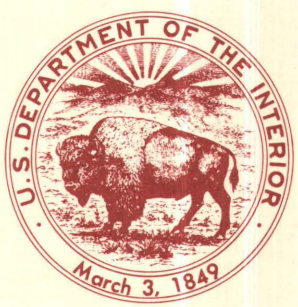
Evaluation of Coal Resources in the Eastern Part of the Fort Peck Indian Reservation, Montana

U.S. GEOLOGICAL SURVEY BULLETIN 1869

Prepared in cooperation with the
U.S. Bureau of Indian Affairs



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Evaluation of Coal Resources in the Eastern Part of the Fort Peck Indian Reservation, Montana

By LAURA R. H. BIEWICK, JOHN K. HARDIE, COURTENEY WILLIAMSON, and HAROLD H. ARNDT

Prepared in cooperation with the
U.S. Bureau of Indian Affairs

U.S. GEOLOGICAL SURVEY BULLETIN 1869

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CONVERSION FACTORS

For readers who wish to convert measurements from U.S. customary units to the metric system of units, the conversion factors are listed below.

U.S. customary unit	Multiply by	To obtain metric unit
inch (in.)	2.540	centimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
square mile (mi^2)	2.590	square kilometer
acre	0.405	hectare
short ton	0.907	metric ton
British thermal unit per pound (Btu/lb)	0.5556	kilocalories per kilogram

Evaluation of Coal Resources in the Eastern Part of the Fort Peck Indian Reservation, Montana

By Laura R.H. Biewick, John K. Hardie, Courteney Williamson, *and* Harold H. Arndt

Abstract

The Fort Peck Indian Reservation occupies about 3,000 square miles in the western part of the Williston Basin, Montana. The area discussed herein lies in the easternmost part of the reservation and contains about 1,000 square miles underlain by the coal-bearing Paleocene Fort Union Formation. Within this study area, the Fort Union Formation contains 15 potentially recoverable coal beds as thick as 13 feet. The coal beds were deposited in two different depositional settings. Coal beds in the lower part of the interval were probably deposited in an upper-delta-plain environment. Coal beds in the upper part of the interval are believed to have been deposited in backswamps on an alluvial plain. The coal-bearing sequence on the Fort Peck Indian Reservation is buried under surficial deposits of late Tertiary and Quaternary age which severely limit bedrock exposures. Most of the data in this report are from shallow drill holes and seismic shotholes that did not penetrate beyond the areas shown to be underlain by the lower coal beds. The apparent rank of all coal beds sampled was calculated as lignite A. The resource information presented in this report was generated using data in the National Coal Resources Data System. Coal resource estimates of 15 potentially recoverable coal beds in the Fort Union Formation were calculated using GARNET (Graphic Analysis of Resources using Numerical Evaluation Techniques) software. Total identified coal resources of the Fort Union Formation in the study area of beds 2.5 feet or greater in thickness and at depths less than 1,000 feet are estimated to be 8.5 billion short tons.

INTRODUCTION

Present Investigation

As part of a program to assess mineral resources in selected Indian lands, the coal resource investigation in the Fort Peck Indian Reservation (fig. 1) was conducted by the U.S. Geological Survey in cooperation with the Bureau of Indian Affairs. This report represents the part of the study that deals with the evaluation of lignitic coal resources in the eastern part of the Fort Peck Indian Reservation (fig. 2). The coal resources were calculated using computerized techniques in a 1,000-mi^2 area underlain by the coal-bearing Paleocene Fort Union Formation. For this study the objectives of the resource calculation were to estimate the coal resources of 15 potentially recoverable coal beds in the Fort Union Formation within the limitations of the available data. The coal resource values presented in this paper were calculated using NCRDS (National Coal Resources Data System).

Previous Work

The Fort Peck Indian Reservation has been mapped by several investigators. Coal beds that crop out were first described and evaluated by Smith (1910), whose early work in the eastern part of the reservation established a stratigraphic nomenclature that was accepted with substantial modification by recent investigators (table 1; Arndt and Hardie, 1985; Hardie and Van Gosen, 1986). Collier and Knechtel (1939) reported on the coal resources in McCone County south of the Fort Peck Indian Reservation. Later, the coal deposits in the vicinity of the towns of Fort Kipp, Medicine Lake, and Reserve were investigated by the Great Northern Railroad Co. (1953–55, 1966), which is now Burlington Northern, Inc. (fig. 3). Colton and Bateman (1956) prepared a generalized geologic and structure contour map of the Fort Peck Indian Reservation. Witkind (1959) and others mapped and summarized the Quaternary

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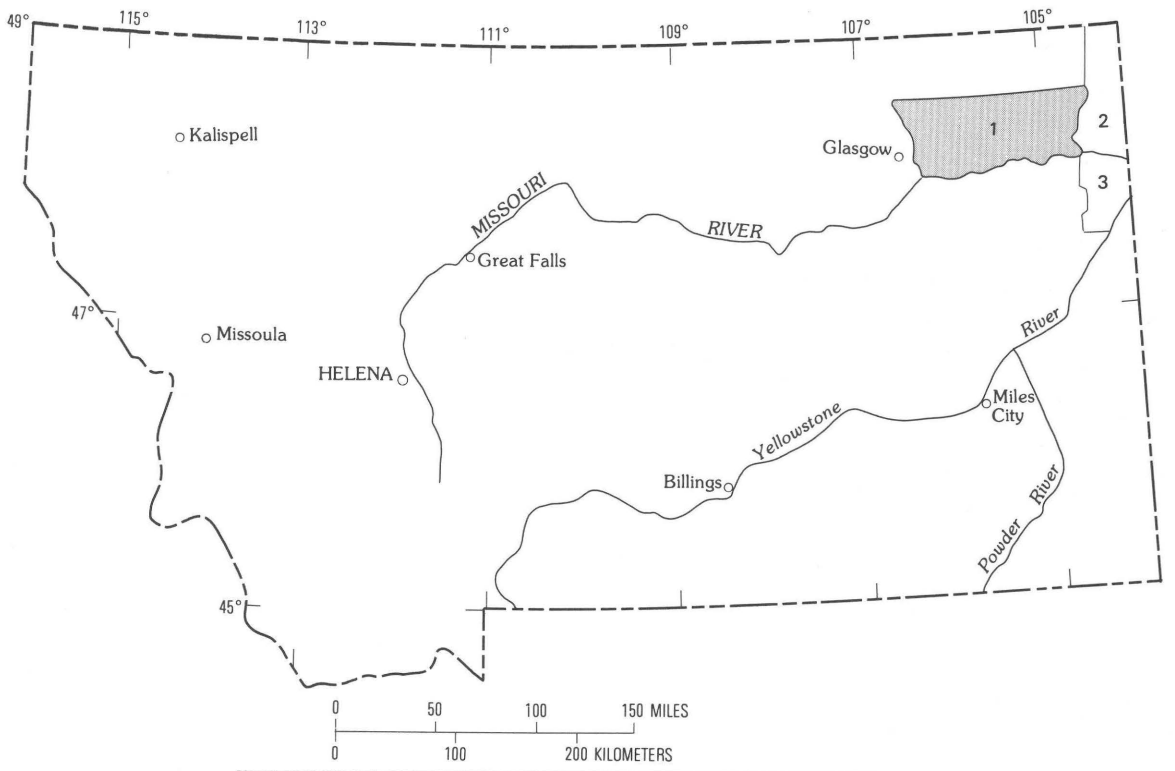


Number	Coal field	U.S. Geological Survey Bulletin
1	Fort Peck	381–A
2	Culbertson	471–D
3	Girard	1310

Figure 1. Index map of Montana showing location of Fort Peck Indian Reservation (shaded) and Fort Peck coal field and adjacent coal fields.

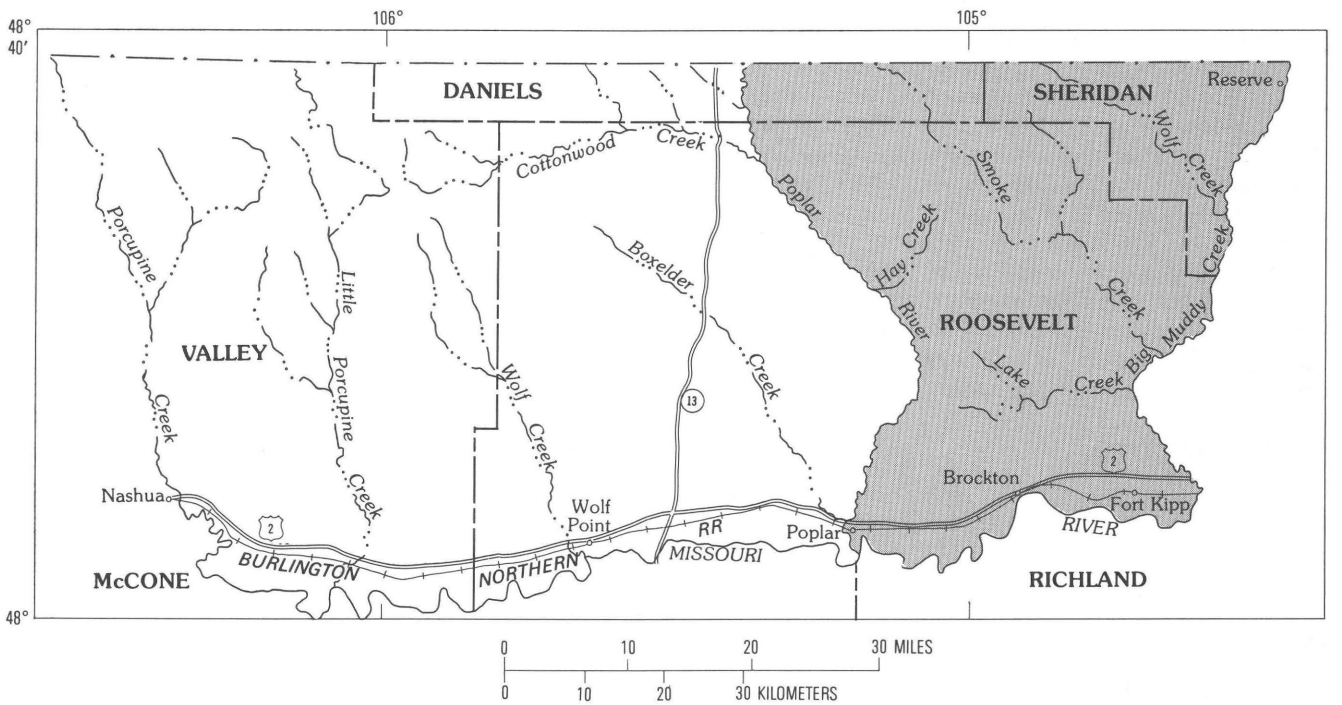


Figure 2. Index map of the Fort Peck Indian Reservation showing the area covered in this report (shaded).

Table 1. Correlation of coal beds in the Fort Union Formation, Fort Peck Indian Reservation coal field and adjoining coal fields, northeastern Montana

[?, queried where correlation is uncertain]

THIS REPORT Fort Peck Indian Reservation		Fort Peck field	Culbertson field	Girard area	Girard field northern part
Northeastern part	Southeastern part	(Smith, 1910)	(Beekly, 1912)	(Spencer, 1980)	(Prichard and Landis, 1975)
			F	Prittegurl	H
		G	E	Bruegger	G
		F	DD	Elvirio	F
		E	CC	E	E
Local R					
Upper Timber Coulee	D Rider				
Timber Coulee					
Lower Timber Coulee	D	D	D	D	D
	C	C		C	
Reserve					
Smoke Creek	Smoke Creek				
Lower Smoke Creek	Lower Smoke Creek				
BC	BC				
B	B	B			
AB	AB				
AA(?)	AA				
A Rider	A Rider				
A	A	A			

geology of the southeastern part of the reservation, and Colton (1962, 1963a, b, c, 1964) mapped the western, south-central, and northern parts of the area covered in this report (fig. 4).

The most recent investigations on the reservation were conducted by the U.S. Geological Survey. From 1978 to 1980, 83 exploratory test holes for coal were drilled and logged and 15 holes were cored in the eastern part of the Fort Peck Indian Reservation by private contractors for the U.S. Geological Survey (figs. 5, 6). Lithologic descriptions and geophysical logs from this drilling program are found in Hardie and Arndt (1981), Arndt and others (1982a, b), Arndt and Hardie (1985), and Hardie and Van Gosen (1986). Coal quality data by Hardie and Arndt (1981) and Arndt and others (1982a) are summarized in tables 4–9 of this report. Additional data were obtained from 40 measured sections and 582 drill holes (seismograph shotholes and water wells), most of which were logged by the U.S. Geological Survey (see appendix and fig. 7). Geologic interpretations that resulted from these investigations are found in Hardie and Van Gosen (1986) and Hardie and Arndt (1987, 1988, in press a, b). This work extended identified coal deposits to those shown in figure 8. Geologic investigative findings that relate to coal thickness and occurrence were entered into NCRDS.

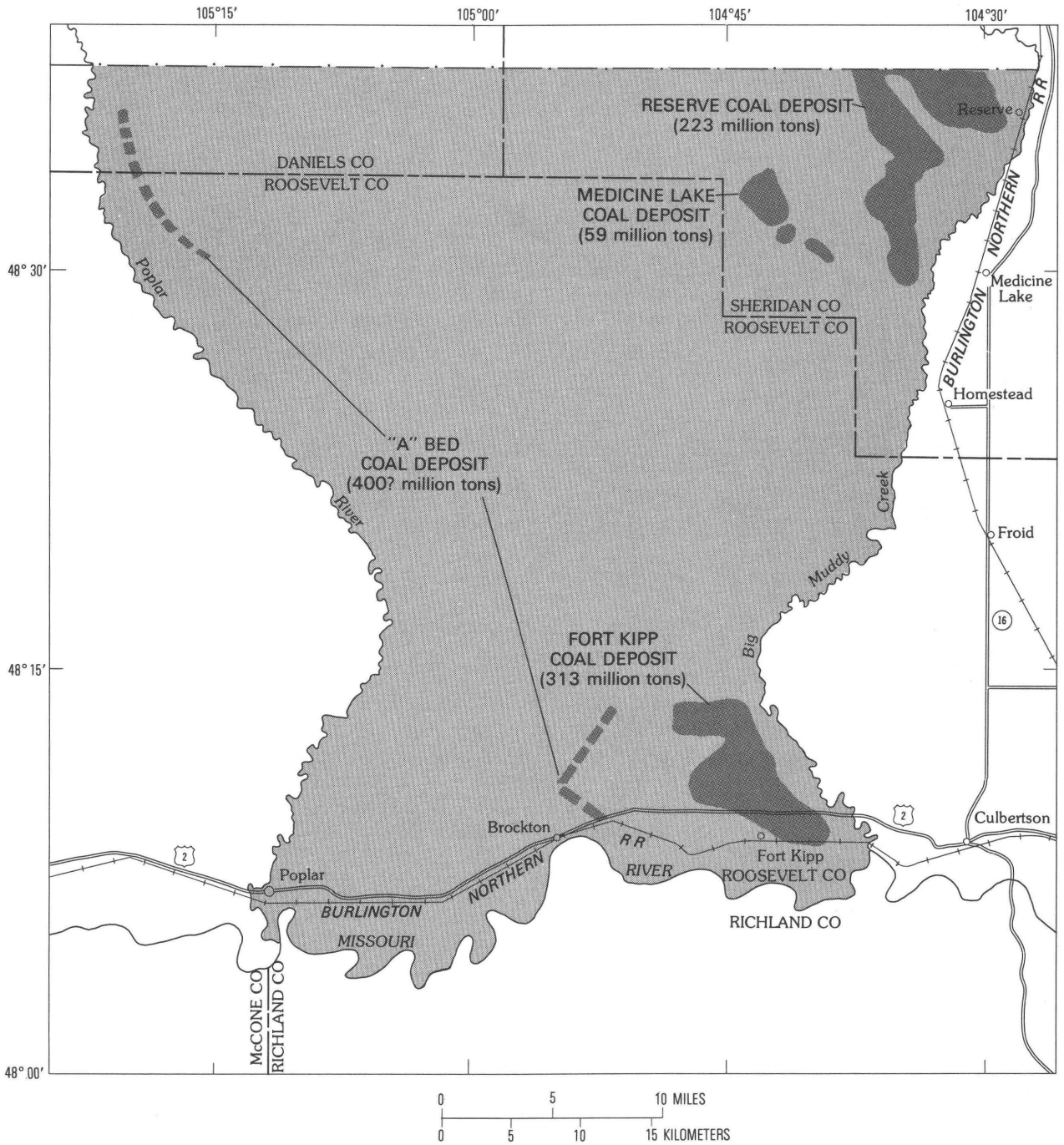


Figure 3. Map of the eastern part of the Fort Peck Indian Reservation showing coal deposits that were identified (before 1978) prior to the investigations by the U.S. Geological Survey. Tonnages cited are from previous estimates, in millions of short tons. Modified from Mudge and others (1977).

Acknowledgments

From 1978 to his demise in the spring of 1985, Harold H. Arndt administered the coal resource investigation in the Fort Peck Indian Reservation. For the southern 400 mi^2 of the study area, he performed field studies, data acquisition, compilation, and data entry into NCRDS, and generated coal bed maps. Arndt used the resource tonnages generated by Laura R.H. Biewick and Courteney Williamson using NCRDS to develop the resource tables in this report.

From 1979 to 1982 and 1985 to 1988, John K. Hardie performed field studies, data acquisition, compilation, and data entry into NCRDS, and generated coal bed maps for the northern 600 mi^2 of the study area. From 1985 to 1988, he administered the completion of

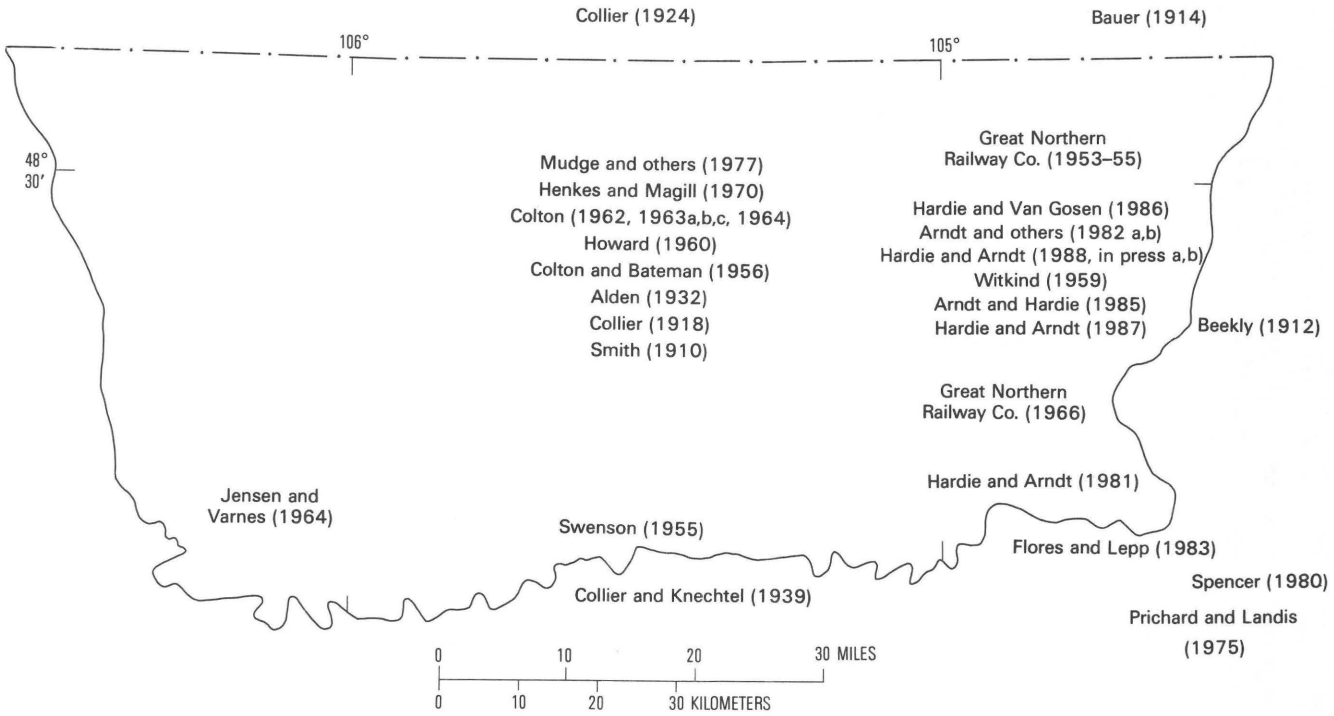


Figure 4. Index map of Fort Peck Indian Reservation and vicinity, Montana, showing selected sources of geologic data.

the Fort Peck Indian Reservation study and finalized partially completed reports.

Laura R.H. Biewick coordinated and executed the NCRDS coal resource calculations of the 15 potentially recoverable coal beds in conjunction with Courteney Williamson, Judy Hunter, and Harold H. Arndt, and compiled this report. Judy Hunter oversaw the NCRDS boundary file combinations that were done jointly by Noreen Rega, Pat Kerr, Mary LeMaster, and Paula Washington. Thomas M. Kehn, Bradley S. Van Gosen, Janet L. Brown, Carolyn L. Thompson, and Jennifer P. Gard assisted in field- and office-related activities at various times through the course of the Fort Peck Indian Reservation investigation.

LOCATION

The coal-bearing rocks underlie the eastern part of the Fort Peck Indian Reservation between the Poplar River and Big Muddy Creek and are included in the Fort Peck Indian Reservation coal (lignite) field of Smith (1910). The exploratory drilling and field investigations that were done by the U.S. Geological Survey examined the coal-bearing rocks in the shaded area shown on the index map of the Fort Peck Indian Reservation (fig. 2). The reservation occupies about 3,000 mi^2 on the western flank of the Williston Basin (fig. 9) in the Missouri Plateau subdivision of the northern Great Plains physiographic province (Fenneman, 1931). The Missouri River, the major drainage channel of the region, forms the southern boundary of the reservation, and lat 48°38′ N. is the approximate northern boundary. The Poplar River flows south across the central part of the reservation to join the Missouri River at the town of Poplar (fig. 2). Principal settlements of Wolf Point and Poplar are located along U.S. Highway 2 and the mainline of the Burlington Northern railroad, which roughly parallels the Missouri River.

GEOLOGIC SETTING

Coal-bearing rocks in the Fort Peck Indian Reservation are in the Hell Creek Formation of Late Cretaceous age and the Fort Union Formation of Paleocene age (tables 2, 3). The Hell Creek Formation is composed of claystone and siltstone, interbedded with ledge-forming sandstones and also fairly numerous but relatively thin and discontinuous beds of coal. The Hell Creek is as much as 280 ft thick in the vicinity of the Fort Peck Indian Reservation. Somber-gray claystone and siltstone predominate in the middle and upper parts of the formation, and brown sandstone predominates in the lower part. Coal beds in the Hell Creek do not exceed 3 ft in thickness under the reservation; consequently, these coal beds are of little economic importance and are not evaluated in this report.

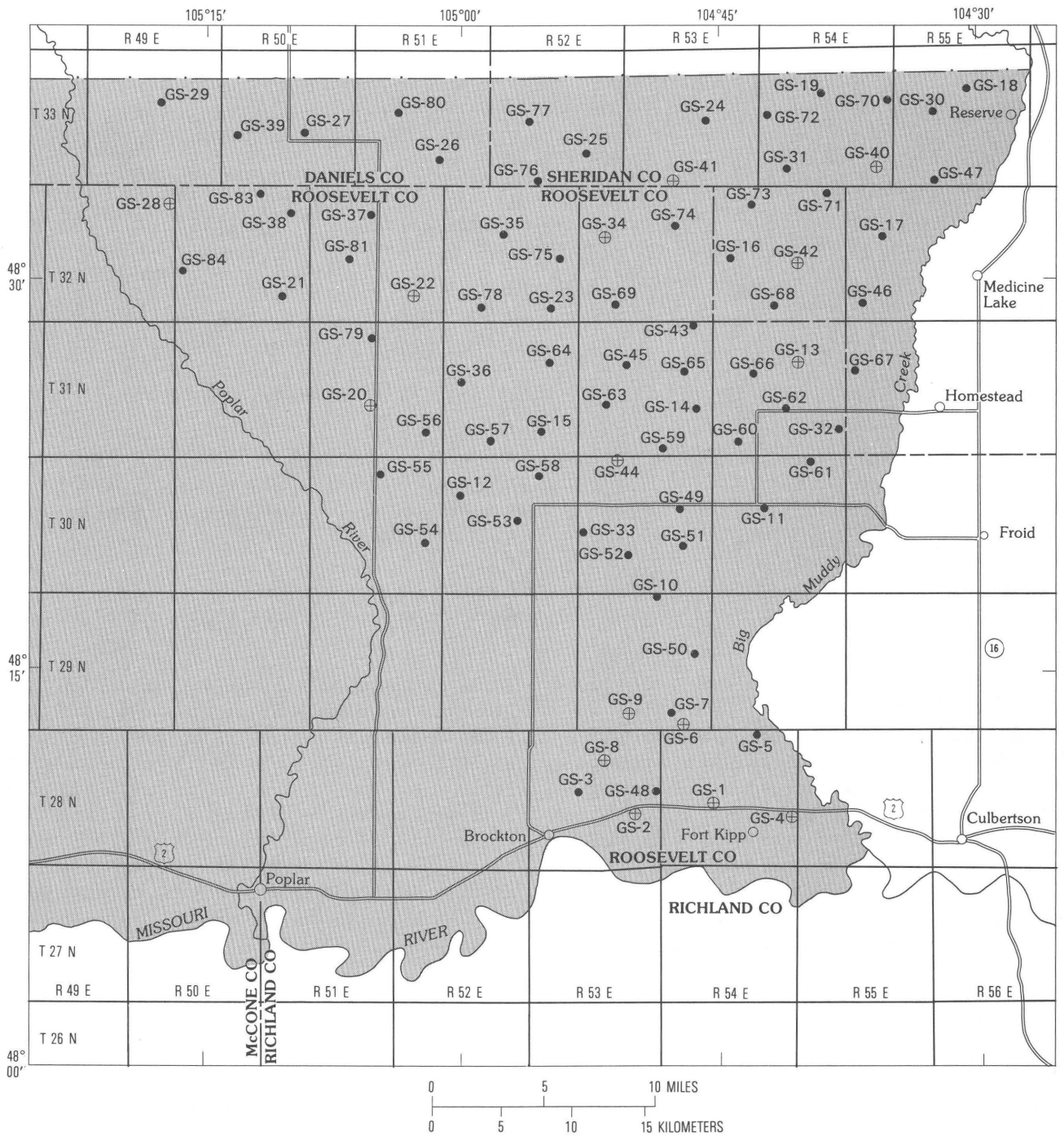


Figure 5. Locations of U.S. Geological Survey coal exploratory drill holes in the eastern part of the Fort Peck Indian Reservation, Montana. ●, exploratory drill hole; ⊕, exploratory drill hole and offset core hole; GS–1, drill-hole identification number.

The Fort Union Formation conformably overlies the Hell Creek Formation. The contact between these formations is gradational and is arbitrarily placed at the base of the lowest mappable coal (lignite) bed (Colton and Bateman, 1956). Somber-gray strata of the Hell Creek generally prevail below this horizon in contrast with the overlying, brighter yellow hued beds that compose the Fort Union Formation. In the study area, the rocks of the Fort Union Formation dip less than 1° to the east. The strata are thickest (as much as 1,300 ft) in the northeastern part of the reservation (Hardie and Arndt, 1988).

The Fort Union Formation in the eastern part of the Fort Peck Indian Reservation consists mainly of

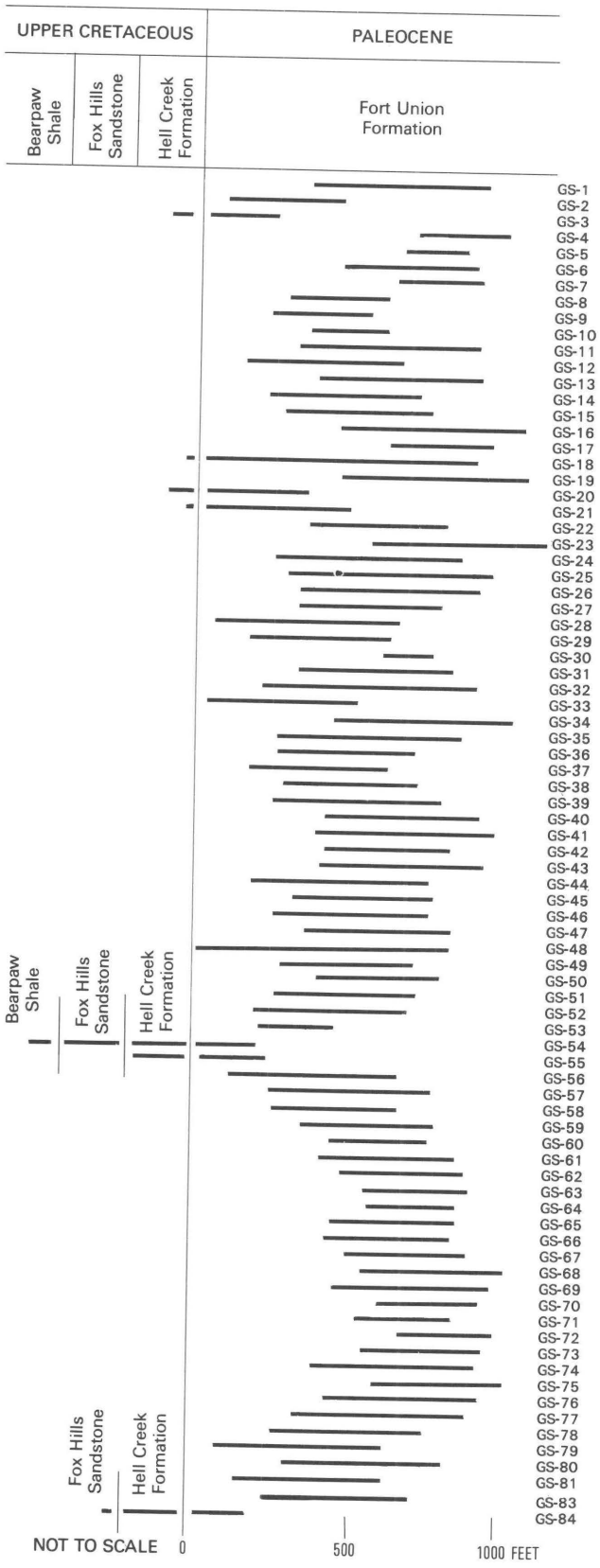


Table 2. Stratigraphic units that crop out in the eastern part of the Fort Peck Indian Reservation, Montana

Alluvium and colluvium	Holocene	QUATERNARY
Glacial deposits	Pleistocene	
Wiota Gravel		
Flaxville Formation	Miocene or Pliocene	TERTIARY
	Unconformity	
Fort Union Formation	Paleocene	
Hell Creek Formation	Upper Cretaceous	CRETACEOUS
Fox Hills Sandstone		
Bearpaw Shale		

Table 3. Uppermost Cretaceous and lower Tertiary lithostratigraphic units of the western part of the Williston basin and the northern margin of the Powder River basin

[Not to scale]

	Northern margin of the Powder River Basin (Miles City)	Williston Basin		
		THIS REPORT Fort Peck Indian Reservation	West-central North Dakota (Stark County)	
			Golden Valley Formation	Eocene and Paleocene
			Formation: Sentinel Butte Member	
Paleocene	Fort Union Formation: Tongue River Member	Fort Union Formation	Union: Tongue River Member	Paleocene
	Fort Union Formation: Lebo Shale Member		Fort: Ludlow Member	
	Fort Union Formation: Tullock Member			
Upper Cretaceous	Hell Creek Formation			Upper Cretaceous

Figure 6. Stratigraphic intervals penetrated by U.S. Geological Survey coal exploratory drill holes in the eastern part of the Fort Peck Indian Reservation, Montana. Locations of exploratory holes GS–1 through GS–84 are shown in figures 5 and 7.

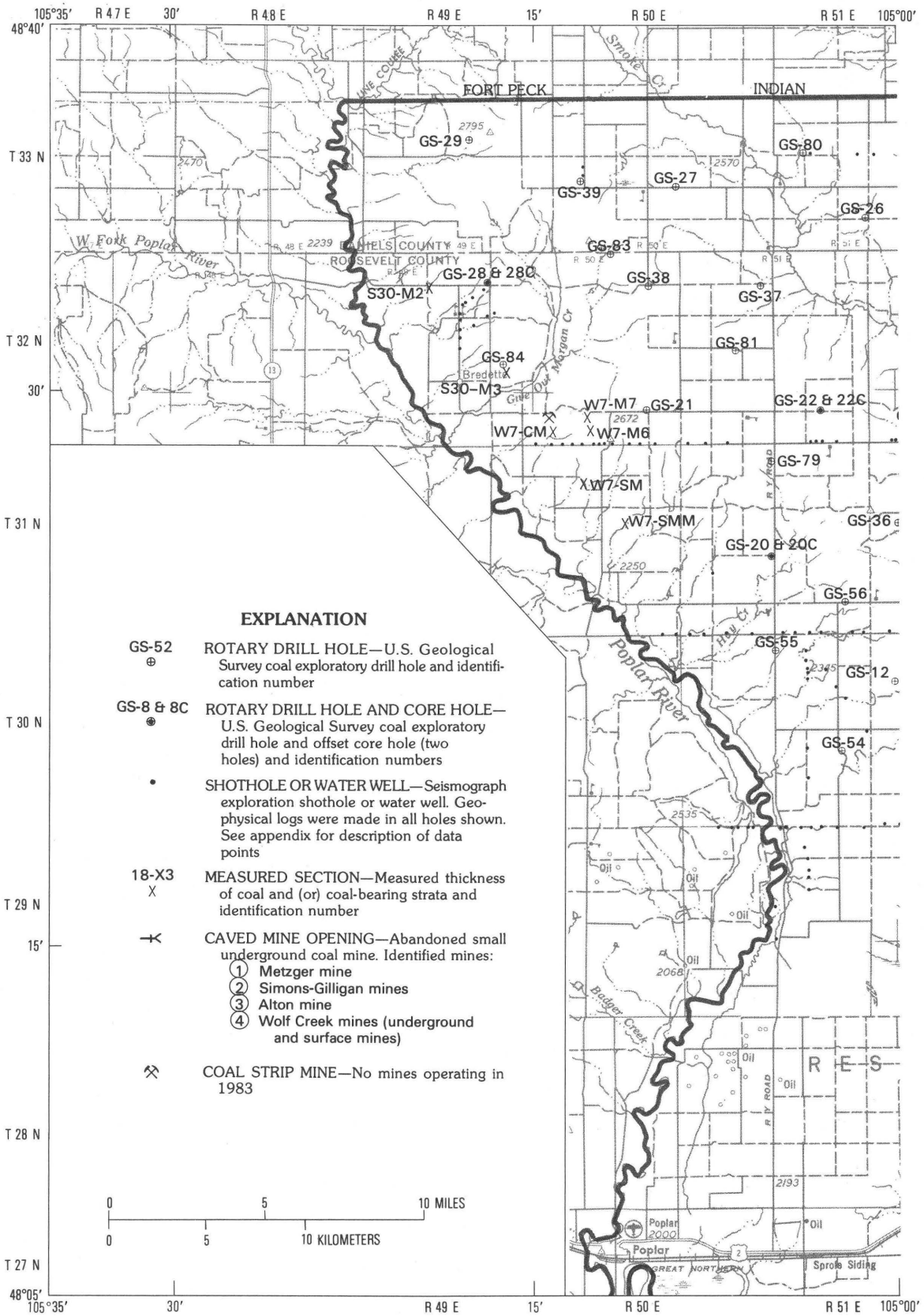
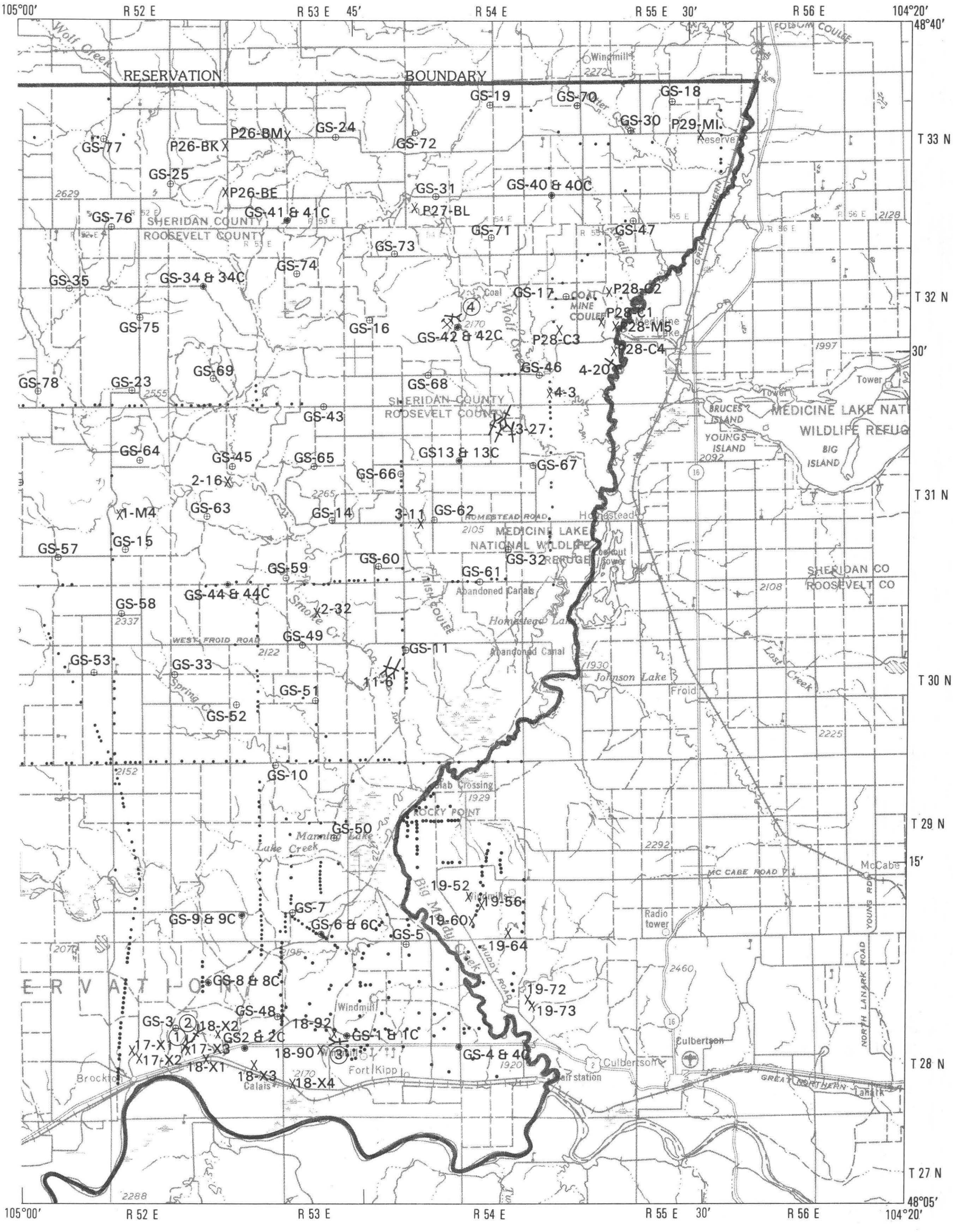


Figure 7 (above and facing page). Location of all data points, eastern part of the Fort Peck Indian Reservation.



105°00'
R 52 E
R 53 E
45'
R 54 E
R 55 E
30'
R 56 E
104°20'
48°40'
RESERVATION BOUNDARY
GS-19
GS-70
GS-18
GS-30
P29-MI
GS-24
P26-BM
P26-BK
GS-77
GS-72
GS-25
P26-BE
GS-31
P27-BL
GS-40 & 40C
GS-41 & 41C
GS-76
SHERIDAN COUNTY
ROOSEVELT COUNTY
GS-71
GS-47
GS-73
GS-74
GS-35
GS-34 & 34C
GS-17
P28-C2
P28-C1
P28-M5
P28-C3
P28-C4
GS-75
GS-16
GS-42 & 42C
GS-46
4-20
GS-69
GS-78
GS-23
GS-68
4-3
GS-43
3-27
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
GS-64
GS-45
GS-65
GS13 & 13C
GS-67
2-16
GS-66
GS-63
GS-14
3-11
GS-62
1-M4
GS-15
GS-57
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
GS-32
GS-60
GS-59
GS-61
GS-44 & 44C
GS-58
2-32
GS-49
GS-53
GS-33
GS-11
11-6
GS-51
GS-52
GS-10
GS-50
19-52
19-56
GS-7
GS-9 & 9C
GS-6 & 6C
GS-5
19-60
19-64
GS-8 & 8C
19-72
19-73
GS-48
GS-3
18-X2
18-92
GS2 & 2C
GS-1 & 1C
17-X1
17-X3
17-X2
18-X1
18-90
GS-4 & 4C
18-X3
18-X4
SHERIDAN CO
ROOSEVELT CO
T 33 N
T 32 N
30'
T 31 N
T 30 N
T 29 N
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R 56 E
104°20'

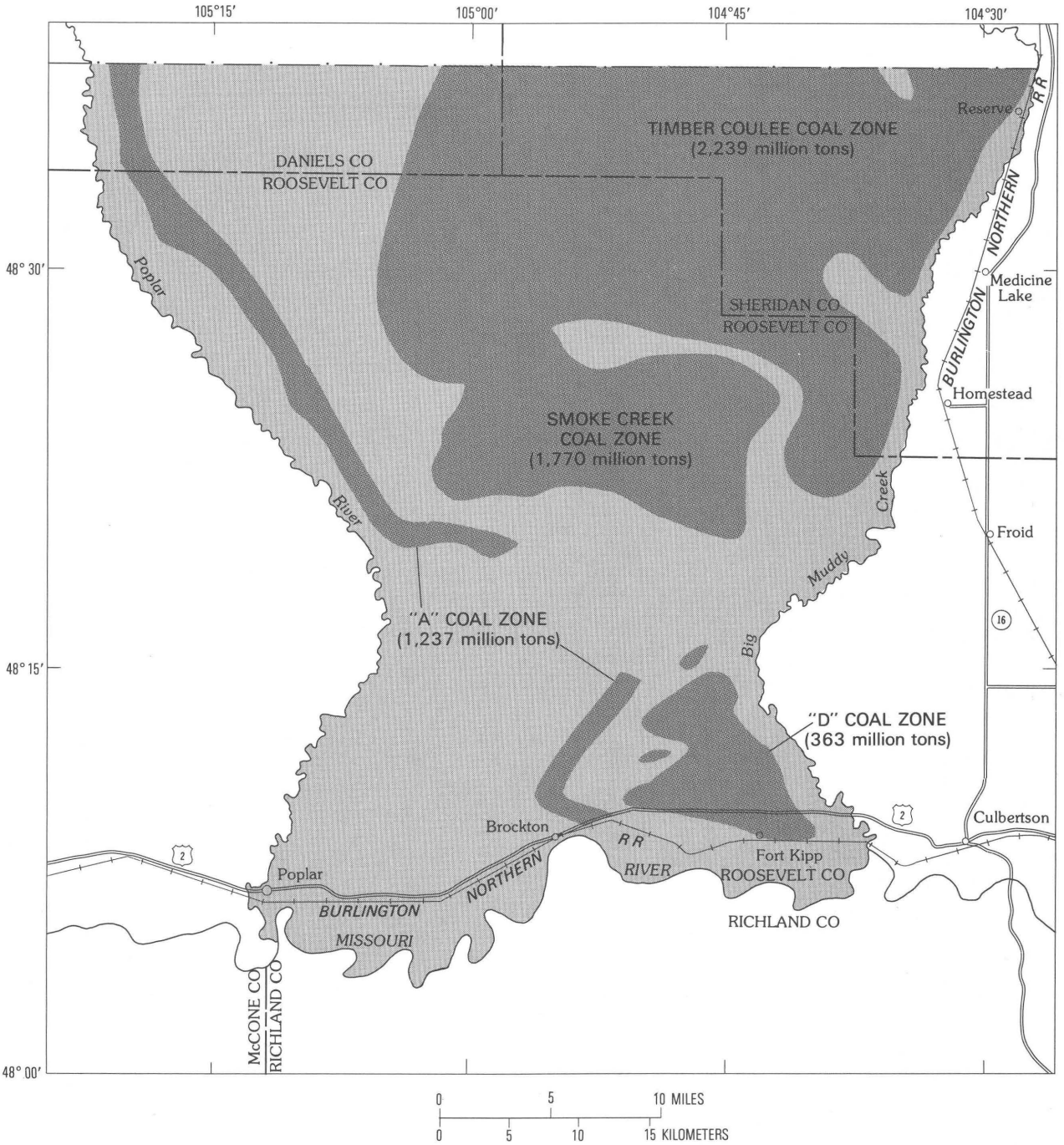


Figure 8. Extension of previously identified (1978) and newly discovered (1981) coal deposits in the eastern part of the Fort Peck Indian Reservation as a result of the investigations by the U.S. Geological Survey. Coal zones include identified coal resources in millions of short tons for the following coal beds: "A" coal zone, "A" and "A" Rider beds; "D" coal zone, "D" and "D" Rider beds; Smoke Creek coal zone, Smoke Creek and Lower Smoke Creek beds; Timber Coulee coal zone, Upper and Lower Timber Coulee beds and Timber Coulee bed.

claystone, siltstone, and sandstone and includes 15 potentially recoverable coal beds as thick as 13 ft (fig. 10; Hardie and Arndt, in press a). Much of the coal-bearing sequence is buried under surficial deposits of late Tertiary and Quaternary age. The surficial deposits include fluvial gravel deposits; glacial outwash, till, kame, and esker deposits; lake deposits; and alluvium and colluvium (R.B. Colton, written commun., 1958). Some of these deposits are thick and extensive and conceal the underlying bedrock. Bedrock is exposed along some roadcuts and commonly along streambeds; however, extensive continuous rock exposures are rare and

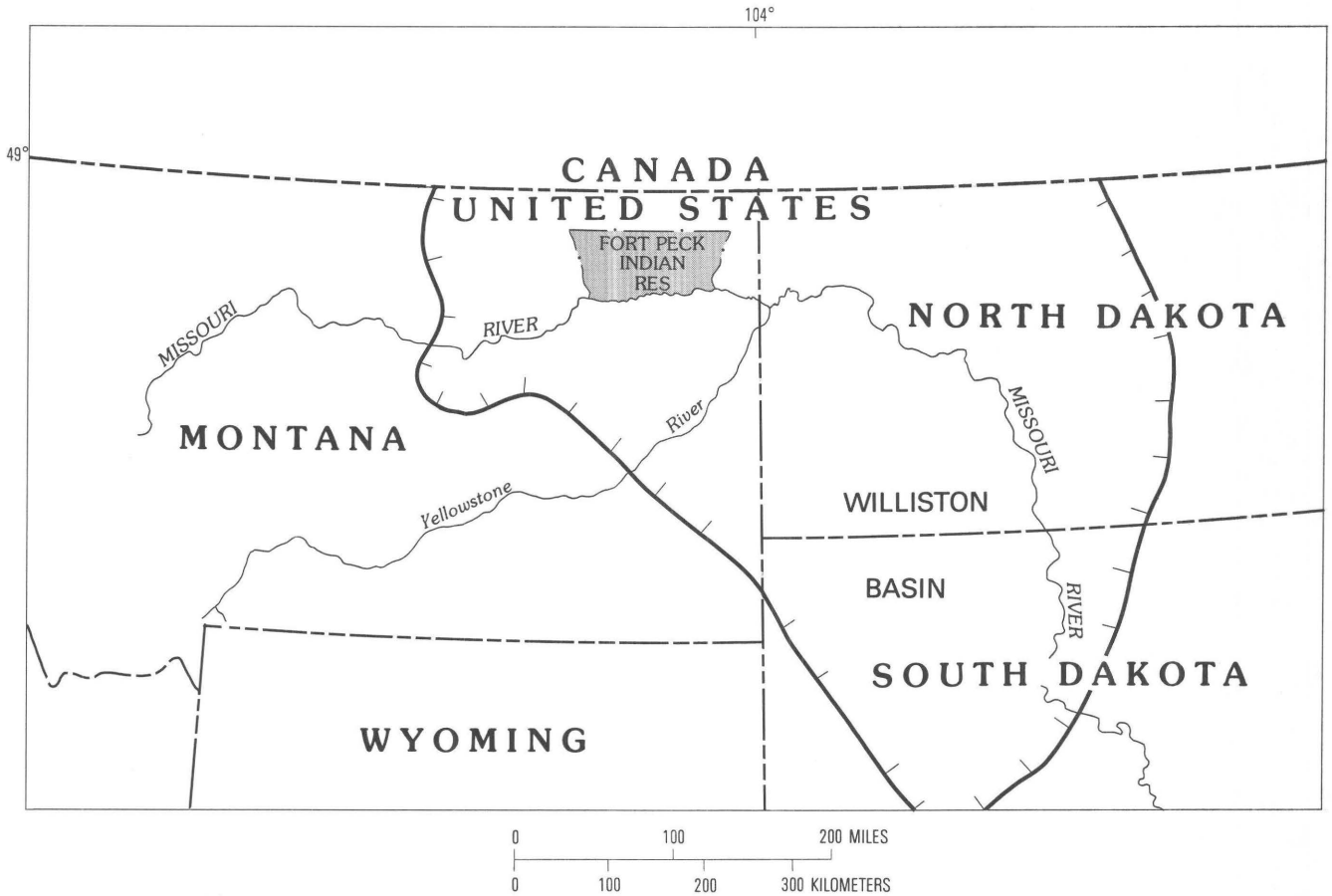


Figure 9. Location of Williston basin (hachured line) and Fort Peck Indian Reservation.

exploratory drilling at many localities was necessary for identification and measurement of the coal-bearing sequence (Hardie and Arndt, 1981).

According to Flores and Lepp (1983), who conducted depositional environment studies, the Fort Union Formation coal beds in the eastern part of the Fort Peck Indian Reservation were deposited in two different depositional settings: upper delta plain and alluvial plain. Delta-plain deposition probably existed through the lowermost part of the Fort Union Formation which is composed of sediments of an upper delta plain. The first freshwater mollusk fossils above coal bed "D" (table 1) mark the transition from delta-plain to alluvial-plain environment. Thus, coal bed "D" probably reflects the earliest organic accumulation in a strictly freshwater swamp of the lower alluvial plain. Thick and persistant peats were best accumulated in backswamps associated with the alluvial-plain facies of the Fort Union Formation (Flores and Lepp, 1983).

NOMENCLATURE

From scattered exposures, Smith (1910) constructed a generalized section with coal beds designated alphabetically. Subsequent investigations by Arndt and Hardie (1985), Hardie and Van Gosen (1986), and Hardie and Arndt (1987, 1988, in press a, b) significantly modified Smith's generalized section and coal bed nomenclature to that shown in figure 10. Where possible, Smith's coal bed designations were preserved (table 1).

COAL BED DESCRIPTIONS

The generalized columnar section (fig. 10) shows the relative stratigraphic position of each coal bed described herein. Thicknesses of the 15 coal beds (measured in outcrops and determined from geophysical data) are shown on the isopach maps (figs. 12, 14, 16, 18, 20, 22, 24, 26, 28, 30). Data points consist of coal exploratory drill holes and seismic shotholes and a few water wells and measured sections (fig. 7). The drill holes, which are shallow (fig. 6), did not penetrate beyond the areas shown to be underlain by the lower coal beds.

"A" bed.—The lowest thick, persistent Fort Union coal bed in the study area is the "A" bed (Smith, 1910), which is more than 8 ft thick in the southern part of the

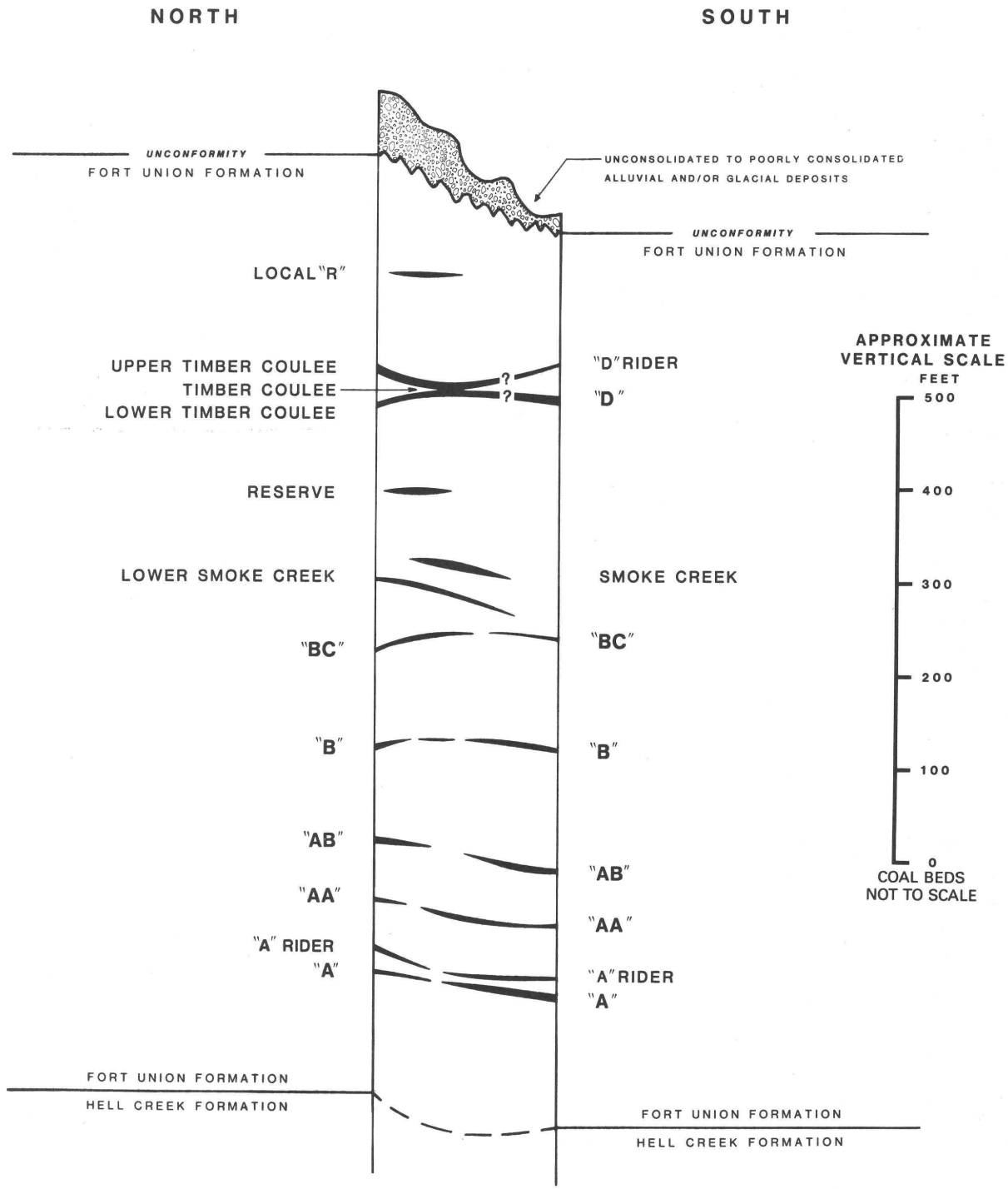


Figure 10. Generalized columnar section showing coal beds of economic importance in the eastern part of the Fort Peck Indian Reservation, Montana.

study area about 2 mi northeast of the town of Brockton (figs. 11, 12). The bed is well exposed along the northern and southern sides of U.S. Highway 2 a few miles east of Brockton. Drill holes penetrate the "A" bed in the western and southern parts of the study area where the "A" bed is more than 120 ft above the base of the Fort Union Formation and 0–30 ft below the "A" Rider bed.

The "A" bed was extensively mined locally for house coal in T. 31 N., R. 50 E., and was commercially mined at the Simons-Gilligan mines in sec. 16, T. 28 N., R. 53 E. Entrances of the two interconnecting mines are on the south side of a small ravine where the "A" bed is burned, about 1 mi north of U.S. Highway 2. The two mines were leased in the 1930's to Roscoe Simons and

Floyd Gilligan and were last operated in 1941 (Henkes and Magill, 1970). The "A" bed was also commercially mined at the Metzger mine in sec. 21, T. 28 N., R. 53 E., where it was about 8 ft in thickness.

"A" Rider bed.—The "A" Rider bed, named by Arndt and Hardie (1985) for its relative stratigraphic position with the "A" bed of Smith (1910), is 1–7 ft thick and lies 30–50 ft below the "AA" bed (figs. 13, 14). Limited exposures are found along the southern part of its area of occurrence. The bed is thickest in the west-central part of the study area near the Poplar River. The "A" Rider bed is located and exposed in the same general area as the "A" bed. Mining information about the "A" bed also applies to the "A" Rider bed.

"AA" bed.—The "AA" bed occurs 60–100 ft below the "AB" bed and is believed to exceed 7 ft in thickness in the southern part of the study area near the Missouri River (figs. 15, 16). The bed is poorly exposed in the northwestern part of the study area about 3 mi south of Give Out Morgan Creek along an escarpment near the Poplar River. Arndt and Hardie (1985) named the "AA" bed after the alphabetical convention of Smith (1910).

"AB" bed.—Like the "AA" bed, the "AB" bed was named by Arndt and Hardie (1985) after the alphabetical convention set by Smith (1910). It exceeds 9 ft in thickness in the northwestern part of the study area (figs. 17, 18) and lies 100–150 ft below the "B" bed. The bed is exposed in sec. 22, T. 28 N., R. 53 E., along the northern side of the Burlington Northern Railroad line about 2 mi north of the Missouri River. The "AB" bed, which underlies most of the study area except the northeast quadrant, contains the largest tonnage of identified coal resources in the area of investigation (table 22).

"B" bed.—The "B" bed of Smith (1910) is 1–6.5 ft thick and underlies most of the southern half of the study area (figs. 19, 20). It lies 75–125 ft below the "BC" bed and 140–180 ft below the Lower Smoke Creek bed. The "B" bed crops out along the northern side of the Burlington Northern Railroad line in a dissected badlands area in sec. 30, T. 28 N., R. 54 E., about 1 mi north of the Missouri River.

"BC" bed.—The "BC" bed exceeds 6 ft in thickness a few miles southwest of the town of Homestead (figs. 21, 22). It lies 20–75 ft below the Lower Smoke Creek bed in the southeastern and east-central parts of the study area along the western side of Big Muddy Creek. The bed is poorly exposured in an outcrop a few miles west of Fort Kipp. Arndt and Hardie (1985) named the "BC" bed after the alphabetical convention set by Smith (1910).

Lower Smoke Creek bed.—The Lower Smoke Creek bed, named by Arndt and Hardie (1985) after its stratigraphic relationship with the Smoke Creek bed, is one of the most continuous coal beds within the study area and underlies all but the westernmost and southernmost portions. It exceeds 5 ft in thickness in the central and north-central part of the study area (figs. 23, 24) and lies 30–50 ft below the Smoke Creek bed and 190–230 ft below the Lower Timber Coulee bed. The Lower Smoke Creek bed is poorly exposed in T. 32 N., R. 50 E., northeast of Bredette and in T. 31 N., R. 51 E., along Hay Creek.

Smoke Creek bed.—The Smoke Creek bed exceeds 8 ft in thickness in a very small area just north of the West Froid Road in the central part of the study area (figs. 25, 26) and lies 100–150 ft below the Lower Timber Coulee bed. It is well exposed in sec. 23, T. 31 N., R. 52 E., along the southern bank of the Smoke Creek after which the bed was named (Arndt and Hardie, 1985).

Reserve bed.—The Reserve bed was named after its area of occurrence near the town of Reserve (Arndt and Hardie, 1985) in the extreme northeastern corner of the study area (figs. 25, 26). In its very limited area of distribution, the Reserve bed is 1–5.5 ft thick and lies about 75–95 ft below the Lower Timber Coulee bed and 100–120 ft below the Upper Timber Coulee bed.

"C" bed.—The "C" bed of Smith (1910) is present in the study area, but due to its limited distribution and lenticular nature it does not have recovery potential, and therefore its resources were not calculated for this report.

Timber Coulee coal zone and "D" coal zone.—Coal beds that compose the Timber Coulee coal zone (Hardie and Van Gosen, 1986) and the "D" coal zone (Hardie and Arndt, in press b) are the thickest and most continuous in the study area, and they are overlain by the least amount of overburden. Therefore, the beds in these zones have the greatest mining potential (figs. 28, 30, 31). According to Hardie and Arndt (1988, in press a, b), both coal zones occupy the same stratigraphic position and may be equivalent. However, the exact relationship of the two zones is unclear due to the presence of an elongated east-west-trending, till-covered, erosional lowland in parts of Tps. 29 and 30 N., Rs. 53 and 54 E. According to Hardie and Arndt (1988, in press a, b), coal beds belonging to the "D" coal zone have been correlated northward to the southern margin of this lowland, where they have been eroded. Coal beds of the Timber Coulee coal zone can be correlated southward to the northern margin of the lowland, where they also have been eroded. Following the premise established by Hardie and Arndt (1988, in press a, b), these coal zones are treated as two distinct coal zones in this report.

"D" bed.—The "D" bed of Smith (1910) was found to occur in the southeastern corner of the study area immediately west of Big Muddy Creek where the bed occupies the same stratigraphic position as the Lower Timber Coulee bed (figs. 27, 28; Hardie and Arndt, 1988, in press a, b). It is one of the thicker beds encountered in the study area and exceeds 10 ft in small areas east and northwest of the town of Fort Kipp. In the western part of

qTps. 28 and 29 N., Rs. 53 and 54 E., the "D" bed is well exposed in outcrop. It was mined commercially at the Alton mine near Fort Kipp north of U.S. Highway 2 until the abandonment of the mine in 1952 (Henkes and Magill, 1970). The "D" bed was targeted (IntraSearch Mine, Engineering, and Planning, 1979) for the Fort Peck Indians in the Fort Kipp area where it was referred to as the Fort Kipp seam, but the planned Fort Kipp coal mine was never developed.

"D" Rider bed.—The "D" Rider bed was named for its stratigraphic relationship with the "D" bed (Arndt and Hardie, 1985); it lies less than 10 to more than 40 ft above the "D" bed (fig. 31). Like the "D" bed, the "D" Rider occurs in the southeastern corner of the study area immediately west of Big Muddy Creek and is exposed in outcrop in the western part of Tps. 28 and 29 N., Rs. 53 and 54 E. (fig. 29). The "D" Rider bed occupies the same stratigraphic position as the Upper Timber Coulee bed and is 1.5–8.8 ft thick under less than 200 ft of overburden (fig. 30). This bed was also targeted for mining (IntraSearch Mine, Engineering, and Planning, 1979) and was referred to as the Fort Peck seam, but it was never developed.

The Timber Coulee coal zone consists of five coal beds including the Timber Coulee bed, its upper and lower splits (the Upper Timber Coulee and the Lower Timber Coulee, respectively), and the Timber Coulee Rider and Timber Coulee Leader (fig. 32). The Timber Coulee coal bed splits into the Upper Timber Coulee and the Lower Timber Coulee where the thickness of the noncoal material in the coal bed exceeds the thickness of the coal in either the underlying or overlying beds. Resources were not calculated for the Timber Coulee Rider and Timber Coulee Leader beds because of their limited distribution and thickness. The Timber Coulee Leader, the lowest bed of the Timber Coulee coal zone, is distributed widely over an area roughly equal to that underlain by the Upper Timber Coulee but is less than 2.5 ft thick in most of its area of occurrence. The uppermost coal bed in the Timber Coulee coal zone, the Timber Coulee Rider, is less than 2.5 ft thick in most of its limited area of occurrence, which roughly equals the area underlain by the Timber Coulee bed.

Lower Timber Coulee bed.—The Lower Timber Coulee bed exceeds 6 ft in thickness in the north-central part of the study area (figs. 27, 28). It lies 125–140 ft below the Local "R" bed. This bed was commercially mined along Coal Mine Coulee, where-after it ignited and extensively burned. The interburden that separates the Upper and Lower Timber Coulee coal beds thickens progressively with distance from the point of merger of the two beds into the Timber Coulee, to more than 30 ft (fig. 31).

Timber Coulee bed.—The Timber Coulee bed was named after its exposures along the banks of Timber Coulee, a northeast-trending drainage that joins Wolf Creek in sec. 14, T. 32 N., R. 54 E. (Colton, 1962). This bed ranges in measured thickness from 8.2 to 12.8 ft. In the eastern area of its occurrence, the Timber Coulee bed is well exposed in outcrop. This bed was commercially mined along Coal Mine Coulee, Timber Coulee, and Wolf Creek west of the town of Medicine Lake at the Wolf Creek mine in sec. 22, T. 32 N., R. 54 E. (figs. 29, 30), in the 1940's and early 1950's. Between 3,000 and 5,000 tons of coal were removed prior to 1952. In 1954 about 600 tons of coal were mined; however, the operation soon was closed down by trespass litigation because the mineral rights belong to the Fort Peck Indian Reservation. In 1955 the Medicine Lake Coal Co. began operations, which resulted in the production of about 10,000 tons of coal by 1959. There was no activity at the property between 1960 and 1970 (Henkes and Magill, 1970).

Upper Timber Coulee.—The upper split of the Timber Coulee bed, the Upper Timber Coulee bed, exceeds 13 ft in thickness in the northern part of its area of occurrence (figs. 29, 30). In the northeastern portion of the study area, the bed lies 75–120 ft below the Local "R" bed.

Local "R" bed.—The coal bed that occupies the highest stratigraphic position in the study area, the Local "R" bed, is 1–5 ft thick in a relatively limited area of distribution in the northeastern corner of the study area (figs. 21, 22). The bed is poorly exposed along Otter Creek a few miles west of the town of Reserve. The name, Local "R," was derived from its local distribution and from the first letter in Reserve (Arndt and Hardie, 1985).

In general, mining on the reservation has been short-lived commercially and limited primarily to house coal used by local residents. The mined areas were not excluded from the resource calculation in this report because they are very small and the mines never stayed open for long periods; hence, only minor amounts of the available coal were removed.

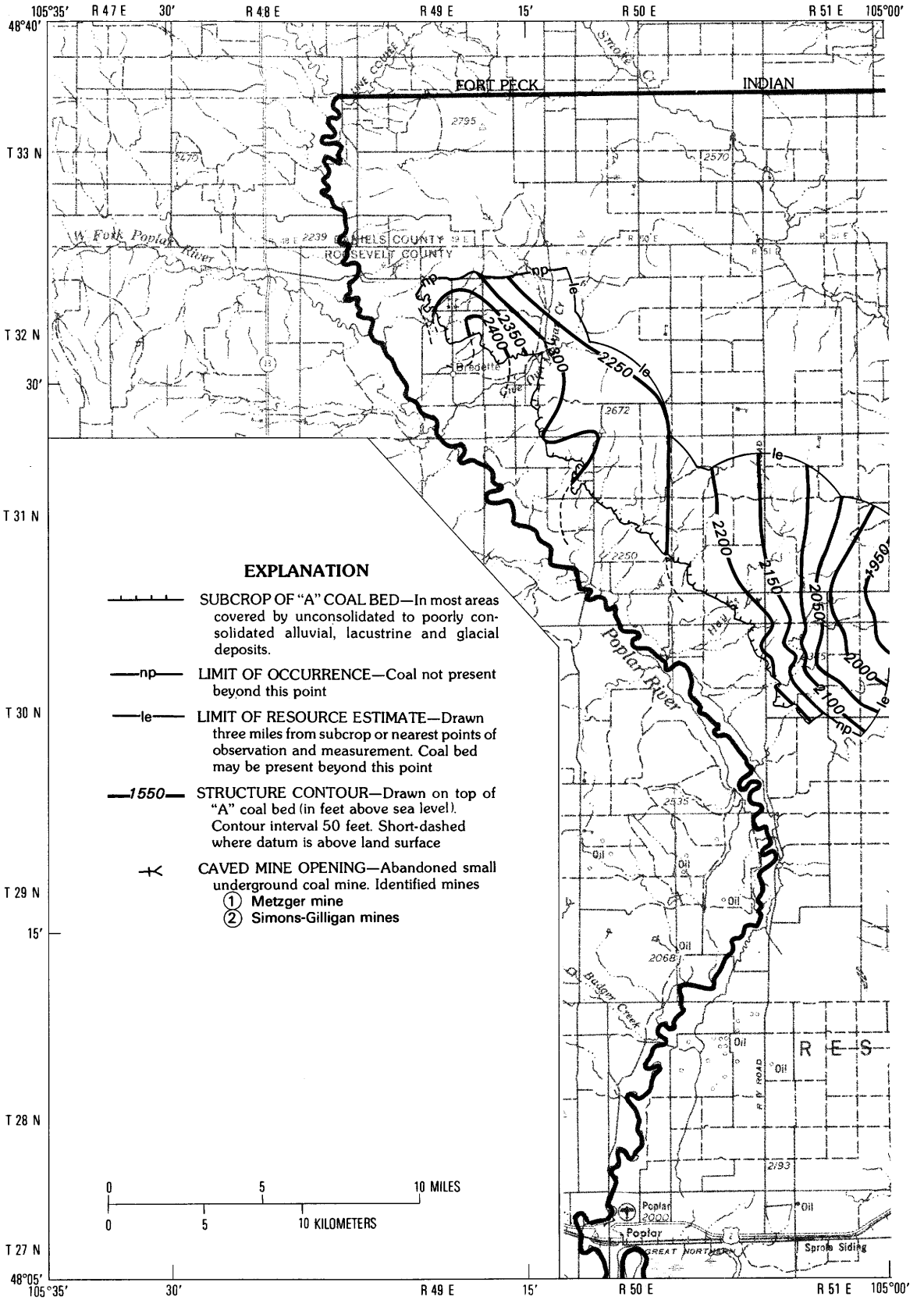
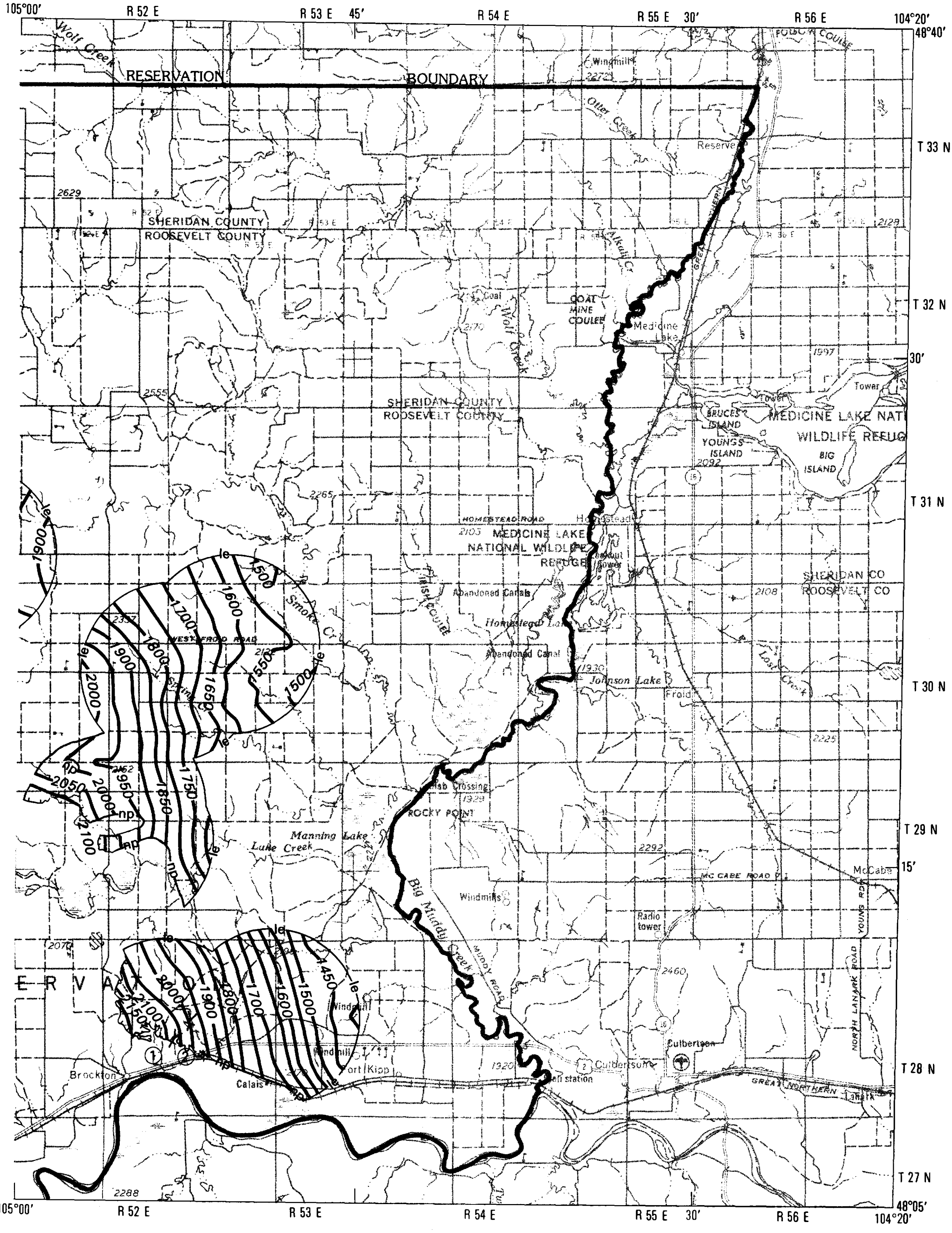


Figure 11 (above and facing page). Occurrence and structure of the "A" coal bed, Fort Peck Indian Reservation.


105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
RESERVATION
BOUNDARY
Wolf Creek
Otter Creek
Reserve
T 33 N
SHERIDAN COUNTY
ROOSEVELT COUNTY
T 32 N
COAL MINE COULEE
Medicine Lake
30′
SHERIDAN COUNTY
ROOSEVELT COUNTY
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
BRUCES ISLAND
YOUNGS ISLAND
BIG ISLAND
T 31 N
HOMESTEAD ROAD
Homestead
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
SHERIDAN CO
ROOSEVELT CO
Abandoned Canals
Homestead Lake
Abandoned Canal
WEST FROID ROAD
Smoke Cr
Johnson Lake
Froid
Lost Creek
T 30 N
Hub Crossing
ROCKY POINT
Manning Lake
Lake Creek
T 29 N
MC CABE ROAD
McCabe
15′
Big Muddy Creek
MUDDY ROAD
Windmills
Radio tower
YOUNG ROAD
NORTH LANARK ROAD
Culbertson
Brockton
Calais
Fort Kipp
T 28 N
GREAT NORTHERN
Lanark
T 27 N
105°00′
R 52 E
R 53 E
R 54 E
R 55 E
30′
R 56 E
48°05′
104°20′

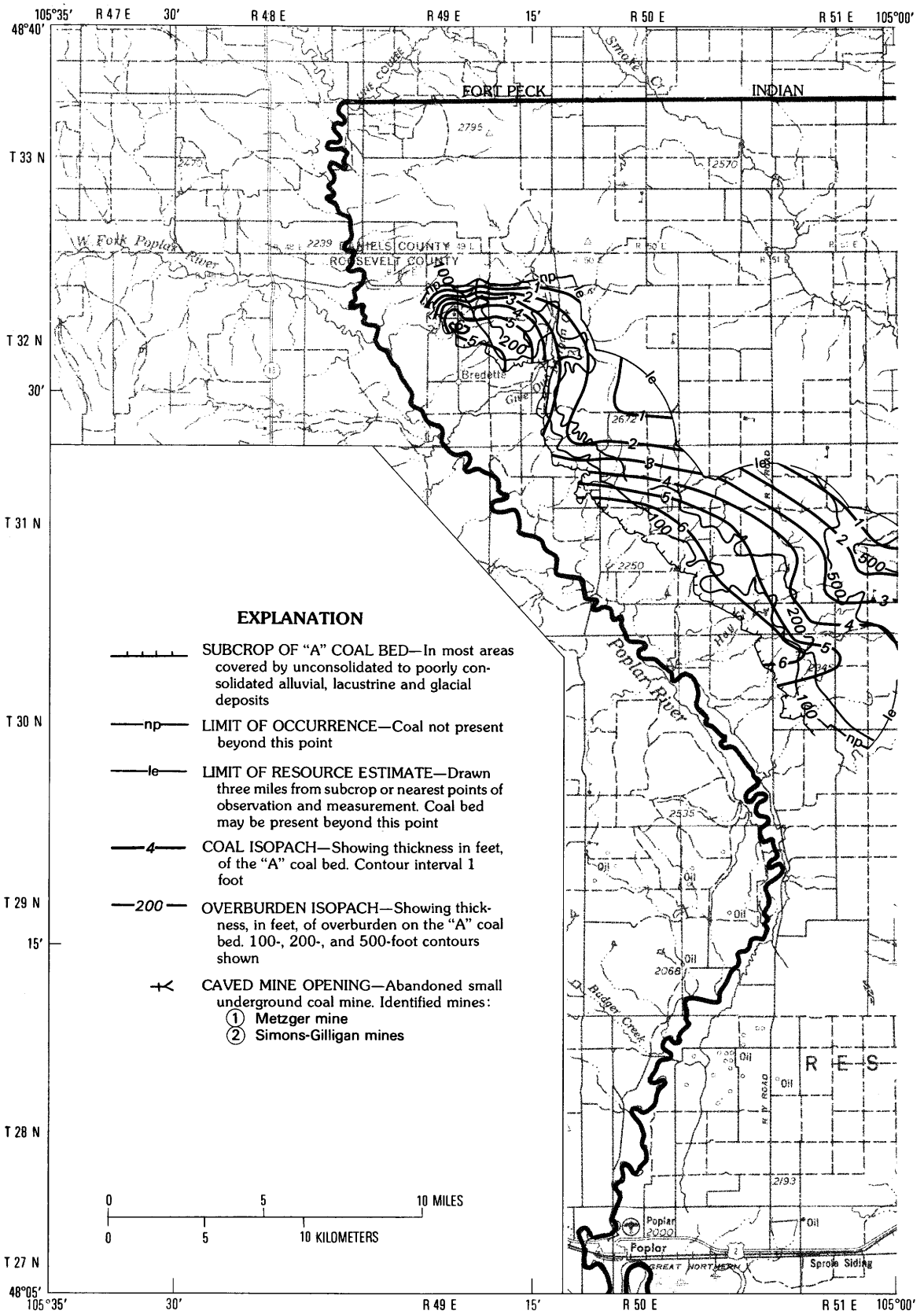
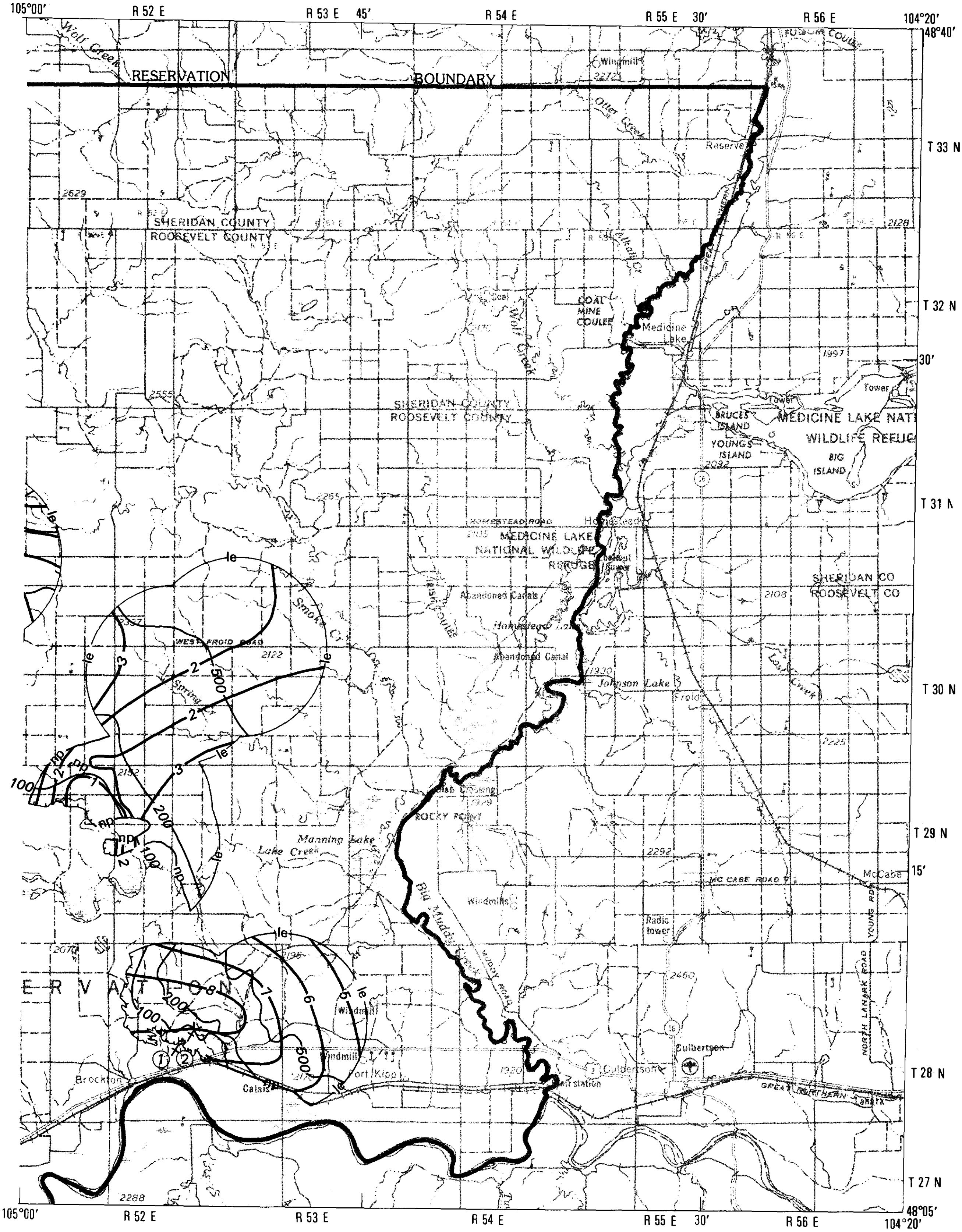


Figure 12 (above and facing page). Isopach of coal and overburden of the "A" coal bed, Fort Peck Indian Reservation.


105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
RESERVATION
BOUNDARY
Wolf Creek
Otter Creek
Reserve
T 33 N
SHERIDAN COUNTY
ROOSEVELT COUNTY
T 32 N
COAL MINE COULEE
Medicine Lake
30′
SHERIDAN COUNTY
ROOSEVELT COUNTY
MEDICINE LAKE NAT
WILDLIFE REFUG
BRUCES ISLAND
YOUNGS ISLAND
BIG ISLAND
T 31 N
HOMESTEAD ROAD
Homestead
MEDICINE LAKE
NATIONAL WILDLIFE
REFUGE
SHERIDAN CO
ROOSEVELT CO
WEST FROID ROAD
Smoke Cr
Spring Cr
Abandoned Canals
Homestead Lake
Abandoned Canal
Johnson Lake
Froid
T 30 N
ROCKY POINT
Manning Lake
Lake Creek
T 29 N
Big Muddy Creek
MC CABE ROAD
McCabe
15′
Windmills
Radio tower
Culbertson
T 28 N
Brockton
Calais
GREAT NORTHERN
T 27 N
105°00′
R 52 E
R 53 E
R 54 E
R 55 E
30′
R 56 E
48°05′
104°20′

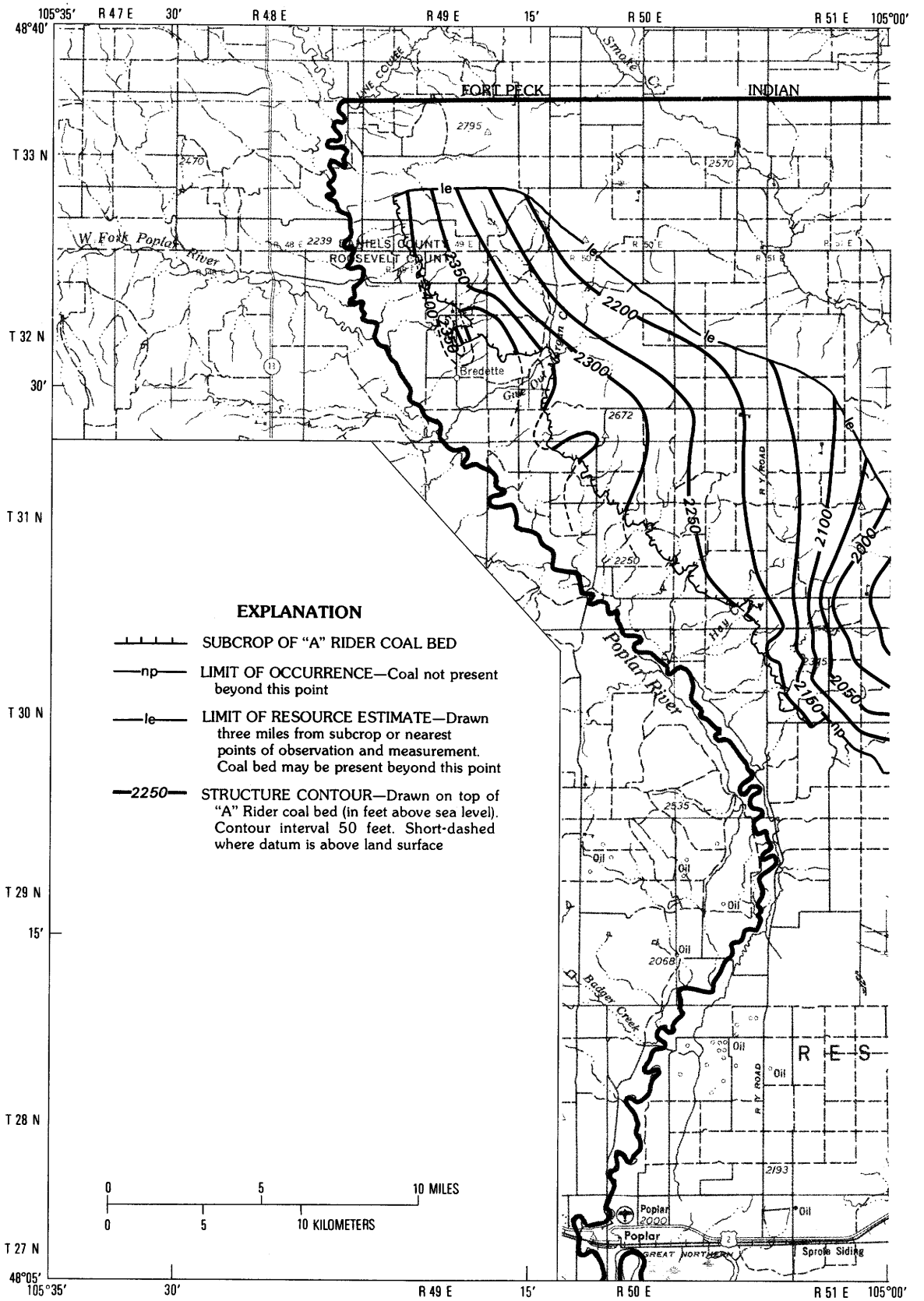
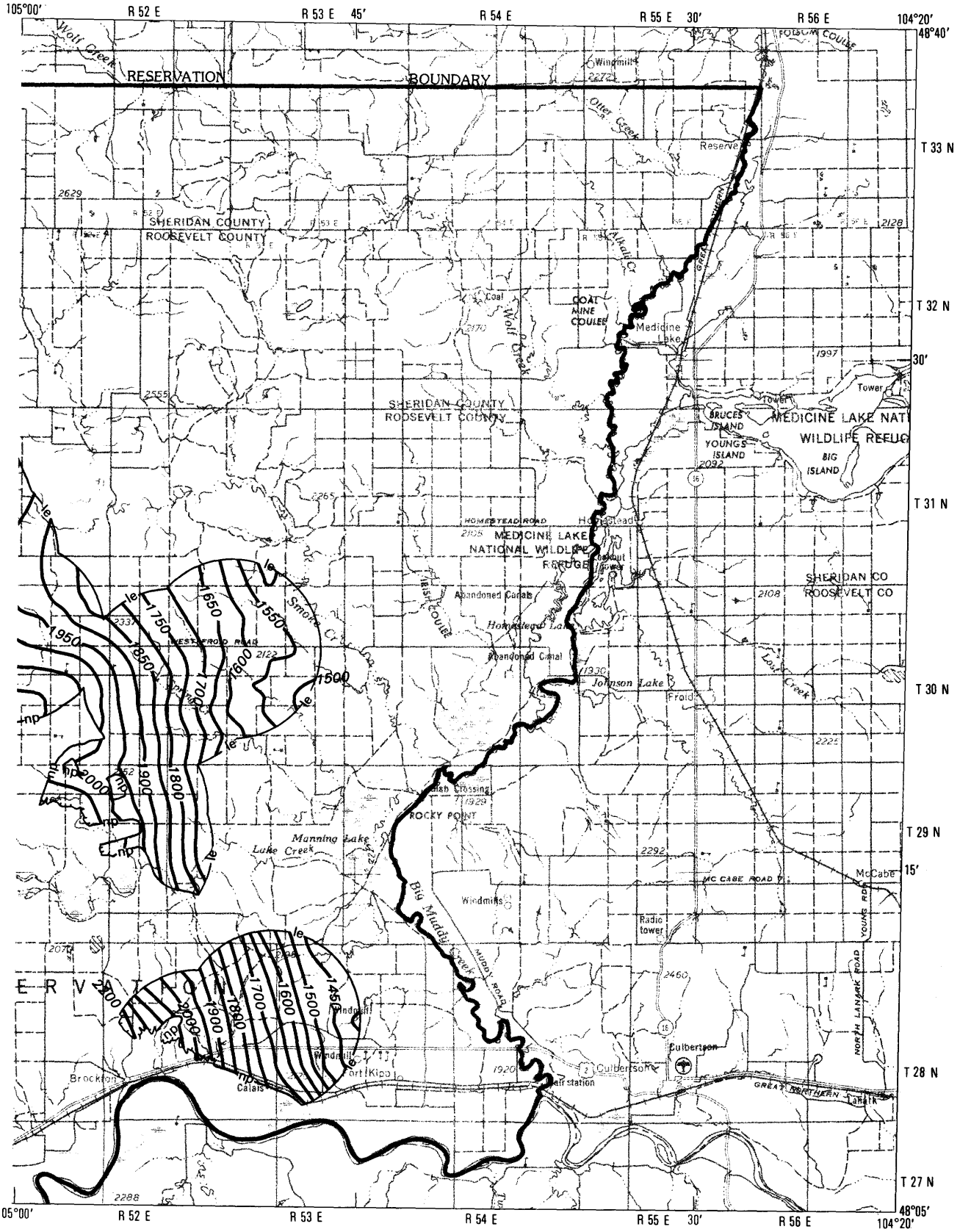


Figure 13 (above and facing page). Occurrence and structure of the "A" Rider coal bed, Fort Peck Indian Reservation.


105°00'
R 52 E
R 53 E 45'
R 54 E
R 55 E 30'
R 56 E
104°20'
48°40'
RESERVATION BOUNDARY
Wolf Creek
Windmill
Otter Creek
Reserve
T 33 N
SHERIDAN COUNTY
ROOSEVELT COUNTY
Coal
GOAT MINE COULEE
Medicine Lake
Wolf Creek
T 32 N
30'
Tower
BRUCES ISLAND
YOUNGS ISLAND
MEDICINE LAKE NATL WILDLIFE REFUG
BIG ISLAND
T 31 N
HOMESTEAD ROAD
Homestead
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
Abandoned Canals
FIRST COULEE
Abandoned Canal
Johnson Lake
Froid
SHERIDAN CO
ROOSEVELT CO
T 30 N
Lost Creek
Flash Crossing
ROCKY POINT
Manning Lake
Lake Creek
Big Muddy Creek
MUDDY ROAD
MC CABE ROAD
McCabe
YOUNG'S ROAD
Windmills
Radio tower
T 29 N
15'
NORTH LANARK ROAD
Culbertson
Brockton
Fort Kipp
Calais
Rail station
GREAT NORTHERN Railway
T 28 N
T 27 N
105°00'
R 52 E
R 53 E
R 54 E
R 55 E 30'
R 56 E
104°20'
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le
np
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1750
1650
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1500
1600
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1900
2000
2100
1450

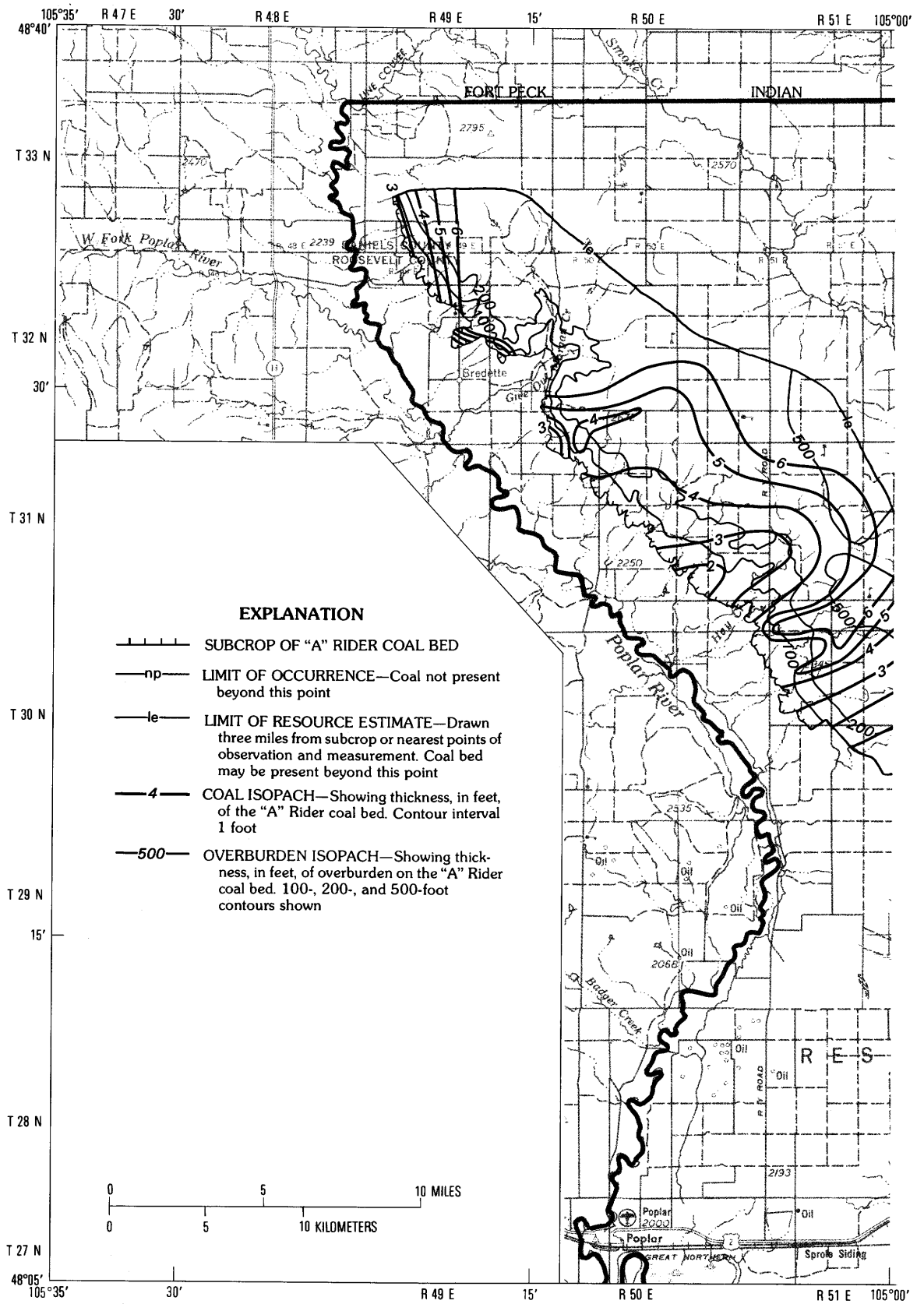
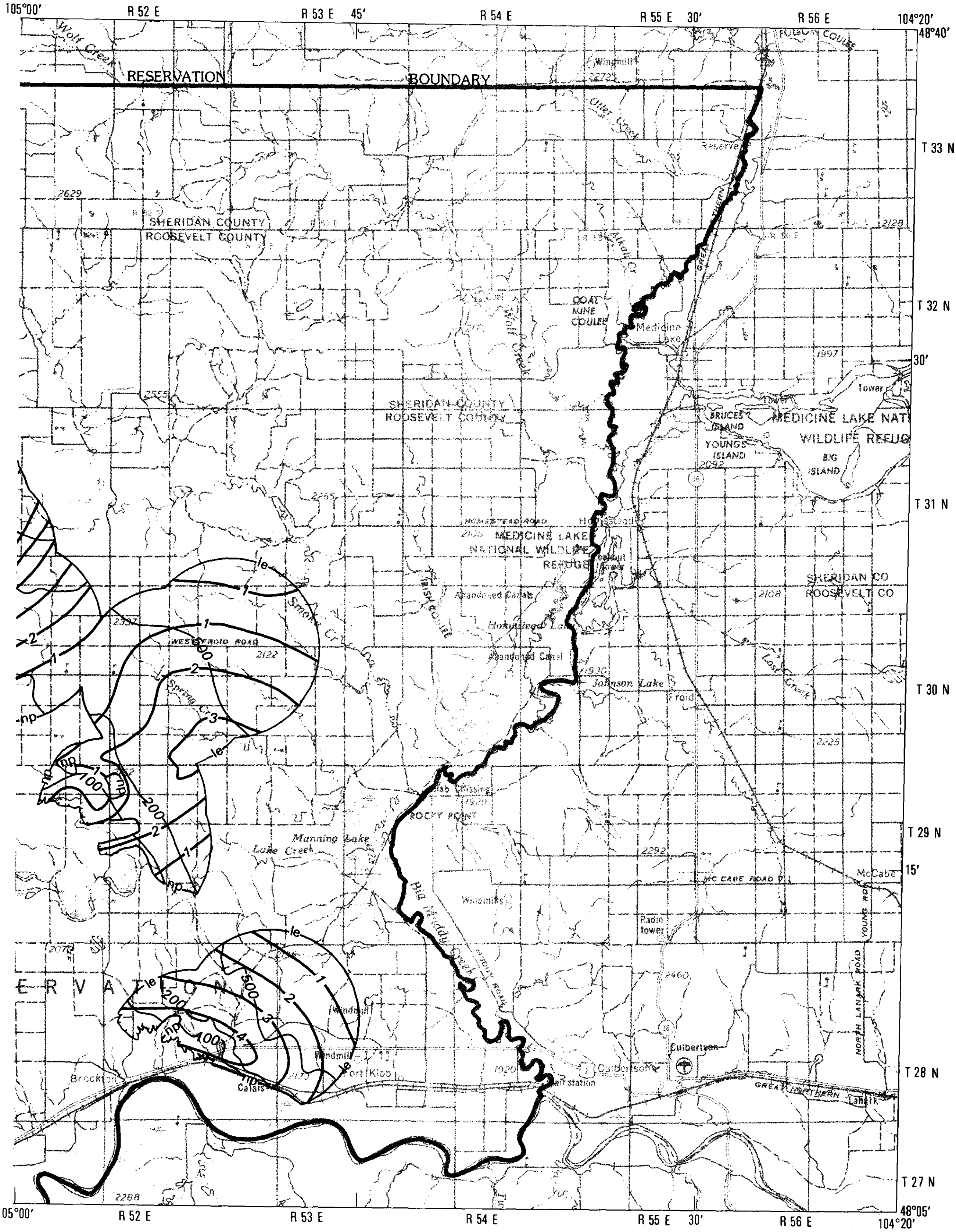


Figure 14 (above and facing page). Isopach of coal and overburden of the "A" Rider coal bed, Fort Peck Indian Reservation.



105°00'
R 52 E
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R 54 E
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30'
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104°20'
48°40'
RESERVATION
BOUNDARY
T 33 N
SHERIDAN COUNTY
ROOSEVELT COUNTY
T 32 N
30'
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
SHERIDAN COUNTY
ROOSEVELT COUNTY
T 31 N
SHERIDAN CO
ROOSEVELT CO
T 30 N
T 29 N
15'
T 28 N
T 27 N
48°05'
104°20'
105°00'
R 52 E
R 53 E
R 54 E
R 55 E
30'
R 56 E
Medicine Lake
Froid
Culbertson
McCabe
Brockton
Lanark
Johnson Lake
Homestead
Reserve
Big Muddy Creek

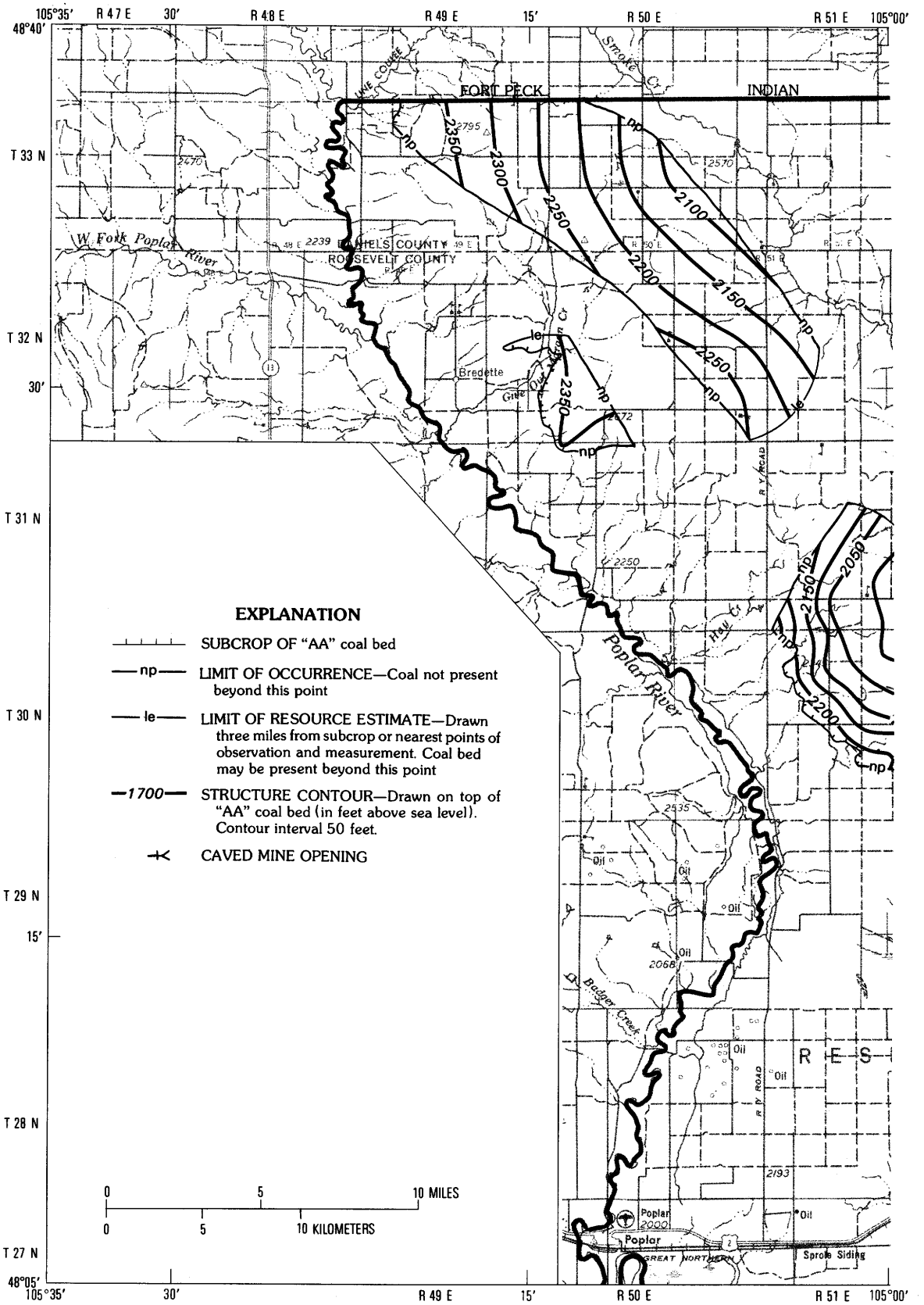
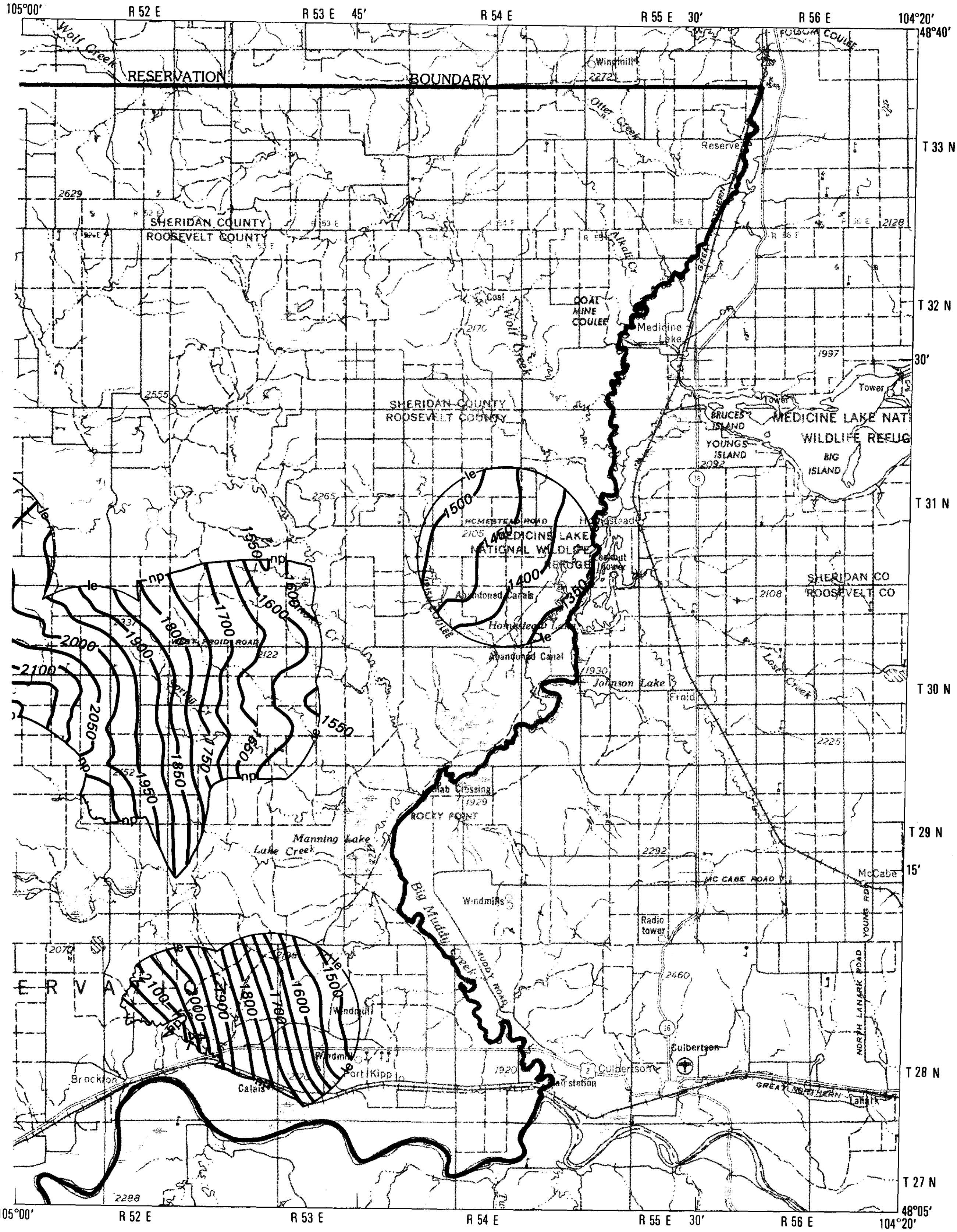


Figure 15 (above and facing page). Occurrence and structure of the "AA" coal bed, Fort Peck Indian Reservation.


105°00'
R 52 E
R 53 E 45'
R 54 E
R 55 E 30'
R 56 E
104°20'
48°40'
RESERVATION
BOUNDARY
T 33 N
T 32 N
30'
T 31 N
T 30 N
T 29 N
15'
T 28 N
T 27 N
48°05'
SHERIDAN COUNTY
ROOSEVELT COUNTY
Medicine Lake
MEDICINE LAKE NAT
WILDLIFE REFUG
Homestead
Froid
Johnson Lake
Culbertson
Brockton
Calais
Fort Kipp
McCabe
Big Muddy Creek
ROCKY POINT
Manning Lake
Lake Creek
Wolf Creek
Reserve
COAL MINE COULEE
SHERIDAN CO
ROOSEVELT CO
MC CABE ROAD
Radio tower
Windmills
Abandoned Canal
Abandoned Canals
1400
1500
1550
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1700
1750
1800
1850
1900
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2000
2050
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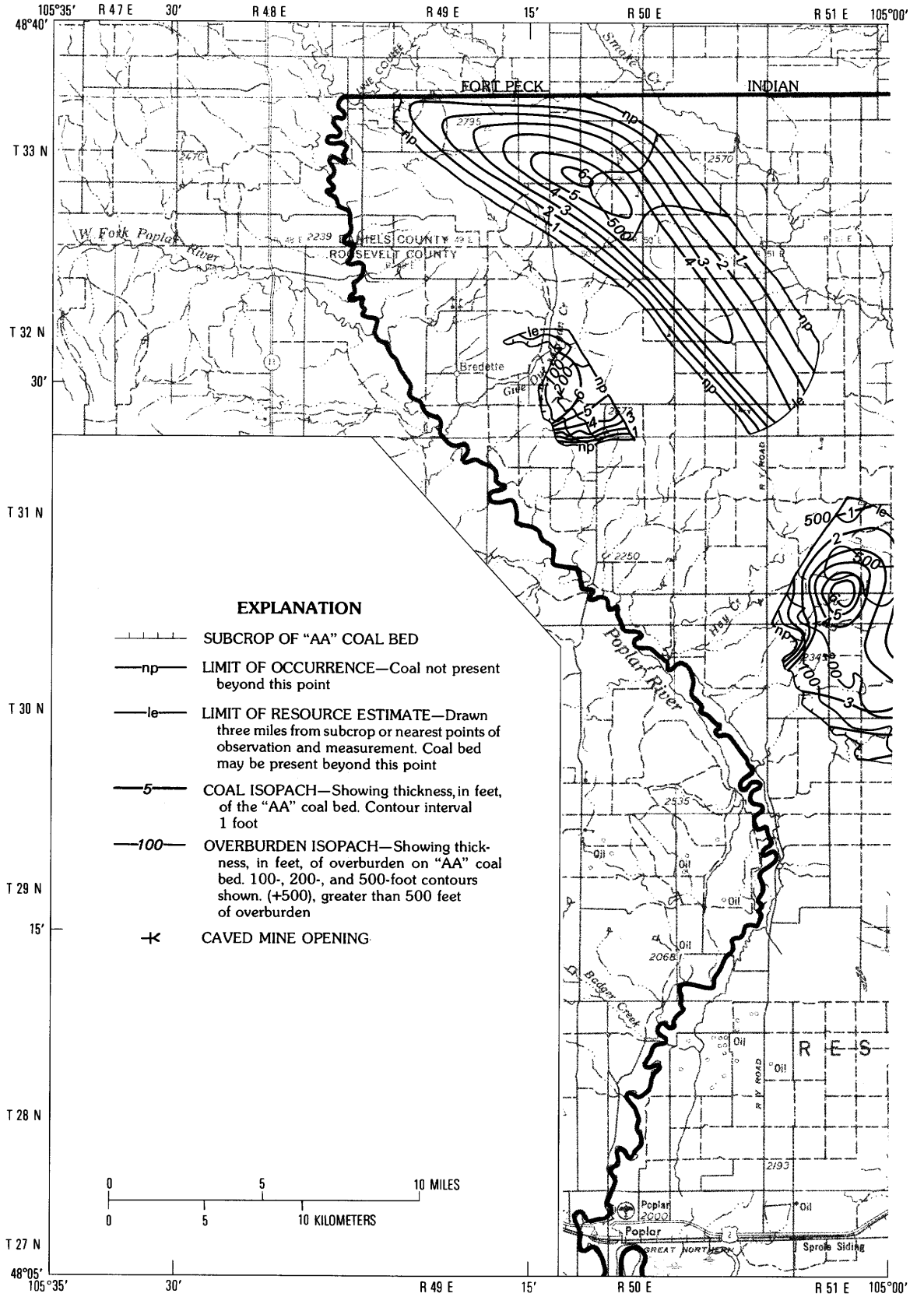
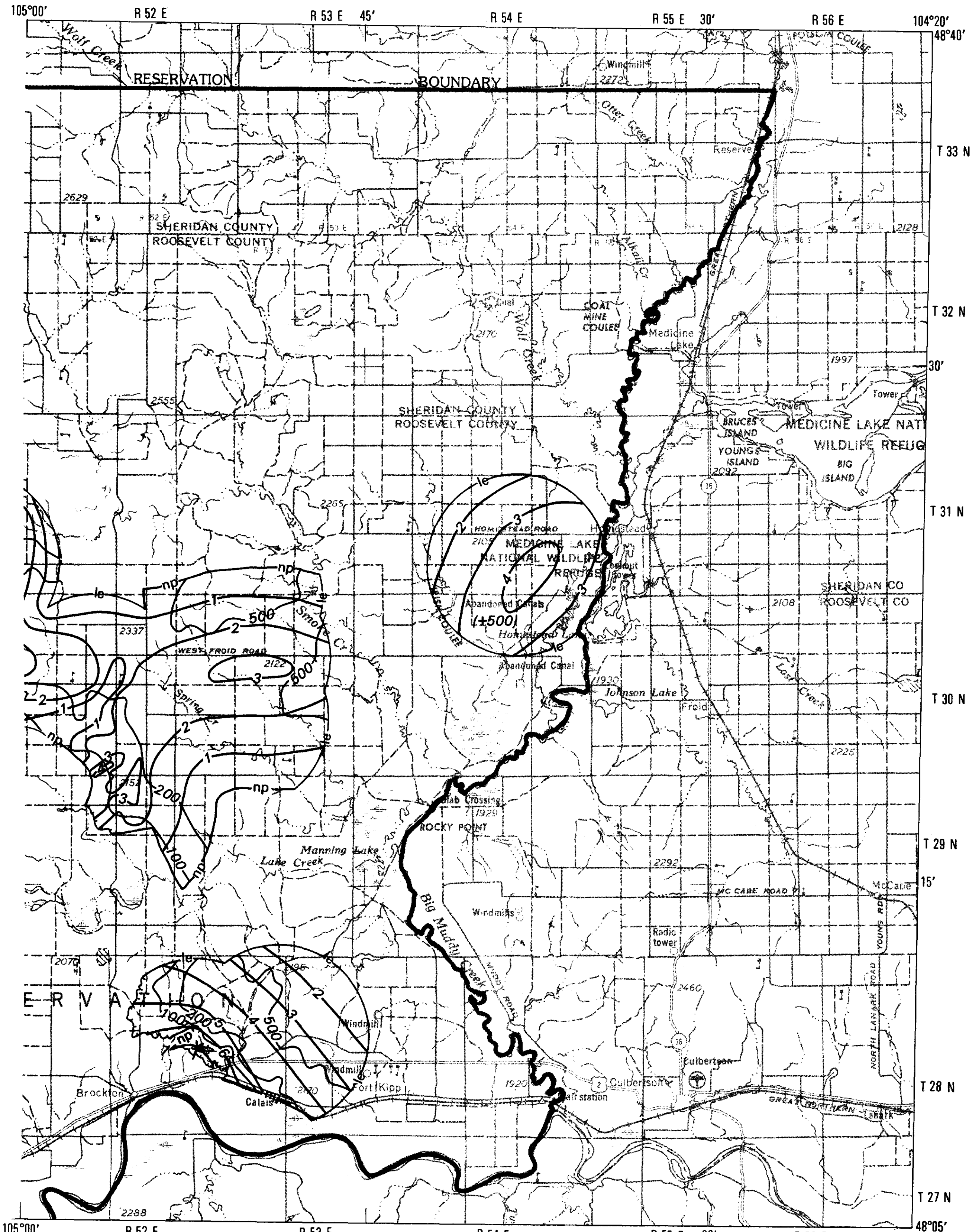


Figure 16 (above and facing page). Isopach of coal and overburden of the "AA" coal bed, Fort Peck Indian Reservation.


105°00'
R 52 E
R 53 E
45'
R 54 E
R 55 E
30'
R 56 E
104°20'
48°40'
RESERVATION
BOUNDARY
Wolf Creek
Windmill
2272
Otter Creek
Reserve
T 33 N
2629
SHERIDAN COUNTY
ROOSEVELT COUNTY
Alkali Cr
2128
COAL
MINE
COULEE
Coal
2170
Wolf Creek
Medicine Lake
T 32 N
1997
30'
Tower
2555
SHERIDAN COUNTY
ROOSEVELT COUNTY
BRUCES ISLAND
YOUNGS ISLAND
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
BIG ISLAND
2092
2265
HOMESTEAD ROAD
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
Homestead
T 31 N
Abandoned Canals
(±500)
Homestead L.
SHERIDAN CO
ROOSEVELT CO
2108
2337
WEST FROID ROAD
2122
Smoke Cr
Spring Cr
Abandoned Canal
Johnson Lake
Froid
Lost Creek
T 30 N
2225
Slab Crossing
1929
ROCKY POINT
Manning Lake
Lake Creek
T 29 N
2292
MC CABE ROAD
McCabe
15'
Windmills
Radio tower
Big Muddy Creek
2070
R V A T I O N
2460
Windmill
Culbertson
Windmill
Fort Kipp
2170
1920
Culbertson
Brockton
Calais
Air station
GREAT NORTHERN
Lanark
T 28 N
T 27 N
2288
105°00'
R 52 E
R 53 E
R 54 E
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30'
R 56 E
48°05'
104°20'

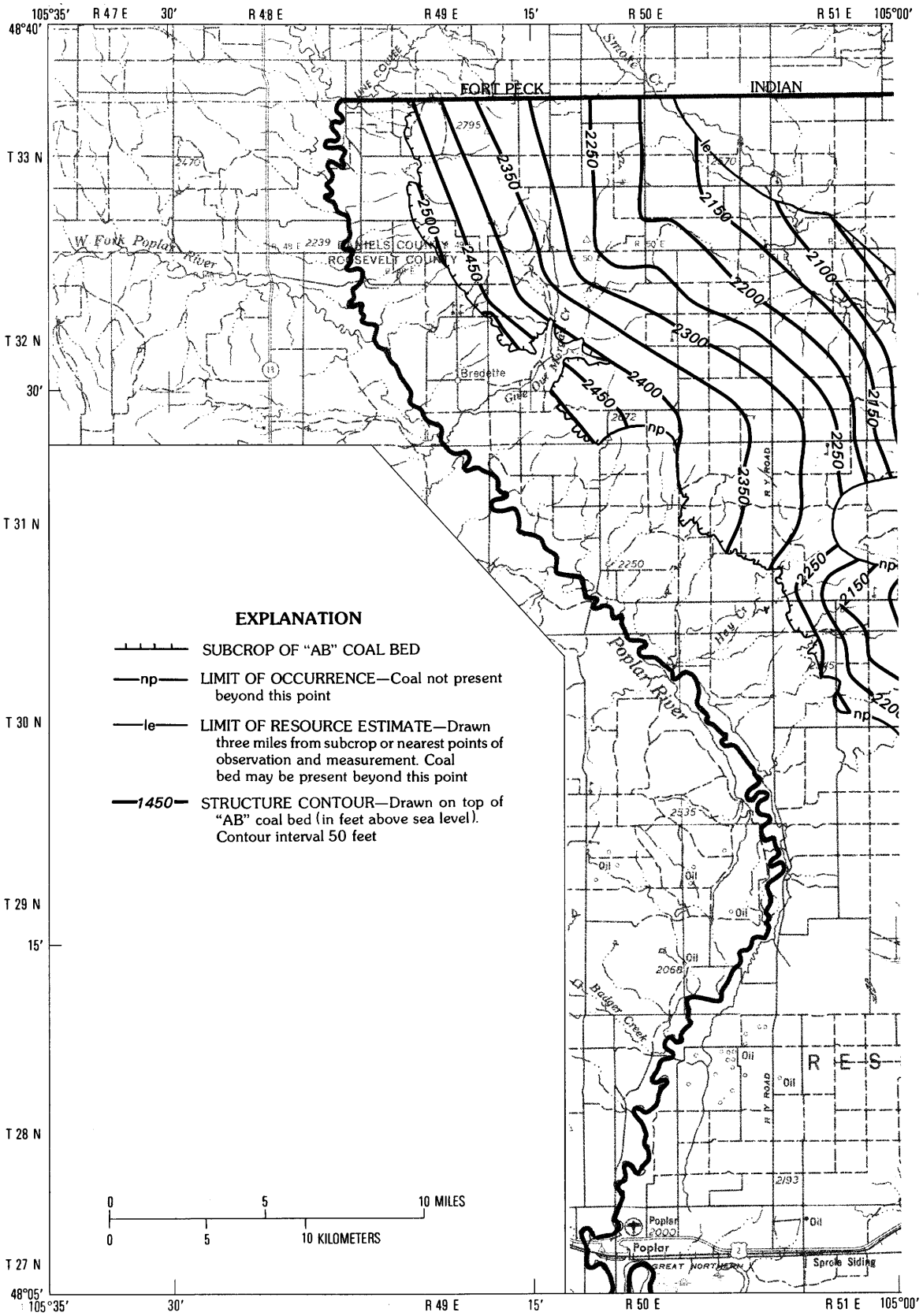
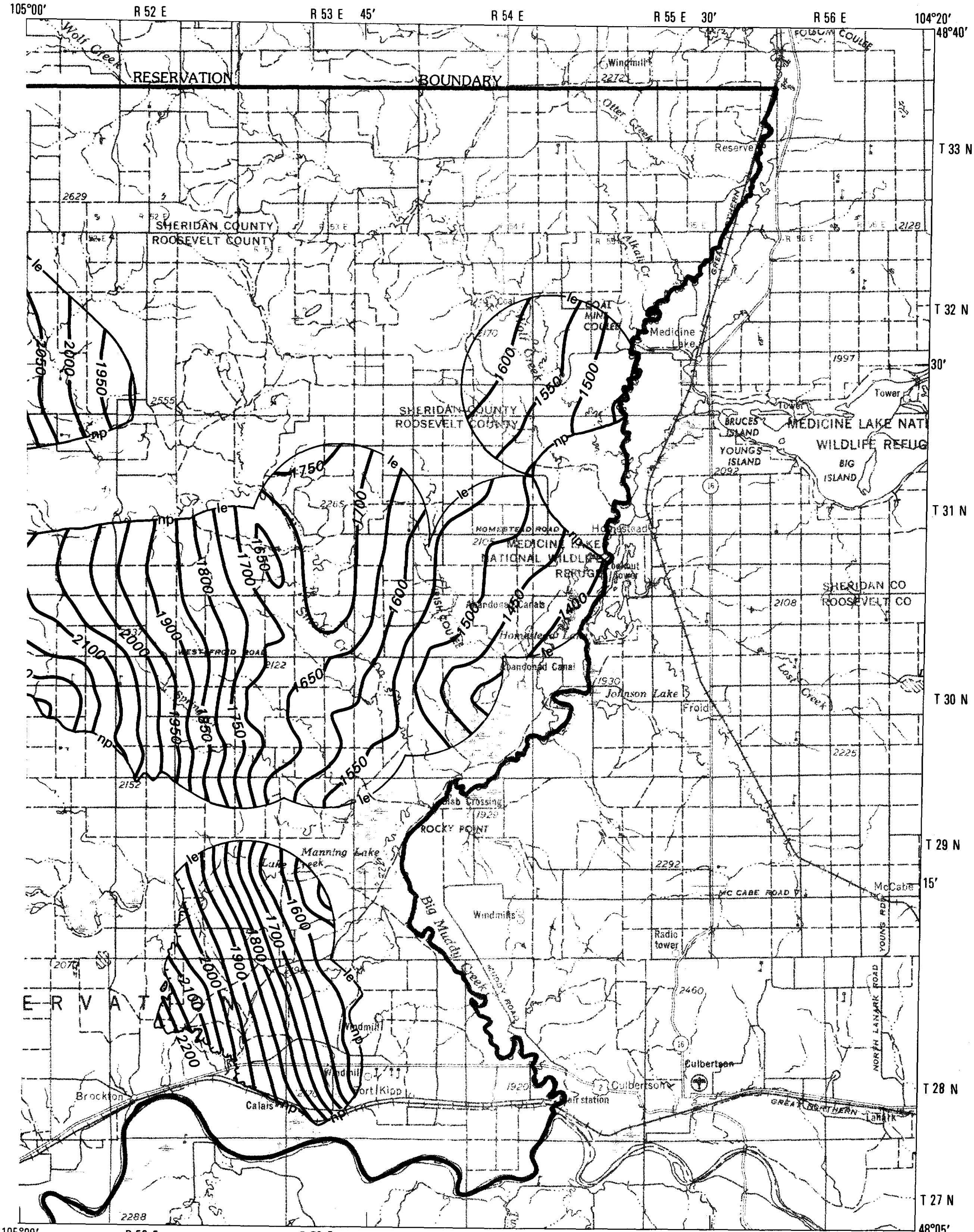


Figure 17 (above and facing page). Occurrence and structure of the "AB" coal bed, Fort Peck Indian Reservation.


105°00'
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R 55 E
30'
R 56 E
104°20'
48°40'
RESERVATION
BOUNDARY
T 33 N
T 32 N
30'
T 31 N
T 30 N
T 29 N
15'
T 28 N
T 27 N
48°05'
SHERIDAN COUNTY
ROOSEVELT COUNTY
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
Medicine Lake
Reserve
Homestead
Johnson Lake
Froid
Bisb Crossing
ROCKY POINT
Manning Lake
Big Muddy Creek
Culbertson
Brockton
Calais
Fort Kipp
McCabe
Lanark
SHERIDAN CO
ROOSEVELT CO
Wolf Creek
Otter Creek
Lost Creek
Abandoned Canal
Windmill
Radio tower
Tower
GOAT MINE COULEE
FOLSOM COULEE
BRUCES ISLAND
YOUNGS ISLAND
BIG ISLAND
HOMESTEAD ROAD
WEST FROID ROAD
MC CABE ROAD
NORTH LANARK ROAD
GREAT NORTHERN
1400
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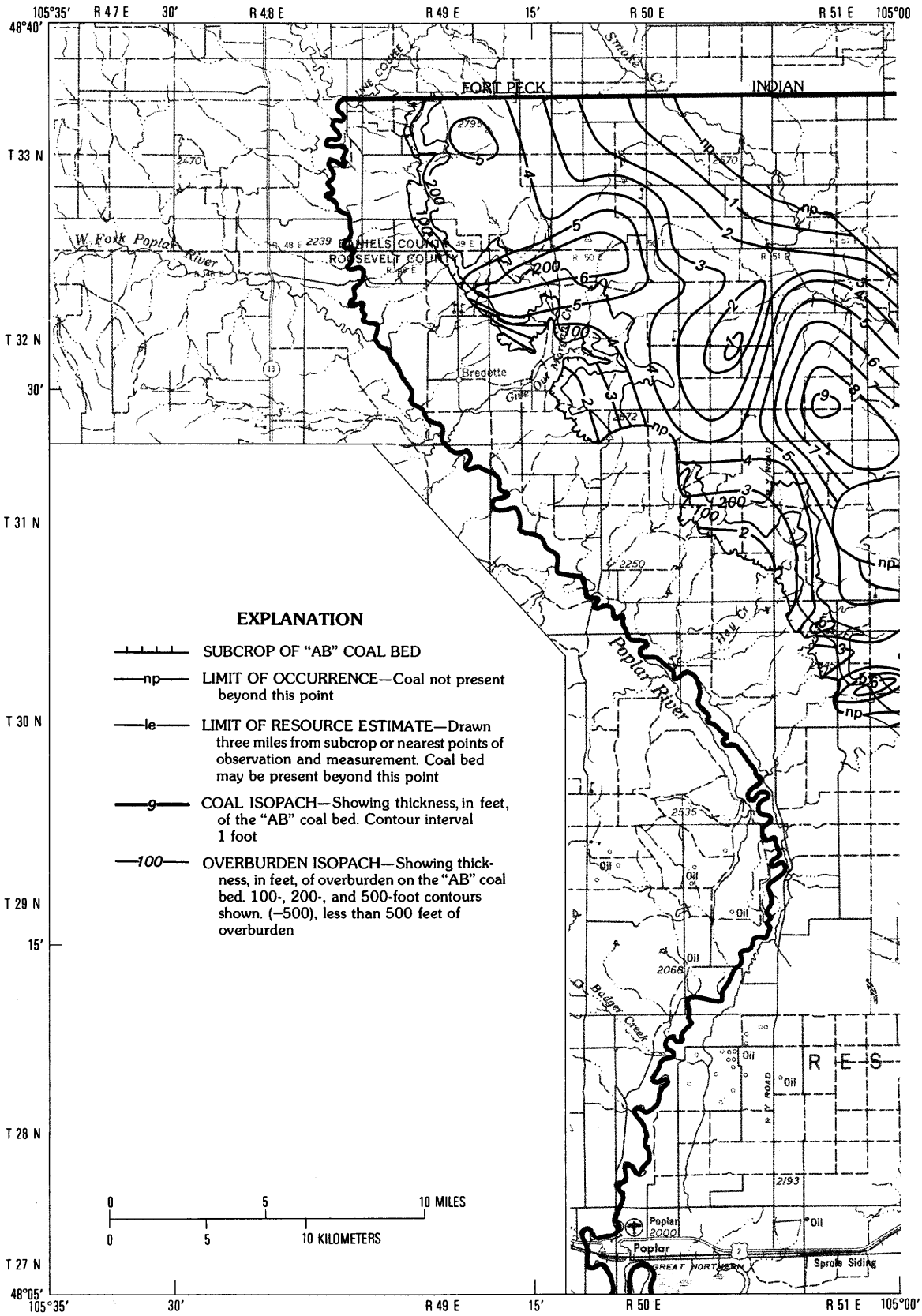
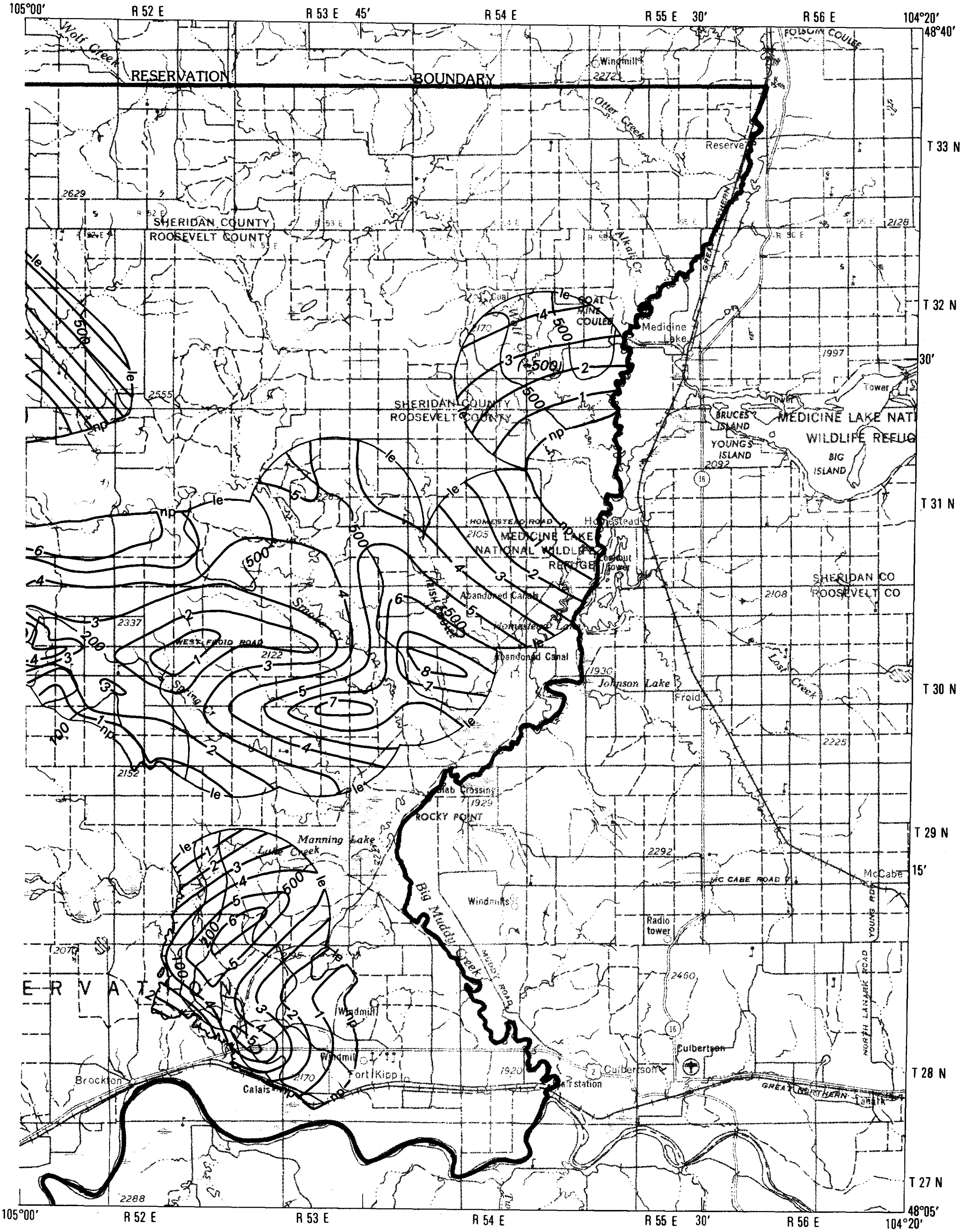


Figure 18. (above and facing page). Isopach of coal and overburden of the "AB" coal bed, Fort Peck Indian Reservation.


105°00'
R 52 E
R 53 E
45'
R 54 E
R 55 E
30'
R 56 E
104°20'
48°40'
RESERVATION
BOUNDARY
Wolf Creek
Otter Creek
Windmill
Reserve
T 33 N
SHERIDAN COUNTY
ROOSEVELT COUNTY
Alkali Cr
T 32 N
COAL MINE COULEE
Medicine Lake
30'
Tower
BRUCES ISLAND
YOUNGS ISLAND
MEDICINE LAKE NAT
WILDLIFE REFUG
BIG ISLAND
T 31 N
HOMESTEAD ROAD
Homestead
MEDICINE LAKE
NATIONAL WILDLIFE
REFUGE
Lookout tower
SHERIDAN CO
ROOSEVELT CO
Abandoned Canal
WEST FROID ROAD
Spring Cr
Johnson Lake
Froid
Lost Creek
T 30 N
Rocky Point
Manning Lake
Lake Creek
T 29 N
McCabe
15'
MC CABE ROAD
YOUNG ROAD
Windmills
Radio tower
Big Muddy Creek
MUDDY ROAD
NORTH LANARK ROAD
E R V A T I O N
Windmill
Culbertson
Fort Kipp
Brockton
Calais
T 28 N
GREAT NORTHERN
Lanark
T 27 N
105°00'
R 52 E
R 53 E
R 54 E
R 55 E
30'
R 56 E
48°05'
104°20'

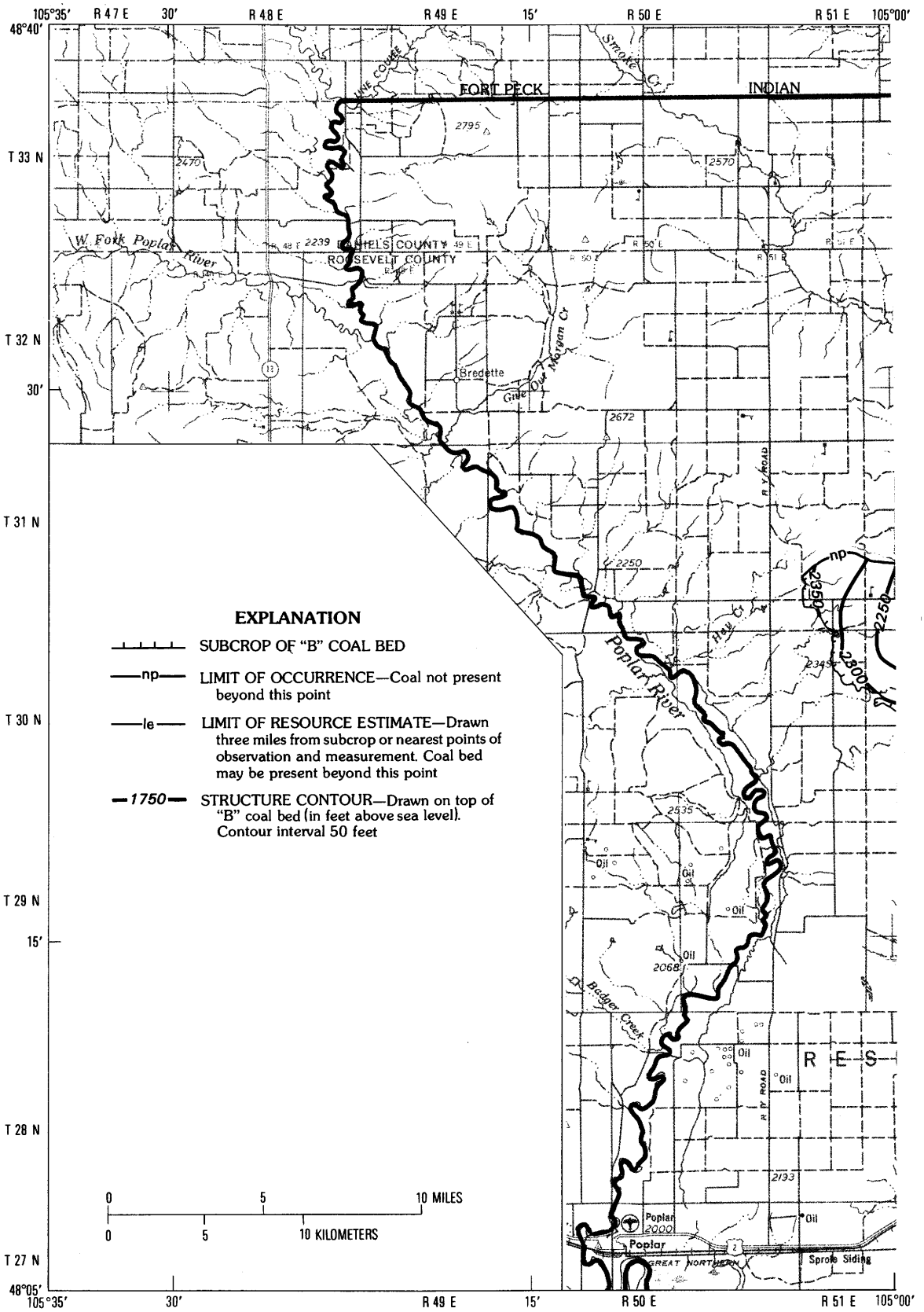
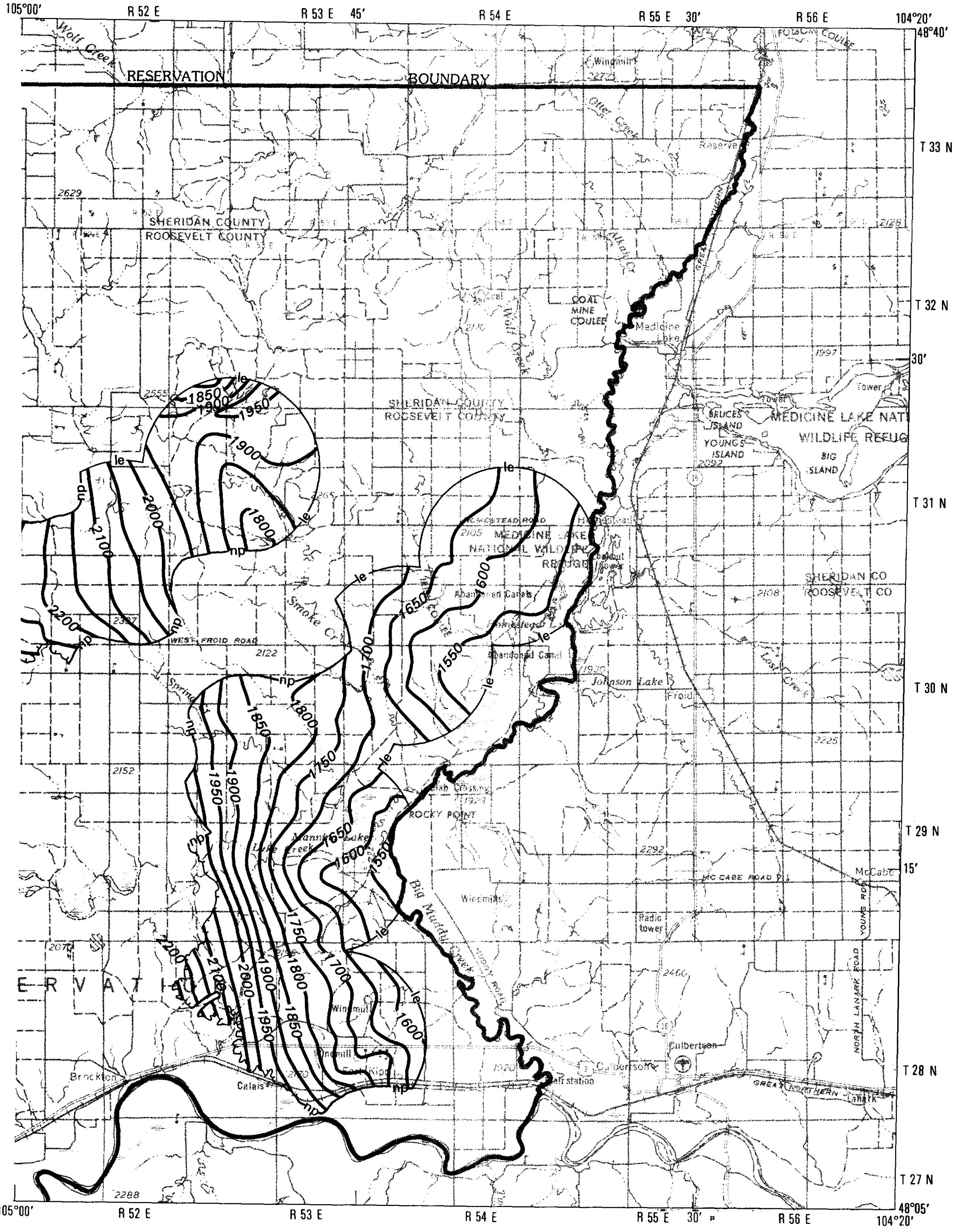


Figure 19 (above and facing page). Occurrence and structure of the "B" coal bed, Fort Peck Indian Reservation.


105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
RESERVATION
BOUNDARY
T 33 N
SHERIDAN COUNTY
ROOSEVELT COUNTY
T 32 N
COAL MINE COULEE
Medicine Lake
30′
MEDICINE LAKE NAT
WILDLIFE REFUG
T 31 N
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
SHERIDAN CO
ROOSEVELT CO
WEST FROID ROAD
Johnson Lake
Froid
T 30 N
ROCKY POINT
T 29 N
15′
McCabe
Big Muddy Creek
Culbertson
Brockton
Calais
T 28 N
T 27 N
105°00′
R 52 E
R 53 E
R 54 E
R 55 E
30′
R 56 E
48°05′
104°20′

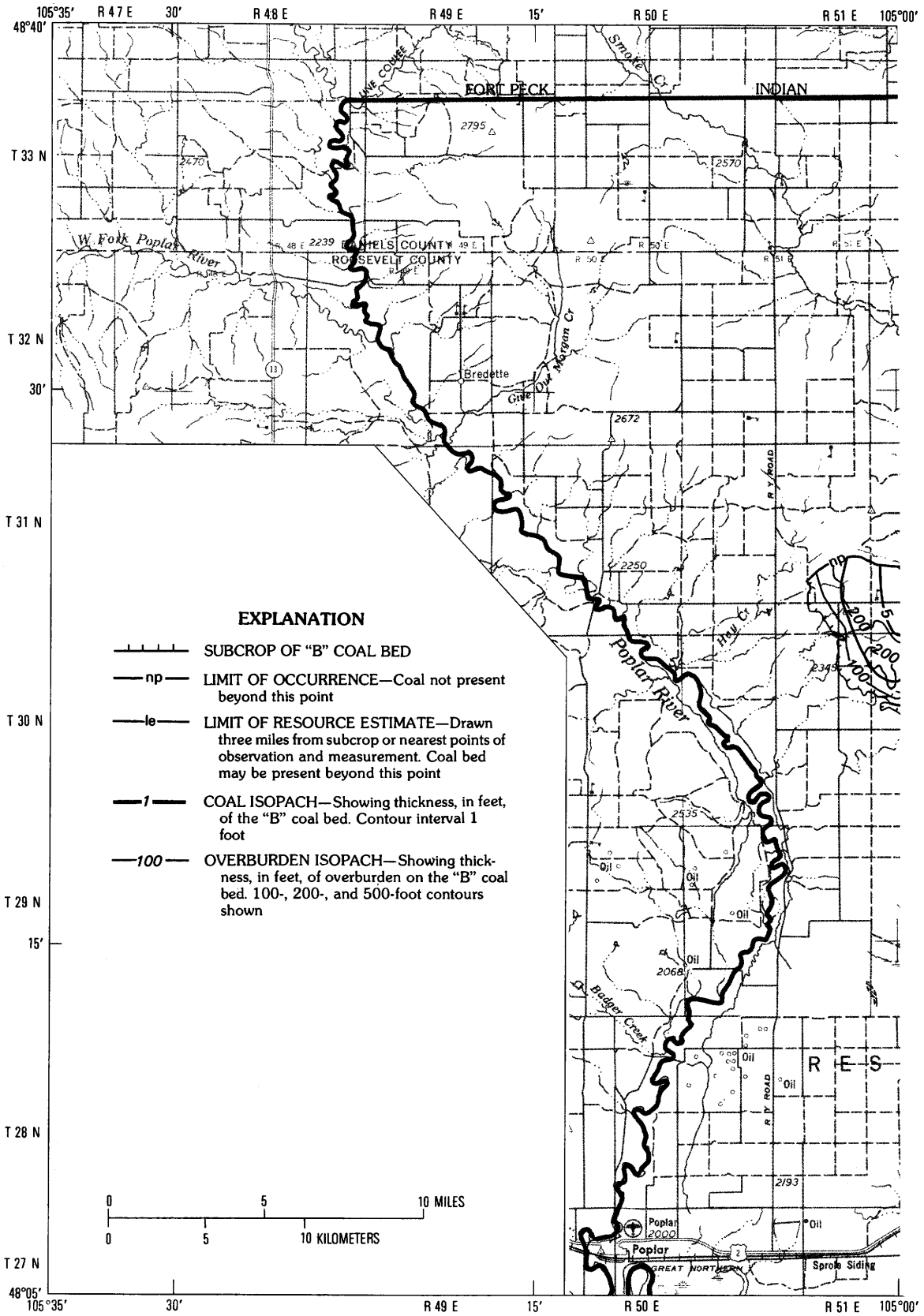
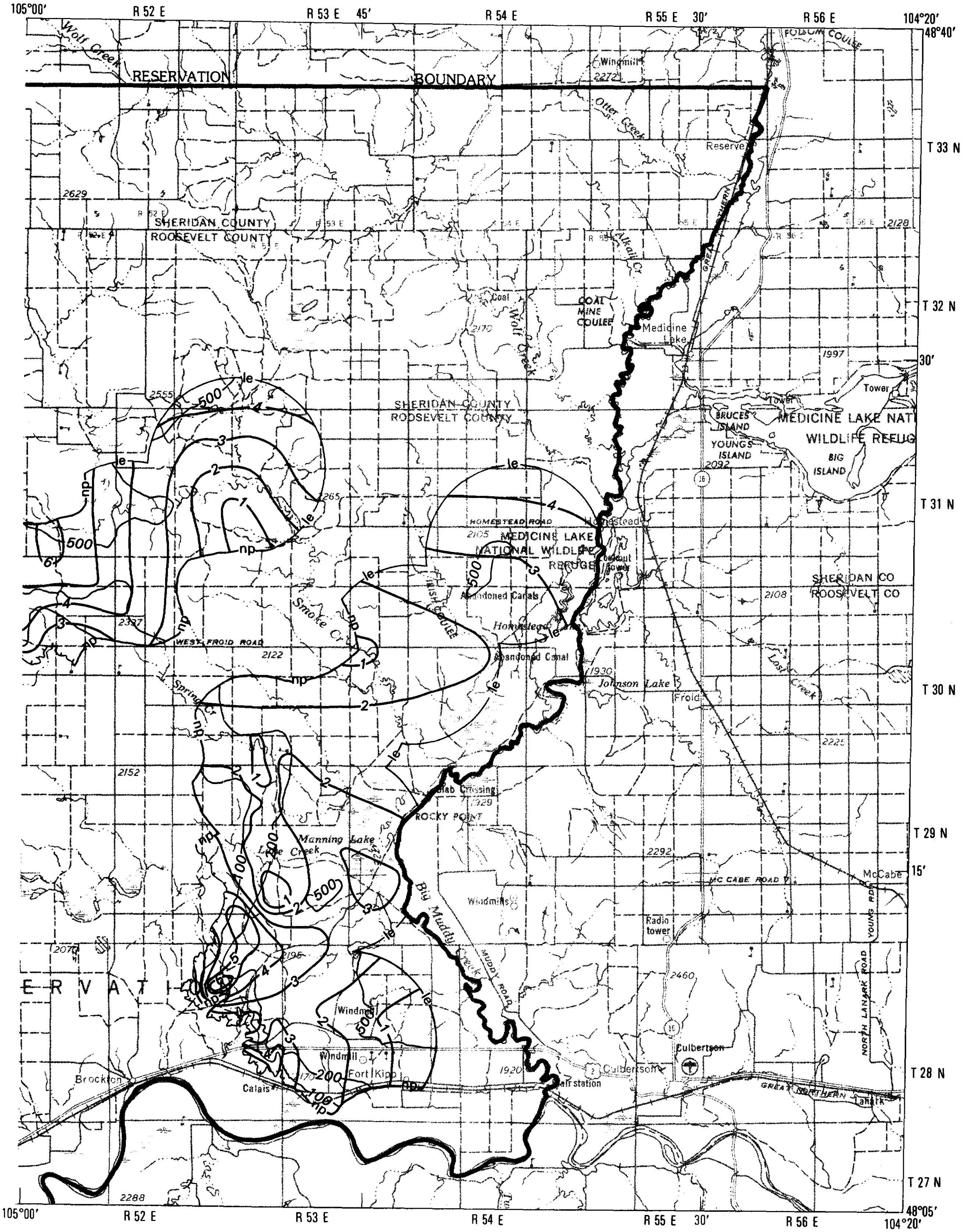


Figure 20 (above and facing page). Isopach of coal and overburden of the "B" coal bed, Fort Peck Indian Reservation.


105°00'
R 52 E
R 53 E 45'
R 54 E
R 55 E 30'
R 56 E
104°20'
48°40'
RESERVATION
BOUNDARY
Wolf Creek
Otter Creek
Reserve
T 33 N
SHERIDAN COUNTY
ROOSEVELT COUNTY
T 32 N
COAL MINE COULEE
Wolf Creek
Medicine Lake
30'
SHERIDAN COUNTY
ROOSEVELT COUNTY
MEDICINE LAKE NAT
WILDLIFE REFUG
BRUCES ISLAND
YOUNGS ISLAND
BIG ISLAND
T 31 N
HOMESTEAD ROAD
MEDICINE LAKE
NATIONAL WILDLIFE
REFUGE
Homestead
SHERIDAN CO
ROOSEVELT CO
Smoke Cr
IRISH COULEE
Abandoned Canals
Abandoned Canal
WEST FROID ROAD
Spring Cr
Johnson Lake
Froid
Lost Creek
T 30 N
Slab Crossing
ROCKY POINT
T 29 N
Manning Lake
Lake Creek
Big Muddy Creek
MUDDY ROAD
MC CABE ROAD
McCabe
15'
Windmills
Radio tower
YOUNGS ROAD
NORTH LANARK ROAD
Culbertson
Brockton
Calais
Fort Kipp
Windmill
Air station
GREAT NORTHERN
Lanark
T 28 N
T 27 N
105°00'
R 52 E
R 53 E
R 54 E
R 55 E 30'
R 56 E
48°05'
104°20'

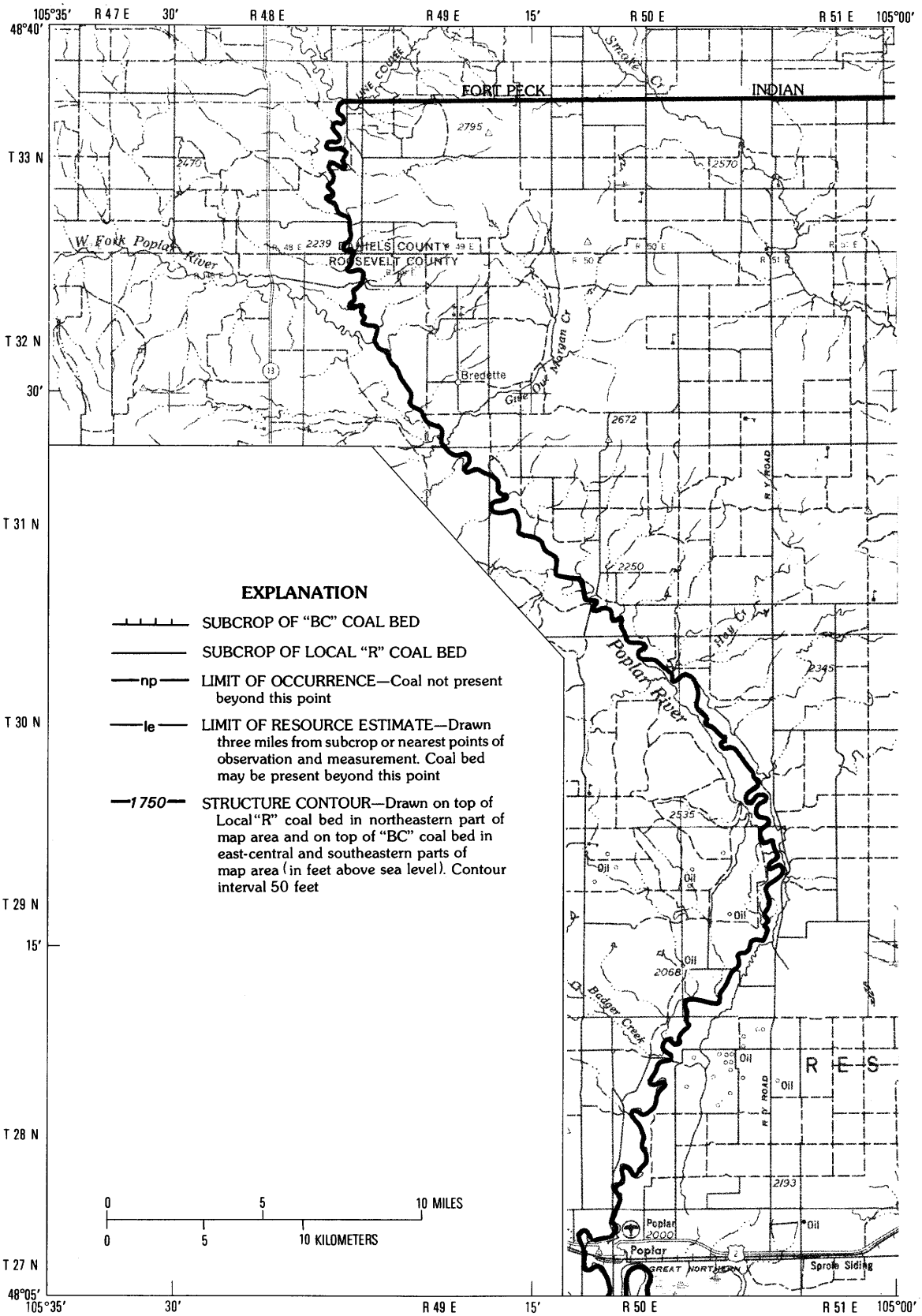
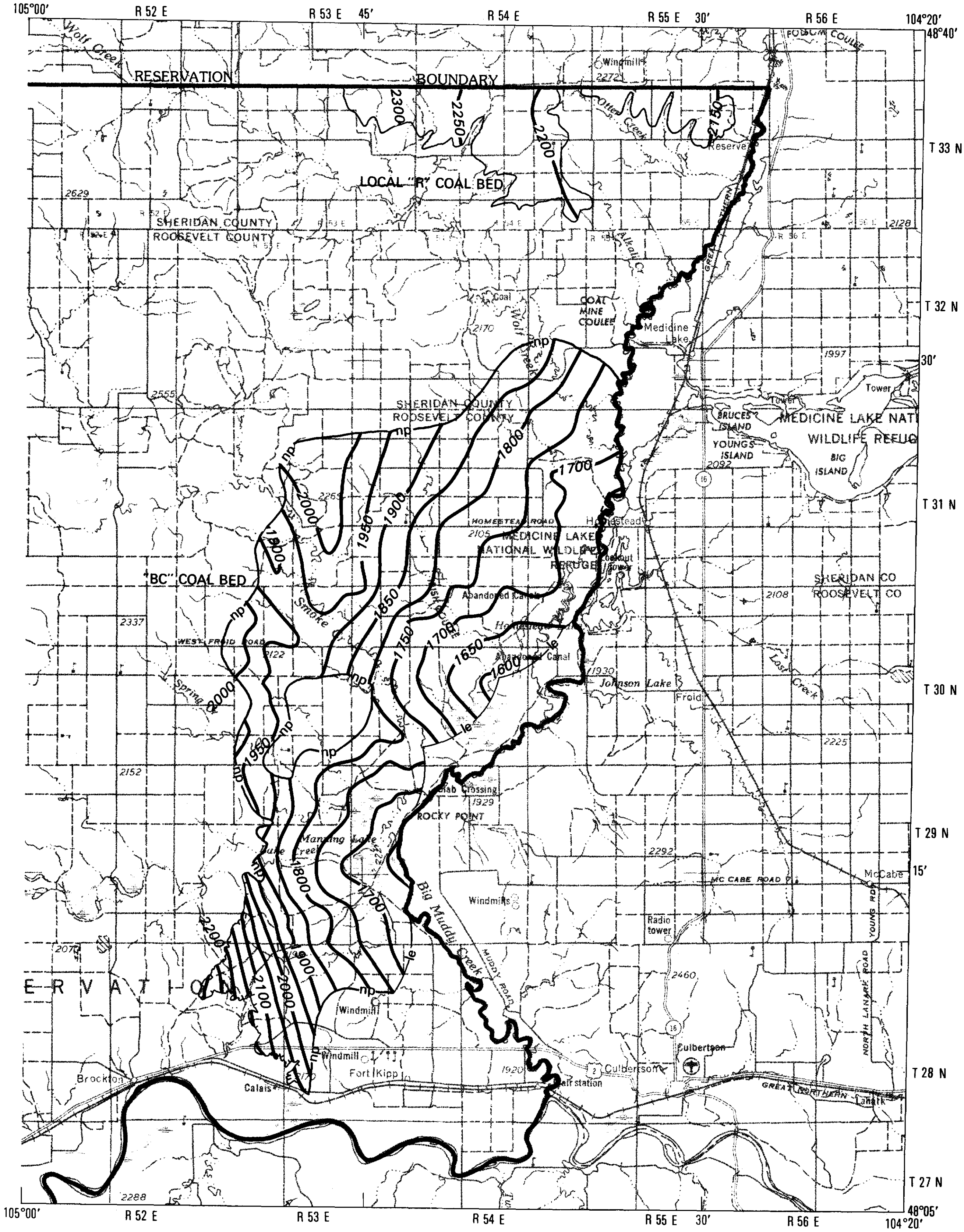


Figure 21 (above and facing page). Occurrence and structure of the "BC" and Local "R" coal beds, Fort Peck Indian Reservation.


105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
RESERVATION
BOUNDARY
LOCAL "R" COAL BED
SHERIDAN COUNTY
ROOSEVELT COUNTY
"BC" COAL BED
T 33 N
T 32 N
30′
T 31 N
T 30 N
T 29 N
15′
T 28 N
T 27 N
48°05′
Reserve
Medicine Lake
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
Homestead
Johnson Lake
Froid
Slab Crossing
ROCKY POINT
Big Muddy Creek
Windmills
Radio tower
McCabe
Culbertson
Brockton
Calais
Fort Kipp
SHERIDAN CO
ROOSEVELT CO
Coal Mine Coulee
Wolf Creek
Otter Creek
Lost Creek
Spring Cr
Smoke
Abandoned Canal
Lookout tower
Windmill
HOMESTEAD ROAD
WEST FROID ROAD
MC CABE ROAD
NORTH LANARK ROAD
YOUNG RD
MUDDY ROAD
GREAT NORTHERN
Lanark
BRUCES ISLAND
YOUNGS ISLAND
BIG ISLAND
Tower
Folsom Coulee
Alkali Cr
Manning Lake Creek
Duck Creek
np
le
2300
2250
2200
2150
2100
2000
1950
1900
1850
1800
1750
1700
1650
1600
2629
2555
2337
2152
2070
2288
2170
2272
2265
2105
2122
2128
1997
2092
2108
1930
2225
1929
2292
2460
1920

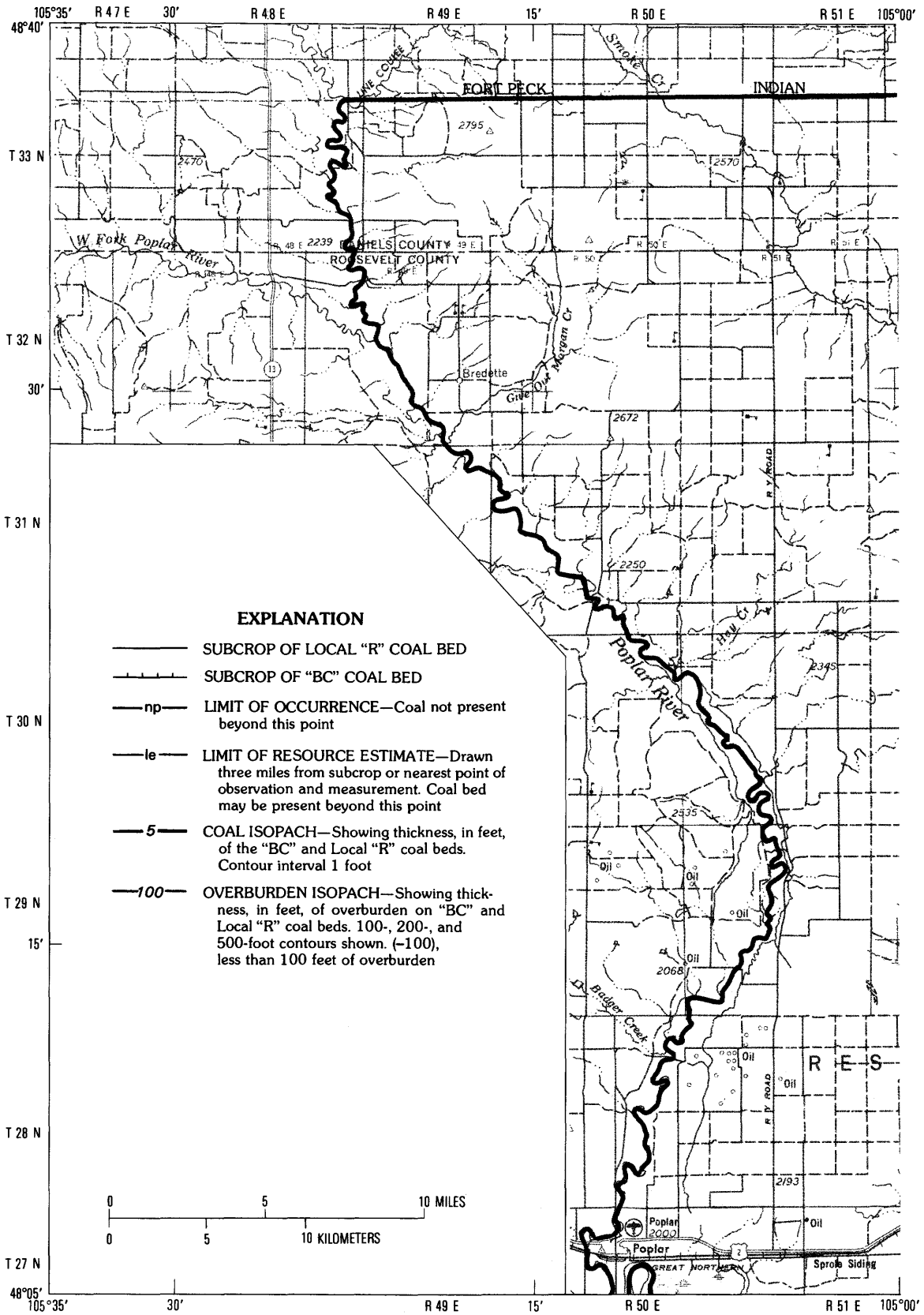
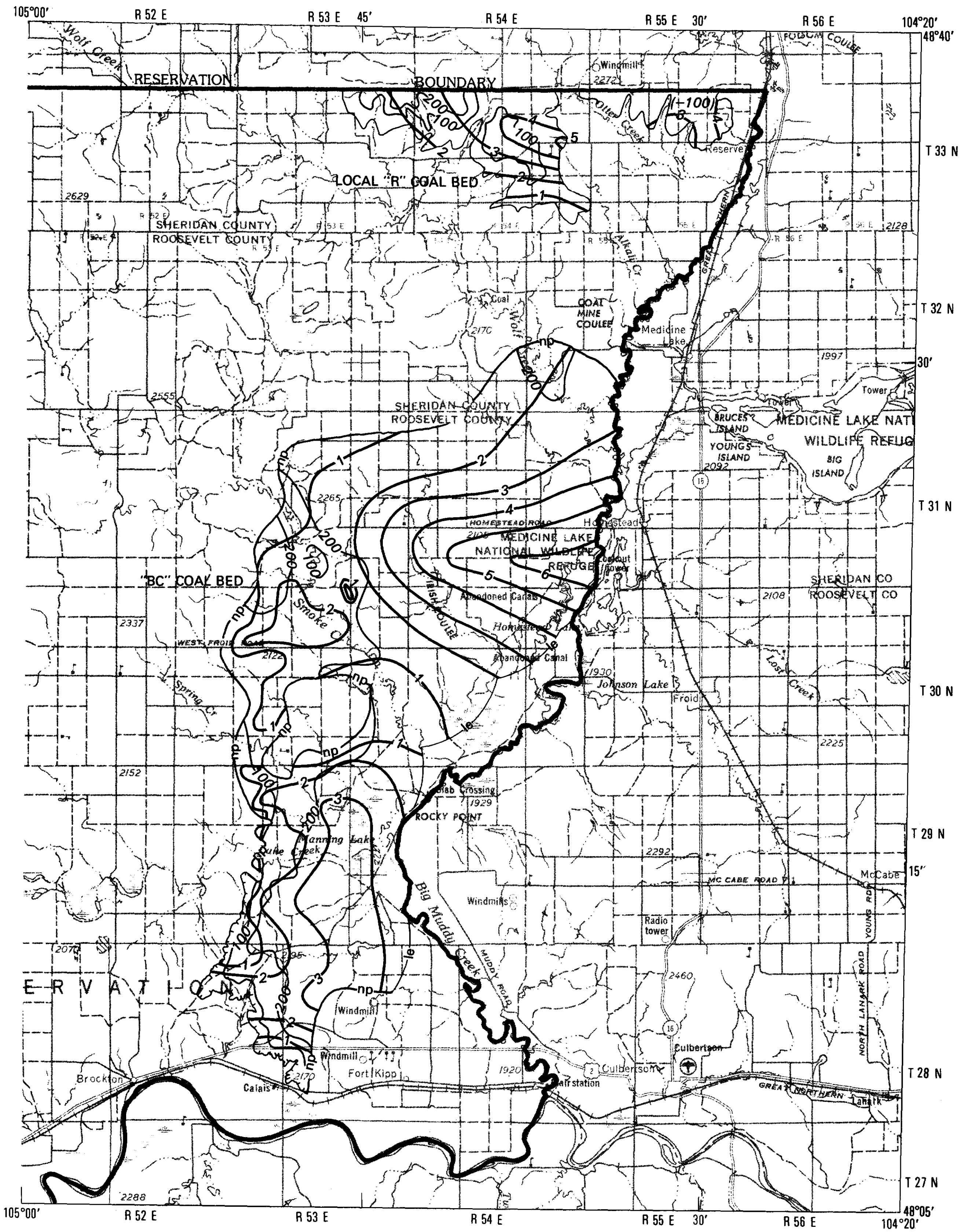


Figure 22 (above and facing page). Isopach of coal and overburden of the "BC" and Local "R" coal beds, Fort Peck Indian Reservation.



105°00'
R 52 E
R 53 E
45'
R 54 E
R 55 E
30'
R 56 E
104°20'
48°40'
RESERVATION BOUNDARY
LOCAL "R" COAL BED
SHERIDAN COUNTY
ROOSEVELT COUNTY
T 33 N
T 32 N
T 31 N
T 30 N
T 29 N
T 28 N
T 27 N
30'
15'
48°05'
"BC" COAL BED
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
Medicine Lake
Homestead
Froid
Johnson Lake
ROCKY POINT
Big Muddy Creek
Manning Lake
Culbertson
Brockton
Calais
Fort Kipp
McCabe
Lanark
Reserve
Coal Mine Coulee
Wolf Creek
Smoke Creek
Spring Cr.
Lost Creek
Alkali Cr.
Otter Creek
Wolf Creek
Sheridan Co
Roosevelt Co
Bruces Island
Youngs Island
Big Island
Windmill
Windmills
Radio tower
Abandoned Canal
Homestead Lake
Tower
GREAT NORTHERN
105°00'
R 52 E
R 53 E
R 54 E
R 55 E
30'
R 56 E
104°20'

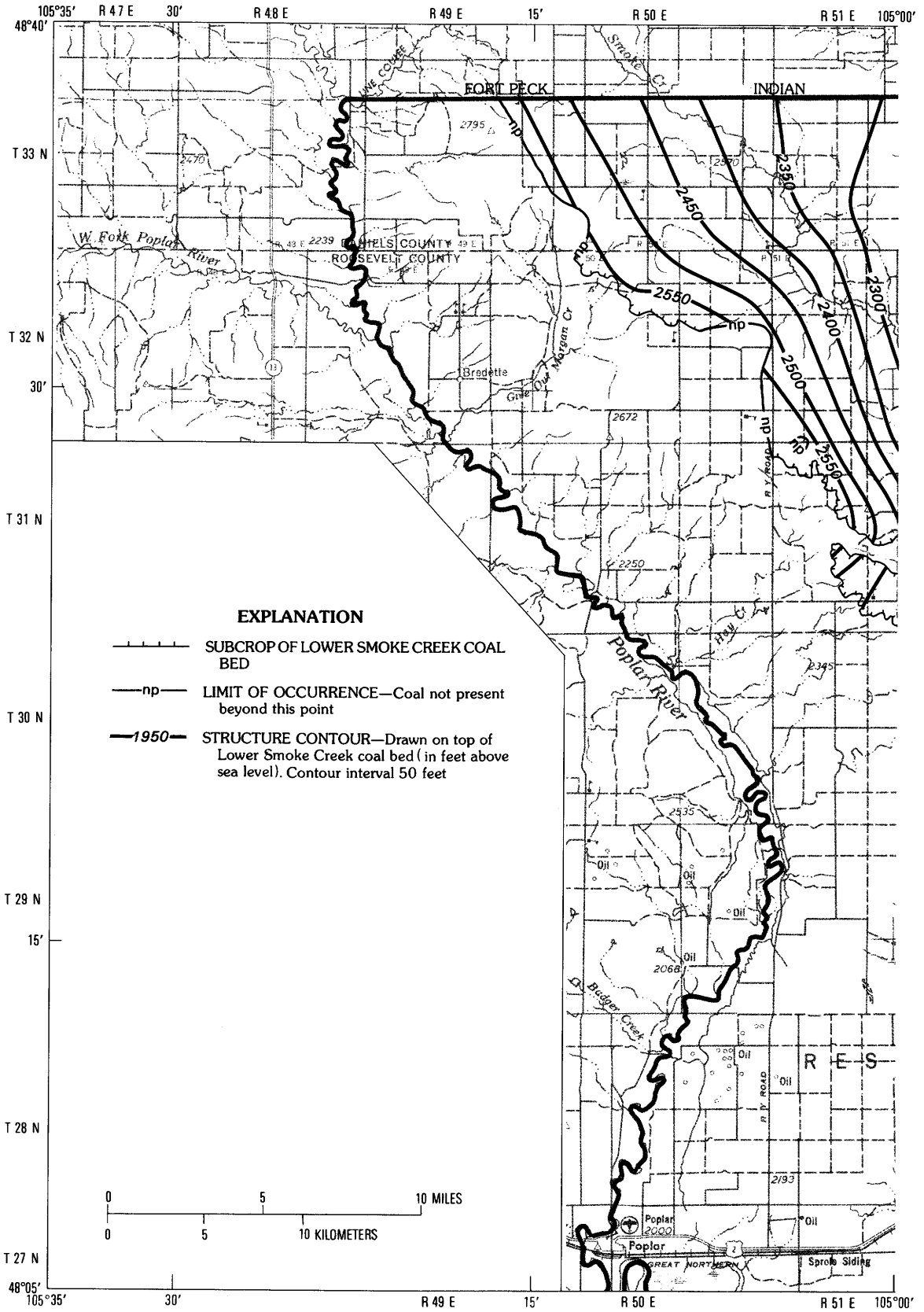
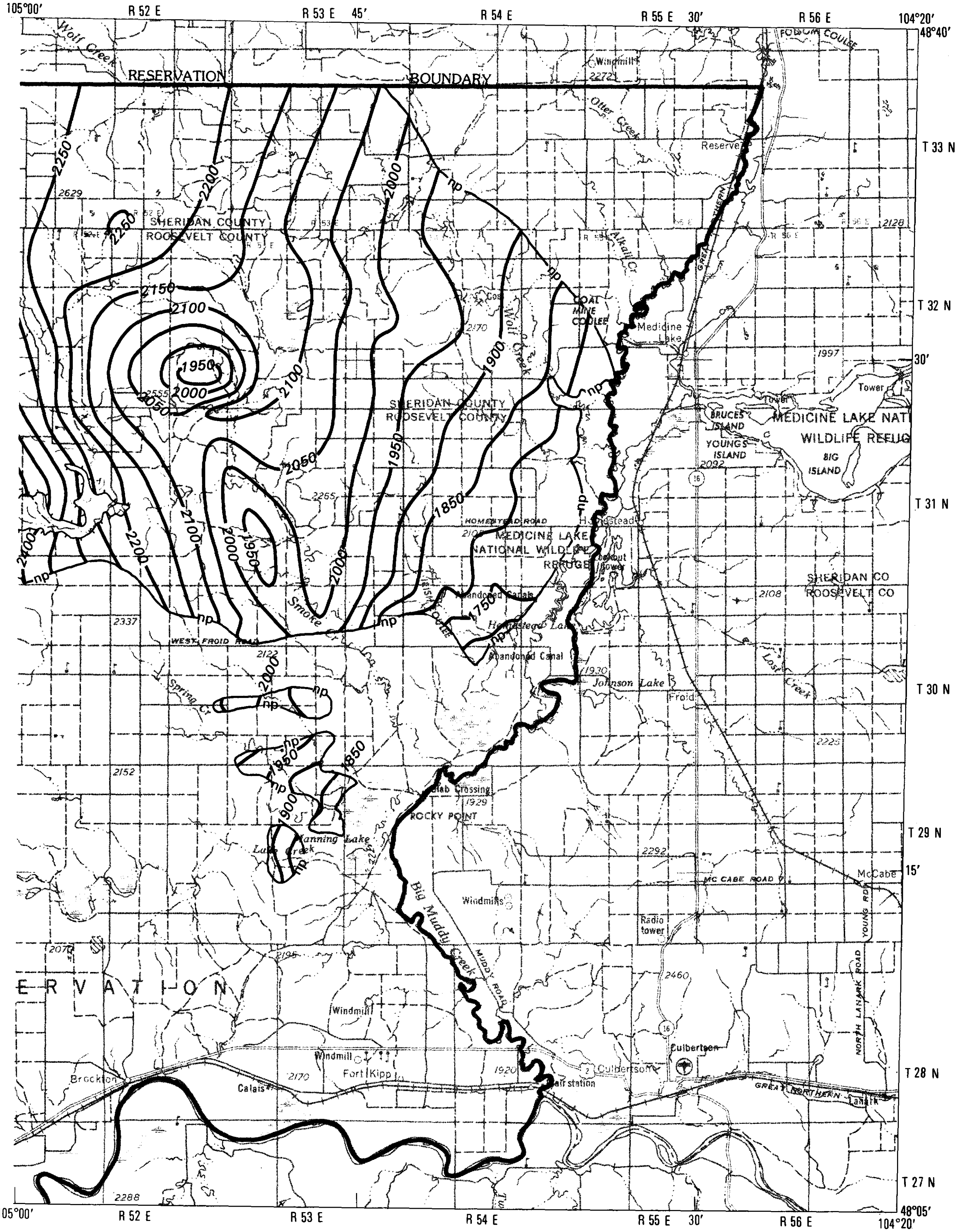


Figure 23 (above and facing page). Occurrence and structure of the Lower Smoke Creek coal bed, Fort Peck Indian Reservation.


105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
RESERVATION
BOUNDARY
Wolf Creek
Otter Creek
Folsom Coulee
Reserve
T 33 N
T 32 N
30′
T 31 N
T 30 N
T 29 N
15′
T 28 N
T 27 N
48°05′
SHERIDAN COUNTY
ROOSEVELT COUNTY
SHERIDAN CO
ROOSEVELT CO
Alkali Cr.
COAL MINE COULEE
Medicine Lake
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
BRUCES ISLAND
YOUNGS ISLAND
BIG ISLAND
Tower
Homestead
HOMESTEAD ROAD
Lookout tower
Smoke Cr.
Abandoned Canals
Homestead Lake
Abandoned Canal
WEST FROID ROAD
Johnson Lake
Froid
Lost Creek
Spring Cr.
Slab Crossing
ROCKY POINT
Manning Lake
Lake Creek
MC CABE ROAD
McCabe
Windmills
Radio tower
Big Muddy Creek
MUDDY ROAD
YOUNG RD
NORTH LANARK ROAD
Windmill
Culbertson
Brockton
Calais
Fort Kipp
Air station
GREAT NORTHERN
Lanark
E R V A T I O N
2250
2200
2150
2100
2050
2000
1950
1900
1850
1750
2400
np
105°00′
R 52 E
R 53 E
R 54 E
R 55 E
30′
R 56 E
104°20′

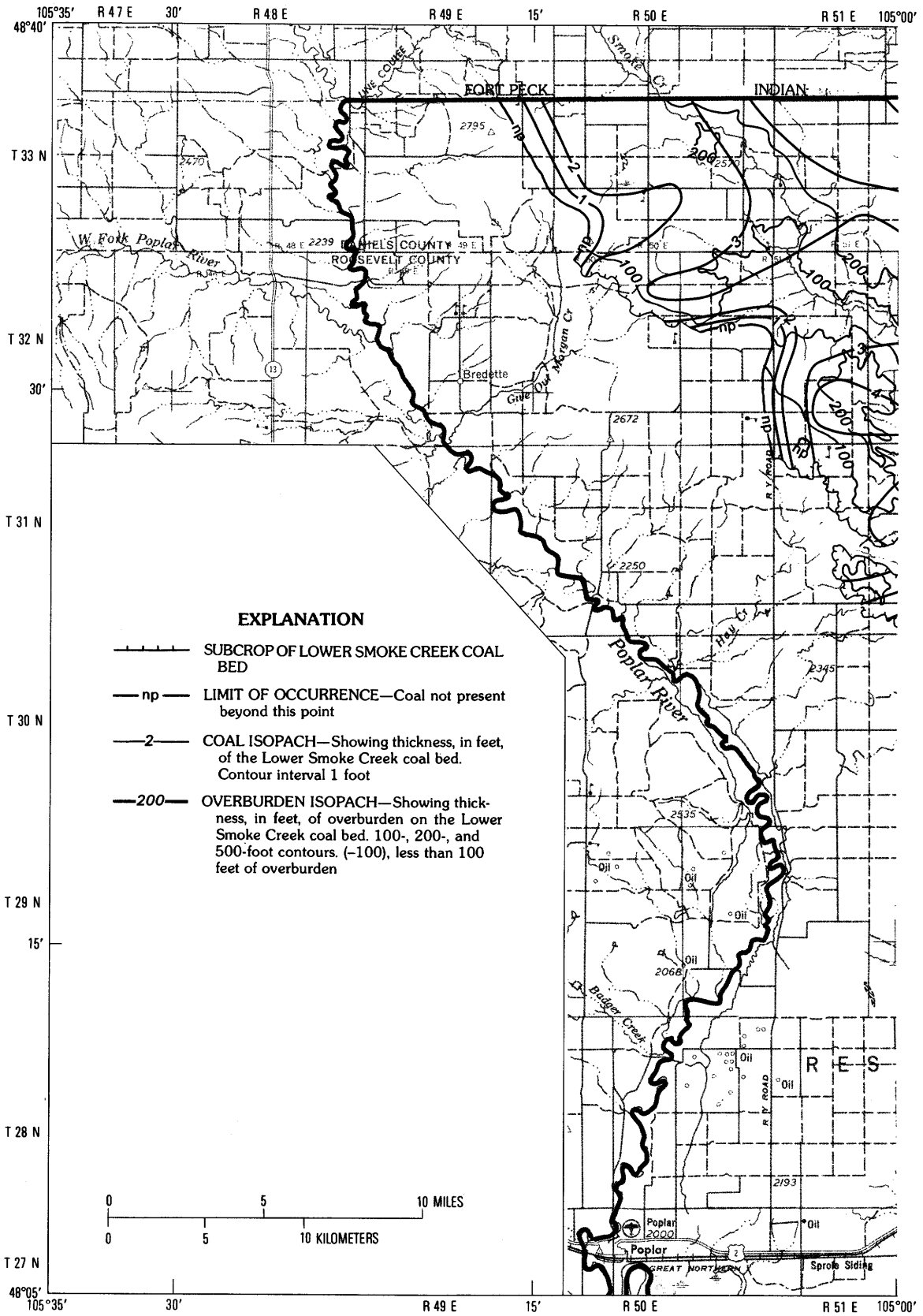
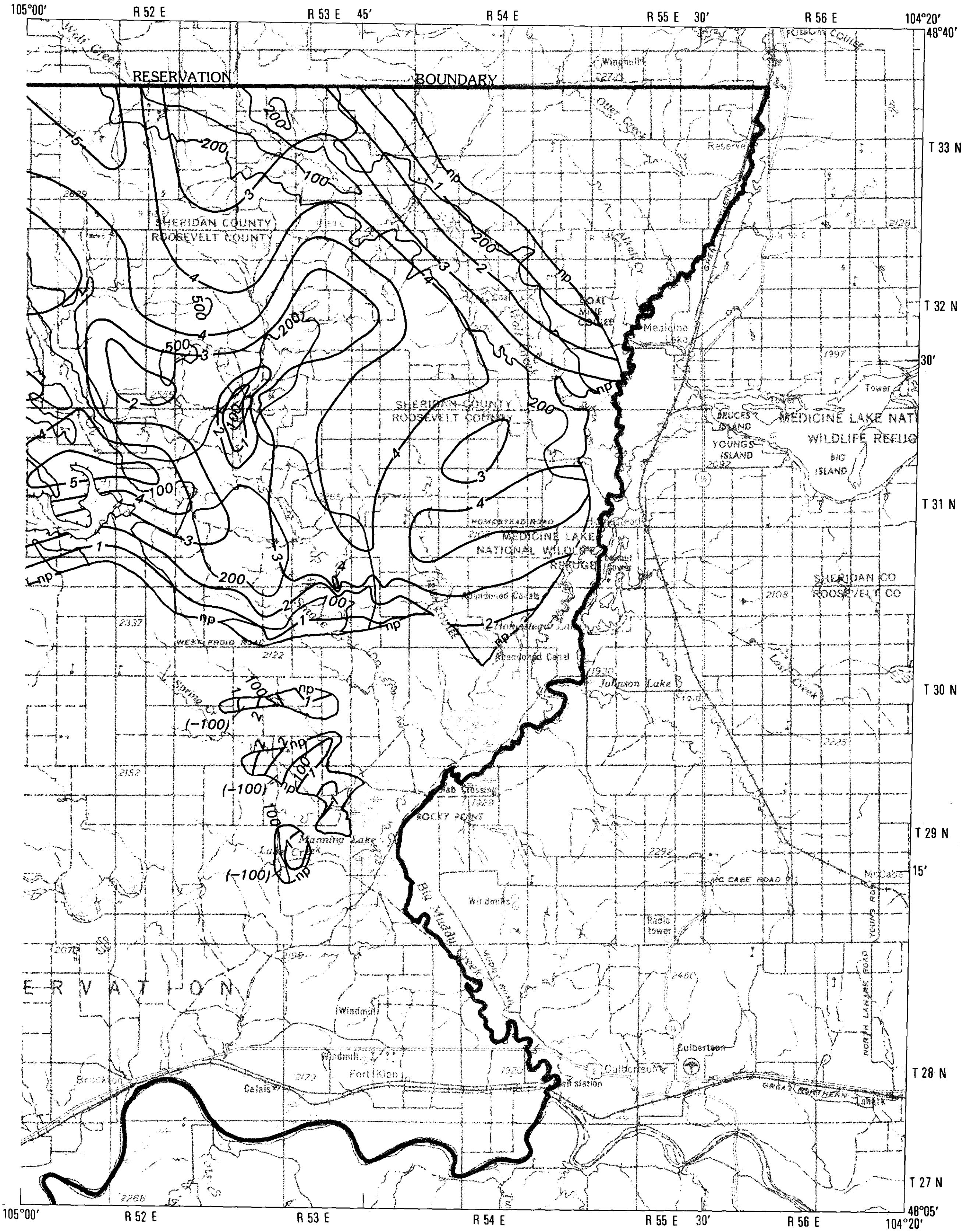


Figure 24 (above and facing page). Isopach of coal and overburden of the Lower Smoke Creek coal bed, Fort Peck Indian Reservation.


105°00'
R 52 E
R 53 E
45'
R 54 E
R 55 E
30'
R 56 E
104°20'
48°40'
RESERVATION
BOUNDARY
T 33 N
T 32 N
30'
T 31 N
T 30 N
T 29 N
15'
T 28 N
T 27 N
48°05'
SHERIDAN COUNTY
ROOSEVELT COUNTY
SHERIDAN CO
ROOSEVELT CO
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
Medicine Lake
Johnson Lake
Froid
Manning Lake
ROCKY POINT
Big Muddy Creek
Culbertson
Brockton
Calais
Fort Kipp
Wolf Creek
Otter Creek
Lost Creek
Spring Cr
Lake Creek
BRUCES ISLAND
YOUNGS ISLAND
BIG ISLAND
HOMESTEAD ROAD
WEST FROID ROAD
MC CABE ROAD
NORTH LANARK ROAD
GREAT NORTHERN
Lanark
Radio tower
Windmill
ERVATION
(−100)
np
105°00'
R 52 E
R 53 E
R 54 E
R 55 E
30'
R 56 E
104°20'

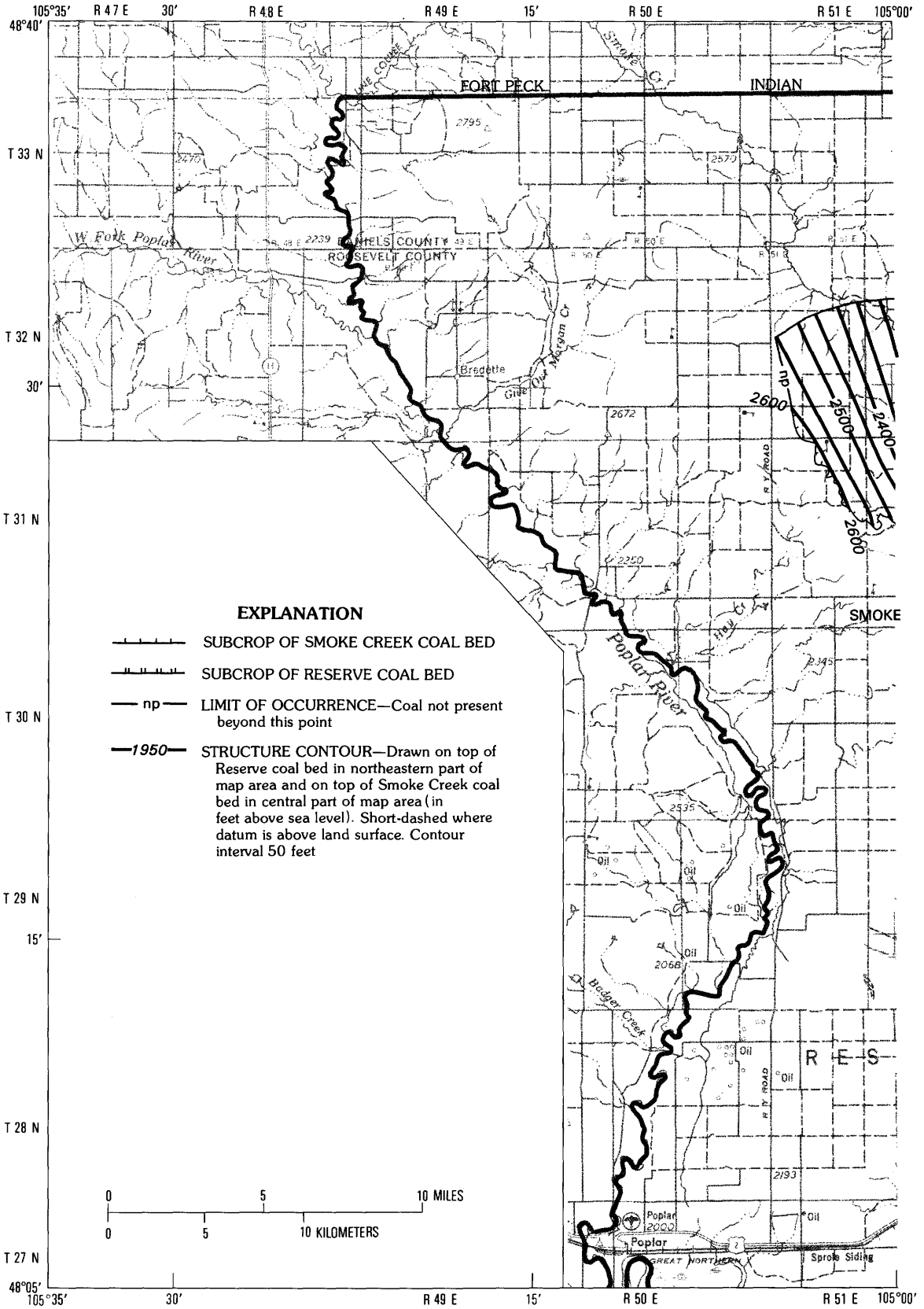
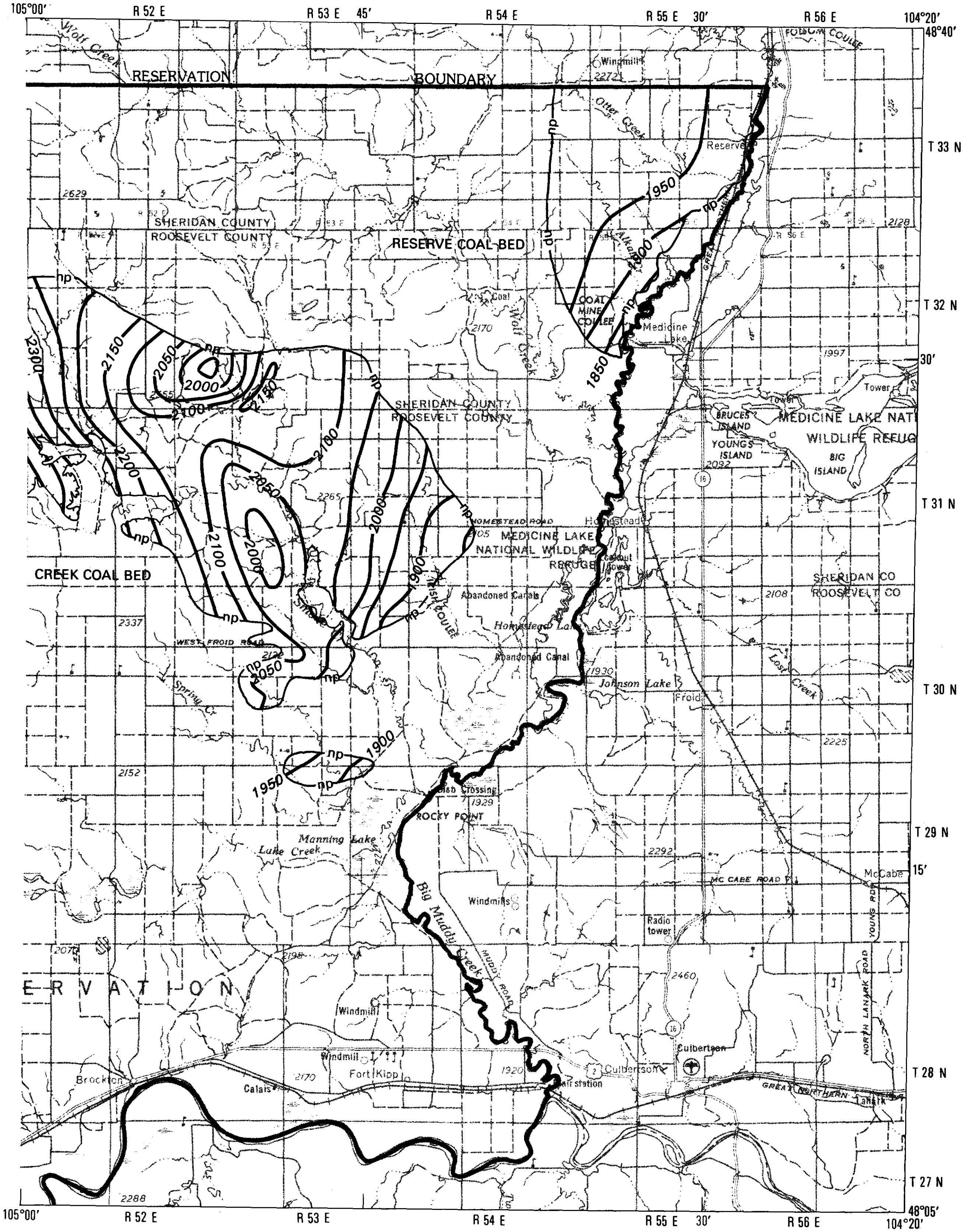


Figure 25 (above and facing page). Occurrence and structure of the Reserve and Smoke Creek coal beds, Fort Peck Indian Reservation.


105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
RESERVATION
BOUNDARY
T 33 N
T 32 N
30′
T 31 N
T 30 N
T 29 N
15′
T 28 N
T 27 N
48°05′
SHERIDAN COUNTY
ROOSEVELT COUNTY
RESERVE COAL BED
CREEK COAL BED
SHERIDAN CO
ROOSEVELT CO
Reserve
Medicine Lake
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
Homestead
Froid
Johnson Lake
ROCKY POINT
Manning Lake
Lake Creek
Big Muddy Creek
Brockton
Calais
Fort Kipp
Culbertson
McCabe
Lost Creek
Wolf Creek
Otter Creek
COAL MINE COULEE
2300
2200
2150
2100
2050
2000
1950
1900
1850
np
E R V A T I O N
105°00′
R 52 E
R 53 E
R 54 E
R 55 E
30′
R 56 E
48°05′
104°20′

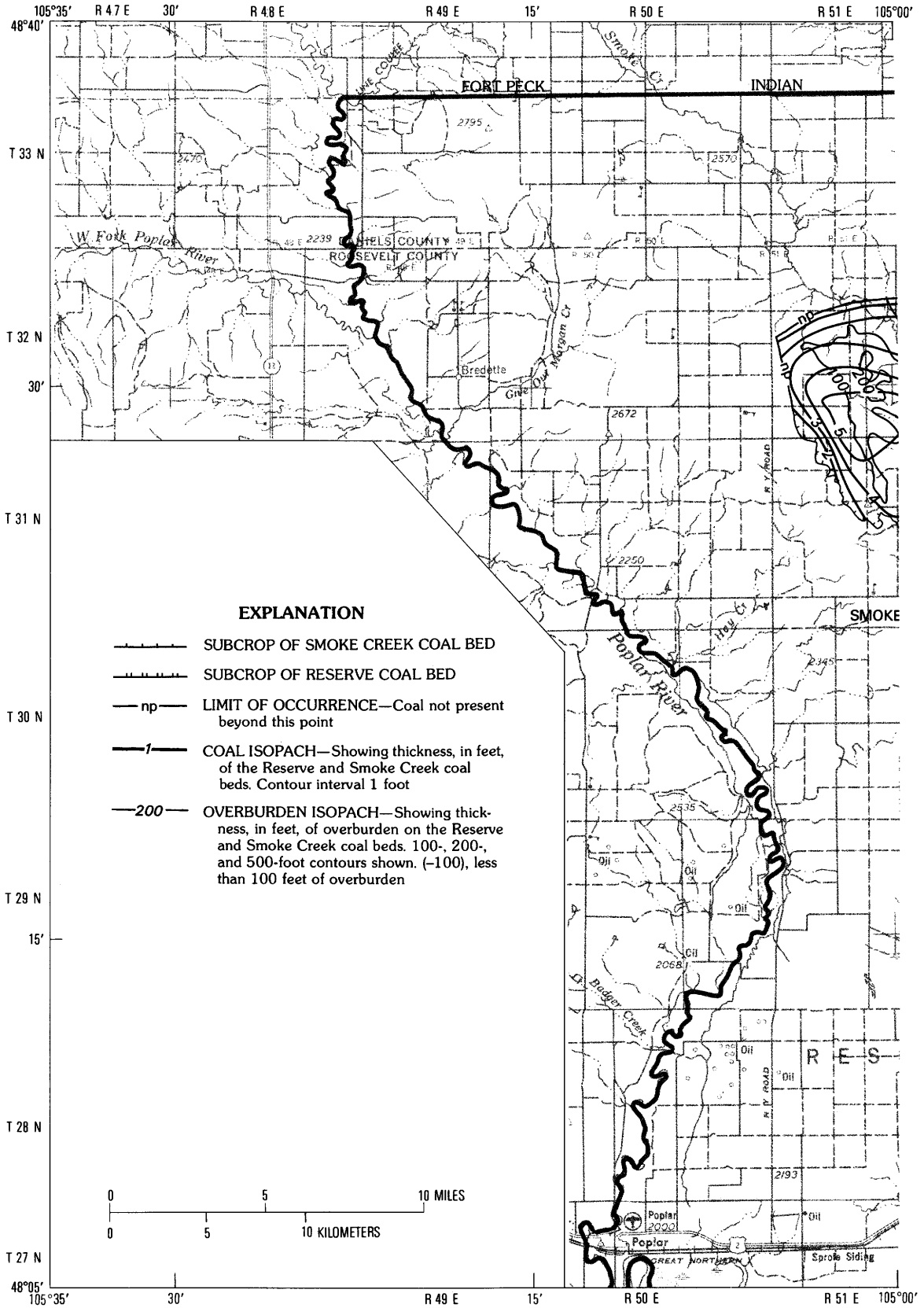
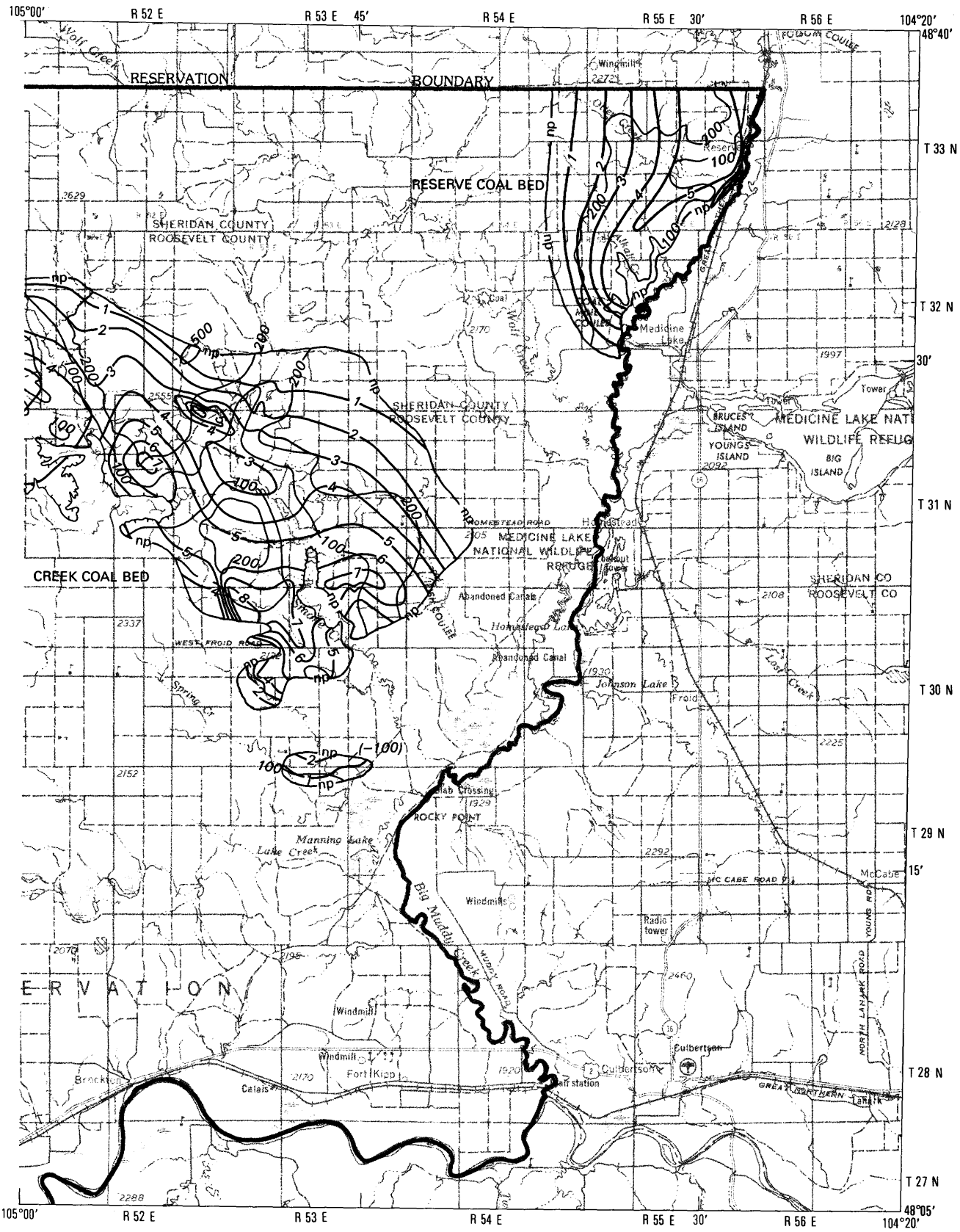


Figure 26 (above and facing page). Isopach of coal and overburden of the Reserve and Smoke Creek coal beds, Fort Peck Indian Reservation.


RESERVATION BOUNDARY
RESERVE COAL BED
CREEK COAL BED
SHERIDAN COUNTY
ROOSEVELT COUNTY
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
T 33 N
T 32 N
30′
T 31 N
T 30 N
T 29 N
15′
T 28 N
T 27 N
48°05′
np
100
200
500
(−100)

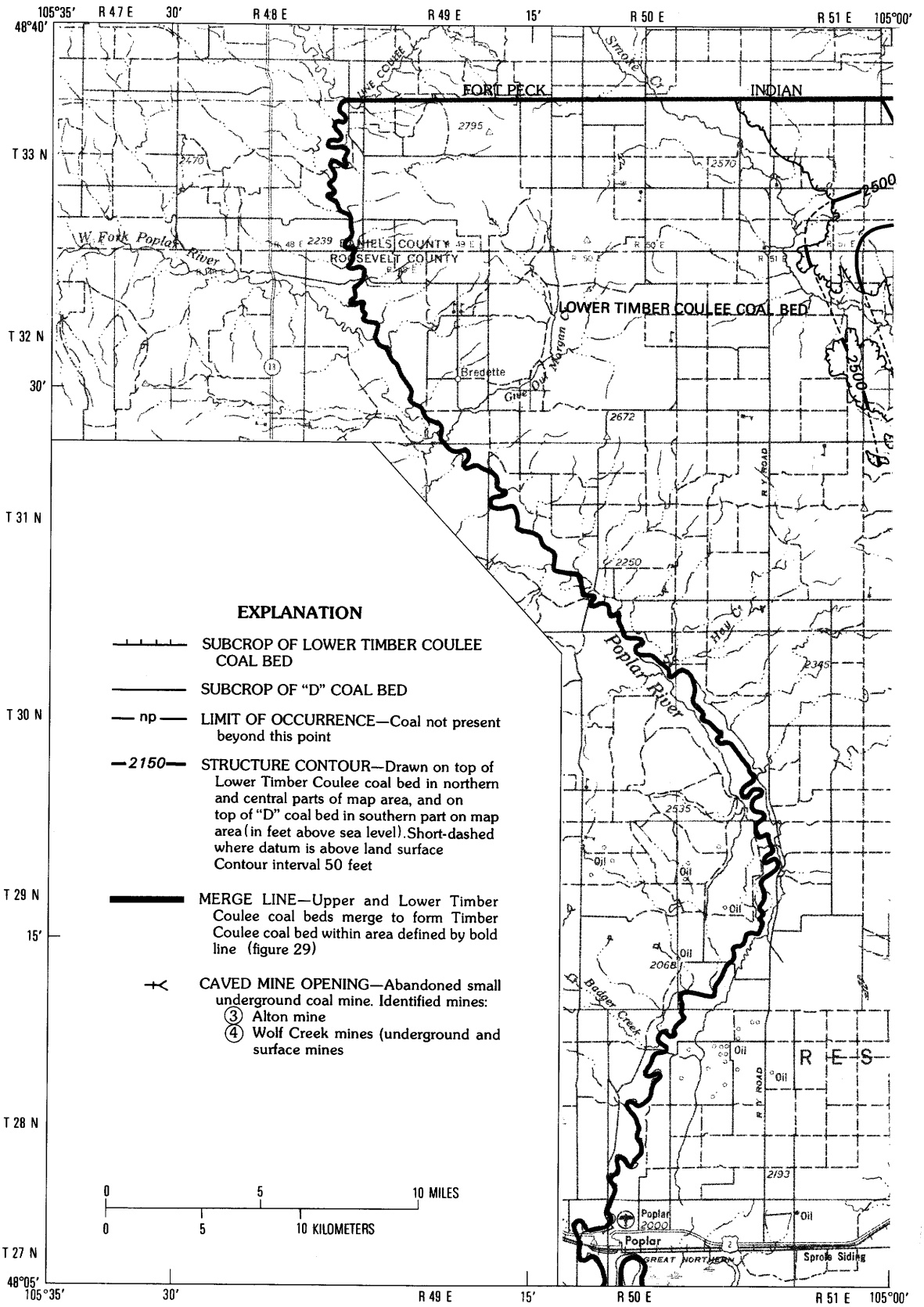
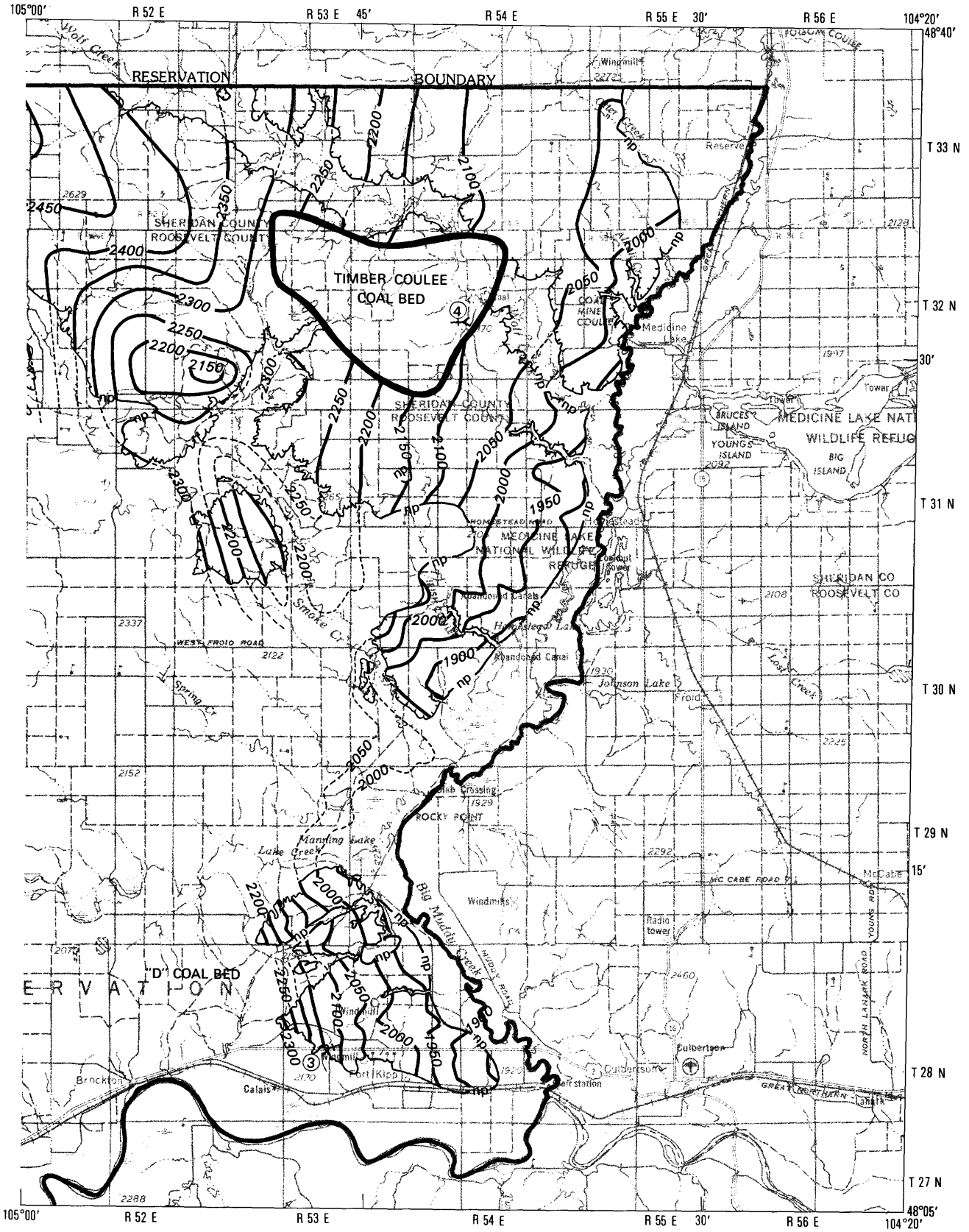


Figure 27 (above and facing page). Occurrence and structure of the Lower Timber Coulee and "D" coal beds, Fort Peck Indian Reservation.


105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
RESERVATION BOUNDARY
TIMBER COULEE COAL BED
"D" COAL BED
SHERIDAN COUNTY
ROOSEVELT COUNTY
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
T 33 N
T 32 N
T 31 N
T 30 N
T 29 N
T 28 N
T 27 N
30′
15′
48°05′
np

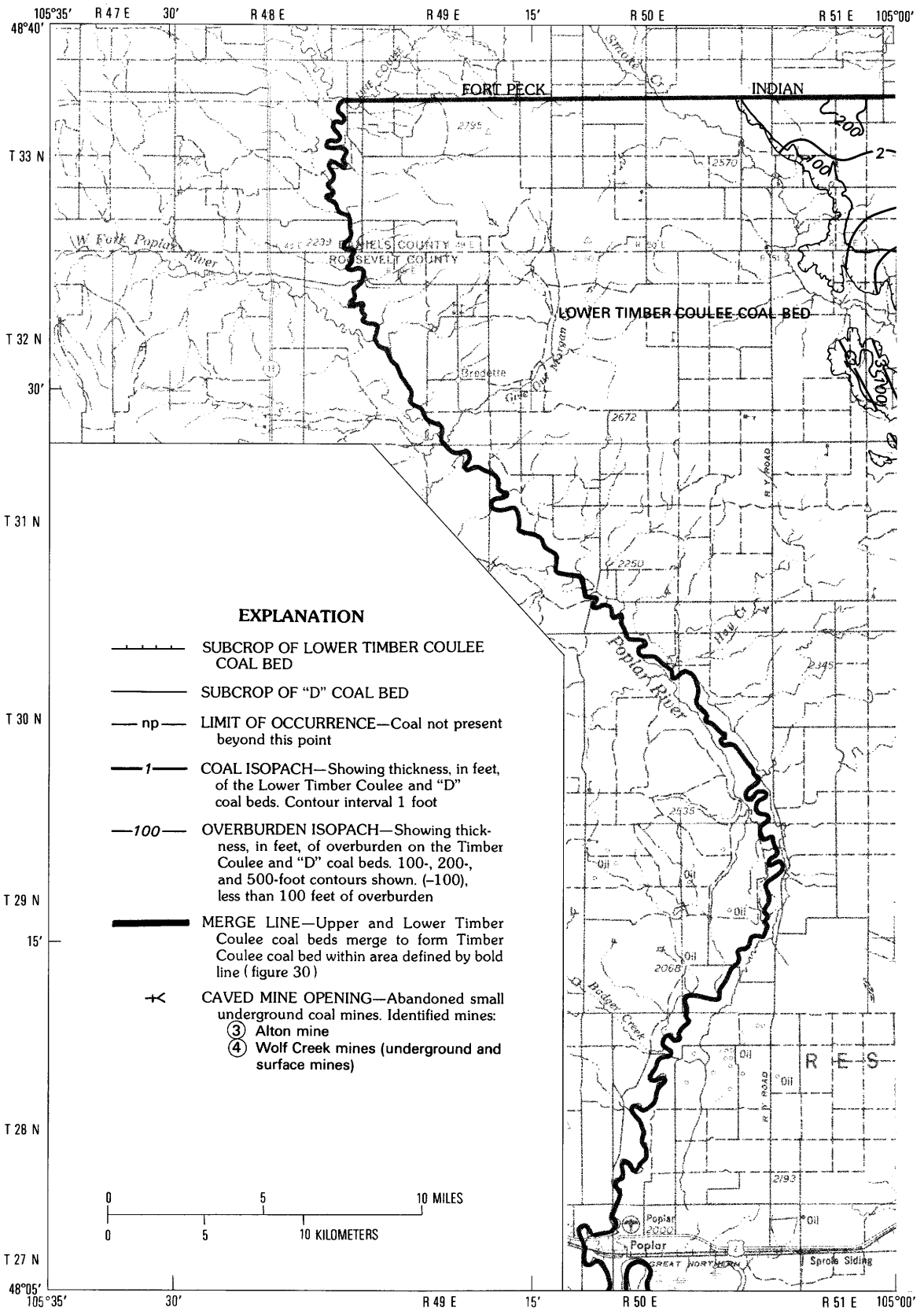
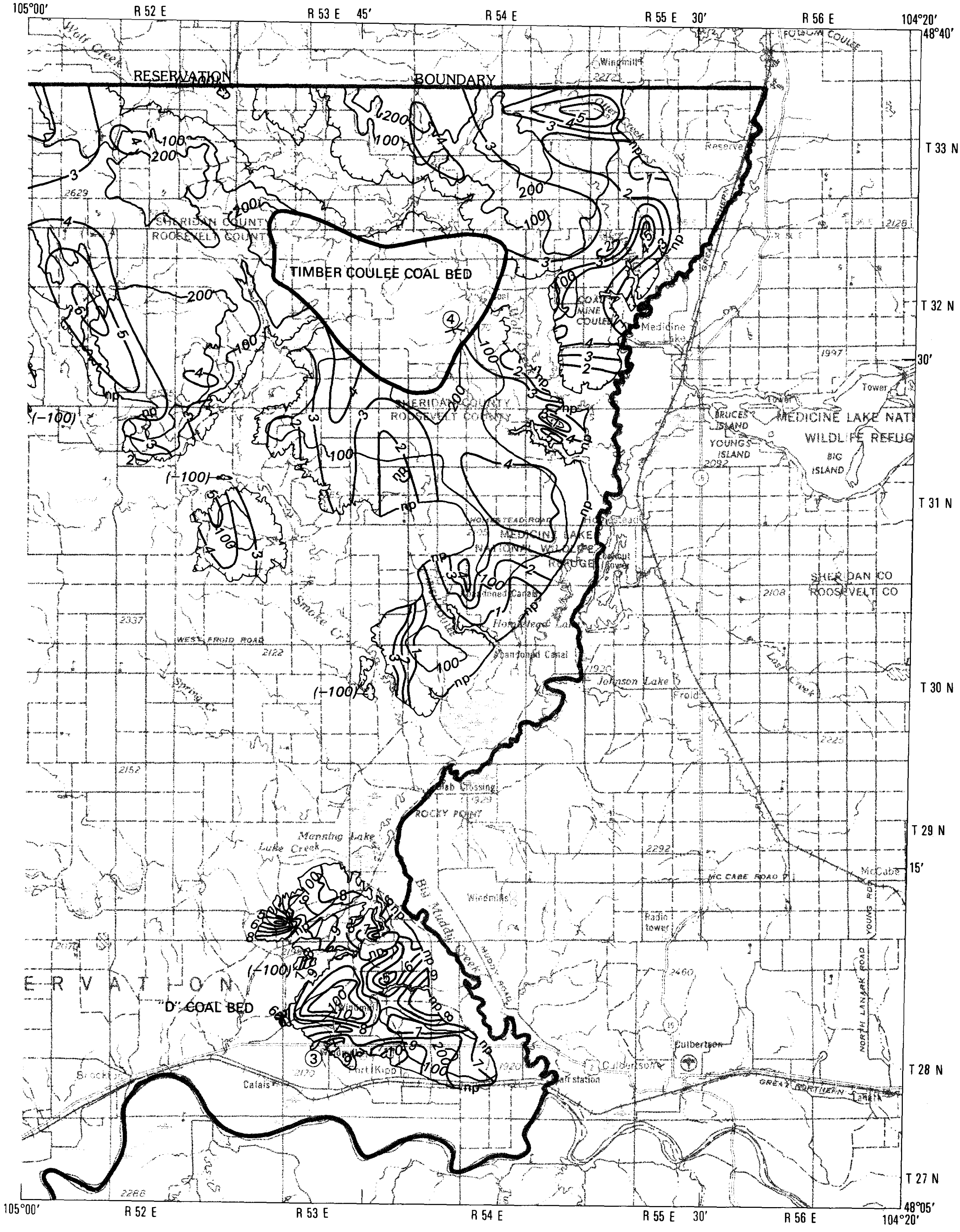


Figure 28 (above and facing page). Isopach of coal and overburden of the Lower Timber Coulee and "D" coal beds, Fort Peck Indian Reservation.


105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
RESERVATION
BOUNDARY
T 33 N
T 32 N
30′
T 31 N
T 30 N
T 29 N
15′
T 28 N
T 27 N
48°05′
TIMBER COULEE COAL BED
"D" COAL BED
SHERIDAN COUNTY
ROOSEVELT COUNTY
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
SHERIDAN CO
ROOSEVELT CO
Medicine Lake
Homestead Lake
Johnson Lake
Froid
Manning Lake
Lake Creek
Smoke Cr.
Spring Cr.
Big Muddy Creek
ROCKY POINT
Culbertson
Calais
Brockton
Fort Kipp
WEST FROID ROAD
MC CABE ROAD
McCabe
NORTH LANARK ROAD
YOUNG ROAD
GREAT NORTHERN
Wolf Creek
FOLSOM COULEE
Windmill
Radio tower
BRUCES ISLAND
YOUNGS ISLAND
BIG ISLAND
Tower
Lookout tower
Canal
2629
2337
2122
2152
2286
2292
2460
1997
2108
2128
2225
1920
np
100
200
(-100)
4
3

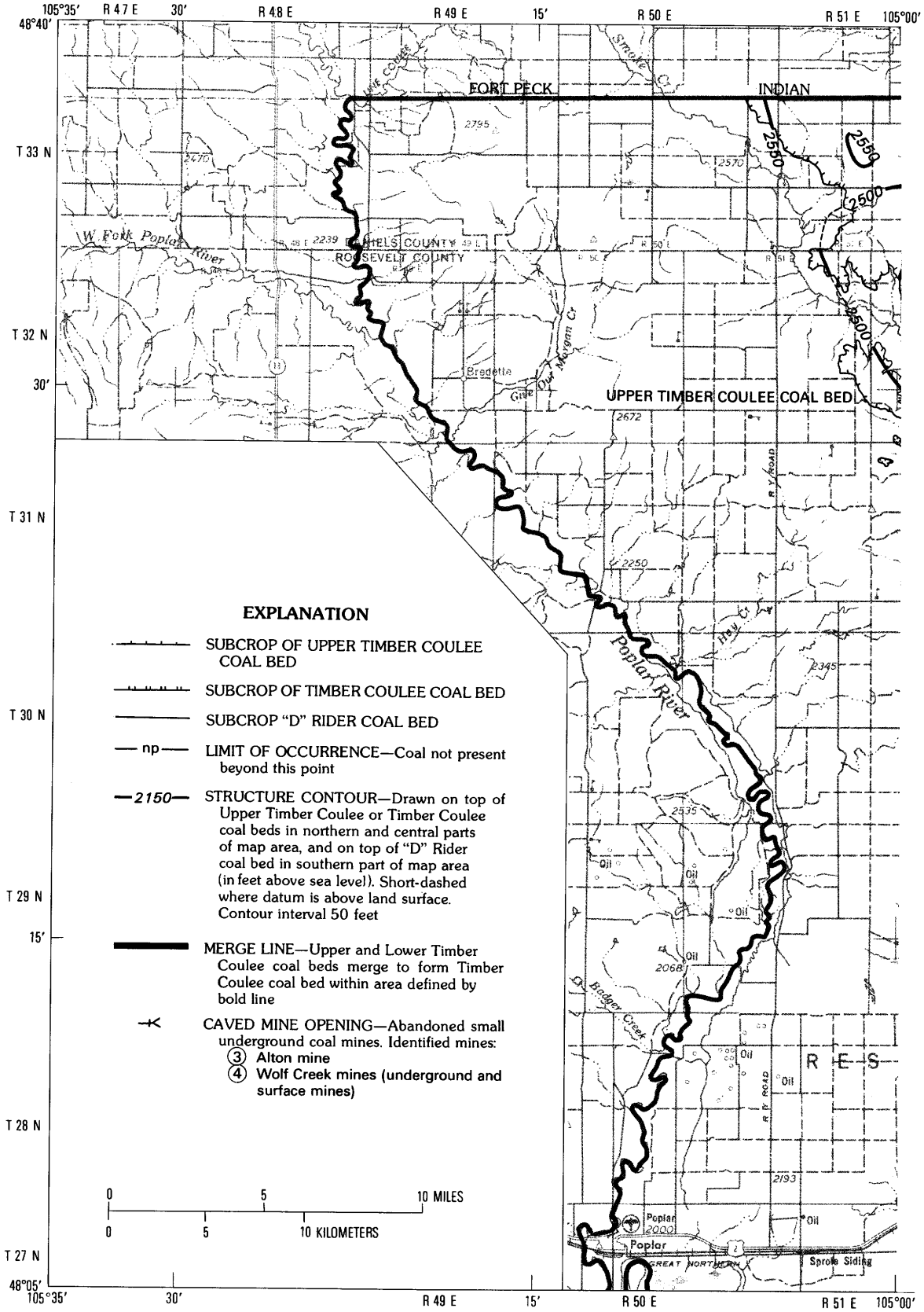
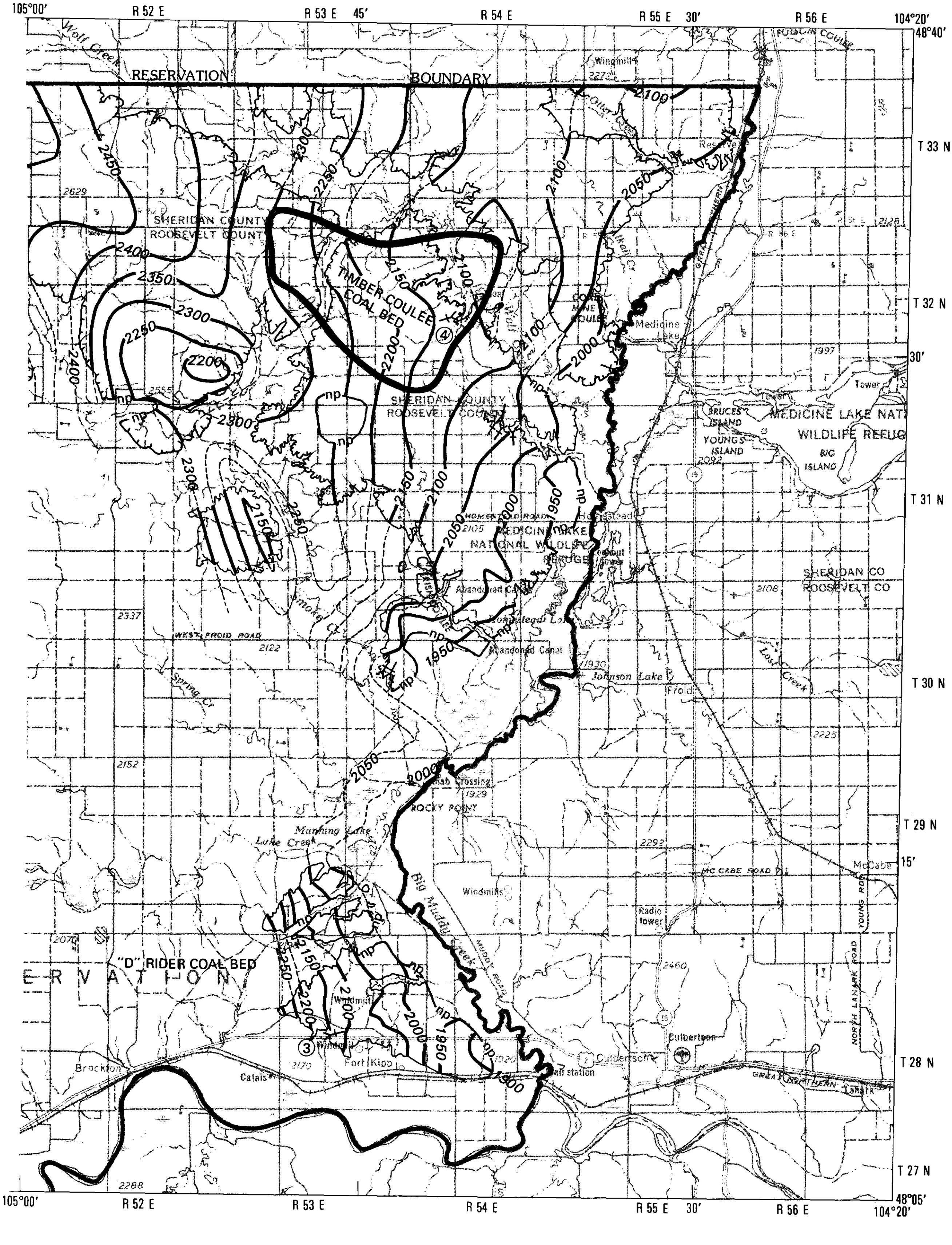


Figure 29 (above and facing page). Occurrence and structure of the Upper Timber Coulee, Timber Coulee, and "D" Rider coal beds, Fort Peck Indian Reservation.



105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
RESERVATION
BOUNDARY
T 33 N
T 32 N
30′
T 31 N
T 30 N
T 29 N
15′
T 28 N
T 27 N
48°05′
SHERIDAN COUNTY
ROOSEVELT COUNTY
TIMBER COULEE COAL BED
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
Medicine Lake
Johnson Lake
Froid
ROCKY POINT
Manning Lake
Big Muddy Creek
"D" RIDER COAL BED
Culbertson
Brockton
Calais
Fort Kipp
SHERIDAN CO
ROOSEVELT CO
McCabe
105°00′
R 52 E
R 53 E
R 54 E
R 55 E
30′
R 56 E
104°20′

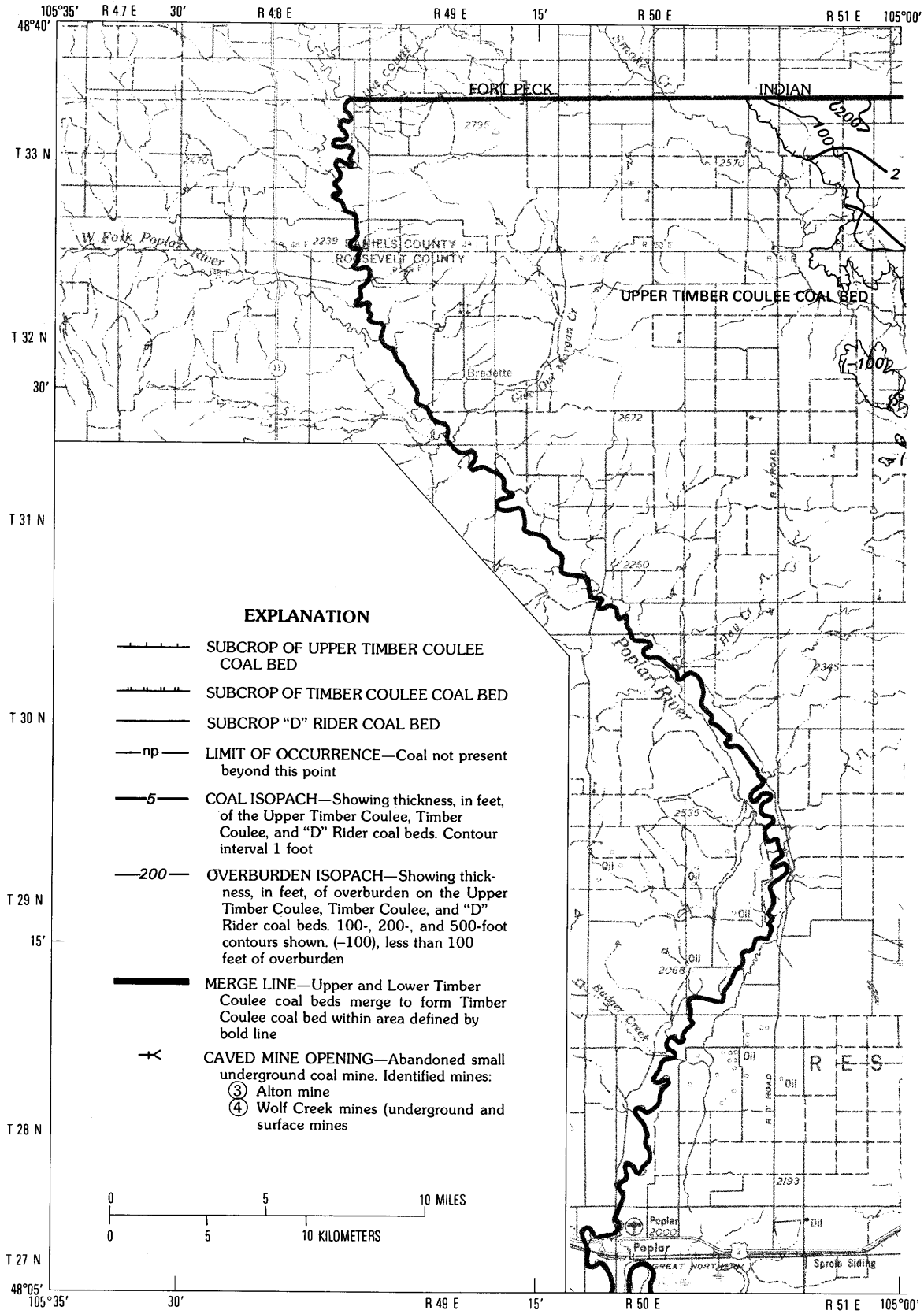
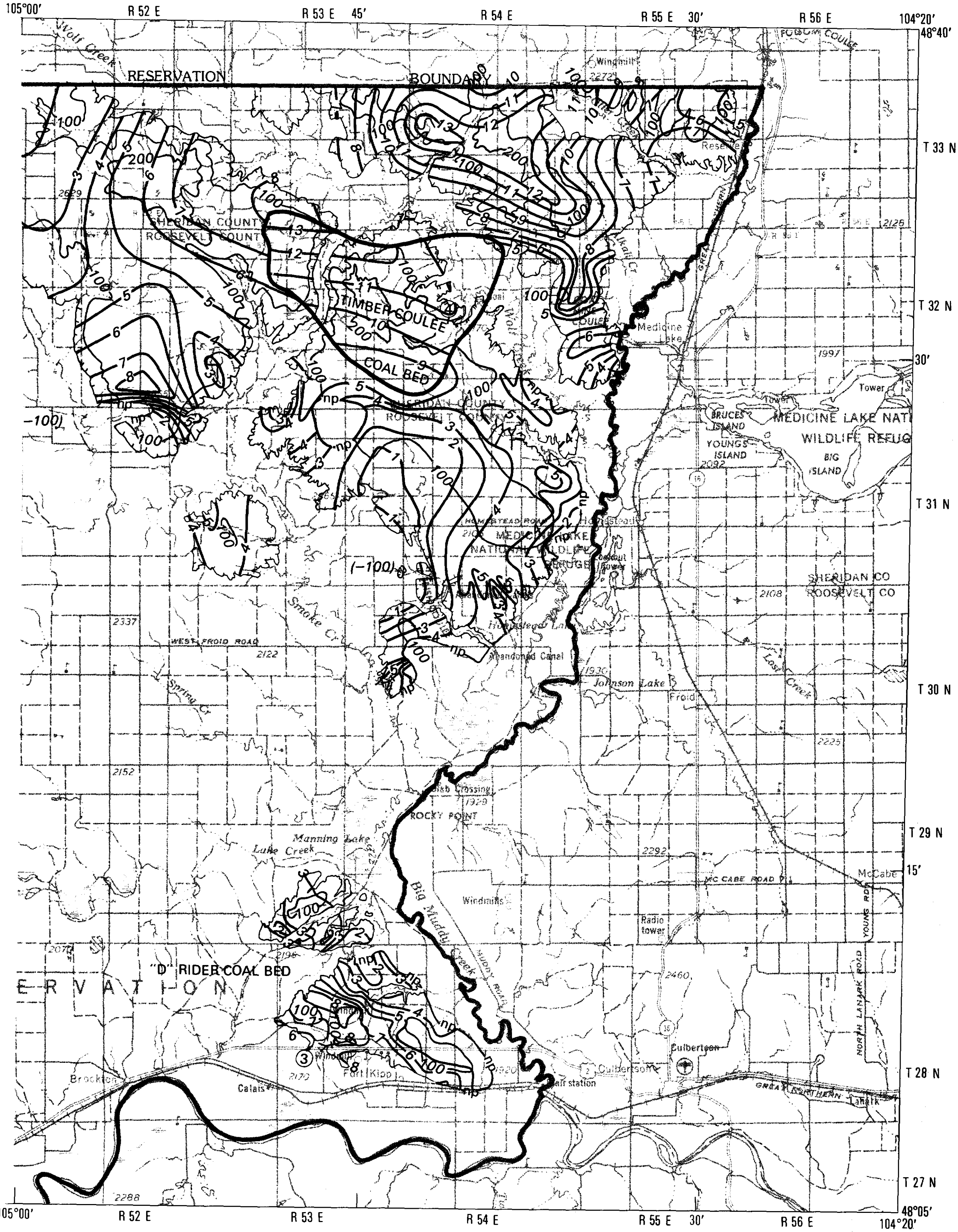


Figure 30 (above and facing page). Isopach of coal and overburden of the Upper Timber Coulee, Timber Coulee, and "D" Rider coal beds, Fort Peck Indian Reservation.


105°00′
R 52 E
R 53 E
45′
R 54 E
R 55 E
30′
R 56 E
104°20′
48°40′
RESERVATION
BOUNDARY
T 33 N
SHERIDAN COUNTY
ROOSEVELT COUNTY
TIMBER COULEE
COAL BED
T 32 N
30′
MEDICINE LAKE NAT
WILDLIFE REFUG
T 31 N
SHERIDAN CO
ROOSEVELT CO
T 30 N
T 29 N
15′
"D" RIDER COAL BED
T 28 N
T 27 N
105°00′
R 52 E
R 53 E
R 54 E
R 55 E
30′
R 56 E
48°05′
104°20′

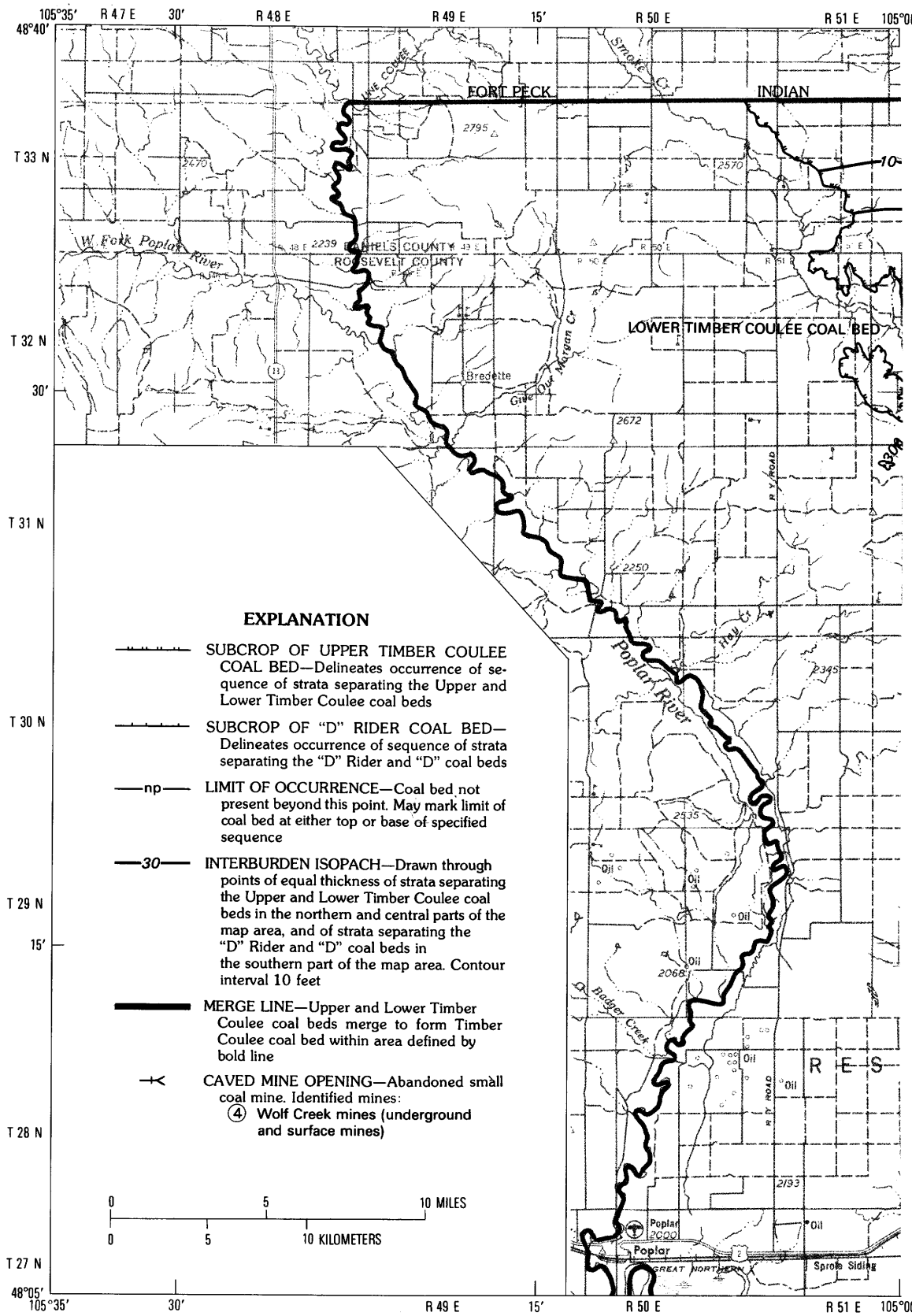
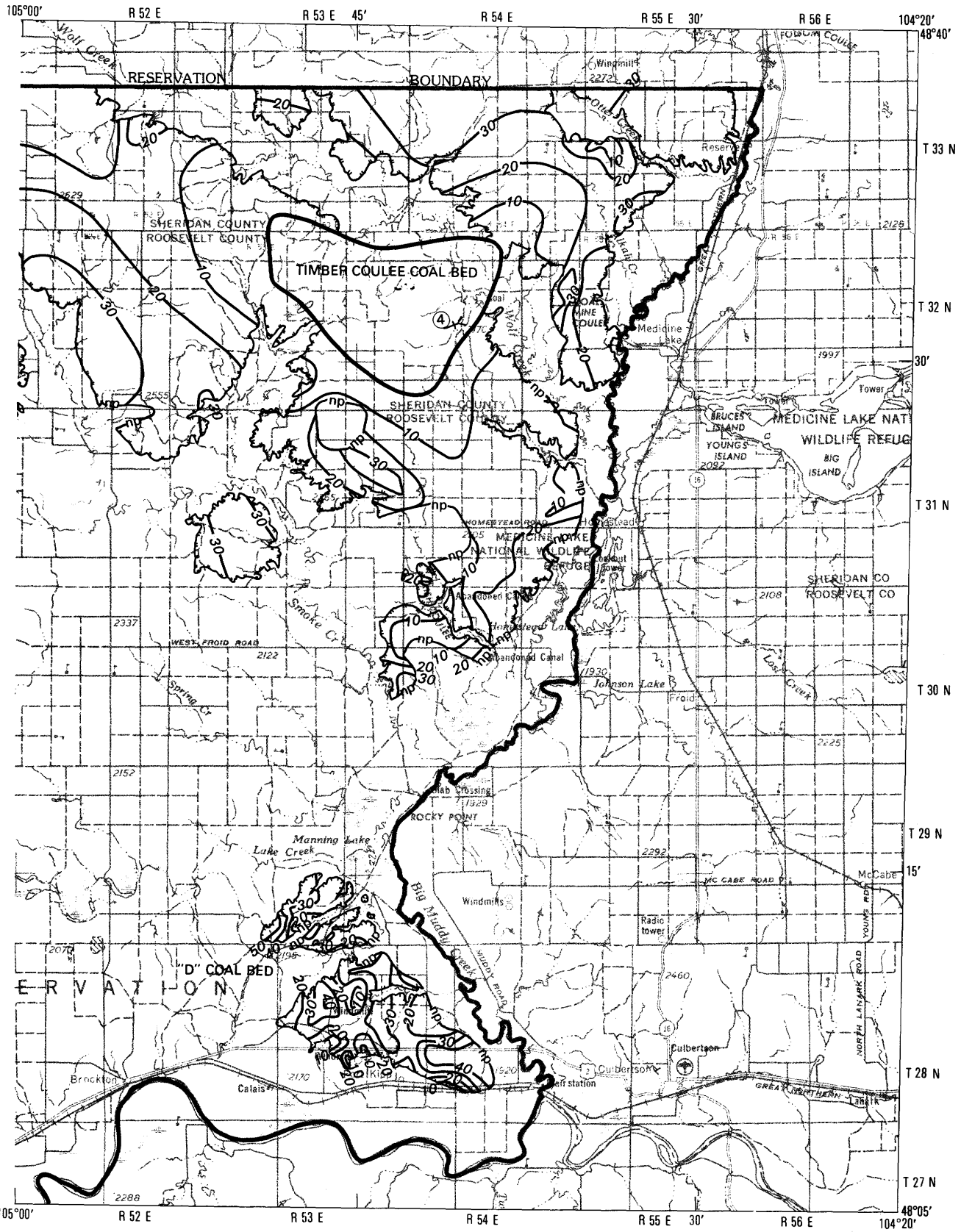


Figure 31 (above and facing page). Variations in the thickness of strata separating the Upper and Lower Timber Coulee coal beds and the "D" Rider and "D" coal beds, Fort Peck Indian Reservation.


105°00'
R 52 E
R 53 E
45'
R 54 E
R 55 E
30'
R 56 E
104°20'
48°40'
RESERVATION BOUNDARY
TIMBER COULEE COAL BED
"D" COAL BED
SHERIDAN COUNTY
ROOSEVELT COUNTY
MEDICINE LAKE NATIONAL WILDLIFE REFUGE
Medicine Lake
Johnson Lake
Manning Lake
Lake Creek
Big Muddy Creek
ROCKY POINT
Culbertson
Brockton
Calais
Froid
McCabe
T 33 N
T 32 N
T 31 N
T 30 N
T 29 N
T 28 N
T 27 N
105°00'
48°05'

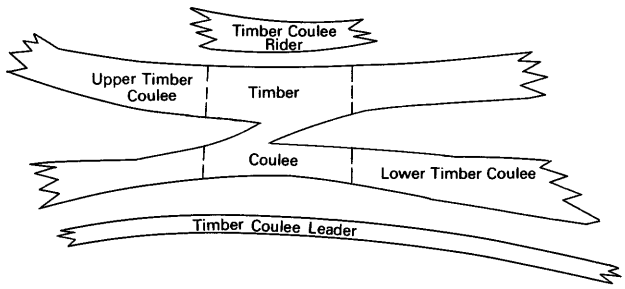


Figure 32. The coal beds of the Timber Coulee coal zone.

COAL QUALITY

From the 15 core holes drilled in the Fort Peck Indian Reservation in 1978 and 1979, fresh samples of coal were obtained for chemical analysis. The locations of the core holes are shown in figures 5 and 7. Thirty-seven samples of coal collected from the cores are listed in table 4. Proximate and ultimate analyses, and heat-of-combustion, air-dried-loss, forms-of-sulfur, and ash-fusion-temperature determinations on the 37 samples of coal were made by the U.S. Department of Energy, Pittsburgh, Pa. The analyses of 21 of the samples are shown in table 5. The proximate and ultimate analyses of 16 of the 37 samples analyzed were discarded because of questionable low moisture content that resulted from inadvertent drying of some samples prior to analysis.

Analyses of the 37 coal samples for ash content and major- and minor-oxide and trace-element composition of the laboratory ash are listed in table 6 and were provided by the U.S. Geological Survey. Most of the analytical procedures used by the U.S. Geological Survey are described in Swanson and Huffman (1976). Table 7 contains whole-coal data. Table 8 lists 23 additional elements not included in tables 6 and 7 which were looked for but not found. These elements, if present, are in concentrations less than their lower limits of detection.

Arithmetic means computed on moisture, ash, sulfur, and heat of combustion on an as-received basis for 21 samples are shown in table 9. The apparent rank of all coals analyzed is lignite A, according to specifications of the American Society for Testing and Materials (1978). Lignite is a brownish-black coal in which the alteration of vegetal material has proceeded further than for peat but not as far as for subbituminous coal. Typically, lignite has a relatively high moisture content and low heat value (Henkes and Magill, 1970). Complete analyses of these samples are also found in Hardie and Arndt (1981) and Arndt and others (1982a).

COAL RESOURCE ESTIMATES GENERATED WITH COMPUTER

Coal resources have been estimated in several areas using both manual and computer methods. Comparison of NCRDS and manual coal resource estimation methods for other areas, for example, Schneider and others (1984), yielded similar results and showed overall agreement. The resource information presented in this report was generated using NCRDS.

The terms used in reporting the estimated coal resources are those currently in use by the U.S. Geological Survey and are defined in "Coal Resource Classification System of the U.S. Geological Survey," U.S. Geological Survey Circular 891 (Wood and others, 1983). The following general definitions of coal resources and resource identification are taken from Circular 891:

Resources—Naturally occurring concentrations or deposits of coal in the Earth's crust, in such forms and amounts that economic extraction is currently or potentially feasible.

Identified resources—Resources whose location, rank, quality, and quantity are known or estimated from specific geologic evidence. Identified coal resources include economic, marginally economic, and subeconomic components. To reflect varying distances from points of control or reliability, these subdivisions can be divided into demonstrated and inferred, or preferably into measured, indicated, and inferred. Tonnage estimates for this category of resource include all bituminous coal and anthracite 14 inches or more thick and all subbituminous coal and lignite 30 inches or more thick from the surface to a depth of 6,000 ft whose location, rank, quality and quantity have been determined within specified degrees of reliability as demonstrated, measured, indicated, and inferred.

Estimate—A determination as to the amount or tonnage of coal in an area. The term estimate indicates that the quantities of resources are known imprecisely. An estimate differs from an assessment, which is an analysis of all data concerning an area's coal resources and reserves with the objective of reaching a judgment about the geologic nature and economic potential of the coal resources and reserves of the area.

An undetermined portion of the identified resources in the eastern part of the Fort Peck Reservation could be classified as "reserve base". The concept of the reserve base is to define a quantity of in-place coal, any part of which is or may become economic depending upon the method of mining and the economic assumptions that are and will be used (Wood and others, 1983,

Table 4. U.S. Geological Survey sample numbers, core-hole numbers and locations, and depth intervals for 37 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana

[All samples were collected from cores]

USGS sample No.	USGS core hole No.	Core hole location	Depth interval (ft)
		Roosevelt County	
D209953	GS-2C	NW1/4 SE1/4 sec. 23, T. 28 N., R. 53 E.	244.4-247.5
D209954	GS-2C'	----------do----------	243.7-248.8
D209955	--do--	----------do----------	290.0-294.5
D209956	--do--	----------do----------	304.4-311.0
D209957	GS-1C	NW1/4 NW1/4 sec. 21, T. 28 N., R. 54 E.	117.2-126.0
D209958	--do--	----------do----------	134.7-143.7
D209959	GS-4C	NE1/4 SE1/4 sec. 24, T. 28 N., R. 54 E.	152.4-154.5
D209960	--do--	----------do----------	154.8-156.2
D209961	--do--	----------do----------	203.0-210.1
D209962	GS-6C	SE1/4 SE1/4 sec. 35, T. 29 N., R. 53 E.	67.5- 71.1
D209963	--do--	----------do----------	94.5-104.0
D209964	--do--	----------do----------	105.7-106.5
D209965	GS-8C	SE1/4 NW1/4 sec. 10, T. 28 N., R. 53 E.	178.0-180.8
D209966	--do--	----------do----------	181.1-184.2
D209967	GS-9C	NE1/4 NW1/4 sec. 33, T. 29 N., R. 53 E.	275.9-276.9
D209968	--do--	----------do----------	277.1-282.6
D221125	GS-22C	SW1/4 SE1/4 sec. 26, T. 32 N., R. 51 E.	112.2-117.1
D221126	--do--	----------do----------	150.0-154.4
D221127	--do--	----------do----------	360.5-362.4
D221128	--do--	----------do----------	362.9-367.1
D221129	--do--	----------do----------	371.1-374.0
D221130	GS-13C	SE1/4 SE1/4 sec. 10, T. 31 N., R. 54 E.	131.5-135.9
D221131	GS-20C	NE1/4 SE1/4 sec. 21, T. 31 N., R. 51 E.	217.1-222.1
D221132	GS-28C	SE1/4 SE1/4 sec. 1, T. 32 N., R. 49 E.	165.6-167.5
D221133	--do--	----------do----------	206.0-211.7
D221134	--do--	----------do----------	325.7-330.2
D221135	--do--	----------do----------	331.1-332.1
D221136	GS-34C	NW1/4 NW1/4 sec. 17, T. 32 N., R. 53 E.	228.1-233.2
D221137	--do--	----------do----------	244.0-247.5
D221138	GS-44C	NE1/4 NE1/4 sec. 5, T. 30 N., R. 53 E	124.0-130.0
		Sheridan County	
D221139	GS-40C	NW1/4 NW1/4 sec. 36, T. 33 N., R. 54 E.	113.6-116.0
D221140	--do--	----------do----------	119.6-132.0
D221141	--do--	----------do----------	144.2-147.9
D221142	GS-41C	SW1/4 SW1/4 sec. 31, T. 33 N., R. 53 E.	48.0- 51.3
D221143	--do--	----------do----------	161.3-169.7
D221144	--do--	----------do----------	170.5-175.3
D221145	GS-42C	SE1/4 NE1/4 sec. 22, T. 32 N., R. 54 E.	28.7- 39.5

p. 3). Coal resources in this report are reported in the "resource" classification and have not been converted to the "reserve base/reserves" classification.

Data Preparation

A working file of stratigraphic information for the eastern part of the Fort Peck Indian Reservation was retrieved from the NCRDS master data base for Montana (MTSTRAT) using the PACER (Program to Analyze Coal Energy Resources) data storage and retrieval system. These data consist of drill-hole and outcrop locations with their respective stratigraphic sections entered and verified in the computer by U.S. Geological Survey geologists.

Retrievals were made from this file to generate several products for analysis and approval. To retrieve data representative of each potentially recoverable coal bed in the Fort Union Formation, PACER requests were made for each of the 15 coal beds. These records were processed using a program (VLATLONG) to sum the thicknesses of coal bed horizons from the same drill hole. This procedure resulted in randomly spaced point locations with total-coal-thickness values per coal bed. These point locations and values were then used for input to the GARNET (Graphic Analysis of Resources using Numerical Evaluation Techniques) program for graphic display and calculation of coal tonnage estimates.

Required digitized information includes x-y locations (latitude and longitude) for each data point; township-range intersections; reservation, county, and coal occurrence boundaries; and thickness-of overburden categories. The coal thickness boundaries were generated in GARNET by gridding randomly spaced data point locations to create an evenly spaced grid of estimated coal thickness values; these values were then displayed as contours or isolines at coal thickness intervals of 1 ft. A grid spacing of 0.2 mi was selected based on the spacing of random data points over the area. The GARNET software provides two gridding algorithm options for interpolation of randomly spaced data: a quadratic algorithm for data that are distributed densely and evenly and a planar algorithm for data that are distributed diffusely and unevenly. The planar gridding option was used for the coal-bed isopach grids because of the diffuse data distribution in this study area. The planar algorithm averages the values over a larger area than the quadratic algorithm and produced coal isopach maps that correlate well with the interpretation of the data by the U.S. Geological Survey geologists.

The computer does not make subjective decisions concerning the configuration of the isopach; it can only apply programmed mathematical relationships to data submitted by the user (Schneider and others, 1984). Sufficient data points were not available to control the isopachs in some locations, therefore the GARNET point-editing capability was used to add control points to modify the isopach patterns to satisfy geological interpretation. The isopach maps generated using the computer compare favorably with the hand-drawn maps, which are shown in figures 12, 14, 16, 18, 20, 22, 24, 26, 28, and 30.

Resource Calculations

The principal criteria used in calculating coal resources by bed in the eastern part of the Fort Peck Indian Reservation are shown in table 10. Tonnage estimates of coal resources are computed by projection of coal and overburden thickness and rank data for specific radii from a point of measurement (fig. 33). GARNET allows graphic combination of digitized and computer-generated line data files to derive boundary lines of the required categories. In this study, isopach maps generated with the computer were used to delineate boundaries of coal thickness categories of 2.5–5 ft, 5–10 ft, and 10–20 ft.

The GARNET software uses a point location file, a gridded coal isopach file, and a boundary file to calculate the volume of coal. Coal resource volumes are computed for each of the reliability categories (measured, indicated, and inferred) and then multiplied by a density factor based on the rank of the coal. For the Fort Union coal estimates, a density factor of 1,750 tons per acre foot was selected to represent the coal rank of lignite in this area. Because the coals are thin and vary in thickness and continuity, and in many cases do not extend further than the inferred boundary, hypothetical resources were not calculated. Figures 34–42 show the digitized reservation and coal bed boundaries. The shaded areas represent coal greater than 2.5 ft thick taken from isopach maps generated and used in GARNET to calculate resources. Areas where the 2.5-ft boundaries differ from the hand-drawn isopach maps of this report (figs. 12, 14, 16, 18, 20, 22, 24, 26, 28, 30) are minimal and simply reflect the inherent differences between manual maps and those generated with the computer.

Results of coal resource calculations that were generated using GARNET are the resource tonnage values in tables 11–22. The coal resource tonnages are displayed in several tables for comparative purposes. The various tables display total coal and (or) identified resources by bed, county, township, reliability of data, overburden, and thickness categories (tables 11–18).

Summaries of the coal resources in the entire study area are given in tables 19–22 and figure 43. Table 19 displays graphically the tonnage values given in table 20. Figure 43 gives an overall picture of the distribution of coal resources over the study area. Total Fort Union identified coal resources within the eastern part of the Fort Peck Indian Reservation are estimated to be 8.5 billion short tons.

Table 5. Proximate and ultimate analyses, and heat-of-combustion, air-dried-loss, forms-of-sulfur, and ash-fusion-temperature determinations for 21 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana

[All analyses in percent except heat of combustion and ash-fusion temperatures. For each sample number, the analyses are reported three ways: first, as received; second, moisture free; and third, moisture and ash free. L, less than value shown; - - -, no data. All analyses by U.S. Department of Energy, 1979–80]

Sample number	Proximate analysis				Ultimate analysis					Heat of combustion
Bed name	Moisture	Volatile matter	Fixed carbon	Ash	Hydrogen	Carbon	Nitrogen	Oxygen	Sulfur	Btu/lb
D209953	34.3	23.9	33.4	8.4	6.4	42.6	0.6	40.8	1.2	7,020
"AA"	---	36.4	50.8	12.8	3.9	64.8	.9	15.7	1.9	10,680
	---	41.8	58.2	---	4.5	74.3	1.1	18.0	2.1	12,250
D209954	35.4	23.9	32.9	7.8	6.7	41.5	.6	42.5	.9	6,920
"AA"	---	37.0	51.0	12.0	4.3	64.3	1.0	17.2	1.4	10,710
	---	42.0	58.0	---	4.8	73.1	1.1	19.4	1.6	12,170
D209955	31.8	23.5	32.7	12.0	5.9	41.4	.6	39.2	.9	6,800
"A"	---	34.5	48.0	17.5	3.4	60.7	.9	16.1	1.3	9,980
Rider	---	41.9	58.1	---	4.1	73.7	1.1	19.5	1.6	12,100
D209956	32.7	22.5	31.8	13.0	6.3	39.8	.6	39.8	.5	6,500
"A"	---	33.4	47.3	19.3	3.9	59.2	.8	16.0	.7	9,660
	---	41.4	58.6	---	4.9	73.4	1.0	19.8	.9	11,980
D209957	35.6	25.1	28.2	11.1	6.9	38.0	.7	42.9	.4	6,450
"D"	---	39.0	43.7	17.3	4.5	58.9	1.0	17.6	.7	10,010
Rider	---	47.1	52.9	---	5.5	71.2	1.2	21.3	.8	12,100
D209958	35.3	26.2	31.5	7.0	6.8	40.8	.7	44.4	.3	6,840
"D"	---	40.6	48.5	10.9	4.5	63.2	1.1	19.9	.5	10,590
	---	45.5	54.5	---	5.0	70.9	1.2	22.3	.5	11,880
D209959	35.5	25.7	29.6	9.2	6.9	39.6	.7	42.9	.7	6,670
"D"	---	39.9	45.8	14.3	4.7	61.4	1.0	17.6	1.1	10,340
Rider	---	46.6	53.4	---	5.4	71.6	1.2	20.5	1.3	12,060
D209960	34.3	26.4	33.4	5.9	6.6	43.1	.7	43.4	.3	7,170
"D"	---	40.1	50.9	9.0	4.3	65.6	1.1	19.5	.4	10,910
Rider	---	44.1	55.9	---	4.7	72.1	1.2	21.5	.5	11,990
D209961	36.3	24.7	30.7	8.3	6.7	39.4	.7	44.6	.3	6,660
"D"	---	38.8	48.2	13.0	4.2	61.9	1.1	19.3	.4	10,460
	---	44.6	55.4	---	4.8	71.2	1.2	22.2	.5	12,030
D209962	34.7	24.9	27.9	12.5	6.3	37.7	.7	40.7	2.1	6,410
"D"	---	38.1	42.8	19.1	3.8	57.7	1.0	15.1	3.2	9,800
Rider	---	47.1	52.9	---	4.7	71.4	1.3	18.7	3.9	12,120
D209963	36.3	25.4	30.7	7.6	6.9	40.1	.7	44.2	.5	6,690
"D"	---	39.9	48.2	11.9	4.5	62.9	1.0	18.9	.8	10,490
	---	45.3	54.7	---	5.1	71.4	1.2	21.4	1.0	11,910
D209964	35.9	24.5	28.1	11.5	6.6	36.5	.5	43.2	1.7	6,250
"D"	---	38.2	43.9	17.9	4.0	57.0	.8	17.5	2.7	9,760
	---	46.6	53.4	---	4.9	69.5	.9	21.3	3.3	11,890
D209965	36.3	25.9	29.5	8.3	6.7	39.5	.7	44.3	.5	6,610
"B"	---	40.7	46.3	13.0	4.1	62.0	1.0	19.1	.7	10,380
	---	46.8	53.2	---	4.8	71.3	1.2	21.9	.9	11,930
D209966	33.7	22.3	24.6	19.4	6.3	32.7	.6	40.2	.8	5,490
"B"	---	33.6	37.1	29.3	3.9	49.3	.9	15.4	1.2	8,290
	---	47.5	52.5	---	5.5	69.7	1.3	21.8	1.7	11,710
D209968	31.9	23.0	29.4	15.7	6.1	37.2	.6	38.9	1.5	6,250
"AB"	---	33.8	43.1	23.1	3.8	54.6	.9	15.5	2.2	9,170
	---	43.9	56.1	---	4.9	70.9	1.2	20.1	2.9	11,920

Table 5. Proximate and ultimate analyses, and heat-of-combustion, air-dried-loss, forms-of-sulfur, and ash-fusion-temperature determinations for 21 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana—Continued

Sample number	Proximate analysis				Ultimate analysis					Heat of combustion
Bed name	Moisture	Volatile matter	Fixed carbon	Ash	Hydrogen	Carbon	Nitrogen	Oxygen	Sulfur	Btu/lb
D221130	33.7	27.1	30.8	8.4	6.6	41.0	0.8	42.6	0.6	6,848
Lower	---	40.9	46.4	12.7	4.2	61.9	1.1	19.0	.9	10,335
Timber	---	46.9	53.1	---	4.9	70.9	1.3	21.8	1.1	11,837
Coulee										
D221138	37.9	24.4	30.1	7.6	6.8	39.0	.7	45.3	.6	6,476
Smoke	---	39.3	48.5	12.2	4.2	62.7	1.1	18.8	.9	10,427
Creek	---	44.7	55.3	---	4.8	71.5	1.2	21.4	1.0	11,883
D221139	35.3	25.8	27.5	11.4	6.7	37.7	.6	42.4	1.2	6,480
Timber	---	39.9	42.5	17.6	4.3	58.2	1.0	17.2	1.8	10,012
Coulee	---	48.3	51.7	---	5.2	70.6	1.2	20.9	2.2	12,143
Rider										
D221140	30.9	27.1	32.6	9.4	6.4	42.5	.7	40.4	.6	7,077
Upper	---	39.2	47.2	13.6	4.2	61.4	1.0	18.8	.9	10,242
Timber	---	45.4	54.6	---	4.9	71.1	1.2	21.8	1.0	11,859
Coulee										
D221141	34.0	21.1	24.6	20.3	6.1	30.6	.6	38.3	4.1	5,447
Lower	---	32.0	37.2	30.8	3.5	46.4	.9	12.3	6.2	8,254
Timber	---	46.2	53.8	---	5.0	67.0	1.3	17.7	8.9	11,929
Coulee										
D221145	36.6	23.4	28.0	12.0	6.6	37.0	.7	42.6	1.1	6,247
Timber	---	36.9	44.2	18.9	4.0	58.4	1.0	15.9	1.8	9,849
Coulee	---	45.5	54.5	---	5.0	72.0	1.3	19.6	2.2	12,147

Table 5. Proximate and ultimate analyses, and heat-of-combustion, air-dried-loss, forms-of-sulfur, and ash-fusion-temperature determinations for 21 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana—Continued

Sample number Bed name	Air dried loss	Forms of sulfur			Ash fusion temperature, °F		
		Sulfate	Pyritic	Organic	Initial deformation	Softening	Fluid
D209953	27.2	0.02	0.82	0.39	2,000	2,110	2,190
"AA"	---	.03	1.24	.59			
	---	.03	1.42	.67			
D209954	28.0	.01L	.50	.43	2,050	2,170	2,280
"AA"	---	.01L	.77	.67			
	---	.01L	.87	.76			
D209955	24.3	.01L	.57	.35	1,910	2,020	2,140
"A"	---	.01L	.83	.51			
Rider	---	.01L	1.01	.61			
D209956	25.1	.01L	.17	.29	2,030	2,150	2,270
"A"	---	.01L	.26	.44			
	---	.01L	.32	.54			
D209957	28.1	.01	.16	.26	2,110	2,230	2,320
"D"	---	.01	.25	.40			
Rider	---	.01	.30	.48			
D209958	27.8	.01L	.12	.19	2,080	2,170	2,280
"D"	---	.01L	.18	.30			
	---	.01L	.20	.33			
D209959	28.0	.01L	.14	.56	1,910	2,020	2,110
"D"	---	.01L	.21	.87			
Rider	---	.01L	.25	1.02			
D209960	26.3	.01L	.03	.25	2,200	2,290	2,370
"D"	---	.01L	.04	.38			
Rider	---	.01L	.05	.42			
D209961	28.6	.01L	.02	.25	1,960	2,070	2,160
"D"	---	.01L	.03	.40			
	---	.01L	.04	.46			
D209962	27.2	.01	.84	1.22	1,890	1,980	2,070
"D"	---	.02	1.29	1.87			
Rider	---	.02	1.60	2.31			
D209963	28.6	.01L	.16	.37	1,910	2,120	2,210
"D"	---	.01L	.26	.58			
	---	.01L	.29	.65			
D209964	28.5	.08	.49	1.16	1,980	2,090	2,180
"D"	---	.13	.76	1.82			
	---	.16	.92	2.21			
D209965	28.5	.01L	.04	.44	2,160	2,280	2,360
"B"	---	.01L	.06	.69			
	---	.01L	.06	.79			
D209966	26.9	.01L	.12	.68	2,240	2,350	2,440
"B"	---	.01L	.19	1.02			
	---	.01L	.26	1.44			
D209968	24.5	.01	.25	1.27	2,000	2,110	2,200
"AB"	---	.01	.37	1.86			
	---	.01	.48	2.42			

Table 5. Proximate and ultimate analyses, and heat-of-combustion, air-dried-loss, forms-of-sulfur, and ash-fusion-temperature determinations for 21 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana—Continued

Sample number Bed name	Air dried loss	Forms of sulfur			Ash fusion temperature, °F		
		Sulfate	Pyritic	Organic	Initial deformation	Softening	Fluid
D221130	25.9	0.02	0.11	0.48	2,080	2,110	2,140
Lower	---	.03	.17	.73			
Timber	---	.04	.20	.84			
Coulee							
D221138	32.9	.01	.23	.33	2,160	2,250	2,340
Smoke	---	.01	.37	.53			
Creek	---	.01	.42	.60			
D221139	30.8	.03	.59	.55	2,050	2,110	2,250
Timber	---	.05	.92	.85			
Coulee	---	.06	1.11	1.03			
Rider							
D221140	23.2	.04	.14	.41	2,050	2,100	2,150
Upper	---	.05	.21	.59			
Timber	---	.06	.24	.68			
Coulee							
D221141	29.9	.02	3.50	.56	1,940	2,030	2,140
Lower	---	.04	5.30	.85			
Timber	---	.05	7.67	1.22			
Coulee							
D221145	31.2	.01	.79	.32	2,060	2,150	2,270
Timber	---	.01	1.25	.50			
Coulee	---	.01	1.54	.61			

Table 6. Major- and minor-oxide and trace-element composition of the laboratory ash of 37 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana

[Lignite ashed at 525 °C. L, less than value shown; N, not detected. "–S" after element title indicates determinations by semiquantitative emission spectrography. The spectrographic results are to be identified with geometric brackets whose boundaries are part of the ascending series 0.12, 0.18, 0.26, 0.38, 0.56, 0.83, 1.2, and so forth, but reported as midpoints of the brackets, 0.1, 0.15, 0.2, 0.3, 0.5, 0.7, 1.0, and so forth. Precision of the spectrographic data is plus-or-minus one bracket at 68 percent or plus-or-minus two brackets at 95 percent confidence level. All analyses by U.S. Geological Survey laboratories, Lakewood, Colo.]

USGS sample No.	Ash (percent)	SiO_2 (percent)	Al_2O_3 (percent)	CaO (percent)	MgO (percent)	Na_2O (percent)	K_2O (percent)	Fe_2O_3 (percent)	TiO_2 (percent)	P_2O_5 (percent)
D209953	10.7	16	10	15	4.32	9.32	0.25	10	0.27	0.09L
D209954	9.4	12	7.4	14	3.98	9.32	.26	14	.23	.09L
D209955	16.0	39	19	8.5	2.49	5.40	1.1	5.1	.45	.09L
D209956	15.6	41	21	10	2.66	5.94	1.2	2.7	.77	.09L
D209957	12.9	15	18	13	6.47	.54	1.3	5.7	.63	.23
D209958	9.0	28	16	20	9.13	.68	.66	4.3	.57	.18
D209959	10.8	28	13	13	4.48	6.35	1.1	9.2	.53	.46
D209960	7.4	15	12	22	6.31	8.64	.36	7.0	.42	.21
D209961	10.9	34	17	14	4.81	7.83	.83	4.4	.58	.09L
D209962	16.2	30	13	10	4.81	.81	1.1	12	.43	.14
D209963	10.1	26	15	18	8.13	.81	.53	4.6	.55	1.01
D209964	15.6	21	7.4	7.3	3.82	.54	1.1	29	.37	.09L
D209965	11.4	32	21	15	6.31	.68	.99	3.1	.62	.09L
D209966	27.5	51	21	6.3	2.82	.68	1.8	2.9	.65	.09L
D209967	31.7	51	16	4.6	1.83	2.97	.98	6.4	.94	.09L
D209968	22.6	43	17	6.3	2.32	4.05	1.1	6.4	.55	.09L
D221125	12.8	30	12	14	5.67	.34	.80	11	.99	.08L
D221126	13.0	30	18	15	5.39	.37	.78	9.0	.32	.08
D221127	20.0	34	18	8.5	2.52	4.18	1.2	10	.57	.05L
D221128	23.1	47	23	9.5	2.21	3.95	1.7	2.3	.63	.04
D221129	13.3	34	13	15	1.42	.51	1.2	4.0	.45	.08
D221130	9.7	32	16	18	4.82	.77	.98	6.0	.48	.21
D221131	18.5	41	25	8.7	1.49	4.62	1.6	3.9	.58	.05
D221132	29.3	41	16	7.3	3.42	.61	1.9	12	.47	.07
D221133	12.4	28	16	20	5.26	1.16	.43	4.4	.50	.08L
D221134	14.6	41	17	12	2.24	4.96	1.9	3.9	.58	.41
D221135	27.8	45	23	6.6	1.40	3.50	2.4	2.2	.80	.07
D221136	21.0	26	9.1	11	4.23	1.00	1.0	21	.25	.29
D221137	24.7	41	16	6.7	3.37	1.13	2.0	11	.53	.12
D221138	9.3	28	19	21	5.85	.44	.43	3.4	.45	.11
D221139	15.0	28	21	9.9	2.95	5.41	.44	9.3	.38	.07L
D221140	10.9	34	16	12	3.96	6.94	1.3	5.4	.43	.46
D221141	21.5	43	18	5.3	2.11	3.67	1.1	11	.58	.09
D221142	18.6	28	18	12	4.36	.25	.29	11	.55	.05
D221143	9.8	18	12	20	6.80	4.00	.48	9.7	.28	.61
D221144	14.4	28	14	13	4.94	3.37	1.2	9.2	.43	.14
D221145	13.9	21	11	13	4.63	1.15	.53	17	.30	.36

Table 6. Major- and minor-oxide and trace-element composition of the laboratory ash of 37 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana—Continued

USGS sample No.	B-S (ppm)	Ba-S (ppm)	Be-S (ppm)	Cd (ppm)	Ce-S (ppm)	Cu (ppm)	Ga-S (ppm)	Ge-S (ppm)	La-S (ppm)	Li (ppm)	Mn (ppm)	Mo-S (ppm)
D209953	1500	5000	5	1.0	N	105	30	N	N	17	380	15
D209954	1500	15000	7	1.0L	N	75	30	N	N	12	350	20
D209955	1000	2000	5	1.0	N	87	30	N	N	67	355	10
D209956	1000	10000	5	1.0L	N	109	50	N	N	63	345	7L
D209957	1000	1000	5	1.0	N	93	50	N	N	43	335	15
D209958	1500	1500	3	1.0	N	84	30	N	N	61	470	10
D209959	1000	1000	5	2.0	N	140	70	70	N	23	660	30
D209960	1500	3000	15	1.0	N	66	30	N	N	23	1220	20
D209961	1000	1000	5	2.0	N	114	50	N	N	54	505	10
D209962	700	700	10	1.0	N	71	50	20L	N	25	210	10
D209963	1500	2000	3L	1.0	N	55	30	N	N	56	1330	10
D209964	1000	300	10	2.0	N	106	150	20L	N	10L	215	50
D209965	1000	500	10	1.0L	N	43	100	N	N	65	335	15
D209966	500	500	3	1.0L	N	64	30	N	N	68	150	20
D209967	500	500	5	1.0L	N	66	70	N	N	88	140	10
D209968	500	700	3	1.0	N	106	30	N	N	87	185	15
D221125	1000	1500	15	1.0L	150	49	50	10	50	49	650	30
D221126	1000	3000	7	1.0L	150	49	30	5	50	61	272	30
D221127	1000	1000	10	1.0L	100	88	50	5	50	67	249	20
D221128	700	3000	7	1.0	100L	24	30	3	50	102	280	7
D221129	1500	7000	15	1.0	200	90	50	10	70	27	565	20
D221130	1000	3000	15	4.0	150	114	30	5	70	41	549	30
D221131	1500	5000	10	1.0L	150	30	70	7	100	122	201	7
D221132	700	700	15	1.0L	100L	69	30	10	50	56	209	20
D221133	2000	1500	10	1.0	150	53	30	5	70	55	363	20
D221134	2000	3000	7	1.0	100	133	50	7	70	60	558	15
D221135	1500	5000	15	1.0	150	77	70	7	100	100	356	7
D221136	1000	7000	10	1.0L	100L	29	30	7	70	29	328	30
D221137	1000	7000	10	1.0L	100L	38	20	7	70	41	169	15
D221138	1000	1500	5	2.0	100	43	30	5	70	69	486	15
D221139	700	5000	20	2.0	100L	63	50	10	100	67	455	50
D221140	700	7000	7	1.0L	150	44	20	5	50	51	373	20
D221141	700	2000	15	1.0L	200	48	50	20	70	44	180	15
D221142	700	2000	15	2.0	200	109	50	15	100	55	270	50
D221143	1500	2000	5	1.0	150	35	20	7	70	38	534	15
D221144	1000	15000	10	1.0	150	66	30	5	70	31	389	20
D221145	1000	5000	7	1.0L	100L	36	20	5	50	38	354	15

Table 6. Major- and minor-oxide and trace-element composition of the laboratory ash of 37 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana—Continued

USGS sample No.	Nb-S (ppm)	Ni-S (ppm)	Pb (ppm)	Sc-S (ppm)	Sr-S (ppm)	V-S (ppm)	Y-S (ppm)	Yb-S (ppm)	Zn (ppm)	Zr-S (ppm)
D209953	20L	20	36	20	5000	150	70	7	193	200
D209954	20L	30	25L	30	5000	150	50	5	170	150
D209955	20L	50	50	10	1500	200	50	5	196	300
D209956	20L	30	64	30	2000	200	50	5	152	500
D209957	20L	30	31	20	2000	200	50	5	296	200
D209958	20L	10	35	15	3000	100	50	3	164	150
D209959	20L	150	30	30	3000	500	70	7	173	500
D209960	20	70	25	30	7000	150	150	15	296	300
D209961	20L	15	36	20	3000	150	70	5	344	300
D209962	20L	30	25L	20	1000	150	100	10	118	300
D209963	20L	20	25L	15	2000	100	50	3	44	200
D209964	20L	300	47	50	1000	500	150	15	354	500
D209965	20L	50	28	15	1500	150	70	5	85	300
D209966	20L	30	52	10	1000	150	50	5	85	300
D209967	20L	50	47	20	1500	200	50	7	66	300
D209968	N	50	28	15	1500	200	50	3	72	150
D221125	70	20	28	20	1000	100	70	5	35	500
D221126	50	15	36	10	700	50	70	5	32	300
D221127	30	70	45	20	1500	200	70	5	66	300
D221128	50	7	58	10L	2000	70	50	5	34	500
D221129	30	30	34	20	3000	150	100	10	272	500
D221130	30	50	43	20	1000	150	100	10	94	500
D221131	70	20	56	20	3000	150	70	7	20L	700
D221132	30	70	44	20	1000	150	100	7	78	500
D221133	50	20	68	15	2000	150	70	5	25	700
D221134	30	30	45	20	2000	150	70	5	42	500
D221135	100	30	80	20	2000	200	100	10	76	1000
D221136	30	30	30L	15	1500	100	50	5	33	300
D221137	50	30	28	15	1500	150	70	5	63	700
D221138	50	20	83	15	1000	50	50	5	68	300
D221139	70	100	49	30	3000	150	150	15	165	1000
D221140	30	50	35	15	2000	100	50	5	55	500
D221141	50	50	33	20	1500	150	70	7	39	700
D221142	50	20	40	20	700	100	100	7	129	700
D221143	30	20	33	10	3000	50	50	3	29	200
D221144	30	50	30L	20	2000	100	70	7	67	500
D221145	20	15	31	10	2000	70	50	3	44	300

Table 7. Major-, minor-, and trace-element composition of 37 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana

[As, Co, Cr, F, Hg, Sb, Se, Th, and U values are from direct determinations on air-dried (32 °C) coal; all other values are analyses of coal ash calculated back to whole-coal basis. B, not determined; L, less than value shown; N, not detected. "–S" after element title indicates analysis by emission spectrography. All analyses by U.S. Geological Survey laboratories, Lakewood, Colo.]

USGS sample No.	Si (percent)	Al (percent)	Ca (percent)	Mg (percent)	Na (percent)	K (percent)	Fe (percent)	Ti (percent)	Ag-S (ppm)	As (ppm)
D209953	0.80	0.57	1.1	0.28	0.74	0.022	0.75	0.017	N	7.4
D209954	.53	.37	.94	.23	.65	.020	.92	.013	N	4.8
D209955	2.9	1.6	.97	.24	.64	.15	.57	.043	N	6.9
D209956	3.0	1.7	1.1	.25	.69	.16	.29	.072	N	1.6
D209957	.90	1.2	1.2	.50	.052	.14	.51	.049	N	32
D209958	1.2	.76	1.3	.49	.045	.049	.27	.031	N	1.7
D209959	1.4	.74	1.0	.29	.51	.099	.69	.034	N	4.8
D209960	.52	.47	1.2	.28	.47	.022	.36	.019	N	1.4
D209961	1.7	.98	1.1	.32	.63	.075	.34	.038	N	1.2
D209962	2.3	1.1	1.2	.47	.097	.15	1.4	.042	N	10
D209963	1.2	.80	1.3	.82	.061	.045	.32	.033	N	2.0
D209964	1.5	.61	.81	.36	.062	.14	3.2	.035	N	564
D209965	1.7	1.3	1.2	.43	.057	.094	.25	.042	N	1.7
D209966	6.6	3.1	1.2	.47	.14	.41	.56	.011	N	5.6
D209967	7.6	2.7	1.0	.35	.70	.26	1.4	.18	N	24
D209968	4.5	2.0	1.0	.32	.68	.21	1.0	.074	N	16
D221125	1.8	.84	1.3	.44	.032	.085	1.0	.076	0.15L	10
D221126	1.8	1.2	1.4	.42	.036	.084	.82	.025	.15L	6.2
D221127	3.2	1.9	1.2	.30	.62	.19	1.4	.068	.2L	37
D221128	5.1	2.8	1.6	.31	.68	.32	.37	.087	.2L	8.4
D221129	2.1	.94	1.5	.11	.050	.13	.37	.036	.15L	3.3
D221130	1.5	.81	1.3	.28	.055	.079	.41	.028	.1L	5.7
D221131	3.5	2.4	1.1	.17	.63	.24	.50	.064	.2L	9.8
D221132	5.6	2.5	1.5	.60	.13	.47	2.5	.082	.3L	39
D221133	1.6	1.0	1.7	.39	.11	.044	.38	.037	.15L	15
D221134	2.8	1.3	1.3	.20	.54	.23	.39	.051	.15L	3.6
D221135	5.8	3.3	1.3	.23	.72	.56	.42	.13	.3L	3.0
D221136	2.5	1.0	1.7	.53	.16	.17	3.1	.031	.2L	11
D221137	4.7	2.0	1.2	.50	.21	.42	1.9	.078	.2L	8.8
D221138	1.2	.93	1.4	.33	.030	.033	.22	.025	.2	2.3
D221139	1.9	1.6	1.1	.27	.60	.055	.97	.034	.15L	11
D221140	1.7	.89	.94	.26	.56	.12	.41	.028	.1L	5.7
D221141	4.3	2.0	.82	.27	.58	.20	1.6	.075	.2L	210
D221142	2.4	1.7	1.6	.49	.034	.045	1.5	.061	.2L	14
D221143	.84	.61	1.4	.40	.29	.039	.67	.016	.1L	2.5
D221144	1.9	1.0	1.3	.43	.36	.14	.92	.037	.15L	8.4
D221145	1.4	.82	1.3	.39	.12	.061	1.7	.025	.15L	10

Table 7. Major-, minor-, and trace-element composition of 37 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana—Continued

USGS sample No.	B-S (ppm)	Ba-S (ppm)	Be-S (ppm)	Cd (ppm)	Ce-S (ppm)	Co (ppm)	Cr (ppm)	Cu (ppm)	F (ppm)	Ga-S (ppm)	Ge-S (ppm)	Hg (ppm)
D209953	150	500	0.5	0.11	B	0.6	0.1L	11	20	3	N	0.20
D209954	150	1500	.7	.09L	B	.6	1.3	7.1	25	3	N	.16
D209955	150	300	.7	.16	N	1.4	4.6	14	65	5	N	.11
D209956	150	1500	.7	.16L	N	1.0	5.4	17	50	7	N	.05
D209957	150	150	.7	.13	N	1.2	.1L	12	65	7	N	.32
D209958	150	150	.3	.09	N	.4	2.8	7.6	20	3	N	.05
D209959	100	100	.5	.22	N	4.3	7.7	15	35	7	7	.11
D209960	100	200	1.0	.07	B	1.5	2.7	4.9	20L	2	N	.13
D209961	100	100	.5	.22	N	.6	4.2	12	40	5	N	.08
D209962	100	150	1.5	.16	N	1.9	7.8	12	45	7	3L	.19
D209963	150	200	.3L	.10	N	.5	2.7	5.6	25	3	N	.12
D209964	150	50	1.5	.31	N	13	.1L	17	50	20	3L	.07
D209965	100	70	1.0	.11L	N	1.5	3.7	4.9	25	10	N	.08
D209966	150	150	.7	.27L	N	1.6	10	18	75	7	N	.09
D209967	150	150	1.5	.32L	N	2.0	18	21	120	20	N	.12
D209968	100	150	.7	.23	N	1.6	14	24	95	7	N	.32
D221125	100	150	1.5	.13L	20	1.2	7.0	6.3	65	5	1	.12
D221126	100	500	1	.13L	20	1.1	3.3	6.4	55	5	.7	.10
D221127	200	200	1.5	.20L	20	5.1	15	18	60	7	1	.26
D221128	150	1000	2	.23	20L	.7	8.4	5.5	40	7	.7	.11
D221129	200	700	2	.13	20	1.6	7.0	12	55	7	1	.04
D221130	100	300	1.5	.39	15	1.9	7.0	11	60	3	.5	.06
D221131	300	1000	2	.19L	30	1.1	4.6	5.6	40	10	1	.06
D221132	200	150	5	.29L	30L	13	15	20	140	10	3	.17
D221133	300	200	1.5	.12	15	1.0	3.8	6.6	30	3	.7	.07
D221134	300	500	1	.15	15	1.8	7.3	19	75	7	1	.05
D221135	300	1500	3	.28	50	2.0	14	21	120	20	2	.09
S221136	150	1500	2	.21L	20L	1.9	7.0	6.1	65	7	1.5	.11
D221137	200	2000	3	.25L	20L	4.3	17	9.4	110	7	1.5	.05
D221138	100	150	.5	.19	10	.6	4.0	4.0	40	3	.5	.02
D221139	100	700	3	.30	15L	6.2	5.0	9.5	55	10	1.5	.20
D221140	100	700	.7	.11L	15	1.7	6.4	4.8	60	3	.5	.09
D221141	150	500	3	.22L	50	2.6	13	10	95	10	5	.42
D221142	100	500	3	.37	50	1.4	5.7	20	40	7	2	.16
D221143	150	200	.5	.10	15	1.2	2.5	3.4	30	2	.7	.04
D221144	150	2000	1.5	.14	20	3.7	8.8	9.5	60	5	.7	.12
D221145	100	700	1	.14L	15L	1.1	4.4	5.0	40	3	.5	.12

Table 7. Major-, minor-, and trace-element composition of 37 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana—Continued

USGS sample No.	Li (ppm)	Mn (ppm)	Mo-S (ppm)	Nb-S (ppm)	Ni-S (ppm)	P (ppm)	Pb (ppm)	Sb (ppm)	Sc-S (ppm)	Se (ppm)
D209953	1.8	41	1.5	2L	2	43L	3.9	0.4	2.0	0.8
D209954	1.1	33	2	2L	3	38L	2.3L	.6	3	1.1
D209955	11	57	1.5	3L	7	64L	8.0	.8	1.5	1.4
D209956	9.8	54	1L	3L	5	62L	9.9	.6	5	1.5
D209957	5.5	43	2	2L	5	129	3.9	.7	2	.6
D209958	5.5	42	1	1.5L	1	72	3.2	.6	1.5	.6
D209959	2.5	71	3	2L	15	216	3.2	1.6	3	.5
D209960	1.7	90	1.5	1.5	5	222	1.8	.3	2	.3
D209961	5.9	55	1	2L	1.5	44L	3.9	.5	2	.6
D209962	4.0	34	1.5	3L	5	97	4.1L	1.7	3	.8
D209963	5.7	134	1	2L	2	444	2.5L	.3	1.5	.6
D209964	1.6L	34	7	3L	50	62L	7.3	5.6	7	1.3
D209965	7.4	38	1.5	2L	7	46L	3.2	.5	1.5	1.1
D209966	19	41	5	5L	7	110L	14	1.4	3	2.3
D209967	28	44	3	7L	15	127L	15	1.2	7	2.3
D209968	20	42	3	N	10	90L	6.3	1.9	3	2.3
D221125	6.3	83	5	7	2	45L	3.6	1.0	2	N
D221126	7.9	35	5	7	2	45	4.7	.8	1.5	N
D221127	13	50	5	7	10	44L	9.0	2.4	3	2.2
D221128	24	65	1.5	10	2	40	13	.8	2L	N
D221129	3.6	75	3	5	5	46	4.5	1.3	3	.8
D221130	4.0	53	3	3	5	89	4.2	1.1	2	.7
D221131	23	37	1.5	10	3	40	10	.9	3	1.7
D221132	16	61	7	10	20	90	13	2.0	7	1.0
D221133	6.8	45	2	5	3	43L	8.4	.9	2	.9
D221134	8.8	81	2	5	5	260	6.6	.7	3	1.0
D221135	28	99	2	30	10	85	22	1.2	7	2.4
D221136	6.1	69	7	7	7	270	6.3L	1.2	3	N
D221137	10	42	3	10	10	130	6.9	1.8	5	N
D221138	6.4	45	1	3	1.5	45	7.7	.3	1	.5
D221139	10	68	7	10	15	46L	7.4	2.6	5	N
D221140	5.6	41	2	3	5	220	3.8	1.0	1.5	.6
D221141	9.5	39	3	10	10	85	7.1	2.4	5	N
D221142	10	50	7	7	5	41	7.4	1.0	5	1.2
D221143	3.7	52	1.5	3	2	260	3.2	.7	1	N
D221144	4.5	56	3	5	7	88	4.3L	1.0	3	.4
D221145	5.3	49	2	3	2	220	4.3	.7	1.5	.5

Table 7. Major-, minor-, and trace-element composition of 37 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana—Continued

USGS sample No.	Sr-S (ppm)	Th (ppm)	U (ppm)	V-S (ppm)	Y-S (ppm)	Yb-S (ppm)	Zn (ppm)	Zr-S (ppm)
D209953	500	1.9	1.4	15	7	0.7	21	20
D209954	500	1.1	.7	15	5	.5	16	15
D209955	200	3.0	2.5	30	7	.7	31	50
D209956	300	3.6	2.5	30	7	.7	24	70
D209957	200	1.9	1.7	20	7	.7	38	20
D209958	300	1.5	1.1	10	5	.3	15	15
D209959	300	1.2	1.7	50	7	.7	19	50
D209960	500	1.0	2.1	10	10	1	22	20
D209961	300	2.2	1.1	15	7	.5	37	30
D209962	150	2.8	2.9	20	15	1.5	19	50
D209963	200	1.6	.9	10	5	.3	4.4	20
D209964	150	1.4	7.3	70	20	2	55	70
D209965	150	2.4	1.6	15	7	.7	9.7	30
D209966	300	6.1	5.0	50	15	1.5	23	70
D209967	500	6.2	6.6	70	15	2	21	100
D209968	300	3.7	4.4	50	10	.7	16	30
D221125	150	3.3	5.9	15	10	0.7	4.5	70
D221126	100	4.4	2.7	7	7	.7	4.2	30
D221127	300	4.6	4.1	30	15	1	13	70
D221128	500	9.0	3.9	15	10	1	7.9	100
D221129	500	2.4	2.4	20	15	1.5	36	70
D221130	100	2.2	2.7	15	10	.7	9.1	50
D221131	500	5.8	2.1	20	15	1.5	3.7L	150
D221132	200	5.4	5.3	50	30	2	23	150
D221133	300	N	3.4	15	10	.7	3.1	70
D221134	300	3.3	1.6	20	10	.7	6.1	70
D221135	500	11.8	4.7	70	30	2	21	300
D221136	300	N	2.1	20	10	1	6.9	70
D221137	300	3.8	3.3	30	15	1	16	150
D221138	100	2.6	1.0	5	5	.5	6.3	30
D221139	500	4.0	3.2	20	20	2	25	150
D221140	300	2.4	1.4	10	7	.5	6.0	50
D221141	300	3.7	2.9	30	15	1.5	8.4	150
D221142	150	5.5	4.3	20	20	1.5	24	100
D221143	300	1.7	1.0	5	5	.3	2.8	20
D221144	300	2.3	3.2	15	10	1	9.6	70
D221145	300	2.1	1.6	10	7	.5	6.1	50

Table 8. Elements looked for but not detected in 37 coal samples from the Fort Union Formation, Fort Peck Indian Reservation, Roosevelt and Sheridan Counties, Montana

[Approximate lower detection limits for these elements in coal ash, determined by the six-step spectrographic method of the U.S. Geological Survey, are included]

Element	Symbol	Lower limit of detection (ppm) in coal ash
Gold	Au	50
Bismuth	Bi	20
Dysprosium	Dy	100
Erbium	Er	100
Europium	Eu	200
Gadolinium	Gd	100
Hafnium	Hf	200
Holmium	Ho	50
Indium	In	20
Lutetium	Lu	70
Neodymium	Nd	150
Palladium	Pd	5
Praseodymium	Pr	200
Platinum	Pt	100
Rhenium	Re	100
Samarium	Sm	200
Tin	Sn	20
Tantalum	Ta	1,000
Terbium	Tb	700
Tellurium	Te	5,000
Thallium	Tl	100
Thulium	Tm	50
Tungsten	W	200

Table 9. Range and arithmetic mean of ash, moisture, sulfur, and heat of combustion on an as-received basis for 21 coal samples from the Fort Union Formation collected in the eastern part of the Fort Peck Indian Reservation

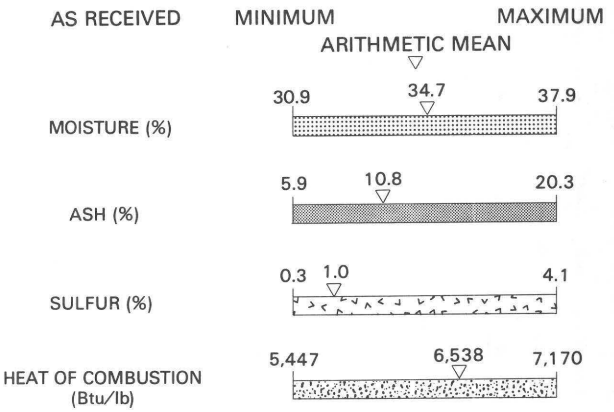


Table 10. Principal criteria used in calculating coal resources in the eastern part of the Fort Peck Indian Reservation

Reliability	Measured:	Extends 1/4 mi from point of coal measurement.
	Indicated:	Virgin coal that lies between 1/4 mi and 3/4 mi from point of coal measurement.
	Inferred:	Virgin coal that lies between 3/4 mi and 3 mi from point of coal measurement.
Thickness	2.5-5 ft.	
	5-10 ft.	
	10-20 ft.	
Overburden	0-100 ft.	
	100-200 ft.	
	200-500 ft.	
	500-1,000 ft.	
Rank	Lignite.	

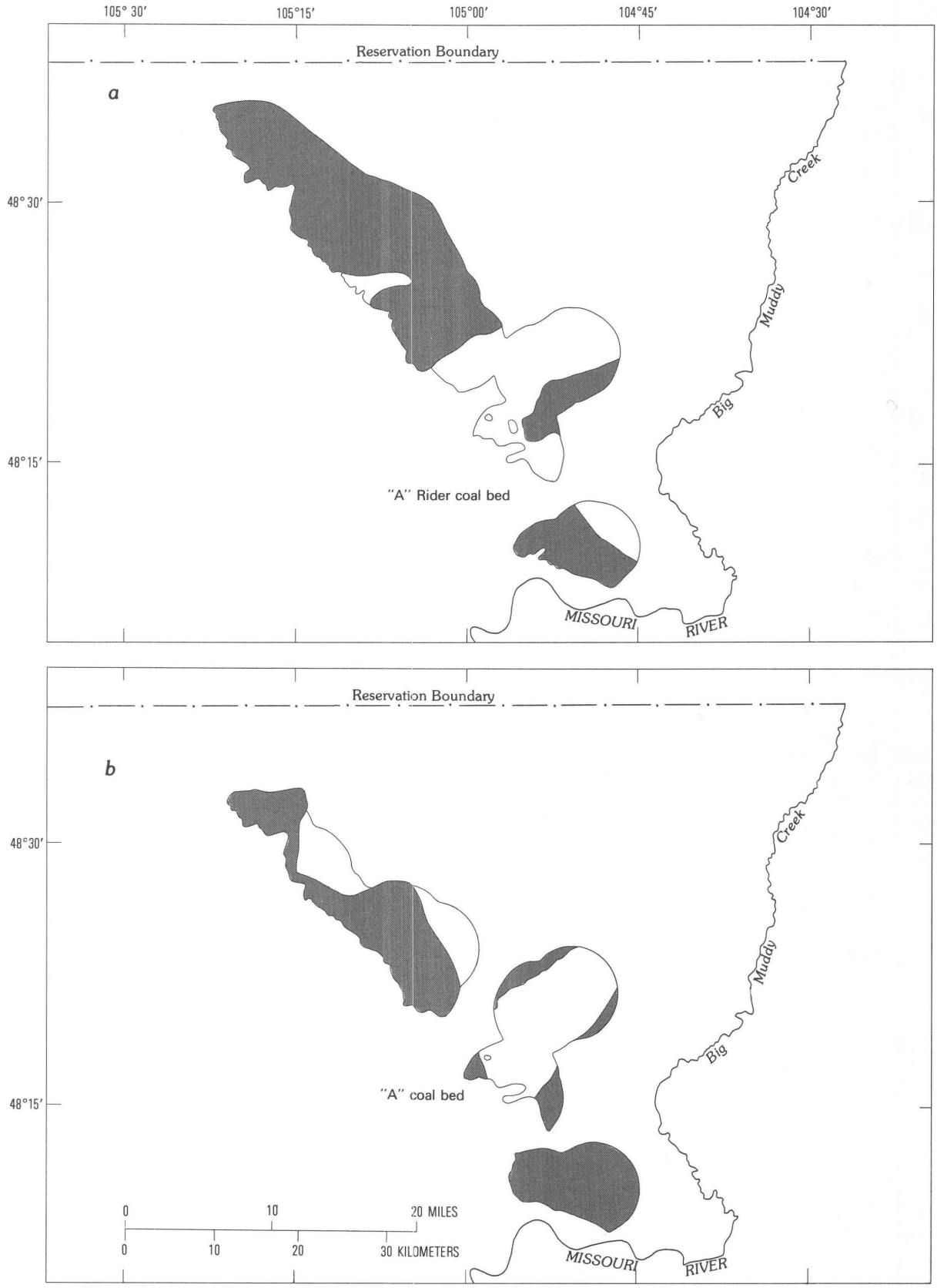


Figure 34. Index maps of the eastern part of the Fort Peck Indian Reservation showing areas analyzed in preparing estimates of resources and areas of identified resources (shaded): *a*, "A" Rider coal bed; and *b*, "A" coal bed.

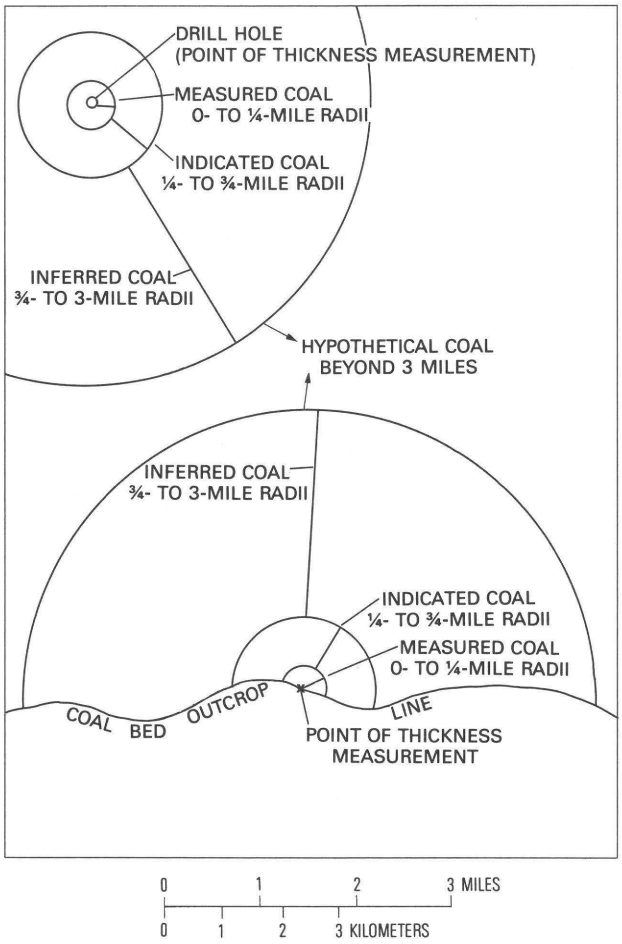


Figure 33. Criteria for determining reliability categories of measured, indicated, inferred, and hypothetical coal resources. Measured, indicated, and inferred are summed to obtain "identified resources" as was done in this report. Diagram modified from Wood and others (1983, p. 11).

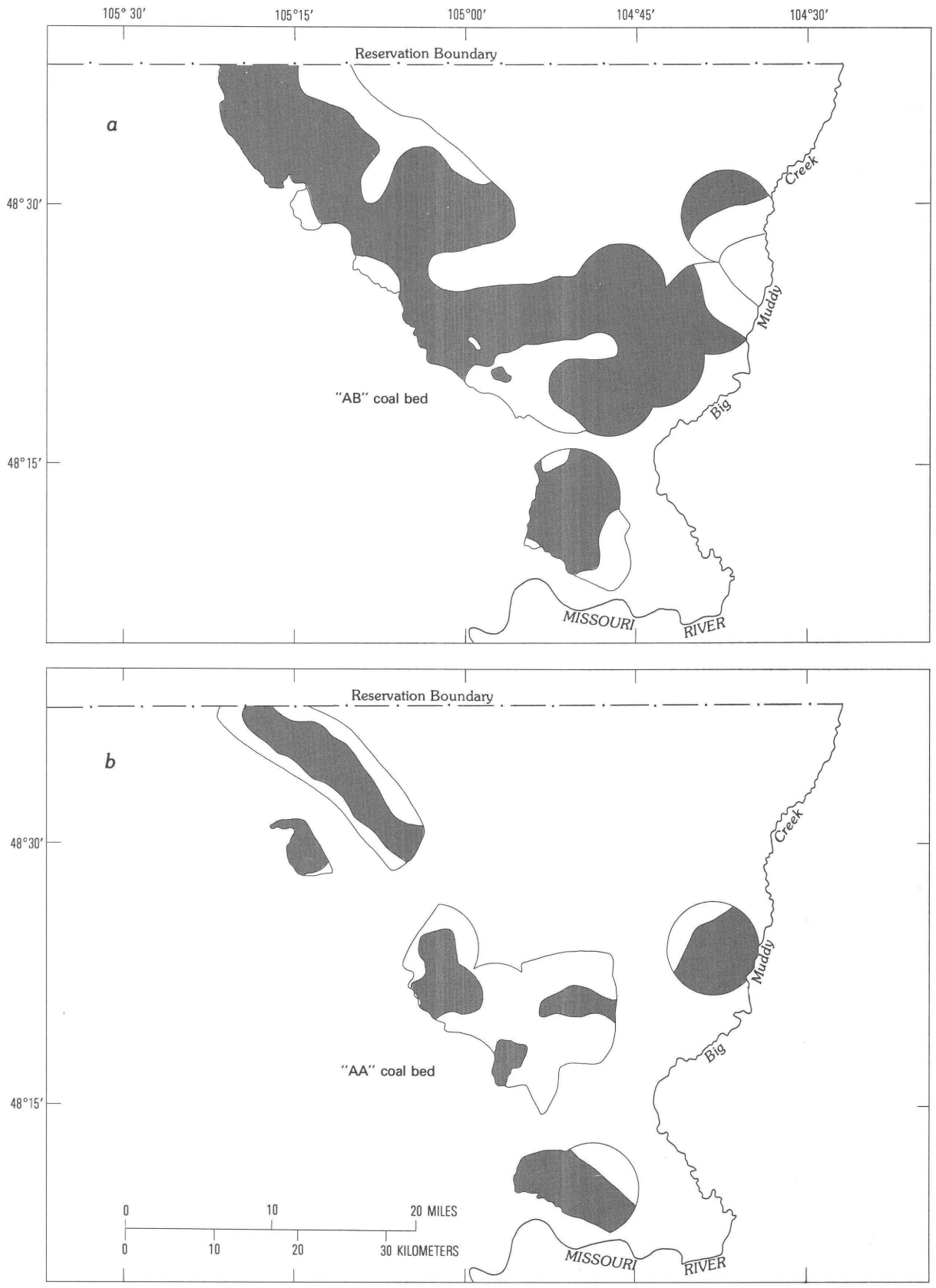


Figure 35. Index maps of the eastern part of the Fort Peck Indian Reservation showing areas analyzed in preparing estimates of resources and areas of identified resources (shaded): *a*, "AB" coal bed; and *b*, "AA" coal bed.

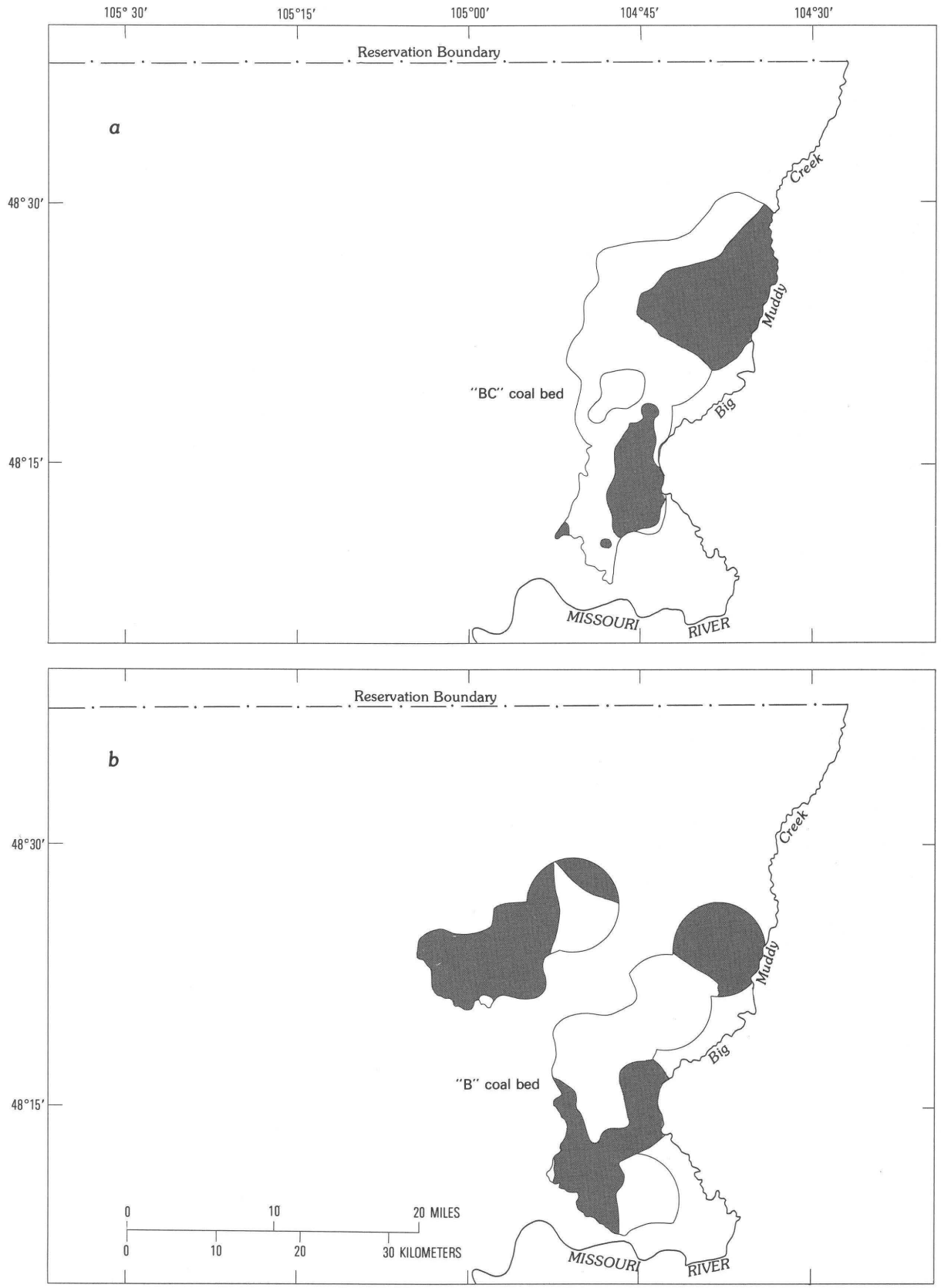


Figure 36. Index maps of the eastern part of the Fort Peck Indian Reservation showing areas analyzed in preparing estimates of resources and areas of identified resources (shaded): *a*, "BC" coal bed; and *b*, "B" coal bed.

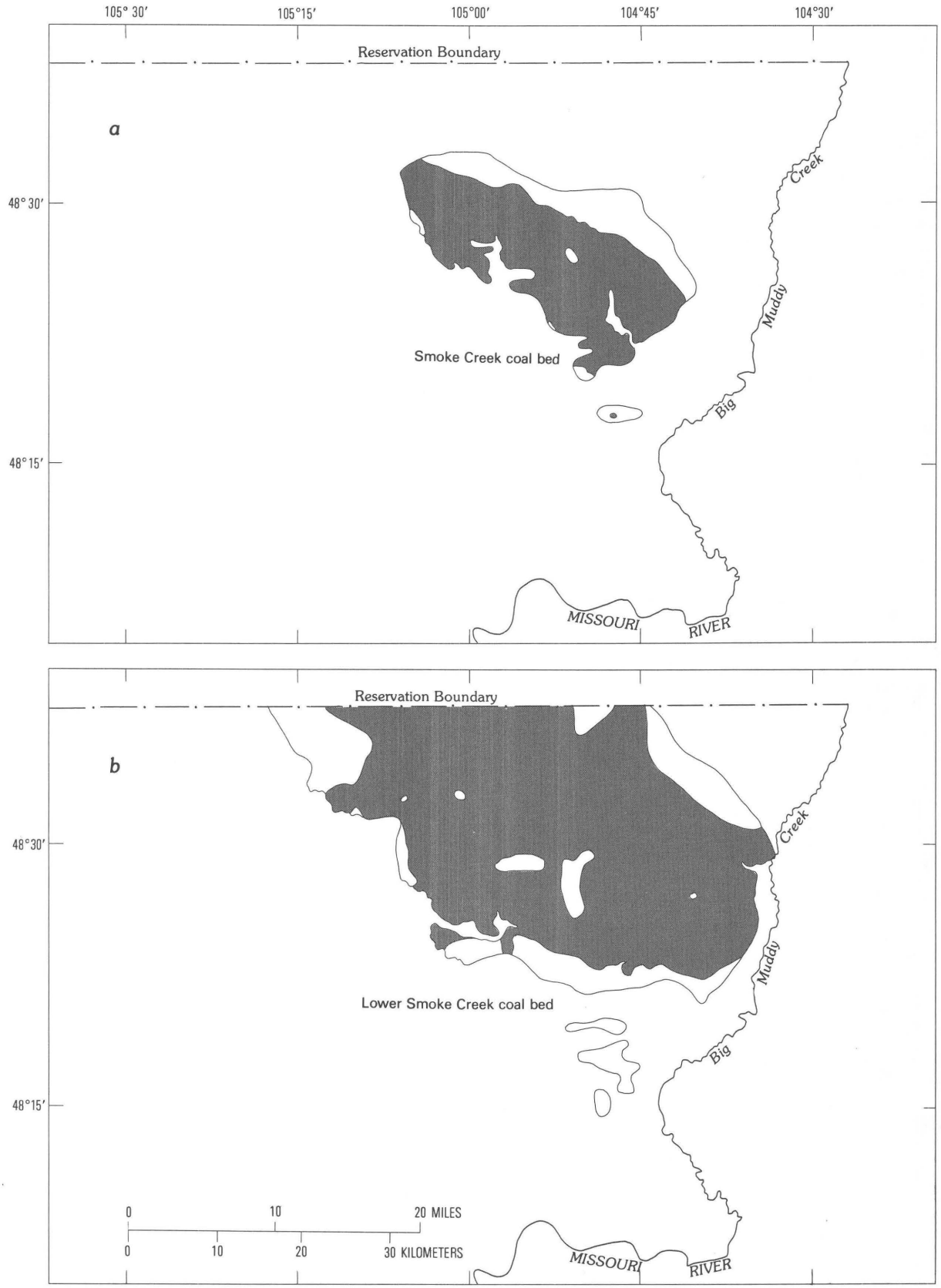


Figure 37. Index maps of the eastern part of the Fort Peck Indian Reservation showing areas analyzed in preparing estimates of resources and areas of identified resources (shaded): *a*, Smoke Creek coal bed; and *b*, Lower Smoke Creek coal bed.

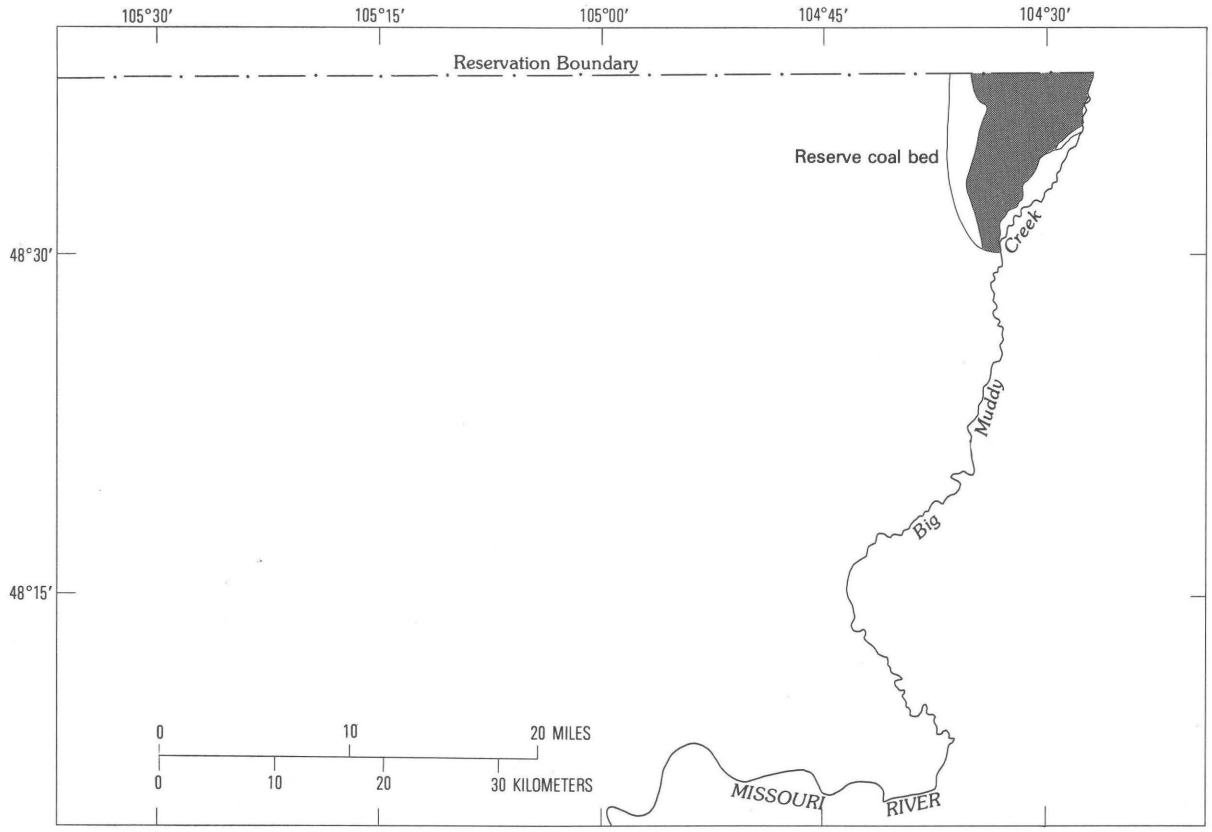


Figure 38. Index map of the eastern part of the Fort Peck Indian Reservation showing area of the Reserve coal bed analyzed in preparing estimate of resources and area of identified resources (shaded).

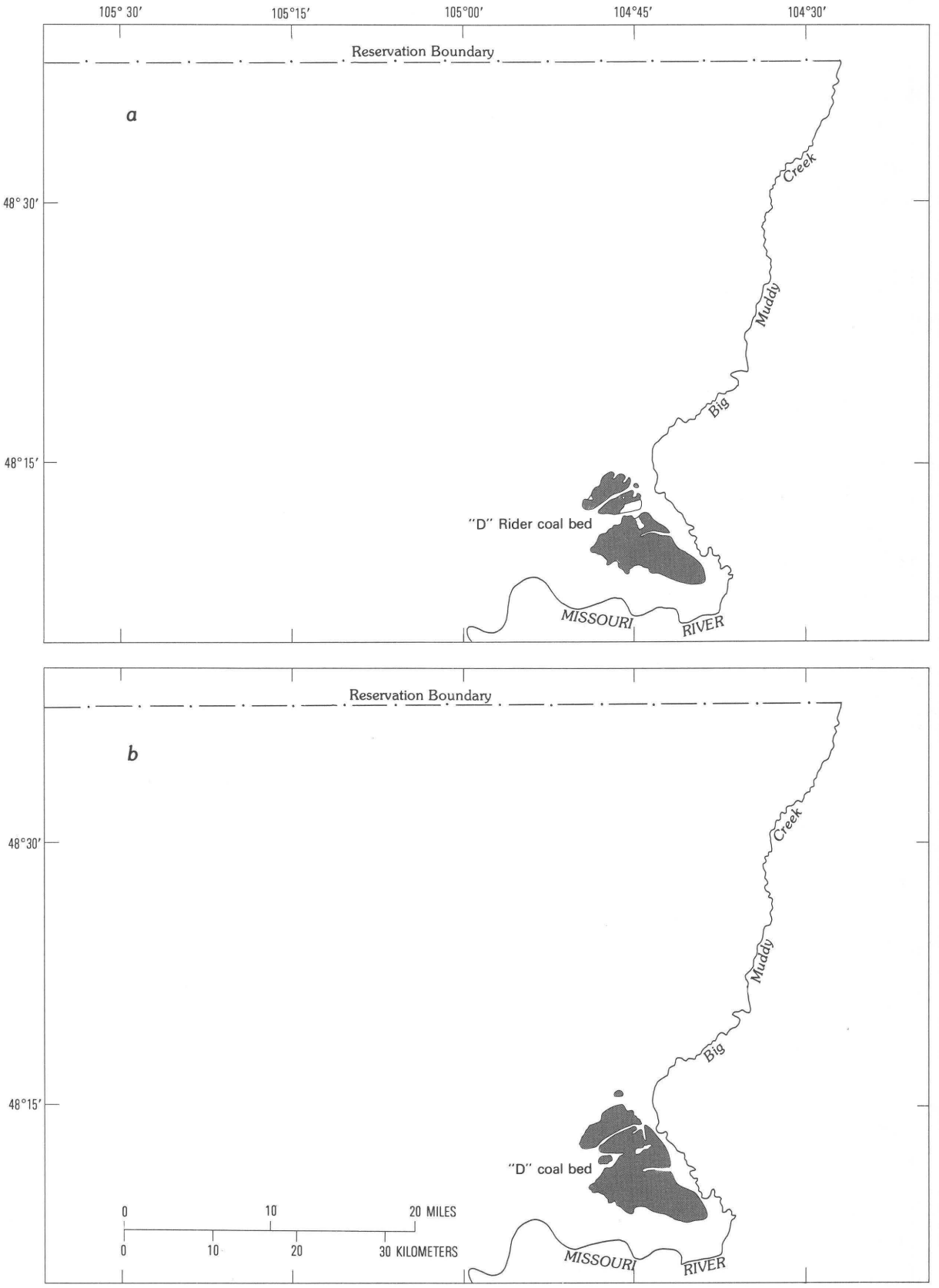


Figure 39. Index maps of the eastern part of the Fort Peck Indian Reservation showing areas analyzed in preparing estimates of resources and areas of identified resources (shaded): *a*, "D" Rider coal bed; and *b*, "D" coal bed.

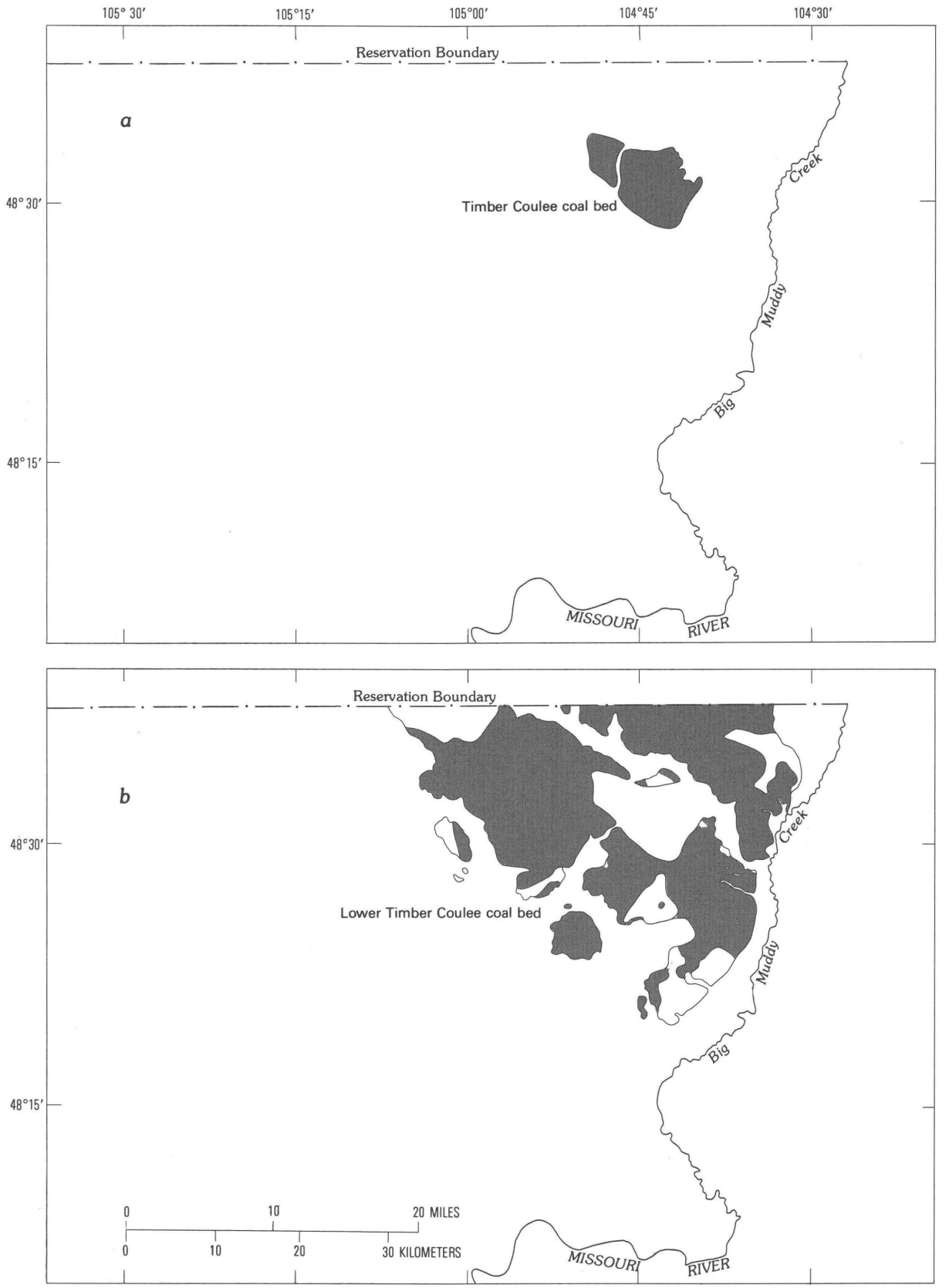


Figure 40. Index maps of the eastern part of the Fort Peck Indian Reservation showing areas analyzed in preparing estimates of resources and areas of identified resources (shaded): *a*, Timber Coulee coal bed; and *b*, Lower Timber Coulee coal bed.

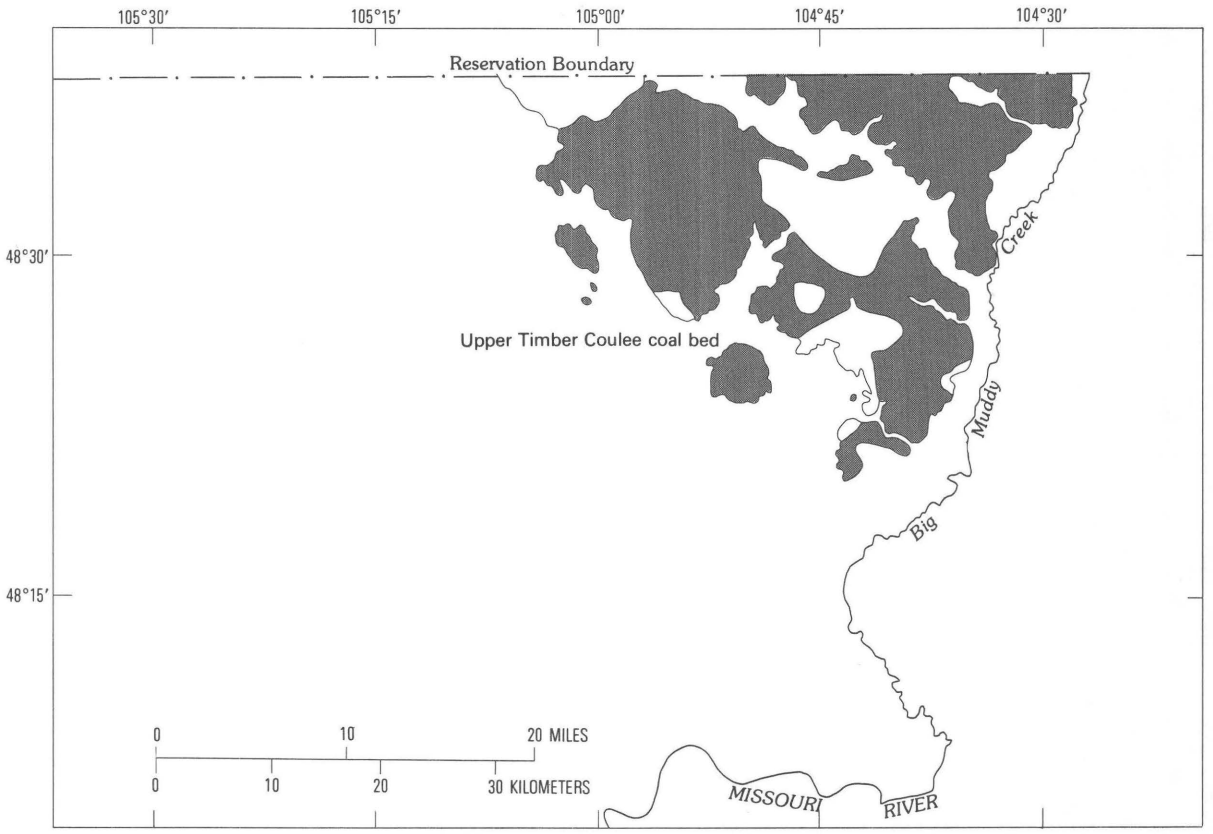


Figure 41. Index map of the eastern part of the Fort Peck Indian Reservation showing area of the Upper Timber Coulee coal bed analyzed in preparing estimate of resources and area of identified resources (shaded).

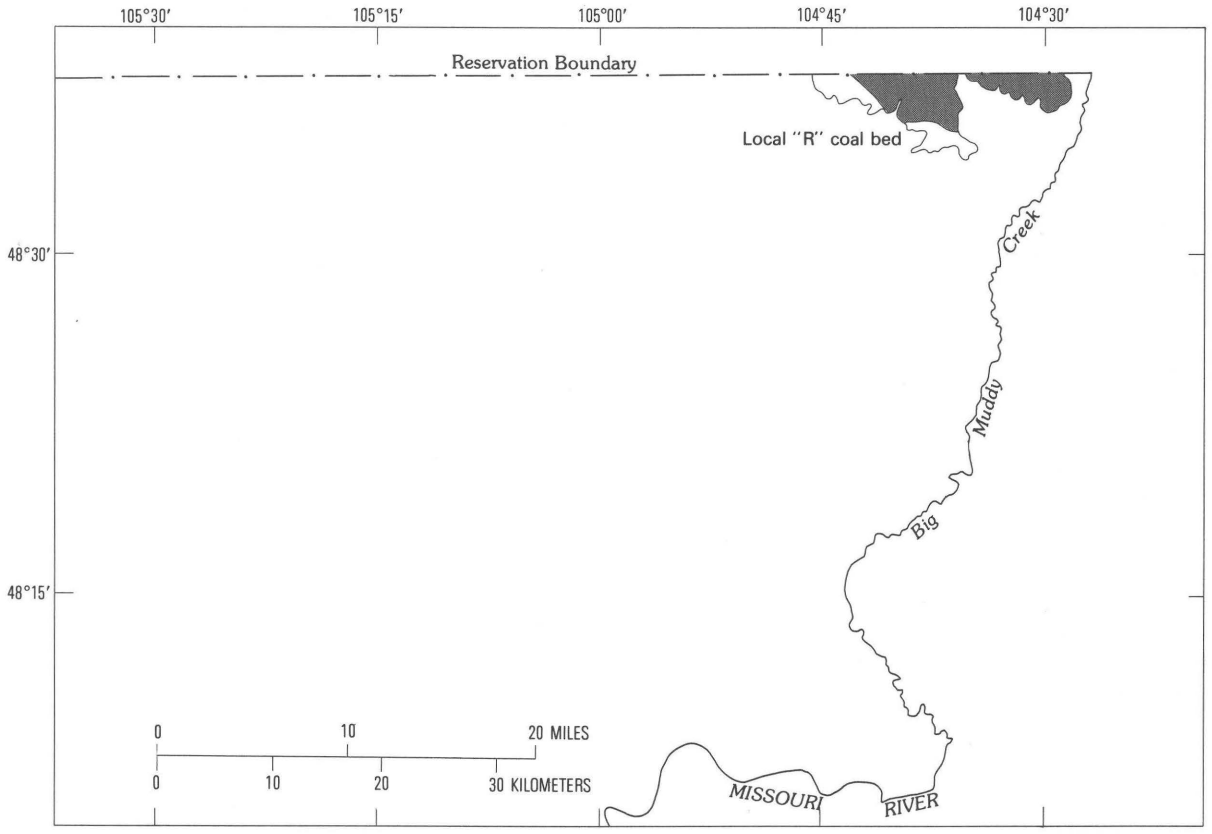


Figure 42. Index map of the eastern part of the Fort Peck Indian Reservation showing area of the Local "R" coal bed analyzed in preparing estimate of resources and area of identified resources (shaded).

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed	Totals, Overburden Categories				GRAND
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	TOTALS
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Roosevelt County: Township 28 North, Range 53 East																			
D	0-100	.....	0.43	.....	0.43	.....	.....	.....	.....	.....	.....	.....	.....	0.43	0.43	.....	.....	.....	0.43
BC	....do....	0.44	.....	.....	0.44	0.89	.....	.....	0.89	.....	.....	.....	.....	1.33	1.33	.....	.....	.....	1.33
B	....do....	0.90	0.19	.....	1.09	3.10	0.14	.....	3.24	4.14	.....	.....	4.14		8.47	.....	.....	.....	8.47
.....do.....	100-200...	1.66	0.77	.....	2.43	3.32	1.78	.....	5.10	4.80	0.24	.....	5.04		.....	12.57	.....	.....	12.57
.....do.....	200-500...	0.67	.....	.....	0.67	4.02	0.25	.....	4.27	8.96	6.51	.....	15.47	41.45	.....	.....	20.41	.....	20.41
AB	0-100.....	0.33	.....	.....	0.33	1.90	.....	.....	1.90	4.92	.....	.....	4.92		7.15	.....	.....	.....	7.15
.....do.....	100-200...	0.62	.....	.....	0.62	2.34	.....	.....	2.34	6.06	0.94	.....	7.00		.....	9.96	.....	.....	9.96
.....do.....	200-500...	0.40	.....	.....	0.40	5.05	.....	.....	5.05	22.01	9.37	.....	31.38		.....	.....	36.83	.....	36.83
.....do.....	500-1000..	0.14	.....	.....	0.14	.....	.....	.....	.....	0.03	.....	.....	0.03	54.11	.....	.....	.....	0.17	0.17
AA	0-100.....	.....	.....	.....	.....	.....	3.11	.....	3.11	.....	10.83	.....	10.83		13.94	.....	.....	.....	13.94
.....do.....	100-200...	.....	0.42	.....	0.42	0.44	1.83	.....	2.27	1.35	7.68	.....	9.03		.....	11.72	.....	.....	11.72
.....do.....	200-500...	0.24	0.46	.....	0.70	5.39	0.51	.....	5.90	23.87	1.60	.....	25.47		.....	.....	32.07	.....	32.07
.....do.....	500-1000..	0.63	.....	.....	0.63	1.49	.....	.....	1.49	0.84	.....	.....	0.84	60.69	.....	.....	.....	2.96	2.96
A Rider	0-100.....	0.29	.....	.....	0.29	4.19	.....	.....	4.19	6.80	.....	.....	6.80		11.28	.....	.....	.....	11.28
.....do.....	100-200...	0.45	.....	.....	0.45	1.74	0.09	.....	1.83	9.38	0.82	.....	10.20		.....	12.48	.....	.....	12.48
.....do.....	200-500...	0.50	.....	.....	0.50	4.75	0.15	.....	4.90	22.92	0.96	.....	23.88		.....	.....	29.28	.....	29.28
.....do.....	500-1000..	0.54	.....	.....	0.54	2.02	.....	.....	2.02	3.30	.....	.....	3.30	58.90	.....	.....	.....	5.86	5.86
A	0-100.....	.....	2.15	.....	2.15	.....	11.13	.....	11.13	.....	12.89	.....	12.89		26.17	.....	.....	.....	26.17
.....do.....	100-200...	.....	1.25	.....	1.25	.....	9.45	.....	9.45	.....	21.52	.....	21.52		.....	32.22	.....	.....	32.22
.....do.....	200-500...	.....	1.51	.....	1.51	.....	9.32	.....	9.32	.....	56.28	.....	56.28		.....	.....	67.11	.....	67.11
.....do.....	500-1000..	.....	1.24	.....	1.24	.....	5.39	.....	5.39	.....	15.60	.....	15.60	147.73	.....	.....	.....	22.23	22.23
TOTAL T. 28 N., R. 53 E.		7.81	8.42	.....	16.23	40.64	43.15	.....	83.79	119.38	145.24	.....	264.62	364.64	68.77	78.95	185.70	31.22	364.64
Roosevelt County--Continued: Township 28 North, Range 54 East																			
D Rider	0-100.....	8.15	26.50	.....	34.65	9.94	25.00	.....	34.94	.....	.....	.....	.....		69.59	.....	.....	.....	69.59
.....do.....	100-200...	2.18	7.68	.....	9.86	2.30	8.10	.....	10.40	.....	.....	.....	.....	89.85	.....	20.26	.....	.....	20.26
D	0-100.....	0.27	48.57	2.27	51.11	0.04	66.81	7.59	74.44	.....	0.24	.....	0.24		125.79	.....	.....	.....	125.79
.....do.....	100-200...	.....	15.96	0.73	16.69	.....	22.50	2.36	24.86	.....	.....	.....	.....		.....	41.55	.....	.....	41.55
.....do.....	200-500...	.....	0.24	.....	0.24	.....	1.18	.....	1.18	.....	.....	.....	.....	168.76	.....	.....	1.42	.....	1.42
BC	....do....	.....	.....	.....	.....	1.85	.....	.....	1.85	11.77	.....	.....	11.77	13.62	.....	.....	13.62	.....	13.62
B	0-100.....	0.32	.....	.....	0.32	0.39	.....	.....	0.39	0.41	.....	.....	0.41		1.12	.....	.....	.....	1.12
.....do.....	100-200...	0.07	.....	.....	0.07	1.75	.....	.....	1.75	0.93	.....	.....	0.93		.....	2.75	.....	.....	2.75
.....do.....	200-500...	0.12	.....	.....	0.12	2.21	.....	.....	2.21	15.80	.....	.....	15.80	22.00	.....	.....	18.13	.....	18.13
AB	100-200...	.....	.....	.....	.....	.....	.....	.....	.....	0.07	.....	.....	0.07		.....	0.07	.....	.....	0.07
.....do.....	200-500...	.....	.....	.....	.....	0.58	.....	.....	0.58	2.65	.....	.....	2.65		.....	.....	3.23	.....	3.23
.....do.....	500-1000..	0.10	.....	.....	0.10	0.83	.....	.....	0.83	2.37	.....	.....	2.37	6.60	.....	.....	.....	3.30	3.30
AA	100-200...	.....	.....	.....	.....	.....	.....	.....	.....	0.40	0.07	.....	0.47		.....	0.47	.....	.....	0.47
.....do.....	200-500...	.....	.....	.....	.....	0.26	.....	.....	0.26	12.37	.....	.....	12.37		.....	.....	12.63	.....	12.63
.....do.....	500-1000..	0.11	.....	.....	0.11	2.11	.....	.....	2.11	7.99	.....	.....	7.99	23.31	.....	.....	.....	10.21	10.21
A Rider	200-500...	.....	.....	.....	.....	0.04	.....	.....	0.04	7.82	.....	.....	7.82		.....	.....	7.86	.....	7.86
.....do.....	500-1000..	0.10	.....	.....	0.10	1.85	.....	.....	1.85	6.31	.....	.....	6.31	16.12	.....	.....	.....	8.26	8.26
A	200-500...	.....	.....	.....	.....	.....	0.24	.....	0.24	.....	14.59	.....	14.59		.....	.....	14.83	.....	14.83
.....do.....	500-1000..	.....	0.24	.....	0.24	.....	4.70	.....	4.70	4.91	55.93	.....	60.84	80.61	.....	.....	.....	65.78	65.78
TOTAL T. 28 N., R. 54 E.		11.42	99.19	3.0	113.61	24.15	128.53	9.95	162.63	73.80	70.83	.....	144.63	420.87	196.50	65.10	71.72	87.55	420.87

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed	Totals, Overburden Categories				GRAND
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	TOTALS
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Roosevelt County--Continued: Township 28 North, Range 55 East																			
D Rider	0-100	1.37	.....	.....	1.37	4.96	1.48	.....	6.44	0.02	0.32	.....	0.34		8.15	.....	.....	.....	8.15
.....do	100-200	0.79	0.41	.....	1.20	0.43	0.27	.....	0.70	.....	.....	.....	.....	10.05	.....	1.90	.....	.....	1.90
D	0-100	.....	1.21	.....	1.21	.....	2.04	.....	2.04	.....	0.45	.....	0.45		3.70	.....	.....	.....	3.70
.....do	100-200	.....	3.11	.....	3.11	.....	8.72	.....	8.72	.....	0.01	.....	0.01	15.54	.....	11.84	.....	.....	11.84
TOTAL T. 28 N., R. 55 E.		2.16	4.73	.....	6.89	5.39	12.51	.....	17.90	0.02	0.78	.....	0.80	25.59	11.85	13.74	.....	.....	25.59
Roosevelt County--Continued: Township 29 North, Range 52 East																			
AB	0-100	.....	.....	.....	.....	.....	.....	.....	.....	0.21	.....	.....	0.21	0.21	0.21	.....	.....	.....	0.21
AA	....do	0.44	.....	.....	0.44	2.58	.....	.....	2.58	0.67	.....	.....	0.67		3.69	.....	.....	.....	3.69
.....do	100-200	1.41	.....	.....	1.41	0.74	.....	.....	0.74	.....	.....	.....	.....	5.84	.....	2.15	.....	.....	2.15
A Rider	....do	.....	.....	.....	.....	.....	.....	.....	.....	0.35	.....	.....	0.35		.....	0.35	.....	.....	0.35
.....do	200-500	.....	.....	.....	.....	.....	.....	.....	.....	3.45	.....	.....	3.45	3.80	.....	.....	3.45	.....	3.45
A	0-100	.....	.....	.....	.....	0.07	.....	.....	0.07	3.03	.....	.....	3.03		3.10	.....	.....	.....	3.10
.....do	100-200	0.17	.....	.....	0.17	1.34	.....	.....	1.34	0.31	.....	.....	0.31	4.92	.....	1.82	.....	.....	1.82
TOTAL T. 29 N., R. 52 E.		2.02	.....	.....	2.02	4.73	.....	.....	4.73	8.02	.....	.....	8.02	14.77	7.0	4.32	3.45	.....	14.77
Roosevelt County--Continued: Township 29 North, Range 53 East																			
D Rider	0-100	4.79	.....	.....	4.79	5.08	.....	.....	5.08	0.60	.....	.....	0.60		10.47	.....	.....	.....	10.47
.....do	100-200	0.79	.....	.....	0.79	1.37	.....	.....	1.37	.....	.....	.....	.....	12.63	.....	2.16	.....	.....	2.16
D	0-100	0.42	13.06	0.73	14.21	0.10	14.63	0.93	15.66	.....	1.75	.....	1.75		31.62	.....	.....	.....	31.62
.....do	100-200	.....	6.70	0.53	7.23	.....	8.63	0.39	9.02	.....	.....	.....	.....	47.87	.....	16.25	.....	.....	16.25
BC	200-500	1.41	.....	.....	1.41	8.02	.....	.....	8.02	10.98	.....	.....	10.98	20.41	.....	.....	20.41	.....	20.41
B	0-100	.....	.....	.....	.....	0.06	1.96	.....	2.02	9.57	0.63	.....	10.20		12.22	.....	.....	.....	12.22
.....do	100-200	.....	1.10	.....	1.10	1.89	2.85	.....	4.74	0.69	0.43	.....	1.12		.....	6.96	.....	.....	6.96
.....do	200-500	0.29	0.24	.....	0.53	3.21	1.22	.....	4.43	15.02	1.34	.....	16.36		.....	.....	21.32	.....	21.32
.....do	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	0.35	.....	.....	0.35	40.85	.....	.....	.....	0.35	0.35
AB	0-100	.....	.....	.....	.....	.....	.....	.....	.....	8.69	0.02	.....	8.71		8.71	.....	.....	.....	8.71
.....do	100-200	.....	.....	.....	.....	.....	0.23	.....	0.23	5.05	3.35	.....	8.40		.....	8.63	.....	.....	8.63
.....do	200-500	.....	1.41	.....	1.41	.....	10.08	.....	10.08	24.64	9.70	.....	34.34		.....	.....	45.83	.....	45.83
.....do	500-1000	.....	.....	.....	.....	.....	0.29	.....	0.29	13.84	7.66	.....	21.50	84.96	.....	.....	.....	21.79	21.79
A Rider	200-500	.....	.....	.....	.....	.....	.....	.....	.....	4.83	.....	.....	4.83		.....	.....	4.83	.....	4.83
.....do	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	0.02	.....	.....	0.02	4.85	.....	.....	.....	0.02	0.02
A	100-200	.....	.....	.....	.....	.....	.....	.....	.....	3.85	.....	.....	3.85		.....	3.85	.....	.....	3.85
.....do	200-300	.....	.....	.....	.....	.....	.....	.....	.....	9.63	.....	.....	9.63	13.48	.....	.....	9.63	.....	9.63
TOTAL T. 29 N., R. 53 E.		7.7	22.51	1.26	31.47	19.73	39.89	1.32	60.94	107.76	24.88	.....	132.64	225.05	63.02	37.85	102.02	22.16	225.05
Roosevelt County--Continued: Township 29 North, Range 54 East																			
D Rider	0-100	.....	.....	.....	.....	0.01	.....	.....	0.01	0.82	.....	.....	0.82	0.83	0.83	.....	.....	.....	0.83
D	....do	.....	3.00	.....	3.00	.....	8.42	.....	8.42	.....	5.30	.....	5.30	16.72	16.72	.....	.....	.....	16.72
BC	200-500	0.36	.....	.....	0.36	2.07	.....	.....	2.07	27.20	.....	.....	27.20	29.63	.....	.....	29.63	.....	29.63
B	....do	.....	.....	.....	.....	0.69	.....	.....	0.69	27.43	.....	.....	27.43	28.12	.....	.....	28.12	.....	28.12
AB	....do	.....	.....	.....	.....	.....	.....	.....	.....	3.30	.....	.....	3.30	3.30	.....	.....	3.30	.....	3.30
TOTAL T. 29 N., R. 54 E.		0.36	3.00	.....	3.36	2.77	8.42	.....	11.19	58.75	5.30	.....	64.05	78.60	17.55	.....	61.05	.....	78.60

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed	Totals, Overburden Categories				GRAND
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	TOTALS
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Roosevelt County--Continued: Township 30 North, Range 51 East																			
B	0-100	.....	.....	.....	.....	0.63	.....	.....	0.63	2.45	.....	.....	2.45		3.08	.....	.....	.....	3.08
do	100-200	0.53	.....	.....	0.53	1.43	.....	.....	1.43	1.30	.....	.....	1.30		.....	3.26	.....	.....	3.26
do	200-500	.....	.....	.....	.....	0.19	.....	.....	0.19	0.15	.....	.....	0.15	6.68	.....	.....	0.34	.....	0.34
AB	0-100	1.57	0.56	.....	2.13	3.27	3.20	.....	6.47	0.05	0.24	.....	0.29		8.89	.....	.....	.....	8.89
do	100-200	0.03	.....	.....	0.03	2.56	0.03	.....	2.59	1.23	0.23	.....	1.46		.....	4.08	.....	.....	4.08
do	200-500	.....	.....	.....	.....	0.32	.....	.....	0.32	3.64	0.04	.....	3.68	16.97	.....	.....	4.00	.....	4.00
AA	0-100	0.28	.....	.....	0.28	0.47	.....	.....	0.47	2.19	.....	.....	2.19		2.94	.....	.....	.....	2.94
do	100-200	0.04	.....	.....	0.04	1.39	.....	.....	1.39	6.69	.....	.....	6.69		.....	8.12	.....	.....	8.12
do	200-500	.....	.....	.....	.....	0.33	.....	.....	0.33	6.33	.....	.....	6.33	17.72	.....	.....	6.66	.....	6.66
A Rider	0-100	0.54	0.38	.....	0.92	2.07	5.57	.....	7.64	2.57	2.28	.....	4.85		13.41	.....	.....	.....	13.41
do	100-200	2.96	0.26	.....	3.22	2.86	0.02	.....	2.88	1.99	.....	.....	1.99		.....	8.09	.....	.....	8.09
do	200-500	.....	.....	.....	.....	2.48	.....	.....	2.48	10.36	.....	.....	10.36	34.34	.....	.....	12.84	.....	12.84
A	0-100	.....	1.94	.....	1.94	0.39	8.97	.....	9.36	2.89	1.78	.....	4.67		15.97	.....	.....	.....	15.97
do	100-200	0.07	3.69	.....	3.76	1.49	1.66	.....	3.15	5.44	.....	.....	5.44		.....	12.35	.....	.....	12.35
do	200-500	.....	0.14	.....	0.14	0.78	3.65	.....	4.43	15.45	0.16	.....	15.61	48.50	.....	.....	20.18	.....	20.18
TOTAL T. 30 N., R. 51 E.		6.02	6.97	.....	12.99	20.66	23.10	.....	43.76	62.73	4.73	.....	67.46	124.21	44.29	35.90	44.02	.....	124.21
Roosevelt County--Continued: Township 30 North, Range 52 East																			
B	0-100	1.00	.....	.....	1.00	5.40	.....	.....	5.40	1.48	.....	.....	1.48		7.88	.....	.....	.....	7.88
do	100-200	1.86	.....	.....	1.86	13.63	.....	.....	13.63	10.30	.....	.....	10.30		.....	25.79	.....	.....	25.79
do	200-500	0.49	.....	.....	0.49	4.24	.....	.....	4.24	8.90	.....	.....	8.90	47.30	.....	.....	13.63	.....	13.63
AB	0-100	0.07	.....	.....	0.07	0.96	.....	.....	0.96	3.38	0.40	.....	3.78		4.81	.....	.....	.....	4.81
do	100-200	2.90	0.02	.....	2.92	5.65	4.10	.....	9.75	1.64	1.96	.....	3.60		.....	16.27	.....	.....	16.27
do	200-500	0.75	1.27	.....	2.02	8.24	3.14	.....	11.38	21.20	1.47	.....	22.67	57.15	.....	.....	36.07	.....	36.07
AA	0-100	0.85	.....	.....	0.85	0.27	.....	.....	0.27	.....	.....	.....	.....		1.12	.....	.....	.....	1.12
do	100-200	2.86	.....	.....	2.86	1.85	.....	.....	1.85	0.82	.....	.....	0.82		.....	5.53	.....	.....	5.53
do	200-500	0.13	1.13	.....	1.26	8.42	1.44	.....	9.86	13.07	.....	.....	13.07	30.84	.....	.....	24.19	.....	24.19
A Rider	....do....	0.28	.....	.....	0.28	2.35	.....	.....	2.35	7.85	.....	.....	7.85		.....	.....	10.48	.....	10.48
do	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	1.24	.....	.....	1.24	11.72	.....	.....	.....	1.24	1.24
A	100-200	0.19	.....	.....	0.19	0.01	.....	.....	0.01	0.20	.....	.....	0.20		.....	0.40	.....	.....	0.40
do	200-500	.....	.....	.....	.....	.....	.....	.....	.....	10.03	.....	.....	10.03		.....	.....	10.03	.....	10.03
do	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	4.25	.....	.....	4.25	14.68	.....	.....	.....	4.25	4.25
TOTAL T. 30 N., R. 52 E.		11.38	2.42	.....	13.80	51.02	8.68	.....	59.70	84.36	3.83	.....	88.19	161.69	13.81	47.99	94.40	5.49	161.69
Roosevelt County--Continued: Township 30 North, Range 53 East																			
Smoke Creek	0-100	2.28	5.17	.....	7.45	5.47	26.28	.....	31.75	6.24	8.86	.....	15.10		54.30	.....	.....	.....	54.30
do	100-200	.....	4.20	.....	4.20	.....	5.50	.....	5.50	0.07	.....	.....	0.07	64.07	.....	9.77	.....	.....	9.77
Lower Smoke Creek	....do....	0.59	.....	.....	0.59	0.68	.....	.....	0.68	.....	.....	.....	.....		.....	1.27	.....	.....	1.27
do	200-500	.....	.....	.....	.....	0.07	.....	.....	0.07	0.06	.....	.....	0.06	1.40	.....	.....	0.13	.....	0.13
B	....do....	.....	.....	.....	.....	.....	.....	.....	.....	1.13	.....	.....	1.13	1.13	.....	.....	1.13	.....	1.13
AB	....do....	1.27	1.54	.....	2.81	11.25	11.39	.....	22.64	56.84	18.70	.....	75.54		.....	.....	100.99	.....	100.99
do	500-1000	.....	.....	.....	.....	0.08	.....	.....	0.08	0.03	.....	.....	0.03	101.10	.....	.....	.....	0.11	0.11
AA	200-500	0.86	.....	.....	0.86	5.80	.....	.....	5.80	10.85	.....	.....	10.85		.....	.....	17.51	.....	17.51
do	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	2.72	.....	.....	2.72	20.23	.....	.....	.....	2.72	2.72
A Rider	200-500	.....	.....	.....	.....	.....	.....	.....	.....	14.21	.....	.....	14.21		.....	.....	14.21	.....	14.21
do	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	12.65	.....	.....	12.65	26.86	.....	.....	.....	12.65	12.65
A	....do....	.....	.....	.....	.....	.....	.....	.....	.....	4.57	.....	.....	4.57	4.57	.....	.....	.....	4.57	4.57
TOTAL T. 30 N., R. 53 E.		5.00	10.91	.....	15.91	23.35	43.17	.....	66.52	109.37	27.56	.....	136.93	219.36	54.30	11.04	133.97	20.05	219.36

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed	Totals, Overburden Categories				GRAND
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	TOTALS
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Roosevelt County--Continued: Township 30 North, Range 54 East																			
Upper Timber Coulee	0-100	3.29	3.86	.....	7.15	6.49	5.27	.....	11.76	4.88	15.03	.....	19.91		38.82	.....	.....	.....	38.82
.....do.....	100-200	0.39	.....	.....	0.39	0.65	.....	.....	0.65	.....	.....	.....	.....	39.86	.....	1.04	.....	.....	1.04
Lower Timber Coulee	0-100	1.22	.....	.....	1.22	5.16	.....	.....	5.16	3.65	.....	.....	3.65	10.03	10.03	.....	.....	.....	10.03
Smoke Creek.....	....do	.....	0.76	.....	0.76	.....	1.51	.....	1.51	2.70	0.80	.....	3.50		5.77	.....	.....	.....	5.77
.....do.....	100-200	.....	1.67	.....	1.67	0.21	4.49	.....	4.70	2.78	1.47	.....	4.25		.....	10.62	.....	.....	10.62
.....do.....	200-500	.....	.....	.....	.....	.....	0.81	.....	0.81	0.57	3.43	.....	4.00	21.20	.....	.....	4.81	.....	4.81
Lower Smoke Creek..	100-200	0.02	.....	.....	0.02	.....	.....	.....	.....	.....	.....	.....	.....		.....	0.02	.....	.....	0.02
.....do.....	200-500	0.53	.....	.....	0.53	2.52	.....	.....	2.52	3.22	.....	.....	3.22	6.29	.....	.....	6.27	.....	6.27
BC.....	100-200	.....	.....	.....	.....	0.05	.....	.....	0.05	.....	.....	.....	.....		.....	0.05	.....	.....	0.05
.....do.....	200-500	1.48	.....	.....	1.48	4.86	.....	.....	4.86	27.39	1.08	.....	28.47	34.86	.....	.....	34.81	.....	34.81
B.....	....do	.....	.....	.....	.....	.....	.....	.....	.....	4.28	.....	.....	4.28		.....	.....	4.28	.....	4.28
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	0.18	.....	.....	0.18	4.46	.....	.....	.....	0.18	0.18
AB.....	200-500	.....	0.08	.....	0.08	.....	4.13	.....	4.13	4.79	82.58	.....	87.37		.....	.....	91.58	.....	91.58
.....do.....	500-1000	.....	1.67	.....	1.67	.....	9.83	.....	9.83	10.98	88.48	.....	99.46	202.54	.....	.....	.....	110.96	110.96
AA.....	....do	.....	.....	.....	.....	.....	.....	.....	.....	17.63	.....	.....	17.63	17.63	.....	.....	.....	17.63	17.63
TOTAL T. 30 N., R. 54 E.		6.93	8.04	.....	14.97	19.94	26.04	.....	45.98	83.05	192.87	.....	275.92	336.87	54.62	11.73	141.75	128.77	336.87
Roosevelt County--Continued: Township 30 North, Range 55 East																			
Upper Timber Coulee	0-100	.....	.....	.....	.....	.....	0.31	.....	0.31	.....	0.39	.....	0.39	0.70	0.70	.....	.....	.....	0.70
BC.....	200-500	.....	.....	.....	.....	.....	.....	.....	.....	5.45	15.35	.....	20.80	20.80	.....	.....	20.80	.....	20.80
B.....	....do	.....	.....	.....	.....	.....	.....	.....	.....	9.43	.....	.....	9.43	9.43	.....	.....	9.43	.....	9.43
AB.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	5.37	2.94	.....	8.31	8.31	.....	.....	.....	8.31	8.31
AA.....	....do	.....	.....	.....	.....	.....	.....	.....	.....	10.32	.....	.....	10.32	10.32	.....	.....	.....	10.32	10.32
TOTAL T. 30 N., R. 55 E.		.....	.....	.....	.....	.....	0.31	.....	0.31	30.57	18.68	.....	49.25	49.56	0.70	.....	30.23	18.63	49.56
Roosevelt County--Continued: Township 31 North, Range 50 East																			
A Rider.....	0-100	0.18	.....	.....	0.18	2.44	.....	.....	2.44	6.98	.....	.....	6.98		9.60	.....	.....	.....	9.60
.....do.....	100-200	0.53	.....	.....	0.53	1.30	.....	.....	1.30	10.36	.....	.....	10.36		.....	12.19	.....	.....	12.19
.....do.....	200-500	0.01	.....	.....	0.01	0.60	.....	.....	0.60	8.82	.....	.....	8.82	31.22	.....	.....	9.43	.....	9.43
A.....	0-100	0.30	1.80	.....	2.10	3.04	6.76	.....	9.80	1.00	7.25	.....	8.25		20.15	.....	.....	.....	20.15
.....do.....	100-200	.....	.....	.....	.....	0.75	.....	.....	0.75	5.33	0.94	.....	6.27	27.17	.....	7.02	.....	.....	7.02
TOTAL T. 31 N., R. 50 E.		1.02	1.80	.....	2.82	8.13	6.76	.....	14.89	32.49	8.19	.....	40.68	58.39	29.75	19.21	9.43	.....	58.39
Roosevelt County--Continued: Township 31 North, Range 51 East																			
Smoke Creek.....	0-100	0.13	0.08	.....	0.21	1.45	0.99	.....	2.44	6.29	.....	.....	6.29		8.94	.....	.....	.....	8.94
.....do.....	100-200	.....	.....	.....	.....	0.04	.....	.....	0.04	0.30	.....	.....	0.30	9.28	.....	0.34	.....	.....	0.34
Lower Smoke Creek..	0-100	0.37	.....	.....	0.37	2.73	.....	.....	2.73	10.42	.....	.....	10.42		13.52	.....	.....	.....	13.52
.....do.....	100-200	0.05	.....	.....	0.05	1.27	.....	.....	1.27	5.22	.....	.....	5.22	20.06	.....	6.54	.....	.....	6.54
B.....	0-100	.....	.....	.....	.....	1.52	.....	.....	1.52	2.35	.....	.....	2.35		3.87	.....	.....	.....	3.87
.....do.....	100-200	1.54	.....	.....	1.54	3.18	.....	.....	3.18	1.54	.....	.....	1.54		.....	6.26	.....	.....	6.26
.....do.....	200-500	0.41	.....	.....	0.41	3.71	.....	.....	3.71	4.19	.....	.....	4.19	18.44	.....	.....	8.31	.....	8.31
AB.....	0-100	0.85	.....	.....	0.85	3.05	.....	.....	3.05	5.05	.....	.....	5.05		8.95	.....	.....	.....	8.95
.....do.....	100-200	0.46	.....	.....	0.46	3.21	.....	.....	3.21	16.81	0.16	.....	16.97		.....	20.64	.....	.....	20.64
.....do.....	200-500	1.59	0.41	.....	2.00	10.59	3.52	.....	14.11	20.96	32.24	.....	53.20	98.90	.....	.....	69.31	.....	69.31
AA.....	....do	.....	1.28	.....	1.28	4.20	3.94	.....	8.14	2.71	0.33	.....	3.04		.....	.....	12.46	.....	12.46
.....do.....	500-1000	.....	.....	.....	.....	1.00	.....	.....	1.00	1.66	.....	.....	1.66	15.12	.....	.....	.....	2.66	2.66

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed Total	Totals, Overburden Categories				GRAND TOTALS
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total		0-100 ft	100-200 ft	200-500 ft	500-1000 ft	
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Roosevelt County--Continued: Township 31 North, Range 51 East--Continued																			
A Rider	0-100	.....	0.53	.....	0.53	1.25	2.14	.....	3.39	6.72	1.25	.....	7.97		11.89	.....	.....	.....	11.89
.....do.....	100-200	1.09	0.69	.....	1.78	2.50	1.24	.....	3.74	9.87	.....	.....	9.87		.....	15.39	.....	.....	15.39
.....do.....	200-500	0.25	1.33	.....	1.58	6.99	8.49	.....	15.48	41.26	30.71	.....	71.97		.....	.....	89.03	.....	89.03
.....do.....	500-1000	0.53	0.33	.....	0.86	2.27	3.41	.....	5.68	2.48	25.19	.....	27.67	150.52	.....	.....	.....	34.21	34.21
A	0-100	.....	1.54	.....	1.54	.....	5.06	.....	5.06	.....	14.55	.....	14.55		21.15	.....	.....	.....	21.15
.....do.....	100-200	0.88	0.71	.....	1.59	3.49	8.85	.....	12.34	4.74	12.50	.....	17.24		.....	31.17	.....	.....	31.17
.....do.....	200-500	1.00	.....	.....	1.00	10.57	.....	.....	10.57	41.26	0.84	.....	42.10		.....	.....	53.67	.....	53.67
.....do.....	500-1000	0.31	.....	.....	0.31	0.81	.....	.....	0.81	0.69	.....	.....	0.69	107.80	.....	.....	.....	1.81	1.81
TOTAL T. 31 N., R. 51 E.		9.46	6.90	.....	16.36	63.83	37.64	.....	101.47	184.52	117.77	.....	302.29	420.12	68.32	80.34	232.78	38.68	420.12
Roosevelt County--Continued: Township 31 North, Range 52 East																			
Upper Timber Coulee	0-100	0.07	.....	.....	0.07	0.13	.....	.....	0.13	0.19	.....	.....	0.19		0.39	.....	.....	.....	0.39
.....do.....	100-200	0.07	.....	.....	0.07	1.25	.....	.....	1.25	0.82	.....	.....	0.82	2.53	.....	2.14	.....	.....	2.14
Lower Timber Coulee	0-100	.....	.....	.....	.....	.....	.....	.....	.....	0.74	.....	.....	0.74		0.74	.....	.....	.....	0.74
.....do.....	100-200	.....	.....	.....	.....	0.29	.....	.....	0.29	1.48	.....	.....	1.48		.....	1.77	.....	.....	1.77
.....do.....	200-500	.....	.....	.....	.....	0.01	.....	.....	0.01	2.45	.....	.....	2.45	4.97	.....	.....	2.46	.....	2.46
Smoke Creek	0-100	1.52	.....	.....	1.52	11.64	.....	.....	11.64	26.22	6.39	.....	32.61		45.77	.....	.....	.....	45.77
.....do.....	100-200	0.50	0.73	.....	1.23	1.13	8.31	.....	9.44	0.43	3.76	.....	4.19		.....	14.86	.....	.....	14.86
.....do.....	200-500	0.03	0.82	.....	0.85	1.34	2.87	.....	4.21	7.12	2.28	.....	9.40	75.09	.....	.....	14.46	.....	14.46
Lower Smoke Creek	0-100	2.85	1.13	.....	3.98	15.58	3.60	.....	19.18	26.54	10.77	.....	37.31		60.47	.....	.....	.....	60.47
.....do.....	100-200	0.99	0.31	.....	1.30	9.76	2.82	.....	12.58	13.37	0.23	.....	13.60		.....	27.48	.....	.....	27.48
.....do.....	200-500	0.38	0.06	.....	0.44	4.28	0.08	.....	4.36	8.89	.....	.....	8.89	101.64	.....	.....	13.69	.....	13.69
B	100-200	0.24	.....	.....	0.24	1.20	0.97	.....	2.17	11.34	19.80	.....	31.14		.....	33.55	.....	.....	33.55
.....do.....	200-500	1.85	1.32	.....	3.17	13.80	9.60	.....	23.40	31.90	10.55	.....	42.45		.....	.....	69.02	.....	69.02
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	1.19	.....	.....	1.19	103.76	.....	.....	.....	1.19	1.19
AB	200-500	.....	2.55	.....	2.55	1.38	19.37	.....	20.75	18.69	69.37	.....	88.06	111.36	.....	.....	111.36	.....	111.36
AA	....do....	.....	.....	.....	.....	.....	.....	.....	.....	2.68	.....	.....	2.68		.....	.....	2.68	.....	2.68
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	2.38	.....	.....	2.38	5.06	.....	.....	.....	2.38	2.38
A Rider	200-500	.....	.....	.....	.....	.....	.....	.....	.....	4.15	12.95	.....	17.10		.....	.....	17.10	.....	17.10
.....do.....	500-1000	.....	1.18	.....	1.18	.....	5.53	.....	5.53	17.29	10.31	.....	27.60	51.41	.....	.....	.....	34.31	34.31
A	200-500	.....	.....	.....	.....	.....	.....	.....	.....	0.29	.....	.....	0.29		.....	.....	0.29	.....	0.29
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	0.11	.....	.....	0.11	0.40	.....	.....	.....	0.11	0.11
TOTAL T. 31 N., R. 52 E.		8.50	8.10	.....	16.6	61.79	53.15	.....	114.94	178.27	146.41	.....	324.68	456.22	107.37	79.80	231.06	37.99	456.22
Roosevelt County--Continued: Township 31 North, Range 53 East																			
Upper Timber Coulee	0-100	1.42	1.15	.....	2.57	7.48	7.71	.....	15.19	26.16	9.10	.....	35.26		53.02	.....	.....	.....	53.02
.....do.....	100-200	.....	0.37	.....	0.37	0.76	0.78	.....	1.54	0.39	1.09	.....	1.48	56.41	.....	3.39	.....	.....	3.39
Lower Timber Coulee	0-100	1.80	0.54	.....	2.34	8.32	1.21	.....	9.53	23.92	.....	.....	23.92		35.79	.....	.....	.....	35.79
.....do.....	100-200	0.52	.....	.....	0.52	7.84	.....	.....	7.84	9.39	.....	.....	9.39	53.54	.....	17.75	.....	.....	17.75
Smoke Creek	0-100	0.59	2.35	.....	2.94	5.13	10.47	.....	15.60	17.20	20.76	.....	37.96		56.50	.....	.....	.....	56.50
.....do.....	100-200	1.86	5.03	.....	6.89	10.30	17.24	.....	27.54	22.46	11.30	.....	33.76		.....	68.19	.....	.....	68.19
.....do.....	200-500	0.81	0.39	.....	1.20	5.61	4.32	.....	9.93	12.68	16.28	.....	28.96	164.78	.....	.....	40.09	.....	40.09
Lower Smoke Creek	0-100	.....	.....	.....	.....	.....	.....	.....	.....	3.52	.....	.....	3.52		3.52	.....	.....	.....	3.52
.....do.....	100-200	1.89	.....	.....	1.89	11.73	.....	.....	11.73	34.23	.....	.....	34.23		.....	47.85	.....	.....	47.85
.....do.....	200-500	2.53	.....	.....	2.53	19.58	.....	.....	19.58	36.60	.....	.....	36.60	110.08	.....	.....	58.71	.....	58.71
B	....do....	.....	.....	.....	.....	.....	.....	.....	.....	26.43	.....	.....	26.43		.....	.....	26.43	.....	26.43
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	0.37	.....	.....	0.37	26.80	.....	.....	.....	0.37	0.37

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed	Totals, Overburden Categories				GRAND
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	TOTALS
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Roosevelt County--Continued: Township 31 North, Range 53 East--Continued																			
AB	200-500	1.19	.....	.....	1.19	7.09	.....	.....	7.09	43.61	12.33	.....	55.94		.....	.....	64.22	.....	64.22
do	500-1000	0.12	.....	.....	0.12	2.38	.....	.....	2.38	36.16	6.82	.....	42.98	109.70	.....	.....	.....	45.48	45.48
A	do	.....	.....	.....	.....	.....	.....	.....	.....	2.38	.....	.....	2.38	2.38	.....	.....	.....	2.38	2.38
TOTAL T. 31 N., R. 53 E.		12.73	9.83	.....	22.56	86.22	41.73	.....	127.95	295.50	77.68	.....	373.18	523.69	148.83	137.18	189.45	48.23	523.69
Roosevelt County--Continued: Township 31 North, Range 54 East																			
Upper Timber Coulee	0-100	2.88	0.94	.....	3.82	17.16	1.67	.....	18.83	13.96	0.03	.....	13.99		36.64	.....	.....	.....	36.64
do	100-200	0.51	.....	.....	0.51	5.49	.....	.....	5.49	24.92	1.68	.....	26.60	69.24	.....	32.60	.....	.....	32.60
Lower Timber Coulee	0-100	0.78	.....	.....	0.78	2.60	.....	.....	2.60	15.00	.....	.....	15.00		18.38	.....	.....	.....	18.38
do	100-200	1.52	.....	.....	1.52	12.74	.....	.....	12.74	35.34	.....	.....	35.34		.....	49.60	.....	.....	49.60
do	200-500	.....	.....	.....	.....	0.26	.....	.....	0.26	0.97	.....	.....	0.97	69.21	.....	.....	1.23	.....	1.23
Smoke Creek	0-100	.....	1.29	.....	1.29	.....	3.68	.....	3.68	.....	1.31	.....	1.31		6.28	.....	.....	.....	6.28
do	100-200	.....	3.10	.....	3.10	1.52	7.41	.....	8.93	14.84	7.48	.....	22.32		.....	34.35	.....	.....	34.35
do	200-500	.....	.....	.....	.....	1.73	0.20	.....	1.93	8.55	0.98	.....	9.53	52.09	.....	.....	11.46	.....	11.46
Lower Smoke Creek	100-200	0.55	.....	.....	0.55	2.58	.....	.....	2.58	2.22	.....	.....	2.22		.....	5.35	.....	.....	5.35
do	200-500	4.45	.....	.....	4.45	30.51	.....	.....	30.51	105.33	.....	.....	105.33	145.64	.....	.....	140.29	.....	140.29
BC	100-200	.....	.....	.....	.....	0.50	.....	.....	0.50	0.07	.....	.....	0.07		.....	0.57	.....	.....	0.57
do	200-500	2.19	1.31	.....	3.50	17.27	8.68	.....	25.95	45.00	6.07	.....	51.07	81.09	.....	.....	80.52	.....	80.52
B	do	0.47	.....	.....	0.47	3.45	.....	.....	3.45	30.74	.....	.....	30.74		.....	.....	34.66	.....	34.66
do	500-1000	0.19	.....	.....	0.19	1.01	.....	.....	1.01	2.12	.....	.....	2.12	37.98	.....	.....	.....	3.32	3.32
AB	200-500	.....	.....	.....	.....	1.12	.....	.....	1.12	2.75	6.51	.....	9.26		.....	.....	10.38	.....	10.38
do	500-1000	.....	.....	.....	.....	1.15	.....	.....	1.15	61.30	7.53	.....	68.83	80.36	.....	.....	.....	69.98	69.98
AA	do	0.88	.....	.....	0.88	5.69	.....	.....	5.69	12.68	.....	.....	12.68	19.25	.....	.....	.....	19.25	19.25
TOTAL T. 31 N., R. 54 E.		14.42	6.64	.....	21.06	104.78	21.64	.....	126.42	375.79	31.59	.....	407.38	554.86	61.30	122.47	278.54	92.55	554.86
Roosevelt County--Continued: Township 32 North, Range 49 East																			
AB	0-100	0.69	0.56	.....	1.25	0.53	1.12	.....	1.65	.....	1.52	.....	1.52		4.42	.....	.....	.....	4.42
do	100-200	.....	0.87	.....	0.87	.....	2.18	.....	2.18	.....	1.54	.....	1.54		.....	4.59	.....	.....	4.59
do	200-500	.....	.....	.....	.....	.....	0.43	.....	0.43	.....	1.46	.....	1.46	10.90	.....	.....	1.89	.....	1.89
A Rider	0-100	1.24	1.19	.....	2.43	3.54	3.05	.....	6.59	0.34	0.06	.....	0.40		9.42	.....	.....	.....	9.42
do	100-200	.....	1.87	.....	1.87	1.07	2.86	.....	3.93	1.36	0.02	.....	1.38		.....	7.18	.....	.....	7.18
do	200-500	.....	0.55	.....	0.55	.....	3.07	.....	3.07	0.69	2.38	.....	3.07	23.29	.....	.....	6.69	.....	6.69
A	0-100	2.14	2.17	.....	4.31	2.64	2.41	.....	5.05	1.03	0.91	.....	1.94		11.30	.....	.....	.....	11.30
do	100-200	.....	0.35	.....	0.35	0.10	0.48	.....	0.58	.....	.....	.....	.....		.....	0.93	.....	.....	0.93
do	200-500	0.35	0.03	.....	0.38	0.66	.....	.....	0.66	.....	.....	.....	.....	13.27	.....	.....	1.04	.....	1.04
TOTAL T. 32 N., R. 49 E.		4.42	7.59	.....	12.01	8.54	15.60	.....	24.14	3.42	7.89	.....	11.31	47.46	25.14	12.70	9.62	.....	47.46
Roosevelt County--Continued: Township 32 North, Range 50 East																			
Lower Smoke Creek	0-100	.....	.....	.....	.....	1.36	.....	.....	1.36	1.60	.....	.....	1.60		2.96	.....	.....	.....	2.96
do	100-200	0.64	.....	.....	0.64	3.40	.....	.....	3.40	1.26	.....	.....	1.26	8.26	.....	5.30	.....	.....	5.30
AB	0-100	0.30	.....	.....	0.30	0.61	0.10	.....	0.71	9.12	0.14	.....	9.26		10.27	.....	.....	.....	10.27
do	100-200	0.41	1.34	.....	1.75	1.35	5.92	.....	7.27	24.83	13.59	.....	38.42		.....	47.44	.....	.....	47.44
do	200-500	1.49	1.08	.....	2.57	11.70	8.59	.....	20.29	21.95	16.01	.....	37.96	118.53	.....	.....	60.82	.....	60.82
AA	0-100	0.48	0.49	.....	0.97	0.12	1.35	.....	1.47	1.64	3.75	.....	5.39		7.83	.....	.....	.....	7.83
do	100-200	0.69	0.12	.....	0.81	0.54	3.09	.....	3.63	3.47	3.01	.....	6.48		.....	10.92	.....	.....	10.92
do	200-500	0.16	.....	.....	0.16	1.42	0.75	.....	2.17	7.33	6.59	.....	13.92	35.00	.....	.....	16.25	.....	16.25

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed Total	Totals, Overburden Categories				GRAND TOTALS
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total		0-100 ft	100-200 ft	200-500 ft	500-1000 ft	
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Roosevelt County--Continued: Township 32 North, Range 50 East--Continued																			
A Rider	0-100	0.28	0.31	.....	0.59	1.19	1.87	.....	3.06	0.99	7.64	.....	8.63		12.28	.....	.....	.....	12.28
.....do.....	100-200	1.27	0.64	.....	1.91	1.72	3.09	.....	4.81	1.19	19.64	.....	20.83		.....	27.55	.....	.....	27.55
.....do.....	200-500	1.14	1.23	.....	2.37	10.00	9.29	.....	19.29	14.07	81.59	.....	95.66	157.15	.....	.....	117.32	.....	117.32
A.....	0-100	0.57	0.26	.....	0.83	0.91	0.49	.....	1.40	3.76	0.83	.....	4.59		6.82	.....	.....	.....	6.82
.....do.....	100-200	0.13	0.01	.....	0.14	0.79	2.51	.....	3.30	4.46	3.74	.....	8.20		.....	11.64	.....	.....	11.64
.....do.....	200-500	0.33	0.39	.....	0.72	1.88	2.60	.....	4.48	11.73	5.90	.....	17.63	41.29	.....	.....	22.83	.....	22.83
TOTAL T. 32 N., R. 50 E.		7.89	5.87	.....	13.76	36.99	39.65	.....	76.64	107.40	162.43	.....	269.83	360.23	40.16	102.85	217.22	.....	360.23
Roosevelt County--Continued: Township 32 North, Range 51 East																			
Upper Timber Coulee	0-100	.....	.....	.....	.....	.....	.....	.....	.....	9.17	0.31	.....	9.48	9.48	9.48	.....	.....	.....	9.48
Lower Timber Coulee	....do....	.....	.....	.....	.....	.....	.....	.....	.....	6.25	.....	.....	6.25		6.25	.....	.....	.....	6.25
.....do.....	100-200	.....	.....	.....	.....	.....	.....	.....	.....	0.06	.....	.....	0.06	6.31	.....	0.06	.....	.....	0.06
Smoke Creek.....	0-100	1.72	0.42	.....	2.14	5.53	3.56	.....	9.09	11.55	0.77	.....	12.32		23.55	.....	.....	.....	23.55
.....do.....	100-200	.....	.....	.....	.....	0.01	0.34	.....	0.35	8.16	3.29	.....	11.45		.....	11.80	.....	.....	11.80
.....do.....	200-500	.....	.....	.....	.....	.....	.....	.....	.....	0.46	0.12	.....	0.58	35.93	.....	.....	0.58	.....	0.58
Lower Smoke Creek..	0-100	1.64	.....	.....	1.64	5.85	.....	.....	5.85	25.55	.....	.....	25.55		33.04	.....	.....	.....	33.04
.....do.....	100-200	1.39	.....	.....	1.39	6.22	.....	.....	6.22	28.61	.....	.....	28.61		.....	36.22	.....	.....	36.22
.....do.....	200-500	.....	.....	.....	.....	1.88	.....	.....	1.88	10.41	.....	.....	10.41	81.55	.....	.....	12.29	.....	12.29
AB.....	....do....	.....	2.03	.....	2.03	0.86	16.29	.....	17.15	61.87	61.76	.....	123.63	142.81	.....	.....	142.81	.....	142.81
AA.....	....do....	0.87	.....	.....	0.87	5.71	.....	.....	5.71	35.35	.....	.....	35.35	41.93	.....	.....	41.93	.....	41.93
A Rider.....	....do....	.....	.....	.....	.....	.....	1.87	.....	1.87	3.45	66.56	.....	70.01		.....	.....	71.88	.....	71.88
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	.....	25.22	.....	25.22	97.10	.....	.....	.....	25.22	25.22
TOTAL T. 32 N., R. 51 E.		5.62	2.45	.....	8.07	26.06	22.06	.....	48.12	200.89	158.03	.....	358.92	415.11	72.32	48.08	269.49	25.22	415.11
Roosevelt County--Continued: Township 32 North, Range 52 East																			
Upper Timber Coulee	0-100	1.22	0.18	.....	1.40	7.06	0.29	.....	7.35	28.62	2.35	.....	30.97		39.72	.....	.....	.....	39.72
.....do.....	100-200	1.94	2.16	.....	4.10	8.10	16.46	.....	24.56	29.84	32.54	.....	62.38	130.76	.....	91.04	.....	.....	91.04
Lower Timber Coulee	0-100	0.09	1.30	.....	1.39	0.38	9.03	.....	9.41	15.58	12.65	.....	28.23		39.03	.....	.....	.....	39.03
.....do.....	100-200	0.19	.....	.....	0.19	2.62	1.04	.....	3.66	28.19	11.15	.....	39.34		.....	43.19	.....	.....	43.19
.....do.....	200-500	1.30	0.45	.....	1.75	9.97	2.31	.....	12.28	19.27	9.10	.....	28.37	124.62	.....	.....	42.40	.....	42.40
Smoke Creek.....	0-100	2.36	0.40	.....	2.76	4.06	2.45	.....	6.51	8.56	0.77	.....	9.33		18.60	.....	.....	.....	18.60
.....do.....	100-200	1.08	0.66	.....	1.74	2.19	3.51	.....	5.70	7.99	4.28	.....	12.27		.....	19.71	.....	.....	19.71
.....do.....	200-500	1.09	.....	.....	1.09	7.87	.....	.....	7.87	14.57	1.55	.....	16.12	63.39	.....	.....	25.08	.....	25.08
Lower Smoke Creek..	0-100	1.07	.....	.....	1.07	3.13	.....	.....	3.13	11.19	.....	.....	11.19		15.39	.....	.....	.....	15.39
.....do.....	100-200	1.93	.....	.....	1.93	5.83	.....	.....	5.83	19.11	.....	.....	19.11		.....	26.87	.....	.....	26.87
.....do.....	200-500	1.66	.....	.....	1.66	15.02	.....	.....	15.02	65.65	.....	.....	65.65		.....	.....	82.33	.....	82.33
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	1.35	.....	.....	1.35	125.94	.....	.....	.....	1.35	1.35
AB.....	200-500	.....	1.53	.....	1.53	.....	11.10	.....	11.10	27.12	26.41	.....	53.53		.....	.....	66.16	.....	66.16
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	6.51	.....	.....	6.51	72.67	.....	.....	.....	6.51	6.51
TOTAL T. 32 N., R. 52 E.		13.93	6.68	.....	20.61	66.23	46.19	.....	112.42	283.55	100.80	.....	384.35	517.38	112.74	180.81	215.97	7.86	517.38

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed	Totals, Overburden Categories				GRAND
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	TOTALS
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Roosevelt County--Continued: Township 32 North, Range 53 East																			
Upper Timber Coulee	0-100	0.82	1.33	.....	2.15	3.70	3.30	.....	7.00	7.04	21.92	.....	28.96		38.11	.....	.....	.....	38.11
.....do.....	100-200	0.53	2.09	.....	2.62	3.65	11.38	.....	15.03	23.12	43.08	.....	66.20		.....	83.85	.....	.....	83.85
.....do.....	200-500	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.96	.....	1.96	123.92	.....	.....	1.96	.....	1.96
Timber Coulee	0-100	.....	.....	.....	.....	.....	.....	2.85	2.85	.....	2.68	15.40	18.08		20.93	.....	.....	.....	20.93
.....do.....	100-200	.....	.....	2.43	2.43	.....	.....	20.83	20.83	.....	5.12	22.13	27.25	71.44	.....	50.51	.....	.....	50.51
Lower Timber Coulee	0-100	0.40	.....	.....	0.40	2.06	.....	.....	2.06	17.07	.....	.....	17.07		19.53	.....	.....	.....	19.53
.....do.....	100-200	2.36	.....	.....	2.36	10.22	.....	.....	10.22	34.54	.....	.....	34.54		.....	47.12	.....	.....	47.12
.....do.....	200-500	0.30	.....	.....	0.30	6.02	.....	.....	6.02	18.77	.....	.....	18.77	91.74	.....	.....	25.09	.....	25.09
Smoke Creek	0-100	0.03	.....	.....	0.03	0.09	.....	.....	0.09	.....	.....	.....	.....		0.12	.....	.....	.....	0.12
.....do.....	100-200	1.36	0.68	.....	2.04	0.88	0.58	.....	1.46	.....	.....	.....	.....		.....	3.50	.....	.....	3.50
.....do.....	200-500	.....	.....	.....	.....	0.81	1.23	.....	2.04	1.32	0.67	.....	1.99	7.65	.....	.....	4.03	.....	4.03
Lower Smoke Creek..	100-200	0.86	.....	.....	0.86	0.88	.....	.....	0.88	9.48	.....	.....	9.48		.....	11.22	.....	.....	11.22
.....do.....	200-500	2.92	.....	.....	2.92	24.32	.....	.....	24.32	95.65	.....	.....	95.65		.....	.....	122.89	.....	122.89
.....do.....	500-1000	.....	.....	.....	.....	0.35	.....	.....	0.35	1.28	.....	.....	1.28	135.74	.....	.....	.....	1.63	1.63
B	200-500	.....	.....	.....	.....	.....	.....	.....	.....	6.70	.....	.....	6.70		.....	.....	6.70	.....	6.70
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	1.82	.....	.....	1.82	8.52	.....	.....	.....	1.82	1.82
TOTAL T. 32 N., R. 53 E.		9.58	4.10	2.43	16.11	52.98	16.49	23.68	93.15	216.79	75.43	37.53	329.75	439.01	78.69	196.20	160.67	3.45	439.01
TOTAL ROOSEVELT COUNTY		148.37	226.15	6.69	381.21	727.93	634.71	34.95	1,397.59	2,616.43	1,380.92	37.53	4,034.88	5,813.68	1,277.03	1,256.17	2,712.63	567.85	5,813.68
Sheridan County: Township 31 North, Range 55 East																			
Upper Timber Coulee	0-100	4.41	0.96	.....	5.37	15.51	2.61	.....	18.12	5.07	0.16	.....	5.23		28.72	.....	.....	.....	28.72
.....do.....	100-200	0.98	.....	.....	0.98	3.88	.....	.....	3.88	2.40	0.36	.....	2.76	36.34	.....	7.62	.....	.....	7.62
Lower Timber Coulee	0-100	3.24	0.02	.....	3.26	15.32	0.14	.....	15.46	6.09	.....	.....	6.09		24.81	.....	.....	.....	24.81
.....do.....	100-200	4.40	.....	.....	4.40	9.11	.....	.....	9.11	2.26	.....	.....	2.26	40.58	.....	15.77	.....	.....	15.77
Lower Smoke Creek..	....do....	0.08	.....	.....	0.08	1.93	.....	.....	1.93	8.00	.....	.....	8.00		.....	10.01	.....	.....	10.01
.....do.....	200-500	0.81	.....	.....	0.81	5.47	.....	.....	5.47	24.45	.....	.....	24.45	40.74	.....	.....	30.73	.....	30.73
BC	....do....	0.67	.....	.....	0.67	4.95	1.62	.....	6.57	38.56	39.20	.....	77.76	85.00	.....	.....	55.00	.....	55.00
B	....do....	.....	.....	.....	.....	0.81	.....	.....	0.81	30.84	.....	.....	30.84	31.65	.....	.....	31.65	.....	31.65
AA	500-1000	.....	.....	.....	.....	1.07	.....	.....	1.07	27.39	.....	.....	27.39	28.46	.....	.....	.....	28.46	28.46
TOTAL T. 31 N., R. 55 E.		14.59	0.98	.....	15.57	58.05	4.37	.....	62.42	145.06	39.72	.....	184.78	262.77	53.53	33.40	147.38	28.46	262.77
Sheridan County--Continued: Township 32 North, Range 54 East																			
Upper Timber Coulee	0-100	1.85	0.45	.....	2.30	5.03	8.60	.....	13.63	8.20	7.64	.....	15.84		31.77	.....	.....	.....	31.77
.....do.....	100-200	0.70	0.24	.....	0.94	4.79	2.21	.....	7.00	8.70	10.11	.....	18.81	58.52	.....	26.75	.....	.....	26.75
Timber Coulee	0-100	.....	.....	2.40	2.40	.....	2.32	18.21	20.53	.....	5.06	36.37	41.43		64.36	.....	.....	.....	64.36
.....do.....	100-200	.....	1.83	2.37	4.20	.....	15.83	8.36	24.19	.....	38.00	34.06	72.06		.....	100.45	.....	.....	100.45
.....do.....	200-500	.....	1.45	0.74	2.19	.....	5.77	7.75	13.52	.....	0.51	11.51	12.02	192.54	.....	.....	27.73	.....	27.73
Lower Timber Coulee	0-100	1.21	.....	.....	1.21	5.14	.....	.....	5.14	7.11	.....	.....	7.11		13.46	.....	.....	.....	13.46
.....do.....	100-200	0.29	.....	.....	0.29	3.73	.....	.....	3.73	14.69	.....	.....	14.69		.....	18.71	.....	.....	18.71
.....do.....	200-500	0.53	.....	.....	0.53	3.87	.....	.....	3.87	2.52	.....	.....	2.52	39.09	.....	.....	6.92	.....	6.92
Lower Smoke Creek..	100-200	0.49	.....	.....	0.49	4.55	.....	.....	4.55	20.12	.....	.....	20.12		.....	25.16	.....	.....	25.16
.....do.....	200-500	2.92	.....	.....	2.92	23.13	.....	.....	23.13	78.90	.....	.....	78.90	130.11	.....	.....	104.95	.....	104.95
AB	....do....	.....	.....	.....	.....	0.06	.....	.....	0.06	8.31	.....	.....	8.31		.....	.....	8.37	.....	8.37
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	14.85	.....	.....	14.85	23.22	.....	.....	.....	14.85	14.85
TOTAL T. 32 N., R. 54 E.		7.99	3.97	5.51	17.47	50.30	34.73	34.32	119.35	163.40	61.32	81.94	306.66	443.48	109.59	171.07	147.97	14.85	443.48

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed	Totals, Overburden Categories				GRAND
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	TOTALS
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Sheridan County--Continued: Township 32 North, Range 55 East																			
Upper Timber Coulee	0-100	1.77	13.64	.....	15.41	9.30	27.94	.....	37.24	5.57	12.90	.....	18.47		71.12	.....	.....	.....	71.12
.....do.....	100-200	.....	0.81	.....	0.81	.....	0.04	.....	0.04	.....	0.41	.....	0.41	72.38	.....	1.26	.....	.....	1.26
Lower Timber Coulee	0-100	8.37	0.39	.....	8.76	22.43	0.83	.....	23.26	18.28	.....	.....	18.28		50.30	.....	.....	.....	50.30
.....do.....	100-200	2.46	.....	.....	2.46	2.56	.....	.....	2.56	1.43	.....	.....	1.43	56.75	.....	6.45	.....	.....	6.45
Reserve.....	0-100	0.42	.....	.....	0.42	1.69	.....	.....	1.69	3.60	.....	.....	3.60		5.71	.....	.....	.....	5.71
.....do.....	100-200	0.58	0.21	.....	0.79	6.11	.....	.....	6.11	17.41	.....	.....	17.41		.....	24.31	.....	.....	24.31
.....do.....	200-500	.....	.....	.....	.....	.....	.....	.....	.....	0.10	.....	.....	0.10	30.12	.....	.....	0.10	.....	0.10
Lower Smoke Creek..	100-200	1.09	.....	.....	1.09	7.03	.....	.....	7.03	6.99	.....	.....	6.99		.....	15.11	.....	.....	15.11
.....do.....	200-500	.....	.....	.....	.....	0.19	.....	.....	0.19	10.66	.....	.....	10.66	25.96	.....	.....	10.85	.....	10.85
BC.....	....do....	.....	.....	.....	.....	0.37	.....	.....	0.37	4.97	.....	.....	4.97	5.34	.....	.....	5.34	.....	5.34
AB.....	....do....	.....	.....	.....	.....	0.66	.....	.....	0.66	11.84	.....	.....	11.84		.....	.....	12.50	.....	12.50
.....do.....	500-1000	.....	.....	.....	.....	.....	.....	.....	.....	10.47	.....	.....	10.47	22.97	.....	.....	.....	10.47	10.47
TOTAL T. 32 N., R. 55 E.		14.69	15.05	.....	29.74	50.34	28.81	.....	79.15	91.32	13.31	.....	104.63	213.52	127.13	47.13	28.79	10.47	213.52
Sheridan County--Continued: Township 33 North, Range 52 East																			
Upper Timber Coulee	0-100	1.89	0.37	.....	2.26	6.48	5.29	.....	11.77	1.68	11.61	.....	13.29		27.32	.....	.....	.....	27.32
.....do.....	100-200	1.05	0.83	.....	1.88	6.79	5.60	.....	12.39	20.14	30.57	.....	50.71		.....	64.98	.....	.....	64.98
.....do.....	200-500	.....	1.55	.....	1.55	0.11	11.84	.....	11.95	3.13	20.48	.....	23.61	129.41	.....	.....	37.11	.....	37.11
Lower Timber Coulee	0-100	1.85	.....	.....	1.85	7.84	.....	.....	7.84	12.29	.....	.....	12.29		21.98	.....	.....	.....	21.98
.....do.....	100-200	1.48	.....	.....	1.48	8.23	.....	.....	8.23	27.84	.....	.....	27.84		.....	37.55	.....	.....	37.55
.....do.....	200-500	0.66	.....	.....	0.66	5.92	.....	.....	5.92	16.73	.....	.....	16.73	82.84	.....	.....	23.31	.....	23.31
Lower Smoke Creek..	0-100	.....	.....	.....	.....	.....	.....	.....	.....	5.75	.....	.....	5.75		5.75	.....	.....	.....	5.75
.....do.....	100-200	.....	.....	.....	.....	0.06	0.27	.....	0.33	16.00	2.25	.....	18.25		.....	18.58	.....	.....	18.58
.....do.....	200-500	1.88	0.47	.....	2.35	15.04	2.73	.....	17.77	64.38	13.65	.....	78.03	122.48	.....	.....	98.15	.....	98.15
TOTAL T. 33 N., R. 52 E.		8.81	3.22	.....	12.03	50.47	25.73	.....	76.20	167.94	78.56	.....	246.50	334.73	55.05	121.11	158.57	.....	334.73
Sheridan County--Continued: Township 33 North, Range 53 East																			
Local R.....	200-500	.....	.....	.....	.....	.....	.....	.....	.....	0.18	.....	.....	0.18	0.18	.....	.....	0.18	.....	0.18
Upper Timber Coulee	0-100	.....	1.36	.....	1.36	.....	9.88	3.55	13.43	.....	48.25	7.61	55.86		70.65	.....	.....	.....	70.65
.....do.....	100-200	.....	.....	.....	.....	.....	1.22	0.26	1.48	.....	20.02	9.94	29.96		.....	31.44	.....	.....	31.44
.....do.....	200-500	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.31	10.62	12.93	115.02	.....	.....	12.93	.....	12.93
Timber Coulee.....	0-100	.....	.....	.....	.....	.....	.....	0.19	0.19	.....	.....	0.76	0.76		0.95	.....	.....	.....	0.95
.....do.....	100-200	.....	.....	2.79	2.79	.....	.....	8.39	8.39	.....	.....	1.55	1.55	13.68	.....	12.73	.....	.....	12.73
Lower Timber Coulee	0-100	0.67	.....	.....	0.67	5.08	.....	.....	5.08	27.67	.....	.....	27.67		33.42	.....	.....	.....	33.42
.....do.....	100-200	.....	.....	.....	.....	1.51	.....	.....	1.51	8.69	.....	.....	8.69		.....	10.20	.....	.....	10.20
.....do.....	200-500	.....	.....	.....	.....	0.04	.....	.....	0.04	9.32	.....	.....	9.32	52.98	.....	.....	9.36	.....	9.36
Lower Smoke Creek..	0-100	.....	.....	.....	.....	.....	.....	.....	.....	7.20	.....	.....	7.20		7.20	.....	.....	.....	7.20
.....do.....	100-200	0.07	.....	.....	0.07	2.51	.....	.....	2.51	30.59	.....	.....	30.59		.....	33.17	.....	.....	33.17
.....do.....	200-500	1.48	.....	.....	1.48	7.34	.....	.....	7.34	24.56	.....	.....	24.56	73.75	.....	.....	33.38	.....	33.38
TOTAL T. 33 N., R. 53 E.		2.22	1.36	2.79	6.37	16.48	11.10	12.39	39.97	108.21	70.58	30.48	209.27	255.61	112.22	87.54	55.85	.....	255.61

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed Total	Totals, Overburden Categories				GRAND TOTALS
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total		0-100 ft	100-200 ft	200-500 ft	500-1000 ft	
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Sheridan County--Continued: Township 33 North, Range 54 East																			
Local R.	0-100	1.20	0.36	.....	1.56	12.17	0.86	.....	13.03	7.98	.....	.....	7.98		22.57	.....	.....	.....	22.57
.....do.....	100-200	0.59	.....	.....	0.59	2.44	.....	.....	2.44	10.14	.....	.....	10.14		.....	13.17	.....	.....	13.17
.....do.....	200-500	.....	.....	.....	.....	.....	.....	.....	.....	0.30	.....	.....	0.30	36.04	.....	.....	0.30	.....	0.30
Upper Timber Coulee	0-100	.....	2.42	4.09	6.51	.....	13.63	30.88	44.51	.....	26.44	23.82	50.26		101.28	.....	.....	.....	101.28
.....do.....	100-200	.....	.....	9.15	9.15	.....	0.07	55.17	55.24	.....	18.65	47.47	66.12		.....	130.51	.....	.....	130.51
.....do.....	200-500	.....	.....	1.26	1.26	.....	.....	9.32	9.32	.....	.....	47.11	47.11	289.48	.....	.....	57.69	.....	57.69
Lower Timber Coulee	0-100	.....	.....	.....	.....	1.85	.....	.....	1.85	12.45	.....	.....	12.45		14.30	.....	.....	.....	14.30
.....do.....	100-200	2.29	.....	.....	2.29	16.93	.....	.....	16.93	33.88	.....	.....	33.88		.....	53.10	.....	.....	53.10
.....do.....	200-500	0.58	.....	.....	0.58	4.30	.....	.....	4.30	19.18	.....	.....	19.18	91.46	.....	.....	24.06	.....	24.06
Reserve	100-200	.....	.....	.....	.....	.....	.....	.....	.....	0.18	.....	.....	0.18	0.18	.....	0.18	.....	.....	0.18
Lower Smoke Creek..	....do....	.....	.....	.....	.....	.....	.....	.....	.....	0.20	.....	.....	0.20	0.20	.....	0.20	.....	.....	0.20
TOTAL T. 33 N., R. 54 E.		4.66	2.78	14.50	21.94	37.69	14.56	95.37	147.62	84.31	45.09	118.40	247.80	417.36	138.15	197.16	82.05	.....	417.36
Sheridan County--Continued: Township 33 North, Range 55 East																			
Local R.	0-100	1.85	.....	.....	1.85	10.22	.....	.....	10.22	7.91	.....	.....	7.91	19.98	19.98	.....	.....	.....	19.98
Upper Timber Coulee	....do....	0.30	11.11	.....	11.41	0.62	41.99	0.59	43.20	0.38	36.93	0.07	37.38		91.99	.....	.....	.....	91.99
.....do.....	100-200	0.22	1.46	.....	1.68	1.58	9.87	3.72	15.17	2.07	14.80	0.62	17.49	126.33	.....	34.34	.....	.....	34.34
Lower Timber Coulee	0-100	0.68	0.19	.....	0.87	2.87	.....	.....	2.87	1.87	.....	.....	1.87		5.61	.....	.....	.....	5.61
.....do.....	100-200	0.62	.....	.....	0.62	4.62	.....	.....	4.62	3.78	.....	.....	3.78	14.63	.....	9.02	.....	.....	9.02
Reserve	0-100	0.83	0.38	.....	1.21	2.42	0.78	.....	3.20	3.14	7.97	.....	11.11		15.52	.....	.....	.....	15.52
.....do.....	100-200	1.64	0.54	.....	2.18	11.23	3.44	.....	14.67	25.27	16.11	.....	41.38		.....	58.23	.....	.....	58.23
.....do.....	200-500	0.56	0.55	.....	1.11	4.42	4.13	.....	8.55	11.97	9.22	.....	21.19	104.60	.....	.....	30.85	.....	30.85
TOTAL T. 33 N., R. 55 E.		6.70	14.23	.....	20.93	37.98	60.21	4.31	102.50	56.39	85.03	0.69	142.11	265.54	133.10	101.59	30.85	.....	265.54
TOTAL SHERIDAN COUNTY		59.66	41.59	22.80	124.05	301.31	179.51	146.39	627.21	816.63	393.61	231.51	1,441.75	2,193.01	728.77	759.00	651.46	53.78	2,193.01
Daniels County: Township 33 North, Range 49 East																			
AB.	0-100	.....	.....	.....	.....	.....	.....	.....	.....	.....	8.93	.....	8.93		8.93	.....	.....	.....	8.93
.....do.....	100-200	.....	.....	.....	.....	.....	0.11	.....	0.11	.....	13.43	.....	13.43		.....	13.54	.....	.....	13.54
.....do.....	200-500	0.55	0.56	.....	1.11	4.19	4.48	.....	8.67	35.56	45.21	.....	80.77	113.02	.....	.....	90.55	.....	90.55
AA.	....do....	0.66	.....	.....	0.66	3.57	.....	.....	3.57	17.79	2.87	.....	20.66	24.89	.....	.....	24.89	.....	24.89
A Rider	0-100	.....	.....	.....	.....	.....	.....	.....	.....	1.69	.....	.....	1.69		1.69	.....	.....	.....	1.69
.....do.....	100-200	.....	.....	.....	.....	.....	.....	.....	.....	3.16	.....	.....	3.16		.....	3.16	.....	.....	3.16
.....do.....	200-500	.....	.....	.....	.....	.....	.....	.....	.....	4.84	47.41	.....	52.25	57.10	.....	.....	52.25	.....	52.25
TOTAL T. 33 N., R. 49 E.		1.21	0.56	.....	1.77	7.76	4.59	.....	12.35	63.04	117.85	.....	180.89	195.01	10.62	16.70	167.69	.....	195.01

Table 11. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, reliability of data, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	Overburden (feet)	Measured				Indicated				Inferred				Bed	Totals, Overburden Categories				GRAND
		Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	TOTALS
		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20							
Daniels County--Continued: Township 33 North, Range 50 East																			
Lower Smoke Creek..	0-100	.....	.....	.....	.....	.....	.....	.....	.....	0.07	.....	.....	0.07		0.07	.....	.....	.....	0.07
.....do.....	100-200	.....	.....	.....	.....	.....	.....	.....	.....	23.16	.....	.....	23.16		.....	23.16	.....	.....	23.16
.....do.....	200-500	.....	.....	.....	.....	.....	.....	.....	.....	3.81	.....	.....	3.81	27.04	.....	.....	3.81	.....	3.81
AB.....	....do	0.65	0.77	.....	1.42	5.52	5.10	.....	10.62	30.40	6.36	.....	36.76	48.80	.....	.....	48.80	.....	48.80
AA.....	....do	.....	1.29	.....	1.29	1.22	7.78	.....	9.00	22.78	2.84	.....	25.62		.....	.....	35.91	.....	35.91
.....do.....	500-1000	.....	.....	.....	.....	.....	0.64	.....	0.64	10.57	6.22	.....	16.79	53.34	.....	.....	.....	17.43	17.43
A Rider.....	200-500	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.40	.....	5.40	5.40	.....	.....	5.40	.....	5.40
TOTAL T. 33 N., R. 50 E.		0.65	2.06	.....	2.71	6.74	13.52	.....	20.26	90.79	20.82	.....	111.61	134.58	0.07	23.16	93.92	17.43	134.58
Daniels County--Continued: Township 33 North, Range 51 East																			
Upper Timber Coulee	0-100	.....	.....	.....	.....	0.67	.....	.....	0.67	3.64	.....	.....	3.64		4.31	.....	.....	.....	4.31
.....do.....	100-200	0.67	.....	.....	0.67	5.42	.....	.....	5.42	13.41	.....	.....	13.41	23.81	.....	19.50	.....	.....	19.50
Lower Timber Coulee	0-100	0.10	.....	.....	0.10	1.50	.....	.....	1.50	4.99	.....	.....	4.99		6.59	.....	.....	.....	6.59
.....do.....	100-200	0.84	.....	.....	0.84	5.92	.....	.....	5.92	15.16	.....	.....	15.16	28.51	.....	21.92	.....	.....	21.92
Lower Smoke Creek..	0-100	.....	.....	.....	.....	.....	.....	.....	.....	4.63	.....	.....	4.63		4.63	.....	.....	.....	4.63
.....do.....	100-200	.....	.....	.....	.....	0.34	.....	.....	0.34	25.40	.....	.....	25.40		.....	25.74	.....	.....	25.74
.....do.....	200-500	1.54	.....	.....	1.54	12.05	.....	.....	12.05	74.13	1.54	.....	75.67	119.63	.....	.....	89.26	.....	89.26
TOTAL T. 33 N., R. 51 E.		3.15	.....	.....	3.15	25.90	.....	.....	25.90	141.36	1.54	.....	142.90	171.95	15.53	67.16	89.26	.....	171.95
TOTAL DANIELS COUNTY		5.01	2.62	.....	7.63	40.40	18.11	.....	58.51	295.19	140.21	.....	435.40	501.54	26.22	107.02	350.87	17.43	501.54
TOTAL EASTERN PART OF FORT PECK INDIAN RESERVATION		213.04	270.36	29.49	512.89	1,069.64	832.33	181.34	2,083.31	3,728.25	1,914.74	269.04	5,912.03	8,508.23	2,032.02	2,122.19	3,714.96	639.06	8,508.23

Table 12. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, thickness, and overburden

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	0-100 ft Overburden				100-200 ft Overburden				200-500 ft Overburden				500-1000 ft Overburden				GRAND TOTALS
	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	
	2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20		
Roosevelt County: Township 28 North, Range 53 East																	
D	.....	0.43	.....	0.43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.43
BC	1.33	.....	.....	1.33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.33
B	8.14	0.33	.....	8.47	9.78	2.79	.....	12.57	13.65	6.76	.....	20.41	.....	.....	.....	.....	41.45
AB	7.15	.....	.....	7.15	9.02	0.94	.....	9.96	27.46	9.37	.....	36.83	0.17	.....	.....	0.17	54.11
AA	.....	13.94	.....	13.94	1.79	9.93	.....	11.72	29.50	2.57	.....	32.07	2.96	.....	.....	2.96	60.69
A Rider	11.28	.....	.....	11.28	11.57	0.91	.....	12.48	28.17	1.11	.....	29.28	5.86	.....	.....	5.86	58.90
A	.....	26.17	.....	26.17	.....	32.22	.....	32.22	.....	67.11	.....	67.11	.....	22.23	.....	22.23	147.73
TOTAL T. 28 N., R. 53 E.	27.90	40.87	.....	68.77	32.16	46.79	.....	78.95	98.78	86.92	.....	185.70	8.99	22.23	.....	31.22	364.64
Roosevelt County--Continued: Township 28 North, Range 54 East																	
D Rider	18.09	51.50	.....	69.59	4.48	15.78	.....	20.26	.....	.....	.....	.....	.....	.....	.....	.....	89.85
D	0.31	115.62	9.86	125.79	.....	38.46	3.09	41.55	.....	1.42	.....	1.42	.....	.....	.....	.....	168.76
BC	.....	.....	.....	.....	.....	.....	.....	.....	13.62	.....	.....	13.62	.....	.....	.....	.....	13.62
B	1.12	.....	.....	1.12	2.75	.....	.....	2.75	18.13	.....	.....	18.13	.....	.....	.....	.....	22.00
AB	.....	.....	.....	.....	0.07	.....	.....	0.07	3.23	.....	.....	3.23	3.30	.....	.....	3.30	6.60
AA	.....	.....	.....	.....	0.40	0.07	.....	0.47	12.63	.....	.....	12.63	10.21	.....	.....	10.21	23.31
A Rider	.....	.....	.....	.....	.....	.....	.....	.....	7.86	.....	.....	7.86	8.26	.....	.....	8.26	16.12
A	.....	.....	.....	.....	.....	.....	.....	.....	.....	14.83	.....	14.83	4.91	60.87	.....	65.78	80.61
TOTAL T. 28 N., R. 54 E.	19.52	167.12	9.86	196.50	7.70	54.31	3.09	65.10	55.47	16.25	.....	71.72	26.68	60.87	.....	87.55	420.87
Roosevelt County--Continued: Township 28 North, Range 55 East																	
D Rider	6.35	1.80	.....	8.15	1.22	0.68	.....	1.90	.....	.....	.....	.....	.....	.....	.....	.....	10.05
D	.....	3.70	.....	3.70	.....	11.84	.....	11.84	.....	.....	.....	.....	.....	.....	.....	.....	15.54
TOTAL T. 28 N., R. 55 E.	6.35	5.50	.....	11.85	1.22	12.52	.....	13.74	.....	.....	.....	.....	.....	.....	.....	.....	25.59
Roosevelt County--Continued: Township 29 North, Range 52 East																	
AB	0.21	.....	.....	0.21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.21
AA	3.69	.....	.....	3.69	2.15	.....	.....	2.15	.....	.....	.....	.....	.....	.....	.....	.....	5.84
A Rider	.....	.....	.....	.....	0.35	.....	.....	0.35	3.45	.....	.....	3.45	.....	.....	.....	.....	3.80
A	3.10	.....	.....	3.10	1.82	.....	.....	1.82	.....	.....	.....	.....	.....	.....	.....	.....	4.92
TOTAL T. 29 N., R. 52 E.	7.00	.....	.....	7.00	4.32	.....	.....	4.32	3.45	.....	.....	3.45	.....	.....	.....	.....	14.77
Roosevelt County--Continued: Township 29 North, Range 53 East																	
D Rider	10.47	.....	.....	10.47	2.16	.....	.....	2.16	.....	.....	.....	.....	.....	.....	.....	.....	12.63
D	0.52	29.44	1.66	31.62	.....	15.33	0.92	16.25	.....	.....	.....	.....	.....	.....	.....	.....	47.87
BC	.....	.....	.....	.....	.....	.....	.....	.....	20.41	.....	.....	20.41	.....	.....	.....	.....	20.41
B	9.63	2.59	.....	12.22	2.58	4.38	.....	6.96	18.52	2.80	.....	21.32	0.35	.....	.....	0.35	40.85
AB	8.69	0.02	.....	8.71	5.05	3.58	.....	8.63	24.64	21.19	.....	45.83	13.84	7.95	.....	21.79	84.96
A Rider	.....	.....	.....	.....	.....	.....	.....	.....	4.83	.....	.....	4.83	0.02	.....	.....	0.02	4.85
A	.....	.....	.....	.....	3.85	.....	.....	3.85	9.63	.....	.....	9.63	.....	.....	.....	.....	13.48
TOTAL T. 29 N., R. 53 E.	29.31	32.05	1.66	63.02	13.64	23.29	0.92	37.85	78.03	23.99	.....	102.02	14.21	7.95	.....	22.16	225.05
Roosevelt County--Continued: Township 29 North, Range 54 East																	
D Rider	0.83	.....	.....	0.83	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.83
D	.....	16.72	.....	16.72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16.72
BC	.....	.....	.....	.....	.....	.....	.....	.....	29.63	.....	.....	29.63	.....	.....	.....	.....	29.63
B	.....	.....	.....	.....	.....	.....	.....	.....	28.12	.....	.....	28.12	.....	.....	.....	.....	28.12
AB	.....	.....	.....	.....	.....	.....	.....	.....	3.30	.....	.....	3.30	.....	.....	.....	.....	3.30
TOTAL T. 29 N., R. 54 E.	0.83	16.72	.....	17.55	.....	.....	.....	.....	61.05	.....	.....	61.05	.....	.....	.....	.....	78.60
Roosevelt County--Continued: Township 30 North, Range 51 East																	
B	3.08	.....	.....	3.08	3.26	.....	.....	3.26	0.34	.....	.....	0.34	.....	.....	.....	.....	6.68
AB	4.89	4.00	.....	8.89	3.82	0.26	.....	4.08	3.96	0.04	.....	4.00	.....	.....	.....	.....	16.97
AA	2.94	.....	.....	2.94	8.12	.....	.....	8.12	6.66	.....	.....	6.66	.....	.....	.....	.....	17.72
A Rider	5.18	8.23	.....	13.41	7.81	0.28	.....	8.09	12.84	.....	.....	12.84	.....	.....	.....	.....	34.34
A	3.28	12.69	.....	15.97	7.00	5.35	.....	12.35	16.23	3.95	.....	20.18	.....	.....	.....	.....	48.50
TOTAL T. 30 N., R. 51 E.	19.37	24.92	.....	44.29	30.01	5.89	.....	35.90	40.03	3.99	.....	44.02	.....	.....	.....	.....	124.21

Table 12. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	0-100 ft Overburden				100-200 ft Overburden				200-500 ft Overburden				500-1000 ft Overburden				GRAND TOTALS
	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	
	2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20		
									Roosevelt County--Continued: Township 30 North, Range 52 East								
B	7.88	.....	.....	7.88	25.79	.....	.....	25.79	13.63	.....	.....	13.63	.....	.....	.....	.....	47.30
AB	4.41	0.40	.....	4.81	10.19	6.08	.....	16.27	30.19	5.88	.....	36.07	.....	.....	.....	.....	57.15
AA	1.12	.....	.....	1.12	5.53	.....	.....	5.53	21.62	2.57	.....	24.19	.....	.....	.....	.....	30.84
A Rider	.....	.....	.....	.....	.....	.....	.....	.....	10.48	.....	.....	10.48	1.24	.....	.....	1.24	11.72
A	.....	.....	.....	.....	0.40	.....	.....	0.40	10.03	.....	.....	10.03	4.25	.....	.....	4.25	14.68
TOTAL T. 30 N., R. 52 E.	13.41	0.40	.....	13.81	41.91	6.08	.....	47.99	85.95	8.45	.....	94.40	5.49	.....	.....	5.49	161.69
									Roosevelt County--Continued: Township 30 North, Range 53 East								
Smoke Creek	13.99	40.31	.....	54.30	0.07	9.70	.....	9.77	.....	.....	.....	.....	.....	.....	.....	.....	64.07
Lower Smoke Creek	.....	.....	.....	.....	1.27	.....	.....	1.27	0.13	.....	.....	0.13	.....	.....	.....	.....	1.40
B	.....	.....	.....	.....	.....	.....	.....	.....	1.13	.....	.....	1.13	.....	.....	.....	.....	1.13
AB	.....	.....	.....	.....	.....	.....	.....	.....	69.36	31.63	.....	100.99	0.11	.....	.....	0.11	101.10
AA	.....	.....	.....	.....	.....	.....	.....	.....	17.51	.....	.....	17.51	2.72	.....	.....	2.72	20.23
A Rider	.....	.....	.....	.....	.....	.....	.....	.....	14.21	.....	.....	14.21	12.65	.....	.....	12.65	26.86
A	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.57	.....	.....	4.57	4.57
TOTAL T. 30 N., R. 53 E.	13.99	40.31	.....	54.30	1.34	9.70	.....	11.04	102.34	31.63	.....	133.97	20.05	.....	.....	20.05	219.36
									Roosevelt County--Continued: Township 30 North, Range 54 East								
Upper Timber Coulee	14.66	24.16	.....	38.82	1.04	.....	.....	1.04	.....	.....	.....	.....	.....	.....	.....	.....	39.86
Lower Timber Coulee	10.03	.....	.....	10.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.03
Smoke Creek	2.70	3.07	.....	5.77	2.99	7.63	.....	10.62	0.57	4.24	.....	4.81	.....	.....	.....	.....	21.20
Lower Smoke Creek	.....	.....	.....	.....	0.02	.....	.....	0.02	6.27	.....	.....	6.27	.....	.....	.....	.....	6.29
BC	.....	.....	.....	.....	0.05	.....	.....	0.05	33.73	1.08	.....	34.81	.....	.....	.....	.....	34.86
B	.....	.....	.....	.....	.....	.....	.....	.....	4.28	.....	.....	4.28	0.18	.....	.....	0.18	4.46
AB	.....	.....	.....	.....	.....	.....	.....	.....	4.79	86.79	.....	91.58	10.98	99.98	.....	110.96	202.54
AA	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17.63	.....	.....	17.63	17.63
TOTAL T. 30 N., R. 54 E.	27.39	27.23	.....	54.62	4.10	7.63	.....	11.73	49.64	92.11	.....	141.75	28.79	99.98	.....	128.77	336.87
									Roosevelt County--Continued: Township 30 North, Range 55 East								
Upper Timber Coulee	.....	0.70	.....	0.70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.70
BC	.....	.....	.....	.....	.....	.....	.....	.....	5.45	15.35	.....	20.80	.....	.....	.....	.....	20.80
B	.....	.....	.....	.....	.....	.....	.....	.....	9.43	.....	.....	9.43	.....	.....	.....	.....	9.43
AB	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.37	2.94	.....	8.31	8.31
AA	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.32	.....	.....	10.32	10.32
TOTAL T. 30 N., R. 55 E.	.....	0.70	.....	0.70	.....	.....	.....	.....	14.88	15.35	.....	30.23	15.69	2.94	.....	18.63	49.56
									Roosevelt County--Continued: Township 31 North, Range 50 East								
A Rider	9.60	.....	.....	9.60	12.19	.....	.....	12.19	9.43	.....	.....	9.43	.....	.....	.....	.....	31.22
A	4.34	15.81	.....	20.15	6.08	0.94	.....	7.02	.....	.....	.....	.....	.....	.....	.....	.....	27.17
TOTAL T. 31 N., R. 50 E.	13.94	15.81	.....	29.75	18.27	0.94	.....	19.21	9.43	.....	.....	9.43	.....	.....	.....	.....	58.39
									Roosevelt County--Continued: Township 31 North, Range 51 East								
Smoke Creek	7.87	1.07	.....	8.94	0.34	.....	.....	0.34	.....	.....	.....	.....	.....	.....	.....	.....	9.28
Lower Smoke Creek	13.52	.....	.....	13.52	6.54	.....	.....	6.54	.....	.....	.....	.....	.....	.....	.....	.....	20.06
B	3.87	.....	.....	3.87	6.26	.....	.....	6.26	8.31	.....	.....	8.31	.....	.....	.....	.....	18.44
AB	8.95	.....	.....	8.95	20.48	0.16	.....	20.64	33.14	36.17	.....	69.31	.....	.....	.....	.....	98.90
AA	.....	.....	.....	.....	.....	.....	.....	.....	6.91	5.55	.....	12.46	2.66	.....	.....	2.66	15.12
A Rider	7.97	3.92	.....	11.89	13.46	1.93	.....	15.39	48.50	40.53	.....	89.03	5.28	28.93	.....	34.21	150.52
A	.....	21.15	.....	21.15	9.11	22.06	.....	31.17	52.83	0.84	.....	53.67	1.81	.....	.....	1.81	107.80
TOTAL T. 31 N., R. 51 E.	42.18	26.14	.....	68.32	56.19	24.15	.....	80.34	149.69	83.09	.....	232.78	9.75	28.93	.....	38.68	420.12

Table 12. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	0-100 ft Overburden				100-200 ft Overburden				200-500 ft Overburden				500-1000 ft Overburden				GRAND TOTALS
	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	
	2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20		
Roosevelt County--Continued: Township 31 North, Range 52 East																	
Upper Timber Coulee	0.39	.....	.....	0.39	2.14	.....	.....	2.14	.....	.....	.....	.....	.....	.....	.....	.....	2.53
Lower Timber Coulee	0.74	.....	.....	0.74	1.77	.....	.....	1.77	2.46	.....	.....	2.46	.....	.....	.....	.....	4.97
Smoke Creek	39.38	6.39	.....	45.77	2.06	12.80	.....	14.86	8.49	5.97	.....	14.46	.....	.....	.....	.....	75.09
Lower Smoke Creek	44.97	15.50	.....	60.47	24.12	3.36	.....	27.48	13.55	0.14	.....	13.69	.....	.....	.....	.....	101.64
B	.....	.....	.....	.....	12.78	20.77	.....	33.55	47.55	21.47	.....	69.02	1.19	.....	.....	1.19	103.76
AB	.....	.....	.....	.....	.....	.....	.....	.....	20.07	91.29	.....	111.36	.....	.....	.....	.....	111.36
AA	.....	.....	.....	.....	.....	.....	.....	.....	2.68	.....	.....	2.68	2.38	.....	.....	2.38	5.06
A Rider	.....	.....	.....	.....	.....	.....	.....	.....	4.15	12.95	.....	17.10	17.29	17.02	.....	34.31	51.41
A	.....	.....	.....	.....	.....	.....	.....	.....	0.29	.....	.....	0.29	0.11	.....	.....	0.11	0.40
TOTAL T. 31 N., R. 52 E.	85.48	21.89	.....	107.37	42.87	36.93	.....	79.80	99.24	131.82	.....	231.06	20.97	17.02	.....	37.99	456.22
Roosevelt County--Continued: Township 31 North, Range 53 East																	
Upper Timber Coulee	35.06	17.96	.....	53.02	1.15	2.24	.....	3.39	.....	.....	.....	.....	.....	.....	.....	.....	56.41
Lower Timber Coulee	34.04	1.75	.....	35.79	17.75	.....	.....	17.75	.....	.....	.....	.....	.....	.....	.....	.....	53.54
Smoke Creek	22.92	33.58	.....	56.50	34.62	33.57	.....	68.19	19.10	20.99	.....	40.09	.....	.....	.....	.....	164.78
Lower Smoke Creek	3.52	.....	.....	3.52	47.85	.....	.....	47.85	58.71	.....	.....	58.71	.....	.....	.....	.....	110.08
B	.....	.....	.....	.....	.....	.....	.....	.....	26.43	.....	.....	26.43	0.37	.....	.....	0.37	26.80
AB	.....	.....	.....	.....	.....	.....	.....	.....	51.89	12.33	.....	64.22	38.66	6.82	.....	45.48	109.70
A	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.38	.....	.....	2.38	2.38
TOTAL T. 31 N., R. 53 E.	95.54	53.29	.....	148.83	101.37	35.81	.....	137.18	156.13	33.32	.....	189.45	41.41	6.82	.....	48.23	523.69
Roosevelt County--Continued: Township 31 North, Range 54 East																	
Upper Timber Coulee	34.00	2.64	.....	36.64	30.92	1.68	.....	32.60	.....	.....	.....	.....	.....	.....	.....	.....	69.24
Lower Timber Coulee	18.38	.....	.....	18.38	49.60	.....	.....	49.60	1.23	.....	.....	1.23	.....	.....	.....	.....	69.21
Smoke Creek	.....	6.28	.....	6.28	16.36	17.99	.....	34.35	10.28	1.18	.....	11.46	.....	.....	.....	.....	52.09
Lower Smoke Creek	.....	.....	.....	.....	5.35	.....	.....	5.35	140.29	.....	.....	140.29	.....	.....	.....	.....	145.64
BC	.....	.....	.....	.....	0.57	.....	.....	0.57	64.46	16.06	.....	80.52	.....	.....	.....	.....	81.09
B	.....	.....	.....	.....	.....	.....	.....	.....	34.66	.....	.....	34.66	3.32	.....	.....	3.32	37.98
AB	.....	.....	.....	.....	.....	.....	.....	.....	3.87	6.51	.....	10.38	62.45	7.53	.....	69.98	80.36
AA	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19.25	.....	.....	19.25	19.25
TOTAL T. 31 N., R. 54 E.	52.38	8.92	.....	61.30	102.80	19.67	.....	122.47	254.79	23.75	.....	278.54	85.02	7.53	.....	92.55	554.86
Roosevelt County--Continued: Township 32 North, Range 49 East																	
AB	1.22	3.20	.....	4.42	.....	4.59	.....	4.59	.....	1.89	.....	1.89	.....	.....	.....	.....	10.90
A Rider	5.12	4.30	.....	9.42	2.43	4.75	.....	7.18	0.69	6.00	.....	6.69	.....	.....	.....	.....	23.29
A	5.81	5.49	.....	11.30	0.10	0.83	.....	0.93	1.01	0.03	.....	1.04	.....	.....	.....	.....	13.27
TOTAL T. 32 N., R. 49 E.	12.15	12.99	.....	25.14	2.53	10.17	.....	12.70	1.70	7.92	.....	9.62	.....	.....	.....	.....	47.46
Roosevelt County--Continued: Township 32 North, Range 50 East																	
Lower Smoke Creek	2.96	.....	.....	2.96	5.30	.....	.....	5.30	.....	.....	.....	.....	.....	.....	.....	.....	8.26
AB	10.03	0.24	.....	10.27	26.59	20.85	.....	47.44	35.14	25.68	.....	60.82	.....	.....	.....	.....	118.53
AA	2.24	5.59	.....	7.83	4.70	6.22	.....	10.92	8.91	7.34	.....	16.25	.....	.....	.....	.....	35.00
A Rider	2.46	9.82	.....	12.28	4.18	23.37	.....	27.55	25.21	92.11	.....	117.32	.....	.....	.....	.....	157.15
A	5.24	1.58	.....	6.82	5.38	6.26	.....	11.64	13.94	8.89	.....	22.83	.....	.....	.....	.....	41.29
TOTAL T. 32 N., R. 50 E.	22.93	17.23	.....	40.16	46.15	56.70	.....	102.85	83.20	134.02	.....	217.22	.....	.....	.....	.....	360.23
Roosevelt County--Continued: Township 32 North, Range 51 East																	
Upper Timber Coulee	9.17	0.31	.....	9.48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9.48
Lower Timber Coulee	6.25	.....	.....	6.25	0.06	.....	.....	0.06	.....	.....	.....	.....	.....	.....	.....	.....	6.31
Smoke Creek	18.80	4.75	.....	23.55	8.17	3.63	.....	11.80	0.46	0.12	.....	0.58	.....	.....	.....	.....	35.93
Lower Smoke Creek	33.04	.....	.....	33.04	36.22	.....	.....	36.22	12.29	.....	.....	12.29	.....	.....	.....	.....	81.55
AB	.....	.....	.....	.....	.....	.....	.....	.....	62.73	80.08	.....	142.81	.....	.....	.....	.....	142.81
AA	.....	.....	.....	.....	.....	.....	.....	.....	41.93	.....	.....	41.93	.....	.....	.....	.....	41.93
A Rider	.....	.....	.....	.....	.....	.....	.....	.....	3.45	68.43	.....	71.88	.....	25.22	.....	25.22	97.10
TOTAL T. 32 N., R. 51 E.	67.26	5.06	.....	72.32	44.45	3.63	.....	48.08	120.86	148.63	.....	269.49	.....	25.22	.....	25.22	415.11

Table 12. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, thickness, and overburden—Continued

[In millions of short ton. Leaders (.....), no coal]

Coal Bed	0-100 ft Overburden				100-200 ft Overburden				200-500 ft Overburden				500-1000 ft Overburden				GRAND TOTALS
	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	
	2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20		
Roosevelt County--Continued: Township 32 North, Range 52 East																	
Upper Timber Coulee	36.90	2.82	.....	39.72	39.88	51.16	.....	91.04	.....	.....	.....	.....	.....	.....	.....	.....	130.76
Lower Timber Coulee	16.05	22.98	.....	39.03	31.00	12.19	.....	43.19	30.54	11.86	.....	42.40	.....	.....	.....	.....	124.62
Smoke Creek	14.98	3.62	.....	18.60	11.26	8.45	.....	19.71	23.53	1.55	.....	25.08	.....	.....	.....	.....	63.39
Lower Smoke Creek	15.39	.....	.....	15.39	26.87	.....	.....	26.87	82.33	.....	.....	82.33	1.35	.....	.....	1.35	125.94
AB	.....	.....	.....	.....	.....	.....	.....	.....	27.12	39.04	.....	66.16	6.51	.....	.....	6.51	72.67
TOTAL T. 32 N., R. 52 E.	83.32	29.42	.....	112.74	109.01	71.80	.....	180.81	163.52	52.45	.....	215.97	7.86	.....	.....	7.86	517.38
Roosevelt County--Continued: Township 32 North, Range 53 East																	
Upper Timber Coulee	11.56	26.55	.....	38.11	27.30	56.55	.....	83.85	.....	1.96	.....	1.96	.....	.....	.....	.....	123.92
Timber Coulee	.....	2.68	18.25	20.93	.....	5.12	45.39	50.51	.....	.....	.....	.....	.....	.....	.....	.....	71.44
Lower Timber Coulee	19.53	.....	.....	19.53	47.12	.....	.....	47.12	25.09	.....	.....	25.09	.....	.....	.....	.....	91.74
Smoke Creek	0.12	.....	.....	0.12	2.24	1.26	.....	3.50	2.13	1.90	.....	4.03	.....	.....	.....	.....	7.65
Lower Smoke Creek	.....	.....	.....	.....	11.22	.....	.....	11.22	122.89	.....	.....	122.89	1.63	.....	.....	1.63	135.74
B	.....	.....	.....	.....	.....	.....	.....	.....	6.70	.....	.....	6.70	1.82	.....	.....	1.82	8.52
TOTAL T. 32 N., R. 53 E.	31.21	29.23	18.25	78.69	87.88	62.93	45.39	196.20	156.81	3.86	.....	160.67	3.45	.....	.....	3.45	439.01
TOTAL ROOSEVELT COUNTY	671.46	575.80	29.77	1,277.03	747.92	488.94	49.40	1,286.26	1,784.99	897.55	.....	2,682.54	288.36	279.49	.....	567.85	5,813.68
Sheridan County: Township 31 North, Range 55 East																	
Upper Timber Coulee	24.99	3.73	.....	28.72	7.26	0.36	.....	7.62	.....	.....	.....	.....	.....	.....	.....	.....	36.34
Lower Timber Coulee	24.65	0.16	.....	24.81	15.77	.....	.....	15.77	.....	.....	.....	.....	.....	.....	.....	.....	40.58
Lower Smoke Creek	.....	.....	.....	.....	10.01	.....	.....	10.01	30.73	.....	.....	30.73	.....	.....	.....	.....	40.74
BC	.....	.....	.....	.....	.....	.....	.....	.....	44.18	40.82	.....	85.00	.....	.....	.....	.....	85.00
B	.....	.....	.....	.....	.....	.....	.....	.....	31.65	.....	.....	31.65	.....	.....	.....	.....	31.65
AA	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28.46	.....	.....	28.46	28.46
TOTAL T. 31 N., R. 55 E.	49.64	3.89	.....	53.53	33.04	0.36	.....	33.40	106.56	40.82	.....	147.38	28.46	.....	.....	28.46	262.77
Sheridan County--Continued: Township 32 North, Range 54 East																	
Upper Timber Coulee	15.08	16.69	.....	31.77	14.19	12.56	.....	26.75	.....	.....	.....	.....	.....	.....	.....	.....	58.52
Timber Coulee	.....	7.38	56.98	64.36	.....	55.66	44.79	100.45	.....	7.73	20.00	27.73	.....	.....	.....	.....	192.54
Lower Timber Coulee	13.46	.....	.....	13.46	18.71	.....	.....	18.71	6.92	.....	.....	6.92	.....	.....	.....	.....	39.09
Lower Smoke Creek	.....	.....	.....	.....	25.16	.....	.....	25.16	104.95	.....	.....	104.95	.....	.....	.....	.....	130.11
AB	.....	.....	.....	.....	.....	.....	.....	.....	8.37	.....	.....	8.37	14.85	.....	.....	14.85	23.22
TOTAL T. 32 N., R. 54 E.	28.54	24.07	56.98	109.59	58.06	68.22	44.79	171.07	120.24	7.73	20.00	147.97	14.85	.....	.....	14.85	443.48
Sheridan County--Continued: Township 32 North, Range 55 East																	
Upper Timber Coulee	16.64	54.48	.....	71.12	.....	1.26	.....	1.26	.....	.....	.....	.....	.....	.....	.....	.....	72.38
Lower Timber Coulee	49.08	1.22	.....	50.30	6.45	.....	.....	6.45	.....	.....	.....	.....	.....	.....	.....	.....	56.75
Reserve	5.71	.....	.....	5.71	24.10	0.21	.....	24.31	0.10	.....	.....	0.10	.....	.....	.....	.....	30.12
Lower Smoke Creek	.....	.....	.....	.....	15.11	.....	.....	15.11	10.85	.....	.....	10.85	.....	.....	.....	.....	25.96
BC	.....	.....	.....	.....	.....	.....	.....	.....	5.34	.....	.....	5.34	.....	.....	.....	.....	5.34
AB	.....	.....	.....	.....	.....	.....	.....	.....	12.50	.....	.....	12.50	10.47	.....	.....	10.47	22.97
TOTAL T. 32 N., R. 55 E.	71.43	55.70	.....	127.13	45.66	1.47	.....	47.13	28.79	.....	.....	28.79	10.47	.....	.....	10.47	213.52
Sheridan County--Continued: Township 33 North, Range 52 East																	
Upper Timber Coulee	10.05	17.27	.....	27.32	27.98	37.00	.....	64.98	3.24	33.87	.....	37.11	.....	.....	.....	.....	129.41
Lower Timber Coulee	21.98	.....	.....	21.98	37.55	.....	.....	37.55	23.31	.....	.....	23.31	.....	.....	.....	.....	82.84
Lower Smoke Creek	5.75	.....	.....	5.75	16.06	2.52	.....	18.58	81.30	16.85	.....	98.15	.....	.....	.....	.....	122.48
TOTAL T. 33 N., R. 52 E.	37.78	17.27	.....	55.05	81.59	39.52	.....	121.11	107.85	50.72	.....	158.57	.....	.....	.....	.....	334.73

Table 12. Identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county, township, and bed according to abundance, thickness, and overburden—Continued

[In millions of short tons. Leaders (.....), no coal]

Coal Bed	0-100 ft Overburden				100-200 ft Overburden				200-500 ft Overburden				500-1000 ft Overburden				GRAND TOTALS
	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	
	2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20		
Sheridan County--Continued: Township 33 North, Range 53 East																	
Local R	.....	.....	.....	.....	.....	.....	.....	.....	0.18	.....	.....	0.18	.....	.....	.....	.....	0.18
Upper Timber Coulee	.....	59.49	11.16	70.65	.....	21.24	10.20	31.44	.....	2.31	10.62	12.93	.....	.....	.....	.....	115.02
Timber Coulee	.....	.....	0.95	0.95	.....	.....	12.73	12.73	.....	.....	.....	.....	.....	.....	.....	.....	13.68
Lower Timber Coulee	33.42	.....	.....	33.42	10.20	.....	.....	10.20	9.36	.....	.....	9.36	.....	.....	.....	.....	52.98
Lower Smoke Creek	7.20	.....	.....	7.20	33.17	.....	.....	33.17	33.38	.....	.....	33.38	.....	.....	.....	.....	73.75
TOTAL T. 33 N., R. 53 E.	40.62	59.49	12.11	112.22	43.37	21.24	22.93	87.54	42.92	2.31	10.62	55.85	.....	.....	.....	.....	255.61
Sheridan County--Continued: Township 33 North, Range 54 East																	
Local R	21.35	1.22	.....	22.57	13.17	.....	.....	13.17	0.30	.....	.....	0.30	.....	.....	.....	.....	36.04
Upper Timber Coulee	.....	42.49	58.79	101.28	.....	18.72	111.79	130.51	.....	.....	57.69	57.69	.....	.....	.....	.....	289.48
Lower Timber Coulee	14.30	.....	.....	14.30	53.10	.....	.....	53.10	24.06	.....	.....	24.06	.....	.....	.....	.....	91.46
Reserve	.....	.....	.....	.....	0.18	.....	.....	0.18	.....	.....	.....	.....	.....	.....	.....	.....	0.18
Lower Smoke Creek	.....	.....	.....	.....	0.20	.....	.....	0.20	.....	.....	.....	.....	.....	.....	.....	.....	0.20
TOTAL T. 33 N., R. 54 E.	35.65	43.71	58.79	138.15	66.65	18.72	111.79	197.16	24.36	.....	57.69	82.05	.....	.....	.....	.....	417.36
Sheridan County--Continued: Township 33 North, Range 55 East																	
Local R	19.98	.....	.....	19.98	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19.98
Upper Timber Coulee	1.30	90.03	0.66	91.99	3.87	26.13	4.34	34.34	.....	.....	.....	.....	.....	.....	.....	.....	126.33
Lower Timber Coulee	5.42	0.19	.....	5.61	9.02	.....	.....	9.02	.....	.....	.....	.....	.....	.....	.....	.....	14.63
Reserve	6.39	9.13	.....	15.52	38.14	20.09	.....	58.23	16.95	13.90	.....	30.85	.....	.....	.....	.....	104.60
TOTAL T. 33 N., R. 55 E.	33.09	99.35	0.66	133.10	51.03	46.22	4.34	101.59	16.95	13.90	.....	30.85	.....	.....	.....	.....	265.54
TOTAL SHERIDAN COUNTY	296.75	303.48	128.54	728.77	379.40	195.75	183.85	759.00	447.67	115.48	88.31	651.46	53.78	.....	.....	53.78	2,193.01
Daniels County: Township 33 North, Range 49 East																	
AB	.....	8.93	.....	8.93	.....	13.54	.....	13.54	40.30	50.25	.....	90.55	.....	.....	.....	.....	113.02
AA	.....	.....	.....	.....	.....	.....	.....	.....	22.02	2.87	.....	24.89	.....	.....	.....	.....	24.89
A Rider	1.69	.....	.....	1.69	3.16	.....	.....	3.16	4.84	47.41	.....	52.25	.....	.....	.....	.....	57.10
TOTAL T. 33 N., R. 49 E.	1.69	8.93	.....	10.62	3.16	13.54	.....	16.70	67.16	100.53	.....	167.69	.....	.....	.....	.....	195.01
Daniels County--Continued: Township 33 North, Range 50 East																	
Lower Smoke Creek	0.07	.....	.....	0.07	23.16	.....	.....	23.16	3.81	.....	.....	3.81	.....	.....	.....	.....	27.04
AB	.....	.....	.....	.....	.....	.....	.....	.....	36.57	12.23	.....	48.80	.....	.....	.....	.....	48.80
AA	.....	.....	.....	.....	.....	.....	.....	.....	24.00	11.91	.....	35.91	10.57	6.86	.....	17.43	53.34
A Rider	.....	.....	.....	.....	.....	.....	.....	.....	.....	5.40	.....	5.40	.....	.....	.....	.....	5.40
TOTAL T. 33 N., R. 50 E.	0.07	.....	.....	0.07	23.16	.....	.....	23.16	64.38	29.54	.....	93.92	10.57	6.86	.....	17.43	134.58
Daniels County--Continued: Township 33 North, Range 51 East																	
Upper Timber Coulee	4.31	.....	.....	4.31	19.50	.....	.....	19.50	.....	.....	.....	.....	.....	.....	.....	.....	23.81
Lower Timber Coulee	6.59	.....	.....	6.59	21.92	.....	.....	21.92	.....	.....	.....	.....	.....	.....	.....	.....	28.51
Lower Smoke Creek	4.63	.....	.....	4.63	25.74	.....	.....	25.74	89.26	.....	.....	89.26	.....	.....	.....	.....	119.63
TOTAL T. 33 N., R. 51 E.	15.53	.....	.....	15.53	67.16	.....	.....	67.16	89.26	.....	.....	89.26	.....	.....	.....	.....	171.95
TOTAL DANIELS COUNTY	17.29	8.93	.....	26.22	93.48	13.54	.....	107.02	220.80	130.07	.....	350.87	10.57	6.86	.....	17.43	501.54
TOTAL EASTERN PART OF FT. PECK INDIAN RESERVATION	985.50	888.21	158.31	2,032.02	1,220.80	698.23	233.25	2,152.28	2,453.46	1,143.10	88.31	3,684.87	352.71	286.35	.....	639.06	8,508.23

Table 13. Summary of identified coal resources in Roosevelt County, eastern part of the Fort Peck Indian Reservation, Montana, by township according to abundance, reliability of data, thickness, and overburden

[In millions of short tons. Leaders (.....), no coal]

Township	Measured				Indicated				Inferred				Totals, Overburden Categories				GRAND TOTALS
	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	
	2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20						
Roosevelt County:																	
T. 28 N., R. 53 E.	7.81	8.42	.....	16.23	40.64	43.15	.....	83.79	119.38	145.24	.....	264.62	68.77	78.95	185.70	31.22	364.64
T. 28 N., R. 54 E.	11.42	99.19	3.00	113.61	24.15	128.53	9.95	162.63	73.80	70.83	.....	144.63	196.50	65.10	71.72	87.55	420.87
T. 28 N., R. 55 E.	2.16	4.73	.....	6.89	5.39	12.51	.....	17.90	0.02	0.78	.....	0.80	11.85	13.74	.....	.....	25.59
T. 29 N., R. 52 E.	2.02	.....	.....	2.02	4.73	.....	.....	4.73	8.02	.....	.....	8.02	7.00	4.32	3.45	.....	14.77
T. 29 N., R. 53 E.	7.70	22.51	1.26	31.47	19.73	39.89	1.32	60.94	107.76	24.88	.....	132.64	63.02	37.85	102.02	22.16	225.05
T. 29 N., R. 54 E.	0.36	3.00	.....	3.36	2.77	8.42	.....	11.19	58.75	5.30	.....	64.05	17.55	.....	61.05	.....	78.60
T. 30 N., R. 51 E.	6.02	6.97	.....	12.99	20.66	23.10	.....	43.76	62.73	4.73	.....	67.46	44.29	35.90	44.02	.....	124.21
T. 30 N., R. 52 E.	11.38	2.42	.....	13.80	51.02	8.68	.....	59.70	84.36	3.83	.....	88.19	13.81	47.99	94.40	5.49	161.69
T. 30 N., R. 53 E.	5.00	10.91	.....	15.91	23.35	43.17	.....	66.52	109.37	27.56	.....	136.93	54.30	11.04	133.97	20.05	219.36
T. 30 N., R. 54 E.	6.93	8.04	.....	14.97	19.94	26.04	.....	45.98	83.05	192.87	.....	275.92	54.62	11.73	141.75	128.77	336.87
T. 30 N., R. 55 E.	.....	.....	.....	.....	.....	0.31	.....	0.31	30.57	18.68	.....	49.25	0.70	.....	30.23	18.63	49.56
T. 31 N., R. 50 E.	1.02	1.80	.....	2.82	8.13	6.76	.....	14.89	32.49	8.19	.....	40.68	29.75	19.21	9.43	.....	58.39
T. 31 N., R. 51 E.	9.46	6.90	.....	16.36	63.83	37.64	.....	101.47	184.52	117.77	.....	302.29	68.32	80.34	232.78	38.68	420.12
T. 31 N., R. 52 E.	8.50	8.10	.....	16.60	61.79	53.15	.....	114.94	178.27	146.41	.....	324.68	107.37	79.80	231.06	37.99	456.22
T. 31 N., R. 53 E.	12.73	9.83	.....	22.56	86.22	41.73	.....	127.95	295.50	77.68	.....	373.18	148.83	137.18	189.45	48.23	523.69
T. 31 N., R. 54 E.	14.42	6.64	.....	21.06	104.78	21.64	.....	126.42	375.79	31.59	.....	407.38	61.30	122.47	278.54	92.55	554.86
T. 32 N., R. 49 E.	4.42	7.59	.....	12.01	8.54	15.60	.....	24.14	3.42	7.89	.....	11.31	25.14	12.70	9.62	.....	47.46
T. 32 N., R. 50 E.	7.89	5.87	.....	13.76	36.99	39.65	.....	76.64	107.40	162.43	.....	269.83	40.16	102.85	217.22	.....	360.23
T. 32 N., R. 51 E.	5.62	2.45	.....	8.07	26.06	22.06	.....	48.12	200.89	158.03	.....	358.92	72.32	48.08	269.49	25.22	415.11
T. 32 N., R. 52 E.	13.93	6.68	.....	20.61	66.23	46.19	.....	112.42	283.55	100.80	.....	384.35	112.74	180.81	215.97	7.86	517.38
T. 32 N., R. 53 E.	9.58	4.10	2.43	16.11	52.98	16.49	23.68	93.15	216.79	75.43	37.53	329.75	78.69	166.11	190.76	3.45	439.01
TOTAL ROOSEVELT COUNTY	148.37	226.15	6.69	381.21	727.93	634.71	34.95	1,397.59	2,616.43	1,380.92	37.53	4,034.88	1,277.03	1,256.17	2,712.63	567.85	5,813.68

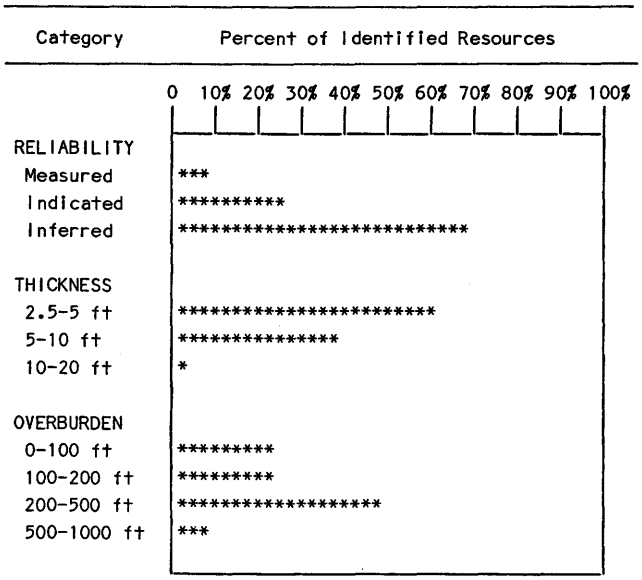
Roosevelt County Summary:

Reliability categories	Millions of short tons	Percent of identified resources
Measured...	381.21	6.56
Indicated..	1,397.59	24.04
Inferred...	4,034.88	69.40
Total.....	5,813.68	100.00

Thickness categories (feet)	Millions of short tons	Percent of identified resources
2.5-5.....	3,492.73	60.08
5-10.....	2,241.78	38.56
10-20.....	79.17	1.36
Total.....	5,813.68	100.00

Overburden categories (feet)	Millions of short tons	Percent of identified resources
0-100.....	1,277.03	21.96
100-200...	1,256.17	21.61
200-500...	2,712.63	46.66
500-1000..	567.85	9.77
Total.....	5,813.68	100.00

Table 14. Graphic summary of identified coal resources in Roosevelt County, eastern part of the Fort Peck Indian Reservation, Montana



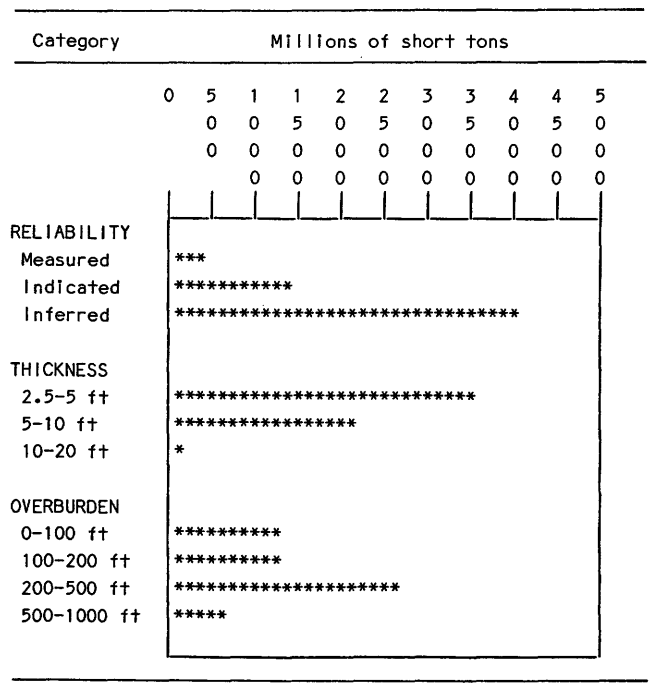


Table 15. Summary of identified coal resources in Sheridan County, eastern part of the Fort Peck Indian Reservation, Montana, by abundance according to townships, reliability of data, thickness, and overburden

[In millions of short tons. Leaders (.....), no coal]

Township	Measured				Indicated				Inferred				Totals, Overburden Categories				GRAND TOTALS
	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	
	2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20						
Sheridan County:																	
T. 32 N., R. 54 E.	7.99	3.97	5.51	17.47	50.30	34.73	34.32	119.35	163.40	61.32	81.94	306.66	109.59	171.07	147.97	14.85	443.48
T. 33 N., R. 54 E.	4.66	2.78	14.50	21.94	37.69	14.56	95.37	147.62	84.31	45.09	118.40	247.80	138.15	197.16	82.05	.....	417.36
T. 33 N., R. 52 E.	8.81	3.22	.....	12.03	50.47	25.73	.....	76.20	167.94	78.56	.....	246.50	55.05	121.11	158.57	.....	334.73
T. 33 N., R. 55 E.	6.70	14.23	.....	20.93	37.98	60.21	4.31	102.50	56.39	85.03	0.69	142.11	133.10	101.59	30.85	.....	265.54
T. 31 N., R. 55 E.	14.59	0.98	.....	15.57	58.05	4.37	.....	62.42	145.06	39.72	.....	184.78	53.53	33.40	147.38	28.46	262.77
T. 33 N., R. 53 E.	2.22	1.36	2.79	6.37	16.48	11.10	12.39	39.97	108.21	70.58	30.48	209.27	112.22	87.54	55.85	.....	255.61
T. 32 N., R. 55 E.	14.69	15.05	.....	29.74	50.34	28.81	.....	79.15	91.32	13.31	.....	104.63	127.13	47.13	28.79	10.47	213.52
TOTAL SHERIDAN COUNTY	59.66	41.49	22.80	124.05	301.31	179.51	146.39	627.21	816.63	393.61	231.51	1,441.75	728.77	759.00	651.46	53.78	2,193.01

Sheridan County Summary:

Reliability categories	Millions of short tons	Percent of identified resources
Measured...	124.05	5.66
Indicated..	627.21	28.60
Inferred...	1,441.75	65.74
Total.....	2,193.01	100.00

Thickness categories (feet)	Millions of short tons	Percent of identified resources
2.5-5.....	1,177.60	53.70
5-10.....	614.71	28.03
10-20.....	400.70	18.27
Total.....	2,193.01	100.00

Overburden categories (feet)	Millions of short tons	Percent of identified resources
0-100.....	728.77	33.23
100-200...	759.00	34.61
200-500...	651.46	29.71
500-1000..	53.78	2.45
Total.....	2,193.01	100.00

Table 16. Graphic summary of identified coal resources in Sheridan County, eastern part of the Fort Peck Indian Reservation, Montana

Category	Percent of Identified Resources
	0 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
RELIABILITY	
Measured	**
Indicated	**********
Inferred	**************************
THICKNESS	
2.5-5 ft	********************
5-10 ft	**********
10-20 ft	*******
OVERBURDEN	
0-100 ft	**********
100-200 ft	**********
200-500 ft	**********
500-1000 ft	*

Category	Millions of short tons
	0 50 100 150 200 250 300 350 400 450 500
RELIABILITY	
Measured	*
Indicated	*****
Inferred	**********
THICKNESS	
2.5-5 ft	*********
5-10 ft	*****
10-20 ft	***
OVERBURDEN	
0-100 ft	******
100-200 ft	******
200-500 ft	*****
500-1000 ft	*

Table 17. Summary of identified coal resources in Daniels County, eastern part of the Fort Peck Indian Reservation, Montana, by abundance according to townships, reliability of data, thickness, and overburden

[In millions of short tons. Leaders (.....), no coal]

Township	Measured				Indicated				Inferred				Totals, Overburden Categories				GRAND TOTALS
	Thickness (feet)			Total	Thickness (feet)			Total	Thickness (feet)			Total	0-100 ft	100-200 ft	200-500 ft	500-1000 ft	
	2.5-5	5-10	10-20		2.5-5	5-10	10-20		2.5-5	5-10	10-20						
Daniels County:																	
T. 33 N., R. 49 E.	1.21	0.56	.....	1.77	7.76	4.59	.....	12.35	63.04	117.85	.....	180.89	10.62	16.70	167.69	.....	195.01
T. 33 N., R. 51 E.	3.15	.....	.....	3.15	25.90	.....	.....	25.90	141.36	1.54	.....	142.90	15.53	67.16	89.26	.....	171.95
T. 33 N., R. 50 E.	0.65	2.06		2.71	6.74	13.52	.....	20.26	90.79	20.82	.....	111.61	0.07	23.16	93.92	17.43	134.58
TOTAL DANIELS COUNTY	5.01	2.62	.....	7.63	40.40	18.11	.....	58.51	295.19	140.21	.....	435.40	26.22	107.02	350.87	17.43	501.54

Daniels County Summary:

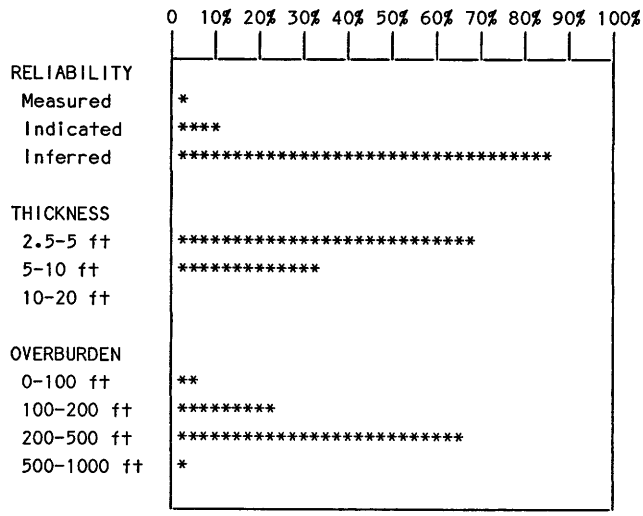
Reliability categories	Millions of short tons	Percent of identified resources
Measured...	7.63	1.52
Indicated..	58.51	11.67
Inferred...	435.40	86.81
Total.....	501.54	100.00

Thickness categories (feet)	Millions of short tons	Percent of identified resources
2.5-5.....	340.60	67.90
5-10.....	160.94	32.10
10-20.....	.....	.....
Total.....	501.54	100.00

Overburden categories (feet)	Millions of short tons	Percent of identified resources
0-100.....	26.22	5.22
100-200...	107.02	21.34
200-500...	350.87	69.96
500-1000..	17.43	3.48
Total.....	501.54	100.00

Table 18. Graphic summary of identified coal resources in Daniels County, eastern part of the Fort Peck Indian Reservation, Montana

Category — Percent of Identified Resources



Category — Millions of short tons

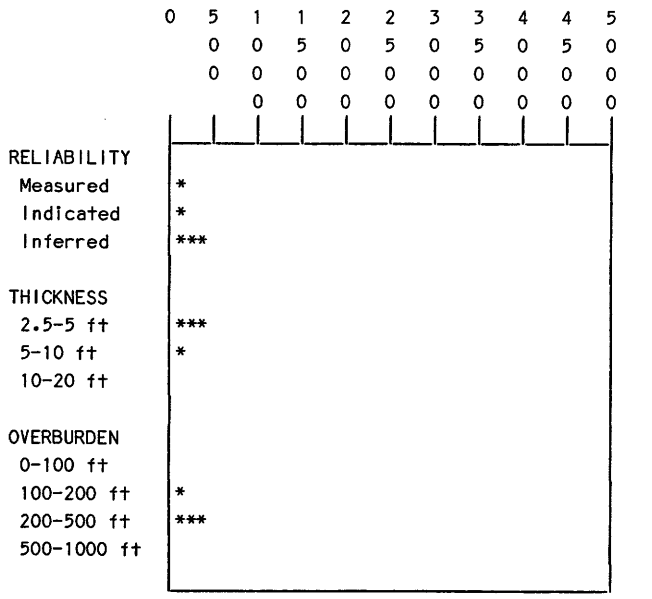
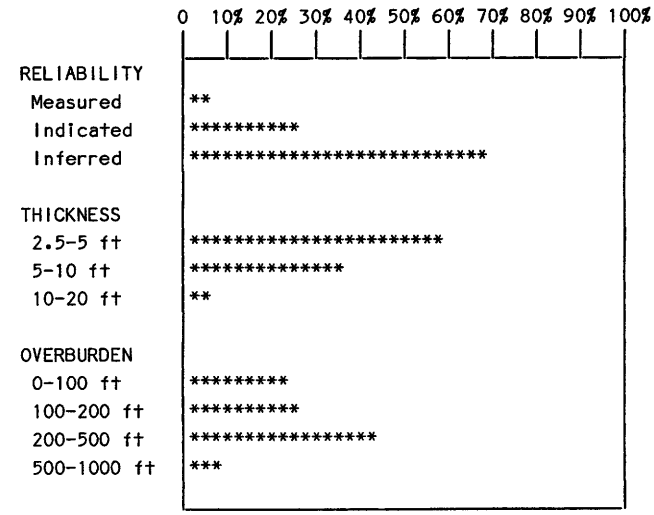


Table 19. Graphic summary of identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana

Category — Percent of Identified Resources



Category — Millions of short tons

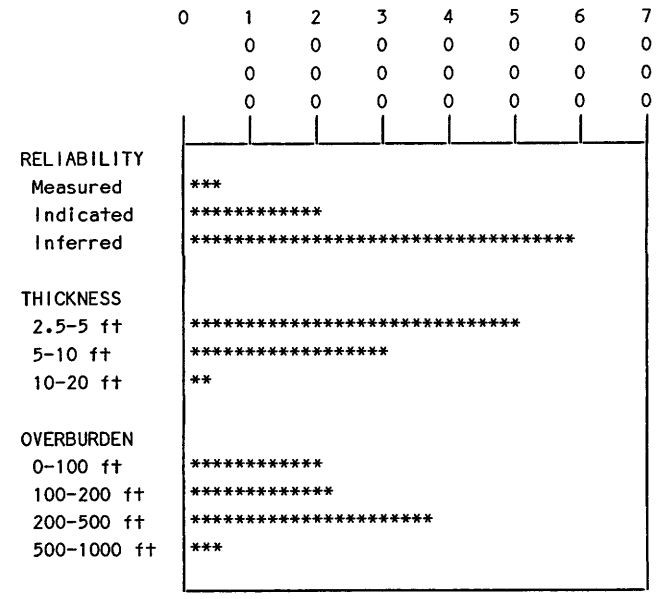


Table 20. Summary of identified coal resources in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, by county according to abundance, reliability of data, thickness, and overburden

[In millions of short tons. Leaders (.....), no coal]

Category	Roosevelt County	Sheridan County	Daniels County	GRAND TOTALS
MEASURED				
2.5-5 ft	148.37	59.66	5.01	213.04
5-10 ft	226.15	41.59	2.62	270.36
10-20 ft	6.69	22.80	.....	29.49
Total....	381.21	124.05	7.63	512.89
INDICATED				
2.5-5 ft	727.93	301.31	40.40	1,069.64
5-10 ft	634.71	179.51	18.11	832.33
10-20 ft	34.95	146.39	.....	181.34
Total....	1,397.59	627.21	58.51	2,083.31
INFERRED				
2.5-5 ft	2,616.43	816.63	259.19	3,728.25
5-10 ft	1,380.92	393.61	140.21	1,914.74
10-20 ft	37.53	231.51	.....	269.04
Total....	4,034.88	1,441.75	435.40	5,912.03
OVERBURDEN				
0-100 ft	1,277.03	728.77	26.22	2,032.02
100-200 ft	1,256.17	759.00	107.02	2,122.19
200-500 ft	2,712.63	651.46	350.87	3,714.96
500-1000 ft	567.85	53.78	17.43	639.06
COUNTY TOTAL	5,813.68	2,193.01	501.54	8,508.23

Summary of eastern part of the Fort Peck Indian Reservation:

	Millions of tons	Percent of total IR*
RELIABILITY		
Measured	512.89	6.03%
Indicated	2,083.31	24.48%
Inferred	5,912.03	69.49%
THICKNESS		
2.5-5 ft	5,010.93	58.90%
5-10 ft	3,017.43	35.46%
10-20 ft	479.87	5.64%
OVERBURDEN		
0-100 ft	2,032.02	23.88%
100-200 ft	2,122.19	24.94%
200-500 ft	3,714.96	43.67%
500-1000 ft	639.06	7.51%

*IR; identified resources

Table 21. Range in thickness and mean statistics for 15 coal beds in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana

[Obs., observations; S.dev., standard deviation]

Coal Bed	No.of Obs.	Thickness in feet			
		Minimum	Maximum	Mean	S.dev.
Local R	13	0.00	5.00	2.64	1.63
Upper Timber Coulee	110	0.00	13.00	4.83	2.54
Timber Coulee	6	8.20	12.80	10.73	1.61
Lower Timber Coulee	104	0.00	6.00	2.94	1.16
D Rider	76	1.50	8.80	4.84	1.93
D	93	3.30	10.60	8.01	1.28
Reserve	10	0.00	5.50	3.55	1.89
Smoke Creek	72	0.00	8.50	3.94	2.33
Lower Smoke Creek	104	0.00	5.00	2.54	1.17
BC	71	0.00	6.00	1.84	1.02
B	44	0.00	6.50	2.65	1.44
AB	60	0.00	9.50	3.48	2.04
AA	61	0.00	6.10	2.81	1.25
A Rider	43	0.00	7.00	3.74	1.83
A	50	0.00	8.00	3.91	2.15

Table 22. Estimated total coal and identified resources in 15 coal beds in the eastern part of the Fort Peck Indian Reservation, Daniels, Roosevelt, and Sheridan Counties, Montana, in order of abundance of identified resources

[In millions of short tons. Avg thk; average thickness of coal in feet. Acres; area underlain by coal bed that was considered in preparing estimate of resources. TC; total coal in coal bed(s), including coal less than 30 inches thick. IR; identified resources. Leaders (.....), no data. The total acreage that is actually underlain by coal is smaller than the total acreage shown here because many of the areas overlap one another]

Coal Bed	TOTAL COAL				IDENTIFIED RESOURCES					COAL LESS THAN 30 INCHES THICK			
	Millions of tons	Avg thk	Acres	Percent of TC	Millions of tons	Avg thk	Acres	Percent of IR	Percent of TC	Millions of tons	Acres	Percent <30 in	Percent of TC
AB	1,801.18	3.5	270,456	15.88%	1,488.49	4.6	183,642	17.49%	13.12%	312.69	86,814	11.02%	2.76%
Upper Timber Coulee	1,857.52	4.8	187,234	16.37%	1,284.19	5.8	125,902	15.09%	11.32%	573.33	61,332	20.21%	5.05%
Lower Smoke Creek	1,716.70	2.5	311,611	15.13%	1,276.51	3.6	204,005	15.00%	11.25%	440.19	107,606	15.51%	3.88%
Lower Timber Coulee	1,021.25	2.9	195,818	9.00%	767.26	3.5	125,818	9.02%	6.76%	253.99	70,000	8.95%	2.24%
A Rider	909.06	3.7	138,686	8.01%	729.78	4.7	88,810	8.58%	6.43%	179.28	49,876	6.32%	1.58%
A	668.05	3.9	108,315	5.89%	506.80	4.9	58,462	5.96%	4.47%	161.25	49,853	5.68%	1.42%
Smoke Creek	563.13	3.9	87,762	4.96%	493.48	4.3	61,327	5.80%	4.35%	69.65	26,435	2.45%	0.61%
B	632.26	2.6	131,016	5.57%	428.57	3.5	68,999	5.04%	3.78%	203.69	62,017	7.18%	1.80%
AA	660.55	2.8	152,667	5.82%	409.63	3.7	63,165	4.82%	3.61%	250.92	89,502	8.84%	2.21%
BC	475.30	1.8	109,503	4.19%	292.08	3.8	44,391	3.43%	2.57%	183.22	65,112	6.46	1.61%
Timber Coulee	277.66	10.7	14,981	2.45%	277.66	10.6	14,981	3.26%	2.45%	.....	.....	.....	.....
D	249.32	8.0	17,919	2.20%	249.32	8.0	17,919	2.93%	2.20%	.....	.....	.....	.....
Reserve	250.59	3.6	38,691	2.21%	134.90	4.1	19,023	1.59%	1.19%	115.69	19,668	4.08%	1.02%
D Rider	118.41	4.8	13,883	1.04%	113.36	5.1	12,626	1.33%	1.00%	5.05	1,257	0.18%	0.04%
Local R	144.80	2.6	29,182	1.28%	56.20	3.5	9,598	0.66%	0.50%	88.60	19,584	3.12%	0.78%
GRAND TOTALS	11,345.78		1,807,724	100.00%	8,508.23		1,098,668	100.00%	75.00%	2,837.55	709,056	100.00%	25.00%

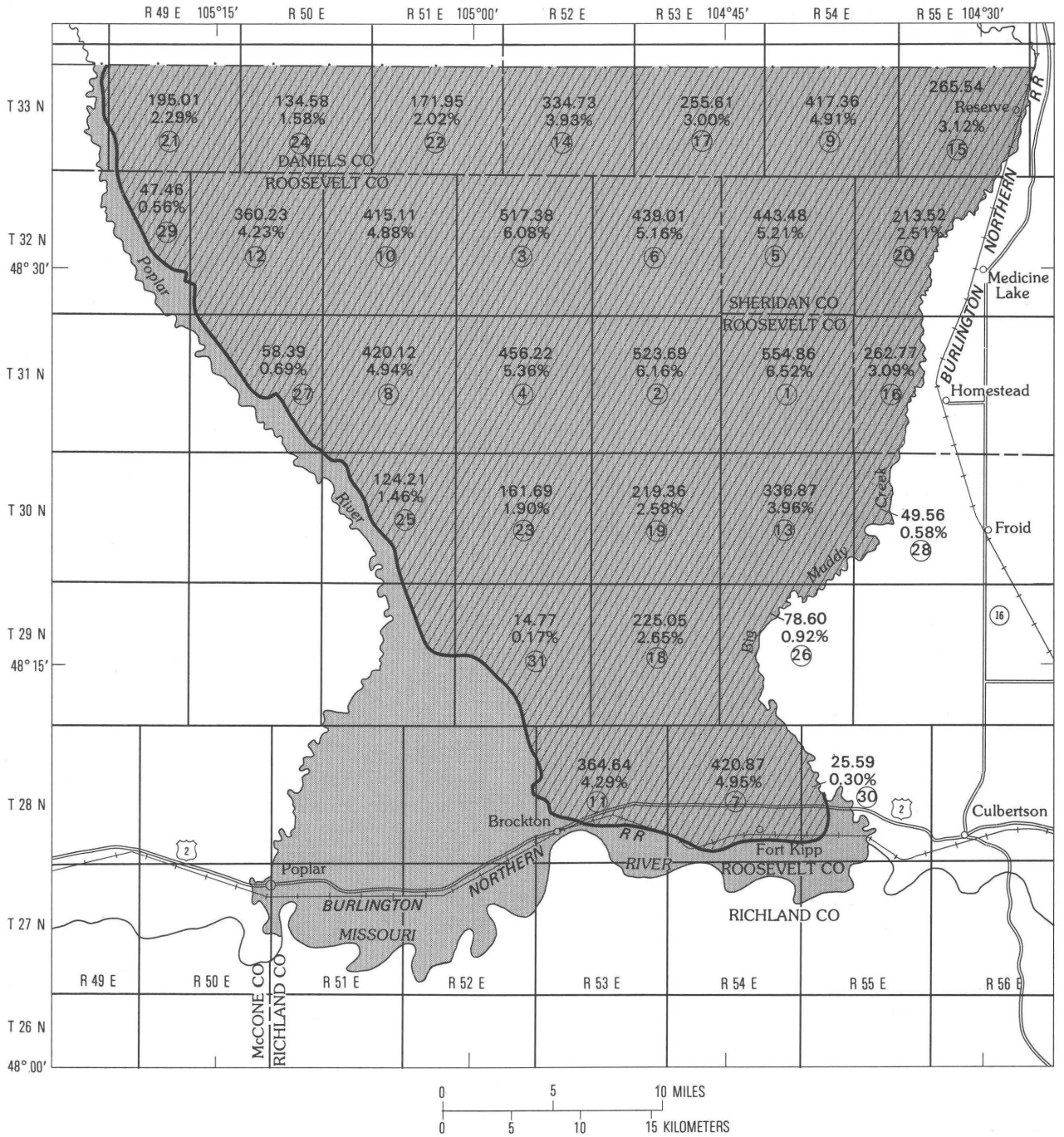


Figure 43. Identified coal resources (patterned) in the eastern part of the Fort Peck Indian Reservation. Numbers within townships indicate, in descending order: identified resources within township, in millions of short tons; percent of the total identified resources in the eastern part of the reservation; and numerical ranking of township wherein township numbered 1 (one) contains the most identified resources and township numbered 31 contains the least identified resources.

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Index of Data Points

This appendix includes a brief description of all data points other than U.S. Geological Survey coal exploratory drill holes that are sources of information utilized in the assessment of coal resources in the eastern part of the Fort Peck Indian Reservation. These data supplement the exploratory drilling that was done by the U.S. Geological Survey and include seismograph exploration shotholes, most of which were logged by the U.S. Geological Survey, water wells, measured sections of coal-bearing strata obtained in the course of field investigations, and published descriptions of drill holes and measured thicknesses of coal beds from sources outside the U.S. Geological Survey.

Information obtained at the 622 data points has been entered in NCRDS (National Coal Resources Data System). The locations, NCRDS pointids, sources of data, elevations, and total footages logged or measured at the data points are summarized by county and township in table 23.

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County Township 28 North, Range 53 East		
18-44	Shothole	NW NW 1	2040	185
18-45	---do-----	SW NW 1	2215	188
18-46	---do-----	SW NW 1	2210	183
18-47	---do-----	NE NE 1	2160	125
18-48	---do-----	SE NE 1	2168	100
18-49	---do-----	NE SE 1	2125	78
18-50	---do-----	NE SE 1	2142	66
18-51	---do-----	SE SE 1	2168	110
18-43	GN RR[1]	SE NE 2	2362	202
18-41	Shothole	NW SW 3	2220	115
18-42	---do-----	SW SW 3	2258	190
17-8	---do-----	NW NE 6	2040	171
17-9	---do-----	SW NE 6	2053	182
17-10	---do-----	SW NE 6	2080	174
17-11	---do-----	NW SE 6	2085	163
17-12	---do-----	NW SE 6	2087	180
17-13	---do-----	SW NE 7	2130	177
17-14	---do-----	SW NE 7	2135	180
17-15	---do-----	NE SW 7	2149	180
17-16	---do-----	NE SW 7	2168	180
17-17	---do-----	SE SW 7	2170	179
18-60	---do-----	NW NW 10	2305	105
18-61	---do-----	SW NW 10	2331	163
18-62	---do-----	SW NW 10	2340	168
18-63	---do-----	NW SW 10	2322	150
18-64	---do-----	NE NE 12	2232	120
18-65	GN RR[1]	NE NE 12	2260	90
18-66	Shothole	SE NE 12	2190	130
18-67	---do-----	SE SE 12	2198	154
18-73	---do-----	NE NE 13	2230	95

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
	Roosevelt County--Continued Township 28 North, Range 53 East--Continued			
18-74	Shothole	SE NE 13	2300	194
18-75	---do-------	NE SE 13	2334	178
18-76	GN RR[1]	NE SE 13	2348	75
18-77	Shothole	NE SE 13	2342	170
18-78	---do-------	SE SE 13	2305	84
17-18	---do-------	NE NW 18	2125	180
17-19	---do-------	NE NW 18	2218	181
17-20	---do-------	SE NW 18	2225	171
17-21	---do-------	NE SW 18	2230	166
17-22	---do-------	SE SW 18	2165	180
17-23	---do-------	NE NW 19	2135	180
17-24	---do-------	NE NW 19	2122	158
17-25	---do-------	SE NW 19	2085	183
17-26	---do-------	NE SW 19	2100	182
17-27	---do-------	SE SW 19	2100	180
17-28	---do-------	SE SW 19	2080	180
17-X1	Measured section	NE SE 19	2180	31
17-X2	---do-------	SE SE 19	2089	95.4
17-X3	---do-------	NW SE 21	2070	57.4
18-X1	---do-------	SE SW 22	2005	23.3
18-X2	---do-------	NW NE 22	2080	22.6
18-85	Shothole	NW NW 24	2150	170
18-86	---do-------	NW NE 24	2200	190
18-X3	Measured section	SE NE 26	1963	21.3
17-29	Shothole	NE NW 30	2000	180
17-30	---do-------	SE NW 30	2055	180
17-31	---do-------	SE NW 30	2012	182
17-32	---do-------	NE SW 30	1978	180
17-33	---do-------	SE SW 30	1978	95

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 28 North, Range 54 East		
19-13	Shothole	NW SW 2	2008	53
19-12	---do-----	SE NW 3	2030	75
19-9	---do-----	NE NE 4	2025	36
19-10	---do-----	SW NE 4	2055	89
19-11	---do-----	NW SE 4	2105	74
18-58	Shothole	SW NW 4	2075	70
18-59	GN RR[1]	SE SW 4	2150	160
18-56	Shothole	NW NE 5	2080	66
18-57	---do-----	NE NE 5	2070	64
18-54	---do-----	NW SE 6	2155	113
18-55	GN RR[1]	SE SE 6	2155	105
18-68	Shothole	NW SE 8	2208	105
18-69	GN RR[1]	NE SW 8	2250	180
18-70	Shothole	NW SW 9	2200	115
18-71	---do-----	SE NW 9	2125	83
18-72	---do-----	NW SE 9	2120	105
19-15	---do-----	NW SE 9	2105	110
19-16	---do-----	NE SE 9	2082	105
19-17	GN RR[1]	SW NE 10	2030	120
19-20	---do-----	SE SW 10	2075	90
19-18	---do-----	SW NE 11	2030	255
19-19	Shothole	NE SW 12	1966	170
19-14	GN RR[1]	NE NW 12	1995	90
19-23	---do-----	NW SW 13	2050	120
19-24	---do-----	C 13	1991	195
19-22	---do-----	SE NE 14	2100	180
19-21	---do-----	SW NW 15	2150	210
18-83	---do-----	NE NW 16	2122	105
18-84	---do-----	NE SW 16	2105	105
18-82	---do-----	SW NW 17	2245	150

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
	Roosevelt County--Continued Township 28 North, Range 54 East--Continued			
18-79	GN RR[1]	NW NW 18	2240	150
18-80	---do-------	NW SE 18	2333	150
18-81	---do-------	NE NE 18	2245	105
18-87	Shothole	NW NW 20	2240	164.5
18-88	---do-------	NE NW 20	2212	180
18-89	---do-------	NW NE 20	2195	185
18-90X	Measured section	SW NW 20	2195	28.2
18-92	---do-------	SW NE 20	2160	9
18-91	Shothole	NE NW 21	2178	170
18-93	IS FPP[2]	NW SW 21	2205	182
18-94	IS FPP[2]	NW SW 21	2166	101
18-95	---do-------	NE SW 21	2110	70
18-96	---do-------	NW SE 21	2127	100
18-97	---do-------	NW SE 21	2090	70
18-98	---do-------	SW SW 21	2115	58
18-99	---do------	SW SW 21	2105	58
18-100	---do------	SE SW 21	2105	60
19-35	---do------	NE SE 21	2105	100
19-36	---do------	NW SE 21	2079	80
19-32A	GN RR[1]	NE NW 22	2159	180
19-33	Shothole	NE NW 22	2173	185
19-34	---do-------	NW NW 22	2222	165
19-37	GN RR[1]	NE SE 22	2170	150
19-30	Shothole	NW NE 23	2125	170
19-31	---do-------	NW NW 23	2085	155
19-38	GN RR[1]	SE NE 23	2136	225
19-29	Shothole	NE NW 24	2065	200
19-40	GN RR[1]	SW NE 25	2020	132
19-39	---do-------	NE NE 26	2040	135
18-X4	Measured section	SW SW 30	1980	16.5

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
Roosevelt County--Continued Township 28 North, Range 55 East [The following data points are slightly east of the reservation]				
19-65	Shothole	SW NE 6	1949	76.5
19-66	---do-------	SW NW 6	1918	189
19-67	---do-------	NW SW 6	1916	185
19-68	---do-------	NW SE 7	1916	190
19-69	---do-------	NW NE 8	2080	145
19-70	---do-------	SW NE 8	2035	199
19-71	---do-------	SW SE 8	1930	167
19-72	Measured section	NE NW 16	2036	6
19-73	---do-------	NE NW 16	2039	4.8
Roosevelt County--Continued Township 28 North, Range 55 East [The following data points are in the reservation]				
19-25	Shothole	NW NE 19	1940	83
19-26	---do-------	NW NW 19	1975	115
19-27	---do-------	NW NW 19	2035	135
19-28	GN RR[1]	NW NW 19	2045	180
19-42	---do-------	NW SW 29	1930	150
19-41	---do-------	NE NW 30	2033	190
Roosevelt County--Continued Township 29 North, Range 51 East				
W16-21	Shothole	NE NE 1	2242	170
W16-20	---do-------	NE NE 2	2195	146
W16-19	---do-------	NE NW 2	2165	180
W16-18	---do-------	NW NW 2	2155	187
W16-23	---do-------	NW SW 2	2235	158
W16-17	---do-------	NE NE 3	2142	180
W16-16	---do-------	NE NW 3	2095	187
W16-15	---do-------	NW NW 3	2105	154
W16-14	---do-------	NE NW 4	2070	151
W16-13	---do-------	NW NW 4	2075	189

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 29 North, Range 51 East--Continued		
W16-12	Shothole	NE NE 5	2125	183
W16-11	---do----	NW NE 5	2130	183
W16-10	---do----	NW NW 5	2190	186
W16-24	---do----	NW NW 11	2178	180
W16-25	---do----	SW NW 11	2142	187
W16-26	---do----	NW SW 11	2115	189
W16-27	---do----	NW NW 14	2166	189
W16-28	---do----	NE SE 16	2016	190
W16-29	---do----	NE SE 21	2080	185
		Roosevelt County--Continued Township 29 North, Range 52 East		
9-40	Shothole	NW NW 2	2132	190
9-41	---do----	NW SW 2	2131	181
9-42	---do----	NW SW 2	2128	179
9-43	---do----	NW SW 2	2131	182
9-44	---do----	NW NW 11	2122	182
9-45	---do----	NE NW 11	2112	119
9-46	---do----	SE NW 11	2104	177
9-47	---do----	NE SW 11	2097	178
9-48	---do----	NE NW 14	2090	183
9-49	---do----	SW NE 14	2088	182
9-50	---do----	NW SE 14	2072	181
9-51	---do----	SW SE 14	2038	121
9-52	---do----	NW NE 23	2042	183
9-53	---do----	NE SE 23	2018	180
9-54	---do----	NW SW 23	2030	148
17-1	---do----	SE SE 23	2021	183
17-2	---do----	SE SE 23	2022	176
17-3	---do----	NE SE 26	2032	186
17-4	---do----	SW SE 26	2037	185
17-5	---do----	NW NE 35	2042	185
17-6	---do----	NW SE 35	2039	194
17-7	---do----	SW SE 35	2045	185

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 29 North, Range 53 East		
10-28	Shothole	NE SE 4	2030	189
10-29	---do----	SE SE 4	2020	188
10-31	---do----	SE NE 9	2023	189
10-32	---do----	SE NE 9	2020	190
10-33	---do----	SE SE 9	2017	189
10-34	---do----	SE SE 10	2006	183
10-36	---do----	NW NW 13	1963	123
10-37	---do----	NW NE 13	1963	146
10-38	---do----	NE NE 13	1933	155
10-43	---do----	NW SW 13	1988	185
10-35	---do----	NW NE 14	1968	183
10-42	---do----	SW NW 14	2017	184
10-39	---do----	NE NE 16	2005	190
10-40	---do----	SE NE 16	1992	189
10-41	---do----	NE SE 16	1982	191
10-44	---do----	NE NE 21	1967	190
18-1	---do----	NE SE 21	1996	174
18-2	---do----	SE SE 21	2022	190
18-3	---do----	SE SE 22	2028	171
18-4	---do----	NE SE 23	2062	164
18-5	---do----	SE SE 23	2082	143
18-6	---do----	SE SE 23	2065	182
10-45	---do----	NW NW 23	1935	178
10-46	---do----	NW SW 23	1988	145
10-47	---do----	SW NW 24	1984	186
10-48	---do----	NW SW 24	2017	185
10-49	---do----	SW NE 24	1953	158
18-15	---do----	NE NE 26	2025	89
18-16	---do----	NE NE 26	2038	168
18-17	---do----	SE NE 26	2080	183
18-18	---do----	SE NE 26	2160	178
18-12	---do----	SE NE 27	2130	123
18-13	---do----	NE SE 27	2207	137
18-14	---do----	NE SE 27	2222	130
18-7	---do----	NE NE 28	2048	188

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 29 North, Range 53 East		
18-8	Shothole	SE NE 28	2074	187
18-9	---do----	NE SE 28	2095	189
18-10	---do----	SE SE 28	2129	125
18-11	---do----	SE SE 28	2140	175
18-19	---do----	NE NE 33	2168	189
18-20	---do----	SE NE 33	2220	188
18-21	---do----	SE NE 33	2258	190
18-22	---do----	NE SE 33	2272	189
18-23	---do----	SE SE 33	2285	200
18-24	---do----	SE SE 33	2245	188
18-25	---do----	NE NE 34	2235	40
18-26	---do----	NE NE 34	2235	90
18-27	---do----	SE NE 34	2215	110
18-28	---do----	NE SE 34	2238	25
18-29	GN RR[1]	NW SE 34	2267	90
18-30	Shothole	NE SE 34	2250	190
18-30.5	---do----	NW NW 35	2210	180
18-31	---do----	SW NW 35	2195	136
18-32	---do----	SW NW 35	2185	156
18-33	---do----	SE NW 35	2175	136
18-34	---do----	NW SE 35	2151	116
18-35	---do----	NW SE 35	2150	121
18-36	---do----	NE SE 35	2180	147
18-37	---do----	SE SE 35	2175	138
18-38	---do----	SW SW 36	2140	113
18-39	---do----	SW SW 36	2128	95
18-40	GN RR[1]	SE SW 36	2140	120
		Roosevelt County--Continued Township 29 North, Range 54 East [The following data points are slightly east of the reservation]		
11-24	Shothole	NE NW 1	1940	183
11-25	---do----	NE NE 1	1975	183
11-23	---do----	NE NE 2	1924	183
11-26	---do----	SE NW 2	1920	114

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
Roosevelt County--Continued Township 29 North, Range 54 East--Continued [The following data points are in the reservation]				
11-22	Shothole	NE NW 2	1923	120
11-20	---do----	NW NW 3	1921	185
11-21	---do----	NE NE 3	1920	139
11-18	DATA POINT WAS DELETED			
11-19	Shothole	NW NE 4	1920	187
11-16	---do----	NE NE 5	1920	186
11-17	---do----	NE NE 5	1920	183
10-30	---do----	NW SW 6	1942	176
Roosevelt County--Continued Township 29 North, Range 54 East--Continued [The following data points are east of the reservation]				
11-38	Shothole	SE SE 8	1956	186
11-27	---do----	NE NE 9	1930	164
11-28	---do----	NE NE 9	1935	135
11-29	---do----	SW NE 9	1942	99
11-30	---do----	SE NW 9	1955	125
11-31	---do----	SE NW 9	2000	145
11-32	---do----	SW NE 9	2002	141
11-35	---do----	NE SW 9	2012	133
11-36	---do----	NW SW 9	1918	80
11-37	---do----	SW SW 9	1977	93
11-42	---do----	SW SE 9	2058	181
11-43	---do----	SW SE 9	2069	127
11-45	---do----	SE SE 9	2073	162
11-33	---do----	SW NW 10	1993	150
11-34	---do----	SE NW 10	1982	140
11-46	---do----	SW SW 10	2094	163
11-47	---do----	SW SW 10	2102	161
11-48	---do----	SE SW 10	2060	166
11-49	---do----	SW SE 10	2045	166
11-50	---do----	SW SE 10	2023	177

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
Roosevelt County--Continued Township 29 North, Range 54 East--Continued [The following data points are east of the reservation]--Continued				
11-51	Shothole	SW SE 10	2010	178
11-67	---do----	SW SE 14	2130	188
11-40	---do----	NW NW 16	1995	183
11-41	---do----	NE NW 16	2008	185
11-44	---do----	NE NE 16	2068	115
11-52	---do----	NW NW 16	1990	150
11-53	---do----	NE NW 16	2025	181
11-54	---do----	SW NW 16	1960	142
11-55	---do----	NE NW 16	2045	153
11-56	---do----	SE NW 16	2045	125
11-57	---do----	NW SW 16	2000	122
11-58	---do----	NE SW 16	2067	158
11-59	---do----	SE SW 16	2050	146
11-60	---do----	SE SW 16	2050	161
11-39	---do----	NE NE 17	1968	180
11-61	---do----	NE NW 21	2030	171
11-62	---do----	NE SW 21	1955	172
11-63	---do----	SW NW 22	2040	177
11-64	---do----	SE NW 22	2062	172
11-65	---do----	SE NW 22	2075	148
11-66	---do----	SW NE 22	2117	183
11-68	---do----	NW NE 23	2155	191
11-69	---do----	NW NE 23	2155	191
11-70	---do----	SW NE 23	2170	193
11-71	---do----	SW NE 23	2175	177
11-72	---do----	NW SE 23	2190	171
19-44	---do----	SE SW 23	2210	148
19-45	---do----	SE SW 23	2210	156
11-73	---do----	NW NW 24	2232	187
11-74	---do----	SW NW 24	2235	160

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
Roosevelt County--Continued Township 29 North, Range 54 East--Continued [The following data points are east of the reservation]--Continued				
11-75	Shothole	NW SW 24	2235	165
19-43	---do-------	NW SW 24	2225	174
19-46	---do-------	SW SW 24	2205	165
19-47	---do-------	NE NE 25	2290	146
19-54	---do-------	SE SE 25	2255	74
19-49	---do-------	NE NW 26	2120	163
19-50	---do-------	NE NW 26	2100	169
19-51	---do-------	NE SW 26	2075	182
19-52	Measured section	NW SW 26	2068	5.4
19-53	Shothole	NE SW 26	2060	183
19-56	Measured section	SE SW 26	2142	4.1
19-57	Shothole	SE SW 26	2150	175
Roosevelt County--Continued Township 29 North, Range 54 East--Continued [The following data points are in the reservation]				
19-1	Shothole	SE NE 29	1915	135
19-5	---do-------	NE SE 31	2005	66
19-2	---do-------	NE NW 32	1987	64
19-3	---do-------	SW NW 32	2010	63
19-4	---do-------	NW SW 32	2007	70
19-6	GN RR[1]	SE SW 32	1995	98
19-7	Shothole	SE NE 32	1962	178
19-8	---do-------	NE SE 32	1976	26

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
	Roosevelt County--Continued Township 29 North, Range 54 East--Continued [The following data points are east of the reservation]			
19-58	Shothole	NE NW 35	2162	143
19-59	---do-------	NE NW 35	2165	190
19-60	Measured section	SW NW 35	2062	9.6
19-61	Shothole	NW SW 35	1987	178
19-55	---do-------	NE NE 36	2270	115
19-62	---do-------	SE NE 36	2197	82
19-63	---do-------	SE SE 36	2180	170
19-64	Measured section	SE SW 36	2052	5.4
	Roosevelt County--Continued Township 30 North, Range 51 East [The following data points are in the reservation]			
W8-289	Shothole	NW SW 2	2295	193
W8-281	---do-------	SW SW 2	2289	193
W16-1	---do-------	NW NW 11	2275	180
W16-2	---do-------	NW NW 11	2250	158
W16-3	---do-------	SW NW 11	2210	185
W16-4	---do-------	NW NE 11	2293	124
W16-5	---do-------	NE SE 11	2304	117
W16-6	---do-------	SW SW 12	2275	100
W16-8	---do-------	NW SW 23	2152	85
W16-7	---do-------	NE NE 24	2282	47
W16-9	---do-------	NW SW 26	2215	95
	Roosevelt County--Continued Township 30 North, Range 52 East			
1-453	Shothole	NE NW 5	2440	172
9-1	---do------	SW NE 8	2305	172
9-2	---do------	NE SE 8	2290	188
9-3	---do------	SE SE 8	2278	166
9-6	---do------	SW NW 14	2272	189

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 30 North, Range 52 East--Continued		
9-4	Shothole	SW NW 16	2282	148
9-5	---do----	NE SW 16	2286	192
9-7	---do----	NW NE 21	2309	188
9-8	---do----	SE SE 21	2265	132
9-9	---do----	NW NW 23	2218	189
9-10	---do----	SW NW 23	2220	184
9-11	---do----	SW SW 23	2202	185
9-12	---do----	SW SW 26	2180	152
9-13	---do----	NW SW 26	2160	185
9-14	---do----	NE SW 27	2190	181
9-15	---do----	SE SW 27	2180	173
W16-22	---do----	SE SW 31	2270	187
9-21	---do----	SE SE 31	2245	186
9-22	---do----	SE SW 32	2205	187
9-23	---do----	SW SE 32	2180	187
9-24	---do---	SE SE 32	2178	179
9-25	---do----	SE SW 33	2160	179
9-26	---do----	SW SE 33	2155	188
9-16	---do----	NW NE 34	2165	167
9-17	---do----	NW NE 34	2165	192
9-18	---do----	NE SE 34	2140	192
9-20	---do----	SE SE 34	2142	186
9-27	---do----	SW SW 34	2135	193
9-28	---do----	SE SW 34	2132	170
9-29	---do----	SW SE 34	2135	184
9-30	---do----	SE SE 34	2132	187
9-19	---do----	NW SW 35	2135	164
9-31	---do----	SW SW 35	2136	170
9-32	---do----	SE SW 35	2132	188
9-33	---do----	SW SE 35	2128	187
9-34	---do----	SW SE 35	2125	187
9-35	---do----	SE SE 35	2125	186
9-36	---do----	SW SW 36	2122	185
9-37	---do----	SE SW 36	2115	186
9-38	---do----	SE SE 36	2100	191

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 30 North, Range 53 East		
2-24	Shothole	NE NW 1	2070	172
2-25	---do-------	NE NW 1	2090	188
2-22	---do-------	NW NE 2	2038	180
2-23	---do-------	NE NE 2	2055	143
2-32	Measured section	SE SE 2	2048	6.2
2-21	Shothole	NE NW 3	2162	181
2-30	---do-------	SE NE 4	2150	155
2-31	---do-------	SE SE 4	2152	172
2-18	---do-------	NW NE 5	2223	183
2-17	---do-------	NE NW 5	2212	171
10-2	---do-------	SE NE 9	2127	185
10-3	---do-------	NE SE 9	2120	185
10-1	Water well	NW NW 16	2140	915
10-4	Shothole	NE NE 16	2118	190
10-5	---do-------	SE SE 16	2112	183
10-6	---do-------	NE NE 21	2103	185
10-7	---do-------	NE NE 21	2098	185
10-8	---do-------	NE SE 21	2088	178
10-9	---do-------	SE SE 21	2083	160
10-12	---do-------	SE SW 23	2055	190
10-13	---do-------	NE SW 26	2027	168
10-10	---do-------	NE NE 28	2080	185
10-11	---do-------	NE NE 28	2070	177
9-39	---do-------	SE SW 31	2090	194
10-15	---do-------	SE SE 31	2087	188
10-16	---do-------	SW SW 32	2083	186
10-17	---do-------	SE SW 32	2086	188
10-18	---do-------	SE SE 32	2066	187
10-19	---do-------	SW SW 33	2054	188
10-20	---do-------	SE SW 33	2051	188

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 30 North, Range 53 East--Continued		
10-21	Shothole	SE SE 34	2012	186
10-22	---do-------	SW SW 35	2009	187
10-23	---do-------	SW SE 35	2007	187
10-24	---do-------	SE SE 35	1992	187
10-25	---do-------	SE SW 36	1981	187
10-26	---do-------	SW SE 36	2002	188
10-14	---do-------	NW NW 36	2015	187
		Roosevelt County--Continued Township 30 North, Range 54 East		
3-22	Shothole	NW NW 2	2078	183
3-23	---do-------	NE NW 2	2085	104.5
3-20	---do------	NW NE 3	2049	136
3-21	---do-------	NW NE 3	2065	136
11-1	---do-------	NE NE 8	2075	181
11-2	---do-------	NE SE 8	2062	171
11-3	---do-------	NE NE 17	2057	78
11-4	---do-------	SE NE 17	2053	85
11-5	---do-------	SE SE 17	2044	171
11-6	Measured section	NW NE 20	1960	5
11-9	Shothole	SE NE 20	2008	120
11-7	---do-------	NW NW 21	2025	113
11-8	---do-------	NW NW 21	2011	94
11-10	---do-------	NW SW 21	1981	138
10-27	---do-------	SW SW 31	2002	188
11-11	---do-------	SE SW 31	1957	183
11-12	---do-------	SW SE 31	1948	183
11-13	---do-------	SW SW 32	1923	183
11-14	---do-------	SW SW 32	1920	183
11-15	---do-------	SE SW 32	1919	183

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 30 North, Range 55 East		
4-19	Shothole	NW NW 5	1928	185
		Roosevelt County--Continued Township 31 North, Range 50 East		
W7-SM	Measured section	NE NE 9	2300	1
W7-SMM	---do-------	NE SW 14	2276	7.3
W7-645	Shothole	SE SW 36	2170	181
W7-633	---do-------	SE SE 36	2140	178
		Roosevelt County--Continued Township 31 North, Range 51 East		
W7-D2	Shothole	NW NW 29	2305	164
W7-624	---do-------	SE SW 31	2180	163
W7-618	---do-------	SE SE 31	2210	180
W8-597	---do-------	SE SW 32	2240	174
W8-577	---do-------	SE SW 33	2245	140
W8-553	---do-------	SE SW 34	2278	181
W8-545	---do-------	SW SE 34	2300	176
W8-533	---do-------	SW SW 35	2318	170
W8-525	---do-------	SE SW 35	2310	179
W8-502	---do-------	SE SW 36	2350	148
W8-493	---do-------	SE SE 36	2360	124
		Roosevelt County--Continued Township 31 North, Range 52 East		
1-389	Shothole	SW NW 14	2265	171
1-M4	Measured section	NE SW 23	2204	2
1-341	Shothole	NW NW 26	2275	178
1-329	---do-------	NW SW 26	2298	122
W8-473	---do-------	SW SE 31	2402	173
1-432	---do-------	SE SW 33	2375	179
1-425-A	---do-------	SW SE 33	2355	171
1-321	---do-------	NW NW 35	2325	75

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 31 North, Range 53 East		
2-11	Shothole	NE NE 4	2262	188
2-16	Measured section	SE NE 17	2160	3.1
2-19	Shothole	SE SW 32	2225	184
2-20	---do-------	SE SE 33	2202	180
2-26	---do-------	SW SE 36	2102	185
2-27	---do-------	SW SE 36	2112	163
		Roosevelt County--Continued Township 31 North, Range 54 East		
3-27	Measured section	SE SW 1	2070	5.2
3-6	Shothole	NE NE 5	2313	190
3-7	---do-------	SE SE 8	2215	72
3-8	---do-------	NE NE 17	2222	77
3-9	---do-------	NE SE 17	2188	70
3-10	---do-------	NE SE 17	2185	185
3-11	Measured section	NW NE 28	2108	.9
3-12	Shothole	NE NE 29	2131	188
2-28	---do-------	SW SW 31	2118	155
2-29	---do-------	SW SW 31	2118	169
3-14	---do-------	SE SW 31	2113	170.5
3-15	---do-------	SW SE 31	2108	183
3-16	---do-------	SW SW 32	2090	177
3-17	---do-------	SE SW 32	2088	190
3-13	---do-------	SE NE 32	2103	171
3-18	---do-------	SW SW 33	2074	183
3-19	---do-------	SW SE 33	2081	190
3-24	---do-------	SE SE 35	2056	184
3-25	---do-------	SW SW 36	2042	166
3-26	---do-------	SE SW 36	2032	185

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Sheridan County Township 31 North, Range 55 East		
4-5	Shothole	NE NE 6	2025	184
4-6	---do-------	SE NE 6	2055	181
4-7	---do-------	SE NE 6	2102	145
4-8	---do-------	SE SE 6	2030	185
4-9	---do-------	NE NE 7	2015	184
4-10	---do-------	NE SE 7	2005	127
4-11	---do-------	NE SE 18	2072	167
4-12	---do-------	SE SE 18	2072	188
4-13	---do-------	SE NE 19	2069	189
4-14	---do-------	SE SE 19	2052	190
4-15	---do-------	SE NE 30	2052	110
4-16	---do-------	SE NE 30	2052	180
4-17	---do-------	NE SE 30	2038	185
4-18	---do-------	SE SE 30	2000	190
		Roosevelt County Township 32 North, Range 49 East		
S30-M2	Measured section	NW NW 11	2360	3
S30-1-1	Shothole	NE NE 12	2570	224
S30-1-9	---do-------	SW NE 12	2515	238
S30-1-19	---do-------	NE SW 12	2460	230
S30-1-21	---do-------	NW SW 12	2440	196
S30-2-10	---do-------	SE SE 12	2555	209
S30-1157	---do-------	SW SW 12	2400	107
S30-1162	---do-------	NW NW 13	2390	91
S30-2-27	---do-------	SE NW 13	2415	228
S30-1173	---do-------	SW NW 13	2360	90
S30-1181	---do-------	NW SW 13	2360	90
S30-1192	---do-------	SW SW 13	2430	91

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 32 North, Range 50 East		
S30-2-1	Shothole	SW SW 7	2610	190
S30-M3	Measured section	NE SW 19	2440	186
W7-CM	---do-------	NE SE 32	2340	6.1
W7-145	Shothole	SE SW 32	2310	170
W7-157	---do-------	SE SE 32	2315	174
W7-166	---do-------	SE SW 33	2370	173
W7-173	---do-------	SW SE 33	2435	187
W7-181	---do-------	SE SE 33	2470	185
W7-M7	Measured section	NW NW 34	2580	3
W7-M6	---do-------	SE NW 34	2580	4.6
W7-190	Shothole	SE SW 34	2520	181
W7-195	---do-------	SE SW 34	2540	186
W7-198	---do-------	SW SE 34	2585	188
W7-204	---do-------	SE SE 34	2660	185
W7-213	---do-------	SE SW 35	2600	184
W7-225	---do-------	SE SE 35	2675	177
W7-237	---do-------	SE SW 36	2650	182
		Roosevelt County--Continued Township 32 North, Range 51 East		
W7-263	Shothole	SE SW 31	2650	195
W7-277	---do-------	SE SE 31	2665	198
W8-293	---do-------	SW SE 32	2660	174
W8-357	---do-------	SW SW 35	2625	156
W8-360	---do-------	SE SW 35	2620	158
W8-365	---do-------	SW SE 35	2625	188
W8-377	---do-------	SW SW 35	2615	159

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Roosevelt County--Continued Township 32 North, Range 52 East		
W8-418	Shothole	SW SE 31	2590	195
1-421	---do----	SE SE 31	2590	189
1-425	---do----	SW SW 32	2490	194
1-441	---do----	SW SE 32	2355	195
1-457	---do----	SE SW 33	2362	159
1-469	---do----	SE SE 33	2270	178
1-484	---do----	SE SW 34	2312	187
1-488	---do----	SW SE 34	2320	193
1-498	---do----	SW SW 35	2395	190
1-512	---do----	SW SE 35	2420	188
1-517	---do----	SE SE 35	?	?
1-521	---do----	SW SW 36	2487	192
		Roosevelt County--Continued Township 32 North, Range 53 East		
1-556	---do----	SE SW 31	2390	174
1-551	---do----	SW 31	2365	181
2-1	---do----	SE SE 31	2305	162
2-2	---do----	SW SW 32	2282	187
2-3	---do----	SW SW 32	2228	170
2-4	---do----	SE SW 32	2225	187
2-5	---do----	SW SE 32	2202	187
2-6	---do----	SW SW 33	2195	196
2-7	---do----	SE NE 33	2200	187
2-8	---do----	SE NE 33	2245	186
2-9	---do----	SE SE 33	2205	186
2-10	---do----	SE SE 33	2242	183
2-12	---do----	SW SW 34	2300	168.5
2-13	---do----	SW SE 34	2308	185
2-14	---do----	SW SW 35	2322	163
2-15	---do----	SW SE 35	2355	146

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Sheridan County Township 32 North, Range 54 East		
3-5	Shothole	SE SE 32	2342	184
3-1	---do-------	NE NW 36	2168	113
3-2	---do-------	NW NE 36	2145	117
3-3	---do-------	NW NE 36	2148	184
		Sheridan County--Continued Township 32 North, Range 55 East		
P28-188	Shothole	NE SE 4	2065	91
P28-172	---do-------	NW NW 8	2130	90
P28-152	---do-------	SW SW 8	2130	125
P28-169	---do-------	SW NW 9	2145	105
P28-176	---do-------	NE NW 9	2090	82
P28-464	---do-------	SE NW 15	1995	187
P28-C2	Measured section	SW NW 15	2000	4.7
P28-424	Shothole	NE SW 16	2085	188
P28-434	---do-------	NW SE 16	2075	120
P28-146	---do-------	NW NE 17	2200	171
P28-135	---do-------	SW NW 17	2150	130
P28-387	---do-------	NE SW 17	2115	123
P28-408	---do-------	NE SE 17	2185	180
P28-128	---do-------	SW SW 17	2115	123
P28-116	---do-------	SW NW 20	2075	114
P28-C3	Measured section	NE SW 20	2050	4.9
P28-C1	---do-------	SE NE 21	2000	5.8
P28-M5	---do-------	NE SW 22	1991	30.4
P28-C4	---do-------	SE NW 27	1970	2.7
4-20	---do-------	NW SW 27	1975	2.7
3-4	Shothole	SW SW 30	2090	99
4-1	---do-------	SE NE 31	1962	160
4-2	---do-------	NE SE 31	1995	172
4-4	---do-------	SE SE 31	2045	171
4-3	Measured section	NW SW 32	1995	34

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Daniels County Township 33 North, Range 50 East		
S31-597	Shothole	SW NW 20	2645	178
S31-603	---do-------	NW SW 20	2665	179
		Daniels County--Continued Township 33 North, Range 51 East		
P25-73	Shothole	SE SW 13	2615	119
S32-105	---do-------	SW SW 14	2645	200
S32-117	---do-------	SW SE 15	2640	180
S32-153	---do-------	SW SW 16	2560	183
		Sheridan County Township 33 North, Range 52 East		
P25-117	Shothole	NE SE 8	2430	101
P25-1	---do-------	SW SE 16	2550	181
P25-22	---do-------	SW SE 17	2510	182
P25-29	---do-------	SE SW 17	2510	182
P26-BK	Measured section	SE NE 24	2380	1
		Sheridan County--Continued Township 33 North, Range 53 East		
P26-BM	Measured section	SW SW 16	2290	3
P26-BE	---do-------	SW SW 30	2465	1.1
		Sheridan County--Continued Township 33 North, Range 54 East		
P28-CWW	Water well	SW SW 13	2180	98
P28-B41	Shothole	NE NW 14	2250	149.8
P28-5106	---do-------	SE NE 24	2155	96
P28-B1	---do-------	NE NE 26	2205	110
P27-BL	Measured section	NW SW 31	2155	24.7

Table 23. Index of data points, including seismograph shotholes, water wells, measured sections, and published descriptions of drill holes and measured thicknesses of coal beds, but not including U.S Geological Survey coal exploratory holes, in the eastern part of the Fort Peck Indian Reservation, Montana—Continued

[NCRDS, National Coal Resource Data System]

NCRDS pointid	Source of data	Section	Elevation (ft)	Total footage logged or measured
		Sheridan County--Continued Township 33 North, Range 55 East		
P29-832	Shothole	NW NW 14	2190	194
P29-811	---do-------	SW SE 14	2115	169
P28-5105	---do-------	NE NW 19	2155	175
P28-5104	---do-------	NE NE 19	2150	163
928-5102	---do-------	NE NW 21	2125	184
P29-M1	Measured section	NW NW 23	2149	3.5
P29-802	Shothole	NE NE 23	2125	122
P29-788	---do-------	SE NE 23	2100	89
P29-774	---do-------	SE SE 23	2040	164
P29-768	---do-------	NE NE 26	2030	180
P29-759	---do-------	SE NE 26	1980	78
P28-5108	---do-------	SE SW 29	2100	158
P28-5109	---do-------	SW SE 32	2060	185

[1]Great Northern Railway Co. (now Burlington Northern, Inc.).

[2]IntraSearch Fort Peck Project.

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