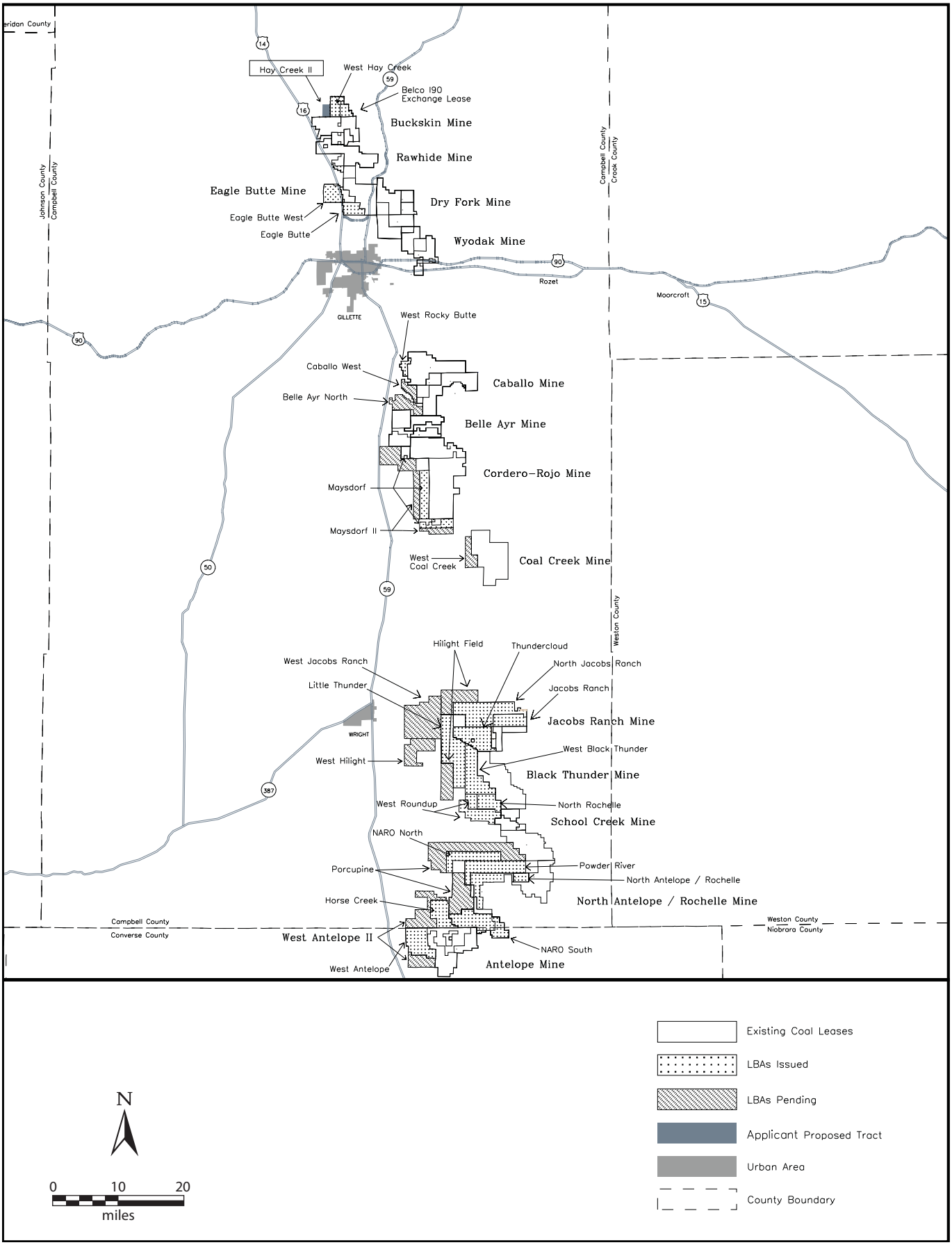
EXECUTIVE SUMMARY

Introduction

The U.S. Bureau of Land Management (BLM) has prepared a final environmental impact statement (EIS) for the Hay Creek II coal lease application (Proposed Action). The final EIS was prepared in accordance with the National Environmental Policy Act (NEPA) and its associated rules and guidelines, and presents the BLM's analysis of environmental impacts from the Proposed Action and alternatives. The BLM will use this impact analysis to make a leasing decision for federal coal reserves adjacent to the Buckskin Mine. A federal coal lease does not authorize mining to occur, but is the first step in that process. The lease merely grants the lessee the exclusive right to pursue a mining permit for the coal tract subject to the terms of the lease, the mining permit itself, and all applicable state and federal laws. Permits to mine are issued by authorized federal and/or state agencies only after a lease has been secured and all appropriate agencies have reviewed and approved an extensive permit application. That application document provides information describing a wide range of baseline resources, as well as detailed mining, mitigation, and reclamation plans.

Background

On March 24, 2006, Kiewit Mining Properties, Inc. (Kiewit), filed the Hay Creek II coal lease application with the BLM for federal coal reserves included in a tract located northwest of and immediately adjacent to the existing Buckskin Mine permit area, approximately 12 miles north of Gillette, Campbell County, Wyoming (map ES-1). The mine is operated by the Buckskin Mining Company, a directly held subsidiary of Kiewit**.** The Hay Creek II lease by application (LBA) was assigned BLM case file number WYW-172684. The federal coal reserves were applied for as a maintenance tract for the Buckskin Mine, which means the coal tract is adjacent to, and can be recovered by, the existing active coal mine. The intent of the proposed tract is to extend the life of existing operations rather than to expand the mine. Since submitting its original application in 2006 (see "applicant original [March 2006] tract" on map ES-2), Kiewit modified its lease application due to changing needs. The applicant proposed tract (proposed tract) from November 2008 was analyzed in the draft EIS. Unforeseen LBA processing delays caused Buckskin to lose the mechanical advantage provided by the November 2008 modification. Consequently, on September 3, 2010, Kiewit requested that the BLM consider a tract configuration under Alternative 2 (see chapter 2) based on the original tract configuration applied for in March 2006. Because the analyses in the draft EIS encompassed all configurations of Kiewit's proposed tract, they are still valid for the final EIS. Therefore, for the purposes of this analysis, the proposed tract remains unchanged from the draft EIS.



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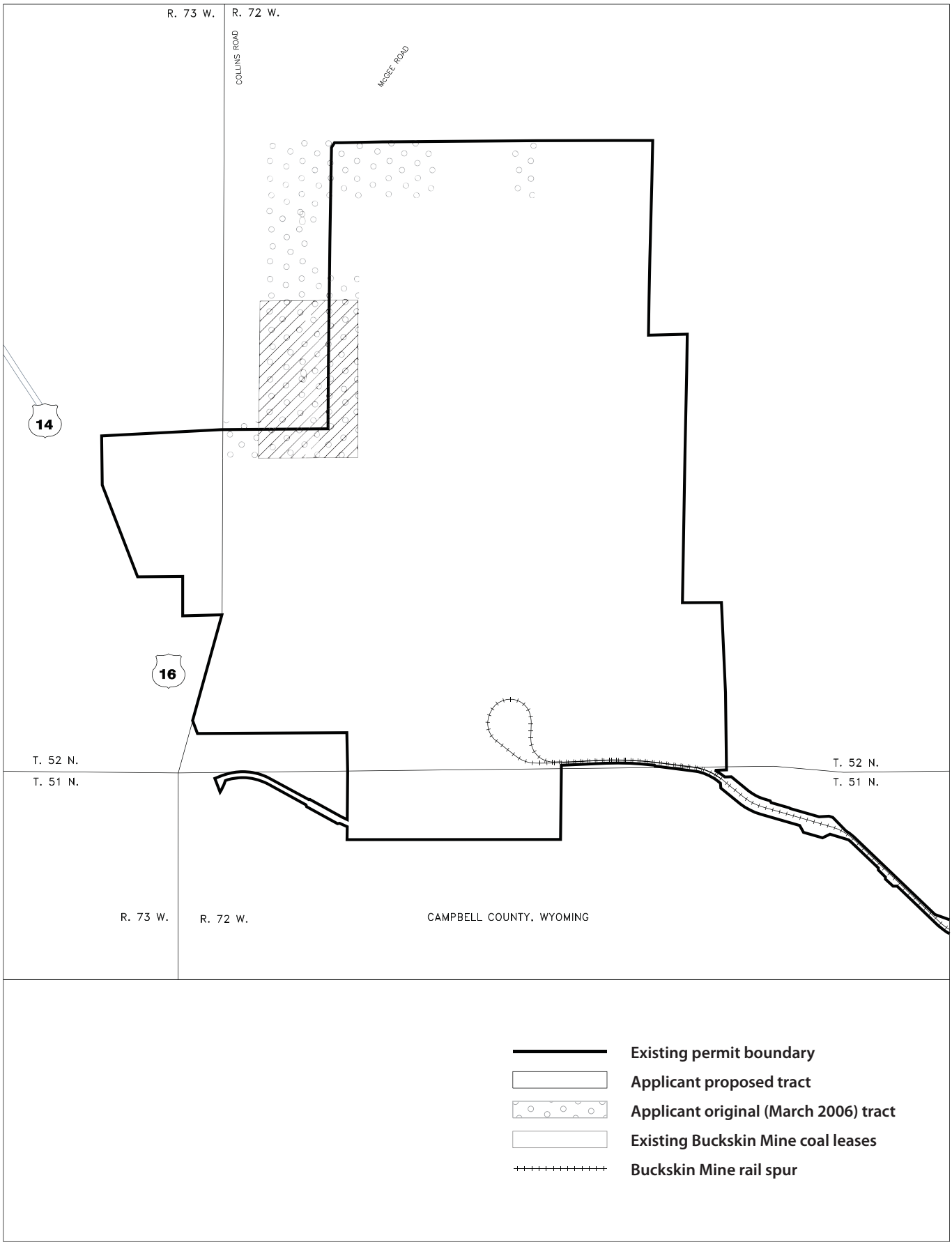
Map ES-1

General Location Map with Federal Coal Leases and LBA Tracts



Map ES-2

Applicant Proposed and Original (March 2006) Tracts

The BLM, Wyoming State Office, Division of Minerals and Lands, has reviewed Kiewit's application for the proposed tract. That office determined that the lease application and lands involved meet the regulatory requirements for an LBA under 43 Code of Federal Regulations (CFR) 3425. The Powder River Regional Coal Team reviewed Kiewit's application at a public meeting held on April 19, 2006, in Casper, Wyoming, and subsequently recommended that the BLM process it.

Evaluation and Environmental Review Process

To process an LBA, the BLM must evaluate the quantity, quality, maximum economic recovery, and fair market value of the federal coal. The BLM also must fulfill the requirements of NEPA by evaluating the environmental impacts of leasing that coal. NEPA requires the BLM to consider and evaluate reasonable alternatives to the Proposed Action, including a "no action" alternative. This EIS has been prepared to evaluate the site-specific and cumulative environmental impacts of leasing and recovering the federal coal reserves in the proposed tract or an alternative tract configuration, as determined by the BLM. In keeping with the purpose of an EIS, the analyses presented in this document are based primarily on existing information.

As stated, the BLM leasing process does not authorize mining of federal coal reserves; applicants must obtain permits from appropriate federal and/or state agencies to mine the coal. However, because mining is a logical consequence of issuing a maintenance lease to an existing operation, the impacts of mining the coal are considered in this EIS.

The BLM will use the analyses in this EIS to decide whether to hold a competitive sale and issue a lease for the federal coal reserves in the proposed tract or an alternative tract configuration. The LBA process by law and regulation is an open, public, competitive sealed-bid process. If a sale is held for a tract, the bidding would be open to any qualified bidder; it would not be limited to the applicant. A coal lease is issued to the highest bidder at the sale, if a federal sale panel determines that the high bid meets or exceeds the fair market value of the coal as determined by the BLM's economic evaluation, and if the Department of Justice determines that no antitrust violations would result from assigning the lease to the high bidder. A decision to lease these federal coal reserves would be in conformance with the BLM Resource Management Plan for the Buffalo and Casper field offices.

Regardless of whether the successful bidder is the applicant or a new operator, the lessee would be required to submit a permit application, including detailed mining, monitoring, mitigation, and reclamation plans to the Wyoming Department of Environmental Quality (WDEQ) for review. The operator would also be required to submit a Resource Recovery and Protection Plan to the BLM for review. Before mining operations could begin in the new tract, the mining permit must be approved by the WDEQ, the Resource Recovery and Protection Plan must be approved by the BLM, and a Mineral Leasing Act mining plan must be approved by the Assistant Secretary of the Interior.

Other agencies will also use this EIS analysis to make decisions related to leasing and mining the federal coal in the proposed tract or an alternative tract configuration. The Office of Surface Mining Reclamation and Enforcement and all divisions of the WDEQ are cooperating agencies on this EIS. Both the U.S. Environmental Protection Agency (EPA) and the BLM will publish a notice of availability of the final EIS in the *Federal Register*. After a 30-day availability period, the BLM will make a decision to hold or not to hold a competitive lease sale for the federal coal reserves in the final tract configuration. The record of decision (ROD) for the tract is mailed to all parties on the mailing list and others who commented on the draft EIS during the comment period. Members of the public and/or the applicant can appeal the BLM decision to hold or not to hold a competitive sale and issue a lease for the final tract configuration. The BLM decision must be appealed within 30 days from the date that the notice of availability for the ROD is published in the *Federal Register*. The decision can be implemented at that time if no appeal is received. If a competitive lease sale is held, it will follow the procedures set forth in 43 CFR 3422, 43 CFR 3425, and BLM Handbook H-3420-1 (Competitive Coal Leasing).

After a competitive coal lease sale is held, but before the lease is issued, the BLM must solicit the opinion of the Department of Justice on whether the planned lease issuance creates a situation inconsistent with federal antitrust laws. The Department of Justice has 30 days to make this determination. If the Department of Justice has not responded in writing within the 30 days, the BLM can issue the lease.

Purpose and Need

The purpose of the Proposed Action is to extend the life of existing operations at the Buckskin Mine. The Proposed Action would not expand operations at the Buckskin Mine, but would extend the life of the mine by approximately two years[1].

More broadly, the Proposed Action responds to the continued demand for coal in the United States, primarily for the purpose of generating electricity. According to the U.S. Energy Information Administration (2008a), the United States has the world's largest known coal reserves. Demand for this coal is driven by the electric power sector, which accounts for about 92% of coal consumption (U.S. Energy Information Administration 2008a, 2008b). Approximately half of the electricity currently generated in the United States comes from coal (U.S. Department of Energy 2009a). Wyoming coal is used to generate electricity in 37 other states (Wyoming Mining Association 2009).

The BLM recognizes that the continued extraction of coal is essential to meet the nation's future energy needs and goals. Consequently, private development of federal coal reserves is integral to the BLM coal leasing program under the authority of the Mineral Leasing Act of 1920, as well as the Federal Land Policy Management Act and the Federal Coal Leasing Amendments Act of 1976. Under the Federal Land Policy Management Act, the BLM is mandated to manage public

[1] Assuming that coal production would continue at the most recent (2008) annual coal production rate of 25 million tons per year.

lands for multiple-use so that the lands are utilized in the combination that will best meet the present and future needs of the American people.

Management of federal coal resources—leasing, mining, and selling—in the Power River Basin (PRB) contributes to a reliable supply of low-sulfur compliance coal for electric power generation in the United States. This domestic supply enables coal-fired power plants to meet current

Clean Air Act requirements and increasing demand without potentially significant increases in power costs while new technologies are developed to improve efficiency and reduce emissions. Management of federal coal resources in the PRB also generates revenue—in the form of bonus, annual rental, and royalty payments—that is used to fund numerous infrastructure and social projects in Wyoming.

Proposed Action and Alternatives

The Proposed Action and two alternatives are analyzed in detail in this final EIS. No new life-of-mine facilities would be built under any of the alternatives; federal coal reserves would be mined as an extension of the existing mine.

- **Proposed Action—**Under the Proposed Action, the BLM would hold a competitive, sealed-bid sale and issue a lease for the federal coal reserves included in the proposed tract, which is a contiguous block of federal coal reserves adjacent to the existing Buckskin Mine permit area. The proposed tract includes approximately 419 acres (map ES-3) and 77.2 million tons of in-place coal reserves.
- **Alternative 1**—Under Alternative 1, the No Action Alternative, the coal lease application would be rejected and no new federal coal reserves would be offered for sale at this time. The existing leases at the Buckskin Mine would be developed according to the current approved mining plan. Rejection of the lease application would not preclude an application to lease a tract in that area in the future. The current coal leases at the mine include approximately 6,438 acres and 460.9 million tons of in-place coal reserves.
- **Alternative 2 (BLM Preferred Alternative)**— The BLM has identified Alternative 2 as its Preferred Alternative for the final EIS. Under that alternative, the BLM would hold a competitive, sealed-bid sale and issue a lease for the federal coal reserves included in an alternative tract configuration within the BLM study area (map ES-3), as determined by the BLM. The entire BLM study area (maximum potential lease area) includes up to approximately 1,883 acres and 269.7 million tons of in-place coal reserves. The BLM is considering an alternative tract configuration that is larger than both Kiewit's proposed tract and original (2006) tract, but smaller than the BLM study area (map ES-4). However, the BLM will not identify the final tract configuration until it issues the ROD for this leasing action.

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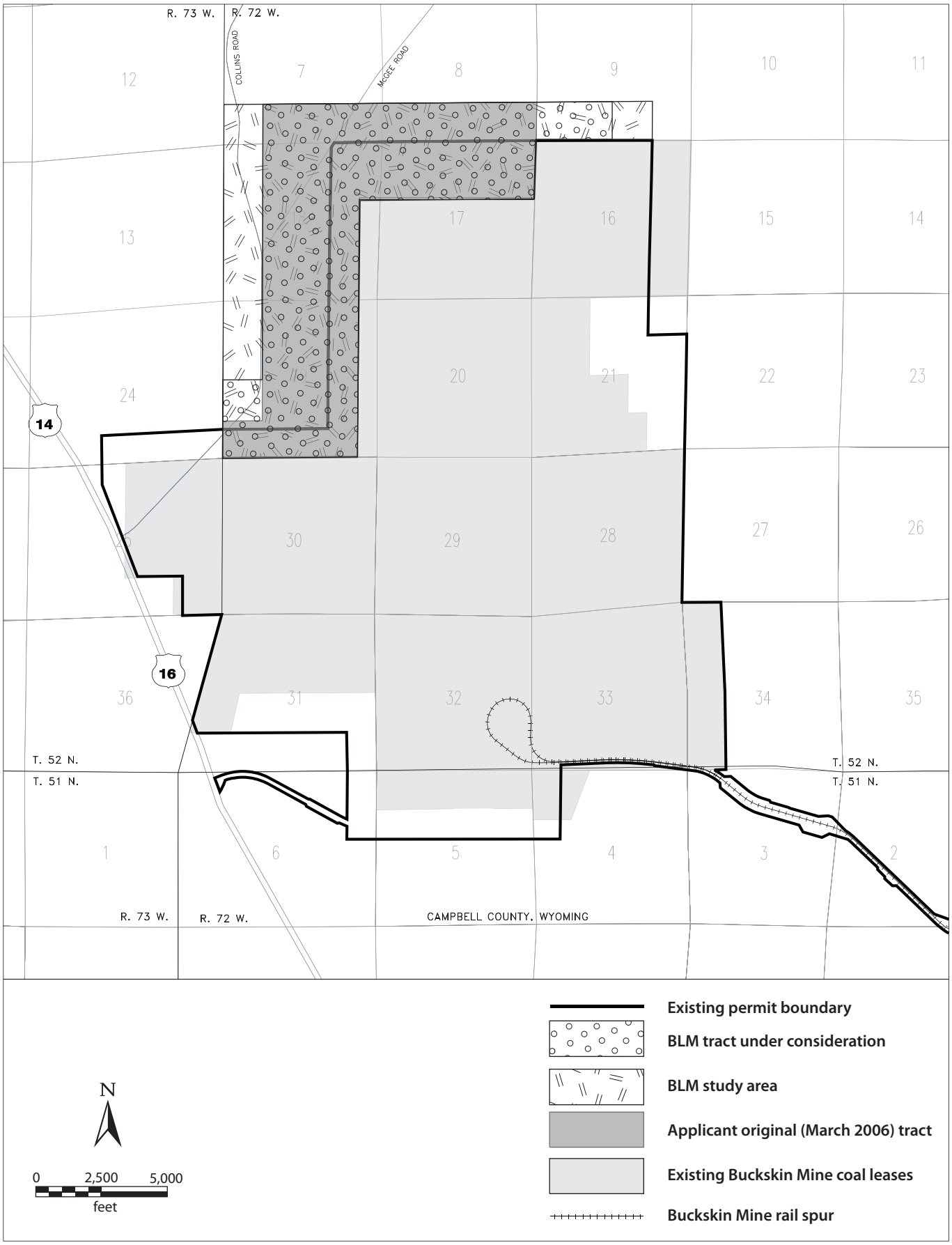
Map ES-3

Applicant Proposed Tract and BLM Study Area



No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by BLM.

Map ES-4

BLM Tract under Consideration and Applicant Original (March 2006) Tract

Not all of the federal coal reserves in the proposed tract and BLM study area are considered mineable at present. Campbell County Road 23 (the Collins Road) and Campbell County Road 73 (the McGee Road) cross the BLM study area from its southern to northern boundaries; much of the western boundary of the proposed tract is adjacent to the Collins Road. The Surface Mining Control and Reclamation Act of 1977 (SMCRA) prohibits mining under a public road, in its right-of-way, or within 100 feet on either side of the right-of-way, as specified under unsuitability criterion 3 (43 CFR 3461.5[c][2][iii]). An exception to this prohibition is included in the SMCRA regulations at section 522(e)(4) and 30 CFR 761.11(d)(2), which can be applied if the appropriate road authority allows the road to be relocated or closed after public notice, an opportunity for a public hearing, and a finding that the interests of the affected public and landowners will be protected.

Under the same unsuitability criterion, the land underlying the only occupied residence in the BLM study area is also considered unsuitable for mining. Surface disturbance at the residence and a 300-foot buffer around it would be prohibited unless Kiewit were to purchase the surface rights associated with the home and its buffer zone.

Kiewit does not currently plan to pursue efforts to close or relocate either county road, or acquire the surface rights to the land associated with the occupied residence; therefore, the company considers the lands around those features inaccessible and operationally limited. Nevertheless, the coal underlying these structures and their buffers is still considered for leasing because those reserves could be mined if the authorized agency determines that one or both roads can be closed or moved, or if Kiewit acquires the surface rights to the occupied residence. Including the coal underlying those features in the lease would also allow for maximum recovery of all the mineable coal adjacent to, but outside of, their respective buffer zones, even if no action is taken to seek an exception to unsuitability criterion 3. If a lease is issued for a tract, the BLM will attach a stipulation stating that no mining activity may be conducted in the portion of the lease underlying the county roads, their rights-of-way, and buffer zones and occupied residence and buffer zone unless approval is obtained from the appropriate authority to move or close the roads or acquire surface rights associated with the occupied residence, respectively.

In addition to existing mine operations, the BLM study area and immediate vicinity include agricultural lands (crops, hayfields, and pastures), several overhead electric power lines, gas (coal bed natural gas) pipelines and infrastructure, and two unoccupied residences. No permitted, operating conventional oil wells are located in the general area. Before any surface disturbance or additional mine-related activities could begin, support infrastructure such as power lines, gas pipelines, and flood- and sediment-control features would be built or relocated, as needed.

The analyses presented in this final EIS assume that Kiewit would be the successful bidder under both the Proposed Action and Alternative 2 (action alternatives). Kiewit would add the tract as an integral extension of existing operations at the Buckskin Mine. Facilities and infrastructure would be the same as those currently identified in the WDEQ Mine Permit 500 Term T7, approved May 22, 2006, and the *BLM Resource Recovery and Protection Plan*, approved

June 16, 2006. Kiewit would submit an application to the WDEQ to amend its existing surface mining permit and mining plan to incorporate the final tract configuration; that application would include detailed amendments to the current monitoring, reclamation, and mitigation plans to include a new lease area.

Table ES-1 describes projected coal production, surface disturbance, mine life, and projected federal and state revenues for the Buckskin Mine under each of the alternatives analyzed in this EIS. These figures are based on the current and projected average annual coal production rate of 25 million tons per year, and the assumption that coal reserves under the public roads and occupied residence would not be mined.

Table ES-1. Comparison of Coal Reserves, Lease and Permit Areas, Production, Mine Life, and Revenues

Item	Existing Buckskin Mine Permit Area	Additional Under		
		Alternative 1 (No Action)	Proposed Action	Alternative 2
In-Place Coal (as of 12-31-08)	460.9 mmt	0	77.2 mmt[a]	269.7 mmt[b]
Accessible Mineable Coal (as of 12-31-08)[c]	361.9 mmt	0	60.1 mmt[a]	166.3 mmt[b]
Recoverable Coal (as of 12-31-08)[d]	344.3 mmt	0	54.1 mmt[a]	149.7 mmt[b]
% Increase in Estimated Recoverable Coal (as of 12/31/08)[d]	—	0	15.7%	43.5%
Coal Lease Area	6,438.2 acres[e]	0	419.0 acres	1,883.1 acres
Permit Area	8,011.5 acres	0	478.0 acres	2,191.6 acres
Average Annual Post-2008 Coal Production	25 mmt	0	0	0
Remaining Life of Mine (Post-2008)[7]	14 years	0	2 years	up to 6 years
Average Number of Employees	350	0	0	0
Total Projected State and Local Revenues (Post-2008)[f]	$563.6 million	0	$90.6–$108.8 million	$250.2–$300.4 million
Total Projected Federal Revenues (Post-2008)[g]	$417.0 million	0	$69.2–$87.3 million	$191.0–$241.1 million

mmt = million tons

[a] Based on the entire proposed tract, including its overlap with the existing Buckskin Mine permit area.

[b] Based on the entire BLM study area, including its overlap with the existing Buckskin Mine permit area.

[c] Maximum estimate; does not include coal reserves that are inaccessible because of criteria 3 (i.e., reserves beneath the occupied residence and associated 300-foot buffer zone; or the public road rights-of-way [Collins and McGee roads], their associated 100-foot buffer zones, and other operationally limited lands between the two roads).

[d] Assumes a recovery rate of 95% for coal in the Canyon seam and a 90% for all other coal reserves; does not include coal left behind as support pillars and similar structures, or unavoidably lost through spillage and spontaneous natural fires during normal mining operations.

[e] Includes federal and state coal leases currently held by the Buckskin Mining Company.

[f] Revenues to the State of Wyoming and local governments include severance taxes; property and production taxes (ad valorem); sales and use taxes; and Wyoming's share of federal royalty payments, bonus bids, annual rental payments, and Abandoned Mine Land fees. State revenues are based on an assumed price of $7.85 per ton of "recoverable coal," federal royalty of 12.5% of the value less 51% federal share, plus $0.315 per ton for Abandoned Mine Land fees on assumed 25% state share, plus bonus payments of between $0.30 and $0.97 per ton of LBA leased coal per ton (based on average of six LBAs in 2004 and 2005) times the tonnage of recoverable coal times a 50% 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., taxes generated by vendors and suppliers and by consumer expenditure supported directly and indirectly by the mine are not included. These figures could change based on the outcome of recent legislation that changed the percentage of distribution to states.

[g] Federal revenues are based on an assumed price of $7.85 per ton, federal royalty of 12.5% times 51% share, plus $0.315 per ton for Abandoned Mine Land fees times an assumed 75% 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 (based on the range of the six LBA sales in 2004 and 2005) times tonnage of recoverable coal minus a 50% federal share. These figures could change based on the outcome of recent legislation that changed the percentage of distribution to states.

Other alternatives that were considered but eliminated from further analysis in this EIS include:

- **Alternative 3**—Under Alternative 3, the BLM would hold a competitive, sealed-bid sale and issue a lease for a coal tract to a successful bidder other than the applicant for the purpose of developing a new stand-alone mine.
- **Alternative 4**—Under Alternative 4, the BLM would delay the sale of a new coal tract with the goal of increasing the public benefit should higher coal prices be in place at a later date

and/or to allow more complete recovery of the potential coal bed natural gas (CBNG) resource prior to mining.

The current economies of mining in the Powder River Federal Coal Region appear to make construction of a new mine economically unfeasible using estimated in-place coal reserves in the proposed tract or alternative tract configuration. The BLM currently estimates that a tract would need to include as much as 500 to 600 million tons of in-place coal to attract a buyer interested in opening a new mine in the Wyoming PRB. Neither the proposed tract (approximately 77 million tons) nor the BLM study area (about 270 million tons) includes sufficient in-place coal resources to justify the costs of opening a new mine. Given these limitations and other assumptions associated with a new mine start, such as the necessary annual production and competition for market share, Alternative 3 is not analyzed further in this EIS. Alternative 4 was not analyzed in detail because it would not produce substantially different impacts from the alternatives analyzed in this EIS; only the timing and possibly the economic return of the sale would differ.

Resources Addressed in this Environmental Impact Statement

The general analysis area represents the maximum surface area that could be disturbed by mining operations (coal extraction and support activities) analyzed in this EIS; it encompasses approximately 2,847.3 acres (map ES-5). The BLM requires that certain elements are analyzed when present in the affected environment. Maps ES-5 through ES-7 show the Proposed Action and two alternatives analyzed in this EIS for most resources, as well as the maximum potential surface disturbance within the general analysis area associated with each alternative.

Required elements present in the general analysis area and addressed in this EIS include:

- air quality (section 3.4);
- water quality (section 3.5);
- wetlands/riparian zones (section 3.7);
- invasive non-native species (section 3.9);
- threatened and endangered species (sections 3.9 and 3.10);
- cultural resources (section 3.12);
- hazardous or solid wastes (section 3.16);
- Native American religious concerns (section 3.17); and
- environmental justice (section 3.17).

The following additional resources also are present in the general analysis area and are addressed in this EIS:

- topography and physiography (section 3.2);
- geology, mineral, and paleontological resources (section 3.3);

- other water resources (section 3.5);
- alluvial valley floors (section 3.6);
- soils (section 3.8);
- vegetation (section 3.9);
- wildlife (section 3.10);
- land use and recreation (section 3.11);
- visual resources (section 3.13);
- noise (section 3.14);
- transportation resources (section 3.15); and
- socioeconomics (section 3.17).

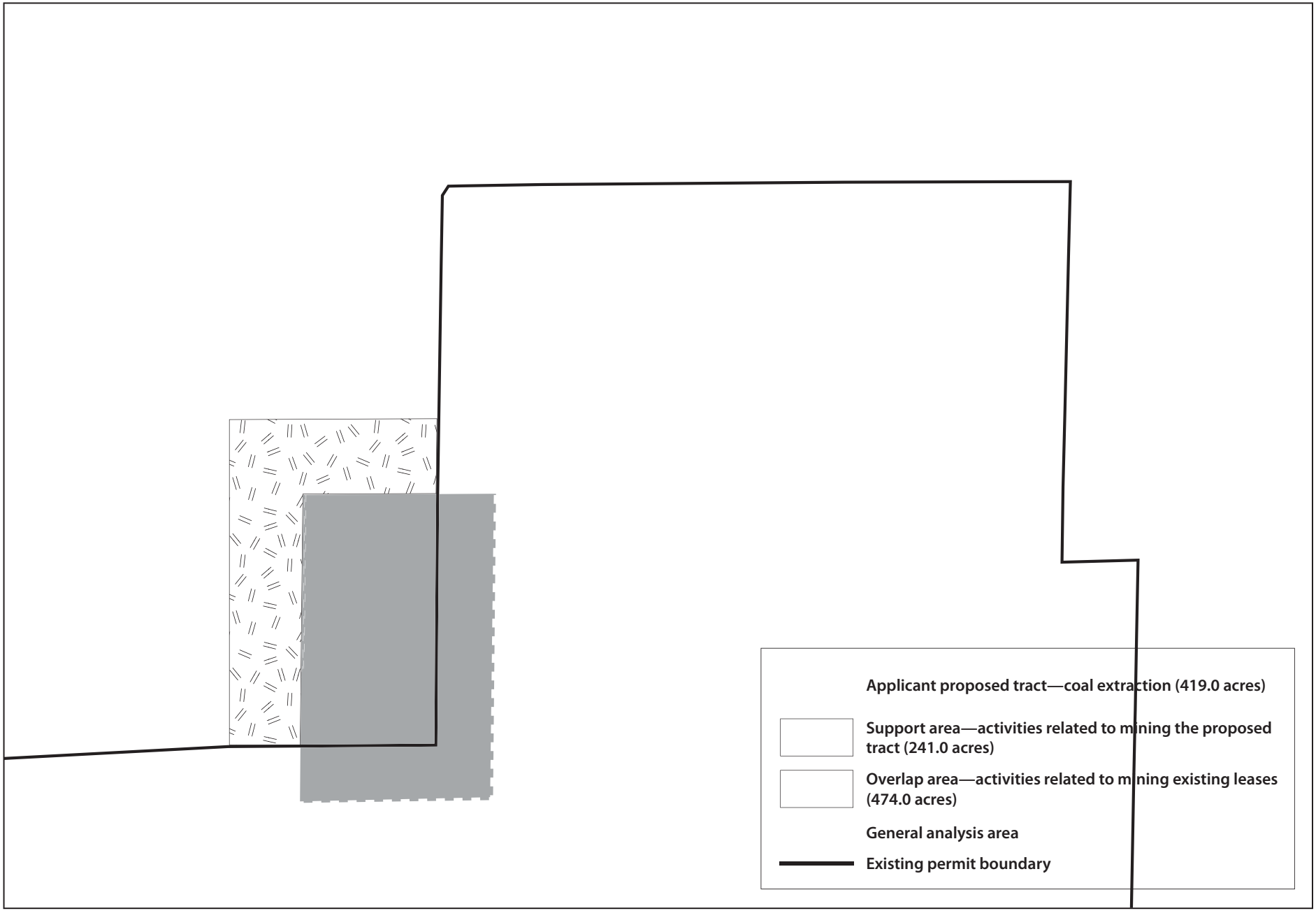
Five additional aspects considered in this chapter are:

- regulatory compliance;
- mitigation and monitoring;
- residual impacts;
- the relationship between local short-term uses of the human environment and the maintenance and enhancement of long-term productivity (3.18); and
- any irreversible and irretrievable commitments of resources that would be associated with the action alternatives (42 United States Code § 4332[C]) (3.19).

The following elements, which are required by the BLM when present in the affected environment, are not present in the general analysis area and are not addressed in this EIS:

- areas of critical environmental concern;
- prime or unique farmlands;
- floodplains;
- wild and scenic rivers; and
- wilderness.

Individual data reports were prepared for each resource; those reports include the information used to prepare the EIS. Copies of those reports can be viewed at the BLM Wyoming High Plains District Office in Casper, Wyoming.



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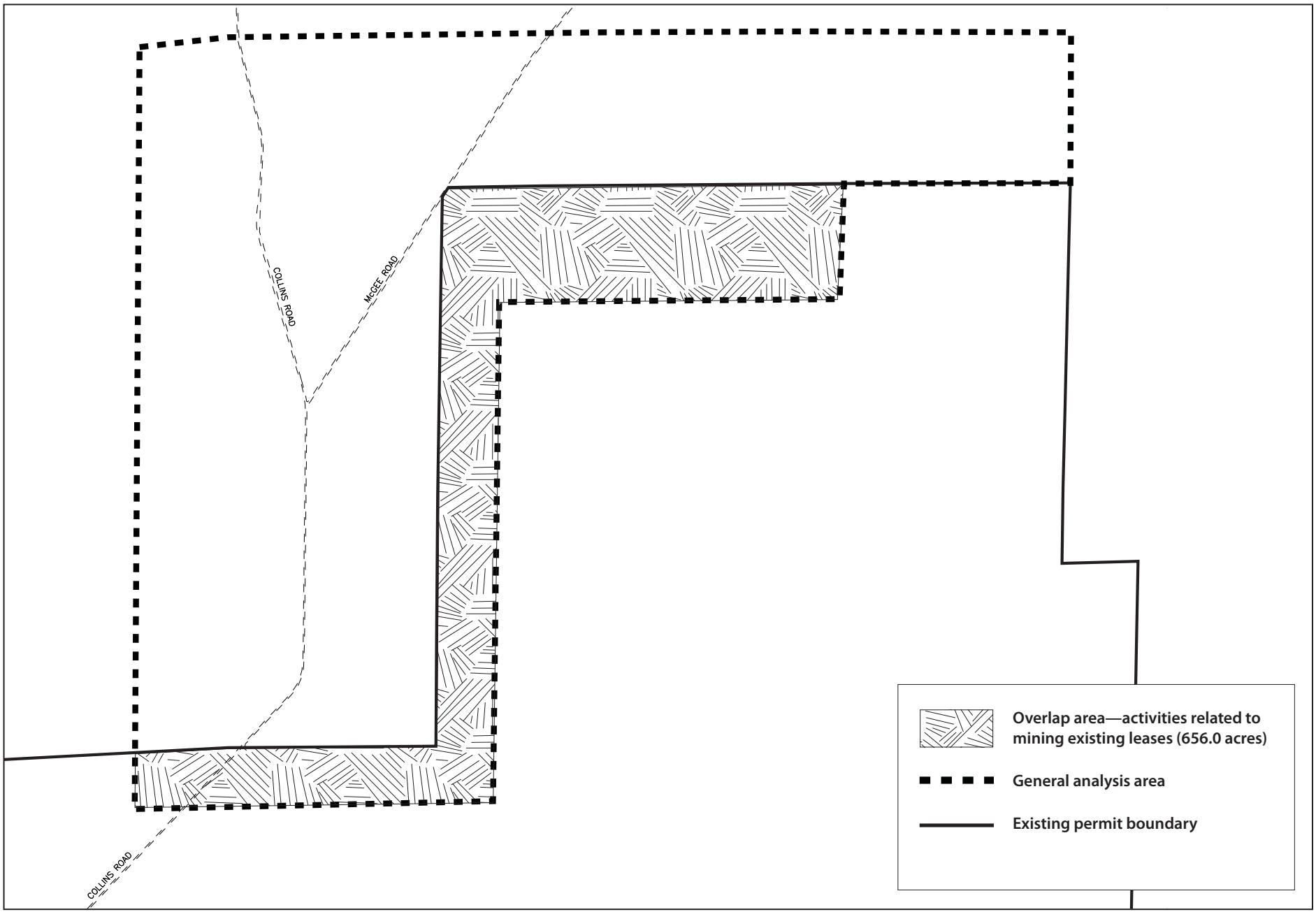
Map ES-5
Areas of Disturbance under the Proposed Action



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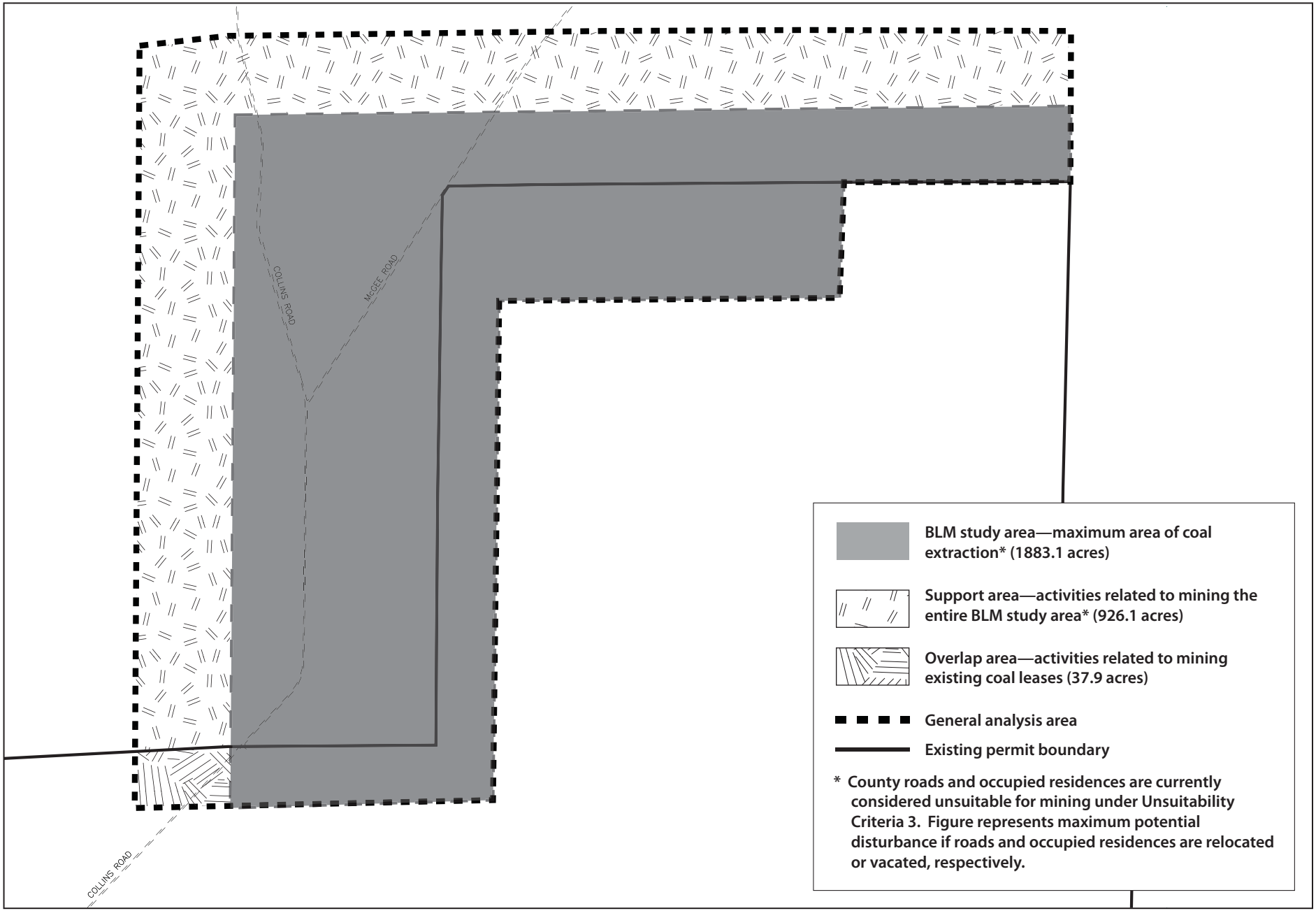
Map ES-6
Areas of Disturbance under Alternative 1 (No Action)



Map ES-7
Areas of Disturbance under Alternative 2

Summary of General Setting and Environmental Consequences

The areas where mining and mine-related activities would occur under each alternative are provided below.

- Under the Proposed Action (map ES-5), coal extraction would occur in the entire proposed tract (approximately 419 acres). Activities related to mining[2] the proposed tract would occur in the support area, a 0.25-mile-wide area north and west of the proposed tract (approximately 241 acres); activities related to mining existing coal leases would continue in the remainder of the overlap area[3] (approximately 474 acres).
- Under Alternative 1 (map ES-6), activities related to mining existing coal leases would continue in the overlap area[3] (approximately 656 acres).
- Under Alternative 2 (map ES-7), coal extraction would occur in an alternative tract configuration within the BLM study area (up to approximately 1,883 acres). Activities related to mining an alternative tract configuration would occur in the support area, a 0.25-mile-wide area north and west of the alternative tract configuration (up to approximately 926 acres); activities related to mining existing coal leases would continue in the remainder of the overlap area[3] (approximately 38 acres).

General Setting

The general analysis area is adjacent to one of the northern-most operating mines in the PRB, in the part of the Northern Great Plains that includes most of northeastern Wyoming. The climate there is typical of a semi-arid, high plains environment with relatively large seasonal and diurnal variations in temperature. Precipitation occurs predominantly during the spring and fall, with approximately 10% in the form of snow. Surface wind speeds average 10.5 miles per hour throughout the year, with prevailing winds from the north-northwest and south-southeast, depending on the season.

The general analysis area is characterized by gently rolling uplands and relatively level agricultural fields; many hills are dissected by drainages that create moderate variations in local relief. Topographic elevations in the general analysis area range from approximately 4,080 feet above mean sea level along Hay Creek in the northern tier to about 4,380 feet above mean sea level in the southwestern portion of the area. The vegetation in the general analysis area consists of species common to eastern Wyoming and is consistent with vegetative communities in the adjacent Buckskin Mine permit area. The proposed tract is dominated (approximately 71%) by

[2] Mining and mine-related activities include, but are not limited to, topsoil stripping, stockpile storage, highwall back-sloping (including catch benches), highwall reduction after mining to match undisturbed topography, and construction of flood- and sediment-control structures. These activities are described in section 1.1.3.3.

[3] The area of overlap between the general analysis area and the existing permit area. Disturbance in this area would be a result of ongoing mine-related activities associated with existing coal leases.

various upland grasslands. The general analysis area is comprised primarily of upland grasslands (approximately 40%) and agricultural lands (croplands and pastures, 31%).

Summary of Impacts

Impacts were identified in this EIS based on criteria set forth by the Council on Environmental Quality (40 CFR 1508.27), BLM NEPA Handbook H-1790-1, and the professional judgment of the specialists completing the analyses. Impacts can be beneficial or adverse, and can be a primary result (direct) of an action, a secondary result (indirect), or cumulative; cumulative impacts are discussed in chapter 4. They can be short-term (operational, persisting during active mining and reclamation); long-term (persisting through the time the reclamation bond is released—minimum of 10 years beyond active reclamation), or permanent. Impacts also vary in terms of significance. Significance can range from no impact or negligible impacts to substantial or significant impacts. Impacts can also be substantial during mining but reduced to no impact or negligible following completion of reclamation. In this EIS, impacts are considered to be adverse unless specifically identified as beneficial.

As described above, the general analysis area represents the maximum surface area that could be disturbed by mining activities analyzed in this EIS. Surface disturbance occurs outside of a coal lease area as a result of activities necessary to support mining including, but not limited to, topsoil stripping, stockpile storage, highwall back-sloping (including catch benches), highwall reduction after mining to match undisturbed topography, and construction of flood- and sediment-control structures.

Alternative 1 (No Action Alternative)

Under the No Action Alternative, the coal lease application would be rejected and no new federal coal reserves would be mined in the general analysis area. However, a decision to reject the coal lease application would not preclude an application to lease a tract in the general analysis area in the future. Under this alternative, impacts in the general analysis area would be limited to its overlap with the existing Buckskin Mine permit area (approximately 656 acres), and would consist of short-term surface disturbance from activities necessary to support mining on existing leases. In most cases, impacts under the No Action Alternative are the same or similar to those for the action alternatives, but would occur in the limited overlap area and would most often be short-term.

Proposed Action and Alternative 2

The following summary focuses on the expected impacts of the two action alternatives analyzed in this EIS.

Topography

Under both action alternatives, surface coal mining would have a moderate, permanent impact on the topography of the proposed tract or BLM study area through blasting, hauling, and stockpiling of overburden and interburden, and from coal extraction. Postmining topography

would be recontoured under either scenario to resemble the premining topography and the basic drainage system would be retained, but the reclaimed lands would be approximately 60 feet lower and somewhat gentler and more uniform in appearance.

These changes in the landscape would result in minor to moderate, long-term reductions in microhabitats and habitat diversity in the affected area. As discussed under the Wildlife Resources heading below, effects on wildlife would be minor to moderate, depending on the species, and long-term. Long-term beneficial impacts of the lower and flatter terrain would be reduced water runoff, which would increase infiltration rates for precipitation and reduce erosion, and may also increase vegetative productivity and potentially accelerate recharge of groundwater. These topographic changes would not conflict with regional land use, and the postmining topography would be designed to adequately support the anticipated future land use of the mined area.

Geology and Coal Resources

The Paleocene Fort Union Formation is the stratigraphic unit (i.e., geological layer) which contains the coal seams that would be mined under the action alternatives. This formation is divided into the Tongue River, Lebo, and Tullock members. The Anderson and Canyon coal seams of the Tongue River Member are targeted for mining in the BLM study area (the maximum extent of leasable coal in the general analysis area).

Under both action alternatives, removal of overburden, interburden, and coal reserves would have a significant, permanent impact on the geology and coal resources on up to 419 acres in the proposed tract and 1,883 acres in the BLM study area, with the area of impact depending on the final tract configuration. An average of about 250 feet of overburden and interburden, 30 feet of Anderson coal, and 70 feet of Canyon coal would be removed under either action alternative. Approximately 54 million tons of coal would be recovered from the proposed tract, and up to 149.7 million tons from the BLM study area.

Overburden removed during mining would be replaced with a relatively homogenous mixture of partially compacted rock and soil that would be significantly and permanently altered from the original distinct layers. Activities related to mining and reclamation would cause short-term surface disturbance in the support area for the final tract configuration.

Other Minerals

The Anderson and Canyon coal seams tapped for CBNG development are the same seams that are being mined at the Buckskin Mine. Wyoming Oil and Gas Conservation Commission records indicate that as of May 2008, 30 CBNG wells have been completed in the general analysis area. Half of those wells are producing and the rest have been shut in, are no longer producing, have been permanently abandoned, or have expired permits. Commission records indicate that no CBNG wells have been completed below the Anderson and Canyon seams within the general analysis area. No conventional oil and gas wells are located in the general analysis area. Additionally, no bentonite or uranium reserves have been identified in the general

analysis area. Clinker (known locally as scoria or red dog) breaks are absent from the proposed tract, but do occur on limited hillsides along the northern edge of the general analysis area.

Under the action alternatives, development of other minerals present in the general analysis area could not occur during mining, but could resume after mining. Surface coal mining would have permanent impacts on unrecovered oil and gas (conventional and CBNG) resources located in and above the mined coal seams. Resources that are not recovered prior to mining would be irretrievably lost when the coal is removed. Dewatering wells and active mining would combine with ongoing CBNG production to deplete the hydrostatic pressures and gas resources adjacent to mining areas a short time after mining would begin.

The action alternatives would have no impact on bentonite or uranium resources because they are not present in the general analysis area. Mining would remove or reduce limited clinker resources along the northern portion of the general analysis area, resulting in a permanent loss of those resources and a change in topographic relief.

Paleontological Resources

Two formations exposed on the surface of the general analysis area could contain paleontological resources: the Paleocene Fort Union Formation and the Paleocene and Eocene Wasatch Formation (Breckenridge 1974; Love and Christiansen 1985). Both of these sedimentary formations are known to yield vertebrate fossils in Wyoming (Estes 1975; Roehler 1991; Secord 1998; Robinson et al. 2004).

No significant or unique paleontological resources have been reported by the Buckskin Mine and none were recorded on the surface in the general analysis area during surveys conducted for the EIS. No specific mitigation was recommended for the action alternatives and no further paleontological work was recommended or required. Additional surveys for paleontological resources may be required if discoveries are made during mining operations. Undiscovered resources not exposed on the surface or detected during mining would be permanently lost.

Air Quality

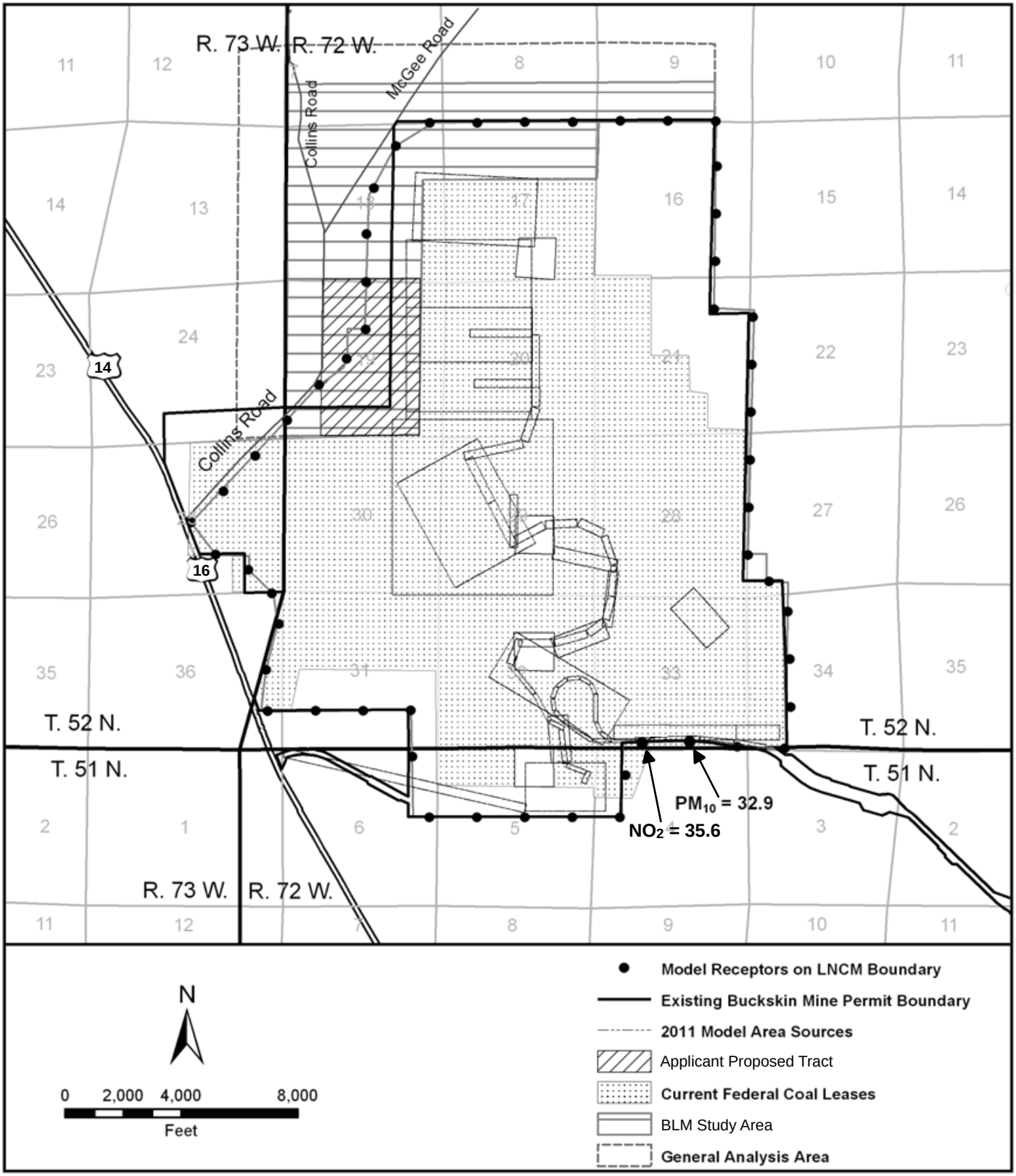
Particulate and gaseous emissions are the two primary types of air pollutants directly associated with surface coal mining in the PRB; both are associated with a variety of health and environmental impacts. In general, PM_{10} particulate matter is the major significant pollutant from coal mine point (stationary) and fugitive (non-point) sources; PM_{10} is coarse particulate with mean aerodynamic diameters less than 10 microns. The major sources of particulate emissions (solid particles and liquid droplets that can be suspended in air) at surface coal mines are fugitive dust and tailpipe emissions from large mining equipment. Activities such as blasting, excavating, loading, and hauling of overburden and coal, and wind erosion of disturbed land all produce fugitive dust. The most common point sources of particulate matter are associated with coal crushing, storage, and handling facilities.

Gases that contain nitrogen and oxygen in varying amounts are referred to as nitrogen oxides, or NO_x. These are the primary fugitive gaseous emissions produced during surface coal mining operations. Nitrogen oxides are generated from tailpipe emissions from mining equipment and other vehicle traffic inside the mine permit area. Blasting to remove overburden can result in emissions of nitrogen dioxide (NO_2), because of the incomplete combustion of explosives used in the blasting process. The Buckskin Mine does not use cast blasting to move overburden, which is the most common source of blasting emissions. No NO_x point sources occur at the Buckskin Mine**.**

Non-mining air pollutant emission sources are also present within the region, though most (i.e., fugitive dust and tailpipe and exhaust emissions) are similar to those at the coal mines. Nitrogen oxides and sulfur dioxide are also generated at power-plants. The closest coal-fired power plants are the Wyodak, WYGEN, and Neil Simpson plants, located about 15 miles southeast of the general analysis area. The Dry Fork Station, a 420-megawatt, coal-fired power plant currently under construction, is located approximately 10 miles southeast of the area. The Buckskin Mine does not provide coal to any power plants in the PRB, and does not dispose of coal combustion by-products from local power plants in its backfill.

The current (since December 2006) EPA 24-hour air quality standard for $PM_{2.5}$ (particulate matter with a mean aerodynamic diameter of 2.5 microns or less) is 35 micrograms per cubic meter ($\mu g/m^3$), a reduction from the previous level of 65 $\mu g/m^3$. The current annual $PM_{2.5}$ standard is 15 $\mu g/m^3$. PM_{10} particulates have been monitored at the PRB mines since 1989. The current National Ambient Air Quality Standard (NAAQS) for 24-hour standard for PM_{10} particulates is 150 $\mu g/m^3$. The former Wyoming annual PM_{10} standard of 50 $\mu g/m^3$ was revoked during the EPA revisions of air quality standards in 2006. The NAAQS for annual NO_2 is 100 $\mu g/m^3$. This gas is not currently regulated at surface coal mines by either national or state ambient air quality standards, though the WDEQ does require an assessment of annual NO_x impacts as part of an air quality permitting analysis for new surface coal mines and existing mine plan revisions.

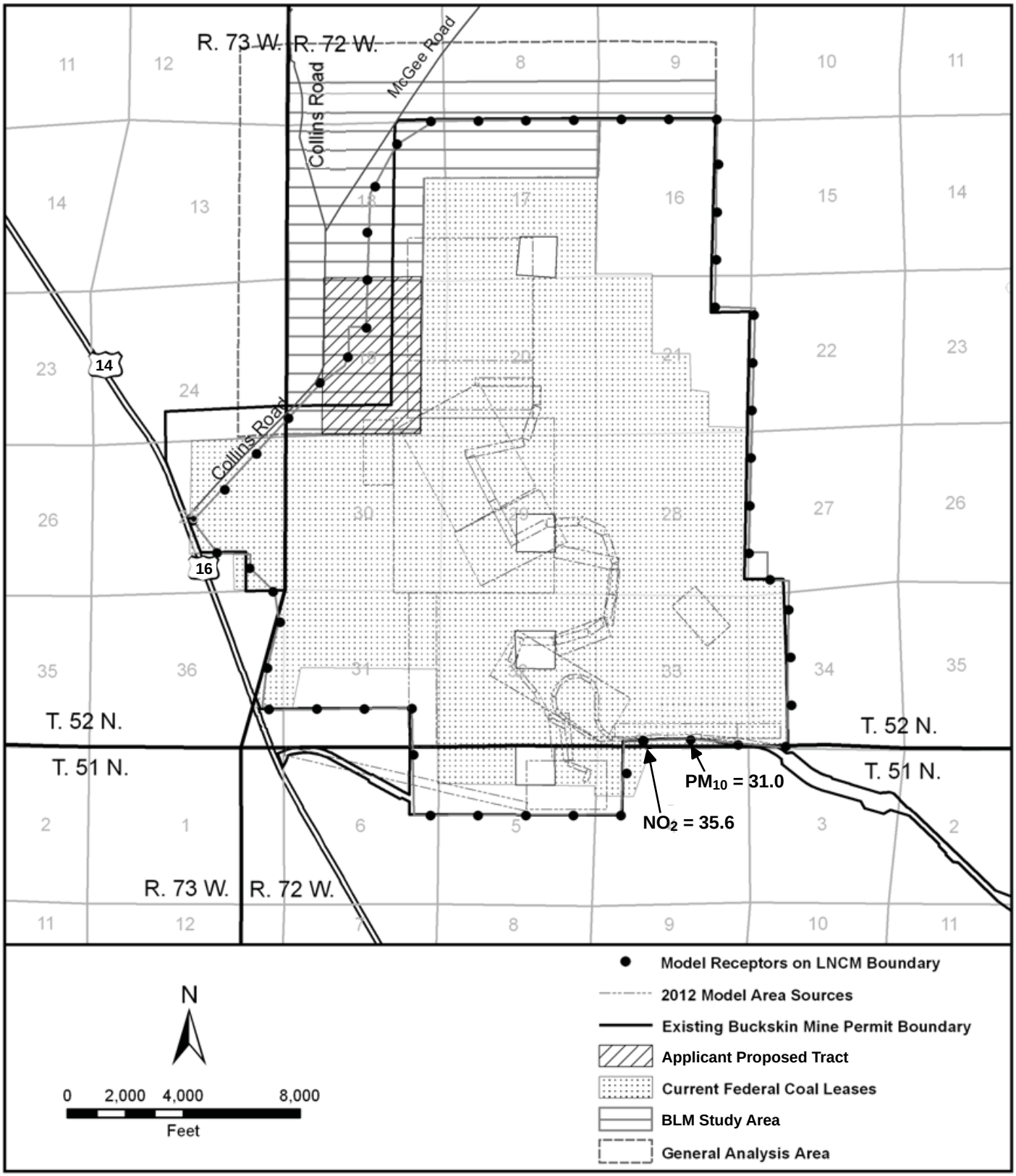
Moderate, short-term impacts on air quality are currently present at the Buckskin Mine because of existing mine operations. Long-term modeling for the current Buckskin Mine permit did not forecast any exceedances of the annual PM_{10} particulate NAAQS at the permitted production rate of 42 million tons per year; Buckskin's current and anticipated average annual production rate is 25 million tons per year**.** Results from the Buckskin Mine 24-hour PM_{10} monitors surpassed the 24-hour national annual average standard (150 $\mu g/m^3$) on only three occasions since monitoring began in 1989. Two of the three exceedances were deemed an "exceptional event" associated with strong winds by the WDEQ. In all three cases, the Buckskin Mine followed all mitigation and documentation procedures as required by the Natural Events Action Policy, including submitting detailed reports of the exceedance and accompanying meteorological conditions to the WDEQ. The dispersion model for the lands necessary to conduct mining at Buckskin (map ES-8A) showed a maximum PM_{10} concentration of 32.9 $\mu g/m^3$ in 2011, one of the two projected "worst-case" years used for the model. Map ES-8B shows the same modeling information for 2012. Both maps also depict the area sources used to model fugitive emissions.



No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by BLM.

Map ES-8A

2011 Maximum Modeled PM_{10} and NO_2 Concentrations for Buckskin Mine Ambient Air Boundary



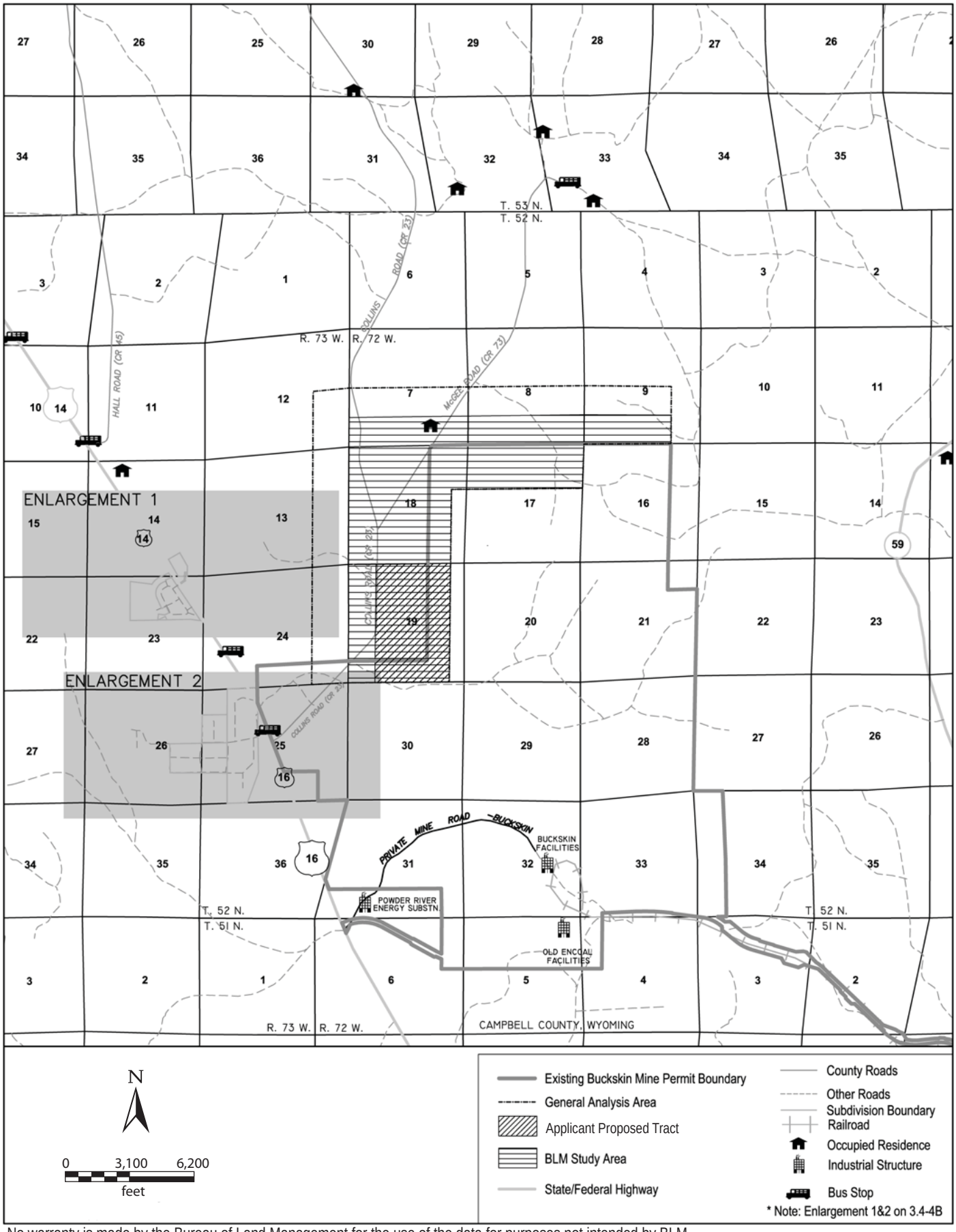
Map ES-8B

2012 Maximum Modeled PM_{10} and NO_2 Concentrations for Buckskin Mine Ambient Air Boundary

Adjacent landowners to the north of the Buckskin Mine have contacted and met with mine personnel on various occasions regarding their concerns about smoke from coal fires at the mine, NO_2, and dust. The landowners and mine representatives are actively working to resolve these issues. The landowners have indicated that they expressed similar concerns to the WDEQ. Nevertheless, the agency has not required the Buckskin Mine to implement any specific measures to control or limit public exposure to NO_2 from blasting, such as restrictions regarding blasting size, setbacks, or other parameters. Maximum annual NO_2 impacts of 1.6 $\mu g/m^3$ in 2011 and 1.8 $\mu g/m^3$ in 2012 were predicted during modeling for the Buckskin Mine; predictions for regional sources and background concentrations were 38.0 $\mu g/m^3$ and 37.8 $\mu g/m^3$ for these respective years. All four values were considerably lower than the annual NO_2 NAAQS of 100 $\mu g/m^3$.

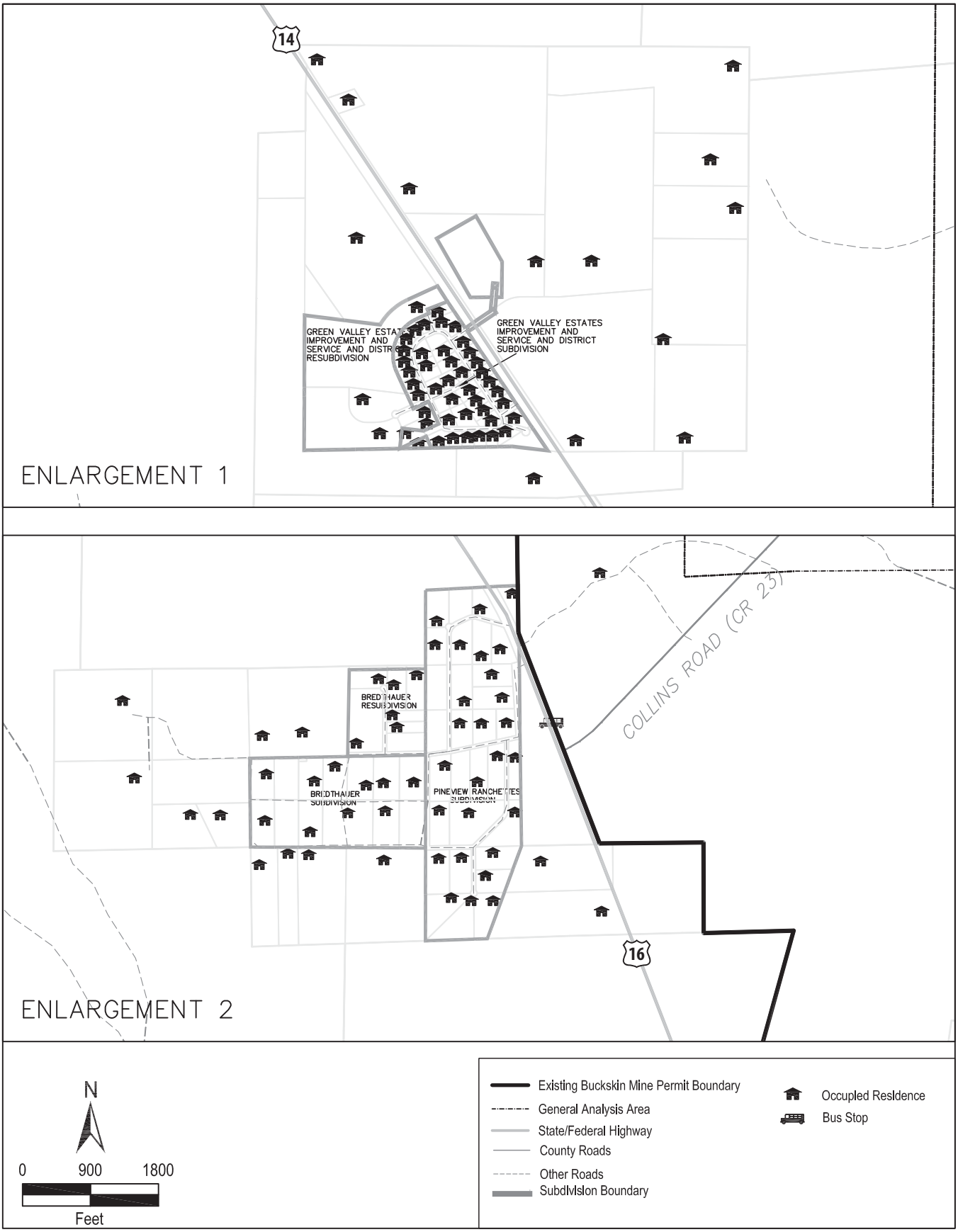
Public exposure to emissions caused by surface mining operations is most likely to occur along public roads and highways that pass by or through the area of mining operations. One occupied dwelling is located within the general analysis area (map ES-9A and map ES-9B) that could also be affected. The residence is less than 0.25 mile north of the overlap area, west of the McGee Road and within the general analysis area; the home is approximately 1 mile north of the northern-most extent of disturbance that would be associated with the proposed tract. With one exception, all other occupied dwellings in the vicinity of the general analysis area are at least 0.5 mile from the general analysis area (map ES-9A and map ES-9B). Most homes are on the far side of ridges that provide visual and audio buffers from existing and future mine operations. Two school bus stops are located on U.S. Highway 14-16, approximately 0.5 mile west of the general analysis area (map ES-9A). Three other school bus stops are located more than 1.5 miles west and north of the area.

Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents as well as natural sources emit NO_x and volatile organic compounds that help form ozone. In March 2008, the EPA promulgated a revised NAAQS for ozone (*75 FR 11*). The ozone standard was lowered from 80 parts per billion to 75 parts per billion based on the fourth highest 8-hour average value per year at a site, averaged over three years. On January 6, 2010, the EPA proposed to strengthen the ozone standard by lowering the primary 8-hour standard to somewhere between 60 and 70 parts per billion (*75 FR 11*). The final standard is expected in mid-2011. The WDEQ does not require ozone monitoring at the Buckskin Mine; however, levels have been monitored at WDEQ operated and maintained ambient air quality monitor sites elsewhere in the PRB since 2001. The northern PRB is still considered an ozone attainment area, though ozone readings have occasionally exceeded the current standard of 75 parts per billion at the Thunder Basin air monitoring site in northern Campbell County. On June 2, 2010, the EPA issued a new 1-hour ambient standard for sulfur dioxide (SO_2) (EPA-HQ-OAR-2007-0352, RIN 2060-A048). The new standard is 75 parts per billion, applied to the three-year average of the fourth highest of the annual distribution of hourly averages. SO_2 monitors have been placed in the PRB explicitly to measure impacts from major sources; the nearest monitor is approximately 15 miles southeast of the Buckskin Mine. Neither site has violated the new 1-hour standard of 75 parts per billion.



Map ES-9A

Roads, Highways, Occupied Dwellings, Businesses, and School Bus Stops in the Vicinity of the General Analysis Area



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Map ES-9B

Enlargement—Roads, Highways, Occupied Dwellings, Businesses, and School Bus Stops in the Vicinity of the General Analysis Area

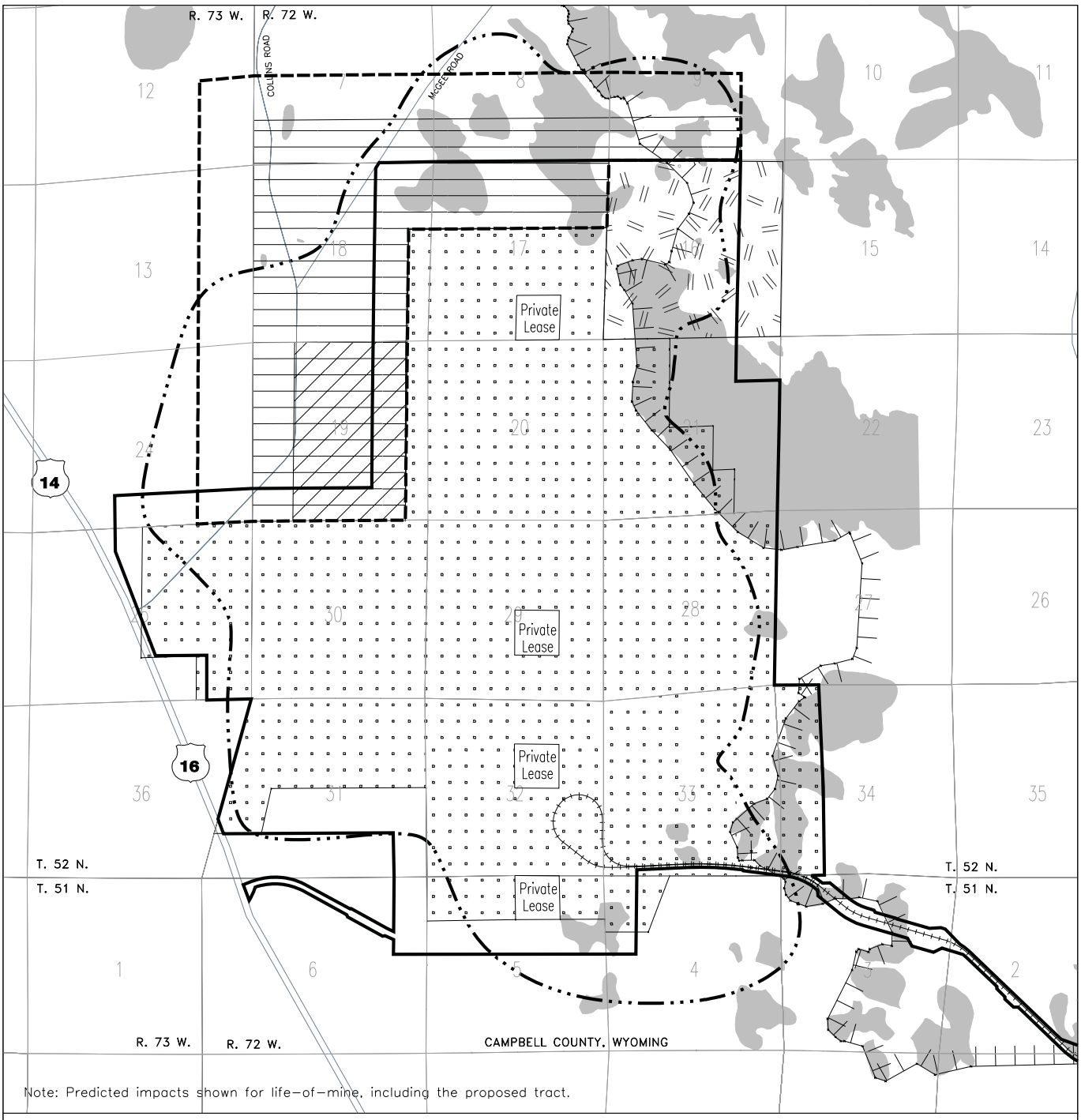
Impacts of coal mining on lake acidification are expected to remain extremely low because of the distance from the Buckskin Mine to sensitive lakes in the region, the absence of NO_x point sources at the mine, the lack of predicted exceedances for NO_x under "worst-case" conditions at the permitted coal production rate of 42 million tons per year, and the continuation of the current average annual production rate of 25 million tons per year under any of the alternatives considered in this EIS.

Water Resources

Under either action alternative, the coal aquifer and any water-bearing strata in the overburden and interburden would be permanently removed and replaced with unconsolidated backfill in the area to be mined. Mining would also cause a moderate, short-term reduction in groundwater in aquifers beyond the final tract configuration as a result of seepage into and dewatering from mine excavations (i.e., drawdown). The extent of drawdown would depend on how long the mine excavations are open, the distance of the aquifers from the mined tract, and the extent of dewatering. Map ES-10 shows the predicted extent of worst-case drawdown in the lowest coal seam (Canyon coal) over the life of the mine within the general analysis area. The area of drawdown in the overburden aquifers would be smaller than in that of the coal aquifers. CBNG development, where present, would continue to have substantial contributions to drawdown, especially in the coal seams. In the absence of CBNG development, drawdown typically is greatest near the mine, and decreases substantially away from the mine.

Groundwater is expected to rise to similar levels as observed prior to mining, but it would not have all of the same characteristics because of the more homogeneous nature of the backfill. Due to its proximity to the existing Buckskin Mine, groundwater quality in the backfill aquifer after mining is expected to be similar to that measured in wells completed in the existing backfill at the mine. It is likely that recharged groundwater would be adequate for postmining land uses such as water sources for livestock and wildlife. Mining would not disturb the aquifers below the coal. Two water supply wells from the underburden aquifer are currently used by the Buckskin Mine. Based on monitoring results to date, these wells currently could remain viable through the life of the mine.

Coal mining would have substantial, short-term effects on surface drainage systems and water runoff characteristics under either action alternative. Erosion and sediment discharge would likely increase in disturbed areas because of vegetation removal, but infiltration rates would likely improve after reclamation because of changes in soil structure and the presence of vegetation and more moderate topography to reduce runoff. Water flow and direction in that area would be altered by the removal and reconstruction of drainage channels prior to mining and from redirected flow through the use of erosion- and sediment-control structures to manage surface water runoff from disturbed areas. The most prominent surface water feature in the general analysis area is Hay Creek, which is ephemeral (i.e., responds only to rainfall or snow-melt events) in nature. The creek has been or will soon be mined out in the overlap area, and has already been diverted to rejoin the undisturbed creek east of the general analysis area. Additional segments of Hay Creek and several tributaries could be diverted and restored during reclamation under Alternative 2. However, Kiewit does not anticipate implementing any additional channel diversions under either action alternative.



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Map ES-10

Extent of Drawdown under Proposed Action

Both action alternatives would result in moderate, long-term impacts on groundwater rights for wells in coal or overburden aquifers until recharge. Effects would be similar for surface water rights. One surface water right on a disconnected drainage would be affected under the Proposed Action, while up to two surface water rights would be affected on disconnected drainages under Alternative 2.

Alluvial Valley Floors

The action alternatives considered in this EIS would not affect alluvial valley floors. Multiple investigations conducted within the general analysis area have concluded that the Hay Creek valley bottom is not an alluvial valley floor as defined by the WDEQ rules and regulations. No stream-laid deposits are present in the general analysis area. Runoff volume from 24-hour storm events in the vicinity of the Buckskin Mine is typically small relative to the cumulative storage capacity of reservoirs in the valley bottom and would not be sufficient to support any reliable flood irrigation practices.

Wetlands

Wetland inventories were based on U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) mapping (USFWS 2007) and a reconnaissance-level field visit throughout the general analysis area. Based on the NWI maps, approximately 64.44 acres of wetlands have been identified in the general analysis area. Of these, 30.7 acres were considered potentially jurisdictional wetlands based on field observations; the remaining 33.74 acres were confirmed to be nonjurisdictional non-wetlands (e.g., borrow pits, old impoundments) or were not found to be present during the field visit. Only the U.S. Army Corps of Engineers has the authorization to determine which wetlands are jurisdictional or nonjurisdictional.

Since the 2007 NWI-based wetland determination was completed, a portion of the general analysis area was formally delineated by wetland biologists. The results of this study are currently being reviewed by the Corps and the issuance of an approved jurisdictional determination is pending.

The specific functions (e.g., agriculture, livestock, and wildlife) of each identified wetland will be determined during the delineation associated with the permitting process for the final tract configuration, should a lease be issued, and are, therefore, not addressed in detail as part of the EIS analysis.

Under the Proposed Action, surface mining in the proposed tract and related activities in the support area and overlap area (associated with existing coal leases) would have a moderate, permanent impact on four small, potentially jurisdictional NWI-inventoried wetlands (1.21 total acres). Under Alternative 2, surface mining in the BLM study area and related activities in the support area and overlap area could have a moderate, permanent impact on five small, potentially jurisdictional NWI-inventoried wetlands (1.89 total acres). The greatest single acreage of a potentially jurisdictional NWI-inventoried wetland is west of one or both county roads in the area considered operationally limited by Kiewit; Kiewit does not anticipate relocating either road to access coal reserves. All wetland functions at affected sites would be lost during mining and

support activities. Any impacts would be mitigated during reclamation by creating equivalent acreages of wetlands elsewhere in the Buckskin Mine permit area to ensure no net loss of wetland function in the general analysis area. No additional reaches of Hay Creek would be diverted under either action alternative.

Soil Resources

Five soil formation processes causing different soil types were described in the general analysis area. Soil types and depths in that area are similar to soils currently being salvaged and used for reclamation at the Buckskin Mine and other nearby mines in northern Campbell County.

Surface mining would have a moderate, long-term effect on soil resources in 1,134 acres under the Proposed Action and up to 2,847 acres under Alternative 2. Mining in the general analysis area would have a moderate, short- to long-term impact on the physical, biological, and chemical properties of stockpiled soils prior to reclamation. Following reclamation, the action alternatives would have a moderate, beneficial, long-term effect on replaced soils. Such soils would be more uniform in type, thickness, and texture, and would have a more uniform soil chemistry and soil nutrient distribution. Runoff would be decreased and infiltration rates would gradually return to premining levels. Sediment-control measures would be implemented where runoff does occur to preserve reclaimed materials. Average topsoil quality would be improved because soil material that is not suitable to support plant growth would not be salvaged for use in reclamation. The replaced soil would support a stable and productive vegetation community adequate in quality and quantity to support the planned postmining land uses (i.e., wildlife habitat and livestock grazing).

Vegetation Resources

Eight distinct vegetation communities and four additional categories were identified and mapped in the general analysis area. The proposed tract is dominated (71%) by a variety of common species of upland grasslands; the general analysis area is dominated (71%) by upland grasslands (approximately 40%, combined) and agricultural lands (crops, hay fields, and pastures; approximately 31%). Sagebrush comprises less than 11% of both the proposed tract and the general analysis area.

Under either action alternative, active mining and support activities would have a moderate, short-term impact on vegetation. Vegetation would be incrementally removed to accommodate mining. Effects would be greatest on upland grasslands and agricultural lands. Under the Proposed Action, approximately 126 non-contiguous acres of sagebrush would be affected in the proposed tract, support area, and remainder of the overlap area. Under Alternative 2, up to 302 non-contiguous acres of sagebrush would be affected in the BLM study area, support area, and remainder of the overlap area. Average patch size for sagebrush in those areas is 4.9 acres.

Impacts associated with the removal of vegetation could include increased soil erosion and differences between premining and postmining vegetative communities. Reclamation, including revegetation, will immediately follow as mining progresses through the area. Estimates of the time elapsed from topsoil stripping through reseeding of any given area range from two to

five years; that time-frame would be considerably longer for areas occupied by mine-related facilities and infrastructure.

Reestablished vegetation would be dominated by species mandated in the reclamation seed mixtures, which are approved by the WDEQ. The majority of these species would be native to the general analysis area. Erosion will be monitored to determine if corrective action is needed during establishment of vegetation. Controlled grazing will be used during revegetation as a management tool and to determine the suitability of the reclaimed land for postmining land uses. Any decrease in plant diversity would not seriously affect the potential productivity of the reclaimed areas, and the proposed postmining land use (wildlife habitat and rangeland) should be achieved even with the changes in vegetation composition and diversity.

Wildlife Resources

Both action alternatives would have a minor to moderate, short-term impact on most wildlife species present in the general analysis area, with longer effects to wildlife habitats. Impacts could include: injuries or mortalities causes by mine-related traffic; direct losses of less mobile wildlife species; restrictions on wildlife movement created by fences, spoil piles and pits; displacement of wildlife from existing habitat in areas of active mining (including abandonment of nests or nesting and breeding habitat for birds); loss of nesting and foraging habitat; increased competition between animals in areas adjacent to mining operations; and increased noise, dust, and human presence. Habitat disturbance would be incremental through the general analysis area, with reclamation progressing as new disturbance occurs.

The Hay Creek II general analysis area is not included in or within several miles of either a state sage-grouse core breeding area or connectivity area, as defined by the Governor of Wyoming's Sage-Grouse Implementation Team (Office of the Governor of Wyoming 2008), or BLM sage-grouse focus area. No greater sage-grouse leks would be physically affected by either action alternative. The nearest sage-grouse lek (Hay Creek) is within the existing permit area approximately 0.5 mile to the southeast of the general analysis area and, thus, is already subject to disturbance from previously permitted activities. The McGee sage-grouse lek is on private surface approximately 1.25 miles north of the general analysis area. That site is on the far side of multiple ridges that provide a visual and audio buffer, and it is not likely to be affected by mine operations. The Daly sage-grouse lek is approximately 1.75 miles southwest of the general analysis area. That lek has been inactive for the last 17 consecutive years, though two adult males were seen approximately 1,000 feet from the lek on one occasion in 2002; the Daly lek has been classified as abandoned by the WGFD (2006). Sage-grouse were last observed at the Hay Creek lek in 2001 and the McGee lek in 2004; both are considered occupied by the WGFD (2006).

Two occupied sharp-tailed grouse leks occur within the general analysis area. The McGee II lek is in the overlap area with the current permit area and the McGee III lek is immediately north of the overlap area (Alternative 2). Due to their locations, those leks have been or would be disturbed by previously permitted mining of existing leases. The McGee I sharp-tailed grouse lek is approximately 0.25 mile north of the general analysis area. It would not be in view of the

general analysis area because of the ridgeline that separates the two sites, but it could be affected by noise from within the general analysis area. The Stickel lek is approximately 0.75 mile southeast of the general analysis area and within the existing permit area; this site has been or would be disturbed by previously permitted activities on existing leases. Sharp-tailed grouse were last recorded at the McGee II lek in 2004 and the McGee III lek in 2005. The McGee I lek was last active in 2001, and the Stickel lek in 2002.

As described previously, the prevalence of upland grasslands and the limited presence of surface water reduce the area's value to sagebrush obligates such as the sage-grouse. No grouse nests or broods for either species have been recorded in the general analysis area during targeted surveys or incidental to surveys for other species. No sage-grouse have been observed during winter, though site visits occur less often at that time of year. No sharp-tailed grouse have ever been observed on the proposed tract during any season, though flocks of as many as a dozen birds have infrequently been recorded in the general analysis area, feeding in fallow agricultural fields and perched in the tree shelterbelt near the junction of the Collins and McGee roads in winter. No sharp-tailed grouse have been seen in those locations since at least 2003.

The general analysis area does not include any unique or crucial big game habitat, and no elk or white-tailed deer are present there. No bald eagle nests or winter roosts have ever been documented in the general analysis area or surrounding lands; sightings of this species in the vicinity of the general analysis area have averaged less than one bird per winter over the last 26 years (1984–2009).

Little (less than 1% of the total area) aquatic habitat is present in the general analysis area, so few aquatic species would be lost during mining operations. Indirect impacts are longer-term and include alterations in topography and vegetative cover following mining and reclamation, which may decrease wildlife carrying capacity and habitat diversity. Because the general analysis area is dominated (71% combined) by upland grassland communities and agricultural lands, the establishment of reclaimed grassland communities after mining has been completed would represent similar or somewhat improved habitats for most wildlife species compared to those in the premining landscape.

No mountain plovers have ever been documented in the vicinity of the general analysis area during that period. Additionally, typical suitable habitat (short and sparse vegetation) for this species is not present in the area. None of the 18 migratory bird species of management concern for Wyoming coal mines that have historically been observed in the vicinity are regularly seen in the general analysis area. The upland grasslands and agricultural lands that dominate the area lack the specific characteristics (shrubs, wetlands, prairie dog colonies, or shorter, less dense grasses) typically associated with the species of greatest concern.

Up to three intact raptor nests could be affected in the general analysis area. Due to their respective locations and histories, only one of the three intact nests is likely to be affected by future mining operations under either action alternative. That nest is in a tree grove in the overlap area and, thus, is already subject to disturbance from previously permitted mine operations. All appropriate mitigation measures will be taken for that nest, in keeping with the

current USFWS-approved monitoring and mitigation plan; the plan would be updated prior to the permitting process and before any new surface associated with either alternative is disturbed.

In the long term, following reclamation, wildlife habitat diversity may be somewhat reduced because of gentler topography, less diverse vegetative cover, and reduction in sagebrush density. However, sagebrush comprises less than 11% of the general analysis area, so impacts on sagebrush-obligates would be reduced. Efforts have been initiated in recent years by mining companies to increase the diversity of postmine topography and to increase the amount of sagebrush in the reclamation, as appropriate.

Threatened and Endangered Species

The action alternatives discussed in this EIS will have no effect on threatened and endangered plant and animal species. Two federally listed plant species occur in Campbell County: the Ute ladies'-tresses (threatened) and blow-out penstemon (endangered). Areas of suitable habitat for the Ute ladies'-tresses within the general analysis area were surveyed during the appropriate survey window in August 2004 and annually from 2006 through 2009; no individuals were located. Surveys conducted for potential blowout penstemon habitat in the general analysis area in 2008 and 2009 confirmed that no suitable habitat for this species is present in the area. In addition, the general analysis area is not located within the documented historical range of the blowout penstemon in Wyoming, which is located approximately 170 miles northwest of the known Nebraska sites and approximately 225 miles northeast of the Wyoming occurrences.

On March 5, 2010, the USFWS issued a determination that listing the greater sage-grouse under the Endangered Species Act was "warranted, but precluded" by other higher priorities. Although the sage-grouse continues to be managed by the WGFD, its current status as a candidate species under the Endangered Species Act gives further impetus to ongoing annual monitoring efforts. On May 11, 2011, after a thorough review of all available scientific and commercial information, the USFWS determined that the mountain plover is not threatened or endangered throughout all or a significant portion of its range, including the Hay Creek II general analysis area and the rest of Campbell County, Wyoming (76 FR 92). The black-footed ferret has been removed from the list of threatened and endangered species for Campbell County, but remains on the national list for such species. The ferret is a nocturnal mammal that depends almost entirely upon the prairie dog for its survival. No black-footed ferrets have ever been documented at the Buckskin Mine or in the surrounding region, and no black-tailed prairie dog colonies (potential ferret habitat) are present within the general analysis area.

Land Use and Recreation

The entire surface of the existing Buckskin Mine permit area and general analysis area is privately owned by individuals or companies. All of the coal reserves in the proposed tract and BLM study area are federally owned, whereas the remaining subsurface minerals (i.e., oil and gas reserves) are under a mixture of private and federal ownership. Wildlife habitat and livestock grazing are the primary present and historical land uses in the general analysis area. Secondary land uses include pastureland (ranching), dryland cropland, transportation, and CBNG development. Coal mining at the Buckskin Mine is and has been the dominant land use to the

east and south of the general analysis area since the mid 1980s. No conventional oil and gas wells are located in the general analysis area.

Under both action alternatives, active mining would have a moderate, short-term impact on most other land uses, with a long-term impact on some wildlife habitats. Grazing uses of the general analysis area would be more limited in disturbance areas during mining, though grazing is used as a management tool in reclaimed areas. Oil and gas development would be curtailed and CBNG that is not recovered prior to mining would be irretrievably lost as the coal is removed. Due to the lack of public lands, opportunities for recreational use and public grazing would not be affected. Existing coal and transportation activities, infrastructure, and facilities would remain in the area; coal production and transportation would continue at their current rates. Kiewit does not anticipate relocating any roads or securing occupied residences to access new federal coal reserves. Livestock and wildlife use is expected to increase once mined areas are fully reclaimed.

Cultural Resources

The entire general analysis area has been reviewed for previous cultural surveys through a files search and inventoried for cultural resources at a Class III level in the field. Of the 14 sites identified in that area, 6 are prehistoric and 8 are historic (Newberry 2008). Historic site categories documented in the general analysis area fall under the context of rural settlement. Specifically, the historic sites in the general analysis area are associated with homesteading and stock-raising circa the 1910s to the 1940s. All prehistoric and historic sites are determined not eligible for inclusion in the National Register of Historic Places. No further protection is afforded these sites and no further work is required.

No sites of Native American religious or cultural importance have been identified in the general analysis area. Appropriate action must be taken to address concerns related to any cultural or Native American sites identified at a later date.

Visual Resources

Mining would affect landscapes classified by the BLM as visual resource management Class IV; the overall natural scenic quality of that class rating is considered relatively low. Impacts of coal mining on visibility in the general analysis area would be minor and short-term. Mining activities would be visible from U.S. Highway 14-16 and two county roads (the Collins and McGee roads), though the extent and duration of visibility would vary under each action alternative. No unique visual resources have been identified in or near the general analysis area, and the landscape character would not be significantly changed following reclamation. Current mining activities (blasting procedures and sizes, coal haul rates and distances, dust suppression, etc.) at the Buckskin Mine would not change if the proposed tract or an alternative configuration is leased. Current best available control technology measures for particulates that could contribute to impaired visibility would continue to be employed.

Noise

One occupied residence is located within the general analysis area, less than 0.25 mile north of the overlap area. This residence is in direct line-of-sight of the current mine pit and associated support activities. Mine-related noise under the action alternatives would have a minor to substantial, short-term impact on this residence, depending on the final tract configuration. Most occupied dwellings are located in one of three housing developments west of the existing permit area and on the far side of Highway 14-16. Those residences are currently closer to the existing permit area than they would be to new mining under either action alternative. The high rolling terrain between most residences and the general analysis area provides a visual and audio buffer from current and future mine operations. Additionally, the increase in noise levels would not be considered a significant noise impact because the rate of mining would not change and the western limit of expansion of the mine would be constrained because of the required setbacks at the Collins Road and U.S. Highway 14-16.

Noise levels in wildlife habitat adjacent to the expansion area might increase, but anecdotal observations indicate wildlife can adapt to mine noise, especially since similar mining operations have been conducted in the area for many years. No increase in average daily railroad traffic or railroad noise would occur under any of the alternatives analyzed.

Transportation

Transportation facilities in and near the general analysis area include a federal highway, a state highway, two gravel county roads, various unimproved local and access roads; the improved Buckskin Mine access road; the Buckskin Mine rail spur; oil and gas pipelines; electric corridors; and associated rights-of-way.

Under the Proposed Action, surface coal mining in the proposed tract could impact one public roadway, three overhead power lines, four existing oil and gas pipelines, and one potential new oil and gas easement; impacts would be minor to moderate, and short-term. Under Alternative 2, mining could have similar impacts on two public roadways, eight overhead power lines, six existing oil and gas pipelines, and one potential new oil and gas easement. Most of the power lines in the vicinity are associated with on-going mine operations. No rail lines would be affected under either action alternative. Temporary surface disturbance from mine support activities (e.g., topsoil stripping, soil stockpiling) in the combined buffer area could affect one additional power line and three additional pipelines.

Existing road and rail infrastructure would remain in place, though the rate of road and rail use is not expected to increase during that period. Two public roads (the Collins and McGee roads) are located within the general analysis area. Lands within 100 feet of the outside edge of the right-of-way of a public road are considered unsuitable for mining; however, they could be included in the final tract configuration to allow for maximum recovery of all the minable coal adjacent to the 100-foot buffer zones. Active pipelines and utility/power lines would have to be relocated in accordance with previous agreements, or agreements would have to be negotiated for their removal or relocation.

Hazardous and Solid Waste

Potential sources of hazardous or solid waste could include spilled, leaked, or dumped substances, petroleum products, and solid waste associated with coal and oil and gas exploration, oil and gas development, utility line installation and maintenance, or agricultural activities. No such hazardous or solid wastes are known to be present in the general analysis area.

Impacts associated with hazardous waste would be negligible and short-term. Hazardous and solid wastes generated in the course of mining the proposed tract would be similar to those currently being created by existing mining operations,. Wastes generated by mining the proposed tract would be handled in accordance with the existing regulations using the procedures currently in use, and in accordance with WDEQ-approved waste disposal plans at the Buckskin Mine

Socioeconomics

Both action alternatives would have negligible, beneficial, short-term impacts on local employment. The Buckskin Mine anticipates hiring a few additional employees to meet existing staffing needs, but no new hires are expected to occur as a result of a new coal leasing action. Impacts on federal and state revenues would be substantial and beneficial under both action alternatives. The potential additional federal revenue from the general analysis area would range from approximately $69 to $241 million, depending on the alternative selected and the bonus price when the coal is leased. The potential additional revenue to the state of Wyoming from the general analysis area would range from $91 to $300 million, depending on the alternative selected, the bonus price when the coal is leased, and the selling price of the coal. Because average annual coal production rates would not increase, no new employees would be hired as a direct result of a leasing action and therefore no new impacts on the local housing market or increased demands on the existing community facilities or services in the county would occur though existing demands on infrastructure could be extended by up to six years.

Environmental Justice

Economic and demographic data indicate that neither minority populations nor people living at or below the poverty level comprise a “meaningfully greater increment” of the total population in Gillette or Campbell County than they do in the state as a whole. Also, the Native American population is smaller than in the state as a whole and no known Native American sacred sites are present in or near the general analysis area.

Greenhouse Gas Emissions

The annual equivalent carbon dioxide (CO_2e) emissions at the Buckskin Mine are not expected to increase under either action alternative. The maximum annual coal production would not be affected; average strip ratios and haul distances would be substantially equivalent to those already encountered at the mine. Conversely, projected CO_2e emissions over the life of the mine would increase under either action alternative. Although annual average production is not expected to increase, the additional federal coal reserves would extend the mine life by approximately two years under the Proposed Action and up to six years under Alternative 2,

which would also extend the period for associated CO_2e emissions. Methane emissions from Wyoming's coal mines in 2010 are projected to be 2.3 million metric tons of CO_2e (Center for Climate Strategies 2007), of which the Buckskin Mine's 2008 methane emissions represent 3.4%.

Carbon Sequestration

Carbon sequestration, the process of carbon capture, separation, and storage or reuse, is being researched as a means to stabilize and reduce concentrations of carbon dioxide (CO_2), a greenhouse gas. Direct options for carbon sequestration would involve means to capture CO_2 at the source (e.g., power plant) before it enters the atmosphere coupled with "value-added" sequestration (e.g., use of captured CO_2 in enhanced oil recovery operations). Indirect sequestration would involve means of integrating fossil fuel production and use with terrestrial sequestration and enhanced ocean storage of carbon (U.S. Department of Energy 2007). The PRB has geologic formations and producing oil and gas reservoirs that are potential target candidates for both enhanced oil recovery and/or deep geologic sequestration. The current limiting factor is the lack of pipeline infrastructure and economic feasibility for CO_2 transmission and use. No geologic carbon sequestration projects currently exist or are currently planned in the PRB at this time.

Mitigation

The Buckskin Mine's currently approved mining permit includes extensive baseline information, ongoing monitoring information and commitments, and mitigation measures that are required by the SMCRA and Wyoming State Law. Compliance, mitigation, and monitoring measures that are required by regulation are considered to be part of the Proposed Action and Alternative 2 considered in this EIS. These regulatory requirements, mitigation measures, and monitoring commitments are in place for the No Action Alternative as part of the currently approved mining and reclamation plan for the mine and would be updated prior to the permitting process that would be required to mine the final tract configuration.

If impacts are identified during the leasing process that are not mitigated by existing required mitigation measures, the BLM can include additional mitigation measures, in the form of stipulations on a new lease, within the limits of its regulatory authority. Any special stipulations identified by the BLM where additional or increased monitoring measures are recommended to be added to the BLM leases are included in appendix D of the EIS.

Cumulative Impacts

Cumulative impacts result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future actions, regardless of who is responsible for such actions. Cumulative impacts can result from individually minor, but collectively significant, actions occurring over time.

Since decertification of the Powder River Federal Coal Region in 1990, 22 federal coal leases containing more than 6.1 billion tons of federal coal have been issued following competitive sealed-bid sales. Three exchanges of federal coal in the Wyoming portion of the Powder River Federal Coal Region have also been completed. Eleven additional coal lease applications, including the Hay Creek II coal lease application, are currently pending. The pending LBA applications contain over 3.3 billion tons of coal.

Currently, the BLM is completing a regional technical study, called the PRB Coal Review, to help evaluate the cumulative impacts of coal and other mineral development in the PRB. The study evaluates current conditions as of a baseline year (2002, 2003, or 2004) and projects development levels and potential associated cumulative impacts related to coal and coal-related development, oil and gas and related development, and other development through 2020. Due to variables associated with future coal production, two projected coal production scenarios (representing an upper and a lower production level) were developed. The projected development levels are based on projected demand and coal market forecasts and include production at the Buckskin Mine during the baseline year and projected production for 2010, 2015, and 2020.

The Wyoming portion of the PRB is the primary focus of the PRB Coal Review, but the Montana portion of the PRB is included in some studies. Results for those PRB Coal Review studies that have been completed are summarized in chapter 4.0 of the EIS. The remaining studies will be incorporated into the final report as they become available.

Cumulative impacts vary by resource, with potential impacts on air quality, groundwater quantity, wildlife habitat, and socioeconomics generally representing the greatest concerns.

The original PRB Coal Review air quality study documented the modeled air quality impact of existing operations during a baseline year, 2002, and of projected development activities in 2010. The BLM updated the model in 2008 and conducted the cumulative air quality impact analysis using a revised baseline year of 2004 with development levels projected for year 2015; that analysis was included in the draft EIS. After the draft EIS was issued, modeling of cumulative air quality effects for 2020 was completed; data and analyses for both model years are reflected in this final EIS. The EPA guideline CALPUFF model system version 5.8 (Scire et al. 1999a) was used for the modeling analysis. The revised baseline year emissions inventory was developed using 2004 actual emissions data or emissions estimates and has incorporated the recent analyses of emissions in Wyoming and Montana, which were not available when the 2010 modeling study was done. The impacts for the baseline year (2004) and for 2015 and 2020 lower and upper coal production scenarios were directly modeled.

The PRB Coal Review generally considers existing regional air quality conditions in the targeted study areas to be very good. There are limited air pollution emissions sources (few industrial facilities, including the surface coal mines, and few residential emissions in relatively small communities and isolated ranches) and good atmospheric dispersion conditions. The available data show that the region complies with the ambient air quality standards for NO_2 and SO_2. There have been no monitored exceedances of the annual PM_{10} standard in the Wyoming PRB. Table ES-2 presents the maximum modeled impacts on ambient air quality at the near-field

receptors in Wyoming and Montana. Results shown represent the maximum impact at any point in each receptor group; data are provided for the baseline year (2004) analysis and for both coal production scenarios for 2015 and 2020. Peak impacts occur at isolated receptors and are likely due to unique source-receptor relationships. The model results should not be construed as predicting an actual exceedance of any standard, but are at best indicators of potential impacts.

Table ES-3 lists provides a detailed listing of visibility impacts for all analyzed Class I and sensitive Class II areas. For the upper and lower coal production scenarios, it shows the number of additional days that the projected impacts were greater than 1.0 deciview (10% change in light extinction) for each site in each modeled year.

The PRB Coal Review provides an assessment of the cumulative impact on surface and groundwater resources associated with future projected levels of coal mining, coal mine dewatering, CBNG groundwater withdrawal and surface disposal, and coal mine and conventional oil and gas surface disposal of groundwater. Updated Coal Review studies describe the baseline year (2002) ground and surface water resource conditions in the study area, which includes the Hay Creek II area and the rest of Campbell County. The reports present potential future cumulative groundwater impacts in the area of CBNG development and coal mine expansion in the eastern PRB. They also provide a cumulative impact assessment of modeled changes in surface water quality as a result of CBNG, conventional oil and gas, and surface coal mining development projected for 2010, 2015, and 2020 (base year of 2003) in the eastern PRB within approximately 25 miles of the coal mines. A stream channel stability analysis was also conducted to evaluate the potential effects to stream channels because of projected CBNG production water discharge.

A number of modeling analyses have previously been conducted to help predict the impacts of surface coal mining on groundwater resources in the PRB. In addition, each mine must monitor groundwater levels in the coal and underlying and overlying aquifers and assess the probable hydrologic consequences of mining as part of the mine permitting process. Extending the life of the Buckskin Mine by issuing a new lease would result in additional water being withdrawn from the subcoal Fort Union Formation, but no new subcoal water supply wells would be required. The additional water withdrawal would not be expected to extend the area of water level drawdown over a substantially larger area because of the discontinuous nature of the sands in the Tullock Member and the fact that drawdown and yield reach equilibrium in a well because of recharge effects. Because of the distances separating subcoal Fort Union Formation wells used for mine water supply, these wells have not experienced interference and are not likely to in the future.

Table ES-2. Projected Maximum Potential Near-Field Impacts (µg/m³)

Pollutant	Averaging Time	Base Year (2004) Impacts	2015 Lower Coal Development Scenario Impacts	2015 Upper Coal Development Scenario Impacts	2020 Lower Coal Development Scenario Impacts	2020 Upper Coal Development Scenario Impacts	National AAQS	Wyoming AAQS	Montana AAQS	PSD Class II Increments
Wyoming Near-Field										
NO_2	Annual	31.3	46.7	47.4	30.5	30.6	100	100	—[a]	25
SO_2	Annual	15.3	16.2	16.2	16.4	16.5	80	60	—	20
	24-hour	112.3	119.6	119.6	143.3	143.3	365	260	—	91
	3-hour	462.0	814.1	814.1	936.7	936.7	1,300	1,300	—	512
$PM_{2.5}$	Annual	13.4	18.7	21.4	16.3	16.3	15	15	—	—
	24-hour	87.6	179.5	179.5	218.4	218.4	35	35	—	—
PM_{10}	Annual	38.4	53.5	61.0	46.6	46.6	—	50[b]	—	17
	24-hour	250.4	512.8	512.9	624.1	624.3	150	150	—	30
Montana Near-Field										
NO_2	Annual	3.3	6.5	6.5	2.5	2.6	100	—	100	25
	1-hour	409.0	826.3	826.4	440.1	442.7	188.1	—	564	—
SO_2	Annual	1.6	1.7	1.7	3.0	3.1	80	—	80	20
	24-hour	16.1	16.5	16.6	24.7	27.1	365	—	365	91
	3-hour	65.0	66.5	66.5	138.9	138.9	1,300	—	1,300	512
	1-hour	162.9	166.6	166.6	237.0	259.1	—	—	1,300	—
$PM_{2.5}$	Annual	1.0	1.8	1.9	0.9	0.9	15	—	15	—
	24-hour	10.2	15.4	20.6	10.2	10.2	35	—	35	—
PM_{10}	Annual	2.8	5.2	5.3	2.5	2.6	—	—	50	17
	24-hour	29.1	44.0	58.5	29.3	29.3	150	—	150	30

µg/m³ = microgram per cubic meter; AAQS = Ambient Air Quality Standards; PSD = prevention of significant deterioration; NO = nitrogen oxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter measuring 10 microns or less in diameter; $PM_{2.5}$ = particulate matter measuring 2.5 microns or less in diameter

[a] No standard or increment.

[b] The EPA has revoked the NAAQS annual PM_{10} standard of 50 µg/m³, but that standard is still effective for Wyoming until it enters into rulemaking to revise the state AAQS.

Bold values indicate projected exceedance of national and/or state ambient air quality standards.

Source: 2009 update to the Task 3A Report (BLM 2009c).

Table ES-3. Modeled Change in Visibility Impacts at Class I and Sensitive Class II Areas

		Coal Development Scenario			
	Base Year (2004)	2015 Lower	2015 Upper	2020 Lower	2020 Upper
Location	No. of Days >10% Change in Visibility	Change in No. of Days >10% in visibility			
Class I Areas[a]					
Badlands National Park	218	26	26	44	44
Bob Marshall Wilderness Area	8	0	0	0	0
Bridger Wilderness Area	144	2	2	5	5
Fitzpatrick Wilderness Area	91	2	2	6	6
Fort Peck Indian Reservation	105	10	10	20	21
Gates of the Mountain Wilderness Area	55	0	0	4	4
Grand Teton National Park	70	2	2	6	6
North Absaroka Wilderness Area	61	3	3	8	8
North Cheyenne Indian Reservation	243	32	47	59	60
Red Rock Lakes	42	2	2	3	3
Scapegoat Wilderness Area	27	1	1	2	2
Teton Wilderness Area	57	4	4	8	8
Theodore Roosevelt National Park	178	5	9	24	24
UL Bend Wilderness Area	77	8	10	18	18
Washakie Wilderness Area	83	5	5	8	8
Wind Cave National Park	262	18	19	28	31
Yellowstone National Park	84	2	2	5	5

Location	Base Year (2004)	Coal Development Scenario			
		2015 Lower	2015 Upper	2020 Lower	2020 Upper
	No. of Days >10% Change in Visibility	Change in No. of Days >10% in visibility			
Sensitive Class II Areas[b]					
Absaroka Beartooth Wilderness Area	101	2	3	10	10
Agate Fossil Beds National Monument	251	20	20	26	26
Big Horn Canyon National Rec. Area	331	1	3	1	1
Black Elk Wilderness Area	236	34	36	47	47
Cloud Peak Wilderness Area	126	18	18	29	30
Crow Indian Reservation	360	4	4	3	3
Devils Tower National Monument	274	25	25	31	32
Fort Belknap Indian Reservation	66	6	7	14	15
Fort Laramie National Historic Site	260	10	10	15	16
Jedediah Smith Wilderness Area	79	1	1	3	5
Jewel Cave National Monument	261	19	21	36	37
Lee Metcalf Wilderness Area	97	2	2	2	2
Mount Naomi Wilderness Area	51	1	1	1	1
Mount Rushmore National Monument	222	36	36	49	52
Popo Agie Wilderness Area	139	4	4	6	6
Soldier Creek Wilderness Area	268	18	18	19	19
Wellsville Mountain Wilderness Area	130	10	10	17	17
Wind River Indian Reservation	217	2	5	9	10

[a] Pristine attainment area.
[b] Certain federal assets with Class II status for which air quality and/or visibility are valued resources.
Source: 2009 update to the Task 3A Report (BLM 2009c).

Projected cumulative surface water impacts primarily include the impacts of CBNG production water discharge to ephemeral drainages and the surface disturbance and subsequent reclamation of drainages that result from coal mine expansion. Future coal mining in the PRB could remove intermittent or ephemeral streams and stockponds in various watershed. Coal mine permits provide for removal of first- through fourth-order drainages. During reclamation, third- and fourth-order drainages must be restored; first- and second-order drainages often are not replaced (Martin et al. 1988). Coal-mining-related surface water would be discharged into intermittent and ephemeral streams. Based on current trends, it is assumed that most, if not all, of the coal-mine-produced water would be consumed during operation. As discussed in section 3.5.2.2, changes in surface runoff would occur as a result of the destruction and reconstruction of drainage channels as mining progresses. Sediment control structures would be used to manage discharges of surface water from the mine permit areas. State and federal regulations require treatment of surface runoff from mined lands to meet effluent standards. Monitoring data from the mines indicate that water from the backfill will generally be acceptable for premining uses (primarily livestock watering). Modeling and monitoring indicate that the groundwater drawdown impacts of coal mining and CBNG development are overlapping.

The updated PRB Coal Review studies discuss potential cumulative impacts on wildlife from projected development activities in that study area. The area of habitat disturbance and reclamation for 2003 and 2007and the projected cumulative areas of disturbance and reclamation for 2010, 2015, and 2020 are shown in tables 4-2 and 4-3. As discussed above, impacts on wildlife and fisheries can be classified as no impact (threatened and endangered species), short-term, and long-term. Potential short-term impacts arise from habitat disturbance associated with a project's development and operation (e.g., coal mines, CBNG wells) and would cease upon project completion and successful reclamation in a given area. Potential long-term impacts consist of long-term or permanent changes to habitats and the wildlife populations that depend on those habitats, irrespective of reclamation success, and habitat disturbance related to longer term projects (e.g., power plant facilities, rail lines). Habitat fragmentation can result from activities such as roads, well pads, mines, pipelines, and overhead electrical power lines, as well as increased noise, elevated human presence, dispersal of noxious and invasive weed species, and dust from unpaved road traffic. These effects result in overall changes in habitat quality, habitat loss, increased animal displacement, reductions in local wildlife populations, and changes in species composition. However, the severity of these effects on terrestrial wildlife would depend on factors such as sensitivity of the species, seasonal use, type and timing of project activities, and physical parameters (e.g., topography, cover, forage, and climate). Potential cumulative effects on fisheries from of development activities would be closely related to impacts on ground and surface water resources.

The PRB Coal Review used the REMI Policy Insight regional economic model to project cumulative employment and population levels and associated impacts in the PRB for the upper and lower coal production scenarios in 2010, 2015, and 2020. Table ES-4 presents the recent and projected population levels for the counties included in the PRB Coal Review socioeconomic analysis. The Hay Creek II LBA would have no impact on local or regional populations.

Table ES-4. Recent and Projected PRB Population

Year	Campbell County	Converse County	Crook County	Johnson County	Sheridan County	Weston County	Six County PRB Total
Census							
2000	33,698	12,104	5,895	7,108	26,606	6,642	92,053
2003[a]	36,381	12,326	5,971	7,530	27,116	6,665	95,989
2006[a]	38,934	12,866	6,255	8,014	27,673	6,762	100,504
2009[a]	43,967	13,578	6,653	8,531	29,163	7,009	108,901
Projected Lower Coal Production Scenario							
2010	45,925	13,103	6,542	8,389	28,459	7,108	109,526
2015	48,905	13,671	6,759	8,867	30,016	7,174	115,392
2020	50,995	14,193	6,989	9,326	31,467	7,208	120,178
Projected Upper Coal Production Scenario							
2010	47,662	13,160	6,570	8,424	28,579	7,137	111,532
2015	51,558	13,763	6,802	8,924	30,214	7,219	118,480
2020	54,943	14,313	7,045	9,403	31,733	7,266	124,703

[a] Projected by U.S. Census Bureau based on 2000 data.

Source: U.S. Census Bureau (2006a) and 2005 Task 3C Report (BLM 2005a).