

## 2.0 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action and alternatives to this action. The Proposed Action is to hold a competitive lease sale and issue a lease for the federal coal lands included in the West Antelope II LBA<sup>1</sup> Tract as applied for by ACC. The proposed lease is contiguous with the existing Antelope Mine and would be mined as a maintenance lease for the existing Antelope Mine.

Under the Proposed Action, the tract would be offered for lease as applied for at one competitive lease sale with sealed bids, subject to standard and special lease stipulations developed for the PRB and that tract. The boundaries of the tract would be consistent with the tract configuration proposed by the applicant. As applied for, the West Antelope II LBA tract consists of two non-contiguous blocks of federal coal. The Proposed Action assumes that the applicant would be the successful bidder on the tract, and that the tract would be mined as a maintenance lease for an existing mine.

NEPA requires the consideration and evaluation of other reasonable ways to meet proposal objectives while minimizing or avoiding environmental impacts. Thus, NEPA requires the evaluation of a No Action Alternative and a practical range of other “reasonable” alternatives that may avoid or minimize project impacts. Reasonable alternatives are defined by NEPA as those that are technically, economically, and environmentally practical and feasible. Reasonable alternatives are formulated to address issues and concerns raised by the public and agencies during scoping. These alternatives should represent another means of satisfying the stated purpose and need for the federal action.

Five alternatives to the Proposed Action are considered in this analysis:

- 1) Reconfigure the tract and hold one competitive coal sale.
- 2) Divide the tract as applied for or as reconfigured by BLM into two tracts and offer one or both for sale as separate competitive bids for each tract.
- 3) Reject the application (No Action.)
- 4) Assume that the applicant is not the successful bidder on the tract (as applied for or under Alternatives 1 or 2) and the coal is developed as a new mine.
- 5) Delay the sale of tract (as applied for or under Alternatives 1 or 2).

Alternatives 4 and 5 were considered but not analyzed in detail. The Proposed Action and all alternatives are discussed in greater detail in sections 2.1 through 2.6.

The BLM Competitive Coal Leasing Manual (BLM Manual 3420-1) requires the BLM to evaluate modifying the configuration of federal coal tracts based on

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<sup>1</sup> Refer to page xv for a list of abbreviations and acronyms used in this document.

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providing for maximum economic recovery of the coal resource, maintaining or increasing the potential for competition, and avoiding future bypass or captive tract situations. For NEPA purposes, BLM evaluates alternate tract configurations as alternatives to the Proposed Action. In evaluating this lease application, BLM has identified a study area for the tract which includes the tract as applied for and adjacent unleased federal coal, shown in Figure 2-1.

The leasing on application regulations at 43 CFR 3425.1-9 state that: “The authorized officer may add or delete lands from an area covered by an application for any reason he/she determines to be in the public interest.” Accordingly, in evaluating alternative tract configurations, BLM could increase or decrease the size of the tract as applied for.

Under Alternatives 1 and 2, the study area is evaluated for the purpose of identifying potential alternate tract configurations to the Proposed Action that would be technically, economically, or environmentally preferable to the Proposed Action. Under both alternatives, BLM is evaluating adding all or part of the additional coal included in the BLM study area to the tract as applied for and/or reducing the size of the tract as applied for. Under Alternative 1, one competitive sale would be held and a lease issued for federal coal lands included in an LBA tract as modified by the BLM. Under Alternative 2, BLM is evaluating splitting the application into two tracts (North Tract and South Tract). The lands included in the two tracts would be the lands included in the as-applied-for tract or the tract as modified by BLM. Two separate competitive sales would be held and two leases would be issued. The West Antelope II LBA tract as applied for (Proposed Action), the BLM study area (the tract as applied for and the additional area evaluated under Alternatives 1 and 2), and the two tracts formed under Alternative 2 are shown in Figure 2-1.

The No Action Alternative (Alternative 3) is to reject the West Antelope II lease application. Under the No Action Alternative, the tract would not be offered for competitive sale, and the coal contained within the tract would not be mined as proposed. Rejection of the application would not affect currently permitted mining activities on existing leases at the Antelope Mine and selection of the No Action Alternative would not preclude an application to lease the rejected tract in the future. Portions of the surface of the LBA tract would probably be disturbed due to overstripping to allow coal to be removed from the adjacent existing leases.

The alternatives considered but not analyzed in detail are:

- holding a competitive lease sale and issuing a lease for federal coal lands included in the West Antelope II LBA tract (as applied for or as modified by BLM), with the assumption that the tract would be developed as a new mine (Alternative 4); and

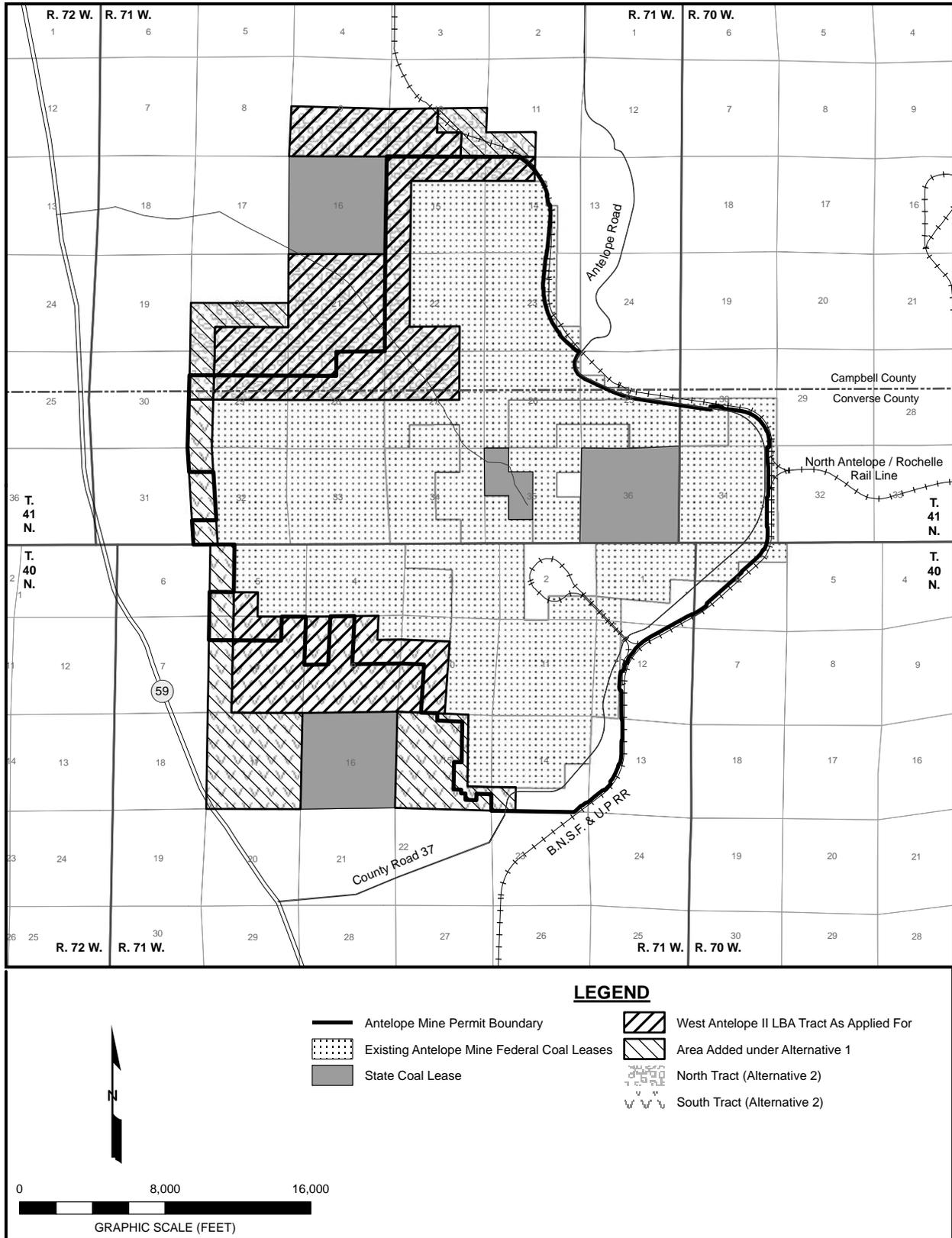


Figure 2-1. West Antelope II LBA Alternative Tract Configurations.

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- delaying the sale of the West Antelope II LBA tract as applied for in order to take advantage of higher coal prices and/or to allow recovery of the potential CBNG resources in the tract prior to mining (Alternative 5). Under this alternative, it is assumed that the tract could be developed later as a maintenance tract or a new mine start, depending on how long the sale was delayed.

LBA tracts are nominated for leasing by companies with an interest in acquiring them but, as discussed in Chapter 1, the LBA process is, by law and regulation, an open, public, competitive sealed-bid process. If a tract is offered for lease, the applicant for that tract may or may not be the high bidder when the lease sale is held. The Proposed Action and Alternatives 1 and 2 considered in this EIS assume ACC would be the successful bidder if the federal coal included in the tract is offered for lease, and that the West Antelope II LBA tract would be mined as a maintenance tract for the permitted Antelope Mine.

If a decision is made to hold a competitive lease sale for a tract of federal coal and a lease is issued, the lessee must obtain a permit to conduct coal mining operations before mining can begin on the tract. As discussed in Section 1.3, this permit application would undergo detailed review by state and federal agencies as part of the approval process. The detailed permit application could potentially differ from the more general mining plan used to analyze the impacts of the Proposed Action and Alternatives 1 and 2 in this EIS, but the differences would not be expected to substantially change the impacts described here. These differences would typically be related to the details of mining and reclaiming the tract but major factors, like the approximate number of tons of coal to be mined and yards of overburden to be removed, the acres disturbed, etcetera, would not be substantially different from the plans used in this analysis.

If the tract is leased under the Proposed Action or Alternatives 1 and 2, it is assumed that an area larger than the lease area would have to be disturbed in order to recover all of the coal in that tract. The disturbances outside the coal removal area would be due to activities like overstripping, matching undisturbed topography, and construction of flood control and sediment control structures.

### **2.1 Proposed Action**

Under the Proposed Action, the West Antelope II LBA tract, as applied for by ACC, would be offered for lease at a sealed-bid, competitive lease sale, subject to standard and special lease stipulations developed for the PRB (Appendix D). The boundaries of the tract would be consistent with the tract configuration proposed in the West Antelope II lease application (Figure 2-1). The Proposed Action assumes that ACC will be the successful bidder on the West Antelope II LBA tract if it is offered for sale.

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The legal description of the proposed West Antelope II LBA tract coal lease lands as applied for by ACC under the Proposed Action is as follows:

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

Section 9: Lots 9 through 16:	330.68 acres
Section 10: Lots 11 through 15:	203.00 acres
Section 14: Lots 3 and 4:	82.64 acres
Section 15: Lots 1 through 5, 12, and 13:	289.35 acres
Section 20: Lots 14 through 16:	122.89 acres
Section 21: Lots 1 through 16:	651.74 acres
Section 22: Lots 2, 7, 8, and 14 through 16:	252.93 acres
Section 27: Lots 6 through 11:	250.51 acres
Section 28: Lots 1 through 8:	322.50 acres
Section 29: Lots 1 through 3 and 6 through 8:	247.76 acres

T.40N., R.71W., 6th P.M., Converse County, Wyoming

Section 5: Lot 18:	40.25 acres
Section 8: Lots 1 through 3, 6 through 11, and 14 through 16:	478.14 acres
Section 9: Lots 2 through 16:	597.22 acres
Section 10: Lots 5, 6, and 11 through 14:	238.99 acres

Total: 4,108.60 acres

The land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of April 15, 2004 and December 6, 2004. The coal estate included in the tract described above is federally owned. The ownership of the surface and oil and gas estates is discussed in Section 3.11.

As discussed in Section 1.5, the BNSF & UP railroad crosses portions of the northern block of federal coal included in the West Antelope II LBA tract (Figure 2-1), and the coal that is located within the BNSF & UP ROW and an associated 100 foot buffer zone has been determined to be unsuitable for mining under Unsuitability Criterion 2. As a result, some of the coal in the above described lands is not currently considered to be recoverable. Although these lands would not be mined, they are included in the tract to allow maximum recovery of all of the mineable coal that is adjacent to but outside of the railroad ROW and its associated buffer zone and to comply with the coal leasing regulations that do not allow leasing of less than 10-acre aliquot parts.

As applied for, the West Antelope II LBA tract consists of two separate blocks of federal coal (Figure 2-1), which includes approximately 4,108.6 acres with an estimated 465.1 million tons of in-place coal reserves. ACC estimates that 1.4 million tons of the in-place coal would not be mineable because of the BNSF & UP railroad tracks and associated ROW. Of the 463.7 million tons of mineable reserves, ACC estimates that approximately 429.5 million tons would be recoverable from the West Antelope II LBA tract as applied for. This estimate of recoverable reserves assumes that approximately seven to nine percent of the

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mineable coal included within the West Antelope II LBA tract would not be recoverable under normal mining practices, based on historical recovery factors.

BLM independently evaluates the volume and average quality of the coal resources included in proposed LBA tracts as part of the fair market value determination process. BLM's estimate of the mineable federal coal reserves included in the tract may not be in agreement with the mineable coal reserve and coal quality estimates provided by the applicant. BLM's estimate of the mineable federal coal reserves included in the tract will be included in the Final EIS and published in the sale notice if the tract is offered for sale.

The West Antelope II LBA tract would be mined as an integral part of the Antelope Mine under the Proposed Action. The West Antelope II LBA tract would be an extension of the existing Antelope Mine, the facilities and infrastructure would be the same as those identified in the WDEQ/LQD Mine Permit 525 Term T7 approved October 29, 2003 and the BLM R2P2, which was approved November 8, 2006.

The currently approved air quality permit from the WDEQ/AQD for the Antelope Mine allows up 42 million tons of coal per year to be mined. The Antelope Mine produced:

- 23.0 million tons of coal in 2000,
- 24.6 million tons of coal in 2001,
- 26.8 million tons of coal in 2002,
- 29.5 million tons of coal in 2003,
- 29.7 million tons of coal in 2004,
- 30.0 million tons of coal in 2005, and
- 33.9 million tons of coal in 2006

(Antelope Mine 2000, 2001, 2002, 2003, 2004, 2005, and 2006).

Under the currently approved mining plan (the No Action Alternative), the Antelope Mine would mine its remaining estimated 394.3 million tons of recoverable coal reserves in eleven years at an average production rate of approximately 36 mmtpy. Under the Proposed Action, ACC estimates that the life of the mine would be extended by 12 additional years at an average annual coal production rate of approximately 36 million tons. If the production rate increases to 42 mmtpy, the maximum rate allowed by the air quality permit, the life of mine would be extended by ten additional years under the Proposed Action.

If ACC acquires the West Antelope II LBA tract as applied for, they estimate that a total of 823.8 million tons of coal would be recovered after January 1, 2007, with an estimated 429.5 million tons coming from the LBA tract. As of December 31, 2006, approximately 318.9 million tons of coal had been mined from within the current permitted area of the mine.

Prior to disturbance and in advance of mining, mine support structures such as roads, power lines, substations, and flood and sediment control measures would be built as needed.

Topsoil removal with suitable heavy equipment, such as rubber-tired scrapers, would proceed ahead of overburden removal. Whenever possible, direct haulage to a reclamation area would be done, but due to scheduling, some topsoil would be temporarily stockpiled. As required by the reclamation plan, heavy equipment again would be used to haul and distribute the stockpiled topsoil.

The Antelope Mine is one of several mines currently operating in the PRB. Mining would be conducted in five separate, semi-independent pits identified as the Horse Creek (HC) Pit, North West Mine Area North (NWMAN) Pit, South Mine Area (SMA) Pit, West Antelope South (WAS) Pit, and West Antelope North (WAN) Pit. The multi-pit concept has been and would be utilized to reduce operating costs by blending production from areas having different stripping ratios and coal quality, and also to help stabilize manpower requirements. Overburden removal has been and would continue to be conducted using trucks and shovels, draglines, and/or direct cast blasting. Other equipment used during overburden removal and backfilling would include dozers, scrapers, excavators, front-end loaders, graders, and water trucks. Most overburden and all coal have been and would continue to be drilled and blasted to facilitate efficient excavation.

The design of the Antelope Mine seeks to confine disturbance to the active mine blocks. As overburden is removed, most would be directly placed into areas where coal has already been removed.

Once the overburden has been replaced it is sampled and verified to be suitable for reclamation, then graded to approximate final contour, ripped and finally topsoiled. Material that is found to be unsuitable for reclamation (i.e., material that is not suitable for use in reestablishing vegetation or that may affect groundwater quality due to high concentrations of certain constituents, such as selenium, or adverse pH levels) would either be removed and treated, or adequately covered with suitable overburden material prior to grading and topsoiling. Elevations consistent with an approved PMT plan would be established as quickly as possible. Under certain conditions, the PMT may not be immediately achievable. This occurs when there is an excess of material that may require temporary stockpiling, when there is insufficient material available from current overburden removal operations, or when future mining could redisturb an area already mined. Once a seedbed has been formed, vegetation that is consistent with the postmining land use would be reestablished.

Coal would be produced from two coal seams. ACC refers to these seams as the Anderson, which averages 34 ft thick, and the Canyon, which averages 35 ft thick. Coal would be mined at several working faces to enable blending of the

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coal to meet customer quality requirements, to comply with BLM lease requirements for maximum economic recovery of the coal resource, and to optimize coal removal efficiency with available equipment. Coal would be loaded with electric-powered shovels into off-highway haul trucks for transport to crushing facilities. Coal haul roads would be temporary structures built within the mine areas. The Antelope Mine utilizes two separate, existing coal crushing facilities; the North East Mine Area and South Mine Area pit facilities located within the ACC permit area. These facilities provide the capacity to produce the permitted production tonnage. All coal crushing operations and conveying, transferring, and storage facilities are equipped with passive emission controls, atomizer/fogger systems or bag house collection systems for dust control. There are two existing coal storage silos. While sufficient storage capacity exists, future changes in facilities may be constructed to improve operating efficiency and air quality protection. For example, a covered slot storage barn, additional silos, covered dome, or other appropriate storage structure may be built at the plant. In addition, a covered overland conveyor and near-pit crusher system may be constructed and moved as the mining operation progresses away from the plant facilities.

The Antelope Mine presently has a workforce of 430 employees. The expansion in reserves associated with the West Antelope II LBA tract under the Proposed Action would sustain current rates of production [about 36 mmtpy], and as many as 25 additional workers may be needed at times during the life-of-mine as mining progresses to different locations. Raising annual production to 42 mmtpy could increase the incremental workforce needs to as many 40 workers, or 470 total employees, at times.

### 2.1.1 Regulatory Compliance, Mitigation and Monitoring

SMCRA and Wyoming State Law require surface coal mines to collect extensive baseline information and implement extensive monitoring programs and mitigation measures. The currently approved permit to conduct mining operations for the Antelope Mine includes these requirements. Monitoring programs and mitigation measures that are required by regulation are considered to be part of the Proposed Action and the Action Alternatives considered in this EIS for the West Antelope II LBA tract. These data collection requirements, mitigation plans, and monitoring plans are in place for the No Action Alternative, as part of the current approved permit to conduct mining operations for the existing Antelope Mine. These data collection requirements, mitigation plans, and monitoring commitments would be extended to include mining operations on the West Antelope II LBA tract if it is leased and permitted for mining. A permit to conduct mining operations on the West Antelope II LBA tract would have to be approved before mining operations could be conducted on the tract, regardless of who acquires it. The major mitigation and monitoring measures that are required by state or federal regulation are summarized in Table 2-1. More specific information about some of these mitigation and monitoring measures and their results at the Antelope Mine are described in Chapter 3.

Table 2-1. Regulatory Compliance, Mitigation and Monitoring Measures for Surface Coal Mining Operations Required by SMCRA and State Law for all Alternatives.

Resource	Regulatory Compliance or Mitigation Required by Stipulations, State or Federal Law <sup>1</sup>	Monitoring <sup>1</sup>
Topography & Physiography	Restoring to approximate original contour or other approved topographic configuration.	WDEQ/LQD checks as-built vs. approved topography with each annual report.
Geology & Minerals	Identifying & selectively placing or mixing chemically or physically unsuitable overburden materials to minimize adverse effects to vegetation or groundwater.	WDEQ/LQD requires monitoring in advance of mining to detect unsuitable overburden.
Soil	Salvaging soil suitable to support plant growth for use in reclamation; Protecting soil stockpiles from disturbance and erosional influences; Selectively placing at least four ft of suitable overburden on the graded backfill surface below replaced topsoil to meet guidelines for vegetation root zones.	Monitoring vegetation growth on reclaimed areas to determine need for soil amendments; Sampling regraded overburden for compliance with root zone criteria.
Air Quality	Dispersion modeling of mining plans for annual average particulate pollution impacts on ambient air; Using particulate pollution control technologies; Using work practices designed to minimize fugitive particulate emissions; Using EPA- or state-mandated BACT, including: Fabric filtration or wet scrubbing of coal storage silo and conveyor vents, Watering or using chemical dust suppression on haul roads and exposed soils, Containment of truck dumps and primary crushers, Covering of conveyors, Prompt revegetation of exposed soils, High efficiency baghouse dust collection systems or PECs, or atomizers/foggers on the crusher, conveyor transfer, storage bin and train loadout, meeting a standard of 0.01 grains per dry standard cubic foot (dscf) of exit volume, Watering of active work areas, Reclamation plan to minimize surface disturbances subject to wind erosion, Paving of access roads, Haul truck speed limits, Limited material drop heights for shovels and draglines.	On-site air quality monitoring for PM <sub>10</sub> and/or TSP; Off-site ambient monitoring for PM <sub>10</sub> and/or TSP; On-site compliance inspections.

<sup>1</sup> These requirements, mitigation plans, and monitoring plans are in place for the existing Antelope Mine in its current approved mining and reclamation plan (the No Action Alternative). If the West Antelope II LBA tract were leased, these requirements, mitigation plans, and monitoring plans would be part of a mining plan revision covering the West Antelope II LBA tract that must be approved before mining can occur on the tract under the Proposed Action or Action Alternatives.

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Table 2-1. Regulatory Compliance, Mitigation and Monitoring Measures for Surface Coal Mining Operations Required by SMCRA and State Law for all Alternatives (Continued).

Resource	Regulatory Compliance or Mitigation Required by Stipulations, State or Federal Law <sup>1</sup>	Monitoring <sup>1</sup>
Air Quality (continued)	Following voluntary and required measures to avoid exposing the public to NO <sub>2</sub> from blasting clouds, including: Phone notification of neighbors and workers prior to blasting, Monitoring weather and atmospheric conditions prior to decisions to blast, Timing blasts to avoid temperature inversions and to minimize inconvenience to neighbors, Closing public roads when appropriate to protect the public, Minimizing blast sizes, Posting signs on major public roads.	
Surface Water	Building and maintaining sediment control ponds or other devices during mining; Restoring approximate original drainage patterns during reclamation; Restoring stock ponds and playas during reclamation.	Monitoring storage capacity in sediment ponds; Monitoring quality of discharges; Monitoring streamflow and water quality.
Groundwater Quantity	Evaluating cumulative impacts to water quantity associated with proposed mining; Replacing existing water rights that are interrupted, discontinued, or diminished by mining with water of equivalent quantity.	Monitoring wells track water levels in overburden, coal, interburden, underburden, and backfill.
Groundwater Quality	Evaluating cumulative impacts to water quality associated with proposed mining; Replacing existing water rights that are interrupted, discontinued, or diminished by mining with water of equivalent quality.	Monitoring wells track water quality in overburden, coal, interburden, underburden, and backfill.
Alluvial Valley Floors	Identifying all AVFs that would be affected by mining; Determining significance to agriculture of all identified AVFs affected by mining (WDEQ); Protecting downstream AVFs during mining; Restoring essential hydrologic function of all AVFs affected by mining.	Monitoring to determine restoration of essential hydrologic functions of any declared AVF.
Wetlands	Identifying all wetlands that would be affected by mining; Identifying jurisdictional wetlands (COE); Replacing all jurisdictional wetlands that would be disturbed by mining; Replacing functional wetlands as required by surface managing agency, surface landowner, or WDEQ/LQD.	Monitoring of reclaimed wetlands using same procedures used to identify pre-mining jurisdictional wetlands.

<sup>1</sup> These requirements, mitigation plans, and monitoring plans are in place for the existing Antelope Mine in its current approved mining and reclamation plan (the No Action Alternative). If the West Antelope II LBA tract were leased, these requirements, mitigation plans, and monitoring plans would be part of a mining plan revision covering the West Antelope II LBA tract that must be approved before mining can occur on the tract under the Proposed Action or Action Alternatives.

Table 2-1. Regulatory Compliance, Mitigation and Monitoring Measures for Surface Coal Mining Operations Required by SMCRA and State Law for all Alternatives (Continued).

Resource	Regulatory Compliance or Mitigation Required by Stipulations, State or Federal Law <sup>1</sup>	Monitoring <sup>1</sup>
Vegetation	Permanently revegetating reclaimed areas according to a comprehensive revegetation plan using approved permanent reclamation seed mixtures consisting predominantly of species native to the area; Reclaiming 20 percent of reclaimed area with native shrubs at a density of one per square meter; Controlling erosion on reclaimed lands prior to seeding with final seed mixture using mulching, cover crops, or other approved measures; Chemically and mechanically controlling weed infestation; Direct hauling of topsoil; Selectively planting shrubs in riparian areas; Planting sagebrush; Creating depressions and rock piles; Using special planting procedures around rock piles; Posting reclamation bond covering the cost of reclamation.	Monitoring of revegetation growth & diversity until release of final reclamation bond (minimum 10 years); Monitoring of erosion to determine need for corrective action during establishment of vegetation; Use of controlled grazing during revegetation evaluation to determine suitability for post-mining land uses.
Wildlife and Sensitive Species	Restoring pre-mining topography to the maximum extent possible; Planting a diverse mixture of grasses, forbs, and shrubs in configurations beneficial to wildlife; Designing fences to permit wildlife passage; Raptor-proofing power transmission poles; Using raptor safe power lines; Creating artificial raptor nest sites; Increasing habitat diversity by creating rock clusters and shallow depressions on reclaimed land; Cottonwood plantings along reclaimed drainages; Replacing drainages, wetlands, and AVFs disturbed by mining; Reducing vehicle speed limits to minimize mortality; Instructing employees not to harass or disturb wildlife; Following approved raptor mitigation plans; Avoiding bald eagle disturbance; Restoring bald eagle foraging areas disturbed by mining; Restoring mountain plover habitat disturbed by mining; Surveying for mountain plover; Surveying for black-tailed prairie dog.	Baseline and annual wildlife monitoring surveys; Monitoring for Migratory Bird Species of Management Concern in Wyoming.

<sup>1</sup> These requirements, mitigation plans, and monitoring plans are in place for the existing Antelope Mine in its current approved mining and reclamation plan (the No Action Alternative). If the West Antelope II LBA tract were leased, these requirements, mitigation plans, and monitoring plans would be part of a mining plan revision covering the West Antelope II LBA tract that must be approved before mining can occur on the tract under the Proposed Action or Action Alternatives.

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Table 2-1. Regulatory Compliance, Mitigation and Monitoring Measures for Surface Coal Mining Operations Required by SMCRA and State Law for all Alternatives (Continued).

Resource	Regulatory Compliance or Mitigation Required by Stipulations, State or Federal Law <sup>1</sup>	Monitoring <sup>1</sup>
Threatened, Endangered, Proposed, and Candidate Species	Surveying for Ute ladies'-tresses; Searching for black-footed ferrets if prairie dog colonies are on or move onto tract; Same as Wildlife Resource and Sensitive Species above.	Baseline and annual wildlife monitoring surveys.
Land Use	Suitably restoring reclaimed area for historic uses (grazing and wildlife);	Monitoring of controlled grazing prior to bond release evaluation.
Cultural Resources	Conducting Class I & III surveys to identify cultural properties on all state and federal lands and on private lands affected by federal undertakings; Consulting with SHPO to evaluate eligibility of cultural properties for the NRHP; Avoiding or recovering data from significant cultural properties identified by surveys, according to an approved plan; Notifying appropriate federal personnel if historic or prehistoric materials are uncovered during mining operations; Instructing employees of the importance of and regulatory obligations to protect cultural resources.	Monitoring of mining activities during topsoil stripping; cessation of activities and notification of authorities if unidentified sites are encountered during topsoil removal.
Native American Concerns	Notifying Native American tribes with known interest in this area of leasing action and request for help in identifying potentially significant religious or cultural sites.	No specific monitoring program.
Paleontological Resources	Notifying appropriate federal personnel if potentially significant paleontological sites are discovered during mining.	No specific monitoring program.
Visual Resources	Restoring landscape character during reclamation through return to approximate original contour and revegetation with native species.	No specific monitoring program.
Noise	Protecting employees from hearing loss.	MSHA inspections.
Transportation Facilities	Relocating existing pipelines, if necessary, in accordance with specific agreement between pipeline owner and coal lessee.	No specific monitoring program.
Socioeconomics	Paying royalty and taxes as required by federal, state, and local regulations. No mitigation measures are proposed.	Surveying and reporting to document volume of coal removed.

<sup>1</sup> These requirements, mitigation plans, and monitoring plans are in place for the existing Antelope Mine in its current approved mining and reclamation plan (the No Action Alternative). If the West Antelope II LBA tract were leased, these requirements, mitigation plans, and monitoring plans would be part of a mining plan revision covering the West Antelope II LBA tract that must be approved before mining can occur on the tract under the Proposed Action or Action Alternatives.

Table 2-1. Regulatory Compliance, Mitigation and Monitoring Measures for Surface Coal Mining Operations Required by SMCRA and State Law for all Alternatives (Continued).

Resource	Regulatory Compliance or Mitigation Required by Stipulations, State or Federal Law <sup>1</sup>	Monitoring <sup>1</sup>
Hazardous & Solid Waste	Disposing of solid waste and sewage within permit boundaries according to approved plans; Storing and recycling waste oil; Maintaining of files containing Material Safety Data Sheets for all chemicals, compounds, and/or substances used during course of mining; Ensuring that all production, use, storage, transport, and disposal of hazardous materials is in accordance with applicable existing or hereafter promulgated federal, state, and government requirements; Complying with emergency reporting requirements for releases of hazardous materials as established in CERCLA, as amended; Preparing and implementing spill prevention control and countermeasure plans, spill response plans, inventories of hazardous chemical categories pursuant to Section 312 of SARA, as amended; Preparing emergency response plans.	No specific monitoring other than required by these other regulations and response plans.

<sup>1</sup> These requirements, mitigation plans, and monitoring plans are in place for the existing Antelope Mine in its current approved mining and reclamation plan (the No Action Alternative). If the West Antelope II LBA tract were leased, these requirements, mitigation plans, and monitoring plans would be part of a mining plan revision covering the West Antelope II LBA tract that must be approved before mining can occur on the tract under the Proposed Action or Action Alternatives.

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If impacts are identified during the leasing process that are not mitigated by existing required mitigation measures, BLM can require additional mitigation measures, in the form of stipulations on the new lease, within the limits of its regulatory authority. In general, the levels of mitigation and monitoring required for surface coal mining by SMCRA and Wyoming State law are more extensive than those required for other surface disturbing activities; however, concerns are periodically identified that are not monitored or mitigated under existing procedures.

### 2.1.2 Hazardous and Solid Waste

Under the Proposed Action and Action Alternatives, the procedures and requirements for handling of solid and hazardous wastes would be the same as the procedures and requirements for the existing mining operation. Solid waste that is produced at the existing Antelope Mine consists of floor sweepings, shop rags, lubricant containers, welding rod ends, metal shavings, worn tires, packing material, used filters, and office and food wastes. A portion of the solid wastes produced at the Antelope Mine is disposed of within the mine's permit boundary in accordance with WDEQ-approved solid waste disposal plans. Solid waste is also disposed of at the Campbell County landfill. Sewage is handled by WDEQ-permitted sewage systems present on the existing mine facilities. Maintenance and lubrication of most of the equipment takes place at existing shop facilities at the Antelope Mine. Major lubrication, oil changes, etcetera, of most equipment are performed inside the service building lubrication bays at the Antelope Mine, where used oil and grease are currently contained and deposited in storage tanks. All of the collected used oils and grease are then beneficially recycled off site or used for energy recovery. These practices would not change if the applicant acquires the LBA tract.

Antelope Mine has reviewed the EPA's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Re-authorization Act (SARA) of 1986* (as amended) and EPA's *List of Extremely Hazardous Substances* as defined in 40 CFR 355 (as amended) for hazardous substances used at the Antelope Mine. ACC maintains files containing Material Safety Data Sheets for all chemicals, compounds, and/or substances that are or would be used during the course of mining.

Antelope Mine is responsible for ensuring that all production, use, storage, transport, and disposal of hazardous and extremely hazardous materials as a result of mining are in accordance with all applicable existing or hereafter promulgated federal, state, and local government rules, regulations, and guidelines. All mining activities involving the production, use, and/or disposal of hazardous or extremely hazardous materials are and would continue to be conducted so as to minimize potential environmental impacts.

Antelope Mine must comply with emergency reporting requirements for releases of hazardous materials. Any release of hazardous or extremely hazardous substances in excess of the reportable quantity, as established in 40

CFR 117, is reported as required by CERCLA, as amended. The materials for which such notification must be given are the extremely hazardous substances listed in Section 302 of the *Emergency Planning and Community Right to Know Act* and the hazardous substances designated under Section 102 of CERCLA, as amended. If a reportable quantity of a hazardous or extremely hazardous substance is released, immediate notice must be given to the WDEQ Solid and Hazardous Waste Division, WDEQ Water Quality Division, and all other appropriate federal and state agencies.

Each mining company is expected to prepare and implement several plans and/or policies to ensure environmental protection from hazardous and extremely hazardous materials. These plans/policies include:

- Spill Prevention Control and Countermeasure Plans;
- Spill Response Plans;
- Stormwater Pollution Prevention Plans;
- Inventories of Hazardous Chemical Categories Pursuant to Section 313 of SARA, as Amended; and
- Emergency Response Plans.

All mining operations are also required to be in compliance with regulations promulgated under the Resource Conservation and Recovery Act, Federal Water Pollution Control Act (Clean Water Act), Safe Drinking Water Act, Toxic Substances Control Act, Mine Safety and Health Act, Department of Transportation, and the Federal Clean Air Act. In addition, mining operations must comply with all attendant state rules and regulations relating to hazardous material reporting, transportation, management, and disposal.

Compliance with these rules is the current practice at the Antelope Mine. Acquisition of the West Antelope II LBA tract by ACC would not change these current practices nor the type and quantity of any wastes generated and disposed of by the mine.

## **2.2 Alternative 1**

Under Alternative 1 for the West Antelope II LBA tract, BLM would reconfigure the tract and hold one competitive coal sale for the lands included in the reconfigured tract and issue a lease to the successful bidder. The modified tract would be subject to standard and special lease stipulations developed for the PRB and for this tract if it is offered for sale. Alternative 1 for the West Antelope II LBA tract assumes that ACC would be the successful bidder on the tract if a lease sale is held and that the federal coal would be mined as a maintenance lease for the existing Antelope Mine. Assumptions concerning mining methods, facilities, hazardous materials, mitigation and monitoring requirements, etc. are the same as described for the Proposed Action.

As applied for, the West Antelope II LBA tract consists of two non-contiguous blocks of federal coal. In order to evaluate the potential that an alternate

## 2.0 Proposed Action and Alternatives

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configuration of the tract would provide for more efficient recovery of the federal coal, increase competitive interest in the West Antelope II LBA tract, and/or reduce the potential that some of the remaining unleased federal coal in this area would be bypassed in the future, BLM identified a study area. The BLM study area includes the tract as applied for and unleased federal coal adjacent to the northeastern, western, and southern edges of the tract as applied for (Figure 2-1). The study area includes lands on the TBNG, which is administered by USDA-FS. Under Alternative 1, the BLM could add all or part of the adjacent lands to the tract or BLM could reduce the size of the tract, as discussed in Section 2.0.

The area BLM is evaluating adding to the tract as applied for includes the following lands:

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

Section 10: Lots 9, 10, and 16:	123.42 acres
Section 11: Lots 13 and 14:	85.03 acres
Section 20: Lots 9 through 13:	204.29 acres
Section 29: Lots 4 and 5:	81.71 acres

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

Section 29: Lots 12 and 13:	81.09 acres
Section 32: Lots 4, 5, 12, and 13:	162.36 acres

### T.40N., R.71W., 6th P.M., Converse County, Wyoming

Section 5: Lots 8, 9, 16, and 17:	119.54 acres
Section 8: Lots 4, 5, 12, and 13:	159.52 acres
Section 14: Lot 13:	39.99 acres
Section 15: Lots 2 through 7, and 10 through 16:	514.01 acres
Section 17: Lots 1 through 16:	629.62 acres

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Total:	2,200.58 acres
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The legal description of the Alternative 1 reconfiguration of the West Antelope II LBA tract is as follows:

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

Section 9: Lots 9 through 16:	330.68 acres
Section 10: Lots 9 through 16:	326.42 acres
Section 11: Lots 13 and 14:	85.03 acres
Section 14: Lots 3 and 4:	82.64 acres
Section 15: Lots 1 through 5, 12, and 13:	289.35 acres
Section 20: Lots 9 through 16:	327.18 acres
Section 21: Lots 1 through 16:	651.74 acres
Section 22: Lots 2, 7, 8, and 14 through 16:	252.93 acres
Section 27: Lots 6 through 11:	250.51 acres
Section 28: Lots 1 through 8:	322.50 acres
Section 29: Lots 1 through 8:	329.47 acres

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

Section 29: Lots 12 and 13:	81.09 acres
Section 32: Lots 4, 5, 12, and 13:	162.36 acres

### T.40N., R.71W., 6th P.M., Converse County, Wyoming

Section 5: Lots 8, 9, and 16 through 18:	159.79 acres
Section 8: Lots 1 through 16:	637.66 acres
Section 9: Lots 2 through 16:	597.22 acres
Section 10: Lots 5, 6, and 11 through 14:	238.99 acres
Section 14: Lot 13:	39.99 acres
Section 15: Lots 2 through 7, and 10 through 16:	514.01 acres
Section 17: Lots 1 through 16:	629.62 acres

Total: 6,309.18 acres

The land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of April 15, 2004 and December 6, 2004. The coal estate in the tract described above is federally owned. The ownership of the surface and oil and gas estates is discussed in Section 3.11.

As discussed in Sections 1.5 and 2.1, under the Proposed Action, the BNSF & UP railroad crosses portions of the northern block of federal coal included in the West Antelope II LBA tract (Figure 2-1). The coal that is located within the BNSF and UP railroad ROW and associated 100 foot buffer zone has been determined to be unsuitable for mining under Coal Unsuitability Criterion 2 and would not be recoverable.

As discussed in Section 1.5 and shown in Figure 2-1, State Highway 59 crosses the southwestern corner of the BLM study area for the south block of the tract, and Converse County Road 37 crosses the southeastern corner of the BLM study area for the south block of the tract, in Sections 17 and 14, T. 40 N., R. 71 W., respectively. BLM has determined that the coal underlying these portions of State Highway 59 and Converse County Road 37, their ROWs, and a buffer zone extending 100 feet on either side of the ROWs are unsuitable for mining in accordance with Coal Unsuitability 3 and would not be recoverable. ACC estimates that the BLM study area under Alternative 1 contains approximately 490 million tons of mineable coal and that approximately 453.9 million tons of that coal would be recoverable. ACC estimates that approximately 36 million tons of coal would not be mineable because of the railroad and public road ROWs and buffer zones. Although these lands would not be mined, they would be included in the alternative tract configuration to allow maximum recovery of all of the mineable coal that is adjacent to but outside of the ROWs and associated buffer zones and to comply with the coal leasing regulations that do not allow leasing of less than 10-acre aliquot parts. If a lease is issued for this tract, stipulations will be attached to the lease stating that no mining activity may be conducted in the portions of the leased

## *2.0 Proposed Action and Alternatives*

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within the BNSF & UP railroad, State Highway 59, and Converse County Road 37 ROWs and associated buffer zones.

BLM independently evaluates the volume and average quality of the coal resources included in proposed LBA tracts as part of the fair market value determination process. BLM's estimate of the mineable federal coal reserves included in the tract may not be in agreement with the mineable coal reserve and coal quality estimates provided by the applicant. BLM's estimate of the mineable federal coal reserves included in the tract will be included in the Final EIS and published in the sale notice if the tract is offered for sale.

Under Alternative 1 at an average annual coal production of 36 million tons, ACC estimates the life of the mine would be extended by 13 years. The average number of full-time employees could increase by as many as 25 additional workers (to approximately 455 employees). Raising annual production to 42 million tons could increase the incremental workforce needs to as many as 40 workers, or 470 total employees, at times. The life of mine would be extended by 11 years at an average annual coal production rate of 42 million tons.

### **2.3 Alternative 2**

Under Alternative 2 for the West Antelope II LBA tract, BLM is considering dividing the tract into two tracts and offering one or both of those tracts for sale. A separate, competitive sealed bid sale would be held for each tract that is offered for sale, and each tract would be subject to standard and special lease stipulations developed for the PRB and for that tract (Appendix D). If one or both of the tracts are offered for lease, Alternative 2 for the West Antelope II LBA tract assumes that ACC would be the successful bidder and that the federal coal would be mined to extend the life of the existing Antelope Mine. Assumptions concerning mining methods, facilities, hazardous materials, mitigation and monitoring requirements, etc. are the same as described for the West Antelope II LBA tract Proposed Action.

As discussed under the Proposed Action and Alternative 1, the West Antelope II LBA tract consists of two non-contiguous blocks of federal coal. Under Alternative 2, the West Antelope II North LBA Tract would consist of the northern block of coal and the West Antelope II South LBA Tract would consist of the southern block of coal. BLM is considering dividing the tract because the northern tract would potentially be of competitive interest to more than one mine.

As discussed under Alternative 1, BLM has identified a study area which includes the tract as applied for and unleased federal coal adjacent to the northeastern, western, and southern edges of the tract as applied for. The West Antelope II South LBA Tract study area includes lands on the TBNG, which is administered by USDA-FS. BLM is evaluating the potential that adding some or all of these lands to the area offered for lease would provide for more efficient recovery of the federal coal, increase competitive interest in the

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West Antelope II North and South LBA Tracts, and/or reduce the potential that some of the remaining unleased federal coal in this area would be bypassed in the future. Under Alternative 2, the BLM could add all, part, or none of adjacent lands to one or both tracts or BLM could reduce the size of one or both tracts, as discussed in Section 2.0.

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

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

Section 9: Lots 9 through 16:	330.68 acres
Section 10: Lots 9 through 16:	326.42 acres
Section 11: Lots 13 and 14:	85.03 acres
Section 14: Lots 3 and 4:	82.64 acres
Section 15: Lots 1 through 5, 12, and 13:	289.35 acres
Section 20: Lots 9 through 16:	327.18 acres
Section 21: Lots 1 through 16:	651.74 acres
Section 22: Lots 2, 7, 8, and 14 through 16:	252.93 acres
Section 27: Lots 6 through 11:	250.51 acres
Section 28: Lots 1 through 8:	322.50 acres
Section 29: Lots 1 through 8:	329.47 acres

Total: 3,248.45 acres

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

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

Section 29: Lots 12 and 13:	81.09 acres
Section 32: Lots 4, 5, 12, and 13:	162.36 acres

### T.40N., R.71W., 6th P.M., Converse County, Wyoming

Section 5: Lots 8, 9, and 16 through 18:	159.79 acres
Section 8: Lots 1 through 16:	637.66 acres
Section 9: Lots 2 through 16:	597.22 acres
Section 10: Lots 5, 6, and 11 through 14:	238.99 acres
Section 14: Lot 13:	39.99 acres
Section 15: Lots 2 through 7, and 10 through 16:	514.01 acres
Section 17: Lots 1 through 16:	629.62 acres

Total: 3,060.73 acres

The land descriptions and acreage are based on the BLM Status of Public Domain Land and Mineral Titles approved Coal Plats as of April 15, 2004 and December 6, 2004. The coal estate in the tract described above is federally owned. The ownership of the surface and oil and gas estates is discussed in Section 3.11.

As discussed under the Proposed Action and Alternative 1, the BNSF and UP railroad crosses portions of the federal coal included in the West Antelope II

## *2.0 Proposed Action and Alternatives*

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North LBA Tract (Figure 2-1). The coal in the West Antelope II North LBA Tract that is located within the BNSF and UP railroad ROW and associated 100 foot buffer zone has been determined to be unsuitable for mining under Coal Unsuitability Criterion 2, and would not be recoverable

As discussed under Alternative 1 and Section 1.5 and shown in Figure 2-1, State Highway 59 crosses the southwestern corner of the BLM study area for the south block of the tract, and Converse County Road 37 crosses the southeastern corner of the BLM study area for the south block of the tract, in Sections 17 and 14, T. 40 N., R. 71 W., respectively. BLM has determined that the coal underlying these portions of State Highway 59 and Converse County Road 37, their ROWs, and a buffer zone extending 100 feet on either side of the ROWs are unsuitable for mining in accordance with Coal Unsuitability 3 and would not be recoverable.

Although these lands would not be mined, they would be included in the alternative tract configuration to allow maximum recovery of all of the mineable coal that is adjacent to but outside of the ROWs and associated buffer zones and to comply with the coal leasing regulations that do not allow leasing of less than 10-acre aliquot parts.

ACC estimates that the BLM study area for the West Antelope II North LBA Tract contains approximately 403.2 million tons of mineable coal and that approximately 374.6 million tons of that coal would be recoverable.

ACC estimates that the BLM study area for the West Antelope II South LBA Tract contains approximately 86.8 million tons of mineable coal and that approximately 79.3 million tons of that coal would be recoverable.

BLM independently evaluates the volume and average quality of the coal resources included in proposed LBA tracts as part of the fair market value determination process. BLM's estimate of the mineable federal coal reserves included in the West Antelope II North and South LBA Tracts may not be in agreement with the mineable coal reserve and coal quality estimates provided by the applicant. BLM's estimate of the mineable federal coal reserves included in the tracts will be included in the Final EIS and published in the sale notice if the tracts are offered for sale.

Under Alternative 2, ACC estimates that an average annual coal production rate of 36 million tons would extend the life of the mine by from 12 to 13 years, and the average number of full-time employees may at times increase to as many as 455. ACC estimates that an average annual coal production rate of 42 million tons would extend the life of the mine by 11 years and increase the average number of full-time employees to up to 470.

### **2.4 Alternative 3**

Under the West Antelope II LBA tract Alternative 3, the No Action Alternative, ACC's application to lease the coal included in the West Antelope II LBA tract would be rejected, the tract would not be offered for competitive sale at this time, and the coal included in the tract would not be mined.

Rejection of the application would not affect permitted mining activities and employment on the existing leases at the Antelope Mine. The Antelope Mine currently leases approximately 10,828 acres of federal coal and 807 acres of state coal; all of which are within the existing Antelope Mine permit boundaries. A total of approximately 12,105 acres will eventually be affected in mining the current leases. If the West Antelope II LBA tract is not leased, ACC estimates that the average annual production at the Antelope Mine after January 1, 2007 will be 36 million tons, and the average full-time employment level is expected to be 430 persons. Portions of the surface of the LBA tract would probably be disturbed due to overstripping to allow coal to be removed from existing contiguous leases.

In order to compare the economic and environmental consequences of mining these lands versus not mining them, this EIS was prepared under the assumption that West Antelope II LBA tract would not be mined in the foreseeable future if the No Action Alternative is selected. However, selection of the No Action Alternative would not preclude leasing and mining of this tract in the future. If the decision is made to reject the West Antelope II lease application at this time, the tract could be leased as a maintenance lease in the future while the adjacent mine is in operation. If it is not leased while the existing adjacent mine is in operation, it may or may not be leased in the future. The tract being evaluated in this EIS does not include enough coal reserves to economically justify mining by a new operation; however, the coal reserves included in the tract could potentially be combined with unleased federal coal to the west and north to create a larger tract, which could be mined by a new operation in the future.

### **2.5 Alternative 4**

Under this alternative, as under the Proposed Action, Alternative 1, and Alternative 2, the BLM would hold a separate, competitive, sealed-bid sale for the lands included in the West Antelope II LBA tract. Alternative 4 assumes, however, that the successful qualified bidder would be someone other than the applicant and that this bidder would plan to open a new mine to develop the coal resources included in the West Antelope II coal lease application.

A company or companies acquiring this coal for a new stand-alone mine would require considerable initial capital expenses, including the construction of new surface facilities (i.e., offices, shops, warehouses, coal processing facilities, coal loadout facilities, and rail spur), extensive baseline data collection, and development of new mining and reclamation plans. In addition, a company or

## *2.0 Proposed Action and Alternatives*

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companies acquiring this coal for a new start mine would have to compete for customers with established mines in a competitive market.

BLM currently estimates that a tract would potentially need to include as much as 500 to 600 million tons of coal in order to attract a buyer interested in opening a new mine in the Wyoming PRB. This is based on several assumptions. First, it is assumed that an operator would construct facilities capable of producing 30 mmtpy to take advantage of the economies of scale offered by the coal deposits in the PRB. It is also assumed that 20 to 30 years of coal reserves would be needed to justify the expense of building the facilities described above. Given these assumptions, under the Proposed Action, Alternative 1, or Alternative 2, while the total amount of coal included in the two blocks of coal may be sufficient to consider opening a new mine, that coal is divided into two blocks, and neither block includes sufficient coal resources to consider opening a new mine. Therefore, it is unlikely that a company or companies would lease the West Antelope II LBA tract in order to open a new mine.

The potential difficulty in obtaining an air quality permit is another issue that could discourage new mine starts in the PRB. A new mine would create a new source of air quality impacts. As discussed in Chapter 3, the WDEQ/AQD administers a permitting program to assist the agency in managing the state's air resources. Under this program, anyone planning to construct, modify, or use a facility capable of emitting designated pollutants into the atmosphere must obtain an air quality permit to construct. Coal mines fall into this category.

In order to obtain a construction permit, an operator may be required to demonstrate that the proposed activities will not increase air pollutant levels above annual standards established by the Wyoming Air Quality Standards and Regulations, which can be found on the internet at <http://deq.state.wy.us/aqd/standards.asp>. There were no exceedances of the 24-hour PM<sub>10</sub> standards anywhere in the PRB through year 2000. From 2001 through 2005, there were 29 monitored exceedances of the 24-hour PM<sub>10</sub> standard at seven operating mines in the Wyoming PRB, four of which are located within the southern portion of the basin. Nineteen of these exceedances occurred in 2001 and 2002, while two, three, and five exceedances occurred in 2003, 2004, and 2005, respectively. One of the 2005 exceedances occurred at the Antelope Mine, but it was attributed to maintenance/construction operations on the adjacent railroad (WDEQ/AQD 2006a). In the first few months of 2007, there were nine exceedances at four mines. It may be difficult for an operator planning on opening a new mine to demonstrate that new operations would not result in air pollution levels that are above annual Wyoming standards.

In view of the issues discussed above, development of a new mine on the West Antelope II LBA tract is considered unlikely and this alternative is not analyzed in detail in this EIS.

The environmental impacts of developing a new mine to recover the coal resources in the West Antelope II LBA tract would be greater than under the Proposed Action, Alternative 1, Alternative 2, or Alternative 3 (the No Action Alternative) because of the need for new facilities, new rail lines, new employment, and the creation of additional sources of particulates (dust). In the event that a lease sale is held and the applicant is not the successful bidder, the successful bidder would be required to submit a detailed mining and reclamation plan for approval before any of the tract could be mined, and this NEPA analysis would be reviewed and supplemented as necessary prior to approval of that mining and reclamation plan.

## **2.6 Alternative 5**

Under Alternative 5, the BLM would delay the sale of the West Antelope II LBA tract as applied for. The prices received for coal from the PRB have generally been increasing in recent years. If that trend continues, the bonus and royalty payments to the government might be higher if the tract is offered for sale at a later date. Also, delaying the sale of the tract would allow CBNG resources to be more completely recovered prior to mining. Under this alternative, it is assumed that the tract could be developed later as either a maintenance tract or a new start mine, depending on how long the sale was delayed.

There is no assurance at this time that delaying the sale would result in a higher coal price or a higher bonus bid. Damage to train tracks in Wyoming and other states limited coal shipments during much of 2005. These shipping constraints combined with increasing world energy demands and natural disasters in other parts of the country led to large increases in coal prices in 2005. Rail capacity increased in 2006 and prices have moderated in 2006 and 2007.

There are two major sources of revenue to state and federal governments from the leasing and mining of federal coal: 1) the competitive bonus bid paid at the time the coal is leased, and 2) federal and state royalties and taxes collected when the coal is sold.

If coal prices do increase, the fair market value of the coal resources in the LBA tract could potentially increase, which could result in an increased bonus bid if the coal is leased at a later date. However, postponing a lease sale would not necessarily lead to higher royalty or tax income to the state or federal governments. Royalty and tax payments are the larger of the two revenue sources and they increase automatically when coal prices increase because they are collected at the time the coal is sold. They cannot be collected until the coal is leased and permitted, which takes several years. If leasing is delayed, then by the time the coal is mined, the higher coal prices may or may not persist. If the higher coal prices do persist, they may enable the coal lessee to negotiate longer term contracts at higher prices, which would result in longer term, higher royalty and tax revenues. On the other hand, if an existing mine runs out of coal reserves before prices rise, it would potentially have to

## *2.0 Proposed Action and Alternatives*

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shut down before additional coal could be leased and permitted for mining. Under this scenario, the fair market value of the coal could actually decrease because the added expense of reopening a mine or starting a new mine would have to be factored into the fair market value.

Other considerations include the value of leaving the mineable coal for future development versus the value of making low-sulfur coal available now, in anticipation of cleaner fuel sources being developed in the future. Continued leasing of PRB coal enables coal-fired power plants to meet CAA requirements without constructing new plants, revamping existing plants, or switching to existing alternative fuels, which may significantly increase power costs for individuals and businesses. If cleaner fuel sources are developed in the future, they could be phased in with less economic impact to the public.

A range of the potential future economic benefits of delaying leasing until coal prices rise could be quantified in an economic analysis, but the benefits would have to be discounted to the present, which would make them similar to the Proposed Action and Alternatives 1 and 2.

CBNG resources are currently being recovered from oil and gas leases on the West Antelope II LBA tract and there are several mechanisms in place that can be used to allow continuing recovery of the CBNG resources prior to mining if the federal coal in the tract is leased now:

- BLM can attach a Multiple Mineral Development stipulation to the lease, which states that BLM has the authority to withhold approval of coal mining operations that would interfere with the development mineral leases issued prior to the coal lease.
- Mining of the West Antelope II LBA tract cannot occur until the coal lessee has a permit to mine the tract approved by the WDEQ/LQD and a MLA mining plan approved by the Secretary of the Interior. Before the MLA mining plan can be approved, BLM must approve the R2P2 for mining the tract. Prior to approving the R2P2, BLM can review the status of CBNG development on the tract and the mining sequence proposed by the coal lessee. The permit approval process generally takes the coal lessee several years. This would allow time for a large portion of the CBNG resources to be recovered from the tract.
- BLM has a policy in place on CBNG-coal conflicts (BLM Instruction Memorandum No. 2006-153), which directs BLM decision makers to optimize the recovery of both resources and ensure that the public receives a reasonable return (BLM 2006d).

This alternative was not analyzed in detail because it would not produce substantially different impacts from other alternatives analyzed in detail. Rental and royalty provisions in the proposed lease provide for the U.S. to benefit if coal prices increase by the time of mining. Moreover, recovery of a

large portion of the economically-recoverable CBNG resources on the tract would be anticipated after lease issuance because of the mechanisms discussed above. The environmental impacts of mining the coal later as part of an existing mine would be expected to be similar and about equal to the Proposed Action and the Action Alternatives. If a new mine start is required to mine the coal, the environmental impacts would be expected to be greater than if it were mined as an extension of an existing mine.

## **2.7 Summary of Alternatives and Environmental Consequences**

### 2.7.1 Background

The decision-making process for public lands in Wyoming is conducted in compliance with NEPA, which requires all federal agencies to involve interested publics in their decision making, consider reasonable alternatives to the proposed actions, develop measures to mitigate environmental impacts, and prepare environmental documents that disclose the impacts of proposed actions and alternatives.

This draft EIS analyzes in detail four different alternatives for the West Antelope II LBA tract, described in the discussion above.

### 2.7.2 Summary of Alternatives

The West Antelope II LBA tract under the Proposed Action and Alternatives 1 and 2 are shown on Figure 2-1. A summary comparison of projected coal production, surface disturbance, mine life, and federal and state revenues for the Proposed Action and Alternatives 1 and 2 for the West Antelope II LBA tract is presented in Table 2-2 for the 36 mmtpy production rate and in Table 2-3 for the 42 mmtpy production rate.

Table 2-4 presents a comparative summary of the direct and indirect environmental impacts of implementing each alternative as compared to the No Action Alternative. The No Action Alternative assumes completion of currently permitted mining at the Antelope Mine for comparison to anticipated mining if the West Antelope II LBA tract is leased. Table 2-5 presents a comparative summary of cumulative environmental impacts of implementing each alternative. The environmental consequences of the Proposed Action and alternatives are analyzed in Chapters 3 and 4. These summary impact tables are derived from the following explanation of impacts and magnitude.

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Table 2-2. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for West Antelope II LBA Tract and Antelope Mine - Assuming Average Annual Post-2006 Coal Production is 36 mmt.

<b>Item</b>	<b>Alternative 3-No Action Alternative (Existing Antelope Mine)</b>	<b>Added by Proposed Action (tract as applied for)</b>	<b>Added by Alternative 1</b>	<b>Added by Alternative 2 (North Tract)</b>	<b>Added by Alternative 2 (South Tract)</b>
In-Place Coal (as of 1/1/07)	428.6 mmt	465.1 mmt	530.0 mmt	442.7 mmt	87.3 mmt
Mineable Coal (as of 1/1/07) <sup>1</sup>	428.6 mmt	463.7 mmt	490.0 mmt	403.2 mmt	86.8 mmt
Recoverable Coal (as of 1/1/07) <sup>2</sup>	394.3 mmt	429.5 mmt	453.9 mmt	374.6 mmt	79.3 mmt
Coal Mined Through 2006	318.9 mmt	—	—	—	—
Potential Lease Area <sup>3</sup>	11,635.5 ac	4,108.6 ac	6,309.2 ac	3,248.5 ac	3,060.7 ac
Total Area To Be Disturbed <sup>4</sup>	12,104.8 ac	4,314.0 ac	6,624.7 ac	3,410.9 ac	3,213.7 ac
Permit Area <sup>4</sup>	14,280.1 ac	4,490.2 ac	7,405.3 ac	3,616.4 ac	3,870.2 ac
Average Annual Post-2006 Coal Production	36 mmt	0 mmt	0 mmt	0 mmt	0 mmt
Remaining Life of Mine (post-2006)	11 yr	12 yr	13 yr	10 yr	2 yr
Average Number of Employees	430	up to 25	up to 25	up to 25	up to 25
Total Projected State and Local Revenues (post-2006) <sup>5,6</sup>	\$ 657.3 million	\$ 780.4 - \$ 924.3 million	\$ 824.7 - \$ 976.8 million	\$ 680.6 - \$ 806.1 million	\$ 144.1 - \$ 170.6 million
Total Projected Federal Revenues (post-2006) <sup>7</sup>	\$ 473.7 million	\$ 580.5 - \$ 724.3 million	\$ 613.4 - \$ 765.5 million	\$ 506.3 - \$ 631.7 million	\$ 107.2 - \$ 133.7 million

<sup>1</sup> Mineable coal figure excludes all coal that would not be mined beneath BNSF & UP railroad ROW and public road ROWs.

<sup>2</sup> Recoverable coal figure assumes 91.3 percent recovery (south tract, two seams) or 92.9 percent recovery (north tract, one seam) of mineable coal and excludes all mining losses that occur during normal mining operations.

<sup>3</sup> Includes federal and state coal leases

<sup>4</sup> The disturbed area exceeds the leased area because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description. Permit areas for the Alternative 2 North and South Tracts overlap; the sum of these areas is therefore greater than the Alternative 1 permit area.

<sup>5</sup> Revenues to the State of Wyoming and local governments include severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payments, bonus bids, and AML fees. State revenues are based on an assumed price of \$9.01 per ton of 'recoverable coal', federal royalty of 12.5 percent of the value less 50.5 percent federal share, plus \$0.315 per ton for AML fees x an assumed 25 percent state share, plus bonus payments of between \$0.30 and \$0.97 per ton of LBA leased coal per ton (based on average of last 6 LBAs in 2004 and 2005) x tonnage of recoverable coal x 50 percent state share, plus \$0.07 per ton estimated sales and use taxes, plus \$0.33 per ton estimate for ad valorem taxes, plus \$0.415 per ton in severance taxes. Only the sales and use taxes paid directly by the mine are considered, i.e., those generated by vendors and suppliers and by consumer expenditure supported directly and indirectly by the mine are not included.

<sup>6</sup> Revenues for Alternative 3 do not include the \$43.9 million in scheduled coal lease bonus bids to be paid on the West Antelope LBA in FY07 through FY09.

<sup>7</sup> Federal revenues are based on an assumed price of \$9.01 per ton, federal royalty of 12.5 percent x 50.5 percent share, plus \$0.315 per ton for AML fees x an assumed 75 percent federal share, plus black lung tax of \$0.00261 per ton, plus bonus payments of between \$0.30 and \$0.97 per ton of LBA leased coal of (based on the range of the 6 most recent last 6 LBA sales in 2004 and 2005) x tonnage of recoverable coal minus x 50 percent federal share.

Table 2-3. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Revenues for West Antelope II LBA Tract and Antelope Mine - Assuming Average Annual Post-2006 Coal Production is 42 mmt.

<b>Item</b>	<b>Alternative 3-No Action Alternative (Existing Antelope Mine)</b>	<b>Added by Proposed Action (tract as applied for)</b>	<b>Added by Alternative 1</b>	<b>Added by Alternative 2 (North Tract)</b>	<b>Added by Alternative 2 (South Tract)</b>
In-Place Coal (as of 1/1/07)	428.6 mmt	465.1 mmt	530.0 mmt	442.7 mmt	87.3 mmt
Mineable Coal (as of 1/1/07) <sup>1</sup>	428.6 mmt	463.7 mmt	490.0 mmt	403.2 mmt	86.8 mmt
Recoverable Coal (as of 1/1/07) <sup>2</sup>	394.3 mmt	429.5 mmt	453.9 mmt	374.6 mmt	79.3 mmt
Coal Mined Through 2006	318.9 mmt	—	—	—	—
Potential Lease Area <sup>3</sup>	11,635.5 ac	4,108.6 ac	6,309.2 ac	3,248.5 ac	3,060.7 ac
Total Area To Be Disturbed <sup>4</sup>	12,104.8 ac	4,314.0 ac	6,624.7 ac	3,410.9 ac	3,213.7 ac
Permit Area <sup>4</sup>	14,280.1 ac	4,490.2 ac	7,405.3 ac	3,616.4 ac	3,870.2 ac
Average Annual Post-2006 Coal Production	36 mmt	6 mmt	6 mmt	6 mmt	0 mmt
Remaining Life of Mine (post-2006)	11 yrs	10 yr	11 yr	9 yr	2 yr
Average Number of Employees	430	up to 40	up to 40	up to 40	up to 40
Total Projected State and Local Revenues (post-2006) <sup>5,6</sup>	\$ 657.3 million	\$ 780.4 - \$ 924.3 million	\$ 824.7 - \$ 976.8 million	\$ 680.6 - \$ 806.1 million	\$ 144.1 - \$ 170.6 million
Total Projected Federal Revenues (post-2006) <sup>7</sup>	\$ 473.7 million	\$ 580.5 - \$ 724.3 million	\$ 613.4 - \$ 765.5 million	\$ 506.3 - \$ 631.7 million	\$ 107.2 - \$ 133.7 million

<sup>1</sup> Mineable coal figure excludes all coal that would not be mined beneath BNSF & UP railroad ROW and public road ROWs.

<sup>2</sup> Recoverable coal figure assumes 91.3 percent recovery (south tract, two seams) or 92.9 percent recovery (north tract, one seam) of mineable coal and excludes all mining losses that occur during normal mining operations.

<sup>3</sup> Includes federal and state coal leases

<sup>4</sup> The disturbed area exceeds the leased area because of the need for highwall reduction, topsoil removal, and other mine support activities outside the lease boundaries. The permit area is larger than the leased or disturbed area to assure that all disturbed lands are within the permit boundary and to allow an easily defined legal land description. Permit areas for the Alternative 2 North and South Tracts overlap; the sum of these areas is therefore greater than the Alternative 1 permit area.

<sup>5</sup> Revenues to the State of Wyoming and local governments include severance tax, property and production taxes, sales and use taxes, and Wyoming's share of federal royalty payments, bonus bids, and AML fees. State revenues are based on an assumed price of \$9.01 per ton of 'recoverable coal', federal royalty of 12.5 percent of the value less 50.5 percent federal share, plus \$0.315 per ton for AML fees x an assumed 25 percent state share, plus bonus payments of between \$0.30 and \$0.97 per ton of LBA leased coal per ton (based on average of last 6 LBAs in 2004 and 2005) x tonnage of recoverable coal x 50 percent state share, plus \$0.07 per ton estimated sales and use taxes, plus \$0.33 per ton estimate for ad valorem taxes, plus \$0.415 per ton in severance taxes. Only the sales and use taxes paid directly by the mine are considered, i.e., those generated by vendors and suppliers and by consumer expenditure supported directly and indirectly by the mine are not included.

<sup>6</sup> Revenues for Alternative 3 do not include the \$43.9 million in scheduled coal lease bonus bids to be paid on the West Antelope LBA in FY07 through FY09.

<sup>7</sup> Federal revenues are based on an assumed price of \$9.01 per ton, federal royalty of 12.5 percent x 50.5 percent share, plus \$0.315 per ton for AML fees x an assumed 75 percent federal share, plus black lung tax of \$0.00261 per ton, plus bonus payments of between \$0.30 and \$0.97 per ton of LBA leased coal of (based on the range of the 6 most recent last 6 LBA sales in 2004 and 2005) x tonnage of recoverable coal minus x 50 percent federal share.

2.0 Proposed Action and Alternatives

Table 2-4. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternatives 1 and 2, and the No Action Alternative for the West Antelope II LBA Tract<sup>2</sup>.

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
<b>RESOURCE NAME</b>	<b>ALTERNATIVE 3 - NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2</b>
<b>TOPOGRAPHY &amp; PHYSIOGRAPHY</b>		
Lower surface elevation	Moderate, permanent on existing mine area	Same as No Action on expanded mine area
Permanent topographic moderation, which could result in:		
Microhabitat reduction	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Habitat diversity reduction	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Big game carrying capacity reduction	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Reduction in water runoff and peak flows	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
Increased precipitation infiltration	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
Reduction in erosion	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
Potential enhanced vegetative productivity	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
Potential acceleration of groundwater recharge	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
<b>GEOLOGY AND MINERALS</b>		
Removal of coal	Moderate, permanent on existing mine area	Same as No Action on expanded mine area
Removal and replacement of topsoil and overburden	Moderate, permanent on existing mine area	Same as No Action on expanded mine area
Physical characteristic alterations in replaced overburden	Moderate, permanent on existing mine area	Same as No Action on expanded mine area
Loss of unrecovered CBNG through venting and/or depletion of hydrostatic pressure	Moderate to substantial, permanent on existing mine area	Same as No Action on expanded mine area
Loss of access for development of sub-coal oil and gas resources and other minerals	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Destruction of paleontological resources that are not exposed on the surface	Moderate, permanent on the existing mine area	Same as No Action on expanded mine area
<b>AIR QUALITY</b>		
Particulate Emissions:		
Elevated concentrations associated with average production of 36 to 42 mmtpy in compliance with ambient standards	Moderate, short term on existing mine and surrounding area	Same as No Action on expanded mine and surrounding area for 10 to 13 additional years
NO <sub>x</sub> Emissions from Machinery:		
Elevated concentrations associated with average production of 36 to 42 mmtpy in compliance with ambient standard	Moderate, short term on existing mine and surrounding area	Same as No Action on expanded mine and surrounding area for 10 to 13 additional years

<sup>1</sup> Refer to Chapter 3 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-4. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternatives 2 and 3, and the No Action Alternative for the West Antelope II LBA Tract<sup>2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
<b>RESOURCE NAME</b>	<b>ALTERNATIVE 3 - NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2</b>
<b>AIR QUALITY (Continued)</b>		
NO <sub>x</sub> Emissions from Blasting:		
Potential for public exposure	No reported events	No events projected
Visibility:		
Elevated concentrations of fine particulate matter associated with average production of 36 to 42 mmtpy	Moderate, short term on existing mine and surrounding area	Same as No Action on expanded mine and surrounding area for 10 to 13 additional years
Acidification of Lakes:		
SO <sub>2</sub> emissions derived from burning Antelope Mine coal to produce power	Moderate, short term	Same as No Action
<b>WATER RESOURCES</b>		
<u>GROUNDWATER</u>		
Removal of coal and overburden aquifers	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Replacement of existing coal and overburden with unconsolidated backfill material	Moderate, permanent on existing mine area	Same as No Action on expanded mine area
Depressed water levels in overburden and coal aquifers adjacent to mine	Moderate, short to long term on existing mine and surrounding area	Same as No Action on expanded mine and surrounding area
Change in hydraulic properties in backfilled areas	Negligible, long term on existing mine area	Same as No Action on expanded mine area
Increase in TDS concentrations in backfilled areas	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Use of subcoal aquifers for water supply	Negligible, short term on existing mine and surrounding area	Same as No Action on expanded mine and surrounding area
Decrease in water supply for groundwater-right holders within the five-foot drawdown area	Moderate, long term on existing mine and surrounding area	Same as No Action on expanded mine and surrounding area
<u>SURFACE WATER</u>		
Diversion and disruption of surface drainage systems	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Reconstruction of surface drainage systems	Permanent on existing mine areas	Same as No Action on expanded mine area
Increased runoff and erosion rates on disturbed lands due to vegetation removal	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Increased infiltration on reclaimed lands due to topographic moderation	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
Increased runoff on reclaimed lands due to loss of soil structure	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Potential for adverse downstream effects as a result of sediment produced by large storms	Moderate, long term for existing approved mining operation	Same as No Action on expanded mining operation

<sup>1</sup> Refer to Chapter 3 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-4. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternatives 2 and 3, and the No Action Alternative for the West Antelope II LBA Tract<sup>2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
	<b>ALTERNATIVE 3 - NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2</b>
<b>ALLUVIAL VALLEY FLOORS</b>		
While final determinations have not been made by WDEQ/LQD, it is believed that there are no AVFs significant to agriculture on the proposed lease tract		
Removal and restoration of AVFs determined not to be significant to agriculture	Moderate, short term on existing leases	Same as No Action on expanded mine area
Disruptions to streamflows supplying downstream AVFs	Negligible, short term on existing leases	Same as No Action on expanded mine area
<b>WETLANDS</b>		
Removal of jurisdictional wetlands and loss of wetland function until reclamation occurs	Moderate, short term on existing leases; jurisdictional wetlands would be replaced as required under Section 404 of the Clean Water Act	Same as No Action on expanded mine area
Removal of non-jurisdictional wetlands and loss of wetland function until reclamation occurs	Moderate, short term to long term on existing leases; non-jurisdictional wetlands would be replaced as required by the surface land owner or WDEQ/LQD	Same as No Action on expanded mine area
<b>SOILS</b>		
Changes in physical properties after reclamation would include:		
Increased near-surface bulk density and decreased soil infiltration rate resulting in increased potential for soil erosion	Moderate, long term on existing mine area	Same as No Action on expanded mine area
More uniformity in soil type, thickness, and texture	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
Decreased runoff due to topographic modification	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area
Changes in biological properties in soils that are stockpiled before reclamation would include:		
Reduction in organic matter	Moderate, short to long term on existing mine area	Same as No Action on expanded mine area
Reduction in microorganism population	Moderate, short to long term on existing mine area	Same as No Action on expanded mine area
Reduction in seeds, bulbs, rhizomes, and live plant parts	Moderate, short to long term on existing mine area	Same as No Action on expanded mine area
Changes in chemical properties would include:		
More uniform soil nutrient distribution	Moderate, beneficial, long term on existing mine area	Same as No Action on expanded mine area

<sup>1</sup> Refer to Chapter 3 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-4. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternatives 2 and 3, and the No Action Alternative for the West Antelope II LBA Tract<sup>2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
	<b>ALTERNATIVE 3 - NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2</b>
<b>VEGETATION</b>		
During mining:		
Progressive removal of existing vegetation	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Increased erosion	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Wildlife habitat and livestock grazing loss	Moderate, short term on existing mine area	Same as No Action on expanded mine area
After revegetation:		
Changes in vegetation patterns	Negligible, long term on existing mine area	Same as No Action on expanded mine area
Reduction in vegetation diversity	Negligible, long term on existing mine area	Same as No Action on expanded mine area
Reduction in shrub density	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Decreased big game habitat carrying capacity	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Decreased habitat for shrub dependent species	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Potential invasion of non-native plant species	Moderate, short term on existing mine area	Same as No Action on expanded mine area
<b>WILDLIFE</b>		
Big game displacement from active mining areas	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Increased competition on adjacent undisturbed or reclaimed lands, especially big game	Moderate, short term on adjacent area	Same as No Action on adjacent area
Restriction of wildlife movement, especially big game	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Increased mortality of small mammals	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Displacement of small and medium-sized mammals	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Surface and noise disturbance of active sage grouse leks	Moderate, short to long term on existing mine area	Same as No Action on expanded mine area
Disturbance of sage grouse nesting habitat during mining	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Loss of sage grouse nesting habitat after reclamation	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Alteration of plant and animal communities after reclamation	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Abandonment of raptor nests	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Loss of foraging habitat for raptors	Negligible, short to long term on existing mine area	Same as No Action on expanded mine area
Loss of nesting and foraging habitat for Migratory Birds of Management Concern	Negligible, short to long term on existing mine area	Same as No Action on expanded mine area
Reduction in waterfowl resting and feeding habitat	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Loss of habitat for aquatic species during mining	Negligible, short term on existing mine area	Same as No Action on expanded mine area
Road kills by mine-related traffic	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Reduction in habitat carrying capacity and habitat diversity on reclaimed lands	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Potential reduction in microhabitats on reclaimed lands	Moderate, long term on existing mine area	Same as No Action on expanded mine area

<sup>1</sup> Refer to Chapter 3 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-4. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternatives 2 and 3, and the No Action Alternative for the West Antelope II LBA Tract<sup>2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
	<b>ALTERNATIVE 3 - NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2</b>
<b>THREATENED, ENDANGERED, PROPOSED, AND CANDIDATE SPECIES (See Appendix I)</b>		
Black-footed ferrets	As determined by previous consultation with USFWS for all species	No effect
Ute ladies'-tresses		May affect, not likely to adversely affect
<b>LAND USE AND RECREATION</b>		
Reduction of livestock grazing	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Loss of wildlife habitat	Moderate, long term on existing mine area	Same as No Action on expanded mine area
Loss of access for sub-coal oil and gas development	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Removal of oil and gas production facilities	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Loss of access to public land available for recreation and grazing	Moderate, short term on existing mine area	Same as No Action on expanded mine area
<b>CULTURAL RESOURCES</b>		
Sites that are not eligible for NRHP	Ineligible sites may be destroyed without further work	Same as No Action on expanded mine area
Sites that are eligible for NRHP	Impacts to sites that are eligible for the NHRP are not permitted; eligible sites would be avoided or mitigated through data recovery prior to mining	Same as No Action on expanded mine area
Sites that are unevaluated for eligibility	Impacts to unevaluated sites are not permitted; unevaluated sites would be evaluated prior to mining	Same as No Action on expanded mine area
<b>NATIVE AMERICAN CONCERNS</b>		
	No impact identified on existing mine area	Same as No Action on expanded mine area
<b>VISUAL RESOURCES</b>		
During mining:		
Alteration of landscape by mining facilities and operations	Moderate, short term on existing mine area	Same as No Action on expanded mine area
Visibility of mining operations from highway	Moderate, short term on existing mine area	
Following reclamation:		
Smoother sloped terrain	Negligible, long term on existing mine area	Same as No Action on expanded mine area
Reduction in sagebrush density	Moderate, short to long term on existing mine area	Same as No Action on expanded mine area

<sup>1</sup> Refer to Chapter 3 for a discussion on magnitude of impacts.  
<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-4. Summary Comparison of Magnitude<sup>1</sup> and Duration of Direct and Indirect Impacts for the Proposed Action, Alternatives 2 and 3, and the No Action Alternative for the West Antelope II LBA Tract<sup>2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE AND DURATION OF IMPACT</b>	
	<b>ALTERNATIVE 3 - NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2</b>
<b>NOISE</b>		
Increased noise levels	Moderate to substantial, short term on existing mine, surrounding area and occupied dwellings and businesses	Same as No Action on expanded mine area
<b>TRANSPORTATION FACILITIES</b>		
Use of railroads to ship coal	Moderate, for duration of existing approved mining operations	Same as No Action for additional 10 to 13 years
Employee and service contractor use of highways to and from mine sites	Moderate, for duration of existing approved mining operations	Same as No Action for additional 10 to 13 years
Relocation of pipelines	Negligible, short to long term on existing mine area	Same as No Action on expanded mine area
Relocation of utility lines	Negligible, short to long term on existing mine area	Same as No Action on expanded mine area
<b>HAZARDOUS AND SOLID WASTE</b>		
Waste generated by mining operations	Negligible for duration of existing approved mining operations	Same as No Action on expanded mine area
<b>SOCIOECONOMICS</b>		
Employment	Negligible, beneficial short term for existing approved mining operations	Up to 25 to 40 potential additional if mine life extended
Revenues from royalties and taxes to the state and local government	Moderate, beneficial short term for existing approved mining operations	Same as No Action for additional 10 to 13 years
Revenues from royalties and taxes to the federal government	Moderate, beneficial short term for existing approved mining operations	Same as No Action for additional 10 to 13 years
Economic development	Moderate, beneficial short term for existing approved mining operations	Same as No Action for additional 10 to 13 years
Additional housing and infrastructure needs	No new impact related to existing approved mining operations	Same as No Action for additional 10 to 13 years

<sup>1</sup> Refer to Chapter 3 for a discussion on magnitude of impacts.

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-5. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup>.

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE, TYPE, AND DURATION OF IMPACT	
	ALTERNATIVE 3 - NO ACTION ALTERNATIVE	PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2
<b>TOPOGRAPHY &amp; PHYSIOGRAPHY</b>		
Alteration of topography following reclamation of coal disturbance areas	Permanent topographic moderation following reclamation	Same as No Action
Alteration of topography to accommodate coal-related, oil and gas, and oil- and gas-related facilities	Long term to permanent limited changes in discrete, scattered areas	Same as No Action
<b>GEOLOGY AND MINERALS</b>		
Recovery of coal resulting in reduction in coal resources and disturbance and replacement of overburden and topsoil	Moderate, long term to permanent	Same as No Action
Surficial disturbance and reclamation on oil and gas well sites and associated facilities	Moderate, long term to permanent	Same as No Action
<b>PALEONTOLOGY</b>		
Coal, coal-related, oil and gas, and oil- and gas-related development disturbance of PFYC Class 5 Wasatch and Class 3 Fort Union Formations	Permanent potential adverse effects to scientifically significant fossils that are present but not visible prior to disturbance	Same as No Action
<b>AIR QUALITY</b>		
Impacts to Montana near-field receptors - 24-hour PM <sub>10</sub> - All other parameters	A maximum modeled impact in one area above NAAQS for the baseline year and both coal production scenarios for 2010	Same as No Action
	Modeled impacts in compliance with NAAQS and Montana AAQS	Same as No Action
Impacts to Wyoming near-field receptors - 24-hour PM <sub>10</sub> - Annual PM <sub>10</sub>	Modeled impact above NAAQS at some receptors for both coal production scenarios for 2010	Same as No Action
	Maximum modeled impact above WAAQS at one receptor for the upper production scenario for 2010	Same as No Action
- All other parameters	Modeled impacts in compliance with NAAQS and Wyoming AAQS	Same as No Action

<sup>1</sup> Cumulative impact discussion in this table and in Chapter 4 is based on the PRB Coal Review analyses (BLM 2005a-f, 2006a).

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-5. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE, TYPE, AND DURATION OF IMPACT</b>	
	<b>ALTERNATIVE 3 - NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2</b>
<b>AIR QUALITY (Continued)</b>		
Non-regulatory PSD Impacts at Class I and Sensitive Class II Areas		
- Class I Northern Cheyenne Indian Reservation	Modeled impacts above Class I increment levels for 24-hour PM <sub>10</sub> , annual PM <sub>10</sub> , 24-hour SO <sub>2</sub> , 3-hour SO <sub>2</sub> for baseline year and both coal production scenarios for 2010; above Class I increment for annual NO <sub>2</sub> for upper coal production scenario for 2010	Same as No Action
- Class I Washakie Wilderness Area and Wind Cave National Park and Class II Crow Indian Reservation	Modeled impacts above Class I increment levels for 24-hour PM <sub>10</sub> for baseline year and both coal production scenarios for 2010	Same as No Action
- All other Class I and Sensitive Class II modeled receptors	Modeled impacts within Class I increment levels for baseline year and both coal production scenarios for 2010	Same as No Action
Visibility Impacts	199 or more days with a change of 1.0 dv or greater at three Class I areas and seven sensitive Class II areas for the baseline year and both coal productions scenarios for 2010	Same as No Action
Acid deposition Impacts	All modeled impacts below the depositions threshold values for nitrogen and sulfur compounds	Same as No Action
- Florence Lake	Modeled impact above 10 percent ANC	Same as No Action
- Upper Frozen Lake	Modeled impact above 1 µeq/L	Same as No Action
- All other modeled sensitive lakes	Modeled impact below threshold values	Same as No Action
<b>GROUNDWATER RESOURCES</b>		
Removal of coal aquifer and replacement with backfill material	Moderate, permanent for mining areas	Same as No Action
Lowering of water levels in aquifers around the mines	Moderate, long term in area immediately west of mines	Same as No Action
Water level decline in sub-coal aquifers as a result of all development	No cumulative impacts anticipated	Same as No Action
Change in groundwater quality as a result of all development	No cumulative impacts anticipated	Same as No Action

<sup>1</sup> Cumulative impact discussion in this table and in Chapter 4 is based on the PRB Coal Review analyses (BLM 2005a-f, 2006a).

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-5. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

<i>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</i>	<i>MAGNITUDE, TYPE, AND DURATION OF IMPACT</i>	
<b>RESOURCE NAME</b>	<b>ALTERNATIVE 3 - NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2</b>
<b>GROUNDWATER RESOURCES (Continued)</b>		
Overlapping drawdown in the coal aquifer caused by surface mining and CBNG development	Additive, long term in area immediately west of surface coal mines	Same as No Action
<b>SURFACE WATER RESOURCES</b>		
Surface disturbance of intermittent and ephemeral streams and scattered ponds and reservoirs as a result of coal mining, coal-related, oil and gas, and oil- and gas-related development	Moderate, short term	Same as No Action
Discharge of coal mining and CBNG produced waters into intermittent and ephemeral streams	Moderate, short term	Same as No Action
Sediment input into intermittent and ephemeral streams and scattered ponds and reservoirs as a result of coal mining, coal-related, oil and gas, and oil- and gas-related development	Moderate, short term	Same as No Action
<b>ALLUVIAL VALLEY FLOORS</b>		
Coal mining disturbance of AVFs determined to be significant to agriculture	Not permitted by regulation	Same as No Action
Coal mining disturbance of AVFs determined not to be significant to mining	AVFs disturbed by mining must be restored to essential hydrologic function No cumulative impacts anticipated	Same as No Action
<b>SOILS</b>		
Coal mining, coal-related, oil and gas, and oil- and gas-related disturbance and replacement of soil resources	Moderate, short term and long term impacts through accelerated wind or water erosion, declining soil quality factors through compaction, reduced microbial populations and organic matter, and potential mixing of soil zones	Same as No Action
CBNG water disposal impacts to soil resources	Potential increase in soil alkalinity depending on SAR levels in water and method of water disposal	Same as No Action

<sup>1</sup> Cumulative impact discussion in this table and in Chapter 4 is based on the PRB Coal Review analyses (BLM 2005a-f, 2006a).

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

Table 2-5. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE, TYPE, AND DURATION OF IMPACT</b>	
	<b>ALTERNATIVE 3 - NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2</b>
<b>VEGETATION</b>		
Coal mining, coal-related, oil and gas, and oil- and gas-related removal and replacement of native vegetation	Moderate, short to long term impacts due to potential differences in species composition and presence and size of woody species on reclaimed lands	Same as No Action
Coal mining, coal-related, oil and gas, and oil- and gas-related impacts to Special Status Plant Species	Potential incremental loss of alteration of potential or known habitat	Same as No Action
Coal mining, coal related, oil and gas, and oil- and gas-related dispersal of noxious and invasive species	Potential displacement of native species and changes in species composition	Same as No Action
<b>WETLAND AND RIPARIAN VEGETATION</b>		
CBNG-related discharge of produced water	Moderate, short to long term creation of wetlands in areas that previously supported upland vegetation	Same as No Action
<b>WILDLIFE</b>		
Direct and indirect coal mining, coal-related, oil and gas, and oil- and gas-related development impacts to game and non-game species, including direct mortality, habitat fragmentation, animal displacement, noise and increased human presence	Moderate, short term	Same as No Action
Coal mining, coal-related, oil and gas, and oil- and gas-related disturbance of game and nongame species habitat during project development and operation	Moderate, short term loss of all types of habitat present in disturbed areas	Same as No Action
Coal mining, coal related, oil and gas, and oil- and gas-related habitat changes after reclamation	Moderate, long term change in habitat with potential changes in associated wildlife populations	Same as No Action
<b>FISHERIES</b>		
Alteration or loss of habitat due to coal mining, coal-related, oil and gas, and oil- and gas-related development	Moderate, short to long term	Same as No Action
Changes in water quality as a result of surface disturbance or introduction of contaminants into drainages caused by coal mining, coal-related, oil and gas, and oil- and gas-related development	Moderate, short to long term	Same as No Action

<sup>1</sup> Cumulative impact discussion in this table and in Chapter 4 is based on the PRB Coal Review analyses (BLM 2005a-f, 2006a).

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

2.0 Proposed Action and Alternatives

Table 2-5. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE	MAGNITUDE, TYPE, AND DURATION OF IMPACT	
	ALTERNATIVE 3 - NO ACTION ALTERNATIVE	PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2
<b>FISHERIES (Continued)</b>		
Changes in available habitat as a result of water withdrawals or discharges related to coal mining, coal-related, oil and gas, and oil- and gas-related development	Moderate, short term	Same as No Action
<b>SPECIAL STATUS SPECIES</b>		
Direct and indirect coal mining, coal-related, oil and gas, and oil- and gas-related development impacts, including direct mortality, breeding area, nest, or burrow abandonment, noise and increased human presence	Moderate, short term	Same as No Action
Coal mining, coal-related, oil and gas, and oil- and gas-related disturbance of habitat during project development and operation	Moderate, short term loss of all types of special status species habitat present in disturbed areas	Same as No Action
Coal mining, coal related, oil and gas, and oil- and gas-related habitat changes after reclamation	Moderate, long term change in habitat with potential changes in associated populations of special status species	Same as No Action
<b>LAND USE AND RECREATION</b>		
Loss of forage and range improvements and restriction of livestock movement due to coal mining, coal-related, oil and gas, and oil- and gas-related development	Moderate, short term	Same as No Action
Disturbance of developed recreation sites by coal mining, coal-related, oil and gas, and oil- and gas-related development	Negligible, short term	Same as No Action
Reduction or degradation of opportunities for dispersed recreation activities related to coal mining, coal-related, oil and gas, and oil- and gas-related development	Moderate, short term on existing mine area	Same as No Action
<b>CULTURAL RESOURCES</b>		
Disturbance of cultural resource sites	Moderate, permanent	Same as No Action
<b>TRANSPORTATION AND UTILITIES</b>		
Movement of segments of existing highways, pipelines, transmission lines, or railroads to accommodate coal mining development	Moderate, long term to permanent, disruptive effects would be minimized	Same as No Action

1 Cumulative impact discussion in this table and in Chapter 4 is based on the PRB Coal Review analysis (BLM 2005a-f, 2006a).

2 All impacts are assumed to be adverse unless noted otherwise.

Table 2-5. Summary Comparison of Magnitude and Duration of Cumulative Impacts<sup>1, 2</sup> (Continued).

<b>DESCRIPTION OF POTENTIAL IMPACT BY RESOURCE</b>	<b>MAGNITUDE, TYPE, AND DURATION OF IMPACT</b>	
	<b>ALTERNATIVE 3 - NO ACTION ALTERNATIVE</b>	<b>PROPOSED ACTION, ALTERNATIVE 1 and ALTERNATIVE 2</b>
<b>TRANSPORTATION AND UTILITIES</b>		
Increased vehicular traffic on roads and highways due to coal mining, coal-related, oil and gas, and oil- and gas-related development, and associated impacts including traffic accidents, road wear, air emissions, dust, noise, and vehicle collisions with wildlife and livestock	Moderate, short term	Same as No Action
Construction and operation of additional railroad and pipeline facilities and transmission lines to transport coal, oil and gas, and electricity	Moderate, short to long term	Same as No Action
<b>SOCIOECONOMICS</b>		
Increases in employment related to coal mining, coal-related, oil and gas, and oil- and gas-related development	Significant, short to long term	Same as No Action
Increases in personal income due to employment increases related to coal mining, coal-related, oil and gas, and oil- and gas-related development	Significant, beneficial, short to long term	Same as No Action
Increase in population due to employment increases related to coal mining, coal-related, oil and gas, and oil- and gas-related development	Significant, short to long term	Same as No Action
Expansion of housing supply due to employment increases related to coal mining, coal-related, oil and gas, and oil- and gas-related development	Significant, short to long term	Same as No Action
Increases in school enrollment due to employment increases related to coal mining, coal-related, oil and gas, and oil- and gas-related development	Moderate, short term	Same as No Action
Need for additional local government facilities and services due to employment increases related to coal mining, coal-related, oil and gas, and oil- and gas-related development	Moderate, short to long term	Same as No Action
Increased federal state and local revenues related to coal mining, coal-related, oil and gas, and oil- and gas-related development	Significant, beneficial, short to long term	Same as No Action

<sup>1</sup> Cumulative impact discussion in this table and in Chapter 4 is based on the PRB Coal Review analyses (BLM 2005a-f, 2006a).

<sup>2</sup> All impacts are assumed to be adverse unless noted otherwise.

## *2.0 Proposed Action and Alternatives*

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NEPA requires all agencies of the federal government to include, in every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on:

- (i) the environmental impact of the Proposed Action,
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the Proposed Action,
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- (v) any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented (42 USC § 4332[C]).

Impacts can be beneficial or adverse, and they can be a primary result of an action (direct) or a secondary result (indirect). They can be permanent, long-term (persisting beyond the end of mine life and reclamation) or short-term (persisting during mining and reclamation and through the time the reclamation bond is released). Impacts also vary in terms of significance. The basis for conclusions regarding significance are the criteria set forth by the Council on Environmental Quality (40 CFR 1508.27) and the professional judgment of the specialists doing the analyses. Impact significance may range from negligible to substantial; impacts can be significant during mining but be reduced to insignificance following completion of reclamation.