

APPENDIX H

COAL RESOURCE EVALUATION

Federal coal resources in Colorado are leased under the “Lease-by-Application” process described in 43 CFR 4325. Lease applications are submitted by industry to the BLM, who engages the Forest Service if NFS lands are involved. Site-specific NEPA analysis is completed on lands BLM identifies that should be considered for leasing through the tract delineation process. The decision on whether or not to lease the lands, and under what conditions, is made at the time a federal coal lease application for specific lands is reviewed and taken through the NEPA process.

Federal regulations pertaining to coal resource management include provisions for assessing coal resources at the land management planning stage. The process and results are not a decision nor a commitment of any resources. The specific regulatory requirements for the land management planning phase to identify lands on the GMUG NF that are acceptable for further consideration for coal leasing during this plan life are outlined below (from 43 CFR 3420) followed by how the GMUG has met those requirements (in italics):

1. Department of Agriculture shall prepare a comprehensive land use plan or analysis for lands it administers that contain recoverable coal resources. *Preparation of this Forest Plan revision meets this requirement.*
2. The comprehensive land use plan or analysis shall contain an estimate of the amount of coal recoverable by either surface or underground mining methods or both. *This information is provided in Part 2 B.4. of the Forest Plan (Mineral Resources).*
3. Only those areas that have development potential may be identified as acceptable for further consideration for leasing. BLM shall estimate coal development potential for the surface managing agency.

The BLM – Colorado State and Uncompahgre Field Offices provided input on recoverable coal resources within the administrative boundaries of the GMUG NF. BLM indicates that recoverable coal resources that could potentially be developed during the life of this Plan lie in the Somerset and Grand Mesa coalfields. Consistent with BLM findings, the GMUG has identified the lands in the Grand Mesa and Somerset coalfields ([Figure 23](#)) that are acceptable for further consideration for coal leasing during the life of this Plan.

Coal resources exist in other areas on the GMUG, however, are not considered to have development potential at this time and were therefore not identified as acceptable for further consideration in this planning effort (see Comprehensive Assessment).

4. Apply Unsuitability Criteria from 43 CFR 3461 (Unsuitability criteria will be updated at the site specific leasing stage).

Application of the Unsuitability Criteria is done at the land management planning level, and again at the project level once a coal lease application

for specific lands and coal resources is received. The Unsuitability Criteria review may result in certain specific restrictions that would be carried forward as coal leasing stipulations. A summary of the Unsuitability Criterion analysis is provided below (the full analysis is provided as Attachment 1):

- a. *The federal coal lands on the GMUG identified for further consideration for leasing were determined to be suitable for underground coal mining following the application of Unsuitability Criteria Numbers 2, 3, 4, 5, 6, 7, 8, 10, 11, 16, 17, 18, 19, and 20.*
 - b. *Criteria Numbers 1, 9, 12, 13, 14, and 15 were found to be suitable for mining after applying the exceptions to the criterion, and identifying guidelines for protection of the resource where needed.*
5. Evaluation of Lands with coal development potential for other resource values that may be locally, regionally or nationally important, or unique, and are not included in the Unsuitability Criteria.

No lands in the areas where coal development potential exists were identified as having special importance or uniqueness that would warrant removing them from being acceptable for further consideration for leasing.

The lands identified in [Figure 23](#) also have high potential for natural gas resources. Portions of the identified coal lands to the north of the North Fork of the Gunnison River are currently under lease for gas, and there has been interest in gas leasing on the coal lands south of the river as well. The BLM has identified that lands in these areas where the overburden above the coal seams is 3,500 feet and less will be managed primarily for coal resource development. Therefore, none of the identified lands would need to be removed from being acceptable for further consideration for leasing.

The lands shown on [Figure 23](#) include some perennial drainages. Perennial drainages are important to ecosystem function. Preservation of perennially flowing water is essential to ecosystem health. Subsidence from underground coal mining has been known in some cases to disrupt and/or alter the flow or function of perennial streams. Therefore, specific leasing stipulations related to preservation of perennial streams may be required at the leasing stage.

6. Consult with applicable State agency on unsuitability analysis.
- The Colorado Division of Minerals and Geology was consulted during the public review process on the application of Unsuitability Criteria.*

ATTACHMENT 1.

Application of Unsuitability Criteria for Coal Mining

The federal coal regulations require applying the Unsuitability Criteria for Coal mining described at 43 CFR 3461 to lands being considered for coal leasing. Application of the Criteria is done at the land management planning level, and again at the project level once a coal lease application for specific lands and coal resources is received.

The analysis of Unsuitability Criteria for the lands shown on [Figure 23](#) is presented below. Where exceptions or exemptions from the criteria are applicable, the reasoning is noted in the analysis. For the purposes of the Unsuitability Criteria analysis, the area of the GMUG being considered for further coal leasing is referred to as the “review area”.

This Plan-level Unsuitability Criteria review identifies certain resource-specific protections that may be used for project-level coal leasing analyses. The resource protections are discussed in [Appendix C](#).

Criterion 1

All Federal lands included in the following land systems or categories shall be considered unsuitable: National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, National Wild and Scenic Rivers System, National Recreation Areas, lands acquired with money derived from the Land and Water Conservation Fund, National Forests, and federal lands in incorporated cities, towns, and villages.

Exceptions. (i) A lease may be issued within the boundaries of any National Forest if the Secretary finds no significant recreational, timber, economic or other values which may be incompatible with the lease; and (A) surface operations and impacts are incident to an underground coal mine, or (B) where the Secretary of Agriculture determines, with respect to lands which do not have significant forest cover within those National Forests west of the Meridian, that surface mining may be in compliance with the Multiple-Use Sustained-Yield Act of 1960, the Federal Coal Leasing Amendments Act of 1976 and the Surface Mining Control and Reclamation Act of 1977.

Analysis. The lands shown on [Figure 23](#) were proclaimed National Forest on June 6, 1905 and are within the Gunnison National Forest. Further, all leasing of the coal resource will be for surface operations and impacts incident to underground mines. No significant recreational, timber, economic or other values have been identified in this area.

Designated wilderness area in proximity to the lands to be carried forward for coal leasing include the West Elk wilderness, which lies to the south of the identified coal lands south of the Gunnison River ([Figure 23](#)). These lands are withdrawn from mineral entry, and further do not contain geologic strata that contain continuous coal reserves.

Criterion 2

Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial, or other public purposes, on federally-owned surface shall be considered unsuitable.

Exceptions. A lease may be issued, and mining operations approved, in such areas if the surface management agency determines that (i) all or certain types of coal development (e.g., underground mining) will not interfere with the purpose of the right-of-way or easement, or (ii) the right-of-way or easement was granted for mining purposes, or (iii) the right-of-way or easement was issued for a purpose for which it is not being used, or (iv) the parties involved in the right-of-way or easement agree, in writing, to leasing, or (v) it is impractical to exclude such areas due to the location of coal and method of mining and such areas or uses can be protected through appropriate stipulations.

Analysis. There is a General Land Office Order, 6/1/1910, which classifies the lands within the review area for coal. There are no known rights-of-way, easements or surface leases for residential, commercial, industrial, or other public purposes within the analysis area. If at the individual lease application phase any other leases, or rights-of-way, or easements are found, then specific surface use stipulations would be developed for any protection deemed necessary in the site-specific NEPA analysis.

Criterion 3

Federal lands affected by section 522(e)(4) and (5) of the Surface Mining Control and Reclamation Act of 1977 shall be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public road, or within 100 feet of a cemetery, or within 300 feet of any public building, school, church, community or institutional building or public park, or within 300 feet of an occupied dwelling.

Exceptions. A lease may be issued for lands (i) used as mine access roads or haulage roads that join the right-of-way for a public road, (ii) for which the Office of Surface Mining Reclamation and Enforcement has issued a permit to have public roads relocated, (iii) if, after public notice and opportunity for public hearing in the locality, a written finding is made by the Authorized Officer that the interests of the public and the landowners affected by mining within 100 feet of a public road will be protected, or (iv) for which owners of occupied dwellings have given written permission to mine within 300 feet of their buildings.

Analysis. No public roads, cemeteries, occupied dwellings, public buildings, schools, churches, community, or institutional buildings exist within this area.

Criterion 4

Federal lands designated as wilderness study areas shall be considered unsuitable while under review by the Administration and Congress for possible wilderness designation. For any federal land which is to be leased or mined prior to completion of the wilderness inventory by the surface management agency, the environmental assessment or impact statement on the lease sale or mine plan shall consider whether the land possesses the characteristics of a wilderness study area. If the finding is affirmative, the land shall be considered unsuitable, unless issuance of noncompetitive coal leases and mining on leases is authorized under the Wilderness Act and the Federal Land Policy and Management Act of 1976.

Analysis. No lands within the review area are designated Wilderness Study Areas. The West Elk Wilderness area adjoins the federal coal lands to be further considered for leasing located south of the North Fork of the Gunnison River ([Figure 23](#)). See also Criterion 2.

Criterion 5

Scenic federal lands designated by visual resource management analysis as Class I (an area of outstanding scenic quality or high visual sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable. A lease may be issued if the surface management agency determines that surface coal mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.

Analysis. No lands within the review area are designated as visual resource management Class I areas. The West Elk Wilderness is considered a Class I visual resource management area, and adjoins the southern edge of federal coal lands to be further considered. Designated wilderness areas are withdrawn from mineral entry.

Criterion 6

Federal lands under permit by the surface management agency, and being used for scientific studies involving food or fiber production, natural resources, or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration, or experiment except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific use or agency give written concurrence to all or certain methods of mining.

Analysis. No lands within the review area are under permit for scientific study.

Criterion 7

All publicly-owned places on federal lands which are included in the National Register of Historic Places shall be considered unsuitable. This shall include any areas that the surface management agency determines, after

consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Officer, are necessary to protect the inherent values of the property that made it eligible for listing in the National Register.

Analysis. No publicly-owned places on federal lands within the review area are included in the National Register of Historic Places.

Criterion 8

Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

Analysis. No lands within the review area are designated as natural areas or as National Natural Landmarks.

Criterion 9

Federally designated critical habitat for listed threatened or endangered plant and animal species, and habitat proposed to be designated as critical for listed threatened or endangered plant and animal species or species proposed for listing, and habitat for Federal threatened or endangered species which is determined by the Fish and Wildlife Service (FWS) and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitable.

Exceptions. A lease may be issued and mining operations approved if, after consultation with the FWS, the FWS determines that the proposed activity is not likely to jeopardize the continued existence of the listed species and/or its critical habitat.

Analysis. The following list of Federally listed endangered and threatened, species are known to occur on the review area and/or in the vicinity were considered under this criterion (Species list provided by the U.S. Fish and Wildlife Service, 2004):

Canada Lynx	<i>Lynx Canadensis</i>	THR
Mexican Spotted Owl	<i>Strix occidentalis</i>	THR
Bald eagle	<i>Haliaeetus leucocephalus</i>	THR
Bonytail chub	<i>Gila elegans</i>	END
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	END
Humpback Chub	<i>Gila cypha</i>	END
Razorback sucker	<i>Xyrauchen texanus</i>	END
Uinta Basin Hookless Cactus	<i>Sclerocactus glaucus</i>	THR

No lands within the review area are designated as critical habitat, proposed to be designated as critical habitat, or determined to be essential habitat for any Federally listed threatened or endangered plant or animal species, or species proposed for listing (*Federal Register*, various dates).

The species known to occur, or to have habitat (non-critical or non-essential) in the review area, or that could have potential effects from coal leasing and subsequent development are further discussed below:

Colorado River Endangered Fish Species

Critical habitat for the Colorado-pikeminnow, razorback sucker, humpback chub, and bonytail chub exists in the lower Gunnison River about 20 miles west of the review area, and in the Colorado River. This critical habitat could be affected by water depletions from underground coal mining and related surface activities (*Federal Register*/Vol. 59, No. 54) that may occur in the review area.

Potential water depletions will be evaluated at the site-specific leasing stage and prior to the approval of the site-specific mine plan. The permitting agency(ies) must enter into consultation with the U.S. Fish and Wildlife Service to determine the appropriate conservation measures to offset the effect to these listed fishes.

Bald Eagle

Bald eagles winter in a corridor along the North Fork of the Gunnison River that bisects the blocks of federal coal lands on the GMUG to be further considered for leasing. The bald eagle winter concentration area does not extend onto NFS lands. The NFS lands in proximity to this area may be used for incidental foraging, but there are no other known essential habitats, such as nests or communal roosts located on or near the review area (BLM 1980, CDOW 2001).

Canada Lynx

USFS, BLM, and USFWS have delineated areas of suitable habitat for lynx. The review area lies within portions of the Crater Lake, Mount Gunnison and Beckwith Mountains Lynx Analysis Units (LAU). The review area contains habitats mapped as winter, denning and "other" habitat. Winter and denning habitat occur at subalpine and higher montane elevations in spruce-fir and mixed conifer forests, and "other" habitat (capable but not currently denning or winter forage habitat) in aspen stands mixed or significantly interspersed with spruce, fir, or Douglas-fir (LeFevre 2003, USFS 2002, CNHP 2002).

Traditionally, impacts from coal leasing and development have been limited to surface effects incident to subsidence caused by the underground mining. These subsidence-induced effects have had minor effects to wildlife habitats. However, since about 2001, activities related to coal mining have caused more surface disturbance due to methane drainage needs (drilling and road building). It is reasonable to expect that surface use for coal exploration and methane drainage drilling, ventilation shafts, associated temporary road construction, water monitoring and other uses will occur in the review area should leases be issued. These

coal mining-related surface uses could affect lynx habitats in the review area.

Mexican Spotted Owl

No Mexican Spotted Owls have been documented in the review area or the North Fork valley. The nearest suitable habitat occurs on the Uncompahgre Plateau some 50 miles west of the review area. Lower elevations of the North Fork have somewhat similar habitats as the Uncompahgre Plateau and although unlikely may contain suitable habitat.

Uinta Basin Hookless Cactus

The Uinta Basin Hookless Cactus occurs on very dry habitats on the west end of the Grand Mesa, generally near or below the Forest boundary. No occurrences are known within the review area. Similar low elevation dry sites occur in the North Fork Valley which may be potential habitat.

Because there is potential for some threatened and endangered species to occur in the review area, it is identified as a non-mineral resource that may require stipulations at the individual leasing stage (see [Appendix C](#)).

Criterion 10

Federal lands containing habitat determined to be critical or essential for plant or animal species listed by a state pursuant to state law as endangered or threatened shall be considered unsuitable.

Exceptions. A lease may be issued and mining operations approved if, after consultation with the state, the surface management agency determines that the species will not be adversely affected by all or certain stipulated methods of coal mining.

Analysis. No lands within the review area have been determined by the State of Colorado as critical or essential habitat for any State listed endangered or threatened animal species. No plant species are listed by the State of Colorado as threatened or endangered. In addition to the species appearing on the Federal list in Criterion 9, the river otter (***Lutra canadensis***) listed as threatened by the State of Colorado, as well as the boreal toad (***Bufo boreas boreas***), wolverine (***Gulo Gulo***), and Canada lynx (***Lynx canadensis***), listed endangered by the State of Colorado, were considered as potentially occurring in the review area or in the region of potential effect and were considered under this criterion.

The analysis of the potential effects on Canada lynx of this proposed lease action are detailed in Criterion 9, above. River otters are known to occur in the Gunnison Gorge and have been reported in the North Fork of the Gunnison. Grand Mesa is known to have occupied habitat for the boreal toad. Breeding habitat consists of marsh, pond, bog, or wet meadow habitat in spruce-fir forests or alpine meadows, at elevations above 8,000 feet (Boreal Toad Conservation Plan and Agreement, 2001). Wolverine may occupy the higher elevation forests and alpine areas within the review

area. Sightings have occurred nearby the review area as recently as 1995 (CNHP wildlife observations, 2003)

Because there is potential for some State-listed threatened and endangered species to occur in the review area, it is identified as a non-mineral resource that may require stipulations at the individual leasing stage (see [Appendix C](#)).

Criterion 11

A bald or golden eagle nest site on federal lands that is determined to be active, and an appropriate buffer zone of land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the FWS.

Exceptions. A lease may be issued if (1) it can be conditioned in such a way, either in manner or period of operation, that eagles will not be disturbed during the breeding season, or (2) the surface management agency, with the concurrence of the FWS, determines that the golden eagle nest(s) will be moved, or (3) buffer zones may be decreased if the surface management agency determines that the active eagle nests will not be adversely affected.

Analysis. Presently, no bald or golden eagle nest sites exist on federal lands in the review area. If bald or golden eagles nest sites are identified at the site-specific leasing stage, then specific protection measures may be developed at that time.

Criterion 12

Bald and golden eagle roost and concentration areas on federal lands used during migration and wintering shall be considered unsuitable.

Analysis. CDOW has mapped the area, approximately one half mile on either side of the North Fork of the Gunnison, as a concentration area for wintering bald eagles.

No bald or golden eagle roost sites are known to exist on federal lands within the review area. Wintering bald eagles use the uplands in the review area sporadically for foraging.

With respect to bald eagle concentration areas, or bald and golden eagle roost sites which may be established on the review area and are identified at the site-specific leasing stage, then specific protection measures may be developed at that time.

Criterion 13

Federal lands containing a falcon (excluding kestrel) cliff nesting site with an active nest and buffer zone of federal land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Exception. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the falcon habitat during the periods when such habitat is used by the falcons.

Analysis. Peregrine falcons have been documented in the review area south of the North Fork of the Gunnison River. If falcon habitat is identified at the site-specific leasing stage, then specific protection measures will be identified at that time.

Criterion 14

Federal lands which are high priority habitat for migratory bird species of high federal interest on a regional or national basis, as determined jointly by the surface management agency and the FWS, shall be considered unsuitable.

Exception. A lease may be issued where the surface management agency, after consultation with the FWS, determines that all or certain stipulated methods of coal mining will not adversely affect the migratory bird habitat during the periods when such habitat is used by the species.

Analysis. The following list of migratory bird species of high Federal and/or State interest are known, or considered likely, to breed and nest within the review area or vicinity: Band-tailed pigeon, Lewis' woodpecker, Black swift, Peregrine falcon, Cooper's hawk, Prairie falcon, Flammulated owl, Three-toed Woodpecker, Golden eagle, Williamson's sapsucker, Great blue heron, Northern Goshawk, Loggerhead Shrike, Virginia's warbler, Sage sparrow, and Purple Martin.

In addition, a total of eighty-six species of neotropical migrant birds are known to breed or migrate regularly through some part of Colorado. Recent studies in Colorado conclude that 41 percent of these neotropical migrant species are declining in numbers. The study also showed that riparian communities, followed by Gambel oak communities support the highest number of breeding birds. Coopers hawks and Northern Goshawks are known to nest in aspen and spruce-fir communities in the vicinity of the review area. Previous monitoring of the effects of mine subsidence on Cooper's hawk nests, on existing leases, indicate that subsidence is unlikely to impact the birds, nest trees, or the nests (Welt, 1993).

Underground coal mining would affect these species to the degree that the human and surface-disturbing activities could impact their breeding and nesting activities and habitats in riparian and Gamble oak communities.

Therefore, migratory bird habitat is identified as a non-mineral resource that could require stipulations at the individual lease stage (See [Appendix C](#)).

Criterion 15

Federal lands which the surface management agency and the state jointly agree are habitat for resident species of fish, wildlife and plants of high interest to the state and which are essential for maintaining these priority wildlife and plant species shall be considered unsuitable. Examples of such lands which serve a critical function for the species involved include: (i) active dancing and strutting grounds for sage grouse, sharp-tailed grouse, and prairie chicken, (ii) winter ranges crucial for deer, antelope, and elk, (iii) migration corridor for elk, and (iv) extremes of range for plant species.

Exception. A lease may be issued if, after consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected.

Analysis. According to CDOW's current mapping of seasonal ranges for mule deer and elk, portions of the lands in the review area are considered to be crucial winter range for both species and include elk calving areas. (Crucial winter range is a combination of those areas mapped by CDOW as winter concentration area or severe winter range.) Lower reaches of Cunningham and West Fork of Terror Creeks within the review area support a conservation population of Colorado River cutthroat trout.

Surface-disturbing activities in this area caused by underground coal mining could impact wintering range of elk and mule deer, elk calving, or the conservation population of Colorado River cutthroat trout.

Therefore, big-game wintering areas, elk calving areas, and other key wildlife habitat and/or activities are non-mineral resources that could require lease stipulations. Specific time restrictions for specific species will be evaluated at the individual leasing stage, and any additional site specific stipulations developed at that time.

Any stipulations necessary to protect Colorado River cutthroat trout will be developed at the individual leasing stage.

Criterion 16

Federal lands in riverine, coastal, and special floodplains (100-year recurrence interval) on which the surface management agency determines that mining could not be undertaken without substantial threat of loss of life or property shall be considered unsuitable for all or certain stipulated methods of coal mining.

Analysis. The review area does not contain lands within a riverine, coastal, or special floodplain.

Criterion 17

Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

Analysis. None of the lands in the review area are within a municipal watershed.

Criterion 18

Federal lands with National Resource Waters, as identified by states in their water quality management plans, and a buffer zone of federal lands ¼-mile from the outer edge of the far banks of the water, shall be unsuitable.

Analysis. None of the lands in the proposed lease tract are identified as a National Resource Water.

Criterion 19

Federal lands identified by the surface management agency, in consultation with the state in which they are located, as alluvial valley floors according to the definition in Subpart 3400.0-5(a) of this title, the standards of 30 CFR Part 822, the final alluvial floor guidelines of the Office of Surface Mining Reclamation and Enforcement when published, and approved state programs under the Surface Mining Control and Reclamation Act of 1977, where mining would interrupt, discontinue, or preclude farming, shall be considered unsuitable. Additionally, when mining federal land outside an alluvial valley floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

Analysis. The review area lands are not within an alluvial valley floor, but the NFS lands being considered drain into the North Fork Gunnison River, along which both surface irrigated and potentially irrigable sites exist.

Criterion 20

Federal lands in a state to which is applicable a criterion (i) proposed by the state or Indian tribe located in the planning area, and (ii) adopted by rulemaking by the Secretary, shall be considered unsuitable.

Analysis. This criterion is not presently in effect in the State of Colorado.

Summary

The federal coal lands on the GMUG identified for further consideration for leasing were determined to be suitable for coal mining following the application of Unsuitability Criteria Numbers 2, 3, 4, 5, 6, 7, 8, 10, 11, 16, 17, 18, 19 and 20.

Criterion Numbers 1, 9, 12, 13, 14, and 15 were found to be suitable for mining after applying the exceptions to the criterion, and identifying the need for stipulations to protect the non-mineral resource (see [Appendix C](#)).