

**APPENDIX H**

**BIOLOGICAL ASSESSMENT  
FOR THE MAYSDORF II LBA TRACT,  
SOUTH GILLETTE AREA EIS**

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## **H-1.0 INTRODUCTION**

Between 2004 and 2006, operators of four coal mines in Campbell County, Wyoming applied for four tracts of federal coal as maintenance leases under the Leasing on Application regulations at 43 CFD 3425. The environmental impacts of leasing these four Lease by Application (LBA) tracts are being evaluated in one environmental impact statement (EIS), the South Gillette Area Coal (SGAC) EIS. The four tracts, which are shown in Figure H-1, and applicant mines are:

- Belle Ayr North LBA Tract adjacent to and north of the Belle Ayr Mine;
- West Coal Creek LBA Tract adjacent to and west of the Coal Creek Mine;
- Caballo West LBA Tract adjacent to and southwest of the Caballo Mine; and
- Maysdorf II LBA Tract adjacent to and west of the Cordero Rojo Complex.

The purpose of this Biological Assessment is to provide information about the potential effects that leasing one of the tracts, the Maysdorf II LBA Tract, would have on federally listed threatened or endangered (T&E) species. T&E species are managed under the authority of the Endangered Species Act of 1973 (PL 93-205, as amended). The Endangered Species Act 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. 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.

This Biological Assessment was prepared to disclose the possible effects to T&E species (plant and animal) that are known to be present or that may be present within the area influenced by the Proposed Action and the alternative to the Proposed Action being evaluated by the BLM. It was prepared in accordance with Section 7 of the Endangered Species Act.

Biological Assessment objectives are:

1. To comply with the requirements of the Endangered Species Act that actions of federal agencies not jeopardize or adversely modify critical habitat of federally listed species.
2. To provide a process and standard by which to ensure that threatened or endangered species receive full consideration in the decision making process.

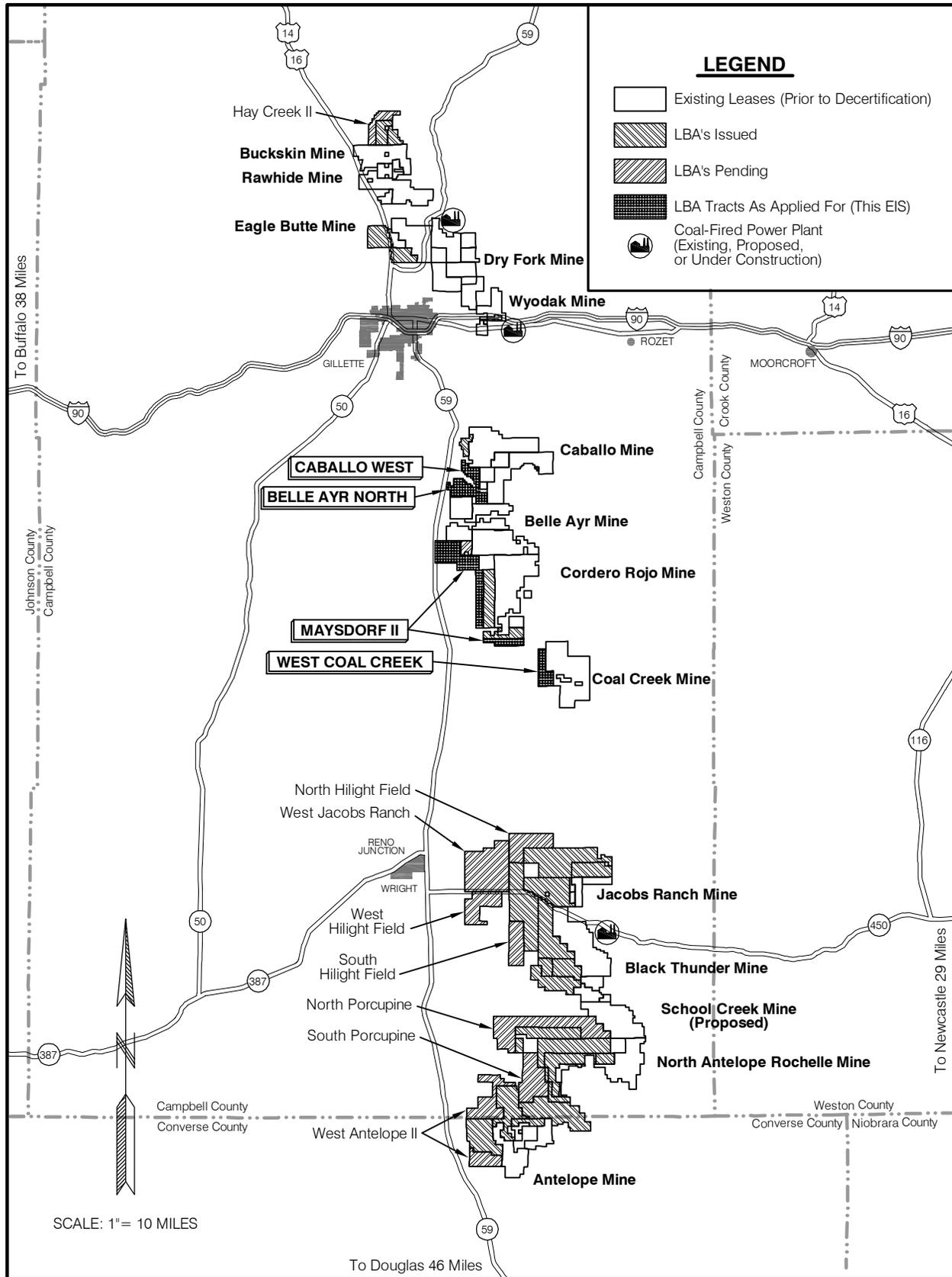


Figure H-1. General Location Map with Federal Coal Leases and LBA Tracts.

## H-2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

### H-2.1 The Proposed Action

On September 1, 2006, Cordero Mining Company filed an application with the BLM to lease federal coal reserves in a tract located west of and immediately adjacent to the Cordero Rojo Mine (Figure H-1). The tract was assigned case file number WYW173360. Under the Proposed Action for the Maysdorf II LBA Tract, the tract as applied for by CMC would be offered for lease at a sealed-bid, competitive lease sale. The boundaries of the tract would be consistent with the tract configuration proposed in the Maysdorf II LBA Tract lease application (Figure H-2). The Proposed Action assumes that CMC will be the successful bidder on the Maysdorf II LBA Tract if it is offered for sale.

The legal description of the proposed Maysdorf II LBA Tract coal lease lands as applied for by CMC under the Proposed Action is as follows:

#### T. 46 N., R. 71 W., 6<sup>th</sup> PM, Campbell County, Wyoming

Section 4: Lots 8, 9, 16, 17;	163.79 acres
Section 5: Lots 5, 12, 13, 20;	165.03 acres
Section 9: Lots 6 through 8;	122.86 acres
Section 10: Lots 7 through 10;	162.62 acres
Section 11: Lots 13 through 16;	161.87 acres
Section 14: Lots 1 through 4;	161.69 acres
Section 15: Lots 1 through 4;	162.59 acres

#### T. 47 N., R. 71 W., 6<sup>th</sup> PM, Campbell County, Wyoming

Section 7: Lots 6 through 11, 14 through 19;	490.18 acres
Section 17: Lots 1 through 15, and W <sup>1/2</sup> ;	639.73 acres
Section 18: Lots 5 through 14, 19, 20;	481.50 acres
Section 20: Lots 1, 8, 9, 16;	154.31 acres
Section 21: Lots 4, 5, 12, 13;	157.69 acres
Section 28: Lots 4, 5, 12, 13;	165.80 acres
Section 29: Lots 1, 8, 9, 16;	164.45 acres

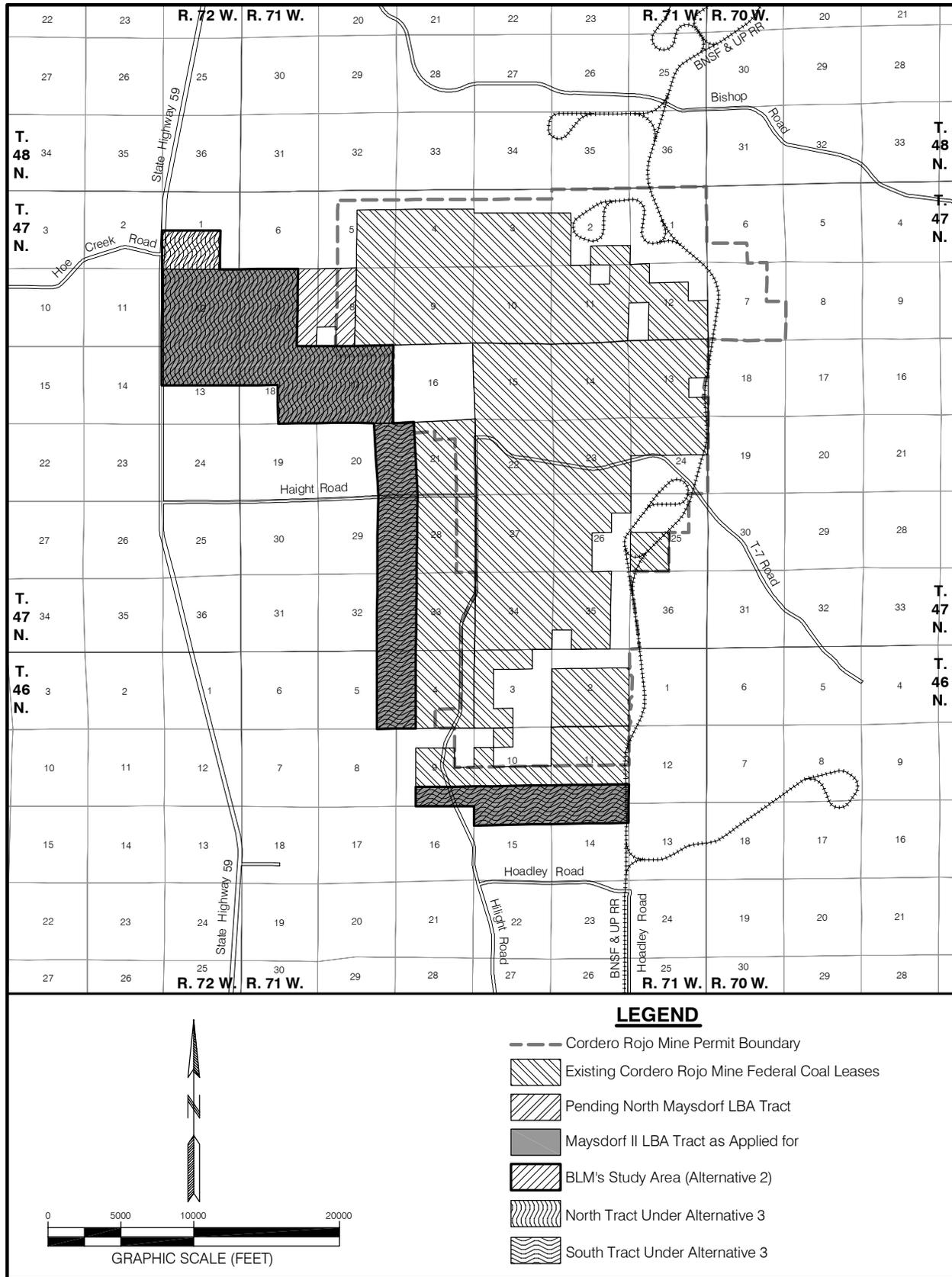


Figure H-2. Maysdorf II LBA Tract Alternatives.

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Section 32: Lots 1, 8, 9, 16;	162.94 acres
Section 33: Lots 4, 5, 12, 13;	164.64 acres
<u>T. 47 N., R. 72 W., 6<sup>th</sup> PM, Campbell County, Wyoming</u>	
Section 12: Lots 1 through 16;	647.10 acres
Section 13: Lots 1 through 8.	<u>325.04 acres</u>
Total:	4,653.83 acres

The coal estate underlying this tract described above is owned by the federal government and administered by the BLM. The surface estate of the tract is privately and federally owned. The federal surface estate is administered by BLM. Surface ownership is shown in Figure H-3.

The tract as applied for includes approximately 4,653.8 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 of the tract would be due to activities like overstripping, matching undisturbed topography, and construction of flood control and sediment control structures.

Under the Proposed Action for the Maysdorf II LBA Tract, if a decision is made to hold a competitive lease sale and if there is a successful bidder at that sale, a lease would be issued for the tract of federal coal as applied for. The tract offered for lease would be subject to standard and special lease stipulations developed for the Wyoming Powder River Basin (PRB). The stipulations that would be attached to a lease for the Maysdorf II LBA Tract are listed in Appendix D of the SGAC EIS document. The following stipulation relating to T&E species is one of the special stipulations developed for the Wyoming PRB:

*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.*

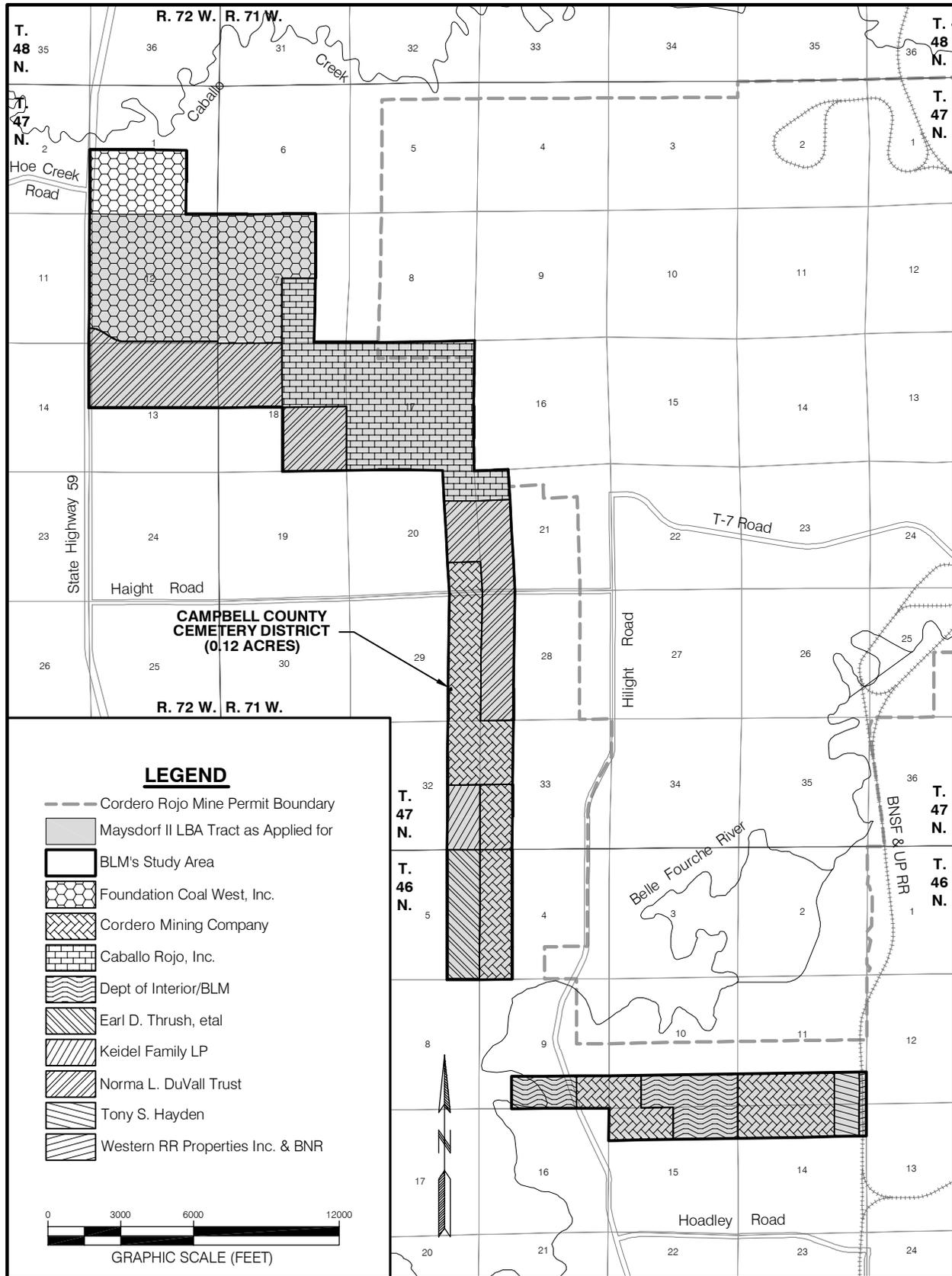


Figure H-3. Surface Ownership Within the Maysdorf II LBA Tract Alternatives.

*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.*

Not all of the coal included in the Maysdorf II LBA Tract is considered to be mineable at this time. A portion Wyoming State Highway 59 and portions of the Haight Road (County Road 44) and the Hilight Road (County Road 52) overlie some of the coal included in the tract. As discussed in Chapter 1, Section 1.1, the Surface Mining Control and Reclamation Act prohibits mining within 100 ft on either side of the right-of-way of any public road (43 CFR 3461). The coal underlying the portions of Highway 59, the Haight and Hilight Roads, and their rights-of-way, and the 100 ft buffer zones within the Maysdorf II LBA Tract could be mined if WYDOT and the Campbell County Board of Commissioners, the authorized agencies, determine that the roads can be moved [30 CFR 761.11(d)]. CMC does not have plans to relocate the highway at this time but CMC is evaluating the feasibility of relocating the county roads. CMC estimates that approximately 3.0 million tons of mineable coal are included within the right-of-way of Highway 59 and associated 100 ft buffer zone that is within the LBA tract. CMC estimates that approximately 17 million tons of mineable coal are included within the rights-of-way of the Haight and Hilight Roads and associated 100 ft buffer zones that are within the LBA tract.

The Maysdorf Point Cemetery, a small rural cemetery owned by the Campbell County Cemetery District, overlies some of the coal included in the tract. SMCRA prohibits mining within 100 ft of a cemetery [30 CFR 761.11(g) and 43 CFR 3461.5(c)(1)]. The coal underlying the cemetery and the buffer zone could be mined if the cemetery is relocated in accordance with all applicable laws and regulations. CMC, the Campbell County Cemetery District, and the Haight Family are working on a plan to relocate the remains currently located in the cemetery. CMC estimates that approximately 0.2 million tons of mineable coal are included within 100 ft of the cemetery.

CMC estimates that within the BNSF & UP railroad ROW, the Maysdorf II BLM study area contains approximately 1.6 million tons of mineable coal. The coal underlying the ROW is not considered to be mineable at this time because the cost that would be associated with moving the railroad would make it economically unfeasible to recover the underlying coal.

The Maysdorf II LBA Tract as applied for contains approximately 504.0 million tons of in-place coal reserves. Excluding the federal coal reserves within the railroad right-of-way, the highway and county road rights-of-way and buffer

zones, the Maysdorf Point Cemetery and buffer zone, and taking into account the no-coal zone, CMC estimates that the Maysdorf II LBA Tract as applied for contains approximately 482.5 million tons of mineable coal reserves. Using CMC's projected recovery factor of 90 percent of the mineable coal reserves included in BLM's tract reconfiguration, the tract would contain about 434.3 million tons of recoverable coal. At the average annual coal production rate of 46.3 mmtpy, mining this coal would extend mine life by over 9 years.

Under this scenario, a total of 708.1 million tons of coal would be mined after January 1, 2008, with an estimated 434.0 million tons coming from the LBA tract. Under the Proposed Action, it is assumed that the LBA tract would be developed as a maintenance lease to extend the life of the adjacent existing Cordero Rojo Mine. As a result, under the Proposed Action, the coal included in the tract would be mined by existing employees using existing facilities and roads.

## H-2.2 Alternatives to the Proposed Action

### H-2.2.1 Alternative 1

Under Alternative 1, the No Action Alternative, the application to lease the coal included in the Maysdorf II 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 Cordero Rojo Mine and would not preclude an application to lease the federal coal included in the Maysdorf II LBA Tract in the future. No additional surface of the Maysdorf II LBA Tract would be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

### H-2.2.2 Alternative 2

Under Alternative 2 for the Maysdorf II LBA Tract, BLM would reconfigure the tract, hold a competitive coal sale for the lands included in the reconfigured tract, and issue a lease to the successful bidder. In evaluating the Maysdorf II coal lease application, BLM identified a study area, which includes unleased federal coal adjacent to the northern edge of the tract as applied for (Figure E-2). BLM is evaluating the potential that some or all of these lands could be added to the tract to provide for more efficient recovery of the federal coal, increase competitive interest in the tract, and/or reduce the potential that some of the potentially mineable federal coal in this area would be bypassed in the future if it is not included in the Maysdorf II LBA Tract. The modified tract would be subject to standard and special lease stipulations developed for the PRB and this tract if it is offered for sale, as discussed above. Alternative 2 for the Maysdorf II LBA Tract assumes that CMC would be the successful bidder on the tract if a lease sale is held and that the tract would be developed as a maintenance lease to extend the life of the adjacent Cordero Rojo Mine. Other assumptions are the same as for the Proposed Action. The lands that BLM is considering adding to the tract are:

T.47N., R.72W., 6<sup>th</sup> P.M., Campbell County, Wyoming

Section 1: Lots 9 through 13, and NW $\frac{1}{4}$ SE $\frac{1}{4}$ ; 241.80 acres

The legal description of BLM's reconfiguration of the Maysdorf II LBA Tract under Alternative 2 is as follows:

T. 46 N., R. 71 W., 6<sup>th</sup> PM, Campbell County, Wyoming

Section 4: Lots 8, 9, 16, 17; 163.79 acres

Section 5: Lots 5, 12, 13, 20; 165.03 acres

Section 9: Lots 6 through 8; 122.86 acres

Section 10: Lots 7 through 10; 162.62 acres

Section 11: Lots 13 through 16; 161.87 acres

Section 14: Lots 1 through 4; 161.69 acres

Section 15: Lots 1 through 4; 162.59 acres

T. 47 N., R. 71 W., 6<sup>th</sup> PM, Campbell County, Wyoming

Section 7: Lots 6 through 11, 14 through 19; 490.18 acres

Section 17: Lots 1 through 15, and W $\frac{1}{2}$ ; 639.73 acres

Section 18: Lots 5 through 14, 19, 20; 481.50 acres

Section 20: Lots 1, 8, 9, 16; 154.31 acres

Section 21: Lots 4, 5, 12, 13; 157.69 acres

Section 28: Lots 4, 5, 12, 13; 165.80 acres

Section 29: Lots 1, 8, 9, 16; 164.45 acres

Section 32: Lots 1, 8, 9, 16; 162.94 acres

Section 33: Lots 4, 5, 12, 13; 164.64 acres

T. 47 N., R. 72 W., 6<sup>th</sup> PM, Campbell County, Wyoming

Section 1: Lots 9 through 13, and NW $\frac{1}{4}$ SE $\frac{1}{4}$ ; 241.80 acres

Section 12: Lots 1 through 16; 647.10 acres

Section 13: Lots 1 through 8.

325.04 acres

Total:

4,895.63 acres

A portion Wyoming State Highway 59 and portions of the Haight Road (County Road 44) and the Hilight Road (County Road 52) overlie some of the coal included in the tract. As discussed in Chapter 1, Section 1.1, the Surface Mining Control and Reclamation Act prohibits mining within 100 ft on either side of the right-of-way of any public road (43 CFR 3461). The coal underlying the portions of Highway 59, the Haight and Hilight Roads, and their rights-of-way, and the 100 ft buffer zones within the Maysdorf II LBA Tract could be mined if WYDOT and the Campbell County Board of Commissioners, the authorized agencies, determine that the road can be moved [30 CFR 761.11(d)]. CMC does not have plans to relocate the highway at this time but CMC is evaluating the feasibility of relocating the county roads. CMC estimates that approximately 3.0 million tons of mineable coal are included within the right-of-way of Highway 59 and associated 100 ft buffer zone that is within the LBA tract. CMC estimates that approximately 17 million tons of mineable coal are included within the rights-of-way of the Haight and Hilight Roads and associated 100 ft buffer zones that are within the LBA tract.

CMC estimates that the reconfigured tract includes approximately 533.0 million tons of in-place coal. After eliminating coal that lies within the railroad ROW, the public road rights-of-way and buffer zones, and the Maysdorf Point Cemetery and buffer zone, CMC estimates that the reconfigured tract includes approximately 510.3 million tons of mineable coal. Using CMC's projected recovery factor of 90 percent, the reconfigured tract would contain about 459.3 million tons of recoverable coal.

### H-2.2.3 Alternative 3

Under Alternative 3 for the Maysdorf II LBA Tract, BLM is considering dividing the tract and offering two tracts for sale at separate, competitive sealed bid sales (Figure H-2). The two tracts would each be subject to standard and special lease stipulations developed for the PRB and for each tract if they are offered for sale, as discussed above.

Alternative 3 for the Maysdorf II LBA Tract assumes that CMC would be the successful bidder on the two tracts if lease sales are held and that the tracts would be mined as maintenance leases for the Cordero Rojo Mine. Other assumptions would be the same as for the Maysdorf II LBA Tract Proposed Action.

As shown in Figure H-2, the Maysdorf II LBA Tract is comprised of two non-contiguous blocks of federal coal. Under Alternative 3, the North Maysdorf II LBA Tract would consist of the northernmost block of coal and the South Maysdorf II LBA Tract would consist of the two southern blocks of coal, as

shown in Figure H-2. BLM is considering dividing the tract because the north tract would potentially be of competitive interest to more than one mine.

As discussed under Alternative 2, BLM has identified a study area, described above and shown in Figure H-2. Under Alternative 3, the BLM could add all, part, or none of the study area to the Maysdorf II LBA Tract as applied for.

The lands that BLM is considering including in the north tract are:

T. 47 N., R. 71 W., 6<sup>th</sup> PM, Campbell County, Wyoming

Section 7: Lots 6 through 11, 14 through 19; 490.18 acres

Section 17: Lots 1 through 15, and W $\frac{1}{2}$ ; 639.73 acres

Section 18: Lots 5 through 14, 19, 20; 481.50 acres

T. 47 N., R. 72 W., 6<sup>th</sup> PM, Campbell County, Wyoming

Section 1: Lots 9 through 13, and NW $\frac{1}{4}$ SE $\frac{1}{4}$ ; 241.80 acres

Section 12: Lots 1 through 16; 647.10 acres

Section 13: Lots 1 through 8; 325.04 acres

Total: 2,825.35 acres

The lands that would be included in the south tract under BLM's Alternative 3 are:

T. 47 N., R. 71 W., 6<sup>th</sup> PM, Campbell County, Wyoming

Section 20: Lots 1, 8, 9, 16; 154.31 acres

Section 21: Lots 4, 5, 12, 13; 157.69 acres

Section 28: Lots 4, 5, 12, 13; 165.80 acres

Section 29: Lots 1, 8, 9, 16; 164.45 acres

Section 32: Lots 1, 8, 9, 16; 162.94 acres

Section 33: Lots 4, 5, 12, 13; 164.64 acres

T. 46 N., R. 71 W., 6<sup>th</sup> PM, Campbell County, Wyoming

Section 4: Lots 8, 9, 16, 17; 163.79 acres

Section 5: Lots 5, 12, 13, 20; 165.03 acres

## Appendix H

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Section 9: Lots 6 through 8;	122.86 acres
Section 10: Lots 7 through 10;	162.62 acres
Section 11: Lots 13 through 16;	161.87 acres
Section 14: Lots 1 through 4;	161.69 acres
Section 15: Lots 1 through 4.	<u>162.59 acres</u>
Total:	2,070.28 acres

Under Alternative 3 reconfiguration of the Maysdorf II LBA Tract, the north tract would include approximately 2,825.4 acres containing approximately 326.4 million tons of in-place coal and the south tract would include approximately 2,070.3 acres containing approximately 206.6 million tons of in-place coal, according to information provided by the applicant. The north tract includes the area that would not be mined within the highway ROW and buffer zone, as discussed above. The south tract includes the areas that would not be mined within the Haight and Hilight County Roads and buffer zones, the BNSF & UP railroad ROW, and the Maysdorf Point Cemetery, as discussed under Alternative 2.

### **H-3.0 CONSULTATION TO DATE**

The location of the existing Cordero Rojo Mine coal leases, the existing approved mine permit area, and the Maysdorf II LBA Tract are shown in Figure H-2.

The Cordero Rojo Mine and Maysdorf II LBA Tract are included in the area determined to be “acceptable for further consideration for leasing” 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. BLM has applied these coal screens to federal coal lands in Campbell County several times, starting in the early 1980s. Most recently, in 1993, BLM began the process of reapplying these screens to federal coal lands in Campbell, Converse, and Sheridan Counties. The results of this analysis were included as Appendix D of the 2001 *Approved Resource Management Plan for Public Lands Administered by the BLM Buffalo Field Office* (BLM 2001), which can be viewed on the Wyoming BLM website at <http://www.wy.blm.gov> in the NEPA documents section. 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).

Appendix B of the SGAC EIS document summarizes the unsuitability criteria, describes the general findings for the screening analyses discussed above, and presents a validation of these findings for the Maysdorf II LBA Tract based on the current information.

Consultation with USFWS has previously been completed for the area included within the Cordero Rojo Mine's existing approved mining permit area, shown in Figure H-2, as part of the mining and reclamation plan approval process. This process began when the CMC Mine and CRI Mine were initially permitted in 1975 and 1980, respectively.

A letter dated March 18, 2005, from Brian Kelly, USFWS, Cheyenne, Wyoming, to Jim Orpet of Intermountain Resources (wildlife consultant for the Cordero Rojo Mine) approved CMC's current Raptor and Migratory Birds of High Federal Interest and Raptor Monitoring and Mitigation Plan (USFWS 2005a).

USFWS provided BLM a listing of the T&E species that may be present in the Maysdorf II coal lease project area in a memorandum letter from Brian T. Kelly, USFWS, Wyoming Field Office, Cheyenne, Wyoming, to Chris Hanson, BLM, Buffalo Field Office, Buffalo, Wyoming dated August 8, 2007 (USFWS 2007). The following list of species that was provided by USFWS represents the federally listed T&E species that may be present in Campbell County, Wyoming:

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

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

The August 8, 2007 memorandum provided recommendations for protective measures for T&E species in accordance with the Endangered Species Act. 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 as a species of specific interest and the importance of identifying grouse habitats within the lease area and appropriate mitigation measures to minimize potential impacts to 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 Endangered Species Act are satisfied and carried out.

The Wyoming Game and Fish Department (WGFD) provided BLM with scoping comments for the four tracts included in the SGAC EIS in a letter from John Emmerich, Deputy Director, WGFD, Cheyenne, Wyoming, to Teresa Johnson, BLM, Casper Field Office, Casper, Wyoming, dated April 10, 2007 (WGFD 2007). WGFD recommended consideration be given to possible impacts to big

game, sage grouse, raptors, and nongame species and their habitat, and aquatic resources within the South Gillette Area Coal project area.

#### **H-4.0 SPECIES HABITAT AND OCCURRENCE AND EFFECTS OF THE PROPOSED PROJECT**

The Cordero Rojo Mine began producing coal in 1976. Wildlife monitoring has been conducted annually for the mine since the early 1980's. This wildlife monitoring was designed to meet the Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD), Wyoming Game and Fish Department (WGFD), 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 WGFD and USFWS. The monitoring program was conducted in accordance with Appendix B of WDEQ/LQD Coal Rules and Regulations. Because the areas covered in the wildlife surveys included the mine's permit area and a large perimeter around the permit boundary, the entire Maysdorf II LBA Tract has been included in baseline inventories and annual wildlife surveys conducted for the Cordero Rojo Mine since wildlife studies began.

The approved Cordero Rojo Mine Permit 237 Term T7 (CMC 2005) includes monitoring and mitigation measures for the Cordero Rojo Mine that are required by SMCRA and Wyoming State Law. If the Maysdorf II LBA Tract is acquired by CMC, these monitoring and mitigation measures would be extended to cover operations on the LBA tract when the Cordero Rojo Mine's mining permit is amended to include the tract. This amended permit would have to be approved before mining operations could take place on the tract. These monitoring and mitigation measures are considered to be part of the Proposed Action and Alternatives 2 and 3 during the leasing process because they are regulatory requirements.

Background information on T&E species in the vicinity of the Maysdorf II LBA Tract was drawn from several sources, including: wildlife survey reports submitted by the Cordero Rojo Mine to the WDEQ/LQD from 1974 through 2005, the Final South Powder River Basin Coal EIS (BLM 2003), the Maysdorf Coal FEIS (BLM 2007), a Wyoming Natural Diversity Database search (University of Wyoming 2001), and from WGFD and USFWS records and contacts in 2004 and 2005. In addition, the Maysdorf II LBA Tract wildlife study area falls within the wildlife monitoring areas for the nearby Belle Ayr and Coal Creek Mines (Figure H-1).

Site-specific data for a substantial portion of the tract as applied for and the study area for Alternatives 2 and 3 were obtained from several sources, including WDEQ/LQD permit applications and annual wildlife reports for the Cordero Rojo Mine and other nearby coal mines. Baseline wildlife studies were conducted by Intermountain Resources (IR) expressly for the Maysdorf II LBA Tract in 2006-2007. Figure H-4 depicts IR's T&E animal species survey areas for the Maysdorf II LBA Tract.

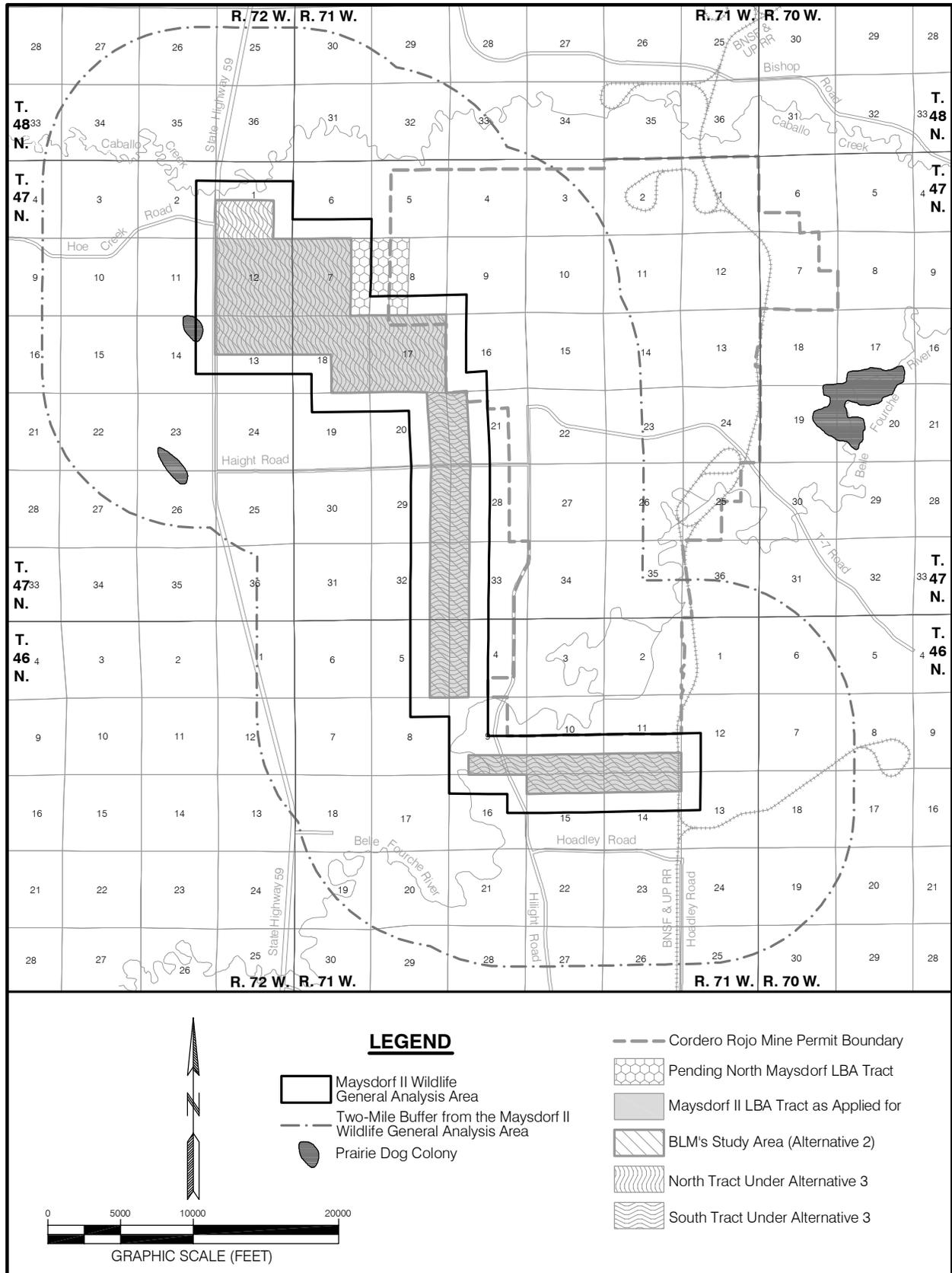


Figure H-4. T&E Species Survey Area for the Cordero Rojo Mine and the Maysdorf II LBA Tract.

The Maysdorf II LBA Tract is in an area of gently rolling terrain of moderate relief influenced by the Belle Fourche River and its tributary, Caballo Creek. Elevation ranges from 4,540 to 4,885 ft within the LBA tract and from 4,520 to 4,885 ft including the area added under Alternatives 2 and 3. Within the LBA tract and the area added under Alternatives 2 and 3, slopes range from flat in the Belle Fourche River floodplain to over 57 percent in the adjacent breaks. The breaks are sharp transitions between the bottomlands and the uplands. The slopes of the gently rolling uplands, which comprise most of the LBA tract, seldom exceed 10 percent. A slope analysis would be done for the LBA tract if a lease sale is held and it is proposed for mining.

Predominant wildlife habitat types classified on the LBA tract and adjacent area correspond with the major plant communities defined during the vegetation baseline study and consist primarily of sagebrush/grassland, grassland, and seeded grassland. Other habitats present in limited extent include disturbance, bottomland, and rough breaks. Networks of road, pipeline, tank battery, and well-pad disturbance areas associated with oil and gas development overlay much of the study area.

The Maysdorf II LBA Tract consists predominantly of gently rolling topography, although the southern portion is dissected by the Belle Fourche River bottomlands and breaks. The Belle Fourche River flows roughly east-northeast through the southern portion of the tract and is currently diverted from its natural channel in this area to facilitate mining within the existing Cordero Rojo Mine permit area. The diversion channel was constructed in 1995. All streams in the region show the characteristic extreme low-flow period from October through January. Flow events frequently result from snowmelt during the late winter and early spring. Although peak discharges from such events are generally small, the duration and therefore the percentage of annual runoff volume can be considerable. During the spring, general storms (both rain and snow) increase soil moisture; hence decreasing infiltration capacity, and subsequent rainstorms can result in both large runoff volumes and high peak discharges. Limited segments of the Belle Fourche River do receive recharge from bank storage (groundwater stored in the alluvium along the stream channel) and flow throughout the year, making the stream locally intermittent.

The wetland analysis area includes the Maysdorf II LBA Tract as applied for, the lands added under Alternatives 2 and 3, and a ¼-mile disturbance buffer around the tract sufficient to mine and reclaim the tract as a part of the existing Cordero Rojo Mine operation. Cordero Rojo Mine conducted a preliminary wetlands inventory in 2005 and 2006 of the lands within the wetlands analysis area, based on USFWS NWI mapping and vegetation mapping in the field ESCO (2007). The area investigated is located almost entirely outside of the existing Cordero Rojo Mine permit area, west and south of the current permit boundary. Some wetland areas previously mapped by the USFWS NWI project have been recently altered somewhat due to CBNG-related water production within and upstream of the Maysdorf II wetlands analysis area. The boundaries of the existing potential wetlands may vary to a greater

or lesser extent from the boundaries shown on the NWI maps, and current field conditions may not be representative of the field conditions in the future. Due to the ephemeral nature of CBNG dewatering activities, the wetland boundaries and areas are likewise ephemeral. A formal wetland delineation survey of the area proposed for mining would be conducted and submitted to the COE for verification as part of the mining and reclamation permit process, if the LBA tract is leased.

Based on the existing USFWS NWI mapping data (which may be somewhat outdated) and the vegetation mapping that was conducted in 2005 and 2006, a total of approximately 140.15 acres of wetlands and other Waters of the U.S. occur within the wetlands analysis area. Of this 140.15 acres identified, approximately 133.54 acres are vegetated wetlands and the remaining 6.61 acres are other Waters of the U.S. The majority of the wetlands are associated with the watercourses of the Belle Fourche River and Caballo Creek, diked or impounded reservoirs, and internally drained depressions/playas, while the majority of the other Waters of the U.S. are associated with ephemeral stream channels and areas of open water. These areas that occur within and adjacent to the Maysdorf II LBA Tract are shown on Figure S4-6 in the SGAC Supplementary Information document.

Within the proposed lease area and adjacent study area there is no “critical” habitat designated by USFWS for T&E species. The following discussion describes species’ habitat requirements and their occurrence in the area of the Maysdorf II LBA Tract and evaluates the potential environmental effects of the Proposed Action and Alternatives 2 and 3 on federal T&E species.

#### H-4.1 Threatened Species

##### H-4.1.1 Ute ladies’-tresses (*Spiranthes diluvialis*)

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 north-central Colorado, northern and south-central Utah, and southeastern Nevada. As of September 2005, it had also been found in western Nebraska, southeastern Wyoming, southwestern Montana, and north-central Washington, while new populations had been documented in northwestern Colorado and northern Utah (Fertig, et al. 2005). USFWS has determined that a petition to remove the Ute ladies’-tresses orchid from federal protection under the Endangered Species Act provides substantial biological information to indicate that removal may be warranted. The petition was received from the Central Utah Water Conservancy District (USFWS 2004).

Biology and Habitat Requirements: Ute ladies’-tresses is a perennial, terrestrial orchid with erect, glandular-pubescent stems 8 to 20 inches tall arising from tuberous-thickened roots. This species typically flowers from late

July through August. 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 (USFWS 2005b). Plants probably do not flower every year and may remain dormant below ground during drought years. The total known population of this species is currently estimated to be 60,000 individuals (USFWS 2004). Occurrences range in size from one plant to a few hundred individuals.

Ute ladies'-tresses occurs primarily on moist, subirrigated or seasonally flooded soils bordering wetland meadows, springs, lakes, or perennial streams. The elevation range of known occurrences is 4,200 to 7,000 feet in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows. Soils where the orchid has been found typically range from fine silt/sand to gravels and cobbles, as well as to highly organic and peaty soil types. The Ute ladies'-tresses orchid is not found in heavy or tight clay soils or in extremely saline or alkaline soils. The orchid seems intolerant of shade and small scattered groups are found primarily in areas where vegetation is relatively open (USFWS 2005). Ute ladies'-tresses orchid is commonly associated with horsetail, milkweed, verbena, blue-eyed grass, reedgrass, goldenrod, bentgrass and arrowgrass.

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. 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).

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 or in the Belle Ayr North wildlife general analysis area in Converse County.

Existing Environment: The Maysdorf II LBA includes a reach of the Belle Fourche River and along that reach are wetland and "moist-land" plant communities that offer seemingly possible habitat for Ute Ladies'-Tresses Orchid. Likewise, there exist isolated wet depressions along some upland

drainages that support hydrophytes such as common spikerush or field clustered sedge. These latter sites were deemed unlikely though remotely possible habitat so were included in field searches. Pedestrian surveys of the Belle Fourche and isolated upland depression areas were conducted for Ute Ladies'-Tresses Orchid by ESCO Associates in August 2005 and 2006.

Playa Grassland was suggested by USFWS (personal communication) as suitable habitat and the portion of the LBA site occupied by this type was also searched in August 2006 with the same results. Eastern Wyoming playas, except during hypothetically potential extraordinary years of unrelenting spring and summer rain, would probably never naturally sustain the moist conditions required by the orchid. Even following the springs when the playas do occasionally, but only temporarily, include standing water, subsequent summer conditions accompany a thorough drying that excludes any routine manifestation of moisture-loving perennial plant species such as the orchid. The highly saline nature of certain of these interior drainages also makes it unlikely that the orchid would occur.

No individuals of the Ute ladies'-tresses orchid were located during the 2005 and 2006 surveys. Other than limited areas along the Belle Fourche River and at isolated upland depressions, most of the land within the Maysdorf II LBA Tract and adjacent study area is not potential Ute ladies'-tresses habitat. This includes highly disturbed or modified sites, upland habitat types, and sites inundated by standing water.

A total of approximately 140.15 acres of wetlands and other Waters of the U.S. occur within the wetlands analysis area. Of this 140.15 acres identified, approximately 133.54 acres are vegetated wetlands and the remaining 6.61 acres are other Waters of the U.S. The majority of the wetlands are associated with the watercourses of the Belle Fourche River and Caballo Creek, diked or impounded reservoirs, and internally drained depressions/playas, while the majority of the other Waters of the U.S. are associated with ephemeral stream channels and areas of open water.

**Effects of the Proposed Project: Mining the federal coal included in the Maysdorf II LBA Tract, if the tract is leased under the Proposed Action or Alternatives 2 and 3, may affect, but is not likely to adversely affect Ute ladies'-tresses.** Typical suitable habitat for this species on the tract is very limited and found along the CBNG-impacted bottomlands of the Belle Fourche River and its tributaries and at isolated upland depressions. However, the quality of potential habitat is extremely poor. Outside of the narrow riparian strips located along these impacted watercourses, typical suitable habitat is rare or non-existent in the study area. Multiple surveys of the existing suitable habitat at the Cordero Rojo Mine and other mines in this area have not found any Ute ladies'-tresses. Because of the ability of this species to persist below ground or above ground without flowering, single season surveys that meet the current USFWS survey guidelines may not detect populations. If undetected populations are present, they could be lost to surface disturbing activities.

Jurisdictional wetlands located in the Maysdorf II LBA Tract 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 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. Replacement of non-jurisdictional and functional wetlands may be required by the surface land owner and/or WDEQ/LQD. WDEQ/LQD allows and sometimes requires mitigation of non-jurisdictional wetlands affected by mining, depending on the values associated with the wetland features.

Cumulative Effects: Alterations of stream morphology and hydrology are believed to have extirpated Ute ladies'-tresses from most of its historical range (USFWS 2002). 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.

#### H-4.2 Endangered Species

##### H-4.2.1 Black-footed ferret (*Mustela nigripes*)

The black-footed ferret is a nocturnal mammal and an obligate associate of prairie dogs (*Cynomys* spp.). Ferrets were listed as endangered in March, 1967. This species is thought to have historically inhabited prairie dog colonies in the short-grass prairies of the eastern and southern Rockies, and across the Great Plains of North America. However, since the early 1900s, numerous factors have led to a decrease in potential habitat to less than 2 percent of its former acreage.

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, colonies which 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: Ferrets rely on prairie dogs to provide both shelter and food (Hillman and Clark 1980). 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. Despite extensive ferret

surveys over the past 20 plus years throughout Wyoming, the last known wild black-footed ferret population was discovered near Meeteetse in 1981 (Miller et al. 1996). Those surveys included numerous USFWS-approved clearances for coal mining and other development in the Powder River Basin of Wyoming, as well as USDA-FS surveys for ferrets on the TBNG. 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.

Existing Environment: The Maysdorf II LBA Tract is within the historical range of the black-footed ferret, although no black-footed ferrets are presently known to occur in northeastern Wyoming. During the 1980s, 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 (Martin Grenier, personal communication, 10/14/2003). In a February 2, 2004 letter to interested parties, the USFWS declared that black-footed ferret surveys are no longer necessary in black-tailed prairie dog colonies within Wyoming.

Intermountain Resources has mapped the current acreage of prairie dog colonies in the vicinity of the Cordero Rojo Mine by walking the perimeters of colonies and delineating them on topographic maps. No black-tailed prairie dog colonies are currently present on the Maysdorf II LBA Tract as proposed and on the area added by Alternatives 2 and 3. One black-tailed prairie dog colony is located less than 1 mile east of the Cordero Rojo Mine's current permit area while two other small colonies are located within 2 miles of the Maysdorf II LBA Tract. One of these colonies is within the Maysdorf II wildlife general analysis area (Figure H-4). The boundaries shown on Figure H-4 and are historical town boundaries and, although black-tailed prairie dogs still exist in the areas, their numbers and distribution may be much smaller than previously recorded.

Effects of the Proposed Project: **Mining the federal coal included in the Maysdorf II LBA Tract, if a lease is issued under the Proposed Action or Alternatives 2 and 3, would have no effect on black-footed ferrets.** There are no black-tailed prairie dog colonies present on the Maysdorf II LBA Tract or in the BLM study area under Alternatives 2 and 3. The black-footed ferret is almost entirely dependent on the prairie dog for survival. The reductions in black-tailed prairie dog populations due to poisoning prior to 1972 and due to recent plague outbreaks have 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. General wildlife surveys and specific ferret surveys have been conducted for many years at the Cordero Rojo Mine, and at other mines in this area. No black-footed ferrets were observed within BLM study area during these surveys. Two black-tailed prairie dog colonies are located within

## Appendix H

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2 miles of the Maysdorf II LBA Tract (one within the Maysdorf II wildlife general analysis area), but they are west of Highway 59 and not within the anticipated Maysdorf II disturbance area (Figure H-4).

**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 and associated habitat for black-footed ferrets. However, black-tailed prairie dogs have been recorded invading and establishing towns on reclaimed coal mined lands in northeastern Wyoming (IR 2005).

Potential ferret habitat is also affected by other impacts to prairie dog populations. 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.

### H-5.0 SUMMARY OF DETERMINATIONS

Table H-1 summarizes the determinations for federally listed T&E species in the area of the Maysdorf II LBA Tract that may result from implementing the Proposed Action or Alternatives 2 and 3.

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Table H-1. Effects Evaluation of Federal T&E Species in the Area of the Maysdorf II LBA Tract.

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<b>Status</b>	<b>Species Common Name</b>	<b>Potential Effects</b>
Threatened:	Ute ladies'-tresses	May affect <sup>1</sup>
Endangered:	Black-footed ferret	No effect

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<sup>1</sup> Not likely to adversely affect individuals or populations.

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### H-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 Maysdorf II LBA Tract is leased, it would be a maintenance lease for the existing Cordero Rojo Mine, 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, such as the Maysdorf II LBA Tract, the existing MLA mining plan and State mining and reclamation plan must be amended to include any newly leased area before that area 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 any newly acquired lease. WDEQ/LQD would review the permit application package to insure the permit application complies with the permitting requirements and 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 lease.

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.

USFWS Section 7 consultation would be required prior to approval of the mining and reclamation plan modification. Additional 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 specific to an actual proposal to mine.

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

- avoiding bald and golden eagle 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 if habitat is present.

#### **H-7.0 CUMULATIVE IMPACTS**

Existing habitat-disturbing activities in the PRB include surface coal mining; conventional oil and gas and CBNG development; uranium mining; sand and gravel, and scoria mining; ranching; agriculture; road, railroad, and power plant construction and operation; recreational activities; and rural and urban housing development. Mining, construction and agricultural activities, 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 T&E plant and wildlife species. In the long term, habitat is being and will continue to be restored as reclamation proceeds.

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 the PRB. 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 at the BLM Wyoming website 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 eight 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 of that disturbance has been reclaimed. This includes conventional oil and gas and CBNG wells and associated facilities and major transportation pipelines.

BLM estimates that the existing federal coal leases in the Wyoming PRB include approximately 121,185 acres. The currently pending federal coal LBA tracts (including the Maysdorf II LBA Tract) include approximately 25,585 additional 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 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.

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 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 estimated total development-related disturbance in the Wyoming PRB in 2003 was 264,704 acres. In addition to the coal and oil and gas development discussed above, this total includes other types of development disturbance,

such as 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.

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, and habitat fragmentation. 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 Maysdorf II LBA Tract, if it is leased as proposed and after required detailed plans to mine the coal and reclaim the mined-out areas are developed and approved.

## **H-8.0 CREDENTIALS OF SURVEY PERSONNEL**

### **Intermountain Resources of Laramie, Wyoming**

#### Jim Orpet

Mr. Orpet obtained a Bachelors of Science degree in Wildlife Management and a Master of Science degree in Range Management from the University of Wyoming and has accumulated over 28 years of field experience in wildlife surveys. This experience includes surveys for T&E species, surveys for species

of high state or federal interest and preparation of wildlife reports 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 14 years of field experience in wildlife surveys in Wyoming. Mr. Tait has assisted Mr. Orpet in completion of wildlife inventories for over nine years on coal mines and other resource development projects in Wyoming, including black-footed ferret surveys, bald eagle surveys, sage grouse lek surveys and surveys for other species of high federal or state interest.

**ESCO Associates Inc. of Boulder, Colorado**

David Buckner

Mr. Buckner obtained a Bachelors of Arts degree, Master of Arts degree, and Ph.D. in Plant Ecology from the University of Colorado and has accumulated over 21 years of field experience in vegetation and rare plant surveys.

Mr. Buckner's rare plant survey experience includes:

- *Asclepias ruthiae*, Grand County, Utah, 1982;
- *Stellaria irrigua*, La Plata County, Colorado;
- *Sclerocactur glaucus*, Mesa and Garfield Counties, Colorado, 1987;
- *Penstemon harringtonii*, Eagle, Grand, and Routte Counties, Colorado, 1982, 1990, 1991, 1993, and 1994.

Mr. Buckner's familiarity with *Spiranthes diluvialis* includes:

- observation of flowering populations in Boulder County, Colorado, 1991-2004;
- observation of vegetative sprouts of individuals occurring in Boulder County populations, January to April 1982, June 1993, and May 1995.H-9.0

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