

**APPENDIX D**  
**MITIGATION**

## APPENDIX D. MITIGATION

This appendix describes measures and techniques that lessen or eliminate impacts. In considering mitigation one must be aware of the complex legal framework that governs the mining process from land use planning to leasing, acquisition of permits, and finally actual mining and reclamation.

The Buffalo Area RMP (BLM, 1985) states that the following general types of mitigating measures will be complied with in the development of federal coal lands:

- **Cultural Resources:** Field inventories and procedures for protection of cultural resources
- **Paleontological Resources:** Survey and resource recovery
- **Existing Rights:** Negotiation procedures
- **Soils:** Separation of "B" horizon material from underlying material
- **Survey Markers:** Protection from damage; provision for replacement
- **Raptors:** Buffer zones around nesting areas and restrictions as necessary on surface mining
- **Black-Footed Ferret Habitat:** Monitoring and inventory in accordance with prescribed guidelines
- **Migratory Birds of High Federal Interest:** Habitat recovery and replacement
- **Buffer Zones and Rights-of-Way:** Buffer zones unsuitable for surface mining for existing public facilities
- **Alluvial Valley Floors:** Mitigation or designation of unsuitability pending final determinations by authorized agencies

Mitigation can be applied as standard and special lease stipulations, conditions on mining permits and other regulatory permits, or as revisions to the

mining and reclamation plan during the permit review process. The need for and the types of mitigation applied through lease stipulations and permit conditions have changed over the past decade as experience has been gained in mining and reclamation in the Powder River Basin. The special lease stipulations that BLM would impose on the West Rocky Butte lease tract would include the following:

In addition to observing the general obligations and standards of performance set out in the current regulations, the lessee shall comply with and be bound by the following stipulations. These stipulations are also imposed upon the lessee's agents and employees. The failure or refusal of any of these persons to comply with these stipulations shall be deemed a failure of the lessee to comply with the terms of the lease. The lessee shall require his agents, contractors and subcontractors involved in activities concerning this lease to include these stipulations in the contracts between and among them. These stipulations may be revised or amended, in writing, by the mutual consent of the lessor and the lessee at any time to adjust to changed conditions or to correct an oversight.

### • CULTURAL RESOURCES

(1) Before undertaking any activities that may disturb the surface of the leased lands, the lessee shall conduct a cultural resource intensive field inventory in a manner specified by the authorized office of the BLM or of the surfacing managing agency, if different, on portions of the mine plan area and adjacent areas, or exploration plan area, that may be adversely affected by lease-related activities and which were not previously inventoried at such a level of intensity. The inventory shall be conducted by a qualified professional cultural resource specialist (i.e., archeologist, historian, historical architect, as appropriate), approved by the authorized officer of the surface managing agency (BLM, if the surface is privately owned), and a report of the inventory and recommendations for protecting any cultural resources identified shall be submitted to the Assistant Director of the Western Support Center of the Office of Surface Mining, the authorized officer of the BLM, if activities are associated with the coal exploration outside an approved mining permit area (hereinafter call Authorized Officer), and the Authorized Officer of the surface managing agency, if different. The lessee shall undertake measures, in accordance with instructions from the Assistant Director or Authorized Officer to protect cultural resources on the lease lands. The lessee shall not commence the surface disturbing activities until permission to proceed is given by the Assistant Director or Authorized Officer.

(2) The lessee shall protect all cultural resource properties within the lease area from lease-related activities until the cultural resource mitigation measures can be implemented as part of an approved mining and reclamation plan or exploration plan.

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(3) The cost of conducting the inventory, preparing reports, and carrying out mitigation measures shall be borne by the lessee.

(4) If cultural resources are discovered during operations under this lease, the lessee shall immediately bring them to the attention of the Assistant Director or Authorized Officer, or the Authorized Officer of the surface managing agency. The lessee shall not disturb such resources except as may be subsequently authorized by the Assistant Director or Authorized Officer. Within two (2) working days of notification, the Assistant Director or Authorized Officer will evaluate or have evaluated any cultural resources discovered and will determine if any action may be required to protect or preserve such discoveries. The cost of data recovery for cultural resources discovered during lease operations shall be borne by the surface managing agency unless otherwise specified by the Authorized Officer of the BLM or of the surface managing agency, if different.

(5) All cultural resources shall remain under the jurisdiction of the United States until ownership is determined under applicable law.

### • PALEONTOLOGICAL RESOURCES

If a paleontological resource, either large and conspicuous, and/or of significant scientific value is discovered during construction, the find will be reported to the Authorized Officer immediately. Construction will be suspended within 250 feet of said find. An evaluation of the paleontological discovery will be made by a BLM approved professional paleontologist within five working days, weather permitting, to determine the appropriate action(s) to prevent the potential loss of any significant paleontological value. Operations within 250 feet of such discovery will not be resumed until written authorization to proceed is issued by the Authorized Officer. The lessee will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant interest discovered during the operation.

### • RESOURCE RECOVERY AND PROTECTION

Any proposed bypass of Federal coal determined to be economically recoverable must have the written approval of the authorized officer of the BLM in the form of an approved modification to the Resource Recovery and Protection Plan (R2P2) prior to the Federal coal being bypassed (43 CFR 3482.2(c)(2)). Failure to comply with this requirement shall result in the issuance of a Notice of Noncompliance by the authorized officer. The Notice of Noncompliance will include the amount of damages to be assessed for the unauthorized bypass of Federal coal as determined by the authorized officer. The amount of damages, at a minimum, will be the amount of royalty to be assessed as determined by the authorized officer to compensate the Federal government for the unauthorized bypassed Federal coal.

### • PUBLIC LAND SURVEY PROTECTION

The lessee will protect all survey monuments, witness corners, reference monuments, and bearing trees against destruction, obliteration, or damage during operations on the lease areas. If any monuments, corners or accessories are destroyed, obliterated, or damaged by this operation, the lessee will hire an appropriate county surveyor or registered land surveyor to reestablish or restore the monuments, corners, or accessories at the same

location, using surveying procedures in accordance with the "Manual of Surveying Instructions for the Survey of Public Lands of the United States". The survey will be recorded in the appropriate county records, with a copy sent to the Authorized Officer.

### • OIL AND GAS RESOURCES

The BLM realizes that coal mining operations conducted on leases issued within producing oil and gas fields may interfere with the economic recovery of oil and gas, just as oil and gas leases issued in coal mining areas may inhibit coal production. BLM retains complete authority to alter and/or modify coal operations or oil and gas operations on lands covered by Federal leases so as to obtain maximum resource recovery of either or both resources with due regard to valid existing rights.

The following mitigation is specifically directed toward conditions found on and near the proposed Rocky Butte permit area and described in Chapter 3.0 of this EIS.

## Topography

Impacts to topography caused by mining can be mitigated by proper design of the postmining surface. The design of the postmining topography (PMT) will be reviewed by Wyoming DEQ/LQD during the permit application process. Specific recommendations pertinent to the Rocky Butte Mine include providing topographic diversity in landforms and hillslopes, stable channels having natural-appearing meanders and pools, and rockpiles and shrub mosaics designed and located so as to give a natural appearance and provide wildlife habitat and cover. The PMT design will be required to approximate original contours which, as generally agreed, means that the shape of the land after mining should be about the same as before, though not necessarily at the same elevation (Martin, et al., 1988, p. 118).

## Soils

Impacts to soils can be mitigated by proper identification and handling of topsoils, protection of stockpiled and replaced soils from erosion hazards, and revegetating replaced soils as rapidly as possible. Nutrients lost during handling or stockpiling can be replaced. A properly designed and implemented erosion control, reclamation and revegetation program can ensure successful erosion control and restoration of all land disturbance. Salvage of soils otherwise unsuitable for reclamation

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due to heavy texture or high salinity may be acceptable for use in special reclamation practices such as restoration of wetlands or playas.

To the extent practical, heavy equipment traffic should be minimized on soils during removal from native surfaces and replacement on reclaimed surfaces, especially when soils are moist, to avoid compaction and destruction of aggregation. Localized areas that become compacted during soil replacement should be ripped to loosen the soil.

### Vegetation

Continued emphasis on increasing vegetal species diversity on reclaimed lands, and particularly on establishing shrublands and riparian areas, will help restore wildlife habitat on reclaimed lands. Playas, which rely on topography, soil types and vegetation, provide special habitats that should be restored in the PMT. Continued sampling, monitoring and grazing demonstration studies such as those proposed at the adjacent mines will provide valuable data for continuing improvements in revegetation practices.

Disturbance to vegetation should be minimized in areas adjacent to construction and mining. Reclamation and revegetation measures should be employed to establish diverse, productive, and ecologically sustainable plant communities that are comparable with postmining land uses and adjacent lands. Some important features of the reclamation plan are as follows:

- topsoil salvage and replacement;
- surface grading and contouring;
- seedbed preparation;
- soil erosion control, including establishment of temporary and permanent vegetation;
- establishment of permanent, self-regenerating, and diverse plant communities;
- replacement of all riparian/wetland habitats;
- restoration of agricultural productivity and wildlife habitat;
- post-reclamation monitoring; and
- evaluation and attainment of reclamation success.

If any T & E or sensitive plant species are discovered during construction or coal production, occupied area(s) and similar habitats will be avoided

until proper authorities determine that populations can be transplanted (or that other appropriate mitigation can be taken). Additionally, a thorough survey of similar habitats will be made.

### Water Resources

Impacts to ground-water quality can be mitigated by special handling of chemically undesirable overburden material to assure that these materials are not placed so as to adversely affect water quality. All mine permit applications submitted to Wyoming DEQ/LQD must include baseline data on overburden geochemistry and special handling plans for unsuitable material to comply with state and federal surface mining regulations.

Provision of ponds and reservoirs on the reclaimed surface helps conserve surface water resources and provides a recharge source for the spoil aquifer. All mine permits require that water uses which are interrupted by mining be mitigated by replacement with water from an alternative source of equivalent quality and quantity. Typically wells which go out of production due to mine-related drawdowns are replaced with deeper wells completed in a sub-coal formation. NWR, like all mine permit applicants, will be required to place a commitment in the Rocky Butte Mine PAP to replace the wells that will be mined through and adjust the pump setting or type of pump in the wells that are expected to be subject to drawdown. The permit documents will also contain the required commitment that NWR will "...replace the water supply of an owner of interest in real property who obtains all or part of his supply of water for domestic, agricultural, industrial, or other legitimate use from an underground or surface source where the supply has been affected by contamination, diminution or interruption proximately resulting from the surface coal mine operation" (W.S.35-11-415(b)(xii)).

Special care must be taken to provide stable channels in the reclaimed surface. The design of stable drainage basins is critical to the success of the overall reclamation plan, and this issue receives considerable attention during the permitting process. In the case of the Rocky Butte Mine, this may require coordination between NWR and The Carter Mining Company, which will mine through and reclaim portions of Tisdale and North Tisdale Creeks and Gold Mine Draw.

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### Alluvial Valley Floors

Based on the discussion in Chapter 3.0 it is not anticipated that AVFs will be an important issue at the Rocky Butte Mine.

### Fish and Wildlife

Wildlife impacts can be mitigated by continuing to consider wildlife habitat in the reclamation planning. Topographic features such as rockpiles and playas, riparian features such as channel potholes and impoundments, and revegetation features designed for wildlife, such as shrublands and trees where conditions permit, will all help to restore and enhance wildlife habitat on reclaimed land. Continued monitoring will provide important feedback concerning the effectiveness of these measures and, hence, important data for future designs. Mitigation efforts should continue to include relocation of affected raptor nests and consideration of raptor nest sites in reclamation planning.

- Subject to landowner preferences and agreements with NWR, all mitigation identified in this document should be adhered to on both state and private lands.
  - Impacts to habitats of high wildlife value (e.g., rim rock, riparian areas) should be minimized both on and off the project area, where possible.
  - Speed limits on the project area should be consistent with safe operating conditions, and limits should be strictly enforced; speed limit signs would be posted at advantageous locations along all roads on the project area.
  - Where possible, raptor nest sites should be avoided during the nesting season. If the area must be impacted, project activities should occur outside the nesting season. Raptor nests on the project area and within the two-mile buffer should be monitored annually, and if potential conflicts arise, appropriate raptor mitigations should be employed. Raptor mitigation and monitoring plans will be developed in coordination with USFWS, WGFD, and BLM.
- To mitigate impacts to raptors resulting from electrocution and collision with powerlines, measures identified in Olendorff et al. (1981) should be employed as directed by the USFWS, WGFD, and BLM.
  - Prior to disturbance, the entire project area and two-mile buffer should be surveyed during early April to determine whether active sage grouse leks are present. Disturbance within active leks will be curtailed during the breeding season, and disturbance within a 2-mile area surrounding each lek will be curtailed where possible during all years leks are active. Reclamation activities providing appropriate breeding, nesting, and rearing habitat would be provided on areas within a 2-mile radius of active lek centers, where possible.
  - Prior to land disturbance, areas slated for impact would be surveyed for T or E species, MBHFI, and State sensitive/priority species. Annual wildlife monitoring of the permit area and 2-mile buffer would also be conducted to determine if these species are present. If T or E, MBHFI, or State sensitive/priority species are found on the area, species-specific mitigations may be used as directed by the USFWS, WGFD, and/or BLM.
  - Rock piles (coarse rocks > 2.5 ft in diameter) approximately 12 ft (L) X 15 ft (W) X 6 ft (H) should be placed at various strategic locations (e.g., lee slopes near ridges for raptor perches, bottom lands for small mammals [Proctor et al. 1983]) on reclaimed areas (see Appendix B).
  - Wetlands, ponds, and other riparian areas disturbed during project implementation should be replaced on a one for one basis as appropriate for aquatic and waterfowl species occurring on the project area; trees occurring in these areas should also be replaced at a minimum of one for one (see Appendix B).

### Archaeological Resources

NRHP eligible archaeological resources which cannot be avoided by the proposed action must be subjected to data recovery. Mitigation by data recovery of NRHP eligible sites listed under Criterion D will result in no adverse effect to those cultural

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resources, as defined under the Section 106 process.

### Historical Resources

NRHP eligible historical resources which cannot be avoided by the proposed action must be subjected to mitigation. Mitigation of adverse effects may include historical research and documentation, as well as photographic documentation of historic structural remains to the standards of the Historic American Buildings Survey.

### Paleontological Resources

Mine personnel should be instructed to observe for and recognize vertebrate fossils and large, well-preserved petrified tree trunks which might be uncovered during mining excavations. If such finds are made, a qualified paleontologist should be contacted immediately to evaluate the find(s). Excavation in the immediate vicinity of the fossil discovery should be halted until the paleontological evaluation can be made.

### Visual Resources

No specific mitigation is recommended for visual resources. Land reclamation and removal of structures, as discussed in the project description, would result in the area returning to its premining status of a Visual Resource Management Class IV.

### Noise

Options to mitigate noise impacts are limited. Tree lines and hedges can be effective noise filters but take years to establish in this climatic zone. The measures should be applied only where the duration of impacts will be five years or more. Most of the residences subject to noise impact will only be impacted for a relatively short time when mining activities are occurring nearby (i.e., 1 or 2 years). For short-term impacts, proper placement of stockpiles can deflect or absorb noise and help mitigate impacts. Timing can be planned for the noisiest activities (e.g., blasting) so these activities are as unobtrusive to nearby residents as possible.

### Land Use

During reclamation, all pre-mining land uses except residential land would be restored unless otherwise requested by landowners (Appendix B). Reclamation will commence as soon as it is practical during the life of mine, thereby reducing the amount of time that a particular land use is impacted. Cropland would be restored to current or higher productivity levels within one year after backfilling mining pits. Pasture and rangeland would be relatively productive within two to five years after backfilling (Cook et al., 1984). Wildlife habitat would be restored with the establishment of diverse and self-regenerating plant communities, water resources, trees, and specialized topographic features (see above and Appendix B). Landscape diversification by natural processes may take a few decades after reclamation, but reclamation practices will provide wildlife habitat within two to five years after backfilling.

No residential areas will be reestablished during reclamation. Mitigation for oil production losses could include the purchase and abandoning of oil wells by the coal operator or temporary plugging of oil wells during mining, with the intention of reestablishing production after the area is reclaimed. Because there would be negligible impacts to public utilities, pipelines, water lines, telephone lines, and roads, no mitigation would be necessary.

### Socioeconomics

Socioeconomic impact mitigation for the proposed mine would be developed in conjunction with local governments on a mutually agreeable basis. The lessee should encourage construction contractors and others to obtain Campbell County sales and use tax permits to increase local sales tax revenues. In addition, efforts should be made to hire locally and purchase from local businesses. The company should keep local government entities well informed of the project so that appropriate planning can occur.

### Recreation

To limit impacts to hunting and wildlife observation, wildlife habitat should be reclaimed to approximate premining conditions (Appendix B).