

EXPLANATION

COAL OUTCROPS

Coal bed outcrop or subcrop (in cases where the outcrop has been burned or weathered); includes coal beds 4 feet thick or more. In areas of closely spaced coal beds, a line may indicate more than one coal bed.

OUTCROPS OF COAL-BEARING FORMATIONS

Tertiary rocks. Contain abundant, thick, laterally continuous subbituminous coal beds that are currently mined. Coal beds 20 to over 100 feet thick at depths of less than 1,000 feet are common.
Cretaceous rocks. Contain bituminous and subbituminous coal beds in the Black Hills region and on the margins of the Powder River Basin. Coal beds are generally less than 10 feet thick.

OUTCROPS OF NONCOAL-BEARING FORMATIONS

Areas where noncoal-bearing rocks at the surface are underlain by coal-bearing rocks in the subsurface. In places coal-bearing rocks are deeply buried.
Areas of igneous and metamorphic rocks not underlain by coal-bearing rocks. Includes Precambrian rocks in major uplifts surrounding the basin and Tertiary intrusive and extrusive rocks in the Black Hills area.
Areas not underlain by coal-bearing rocks.

COAL MINING AND DEVELOPMENT SYMBOLS

Active or proposed surface coal mine; approximate location of active or proposed pits. Mine name or proposed (P) mine and permitted or proposed productive capacity in millions of short tons (MT). (I) indicates active mine on standby or currently idled. Symbol may indicate more than one mine in areas of intensive mining.
Abandoned surface coal mine or pit. Symbol may indicate more than one mine in areas of intensive mining.
Abandoned underground coal mine; approximate location of entrance, shaft, or underground mine workings. Symbol may indicate more than one mine in areas of intensive mining.
Abandoned underground coal mine; location of known entry into underground mine workings. Point of "X" indicates approximate direction or heading of entry. Symbol may indicate more than one mine in areas of intensive mining.
Prospect; symbol may indicate more than one prospect in areas of intensive prospecting.
Inactive or abandoned in-situ coal gasification project.

OTHER SYMBOLS

Black Hills Power & Light Nat. Steam Plant (2,000 MW)
U.S. Bureau of Reclamation Nat. Generator Plant (2.0 MW)
115 kV
Hydroelectric generating plant; operating company name, plant name, and nameplate capacity in megawatts (MW) as of November, 1989.
Electrical transmission line; number of lines (in parentheses) and maximum voltage rating in kilovolts (KV). Only those transmission lines 115 KV and greater are shown.
Industrial facility using coal; company name and plant name as of December, 1989.
Railroad track; solid line indicates major coal unit train route, cross-hatched line indicates other train route. Ownership of trackage:
BN = Burlington Northern Railroad Company
WRPI = Western Railroad Properties, Incorporated (Chicago and North Western Transportation Company, operator)
BN & WRPI = line shared by BN and WRPI between Shawnee and Caballo mine spur
PPAL = Pacific Power and Light Company's private rail line.

STRATIGRAPHIC COLUMN AND DESCRIPTION OF COAL-BEARING FORMATIONS

TERTIARY	WESTERN POWDER RIVER BASIN		EASTERN POWDER RIVER BASIN AND BLACK HILLS	
	Member	Formation	Member	Formation
PALEOGENE	Tongue River Member	Wasatch Formation	Tongue River Member	Wasatch Formation
	Lebo Shale Member	Fort Union Formation	Lebo Shale Member	Fort Union Formation
	Tullock Member		Tullock Member	
	Lance Formation		Lance Formation	Hill Creek Formation
UPPER CRETACEOUS	Fox Hills Sandstone		Fox Hills Sandstone	
	Messaverde Formation		Pierre Shale	
	Cody Shale		Niobrara Formation	
LOWER CRETACEOUS	Frontier Formation		Greenhorn Formation	
	Mowry Shale		Belle Fourche Shale	
	Thermopsis Shale		Newcastle Sandstone	
	Cloverly Formation		Skull Creek Shale	
JURASSIC	Morrison Formation		Fall River Formation	
			Lakota Formation	
			Morrison Formation	

The Lower Cretaceous Lakota Formation in the Black Hills coal field contains bituminous coal beds near its base. In this area, the Lakota is mapped with the underlying Morrison Formation and the overlying Fall River Formation. Immediately west of the outcrop, the Lakota Formation is overlain by a thick sequence of noncoal-bearing Cretaceous rocks.

The Upper Cretaceous Messaverde and Meeteetse Formations contain thin coal beds in the western and southern Powder River Basin. Both units interfinger with marine shales to the east and the formations are absent in the eastern Powder River Basin. Bituminous and subbituminous coal beds are relatively thin (less than 10 feet thick) and discontinuous in these formations, but several more continuous coal beds in the southern part of the Powder River Basin were mined underground in the past.

The Upper Cretaceous Lance Formation and the two lower members of the Paleocene Fort Union Formation contain thin beds of subbituminous coal and lignite and are minor coal-bearing units.

The Tongue River Member of the Fort Union Formation contains thick, laterally continuous coal beds of major economic interest. Subbituminous coal beds of the Tongue River Member are mined commercially in the Gillette and Sheridan areas; coal resources in this member are estimated at over one trillion short tons (Ayers, 1986). Single coal beds in the Tongue River Member commonly exceed 100 feet thick and maximum thickness exceeds 200 feet in the central and western parts of the basin.

The Eocene Wasatch Formation also contains thick, laterally continuous coal beds but the thickest, most persistent coal beds occur in the western and central parts of the Powder River Basin. The coal beds are generally subbituminous in rank but some lignite beds may also occur in this formation.

LOCATION MAP



ACTIVE COAL MINES (AS OF MAY, 1990)

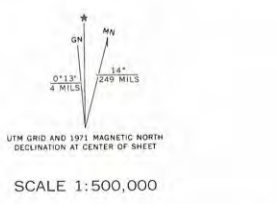
MINE NAME	MINE OPERATOR AND SUBSIDIARY
Antelope	Antelope Coal Company (a subsidiary of NERCO, Incorporated, an operating company of PacifiCorp)
Belle Ayr	Amx Coal Company (a subsidiary of Amx, Incorporated)
Big Horn No. 1	Big Horn Coal Company (a subsidiary of Peter Kiewit Sons, Incorporated)
Black Thunder	Thunder Basin Coal Company (a subsidiary of Atlantic Richfield Company, ARCO)
Buckskin	Triton Coal Company (a subsidiary of Shell Oil Company)
Caballo	Carter Mining Company (a subsidiary of Exxon Coal Resources USA, Incorporated)
Caballo Rojo	Mobil Oil Producing, Incorporated (a subsidiary of Mobil Oil Corporation)
Clevis Point ¹	Kerr-McGee Coal Corporation (a subsidiary of Kerr-McGee Corporation)
Coal Creek	Thunder Basin Coal Company (a subsidiary of Atlantic Richfield Company, ARCO)
Cordero	Cordero Mining Company (a subsidiary of Sun Coal Company)
Dry Fork ²	Dry Fork Coal Company (a partnership between Phillips Petroleum Company, a subsidiary of Phillips Petroleum Company, and Western Fuels Association)
Eagle Butte	Amx Coal Company (a subsidiary of Amx, Incorporated)
Fort Union	Fort Union Coal Company (a partnership of Frontier Coal Company, Ted Vemars, and Melvin Deltzer)
Jacobs Ranch	Kerr-McGee Coal Corporation (a subsidiary of Kerr-McGee Corporation)
Dave Johnston	Glenrock Coal Company (a subsidiary of NERCO, Incorporated, an operating company of PacifiCorp)
North Antelope	North Antelope Coal Company (a subsidiary of Peabody Holding Company)
Rawhide	Carter Mining Company (a subsidiary of Exxon Coal Resources USA, Incorporated)
Rochelle	Rochelle Coal Company (a subsidiary of Peabody Holding Company)
Wyodak	Wyodak Resources Development Corporation (a subsidiary of Black Hills Power and Light Company)

¹ Inactive or idle
² Under construction

REFERENCES USED IN COMPILATION OF MAP

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First printing of 600 maps
Base by U.S. Geological Survey
Cartography by Fred H. Porter, III



COAL MAP OF THE POWDER RIVER BASIN AND ADJACENT AREAS, WYOMING
by
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1990

Prepared in cooperation with the U.S. Geological Survey
(Program: Evolution of sedimentary basins)