or their nests. Mineral development may benefit plovers where surface disturbance provides bare ground and reduces shrub cover (Dechant et al. 2001).

Oil and gas development and mining activities have requirements for reclamation of disturbed areas as resources are depleted. 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 approved plant species are native to the area, however, reclaimed areas may not serve ecosystem functions presently served by undisturbed vegetation communities and habitats, particularly in the short-term, when species composition, shrub cover, and other environmental factors are likely to be different. Shifts in habitat composition or distribution following reclamation could increase or decrease potential habitat for prairie dogs in this area, which could lead to an increase or decrease in potential habitat for mountain plovers in this area.

G-4.4 Candidate Species

G-4.4.1 Black-tailed prairie dog (*Cynomys ludovicianus*)

Biology and Habitat Requirements: The black-tailed prairie dog was added to the list of candidate species for federal listing on February 4, 2000 (USFWS 2000a). At that time, the USFWS concluded that listing the black-tailed prairie dog was warranted but precluded by other higher priority actions to amend the lists of T&E species. No specific date for proposal for listing was given, but the USFWS committed to reviewing the status of the species one year after publication of the above-mentioned notice (i.e., on February 4, 2001) (USFWS 2000b). As of June 2002, the USFWS was listing the black-tailed prairie dog as a candidate (USFWS 2002a).

The black-tailed prairie dog is a highly social, diurnally active, burrowing mammal. Aggregations of individual burrows, known as colonies, form the basic unit of prairie dog populations. Found throughout the Great Plains in shortgrass and mixed-grass prairie areas (Fitzgerald et al. 1994), the black-tailed prairie dog has declined in population numbers. The three major impacts that have influenced black-tailed prairie dog populations are the initial conversion of prairie grasslands to cropland in the eastern portion of its range from approximately the 1880s-1920s; large-scale control efforts conducted from approximately 1918 through 1972, when an Executive Order was issued banning the use of compound 1080; and the introduction of sylvatic plague into North American ecosystems in 1908 (USFWS 2000b). In Wyoming, this species historically occurred east of the Rocky Mountain foothills and may have occupied millions of acres (USFWS 2000b). It is primarily currently found in isolated populations in the eastern half of the state (Clark and Stromberg 1987). USFWS recently estimated that about 125,000 acres of black-tailed prairie dog occupied habitat exists in Wyoming (USFWS 2000b). Many other wildlife species, such as the black-footed ferret, swift fox, mountain plover, ferruginous hawk, and burrowing owl are dependent on the black-tailed prairie dog for some portion of their life cycle (USFWS 2000b).

The species is considered a common resident, utilizing shortgrass and mid-grass habitats in eastern Wyoming (Luce et al. 1999).

Existing Environment: Prairie dog towns were surveyed on the NARO North and South LBA wildlife baseline study area and the North Antelope/Rochelle Complex's current permit area in 2000 by TWC (Figures G-5 and G-6). Twenty-seven black-tailed prairie dog colonies totaling 1,148 acres were inventoried on the study area. Six prairie dog towns were inventoried on or within one-half mile of the two LBA tracts. No colonies were observed on the NARO North LBA Tract and one colony (located in the SW¼ of Section 26, T.42N., R.71W.) is located within one-half mile of that proposed lease boundary. Three colonies occupying approximately 8.38 acres were observed on the NARO South LBA Tract and two others (located in the W½ of Section 17 and the NE¼ of Section

28, T.41N., R.71W.) are within a one-half mile of that proposed lease boundary. No additional prairie dog towns were observed on the area that would be added under Alternative 2 for the NARO South LBA Tract.

According to UDSA-FS observations, on the TBNG in the vicinity of the surface coal mines, the largest concentrations of prairie dog colonies are found east of the coal burnline, which is outside and east of the area of surface coal mining (Tim Byer, personal communication 9/11/2003). The large prairie dog complexes in this area east of the coal burnline have been drastically impacted by outbreaks of plague. The prairie dog colonies west of the burnline, including the area occupied by the NARO North and South LBA Tracts, are generally smaller and less densely concentrated. These colonies have not been affected by plague.

USDA-FS has not allowed poisoning of prairie dogs on TBNG lands since the prairie dog was proposed for listing as a threatened species. Poisoning of prairie dogs by private land owners in this area has not been affected by the USDA-FS poisoning restrictions.

Effects of the Proposed Project: **There are no prairie dog colonies currently located on the NARO North LBA Tract. There would be no effect on prairie dogs if that tract is leased and mined. There are three small prairie dog colonies located on the NARO South LBA Tract. If a federal coal lease is issued for the NARO South LBA Tract under the Proposed Action or Action Alternatives and that tract is mined, those colonies and individuals in those colonies would be directly impacted, if they are still present on the tract when it is mined.** There are other colonies in this area which would not be affected by mining operations at the North Antelope/Rochelle Complex or other nearby mines. Habitat where prairie dogs could establish towns on both tracts would be lost during mining but would be replaced as reclamation occurs on already mined areas or through the possible translocation of prairie dogs to other areas.

G-5.0 SUMMARY OF DETERMINATIONS

Tables G-2.1 and G-2.2 summarize the determinations for federally listed threatened, endangered, proposed, and candidate species in the area of the NARO North and South LBA Tracts, respectively, that may result from implementing the Proposed Actions or Action Alternatives.

Table G-2.1 Effects Evaluation of Federal Threatened, Endangered, Proposed, and Candidate Species in the Area of the NARO North LBA Tract.

Status	Species Common Name	Potential Effects
Threatened:	Bald eagle	May affect[1]
	Ute ladies'-tresses	May affect[1]
Endangered:	Black-footed ferret	No effect
Proposed:	Mountain plover	May affect[2]
Candidate:	Black-tailed prairie dog	No effect

[1] Not likely to adversely affect individuals or populations.
[2] Not likely to jeopardize continued existence of proposed individuals or populations.

Table G-2.2 Effects Evaluation of Federal Threatened, Endangered, Proposed, and Candidate Species in the Area of the NARO South LBA Tract.

Status	Species Common Name	Potential Effects
Threatened:	Bald eagle	May affect[1]
	Ute ladies'-tresses	May affect[1]
Endangered:	Black-footed ferret	No effect[1]
Proposed:	Mountain plover	May affect[2]
Candidate:	Black-tailed prairie dog	Would affect[3]

[1] Not likely to adversely affect individuals or populations.
[2] Not likely to jeopardize continued existence of proposed individuals or populations.
[3] Mining disturbance would have direct and indirect effects on individuals and populations in the area of the NARO South LBA Tract.

G-6.0 REGULATORY REQUIREMENTS AND MITIGATION

The issuance of a Federal coal lease grants the lessee the exclusive rights to mine the coal, subject to the terms and conditions of the lease. Lease ownership is necessary for mining federal coal, but lease ownership does not authorize mining operations. Surface coal mining operations are regulated in accordance with the requirements of the Surface Mining Control and Reclamation Act of 1977 (SMCRA) and Wyoming State regulations. SMCRA gives the Office of Surface Mining Reclamation and Enforcement (OSM) primary responsibility to administer programs that regulate surface coal mining operations and the surface effects of underground coal mining operations. Pursuant to Section 503 of SMCRA, the WDEQ developed, and in November 1980 the Secretary of the Interior approved, a permanent program authorizing WDEQ to regulate surface coal mining operations and surface effects of underground mining on nonfederal lands within the State of Wyoming. In

January 1987, pursuant to Section 523(c) of SMCRA, WDEQ entered into a cooperative agreement with the Secretary of the Interior authorizing WDEQ to regulate surface coal mining operations and surface effects of underground mining on federal lands within the state. In order to get approval of this cooperative agreement, the state had to demonstrate that the state laws and regulations are no less stringent than, meet the minimum requirements of, and include all applicable provisions of SMCRA.

If the NARO North and South LBA Tracts are leased, they would be maintenance leases for the existing North Antelope/Rochelle Complex, which currently has both an approved Mineral Leasing Act of 1920 (MLA) mining plan and an approved State mining and reclamation permit. In the case of maintenance leases, the existing MLA mining plan and State mining and reclamation plan must be amended to include the newly leased areas before they can be mined. In order to amend the existing MLA mining plan and State mining and reclamation permit, the company would be required to submit a detailed permit application package to WDEQ before starting surface coal mining operations on the newly acquired leases. WDEQ/LQD would review the permit application package to insure that the permit application 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, WDEQ would issue the applicant an amended permit that would allow the permittee to extend coal mining operations onto the newly acquired leases.

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."

In addition to requiring the operator to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values, the regulations at 30 CFR 816.97 disallow any surface mining activity which is likely to jeopardize the continued existence of endangered or threatened species 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. Section 7 consultation would be required prior to approval of the mining and reclamation plan modification. Additional mitigation measures to ensure compliance with the ESA and SMCRA can be developed when the detailed mining plan, which identifies the actual location of the disturbance areas, how and when they would be disturbed, and how they would be reclaimed, is developed and reviewed for approval. At the leasing stage, a

detailed mining and reclamation plan is not available for evaluation or development of appropriate mitigation measures.

The following is a partial list of measures that are required as part of the mining and reclamation permits:

- avoiding bald eagle disturbance;
- restoring bald eagle foraging areas disturbed by mining;
- restoring mountain plover habitat;
- using raptor safe power lines;
- surveying for Ute ladies'-tresses if habitat is present;
- surveying for mountain plover if habitat is present; and
- surveying for black-footed ferrets in prairie dog towns potentially affected by mining.

G-7.0 CUMULATIVE IMPACTS

Existing habitat-disturbing activities in the PRB include surface coal mining; conventional oil and gas and CBM development; uranium mining; sand, gravel, and scoria mining; ranching; agriculture; road, railroad, and power plant construction and operation; recreational activities; and rural and urban housing development. Mining and construction activities, agriculture, and urban development tend to have more intense impacts on fairly localized areas, while ranching, recreational activities, and oil and gas development 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. The net area of energy disturbance in the Wyoming PRB has been increasing. In the short term, this means a reduction in the available habitat for threatened, endangered, proposed, and candidate plant and wildlife species. In the long term, habitat is being and will continue to be restored as reclamation proceeds.

Oil and gas exploration and production have been ongoing in the PRB for more than 100 years. Conventional (non CBM) oil and gas fields are, for the most part, concentrated in the central and southern parts of the structural basin. Development of the CBM resources from the coal beds is a more recent occurrence, with CBM production in the Wyoming PRB starting in the late 1980s. According to the Wyoming Oil and Gas Conservation Commission, there are approximately 15,040 oil and gas wells currently producing in the Wyoming PRB. Most (approximately 12,530) of those wells are CBM wells, the remainder (approximately 2,510) are conventional oil or gas wells (Wyoming Oil and Gas Conservation Commission 2003). Additional wells have been drilled in the basin but have been abandoned or are not yet producing. BLM recently completed an environmental impact statement analyzing projected CBM and conventional oil and gas development in the Wyoming over the next 10 years. The *Final Environmental Impact Statement and Proposed Plan Amendment for*

the Powder River Basin Oil and Gas Project (BLM 2003) analyzed the potential impacts of constructing and operating about 39,400 new CBM wells and 3,200 new conventional wells and associated facilities, starting in 2002 and continuing for 10 years. The project area for this analysis encompassed approximately eight million acres, and included all or portions of Campbell, Converse, Sheridan, and Johnson Counties in northeastern Wyoming. Total projected short term and long term disturbance associated with the development under the Preferred Alternative was estimated at 211,643 acres and 102,658 acres respectively.

BLM estimates that the existing federal coal leases in the Wyoming PRB include approximately 103,615 acres. The currently pending federal coal LBA tracts (including the tracts being evaluated in the South Powder River Basin Coal EIS) include approximately 18,650 acres. The majority of the coal in the areas permitted for surface coal mining is federal, but some state and private leases are included within some of the existing mine permit areas. All of the existing federal coal leases are concentrated near the outcrop of the Wyodak coal bed, which is located along the eastern edge of the CBM project area discussed above. These active coal operations along the Wyodak outcrop had disturbed approximately 56,900 acres as of 2001. Approximately 14,400 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. Of the remaining 42,500 acres of disturbance available for reclamation, approximately 23,700 acres had been reclaimed. This information is compiled from BLM lease and WDEQ/LQD mining and reclamation permit databases.

There are an estimated 9,500 additional acres of disturbance occupied by facilities indirectly associated with surface coal mining (i.e., railroad main line and electrical transmission line).

In addition to the ongoing coal leasing and mining and oil and gas development, there are other projects that are in progress or have been proposed. These projects include the Wygen II coal-fired power plant proposed near the Wyodak Mine, the Two Elk coal-fired power plant proposed near the Black Thunder Mine, and the proposed DM&E railroad line. Other power plants have been proposed in this area, but have not progressed beyond very preliminary stages. Most of these proposed projects would be constructed within or adjacent to areas of current disturbance. The proposed DM&E railroad line would represent a new corridor of disturbance across the eastern PRB, if it is approved and constructed.

The total acreage directly affected by surface coal mining and oil and gas development would not be disturbed simultaneously. Some of the disturbed acreage would be reclaimed or be in the process of being reclaimed as new disturbances are initiated in other areas.

Cumulative effects would also occur to T&E 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 T&E 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; however, reclaimed areas may not serve ecosystem functions presently served by undisturbed vegetation communities and habitats. In the short-term in particular, species composition, shrub cover, and other environmental factors are likely to differ from pre-disturbance vegetation communities and habitats. Establishment of noxious weeds and alteration of vegetation in reclaimed areas has the potential to alter T&E plant and wildlife habitat composition and distribution.

Potential adverse effects to listed and proposed species that have occurred and would continue to occur as a result of existing and potential future activities in the PRB would include direct loss of habitat, indirect loss of habitat due to human and equipment disturbance, habitat fragmentation, displacement of bald eagle prey species and the resultant change in bald eagle foraging, and mortality caused by equipment activities, motor vehicle collisions, power line collisions, and power line electrocution. The existing mines have developed mitigation procedures, as required by SMCRA (at 30 CFR 816.97) and Wyoming State regulations, to protect T&E species. These procedural requirements would be extended to include mining operations on the LBA tracts, if they are leased as proposed and after required detailed plans to mine the coal and reclaim the mined-out areas are developed and approved.

G-8.0 CREDENTIALS OF SURVEY PERSONNEL

BKS Environmental, Inc. of Gillette, Wyoming

Brenda K. Schladweiler

Ms. Schladweiler is the Senior Plant Ecologist and Reclamation Specialist for BKS Environmental, Inc. Ms. Schladweiler obtained a Master of Science degree in Soil Science and is currently pursuing a Doctorate Degree in Soil Science from the University of Wyoming. Ms. Schladweiler has skills in baseline soils and vegetation assessments in Wyoming and other western states. She has conducted soil assessments for National Pollution Discharge Elimination System (NPDES) discharge and land disposal of CBM production water,

compiled reclamation plans for various coal, uranium, and bentonite projects and has coordinated management and monitoring for various mining and oil and gas reclamation projects.

Paige Wolken
Ms. Wolken obtained a Master of Science degree in Plant and Soil Sciences from the University of Wyoming. Ms. Wolken has accumulated nine years of field experience in identifying and mapping of sensitive (T&E) species, the collection and analysis of vegetation data for reclamation monitoring, and has conducted wetland delineation for state and private project permitting.

Heidi Smith
Ms. Smith is pursuing a Master of Science degree in Agronomy and Plant Pathology from the University of Wyoming. Ms. Smith has performed baseline studies and monitoring of reclaimed areas on open pit coal mines in the PRB for BKS since 1999.

Intermountain Resources of Laramie, Wyoming

Jim Orpet
Mr. Orpet obtained a Master of Science degree in Range Management from the University of Wyoming and has accumulated 24 years of field experience in vegetation and plant surveys. This experience includes preparation of plant species lists for over 100 projects throughout Wyoming. Mr. Orpet was qualified in 1987 by the WDEQ/LQD to conduct T&E and other plant and animal surveys on Abandoned Mine Lands (AML) projects within the state. Qualification at that time was based on review and approval of Mr. Orpet's credentials by the WGFD and the USFWS. Mr. Orpet has also completed numerous wetland surveys that have been approved by the COE.

Russel Tait
Mr. Tait obtained a Bachelor of Science degree in Wildlife Management from the University of Wyoming and has accumulated 11 years of field experience in vegetation and plant surveys in Wyoming. Mr. Tait has assisted Mr. Orpet in conduction Ute ladies'-tresses orchid surveys for over six years on coal mines and other resource development projects in Wyoming.

Thunderbird Wildlife Consulting, Inc. of Gillette, Wyoming

Gwyn McKee
Ms. McKee obtained a Master of Science degree in Wildlife Ecology form the University of Missouri-Columbia. She has accumulated more than 16 years of professional experience, with the last nine in Wyoming. Ms. McKee has skills that include planning and conducting surveys for a variety of terrestrial and aquatic species, summarizing data, and preparing technical reports for private, state, and federal agencies. Ms. McKee is considered qualified by all state and federal agencies to conduct T&E and other wildlife surveys within the region.

Those qualifications include surveys for mountain plovers and their habitat, and certification by the USFWS to conduct black-footed ferret surveys.

Kort M. Clayton

Mr. Clayton earned a Masters of Science degree in Biology from the University of Saskatchewan. He has been professionally involved with wildlife issues in the Northern Great Plains for over 10 years. Since 1998, Mr. Clayton has focused on wildlife inventories, clearances, impact analysis, mitigation, and applied research related to energy developments in the PRB of Wyoming and Montana. Those experiences include surveys for most vertebrate taxa in the region, sage-grouse research, raptor mitigation projects, and clearance surveys for several Federally listed species.

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