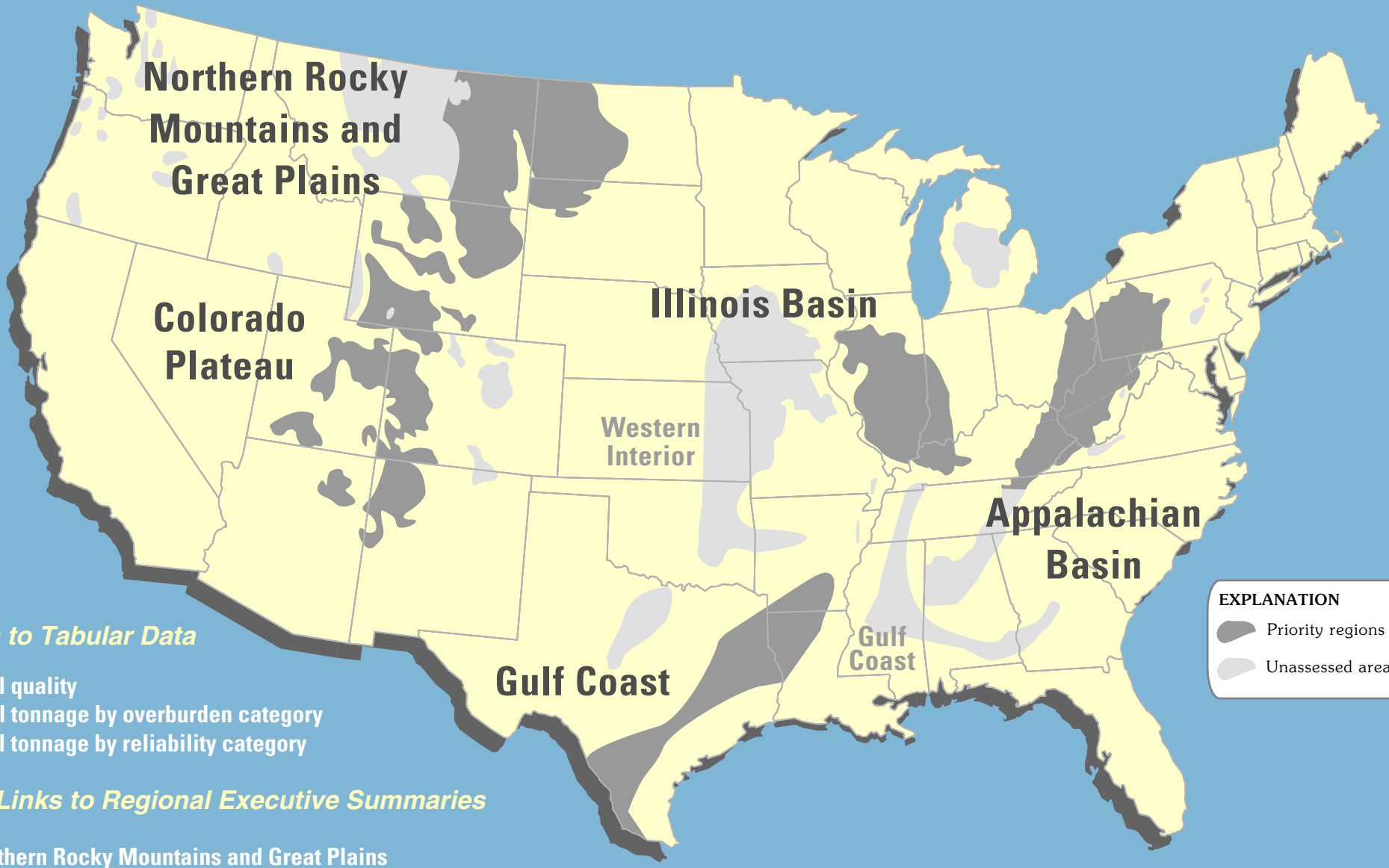
USGS
science for a changing world

LÅ¨¢National Coal Resource Assessment



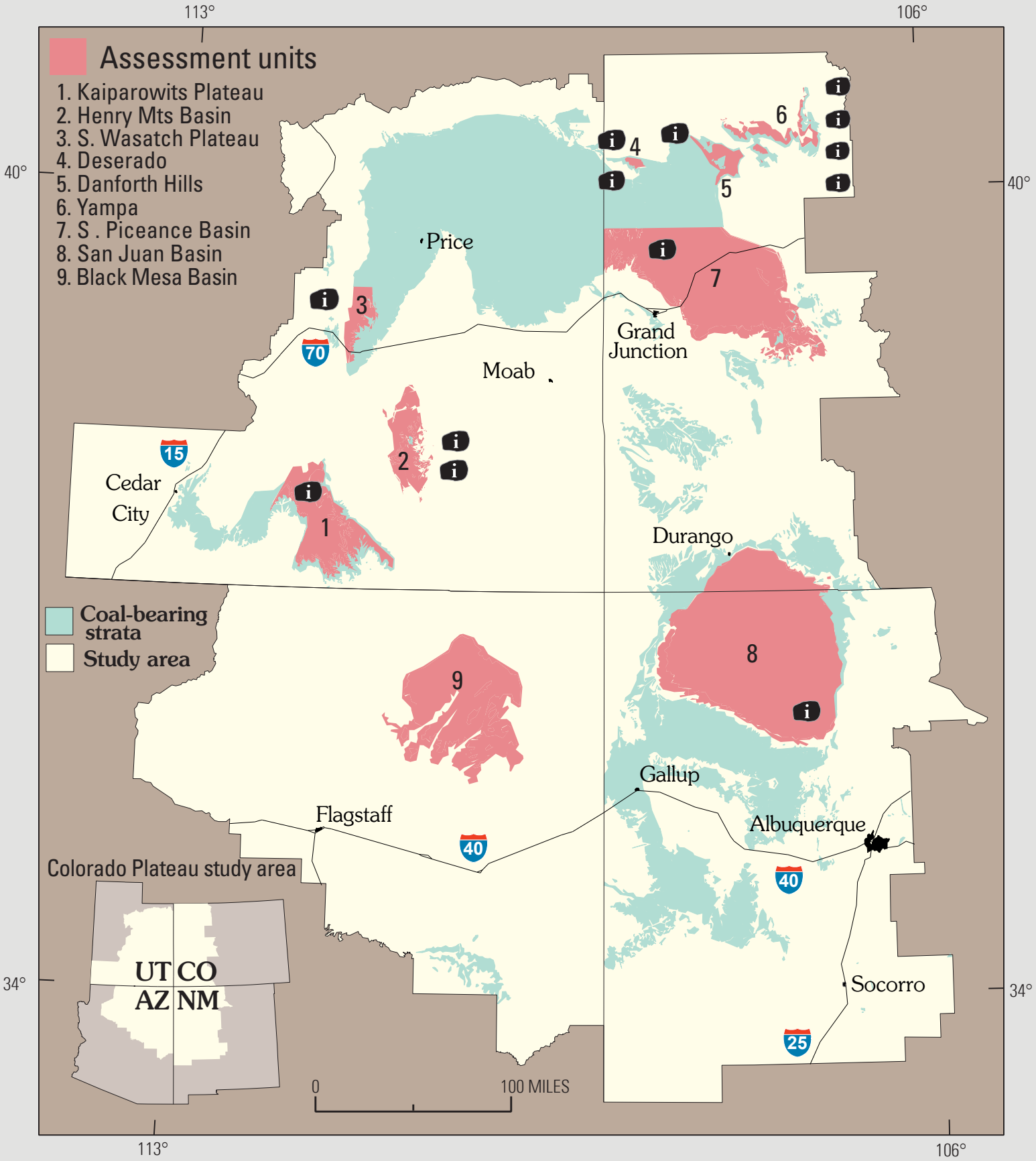
Links to Tabular Data

Coal quality
Coal tonnage by overburden category
Coal tonnage by reliability category

Web Links to Regional Executive Summaries

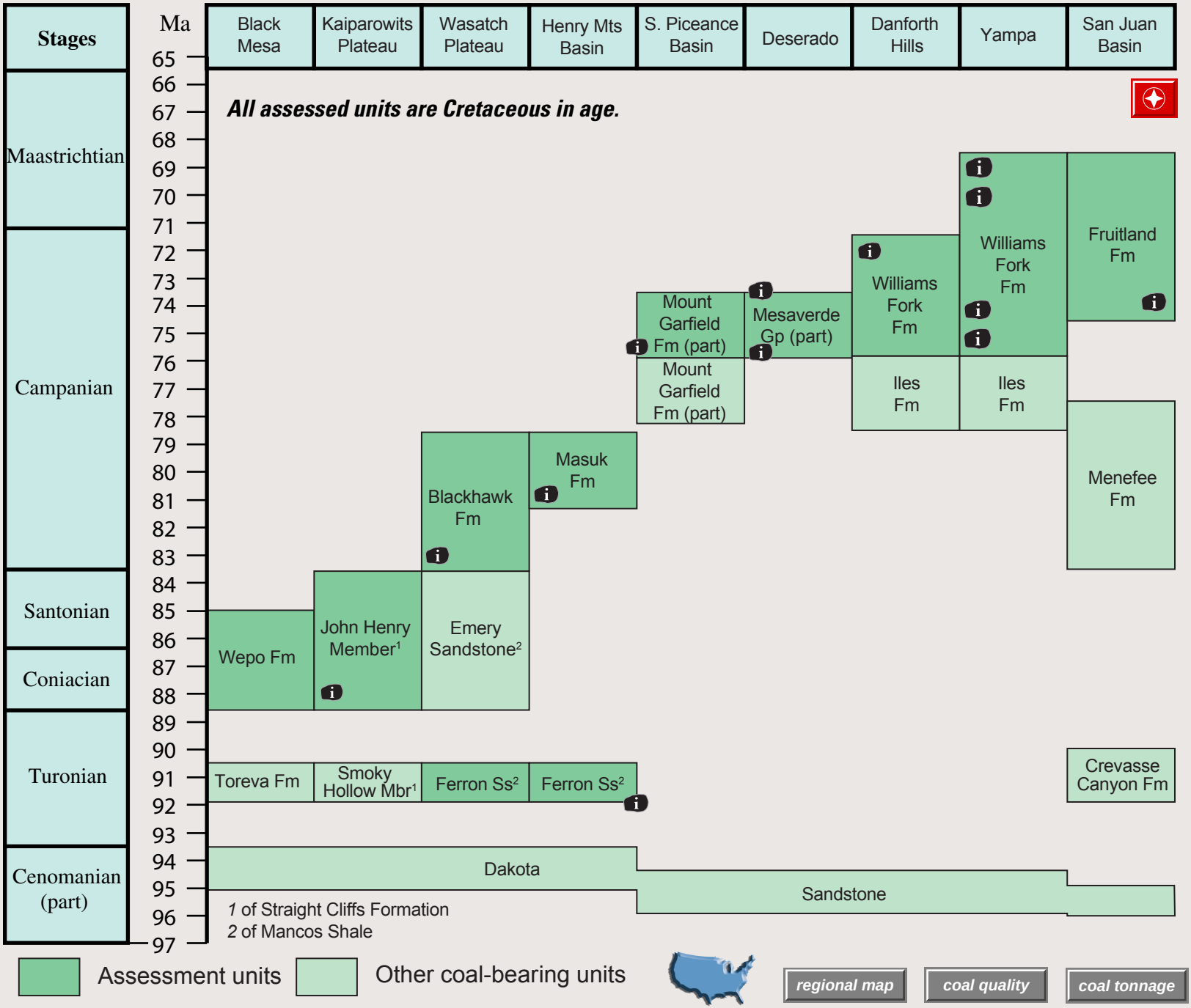
Northern Rocky Mountains and Great Plains
Colorado Plateau
Illinois Basin
Appalachian Basin

chapter text

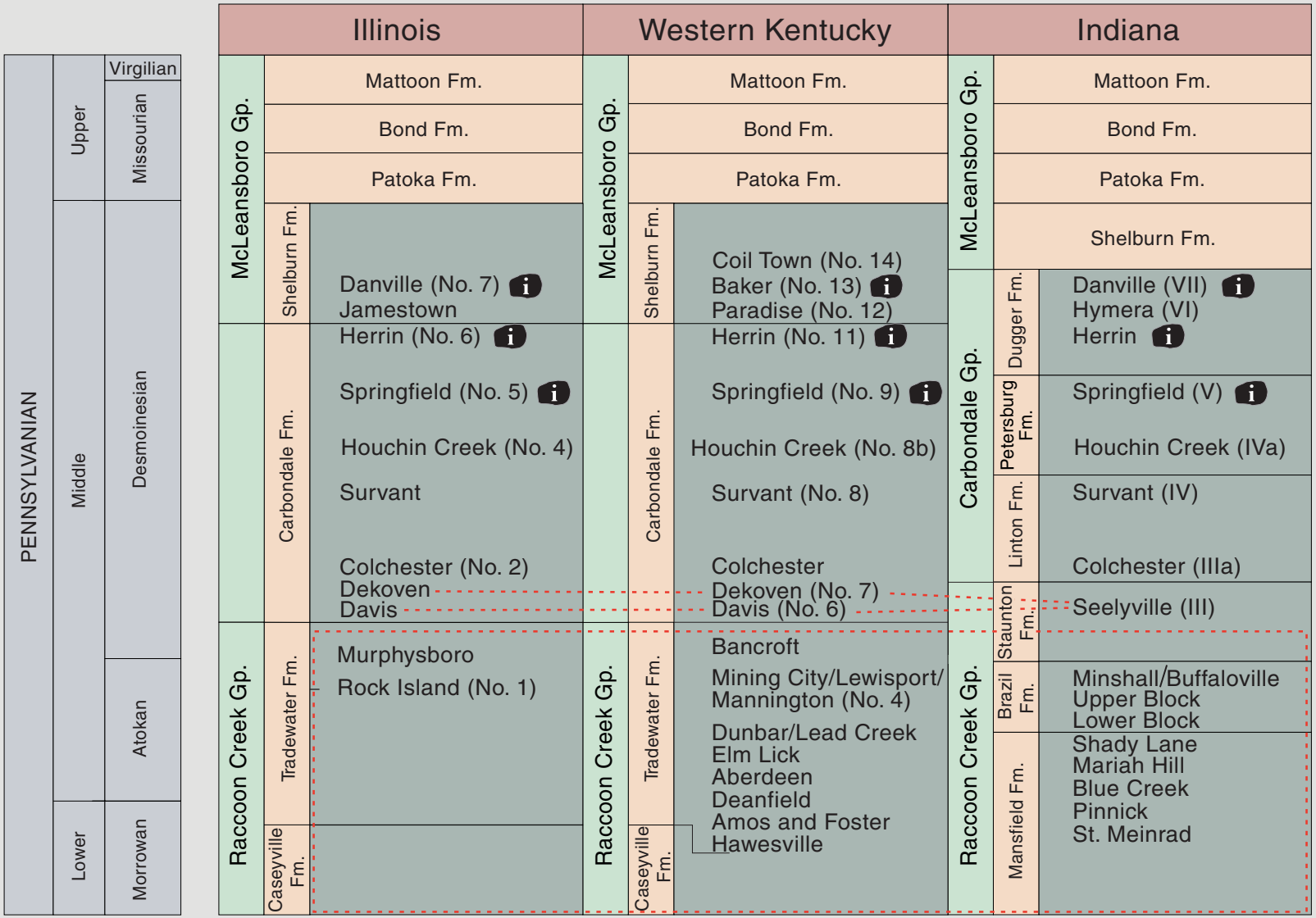


Colorado Plateau regional map.

strat column | coal quality | coal tonnage

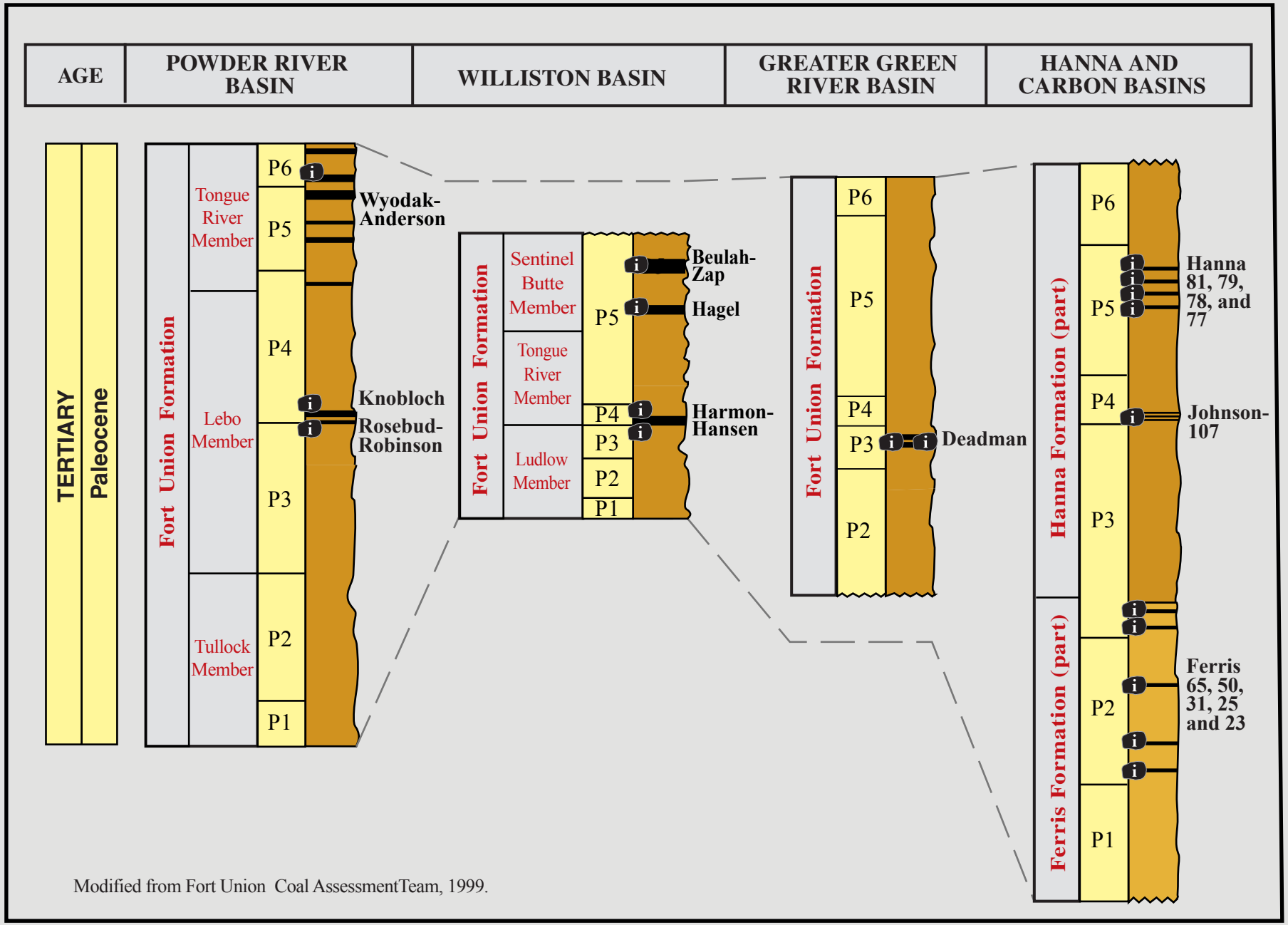

Stages
Ma
Black Mesa
Kaiparowits Plateau
Wasatch Plateau
Henry Mts Basin
S. Piceance Basin
Deserado
Danforth Hills
Yampa
San Juan Basin
All assessed units are Cretaceous in age.
Maastrichtian
Campanian
Santonian
Coniacian
Turonian
Cenomanian (part)
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
Mount Garfield Fm (part)
Mesaverde Gp (part)
Williams Fork Fm
Fruitland Fm
Mount Garfield Fm (part)
Iles Fm
Iles Fm
Blackhawk Fm
Masuk Fm
Menefee Fm
Wepo Fm
John Henry Member1
Emery Sandstone2
Toreva Fm
Smoky Hollow Mbr1
Ferron Ss2
Ferron Ss2
Crevasse Canyon Fm
Dakota
Sandstone
1 of Straight Cliffs Formation
2 of Mancos Shale
Assessment units
Other coal-bearing units
regional map
coal quality
coal tonnage

Illinois Basin Coal Correlation Chart



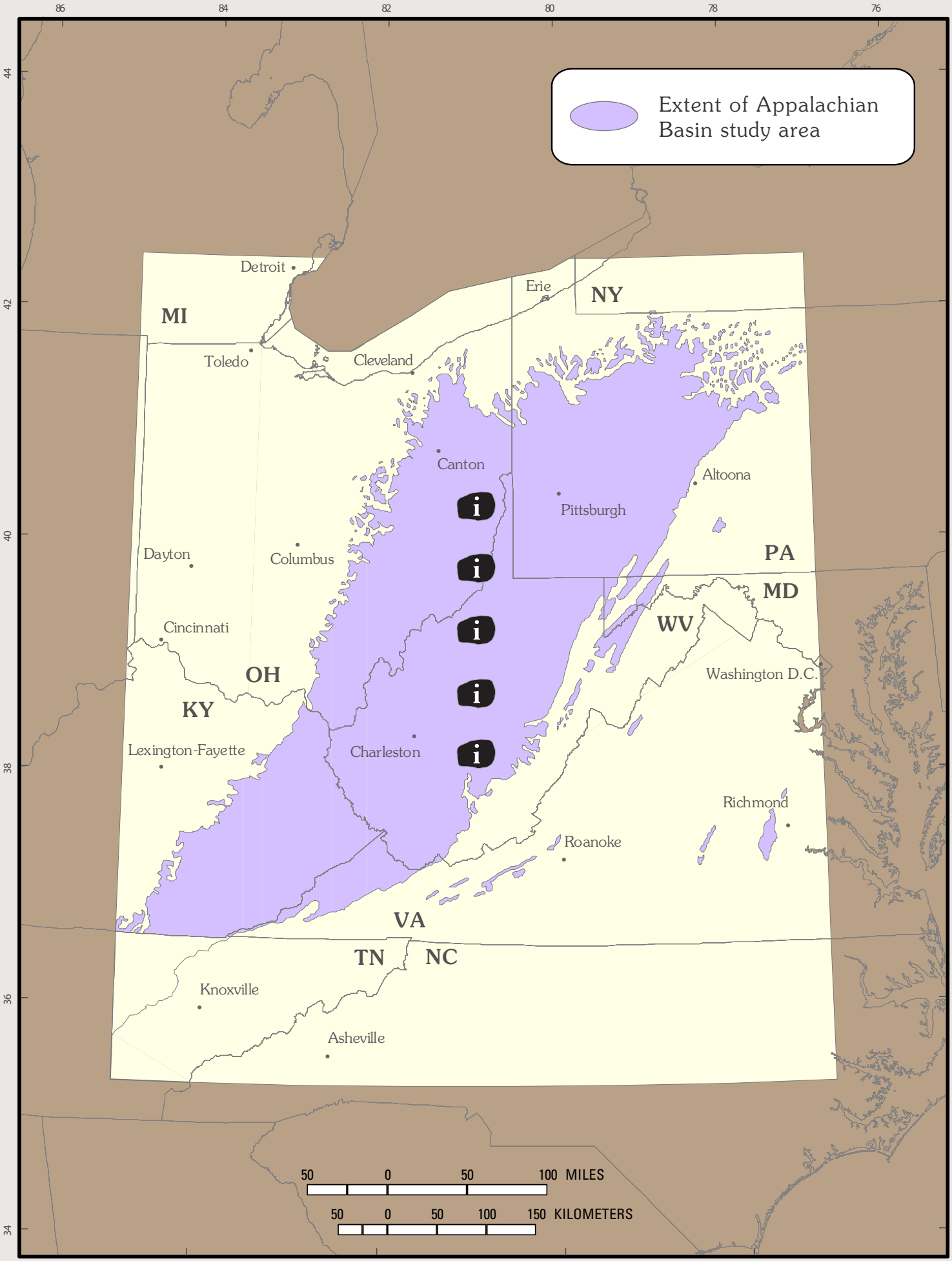
Stratigraphy of the Pennsylvanian System in the Illinois Basin, showing major coal members. Modified from Mastalerz and Harper (1998, Figure 2) and Greb and others (1992, Figure 22). Problematic seam correlation shown by dashed lines.

regional map | coal quality | coal tonnage



Generalized sections showing relative age, thickness, and stratigraphic relationship of coal assessed for the National Coal Resource Assessment in the Northern Rocky Mountains and Great Plains region. All coal assessed is Paleocene in age. The age of the coal is based on palynological biozones; P zones 5 and 6 are late Paleocene, 3 and 4 are middle Paleocene, and 1 and 2 are early Paleocene (Nichols, 1994).

regional map | coal quality | coal tonnage



Appalachian Basin regional map.

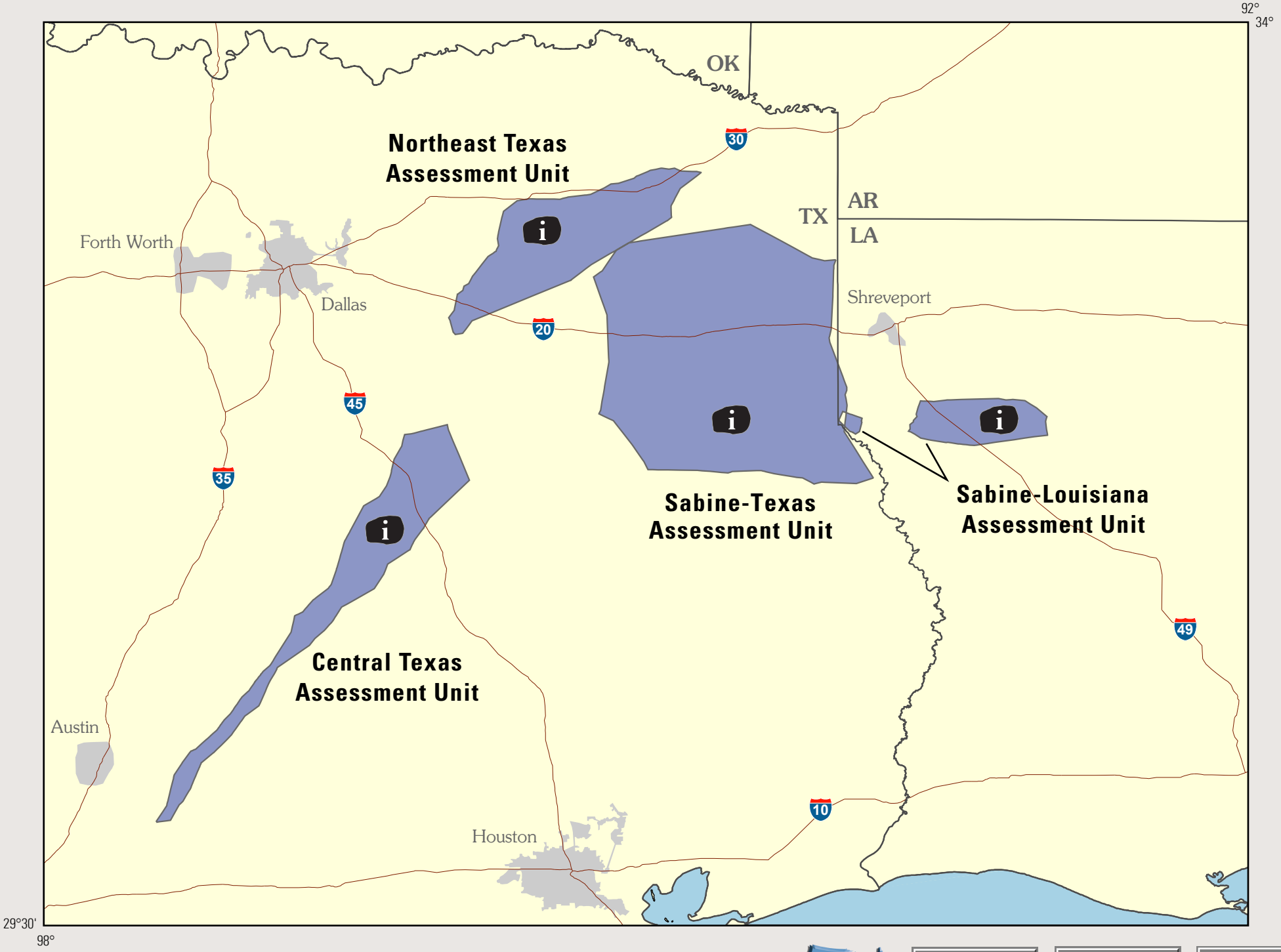
strat column | coal quality | coal tonnage

System	Series	Group	Assessed Coal Bed
Pennsylvanian	Upper	Monongahela Group	Pittsburgh coal
		Conemaugh Group	
	Middle	Allegheny Group	Upper Freeport Lower Kittanning
	Lower	Pottsville Group	Fire Clay Pond Creek Pocahontas No. 3

regional map

coal quality

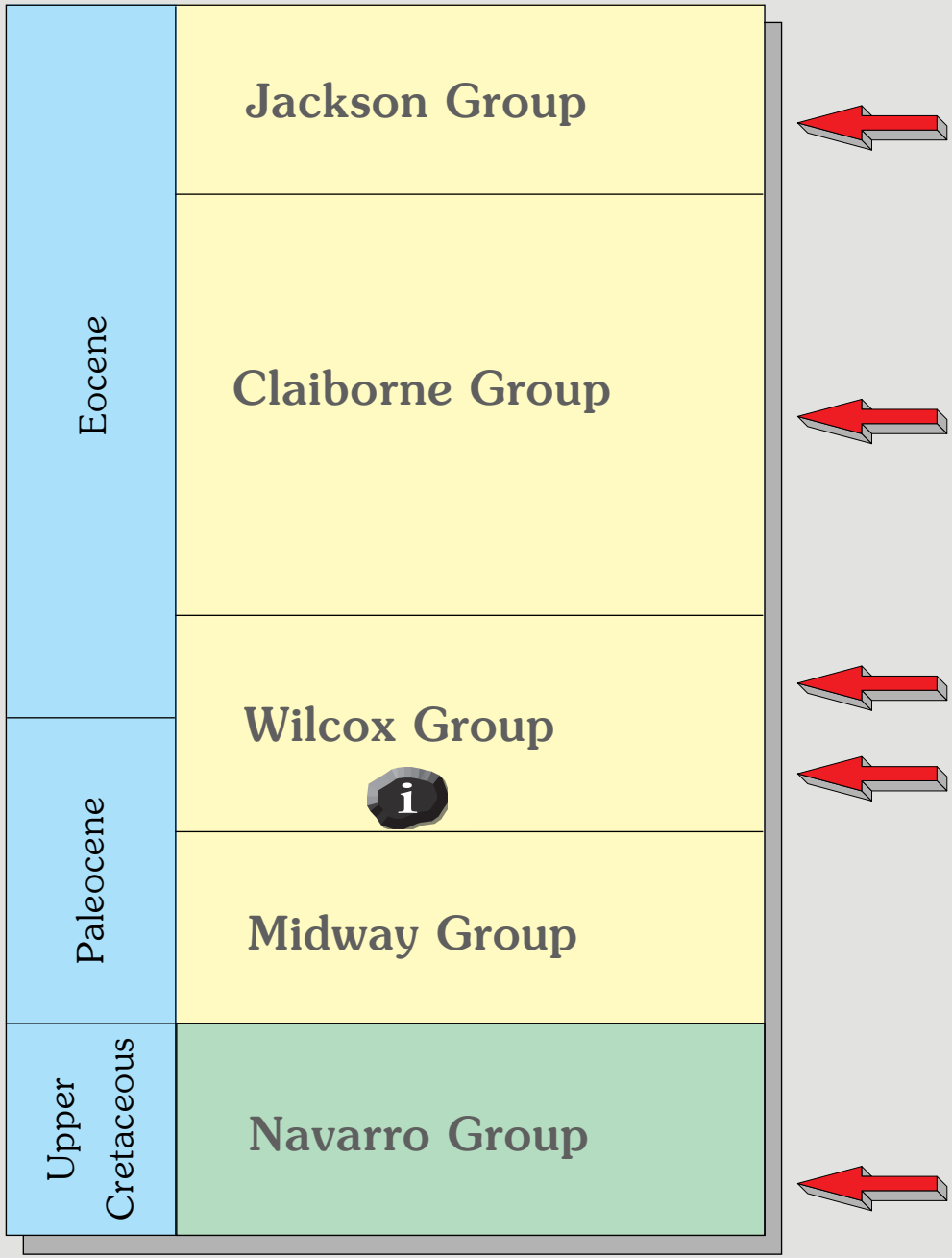
coal tonnage



Gulf Coast regional map.

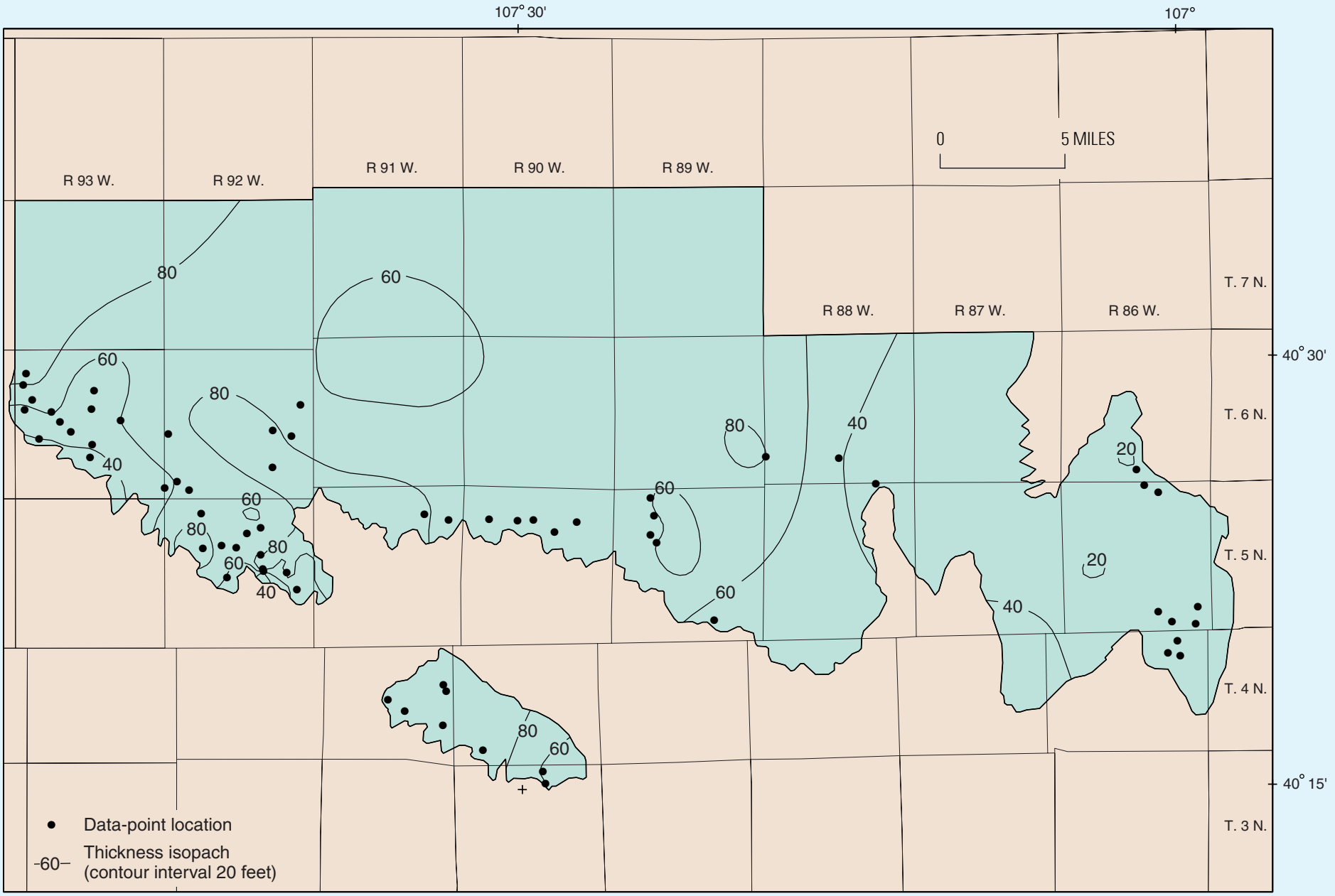
strat column
coal quality
coal tonnage

Stratigraphy of coal-bearing intervals in the U.S. Gulf Coastal Plain



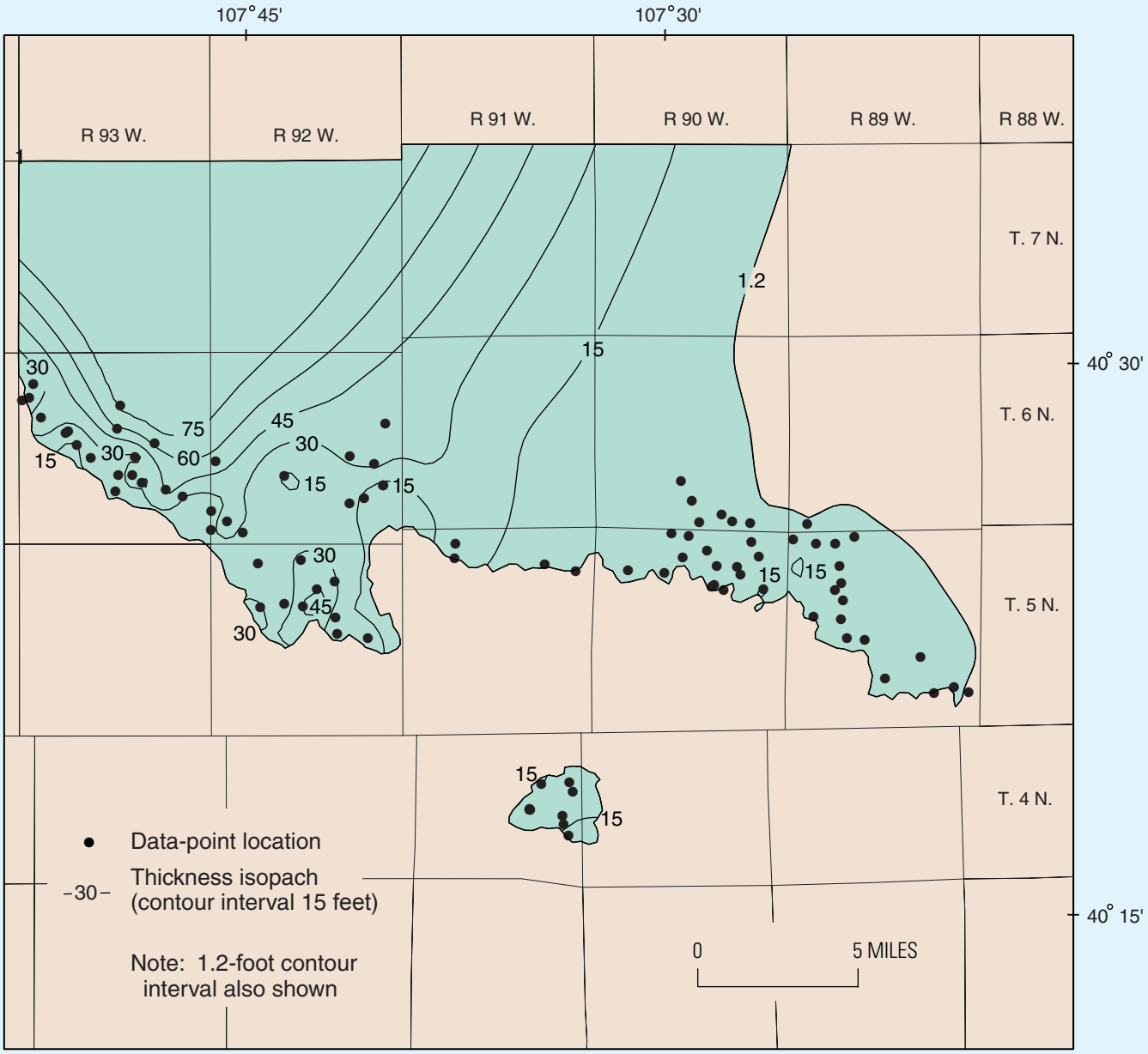
Arrows indicate approximate stratigraphic positions of major coal-bearing intervals.

***Only Wilcox coal zones were assessed.**



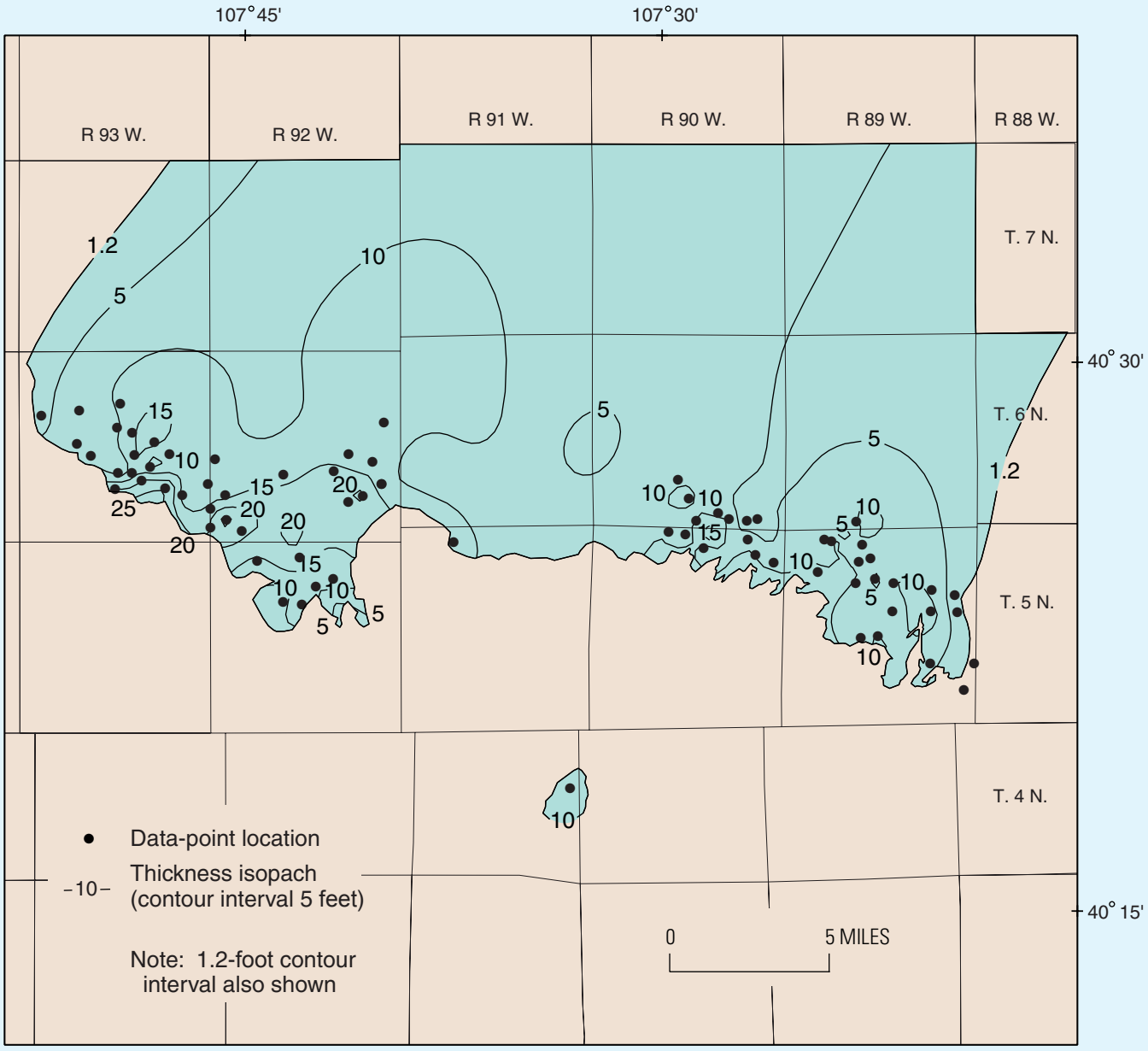
Isopach map of net coal in beds equal to or greater than 1.2 feet thick covering the surface and subsurface extent of the A coal zone, Yampa coal field. Outline is the resource polygon for the A coal zone.

regional map strat column view tonnage



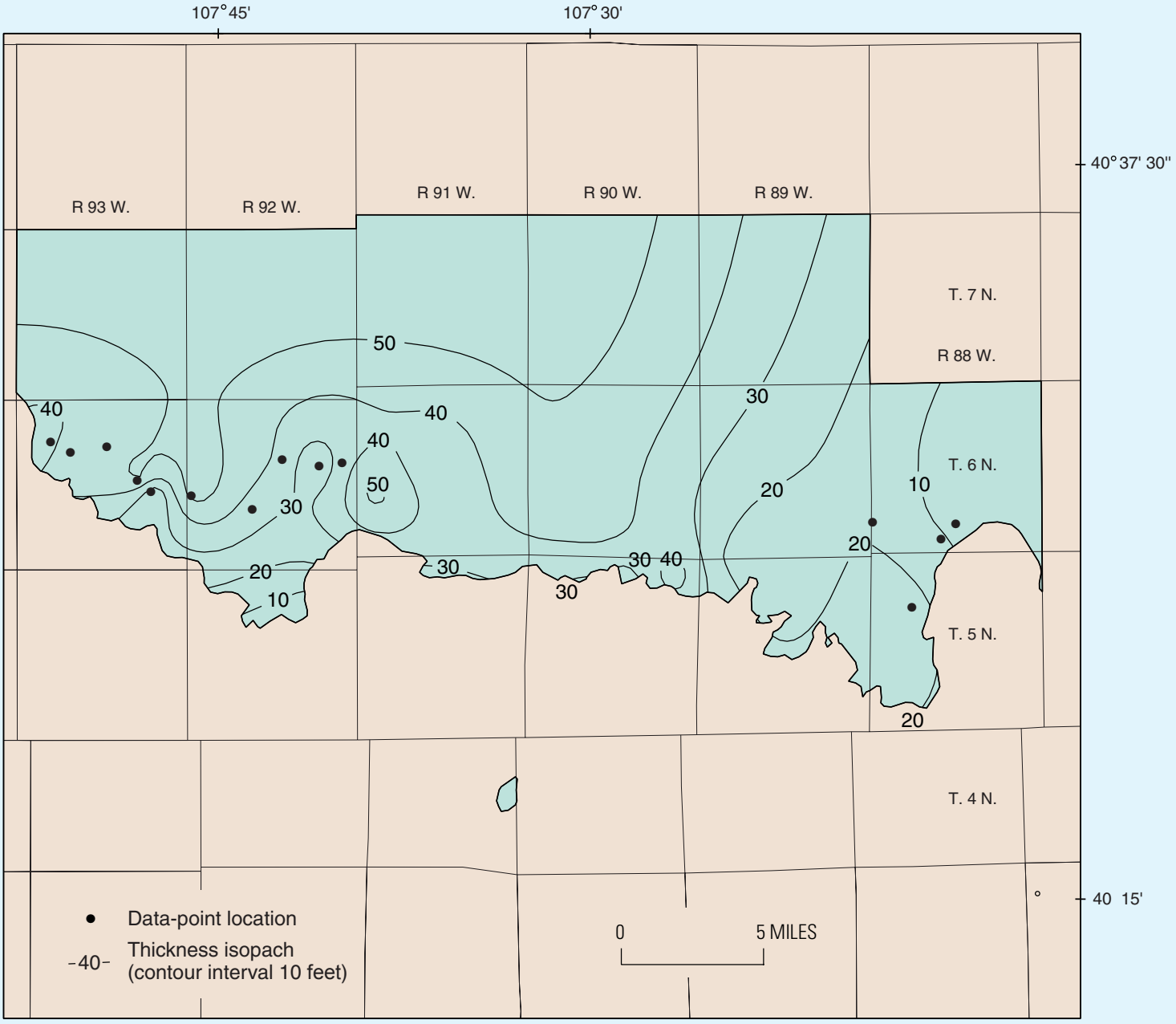
Isopach map of net coal in beds equal to or greater than 1.2 feet thick covering the surface and subsurface extent of the B coal zone, Yampa coal field. Outline is the resource polygon for the B coal zone.

regional map
strat column
view tonnage



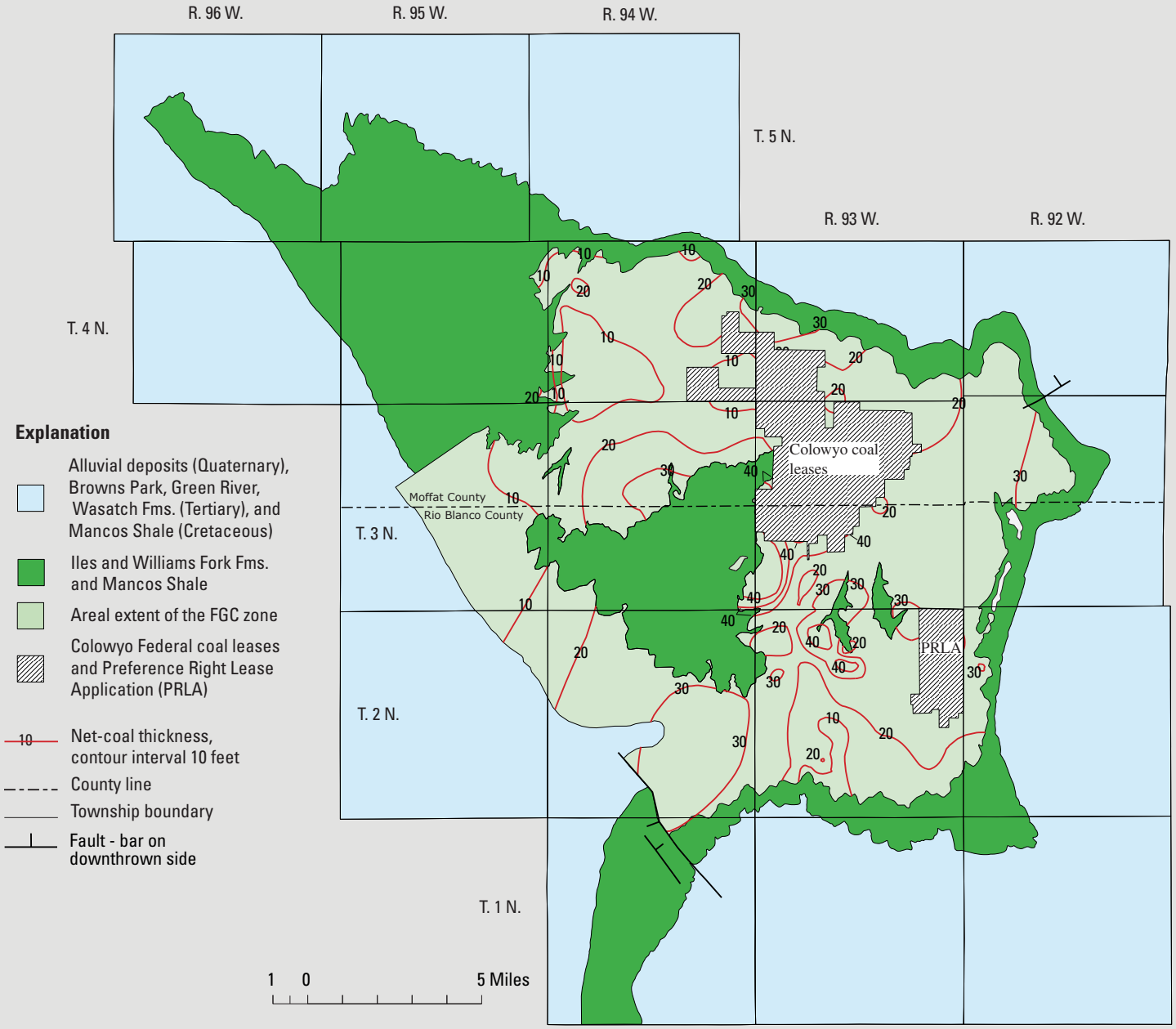
Isopach map of net coal in beds equal to or greater than 1.2 feet thick covering the surface and subsurface extent of the C coal zone, Yampa coal field. Outline is the resource polygon for the C coal zone.

regional map strat column view tonnage



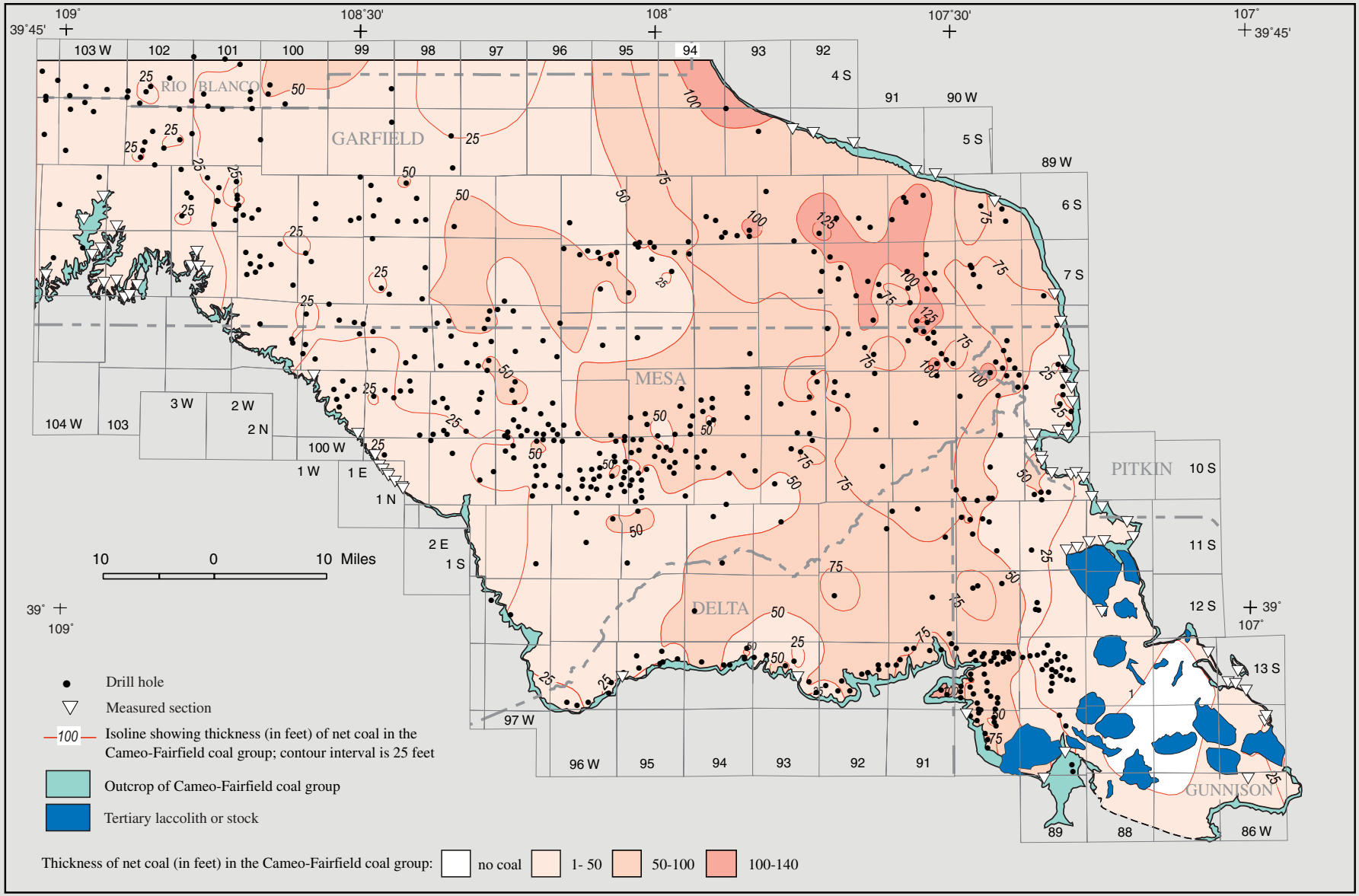
Isopach map of net coal in beds equal to or greater than 1.2 feet thick covering the surface and subsurface extent of the D coal zone, Yampa coal field. Outline is the resource polygon for the D coal zone.

regional map
strat column
view tonnage



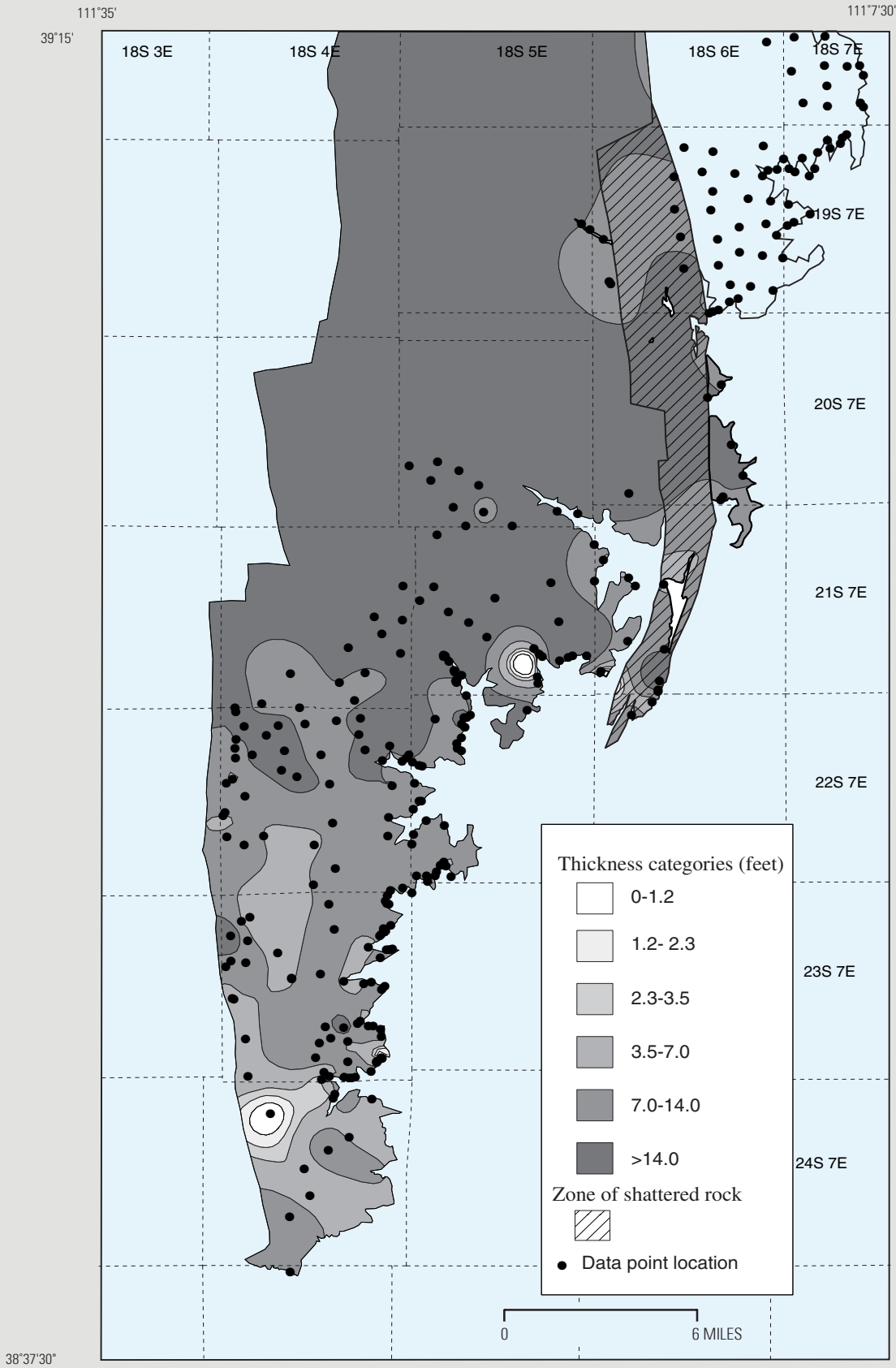
Map showing total net-coal thickness for the FGC coal zone of the Fairfield coal group of the Williams Fork Formation, Danforth Hills coal field, Colorado. Outline of the Danforth Hills coal field drawn on the base of the Upper Cretaceous Iles Formation. Areal extent of FGB zone shown in light green. Data not shown for the Colowyo Federal and State coal leases or PRLA. (C coal zone shown here as an example.)

Seven coal zones were assessed in the Danforth Hills; this isopach map is an example of one of those assessed coal zones.



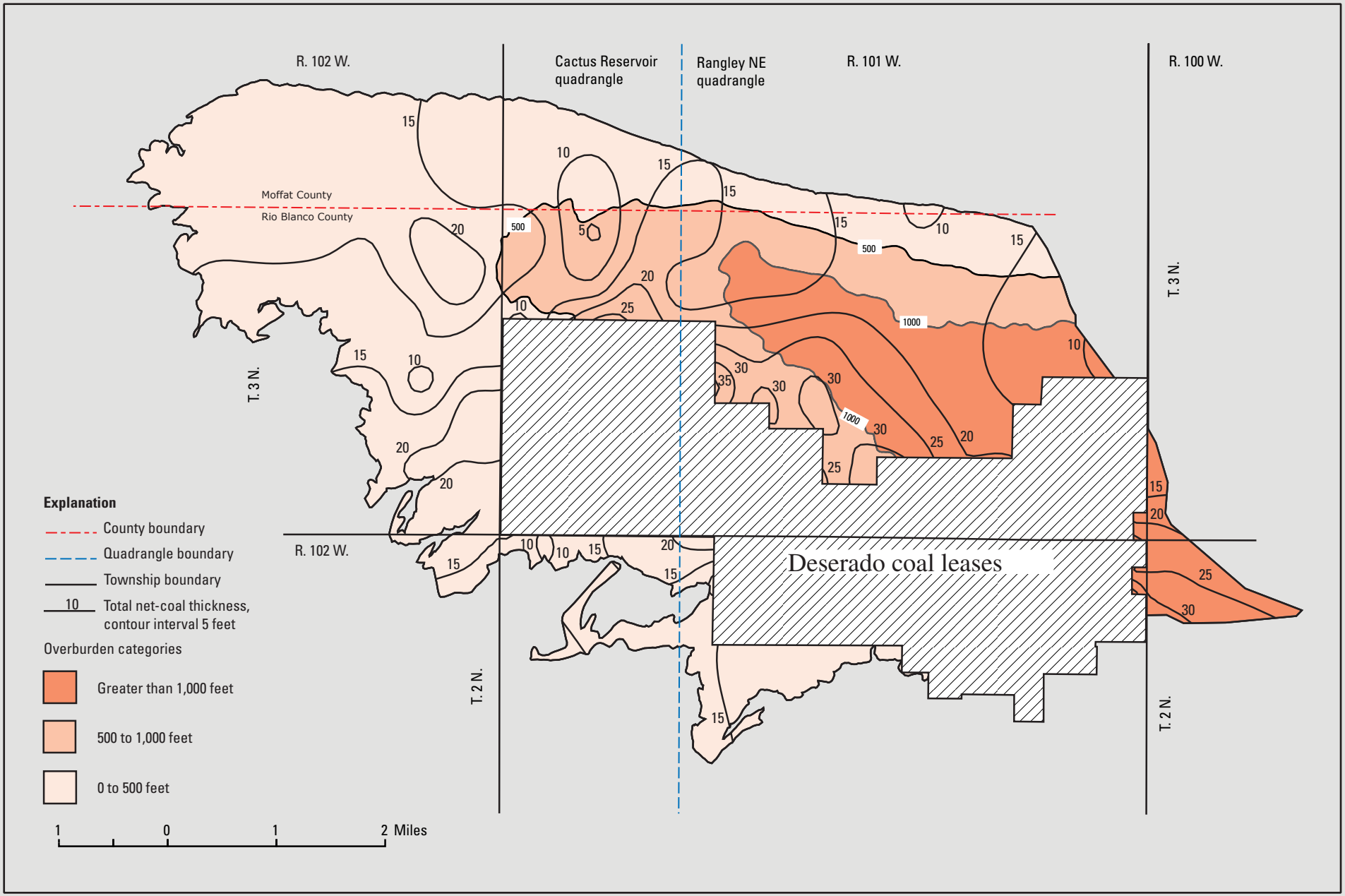
Isopach map of net coal in the Cameo-Fairfield coal group in the southern part of the Piceance Basin, Colorado. Net-coal values represent all beds of coal that are more than 1 foot thick and are determined from 627 data points.

regional map strat column view tonnage



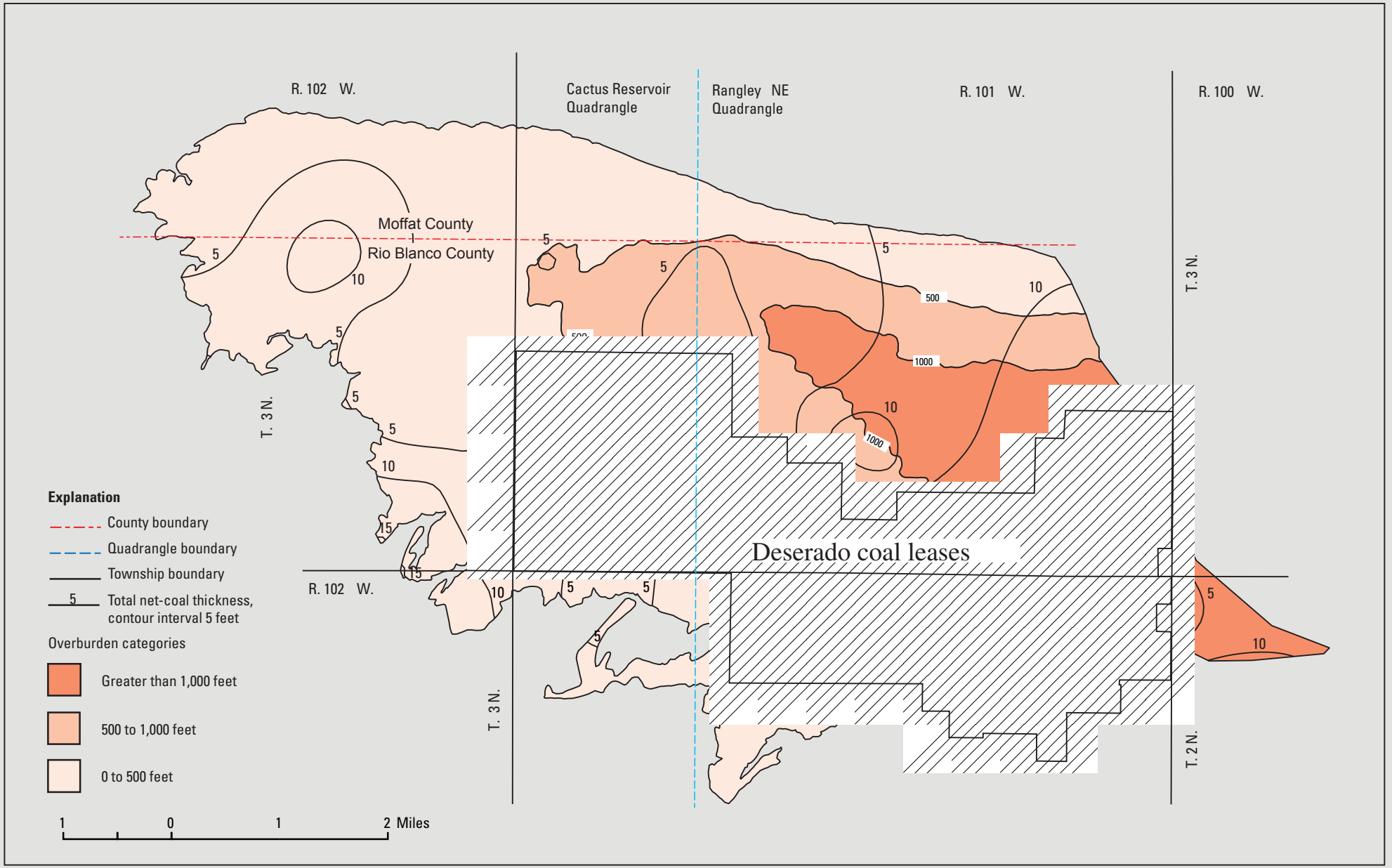
Map showing data point locations, isopachs of net coal, and net-coal thickness categories (thickness categories according to Wood and others, 1983) in the lower Blackhawk coal zone in the Southern Wasatch Plateau study area. Note that isopachs show net coal and not individual bed thickness.

regional map
strat column
view tonnage



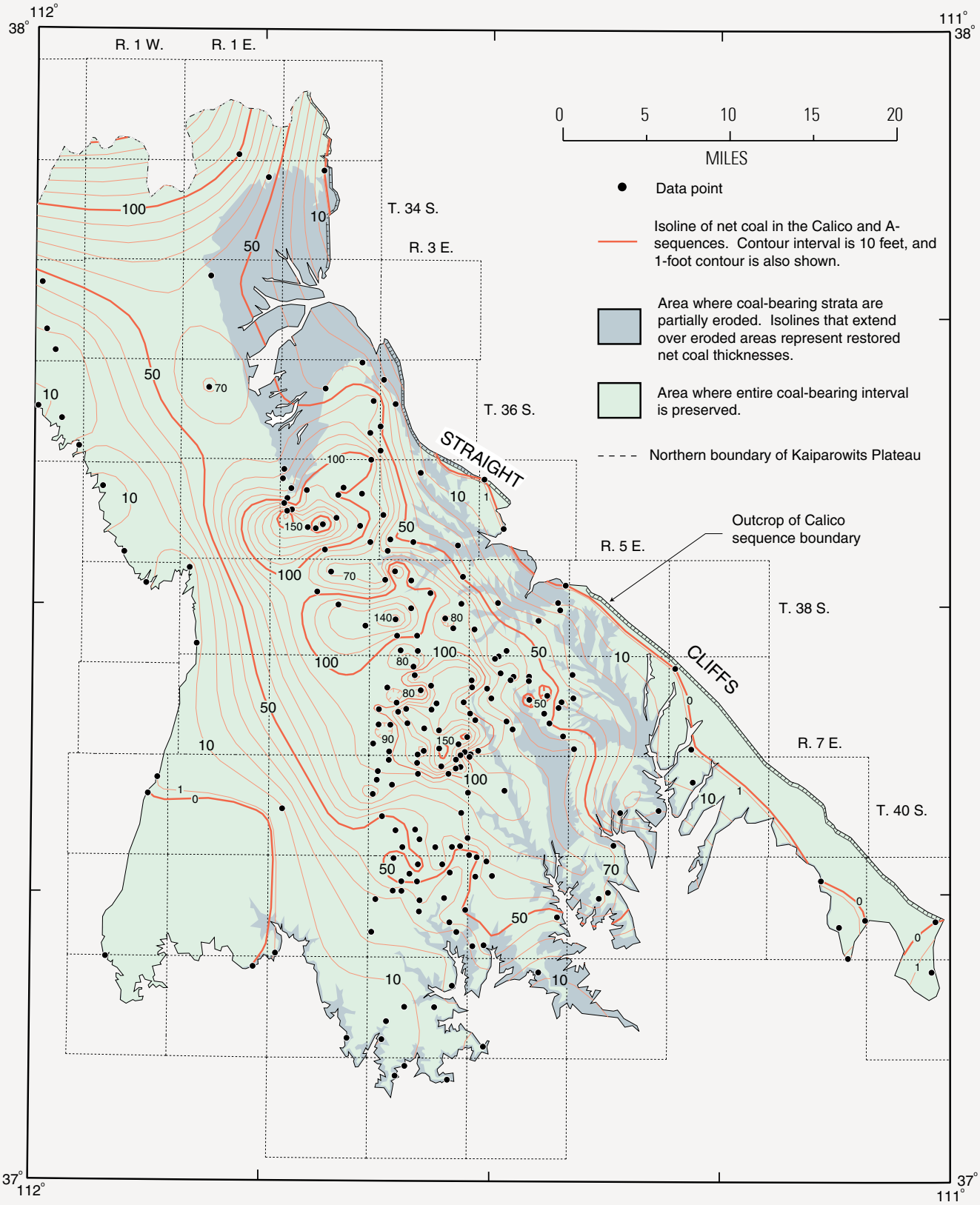
Map showing total net-coal and overburden thickness categories for the D coal zone, Upper Cretaceous Mesaverde Group, Deserado coal area, Lower White River coal field, Colorado. Data not shown for Deserado coal leases.

regional map strat column view tonnage



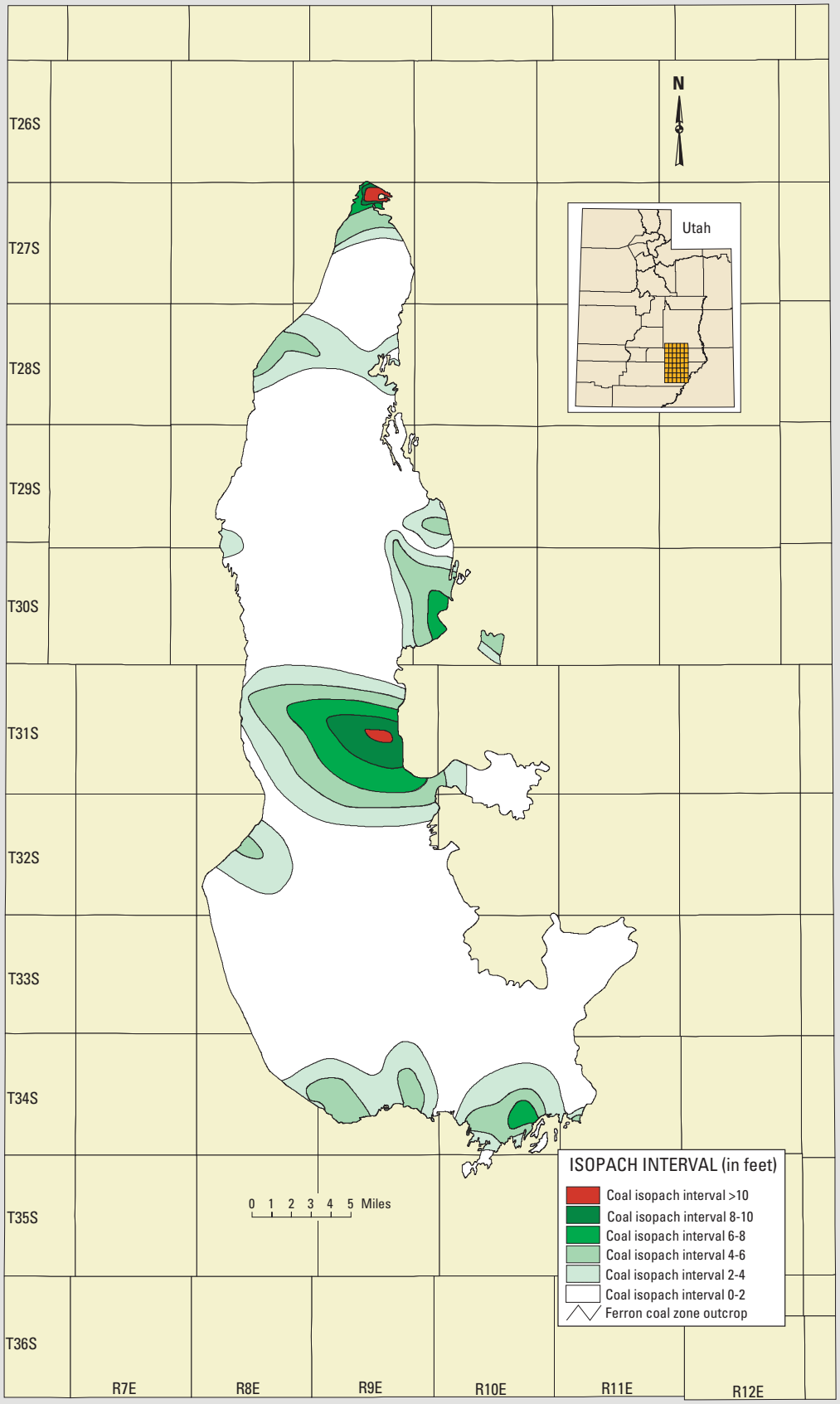
Map showing total net-coal and overburden thickness categories for the D coal zone, Upper Cretaceous Mesaverde Group, Deserado coal area, Lower White River coal field, Colorado. Data not shown for Deserado coal leases.

regional map strat column view tonnage



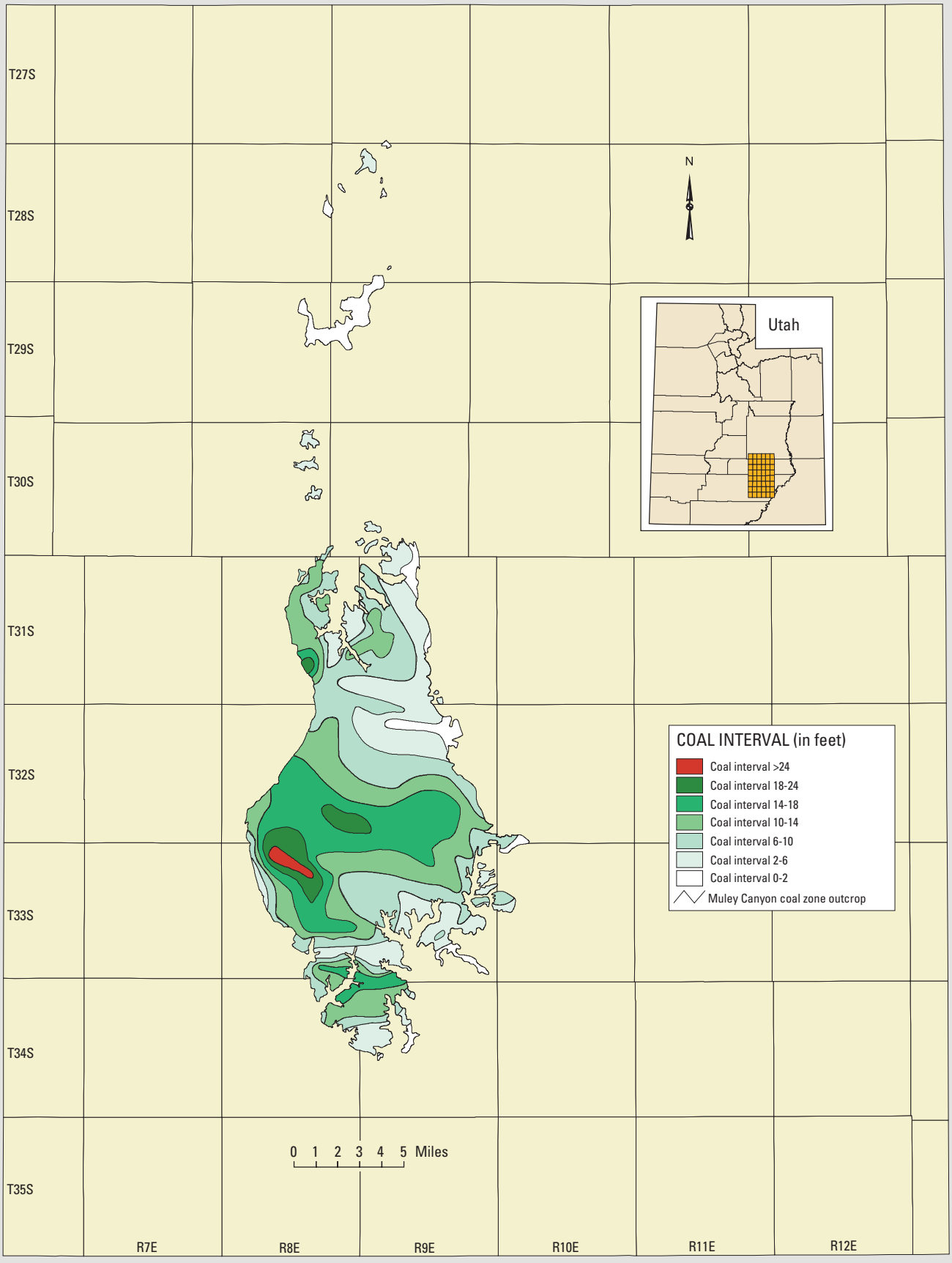
Isopach map of net coal in the Calico and A-sequences of the John Henry Member of the Straight Cliffs Formation. Net coal values represent all coal beds that are more than 1 foot thick and are determined from 209 data points.

regional map | strat column | view tonnage



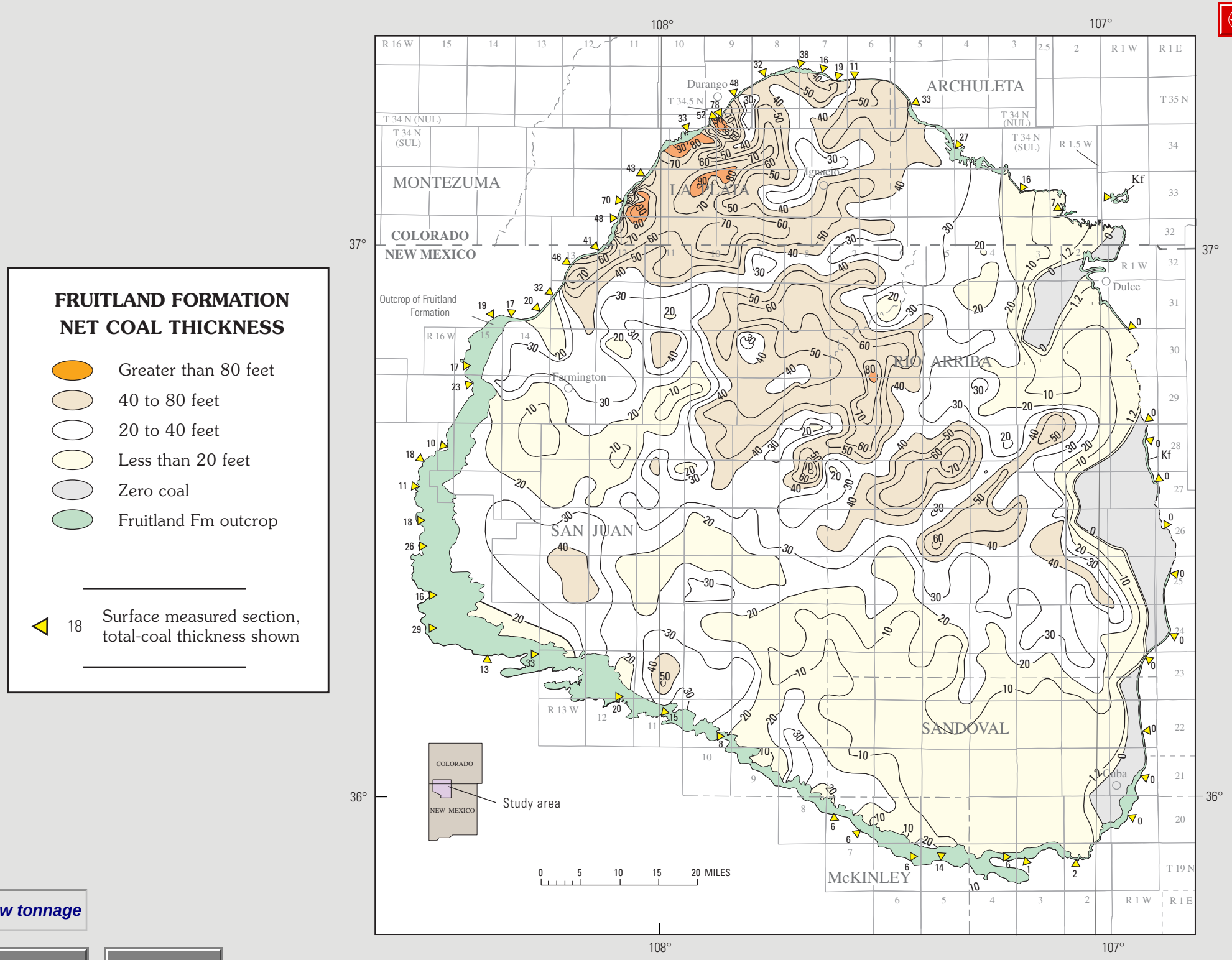
Isopach map of Ferron coal zone.

regional map
strat column
view tonnage



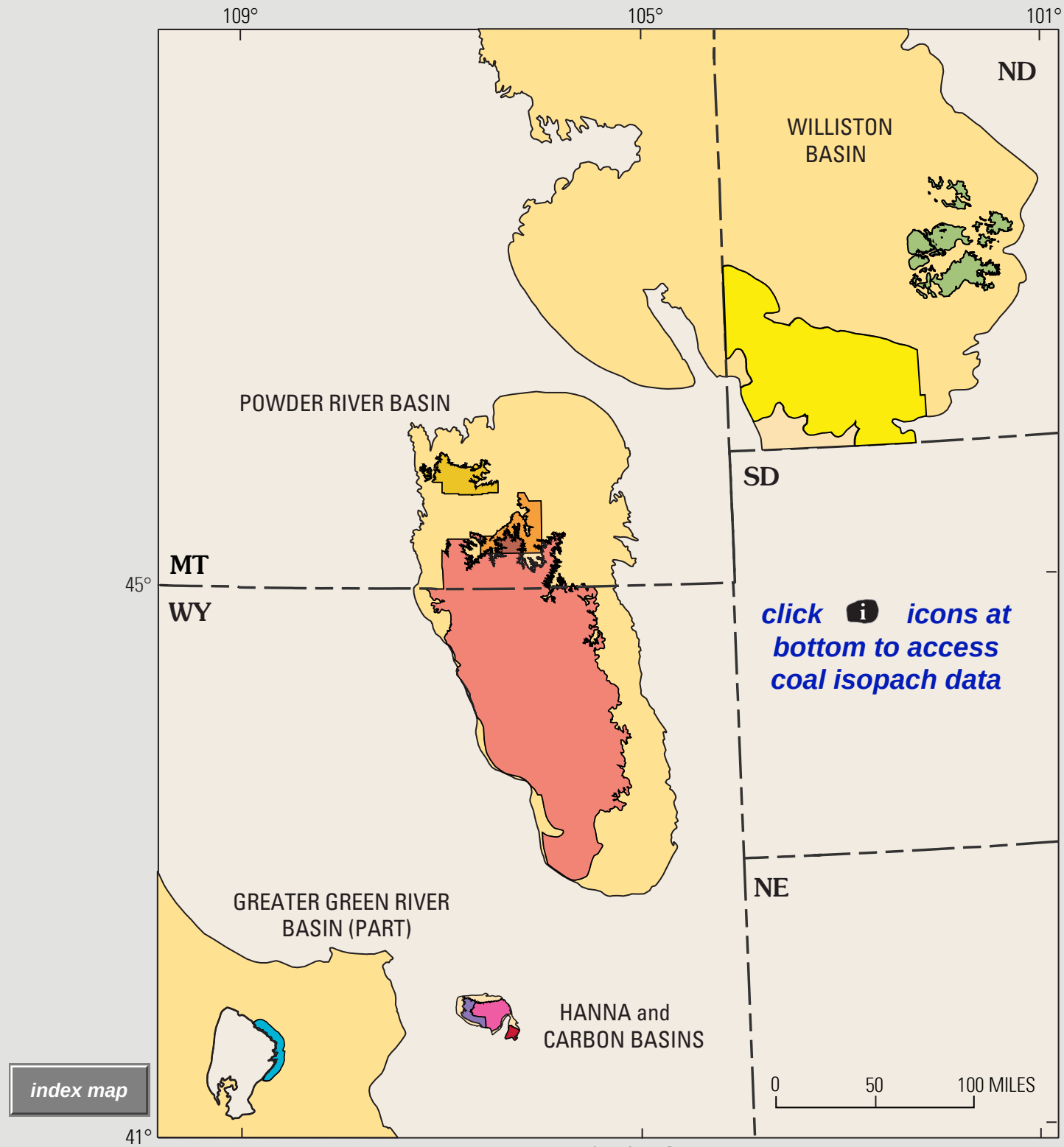
Isopach map of Muley Canyon coal zone.

regional map
strat column
view tonnage



Net coal isopach map of the Fruitland Formation coal beds, San Juan Basin, Colorado and New Mexico.

view tonnage
regional map
strat column



index map

EXPLANATION

Assessment unit study areas (shaded where overlapping)

Tertiary coal basins

Powder River Basin

- Wyodak-Anderson
- Knobloch
- Rosebud-Robinson

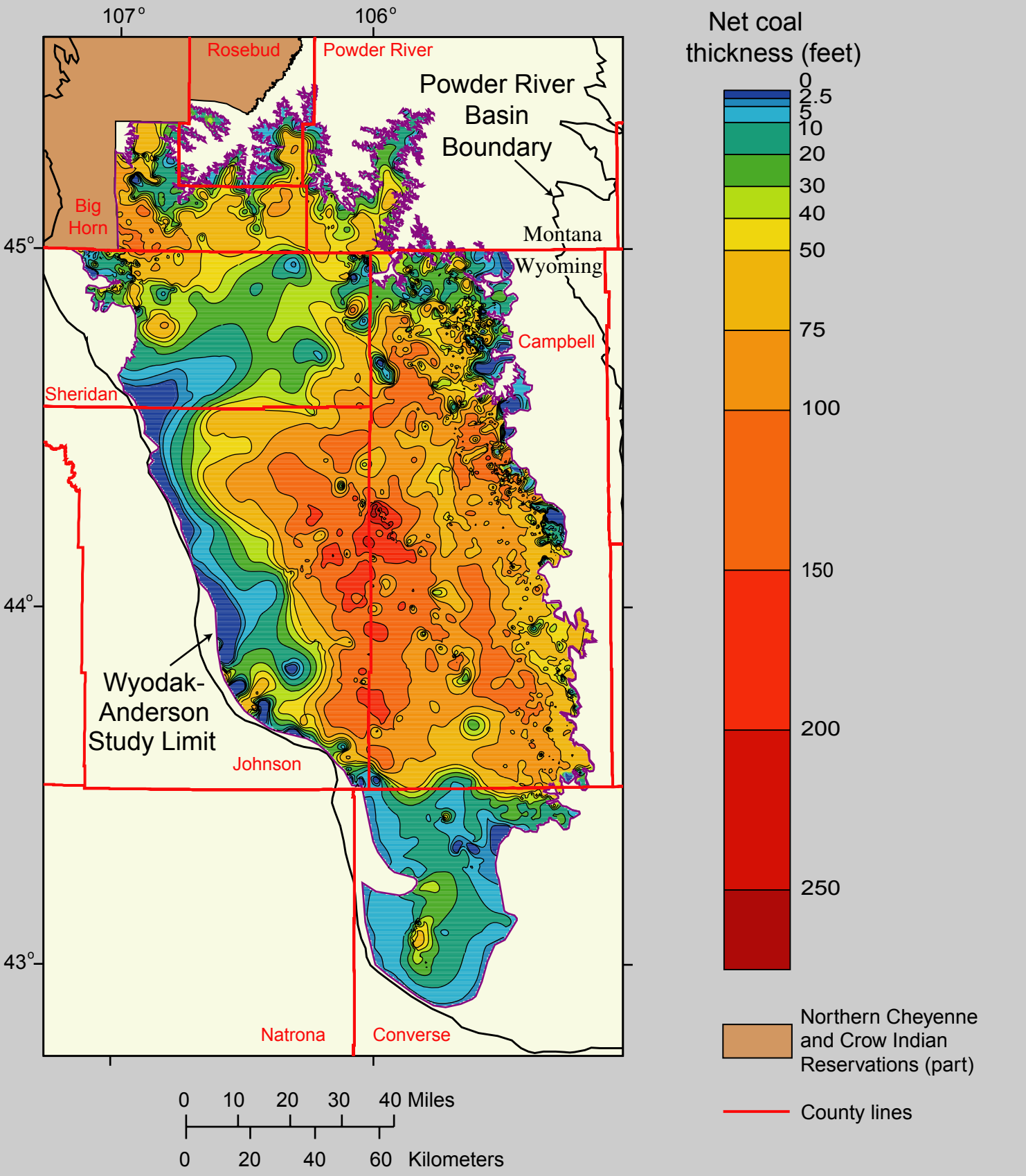
Williston Basin

- Harmon-Hansen
- Beulah Zap-Hagel

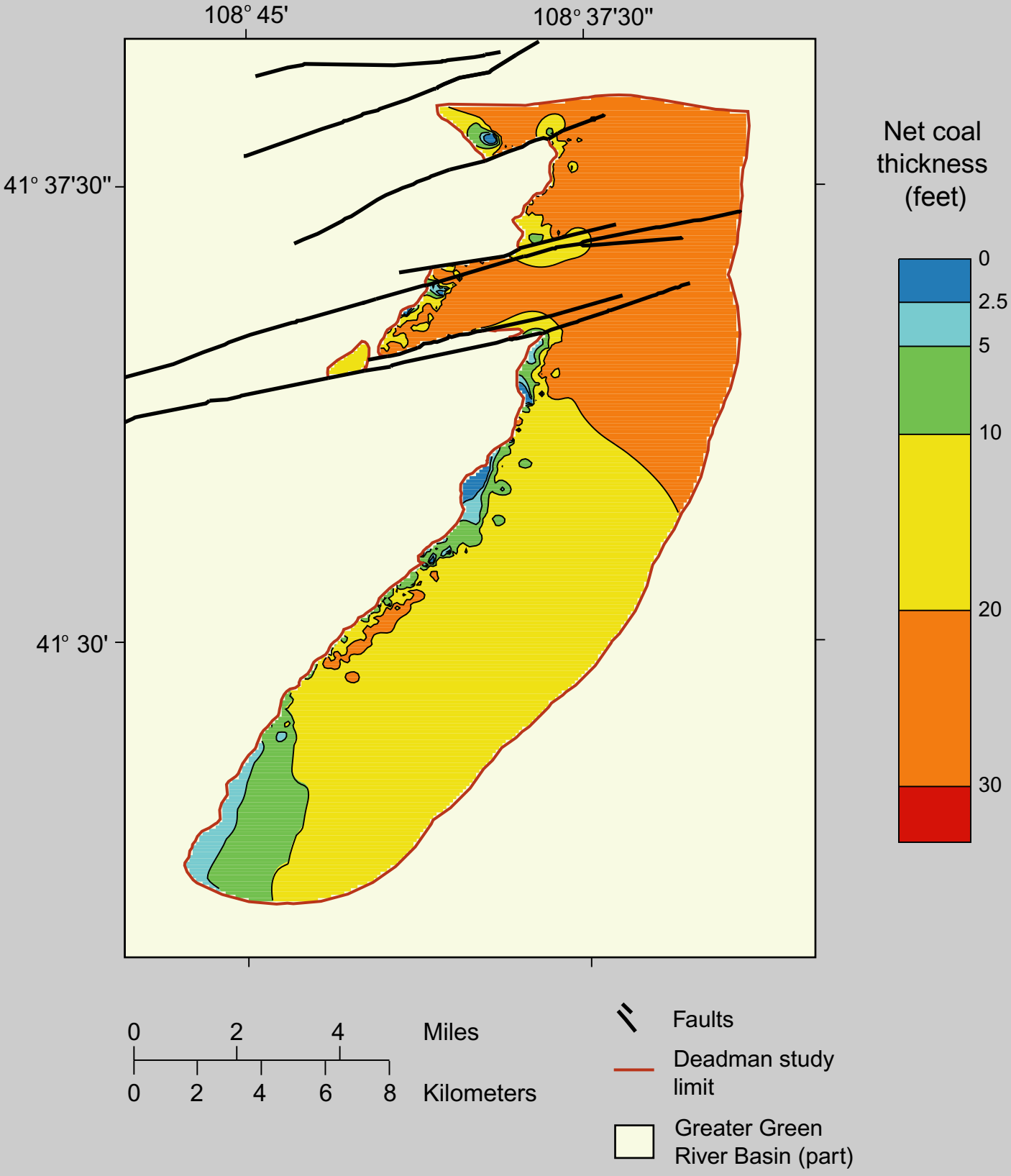
Greater Green River, Hanna, and Carbon Basins

- Deadman
- Ferris
- Hanna
- Johnson-107

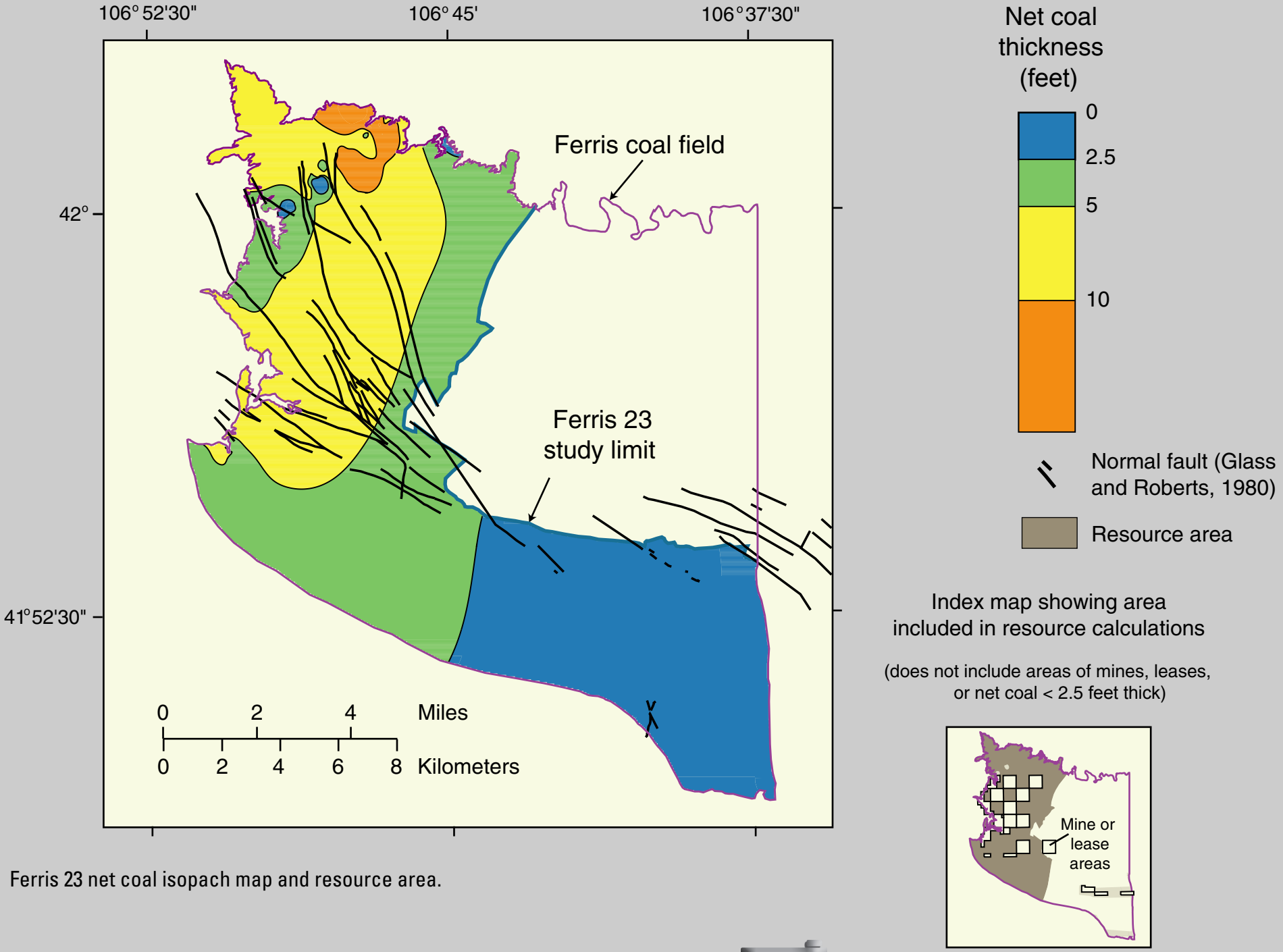
strat column | coal quality | coal tonnage



Wyodak-Anderson net coal isopach map.

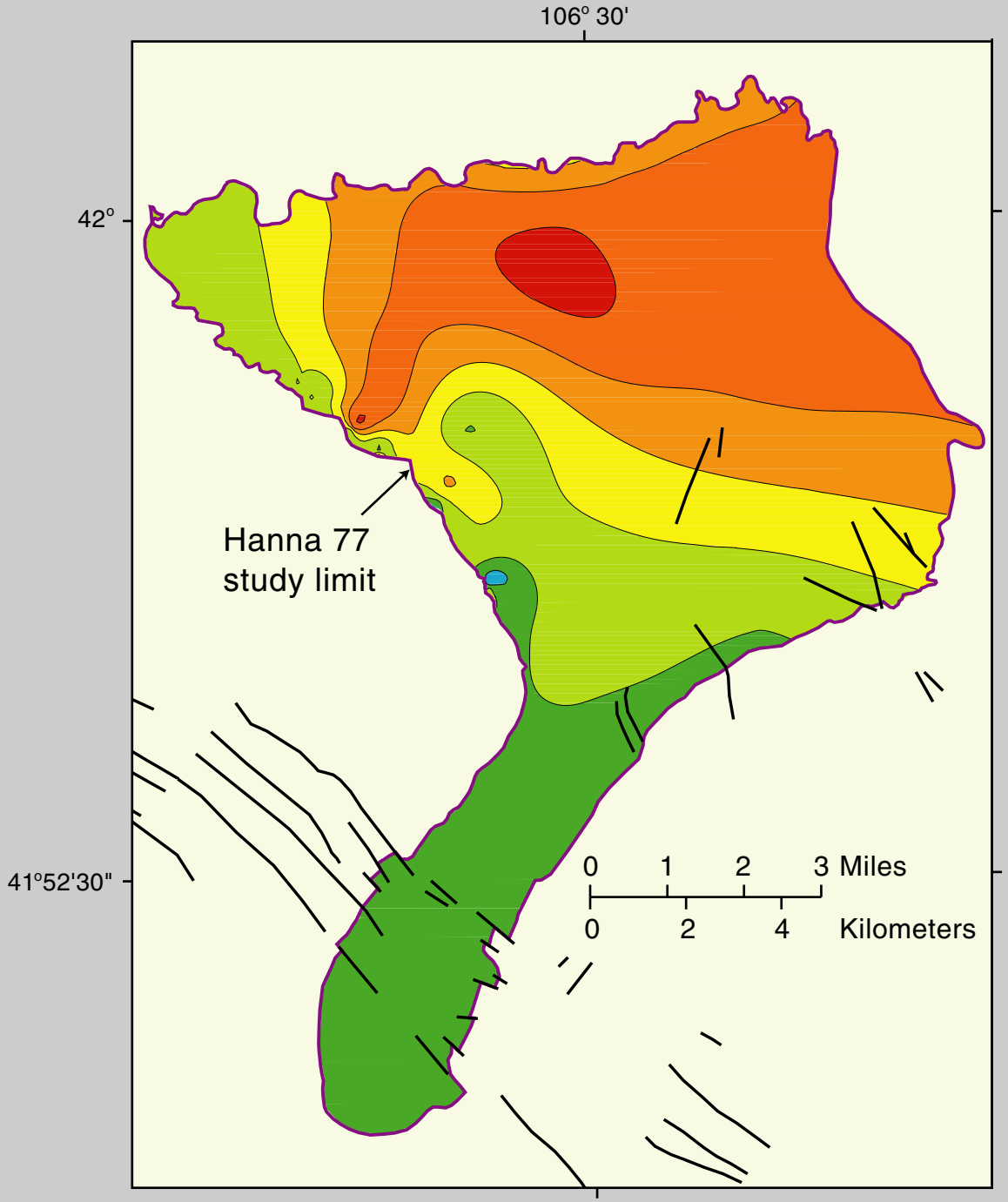


Deadman net coal isopach map in the Black Butte area of the Point of Rocks Black Butte coal field.



Ferris 23 net coal isopach map and resource area.

regional map | strat column | view tonnage



Hanna 77 net coal isopach map and resource area.

Net coal thickness (feet)

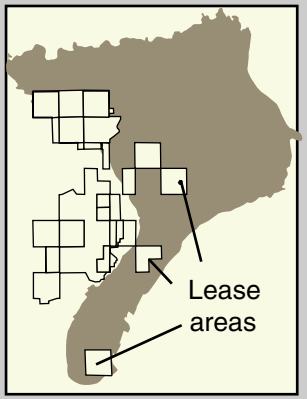
2.5
5
10
20
30
40
50

Normal fault (Glass and Roberts, 1980)

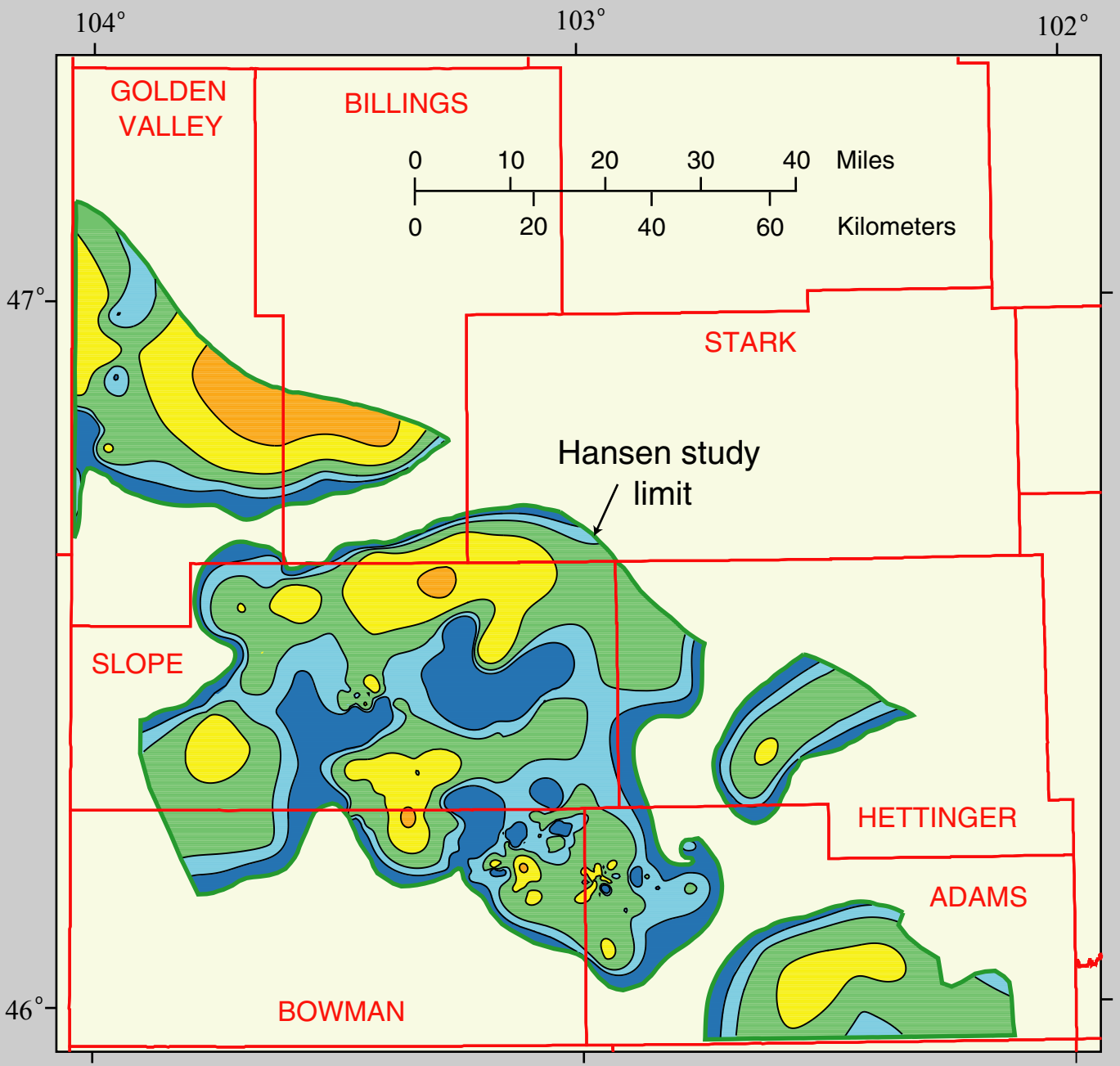
Resource area

Index map showing area included in resource calculations

(does not include lease areas or net coal < 2.5 feet thick)



regional map
strat column
view tonnage



Hansen net coal isopach map and resource area.

Net coal thickness (feet)

0
2.5
5
10
20

County line

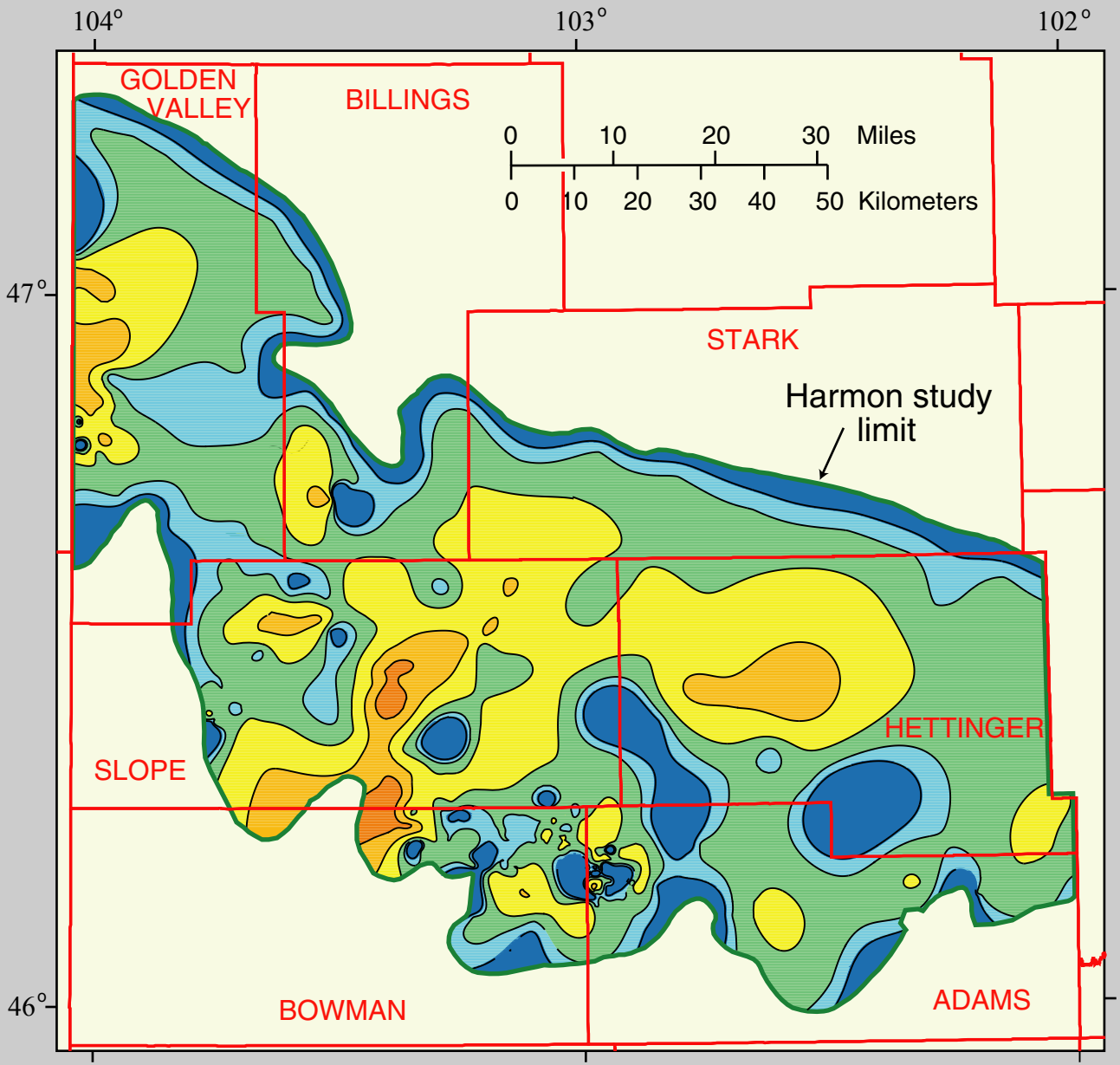
Resource area

Williston Basin (part)

Index map showing area included in resource calculations

(does not include areas of mines or net coal < 2.5 feet thick)

regional map
strat column
view tonnage



Harmon net coal isopach map and resource area.

Net coal thickness (feet)

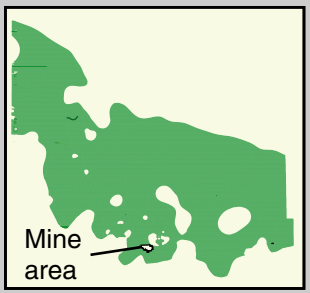
0
2.5
5
10
20
30

County line

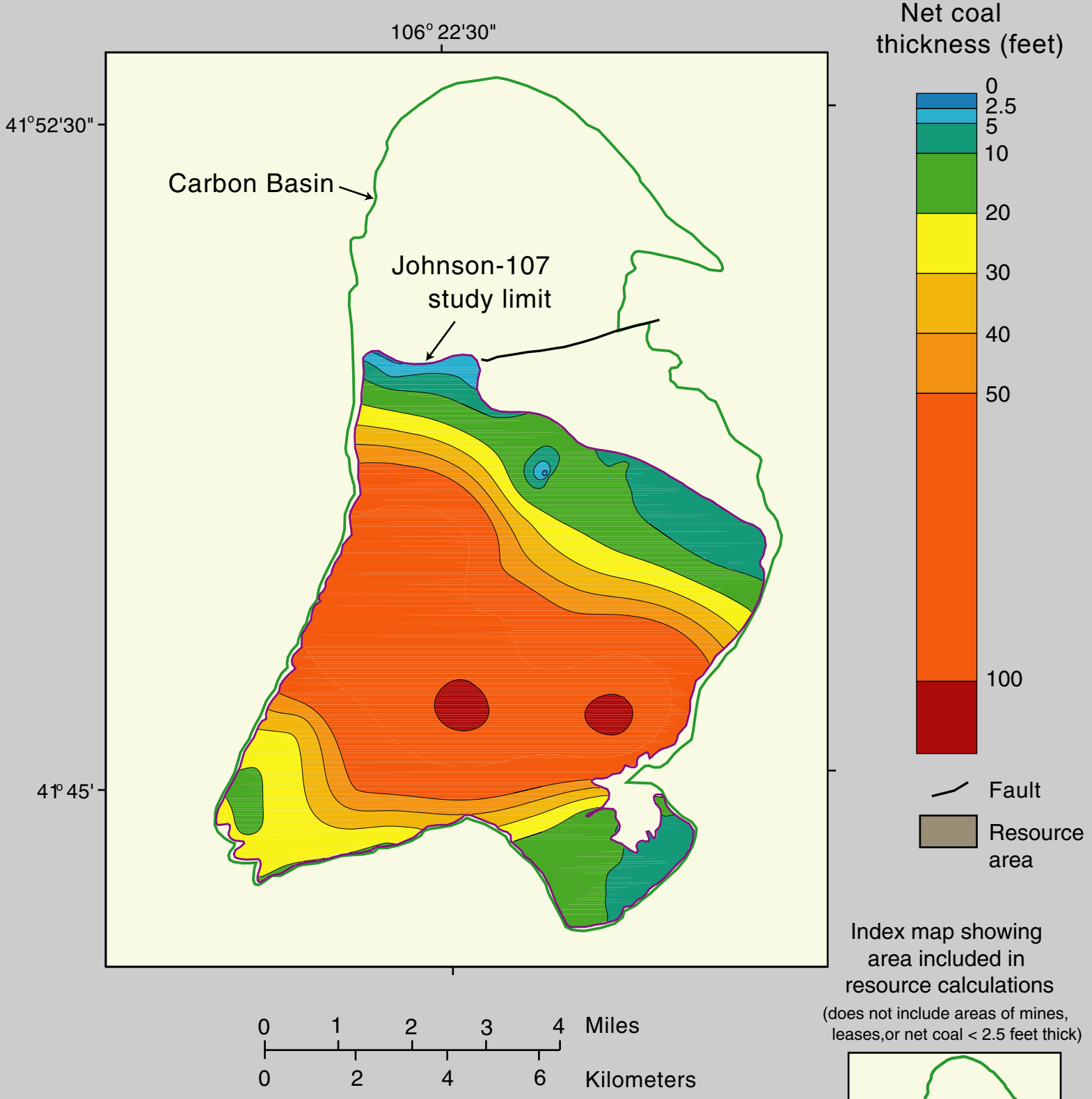
Resource area

Williston Basin (part)

Index map showing area included in resource calculations (does not include areas of mines or net coal < 2.5 feet thick)



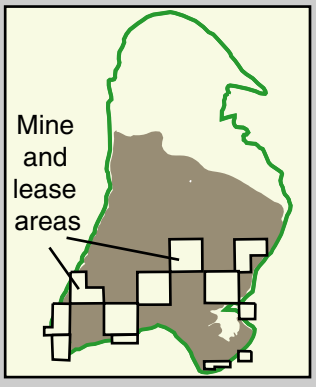
regional map
strat column
view tonnage



Johnson-107 net coal isopach map and resource area.

Index map showing area included in resource calculations

(does not include areas of mines, leases,or net coal < 2.5 feet thick)



regional map
strat column
view tonnage

Rosebud County
Custer County
Powder River County
Big Horn County
106°30'
106°00'
45°45'
45°30'
45°15'
T.1N.
T.1S.
T.2S.
T.3S.
T.4S.
T.5S.
T.6S.
T.7S.
R.42E.
R.44E.
R.46E.
R.48E.
Brandenberg
Stacey
Ashland
Birney
Otter
Tongue River
Powder River
Custer National Forest (part)
Northern Cheyenne Indian Reservation (part)
Ashland coal field boundary
Main coal-bed split area
Split line B
?

Explanation

Net coal thickness (in feet)

- 2.5-10
- 10-20
- 20-30
- 30-40
- 40-50
- 50-60
- 60-70
- > 70 (maximum = 71 feet)

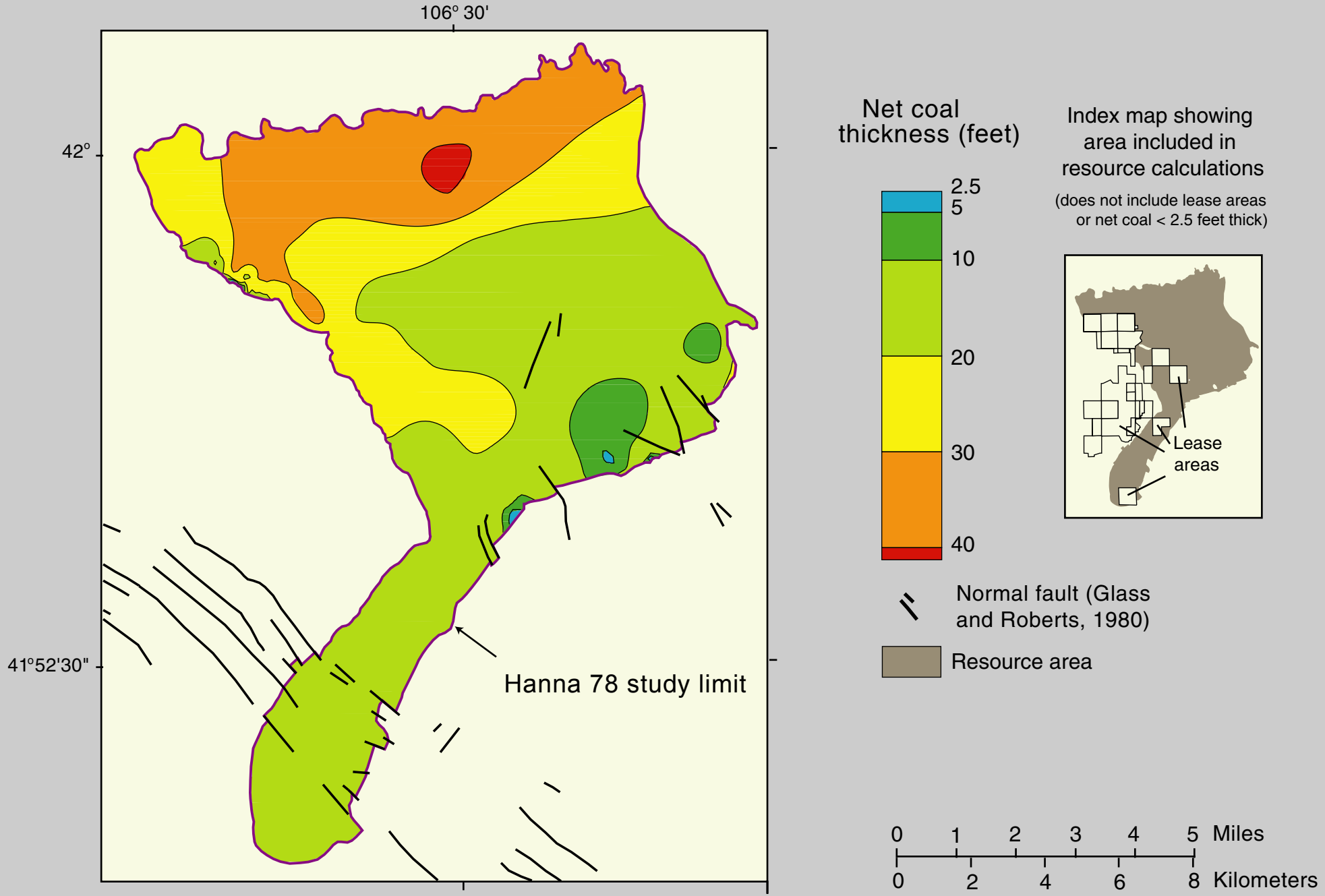
- Drill hole (public data)
- County line
- Custer National Forest (part)
- Northern Cheyenne Indian Reservation (part)
- Main coal-bed split area
- Split line B

0 5 10 Miles

Montana
Study area
North

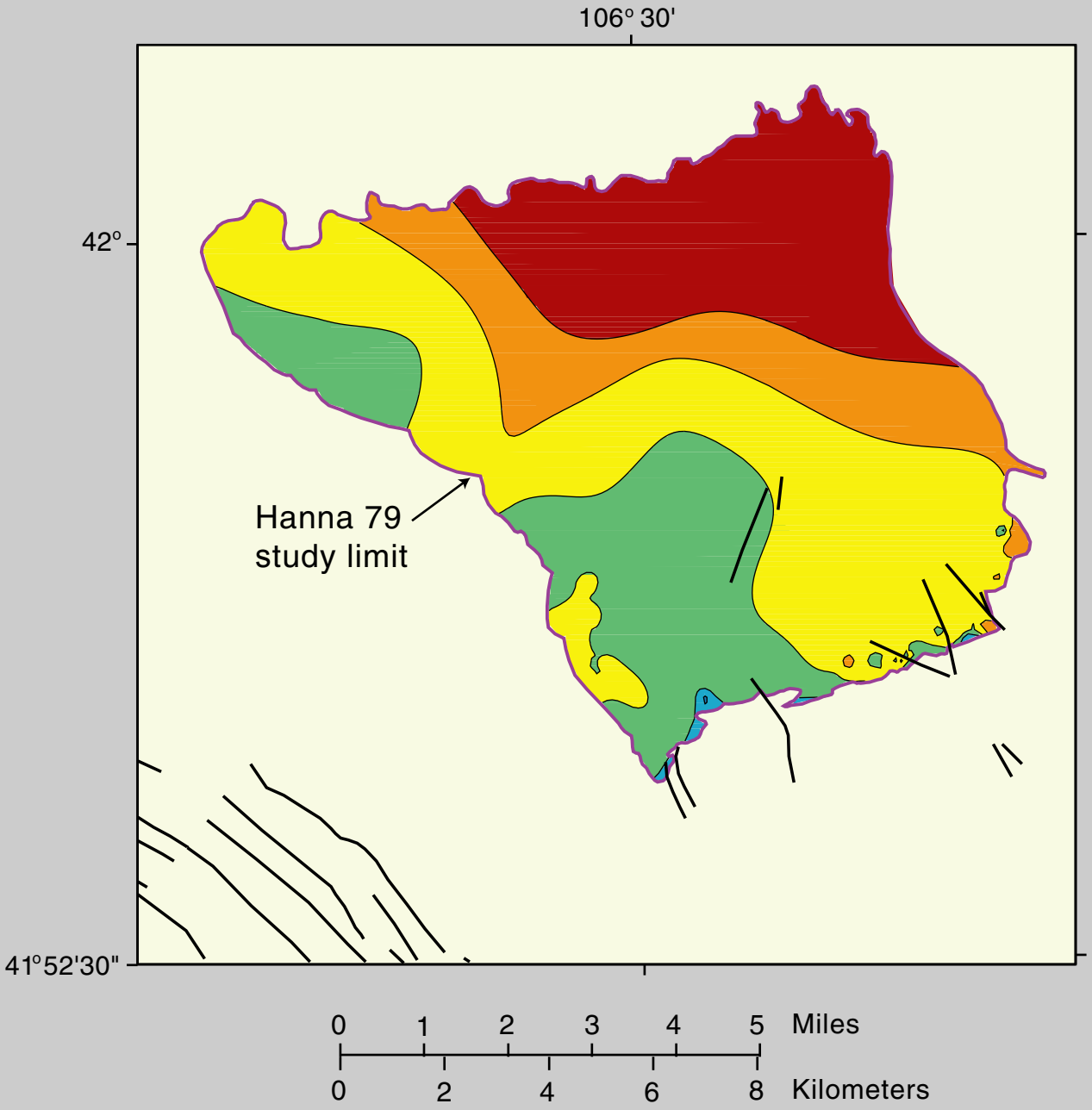
Net coal thickness (isopach) map of the Knobloch coal resource unit, Ashland coafield, southeast Montana.

view tonnage | regional map | strat column



Hanna 78 net coal isopach map and resource area.

regional map
strat column
view tonnage



Net coal thickness (feet)

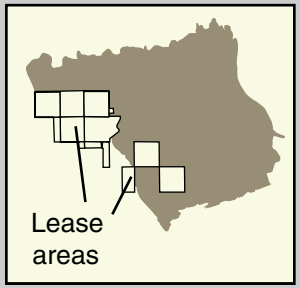
0
2.5
5
10
20
30

Normal fault (Glass and Roberts, 1980)

Resource area

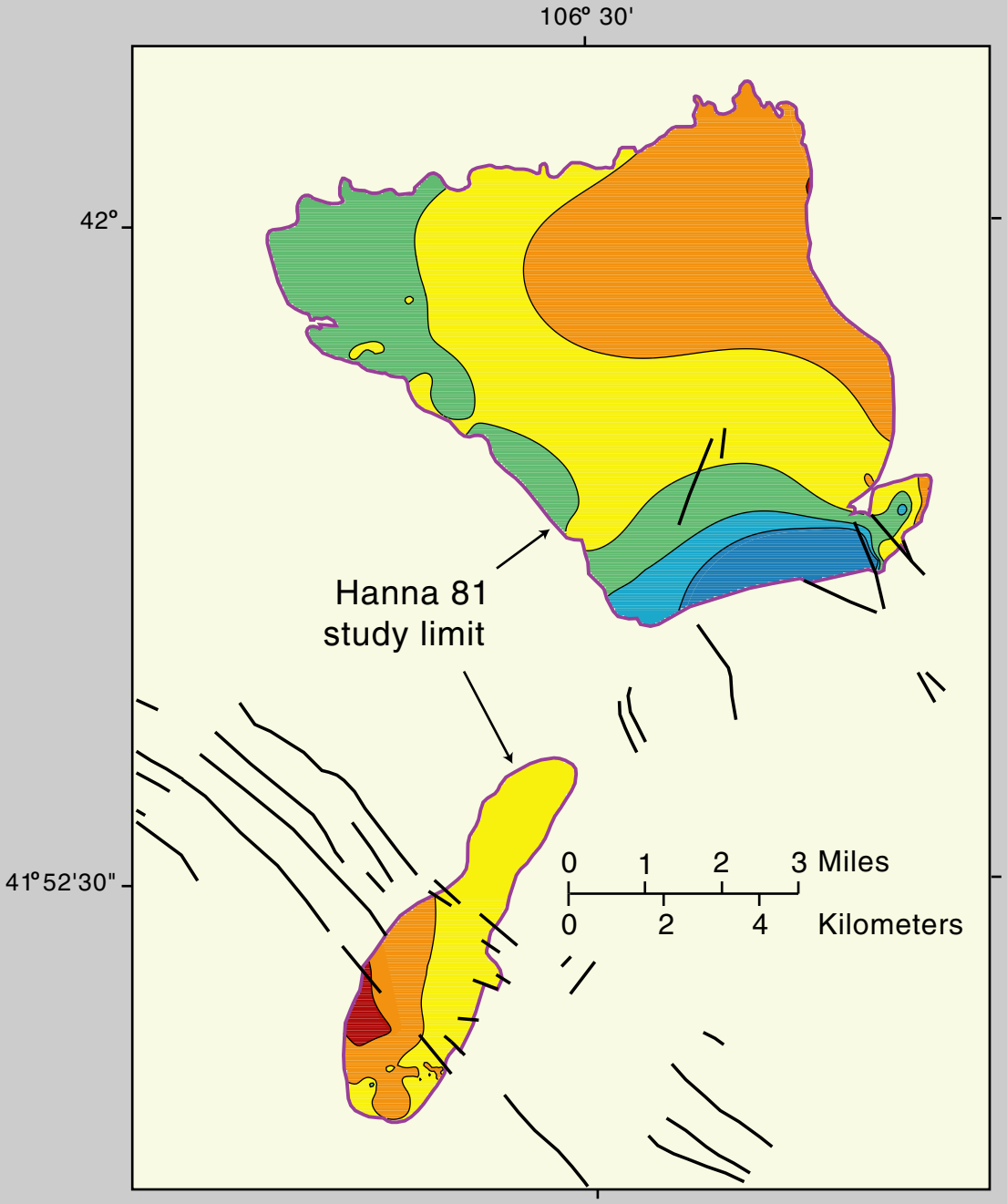
Index map showing area included in resource calculations

(does not include lease areas or net coal < 2.5 feet thick)



Hanna 79 net coal isopach map and resource area.

regional map
strat column
view tonnage



Hanna 81 net coal isopach map and resource area.

Net coal thickness (feet)

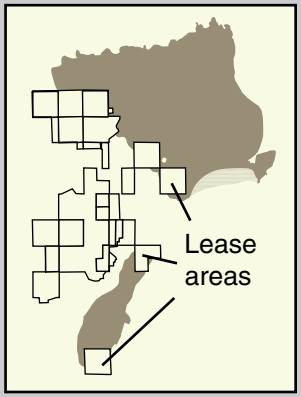
0
2.5
5
10
20
30

Normal fault (Glass and Roberts, 1980)

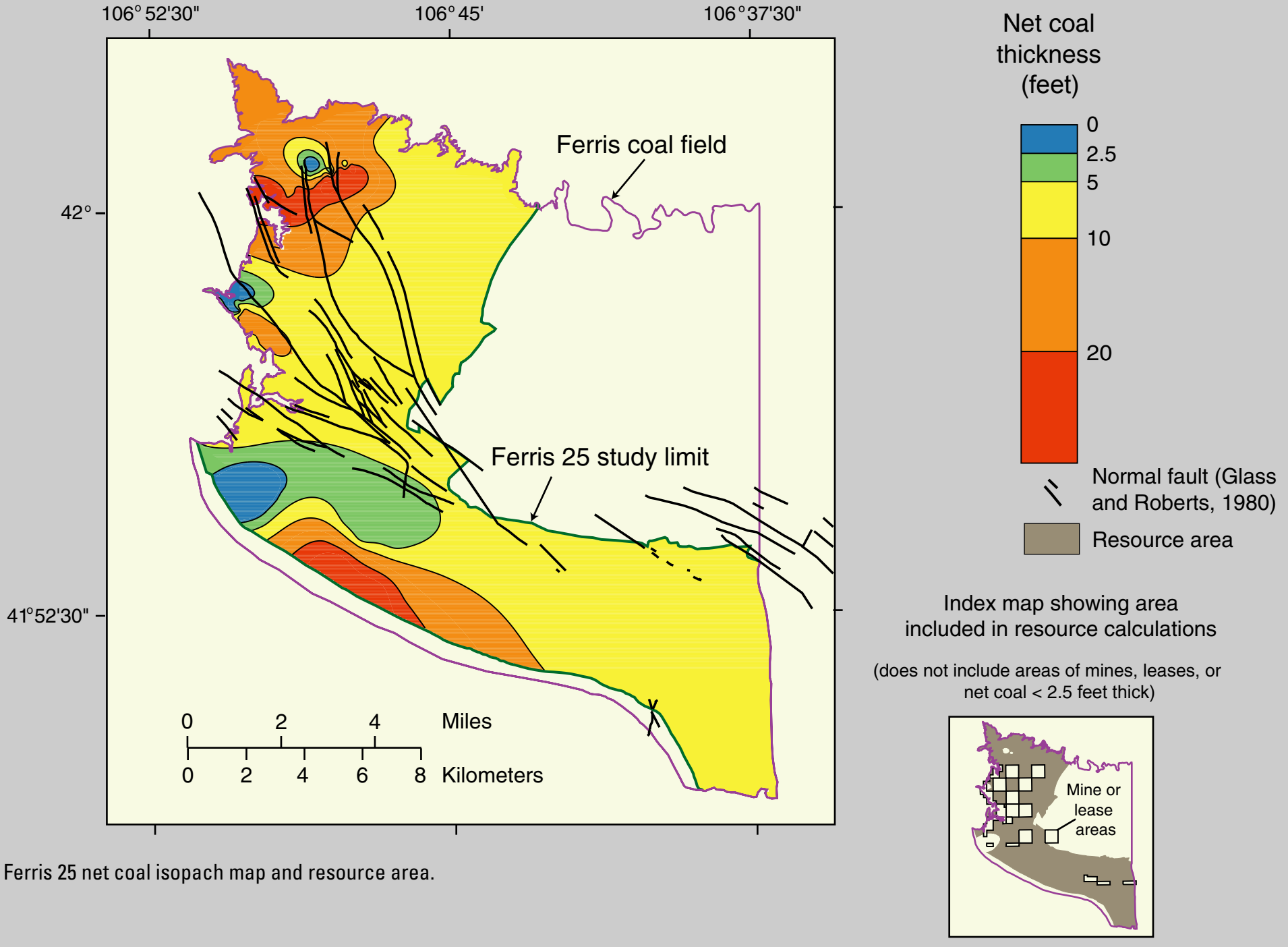
Resource area

Index map showing area included in resource calculations

(does not include lease areas or net coal < 2.5 feet thick)

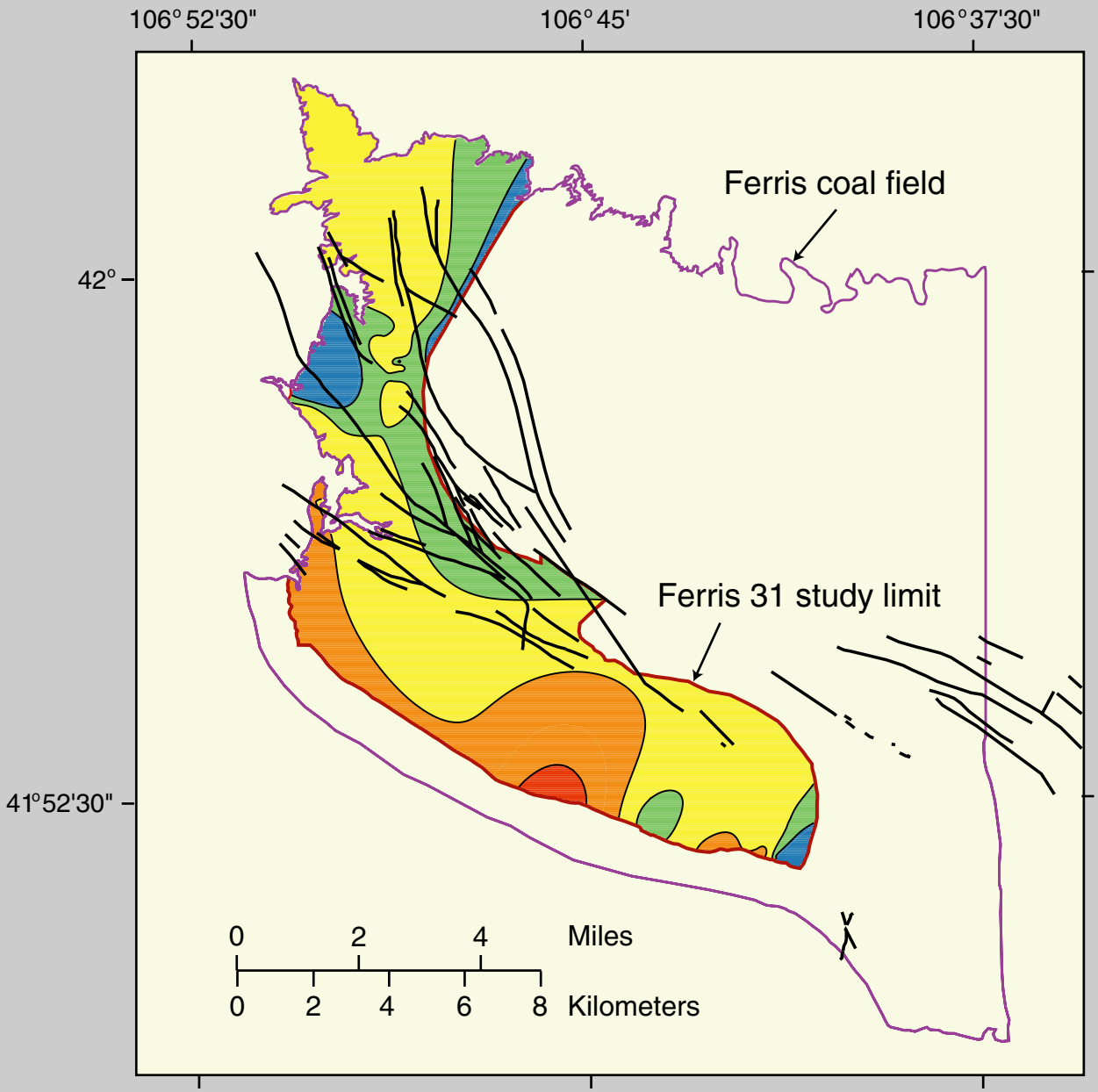


regional map
strat column
view tonnage



Ferris 25 net coal isopach map and resource area.

regional map
strat column
view tonnage



Ferris 31 net coal isopach map and resource area.

Net coal thickness (feet)

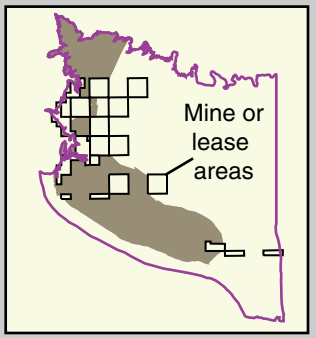
0
2.5
5
10
20

Normal fault (Glass and Roberts, 1980)

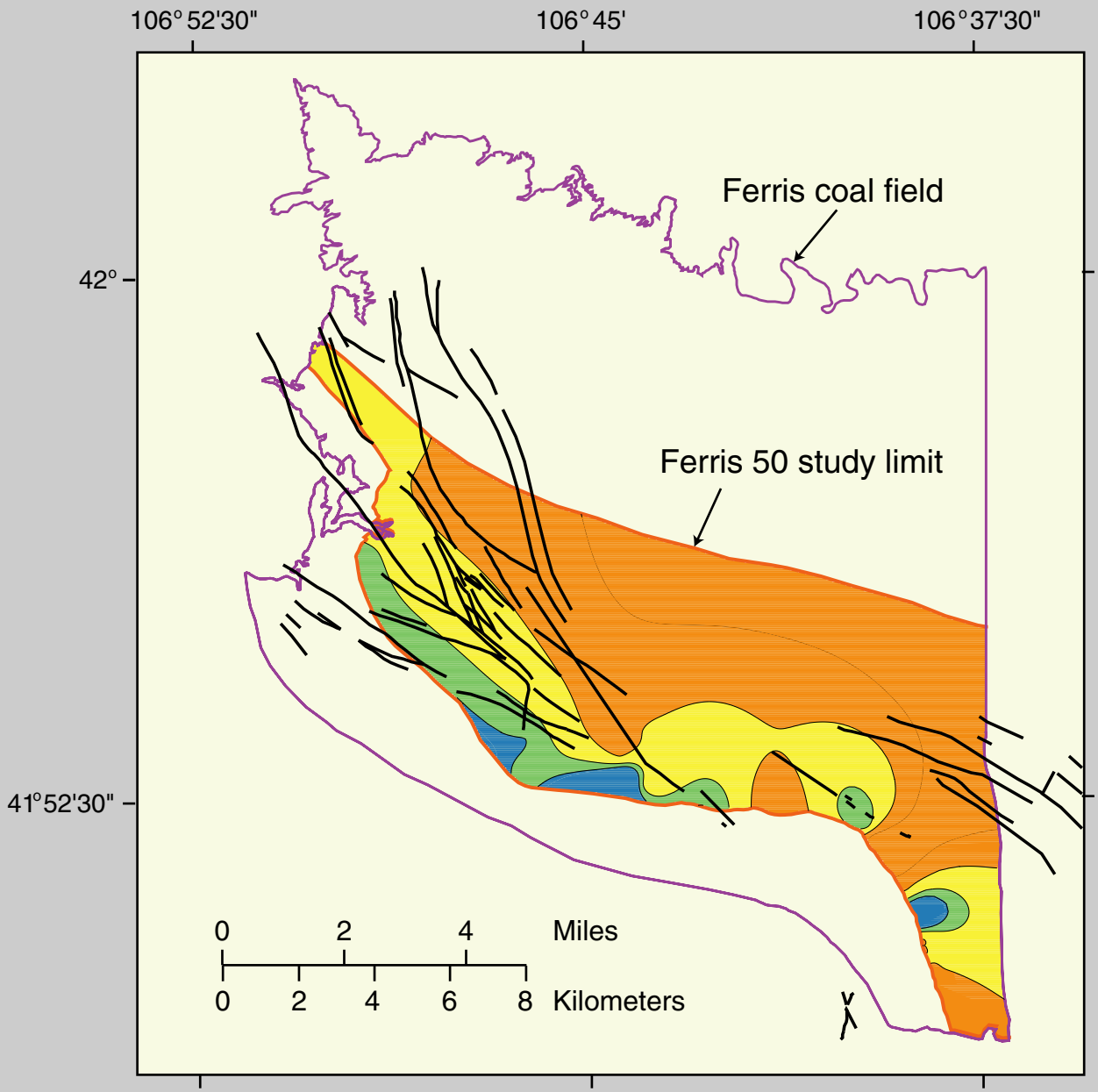
Resource area

Index map showing area included in resource calculations

(does not include areas of mines, leases, or net coal < 2.5 feet thick)



regional map
strat column
view tonnage



Ferris 50 net coal isopach map and resource area.

Net coal thickness (feet)

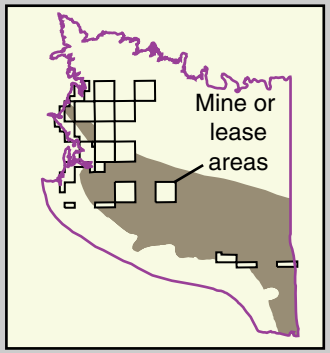
0
2.5
5
10

Normal fault (Glass and Roberts, 1980)

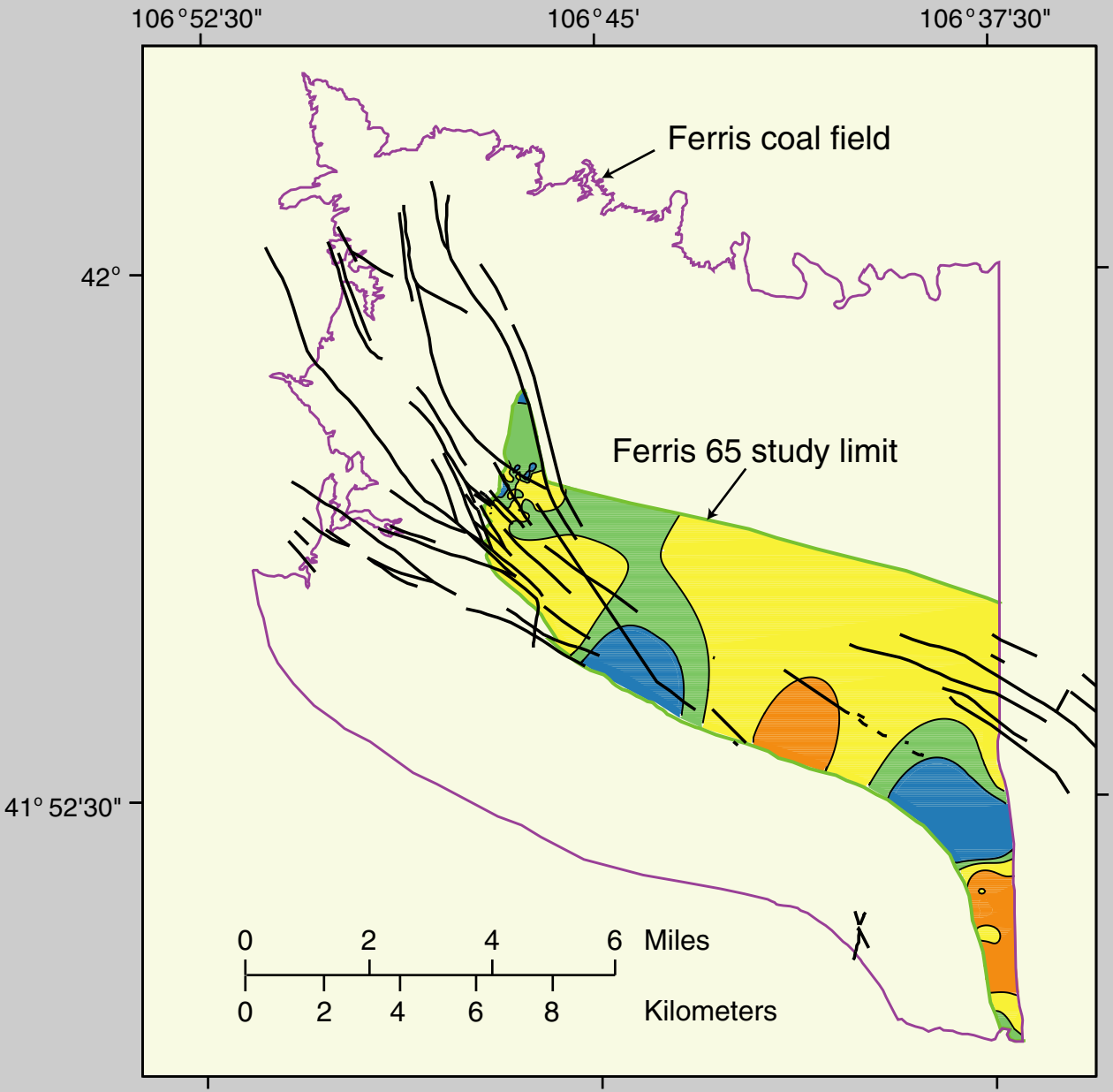
Resource area

Index map showing area included in resource calculations

(does not include areas of mines, leases, or net coal < 2.5 feet thick)



regional map
strat column
view tonnage



Net coal thickness (feet)

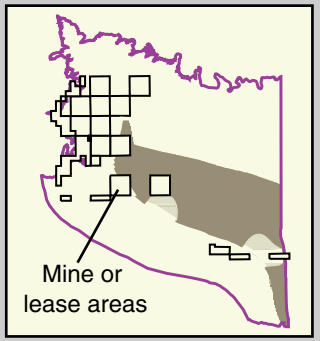
0
2.5
5
10

Normal fault (Glass and Roberts, 1980)

Resource area

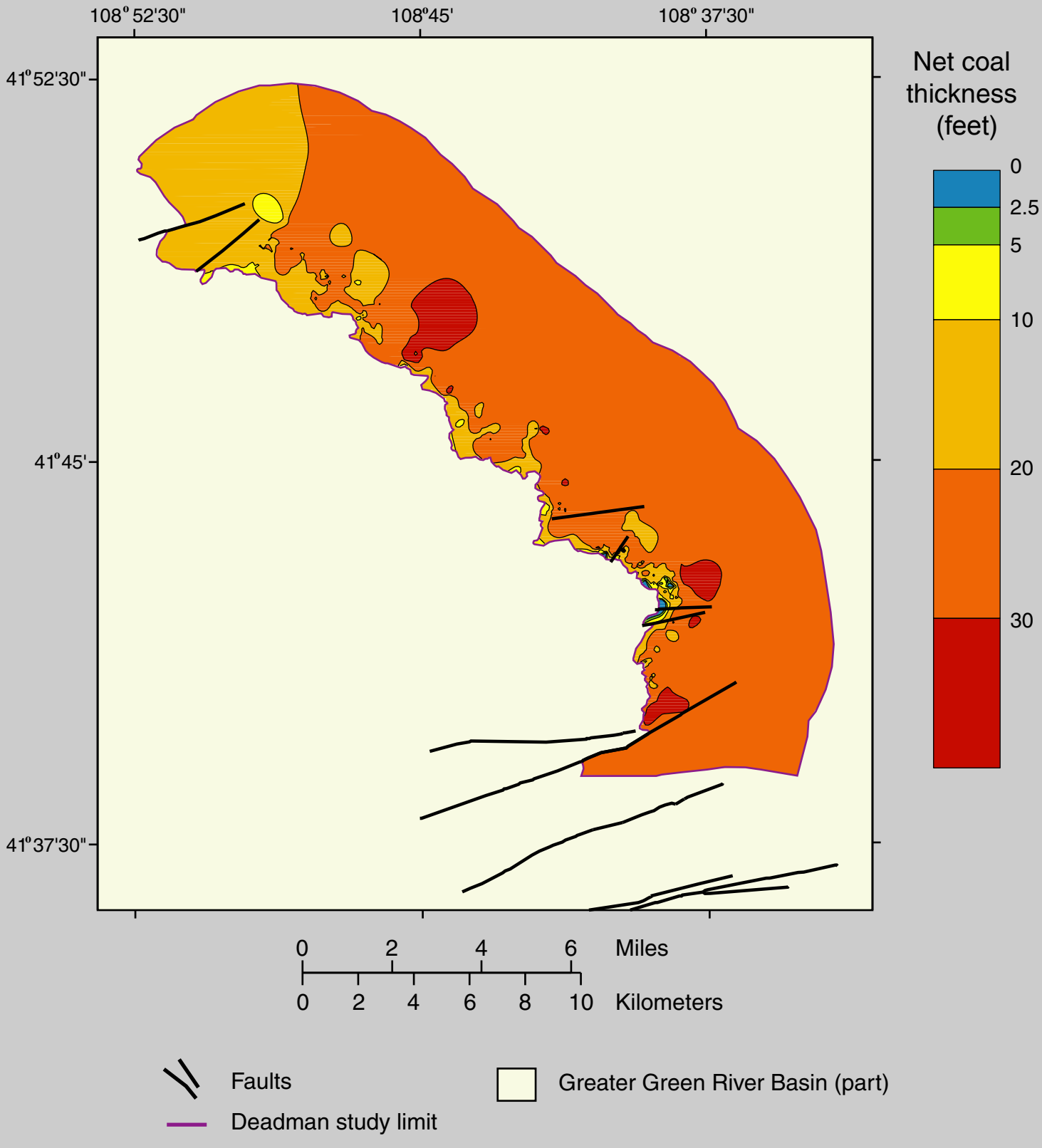
Index map showing area included in resource calculations

(does not include areas of mines, leases, or net coal < 2.5 feet thick)

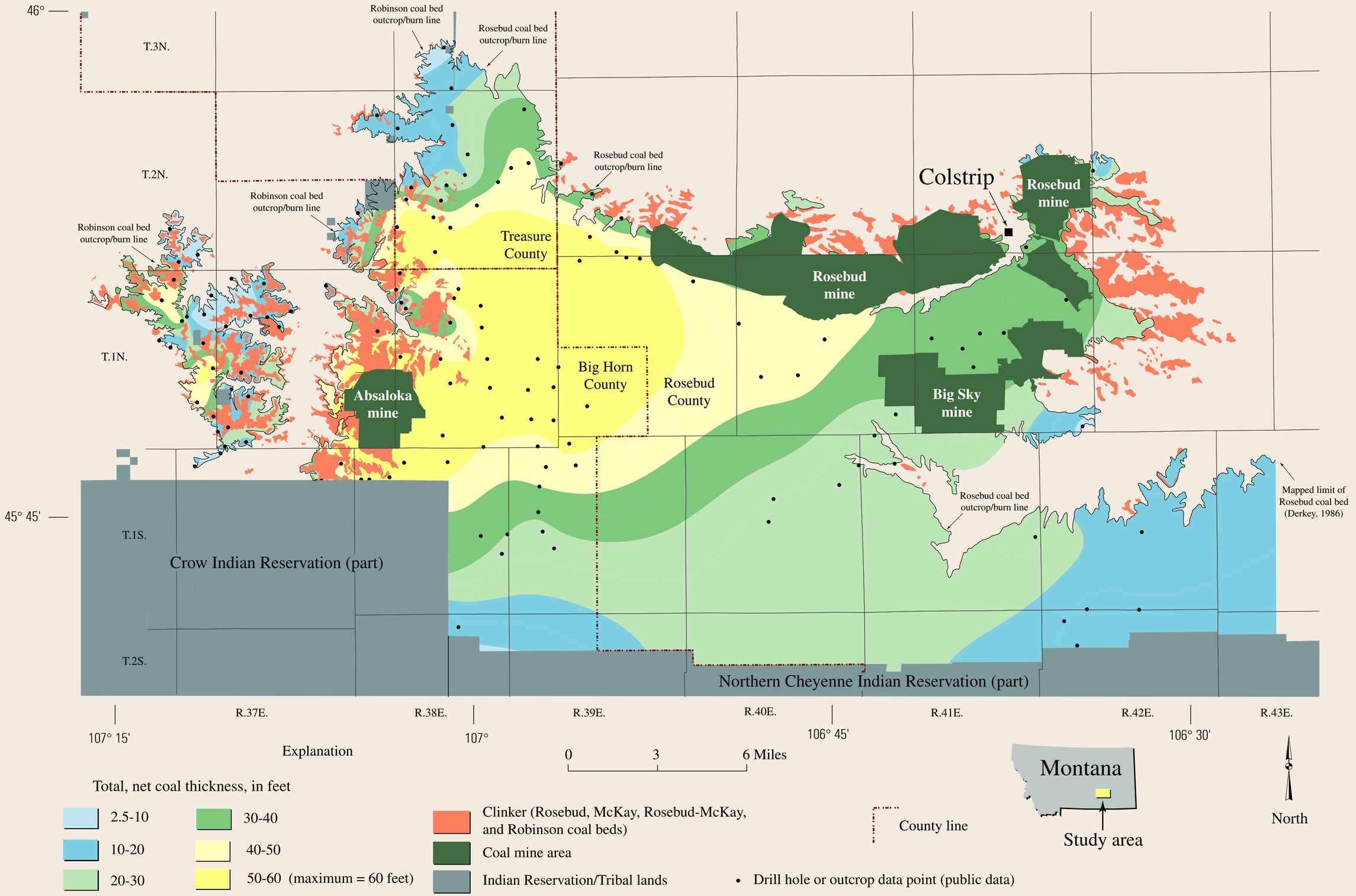


Ferris 65 net coal isopach map and resource area.

regional map
strat column
view tonnage

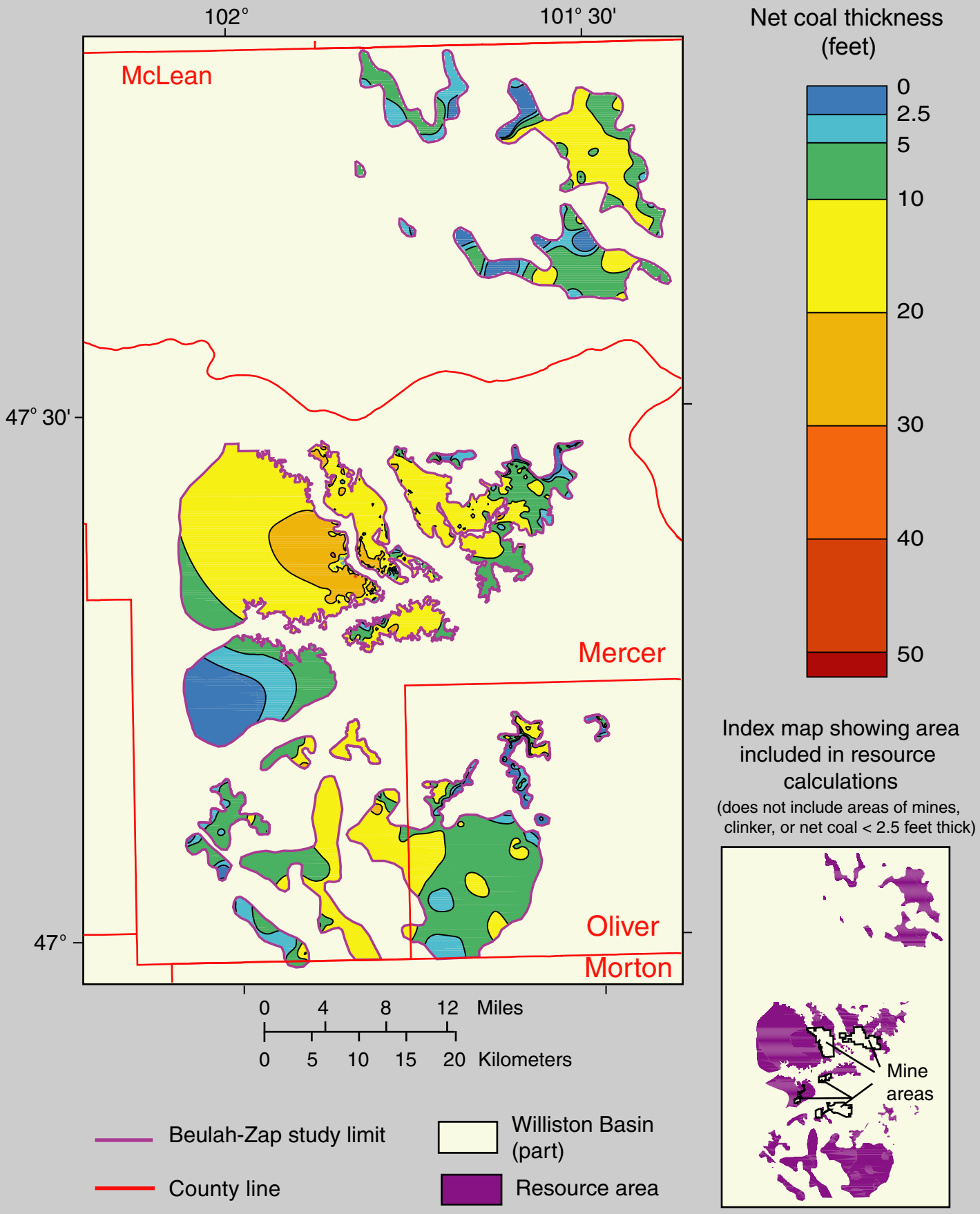


Deadman net coal isopach map in the Jim Bridger area of the Point of Rocks Black Butte coal field.



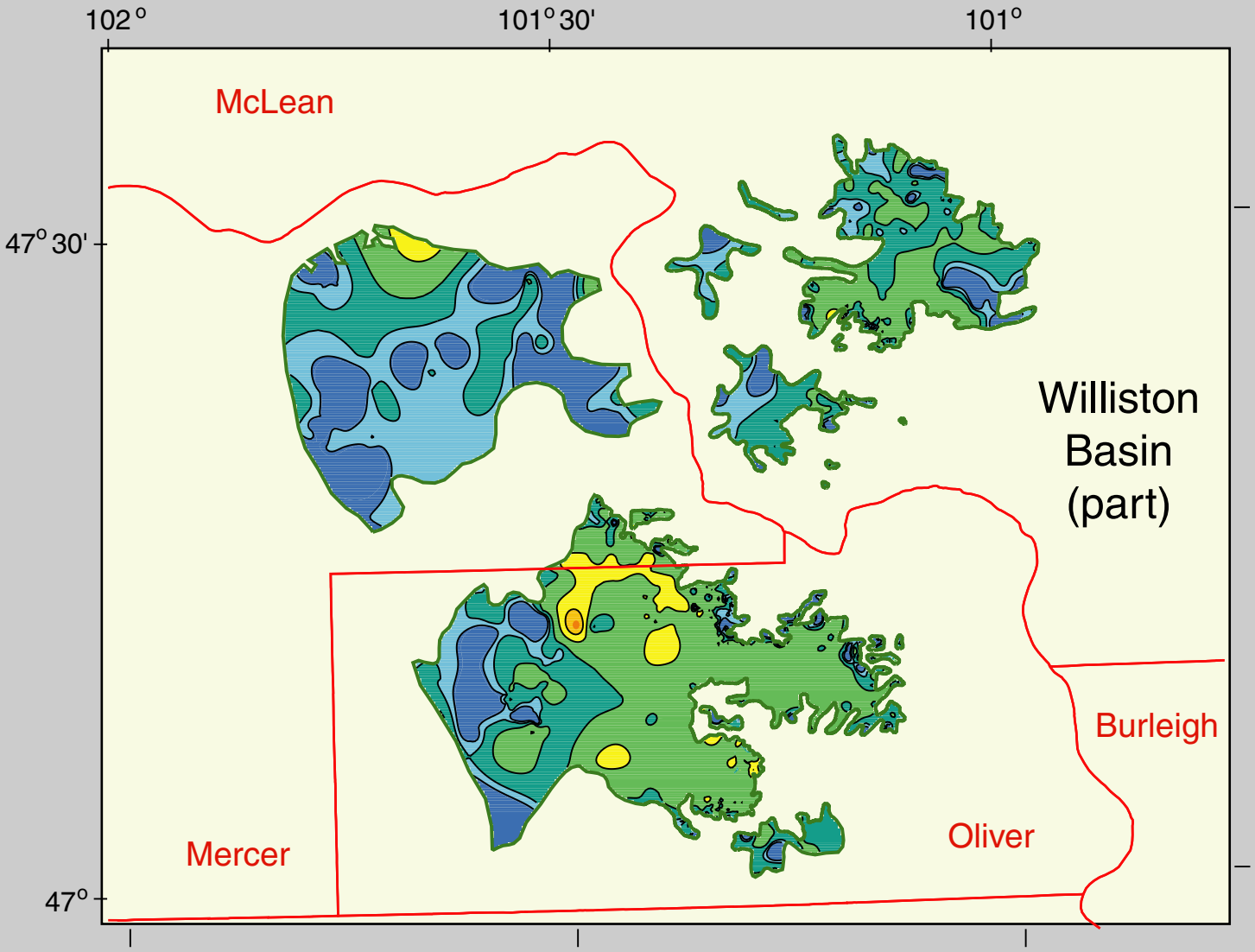
Total, net coal thickness (isopach) map of the Rosebud-Robinson coal zone, Colstrip coal field, south-central Montana.

view tonnage | regional map | strat column



Beulah-Zap net coal isopach map and resource area.

regional map
strat column
view tonnage

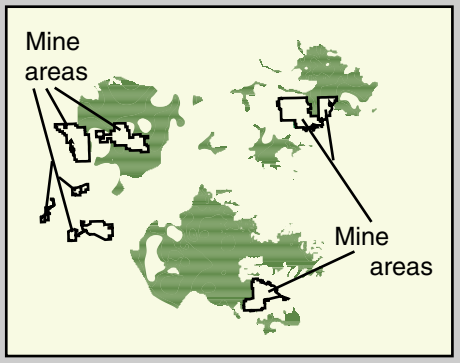


Net coal thickness (feet)

0
2.5
5
10
20
30
40

Index map showing area included in resource calculations

(does not include areas of mines or net coal < 2.5 feet thick)



0 5 10 15 20 Miles

0 10 20 30 Kilometers

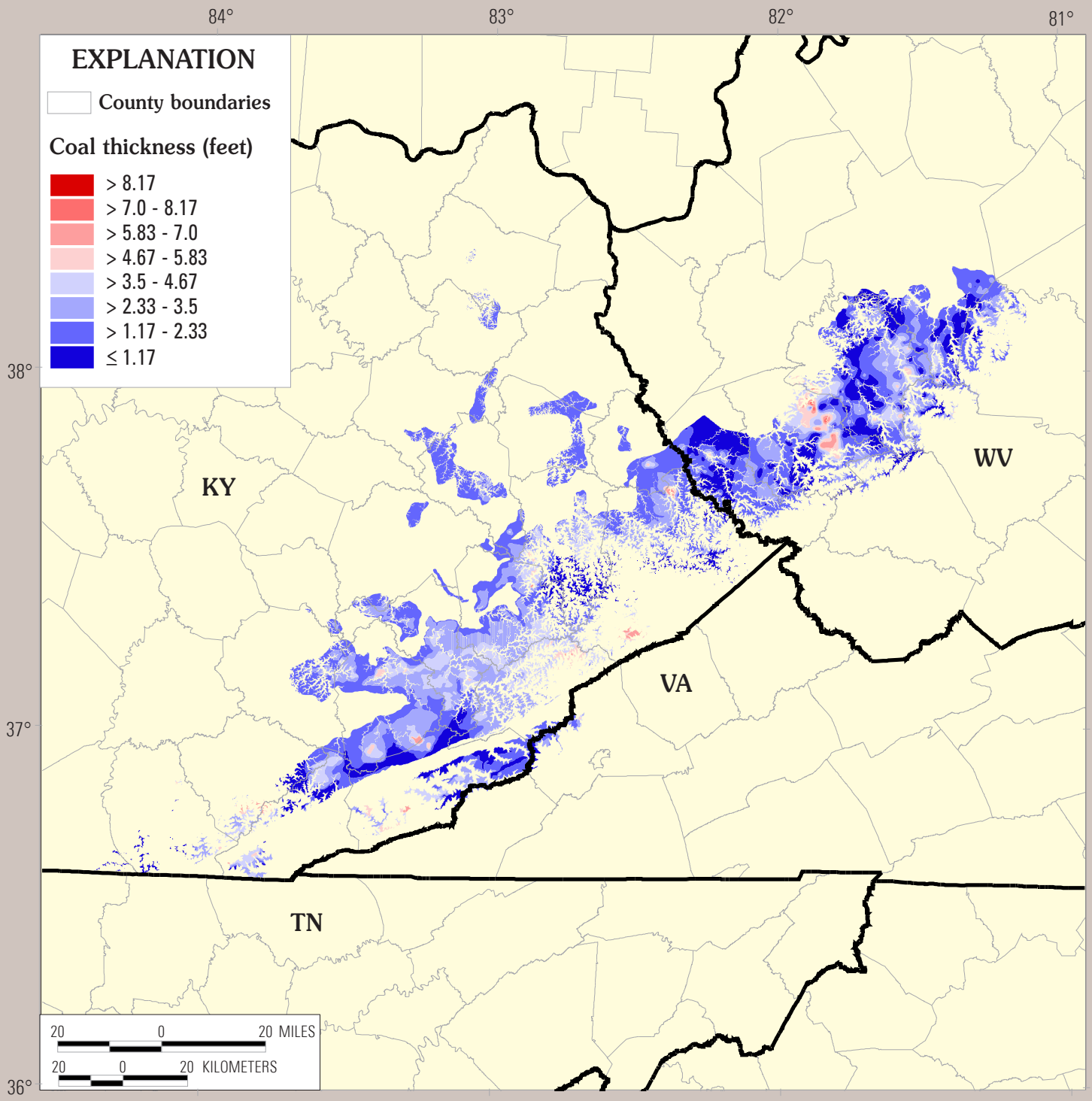
County line

Hagel study limit

Resource area

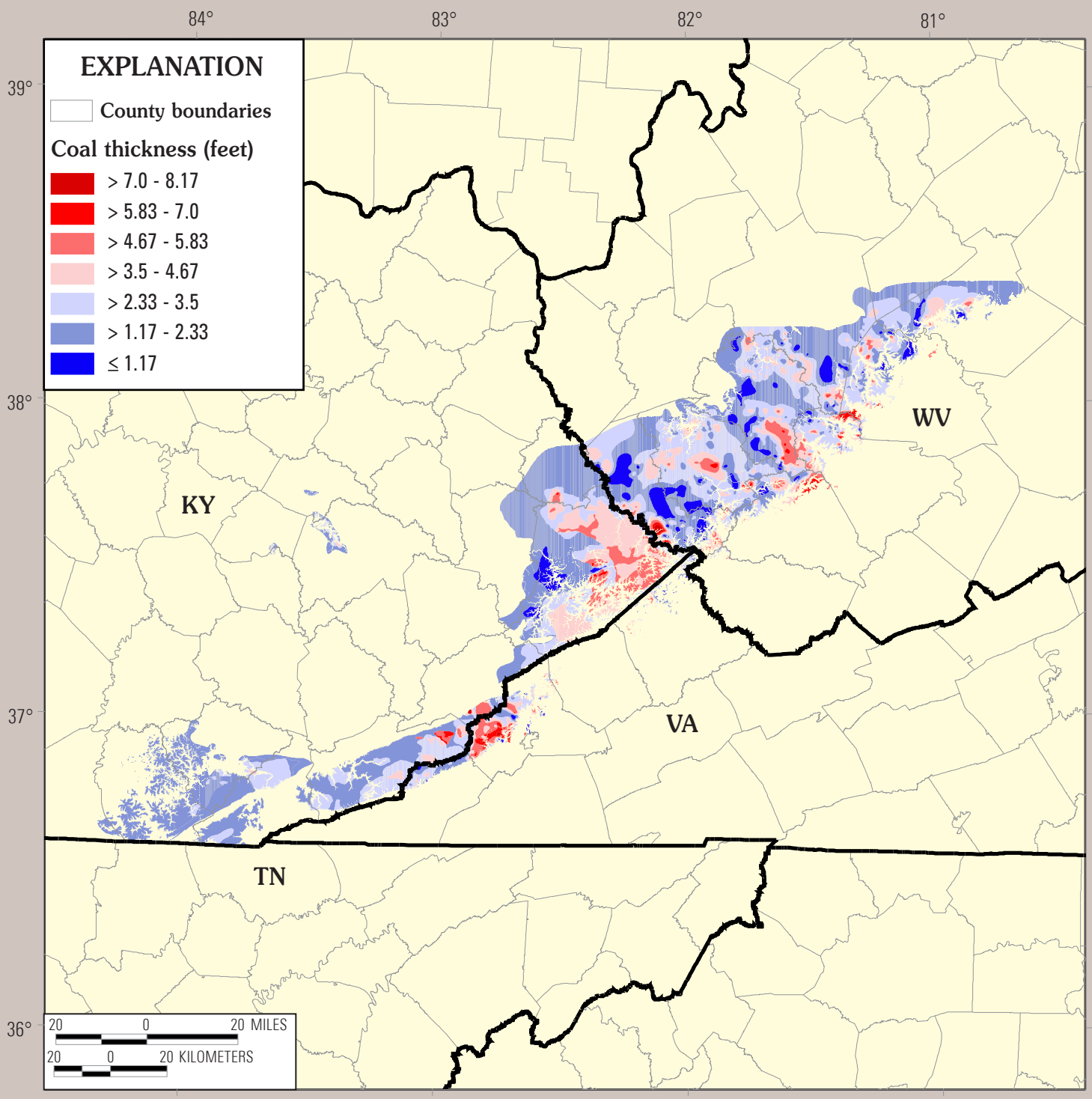
Hagel net coal isopach map and resource area.

regional map
strat column
view tonnage



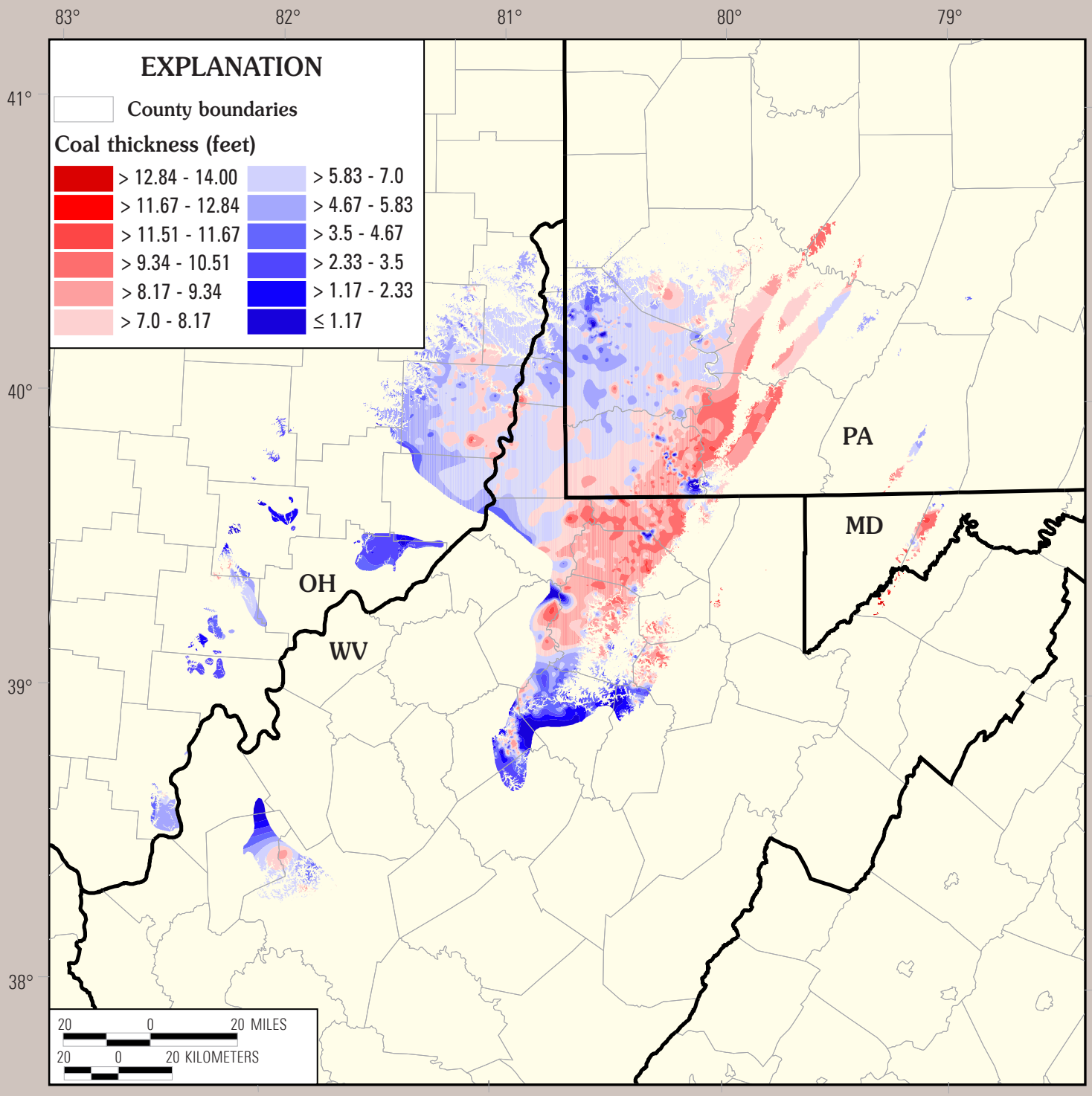
Net coal isopach map of the Fire Clay coal zone.

regional map
strat column
view tonnage



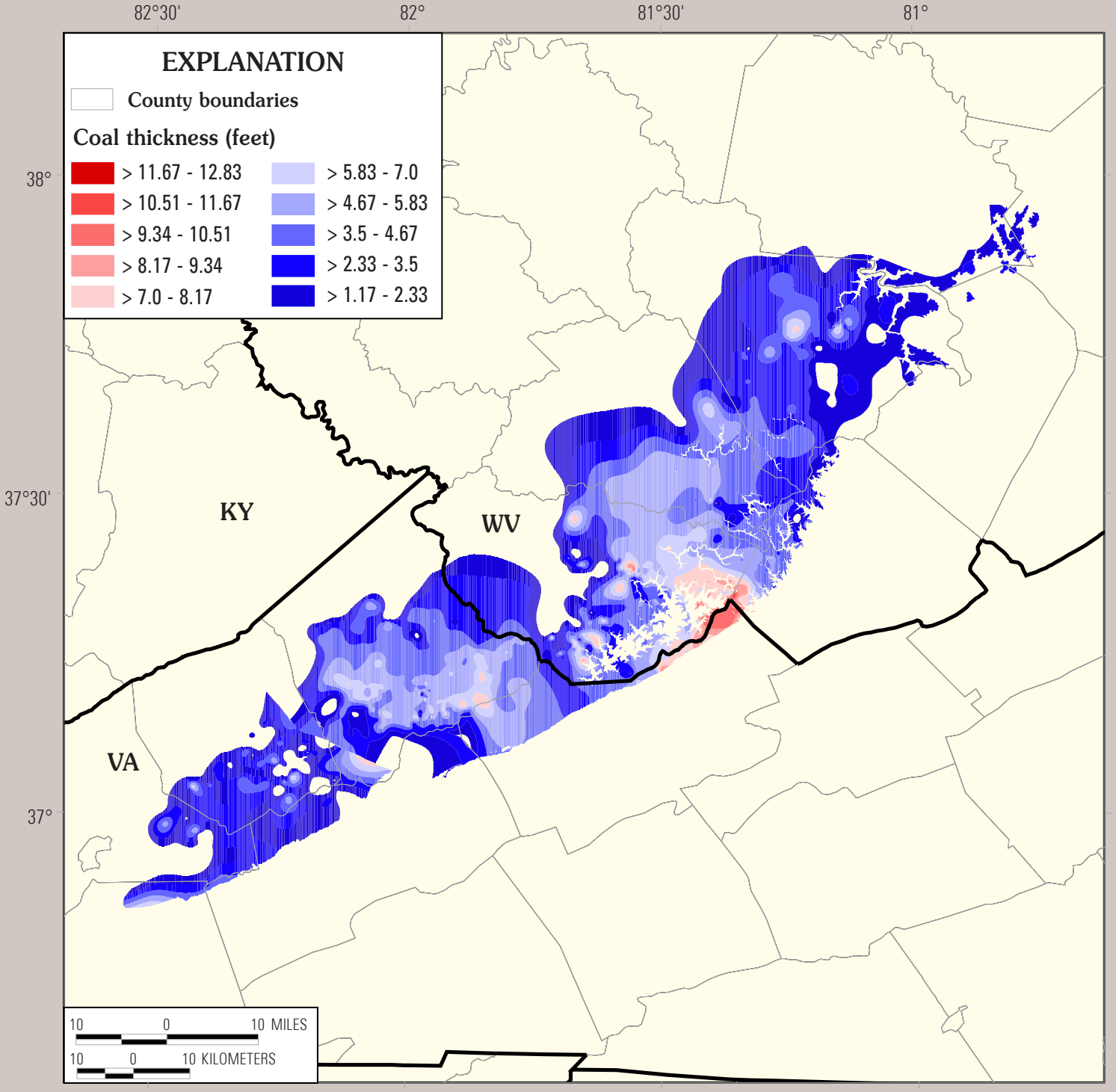
Net coal isopach map of the Pond Creek coal zone.

regional map
strat column
view tonnage



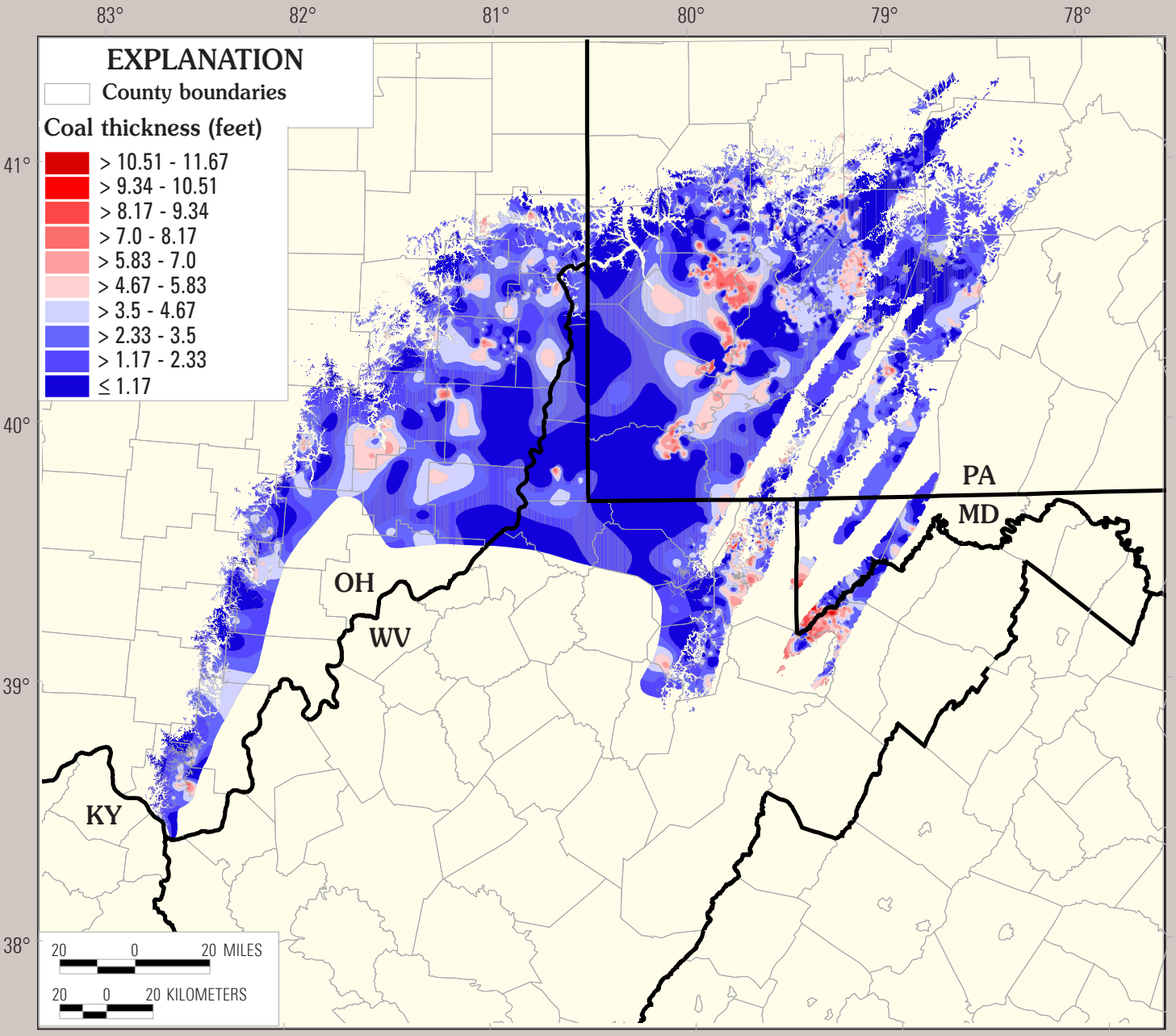
Coal isopach map of the Pittsburgh coal bed.

regional map
strat column
view tonnage



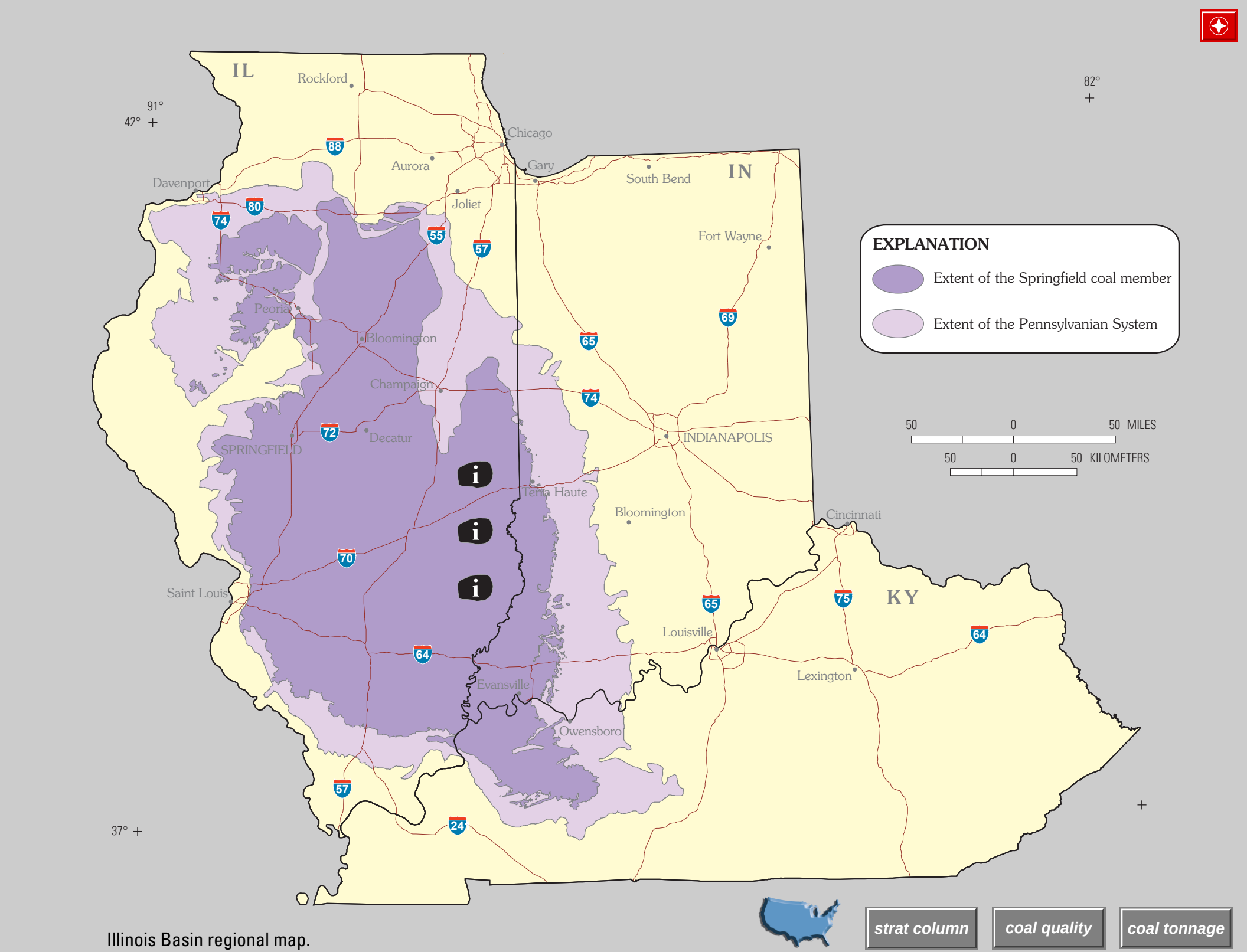
Coal isopach map of the Pocahontas No. 3 coal bed.

regional map
strat column
view tonnage

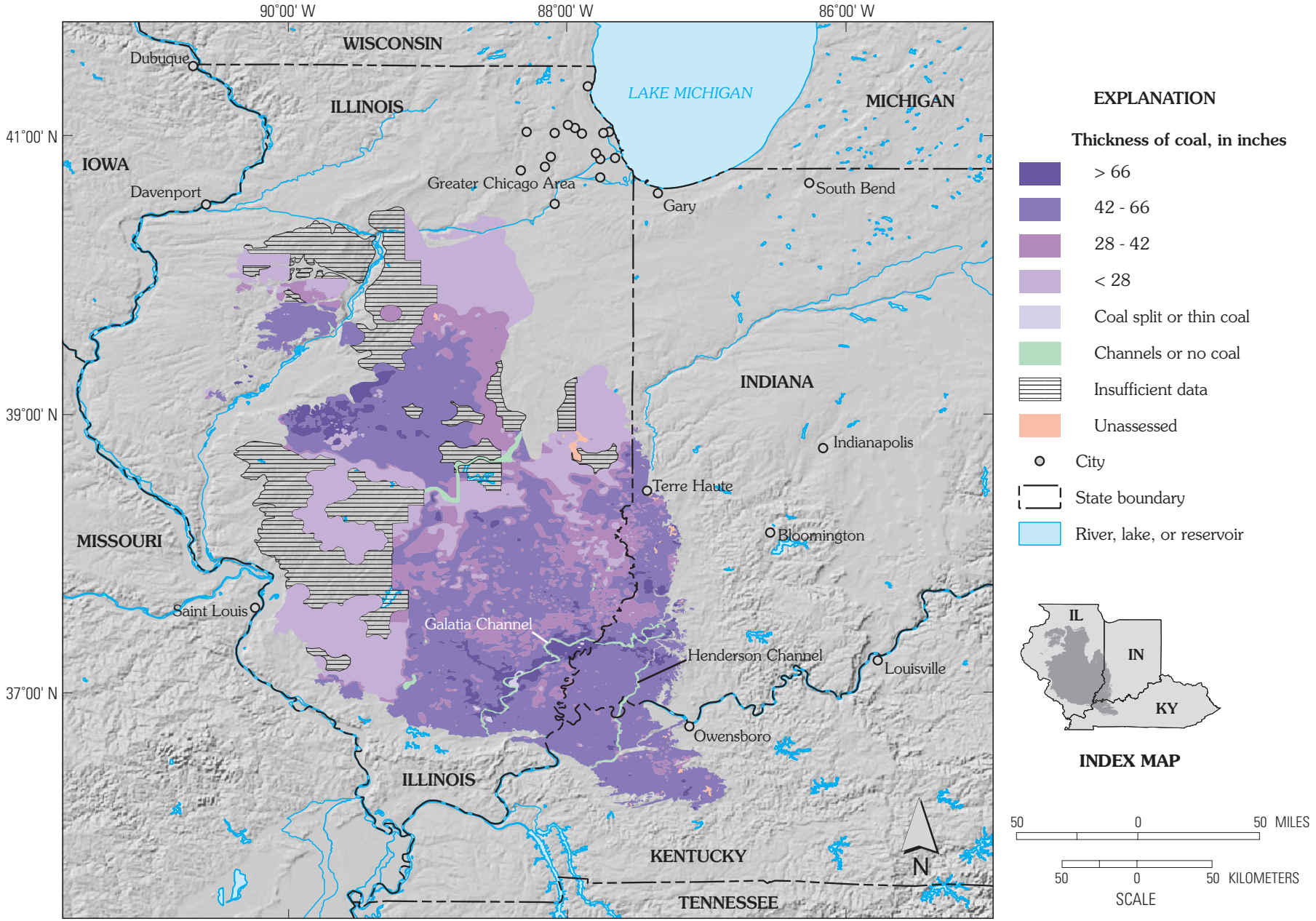


Coal isopach map of the Upper Freeport coal bed.

regional map | strat column | view tonnage

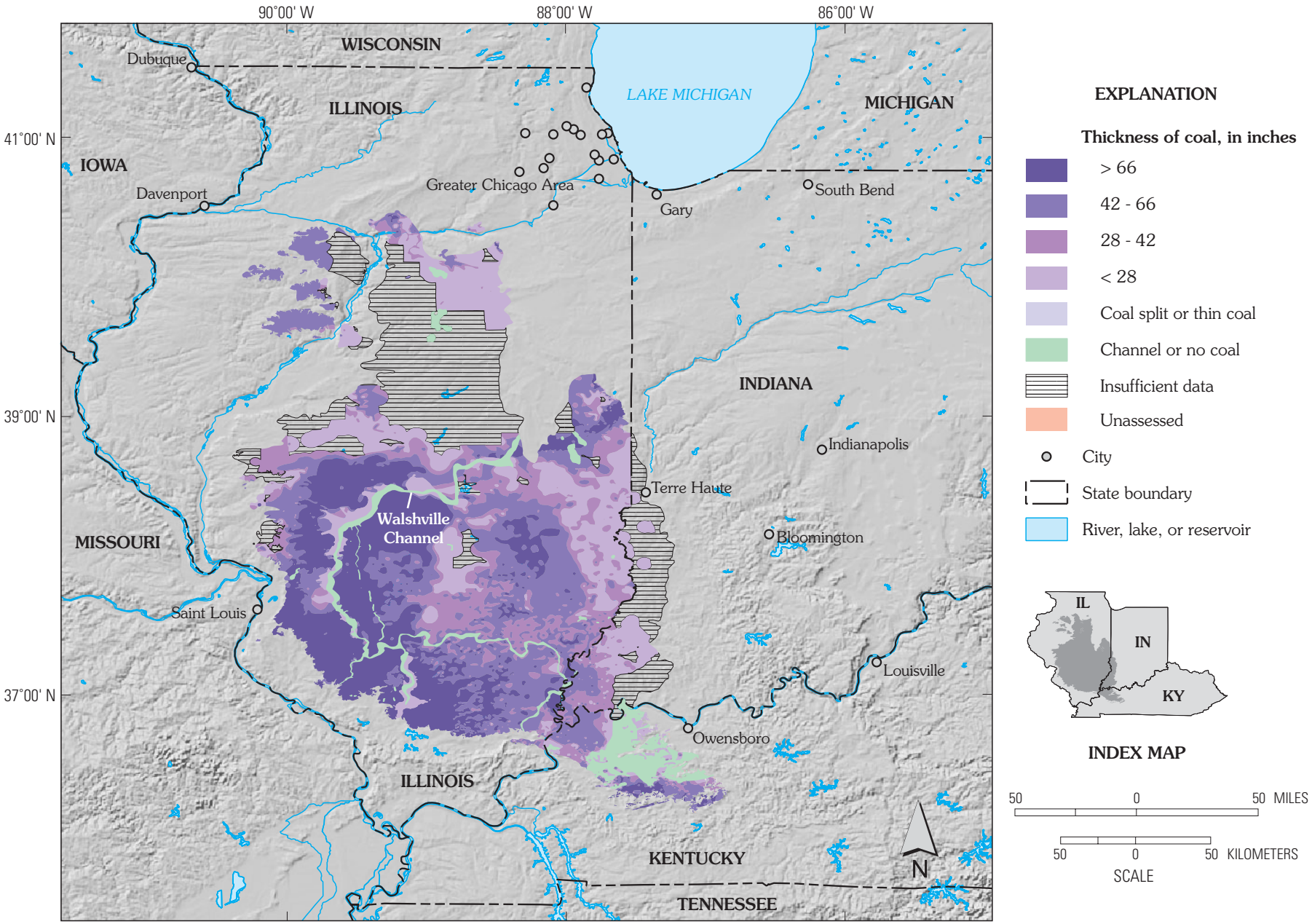


Illinois Basin regional map.



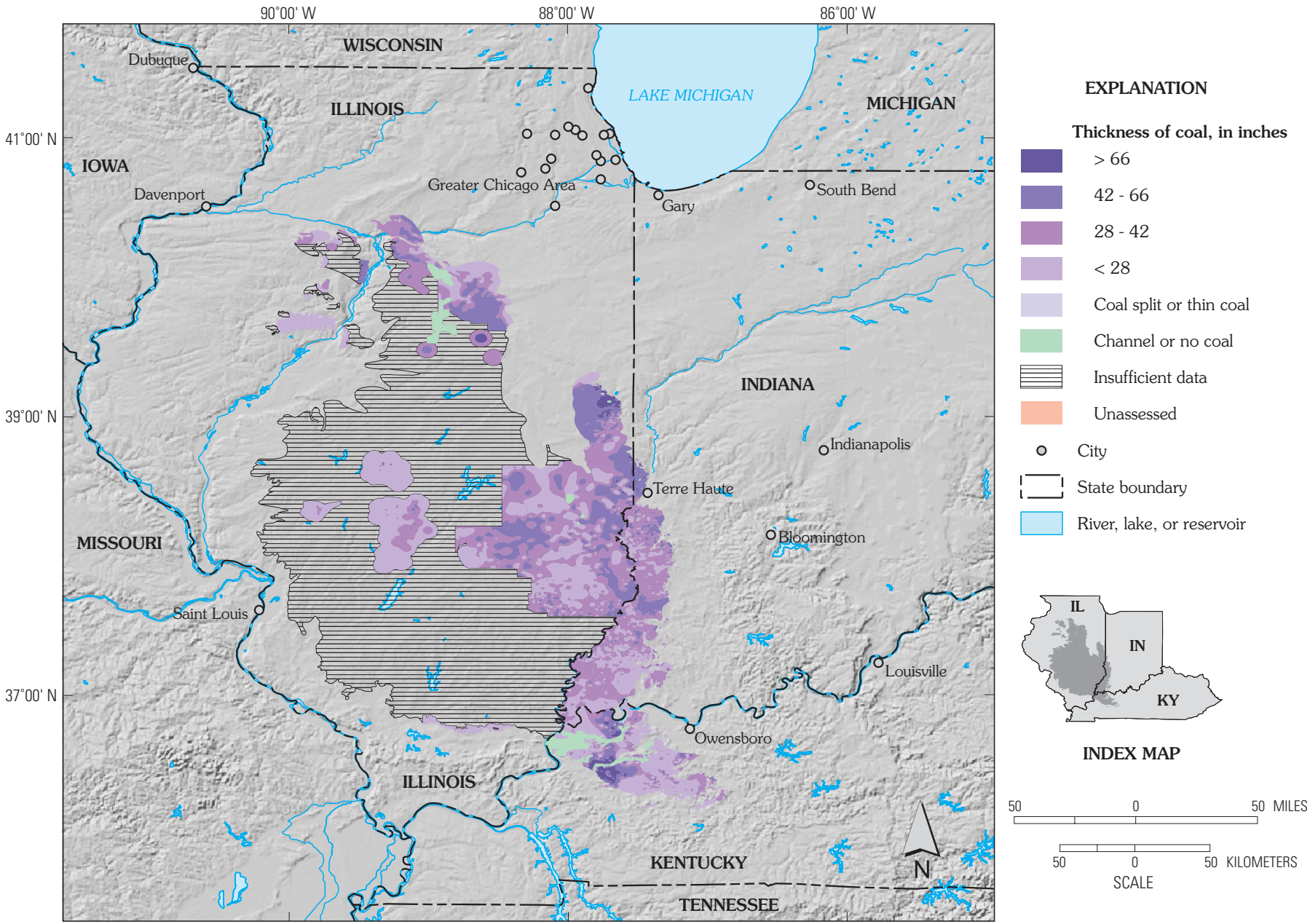
Map showing thickness of the Springfield coal in Illinois, Indiana, and western Kentucky. This illustration was modified from regional shapefiles contained in the Illinois Basin ArcView project (Gunther and others, 2002).

view tonnage | regional map | strat column



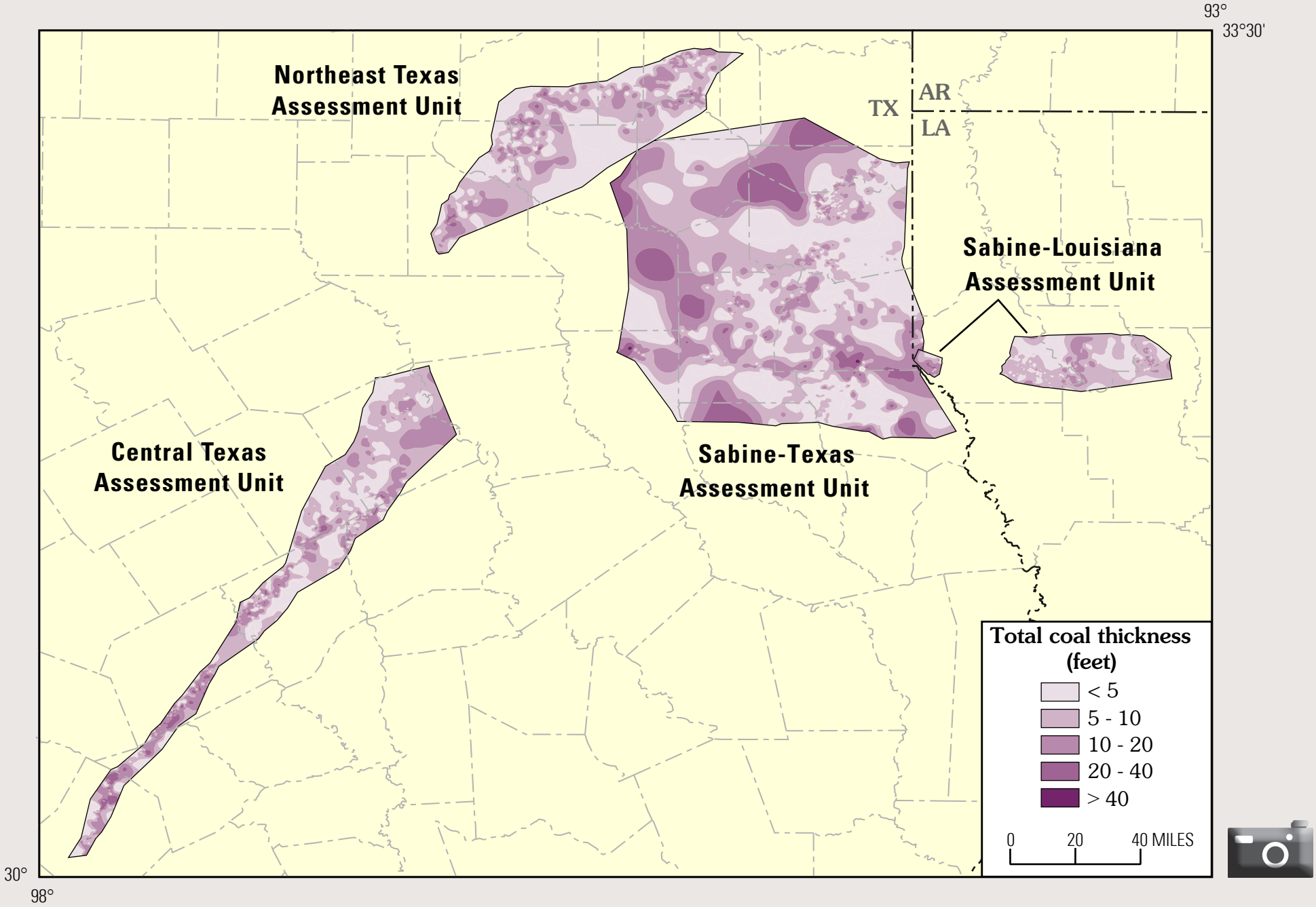
Map showing thickness of the Herrin coal in Illinois, Indiana, and western Kentucky. This illustration was modified from regional shapefiles contained in the Illinois Basin ArcView project (Gunther and others, 2002).

view tonnage
regional map
strat column



Map showing thickness of the Danville coal member in Illinois and Indiana, and the Baker coal in western Kentucky. This illustration was modified from regional shapefiles contained in the Illinois Basin ArcView project (Gunther and others, 2002).

view tonnage
regional map
strat column



Cumulative coal thickness isopachs in the Gulf Coast priority region.

(See regional CD-ROM for more detailed assessment of coal beds and zones.)

regional map
strat column
coal tonnage

Unit	NS	M	Ash	S	CV	SO^2	Hg
Appalachian Basin							
Pittsburgh coal bed	2,893-3,348	2.9	9.02	2.8	13,130	4.34	0.14 (149 samples)
Upper Freeport coal bed	1,735-3,482	2.63	12.31	2.24	12,950	3.46	0.30 (253 samples)
Lower Kittanning coal bed	1,325-2,138	3.19	11.98	2.9	12,890	4.4	0.22 (200 samples)
Pocahontas No.3 coal bed	194	2.22	5.75	0.66	14,490	0.91	0.064 (33 samples)
Pond Creek coal zone	296	3.03	7.24	1.05	13,540	1.57	0.11 (88 samples)
Fire Clay coal zone	59	2.58	10.62	0.99	12,910	1.55	0.12 (39 samples)
Illinois Basin							
Springfield coal bed	1,846		11.2	3.5	11,280	6.21*	0.12
Herrin coal bed	2,548		10.9	3	11,170	5.37*	0.12
Danville/Baker coal bed	338		11.9	2.9	10,920	5.31*	0.13
Colorado Plateau							
Bisti coal field	63	17.4	24.2	0.5	7,610	1.31*	0.08
Black Mesa coal field	30	10.4	7.2	0.5	11,100	0.90*	0.04
Book Cliffs coal field	19-20	9.3	14	0.8	10,770	1.49*	0.07
Carbondale coal field	9	1.4	7	0.7	14,200	0.99*	0.07
Crested Butte coal field	3	5	5.1	0.6	13,280	0.90*	0.06
Danforth Hills coal field	47	14.8	11.5	0.5	9,650	1.04*	0.05
Durango coal field	27	2.2	18.7	1	11,850	1.69*	0.08
Fruitland coal field	11	6.1	16.2	0.9	10,620	1.69*	0.13
Grand Hogback coal field	5-6	4.5	8.2	0.5	12,340	0.81*	0.04
Grand Mesa coal field	50	13.7	11.7	0.7	10,030	1.40*	0.05
Henry Mountains coal field	18	11.3	14.6	1.1	9,840	2.24*	0.09
Kaiparowits coal field	10	20.3	11	0.8	9,030	1.77*	0.06
Lower White River coal field	13	12	11.6	0.5	10,090	0.99*	0.04
Monero coal field	8	3.6	13.6	0.7	12,100	1.16*	0.19
Navajo coal field	4-5	8.3	19.1	0.6	9,220	1.30*	0.08
Somerset coal field	43-44	4.5	11.9	0.7	11,770	1.19*	0.07
Star Lake coal field	46	13.2	21.9	0.6	8,830	1.36*	0.07
Wasatch Plateau coal field	73	5.9	9.3	0.6	12,020	1.00*	0.05
Yampa coal field	148-246	10	8.5	0.8	10,930	1.46*	0.06
Northern Rocky Mountains and Great Plains							
Powder River Basin	277-300	27.66	6.44	0.48	8,220	1.24	0.13 (162 samples)
Hanna and Carbon Bains	148	11.61	12.48	0.96	10,090	2.07	0.07 (14 samples)
Green River Basin	1,082-1,101	19.95	11.18	0.56	9,000	1.27	0.20 (26 samples)
Williston Basin	281	37.88	7.96	0.84	6,510	2.54	0.14 (53 samples)
Gulf Coast							
Northeast Texas	274	34.16	16.34	0.54	6,078	1.82	
Central Texas	78-85	32.56	13.08	1.01	6,850	3.03	
Sabine - Texas	57-64	33.03	10	1.06	6,801	3.27	
Sabine - Louisiana	33-134	34.67	10.76	0.62	7,256	1.75	

APPALACHIAN BASIN

Coal bed thickness category (ft)	Overburden category (ft) 0-200	200-500	500-1,000	1,000-2,000	2,000-3,000	3,000-6,000	Total
Pittsburgh coal bed							
1.2-2.3	150	170	12	1.7			**330**
2.3-3.5	250	220	81	15			**570**
3.5-7	1,900	3,200	5,400	1,700			**12,000**
7-14	190	250	1,400	920			**2,800**
Total	**2,500**	**3,700**	**6,900**	**2,600**			**16,000**
Upper Freeport coal bed							
1.2-2.3	2,500	1,900	1,700	1,100	0.12		**7,200**
2.3-3.5	3,700	3,100	2,700	790	0.25		**10,000**
3.5-7	3,900	4,500	4,000	570			**13,000**
7-14	130	240	150	47			**570**
Total	**10,000**	**9,700**	**8,600**	**2,500**	**0.37**		**31,000**
Fire Clay coal zone							
1.2-2.3	740	1,000	520	25			**2,285**
2.3-3.5	550	840	500	8.9			**1,900**
3.5-7	300	350	210	3.5			**860**
7-14	1.9	0.69	0.46	38			**41**
Total	**1,600**	**2,200**	**1,200**	**5,100**			**5,100**

APPALACHIAN BASIN

Coal bed thickness category (ft)	Overburden category (ft) 0-200	200-500	500-1,000	1,000-2,000	2,000-3,000	3,000-6,000	Total
Pond Creek coal zone							
1.2-2.3	580	1,000	1,500	320	9.6		**3,400**
2.3-3.5	470	870	1,400	450	40		**3,000**
3.5-7	310	500	810	340	24		**2,000**
7-14	9.6	14	8	0.21			**32**
Total	**1,400**	**2,400**	**3,700**	**1,100**	**74**		**8,700**
Pocahontas coal bed							
1.2-2.3	47	160	160	400	180	0.41	**950**
2.3-3.5	40	150	400	590	330	1.4	**1,500**
3.5-7	74	200	670	1,200	460	1.3	**2,600**
7-14	2.8	6.6	12	16	26		**63**
Total	**160**	**510**	**1,200**	**2,200**	**1,000**	**3.1**	**5,100**

ILLINOIS BASIN

Coal bed thickness category (ft)	Overburden category (ft) 0-150	>150	Total
Springfield coal bed			
1.2-2.3	430	160	**590**
2.3-3.5	860	13,000	**14,000**
>3.5	5,700	60,000	**66,000**
Total	**7,000**	**73,000**	**81,000**
Herrin coal bed			
1.2-2.3	320	140	**460**
2.3-3.5	1,400	11,000	**12,000**
>3.5	6,300	62,000	**69,000**
Total	**8,100**	**73,000**	**82,000**
Danville coal bed			
1.2-2.3	1,100	1,700	**2,800**
2.3-3.5	1,700	10,000	**12,000**
>3.5	1,100	7,900	**9,000**
Total	**4,000**	**20,000**	**24,000**

?

ILLINOIS BASIN

Coal bed thickness category (ft)	Overburden category (ft) 0-150	>150	Total
Baker coal bed			
1.2-2.3	310	580	**890**
2.3-3.5	360	500	**870**
>3.5	260	1,300	**1,600**
Total	**930**	**2,400**	**3,400**

< >

Calico and A-sequences, Kaiparowits Plateau

Coal bed thickness category (ft)	Overburden category (ft) 0-1000	1,000-2,000	2,000-3,000	3,000-6,000	6,000-10,000	>10,000	Total
1-2.4							8,000
2.5-3.4							4,000
3.5-7.4	Detailed numbers are not available.						17,000
7.5-14.0							15,000
14.1-20.0							9,000
>20.0							9,000
Total	16,000	16,000	15,000	12,000			62,000

COLORADO PLATEAU

B coal zone, Deserado coal area, Lower White River coal field

Coal bed thickness category (ft)	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
1.2-2.3	0.81	0.12			0.22	1.2
2.3-3.5	3	0.23			0.47	3.7
3.5-7.0	19	6			5.2	30
7.0-14.0	91	31			28	150
>14.0	16	7.6			7.6	31
Total	130	45			42	220

D coal zone, Deserado coal area, Lower White River coal field

Coal bed thickness category (ft)	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
1.2-2.3	4.2	0.63			0.15	5
2.3-3.5	8.6	2.2			1.2	11
3.5-7.0	30	11			4.3	45
7.0-14.0	42	17			27	86
Total	85	31			33	150

COLORADO PLATEAU

A coal zone, Yampa coal field

Coal bed thickness category (ft)	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
>14.0	3,800	3,500	12,000	8,500	15,000	42,000
Total	3,800	3,500	12,000	8,500	15,000	42,000

B coal zone, Yampa coal field

Coal bed thickness category (ft)	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
1.2-2.3	3.1	3.8	9	1.8	3.2	21
2.3-3.5	6.5	9.3	11	2.8	4.8	34
3.5-7.0	26	33	43	13	22	140
7.0-14.0	84	250	130	47	62	570
>14.0	390	750	2,200	3,000	5,700	12,000
Total	510	1,000	2,400	3,000	5,800	13,000

C coal zone, Yampa coal field

Coal bed thickness category (ft)	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
1.2-2.3	2.1	3.1	12	18	10	45
2.3-3.5	3.3	3.8	23	32	16	78
3.5-7.0	52	190	270	270	300	1,100
7.0-14.0	330	350	470	470	550	2,100
>14.0	180	170	24			370
Total	570	710	800	780	880	3,700

D coal zone, Yampa coal field

Coal bed thickness category (ft)	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
3.5-7.0	18	24	53	0	0	97
7.0-14.0	26	6.6	94	7.6	0	130
>14.0	2,500	2,900	3,900	4,500	3,500	17,000
Total	2,500	3,000	4,000	4,500	3,500	17,000

COLORADO PLATEAU

Coal bed thickness category (ft)	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
Zone A, Fairfield coal group, Danforth Hills coal field						
2.3-3.5	2.6	1.5	0.33			**4.4**
3.5-7.0	38	55	12	0.22		**100**
7.0-14.0	270	300	350	90	120	**1,100**
>14.0	280	240	390	75	135	**1,100**
Total	**590**	**600**	**740**	**170**	**250**	**2,400**
Zone B, Fairfield coal group, Danforth Hills coal field						
3.5-7.0	5.7	4				**9.7**
7.0-14.0	23	66	77			**170**
>14.0	1,200	1,200	1,300	370	490	**4,600**
Total	**1,200**	**1,200**	**1,400**	**370**	**490**	**4,700**
Zone C, Fairfield coal group, Danforth Hills coal field						
2.3-3.5	1.6	0.64		0.36	8.9	**12**
3.5-7.0	6.5	15	17	7.6	8.5	**55**
7.0-14.0	98	130	63	14	18	**320**
>14.0	1,100	910	610	180	230	**3,000**
Total	**1,200**	**1,100**	**690**	**200**	**270**	**3,400**
Zone D, Fairfield coal group, Danforth Hills coal field						
2.3-3.5	16	16	5.7	3.4	14	**55**
3.5-7.0	38	37	19	7.4	10	**110**
7.0-14.0	240	340	40	16	43	**680**
>14.0	360	310	360	110	72	**1,200**
Total	**650**	**590**	**430**	**130**	**280**	**1,900**

COLORADO PLATEAU

Coal bed thickness category (ft)	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
Zone E , Fairfield coal group, Danforth Hills coal field						
2.3-3.5	4	4				**8**
3.5-7.0	5.1	4				**9.1**
7.0-14.0	39	17	11			**67**
>14.0	1,800	1,600	730	330	700	**5,200**
Total	**1,800**	**1,600**	**740**	**330**	**700**	**5,200**
Zone F, Fairfield coal group, Danforth Hills coal field						
1.2-2.3	3.7	1.1				**4.8**
2.3-3.5	1.3	0.71				**2**
3.5-7.0	23	7.3				**30**
7.0-14.0	77	33	87.2			**200**
>14.0	930	460	400	180	490	**2,500**
Total	**1,000**	**500**	**410**	**180**	**490**	**2,600**
Zone G, Fairfield coal group, Danforth Hills coal field						
1.2-2.3	6.5	3.8	4.3	4.4	7.9	**27**
2.3-3.5	5.4	1.9	3	2.6	4.4	**17**
3.5-7.0	60	22	9	8.5	31	**130**
7.0-14.0	230	56	38	3.8	4.9	**330**
>14.0	93	15	68			**180**
Total	**390**	**99**	**120**	**19**	**49**	**680**

COLORADO PLATEAU

Coal bed thickness category (ft)	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	3,000-6,000	6,000-10,000	>10,000	Total
Cameo-Wheeler coal zone, southern Piceance Basin								
1-2.3	480	630	2,500	2,800	8,100	6,200	960	**22,000**
>2.3-3.5	340	300	1,000	1,600	4,400	2,400	150	**10,000**
>3.5-7.0	1,000	1,400	4,100	4,800	17,000	12,000	1,100	**41,000**
>7.0-14.0	1,100	1,300	3,000	3,800	19,000	19,000	6,600	**54,000**
>14.0	1,000	1,100	2,300	2,000	10,000	27,000	1,200	**45,000**
Total	**4,000**	**4,600**	**13,000**	**15,000**	**58,000**	**67,000**	**10,000**	**170,000**

COLORADO PLATEAU

Coal bed thickness category (ft)	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
Fruitland Formation, San Juan Basin						
1-2.3	81	51	64	25	21	**240**
>2.3-3.5	85	91	200	110	40	**490**
>3.5-7.0	310	140	780	570	250	**2,000**
>7.0-14.0	2,000	920	3,300	2,600	1,700	**11,000**
>14.0	16,000	15,000	35,000	63,000	86,000	**220,000**
Total	**19,000**	**16,000**	**40,000**	**66,000**	**88,000**	**230,000**
Lower Blackhawk coal zone, southern Wasatch Plateau						
1-2.3	0.43	1.6	1.2			**3.2**
>2.3-3.5	2.2	4.4	2.1			**8.7**
>3.5-7.0	44	60	61			**160**
>7.0-14.0	160	420	610	1.4		**1,200**
>14.0	140	460	2,100	1,800	1,200	**5,700**
Total	**340**	**940**	**2,400**	**1,800**	**1,200**	**6,800**

COLORADO PLATEAU

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-1,000	1,000-2,000	Total
Muley Canyon coal zone, Henry Mountains coal field				
2-6	82	53	1.6	**140**
6-10	120	190	6.1	**320**
>10	190	830	46	**1,100**
Total	**390**	**1,100**	**54**	**1,500**
Ferron coal zone, Henry Mountains coal field				
2-6	59	8.9	6.9	75
6-10	280	100	5.5	390
>10	120	90	4	220
Total	**460**	**200**	**16**	**680**

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	>500	Total
Wyodak-Anderson coal zone, Powder River Basin					
2.5-5	370	120	290	270	**1,000**
5-10	1,300	520	1,400	2,700	**6,000**
10-20	3,300	1,800	3,900	7,400	**16,000**
20-40	7,400	5,600	11,000	26,000	**49,000**
>40	18,000	23,000	80,000	350,000	**480,000**
Total	**30,000**	**31,000**	**96,000**	**390,000**	**550,000**
Rosebud-Robinson coal zone, Colstrip coal field, Powder River Basin					
2.5-5	4.1	0.093	0	0	**4.2**
5-10	17	3.2	0.067	1.8	**22**
10-20	110	120	540	300	**1,100**
20-40	250	350	2,600	1,900	**5,200**
>40	270	590	2,500	3,000	**6,400**
Total	**650**	**1,100**	**5,700**	**5,200**	**13,000**
Knobloch coal bed, Ashland coal field, Powder River Basin					
2.5-5	0	0.3	4	0.97	**5.3**
5-10	0.48	17	120	160	**300**
10-20	120	130	370	240	**860**
20-40	410	260	190	8.5	**860**
>40	970	1,600	1,400	30	**4,000**
Total	**1,500**	**2,000**	**2,100**	**440**	**6,000**
Harmon coal zone, Bowman-Dickinson coal field, Williston Basin					
2.5-5	950	460	780	690	**2,900**
5-10	4,000	1,900	4,500	4,400	**15,000**
10-20	3,300	3,200	8,700	4,800	**20,000**
20-40	1,700	1,600	3,400	69	**6,800**
Total	**10,000**	**7,000**	**17,000**	**10,000**	**45,000**

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	>500	Total
Hansen coal zone, Bowman-Dickinson coal field, Williston Basin					
2.5-5	610	160	1,300	200	**2,300**
5-10	3,500	910	4,100	510	**9,000**
10-20	1,400	270	4,000	1,000	**6,800**
20-40	0.24	58	1,800	930	**2,700**
Total	**5,500**	**1,400**	**11,200**	**2,700**	**22,000**
Beulah-Zap coal zone, Beulah coal field, Williston Basin					
2.5-5	120	76	10		**200**
5-10	700	450	110		**1,300**
10-20	1,500	1,100	150		**2,800**
20-40	130	280	130		**540**
>40	0.31				**0.31**
Total	**2,500**	**1,900**	**400**		**4,800**
Hagel coal zone, Center-Falkirk coal field, Williston Basin					
2.5-5	95	110	180		**380**
5-10	460	310	310		**1,100**
10-20	1,000	1,060	350		**2,400**
20-40	160	220	130		**510**
>40			1.7		**1.7**
Total	**1,700**	**1,700**	**970**		**4,400**
Deadman coal zone, Point of Rocks Black Butte coal field, Green River Basin					
2.5-5	3.2	1.5	0.26		**5**
5-10	1.3	4.1	17	8.4	**31**
10-20	75	52	81	370	**580**
20-40	24	56	1,100	880	**2,000**
>40	1.2	1.1	29	12	**44**
Total	**110**	**120**	**1,200**	**1,300**	**2,700**

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	>500	Total
Ferris 23 coal zone, Ferris coal field, Hanna Basin					
2.5-5	16	2.2	14	73	**100**
5-10	52	4.1	14	36	**110**
10-20	12	0.78	4.9		**18**
Total	**80**	**7.1**	**32**	**110**	**230**
Ferris 25 coal zone, Ferris coal field, Hanna Basin					
2.5-5	0.58	0.56	6.5	13	**21**
5-10	5.6	9.9	68	220	**310**
10-20	8	8.9	120	21	**158**
20-30	2.9	6.8	40	9	**58**
Total	**17**	**26**	**230**	**270**	**540**
Ferris 31 coal zone, Ferris coal field, Hanna Basin					
2.5-5	2.4	0.51	6.3	12	**21**
5-10	7.3	2.7	42	95	**150**
10-20	11	7.2	28	47	**93**
20-30	1.3	0.62	7.3	0.038	**9.2**
Total	**22**	**11**	**84**	**150**	**270**
Ferris 50 coal zone, Ferris coal field, Hanna Basin					
2.5-5	8.3	2.8	2.6	0.29	**14**
5-10	25	6.7	24	37	**93**
10-20	34	9.9	17	340	**400**
Total	**67**	**19**	**43**	**370**	**510**

NORTHERN ROCKY MOUNTAINS AND GREAT PLAINS

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	>500	Total
Ferris 65 coal zone, Ferris coal field, Hanna Basin					
2.5-5	2.2	2.1	14	8.1	**26**
5-10	17	11	64	49	**140**
10-20	5.6	3.7	11	11	**31**
Total	**25**	**17**	**88**	**68**	**200**
Hanna 77 coal zone, Hanna coal field, Hanna Basin					
5-10		0.0034	0.33	0.063	**0.4**
10-20	13	21	54	44	**132**
20-40			0.55	64	**64**
40-50	34	51	150	1,100	**1,300**
50-100				78	**78**
Total	**47**	**72**	**200**	**1,300**	**1,600**
Hanna 78 coal zone, Hanna coal field, Hanna Basin					
2.5-5	0.018	0.055	0.16		**0.24**
5-10	0.59	2.1	4.6	12	**19**
10-20	8.3	6.5	23	92	**130**
20-30	6.5	15	48	170	**240**
30-40	30	37	74	600	**740**
40-50				24	**24**
Total	**45**	**60**	**150**	**890**	**1,100**
Hanna 79 coal zone, Hanna coal field, Hanna Basin					
2.5-5	0.009				**0.009**
5-10	0.78	0.61	0.14	1.3	**2.9**
10-20	8.6	13	29	33	**84**
20-30	0.41	0.31			**0.72**
30-40	22	27	76	700	**820**
Total	**32**	**40**	**100**	**730**	**900**

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	>500	Total
Hanna 81 coal zone, Hanna coal field, Hanna Basin					
2.5-5	1.3	0.72	2.8	0.11	**4.9**
5-10	1.2	0.84	2.5	3.5	**8.1**
10-20	2	0.9	4.8	43	**51**
20-40	64	49	85	400	**600**
Total	**68**	**51**	**95**	**450**	**660**
Johnson-107 coal zone, South Carbon coal field					
2.5-5	0.053	0.059	0.38	0.97	**1.5**
5-10	7.3	2.8	6.2	5.9	**22**
10-20	14	9.6	23	19	**66**
20-30	28	10	23	16	**77**
30-40	14	12	25	21	**72**
>40	190	84	470	170	**910**
Total	**250**	**120**	**550**	**240**	**1,100**

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	Total
Zone 1, Northeast Texas				
1.5-2.5	210	51	13	**270**
2.5-5	610	62	16	**690**
5-10	340	29	2	**370**
10-20	10	<1		**10**
Total	**1,200**	**140**	**31**	**1,300**
Zone 2, Northeast Texas				
1.5-2.5	520	47	<1	**570**
2.5-5	900	120	37	**1,100**
5-10	710	42	12	**760**
10-20	120	<1		**120**
20-40	2			**2**
Total	**2,300**	**210**	**49**	**2,500**
Zone 3, Northeast Texas				
1.5-2.5	3,500	140	6	**500**
2.5-5	1,400	280	3	**1,600**
5-10	530	160	<1	**690**
10-20	6	3		**9**
Total	**2,300**	**590**	**9**	**2,900**
Zone 4, Northeast Texas				
1.5-2.5	230	240	22	**490**
2.5-5	860	1,000	52	**1,900**
5-10	490	670	35	**1,200**
10-20	13	150	5	**170**
Total	**1,600**	**2,100**	**110**	**3,800**

GULF COAST REGION

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	Total
Zone 5, Northeast Texas				
1.5-2.5	93	250	49	**390**
2.5-5	280	910	200	**1,400**
5-10	210	620	150	**970**
10-20	9	36	14	**60**
Total	**590**	**1,800**	**410**	**2,800**
Zone 6, Northeast Texas				
1.5-2.5	49	130	22	**200**
2.5-5	120	430	280	**840**
5-10	110	280	1,200	**1,600**
10-20	2	1		**3**
Total	**280**	**840**	**1,500**	**2,700**
North Zone 5, Central Texas				
1.5-2.5	130	27	2	**160**
2.5-5	550	98	5	**660**
5-10	220	54		**280**
10-20	5			**5**
Total	**910**	**180**	**7**	**1,100**
North Zone 6, Central Texas				
1.5-2.5	110	72	5	**180**
2.5-5	310	280	52	**640**
5-10	350	160	33	**540**
10-20	410	60	22	**490**
20-40	31			**31**
Total	**1,200**	**570**	**110**	**1,900**

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	Total
North Zone 8, Central Texas				
1.5-2.5	58	86	79	**220**
2.5-5	510	350	140	**1,000**
5-10	73	82	15	**170**
10-20		13		**13**
20-40				
Total	**640**	**530**	**240**	**1,400**
North Zone 9, Central Texas				
1.5-2.5	62	100	130	**300**
2.5-5	200	340	130	**670**
5-10	10	92	42	**140**
Total	**270**	**530**	**310**	**1,100**
Central Zone 4, Central Texas				
1.5-2.5	6	7	3	**16**
2.5-5	15	43	14	**72**
5-10	8	15	5	**28**
Total	**29**	**66**	**23**	**120**
Central Zone 5, Central Texas				
1.5-2.5	<1	<1		**<1**
2.5-5	14	10		**24**
5-10	59	72	4	**140**
10-20	39	79	130	**250**
Total	**110**	**160**	**140**	**410**

GULF COAST REGION

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	Total
South Zone 4, Central Texas				
1.5-2.5	46	14	3	**63**
2.5-5	72	160	46	**280**
5-10	6	43	28	**77**
10-20			2	**2**
Total	**120**	**210**	**79**	**420**
South Zone 6, Central Texas				
1.5-2.5	18	13	9	**40**
2.5-5	76	100	77	**260**
5-10	61	90	140	**290**
10-20	46	25	60	**130**
20-40	<1	2	9	**11**
Total	**200**	**240**	**290**	**730**
South Zone 8, Central Texas				
1.5-2.5	<1	1	44	**45**
2.5-5	11	52	59	**120**
5-10	31	140	61	**240**
10-20	25	57	56	**140**
Total	**67**	**250**	**220**	**540**
Naborton coal bed, NW Louisiana				
1.5-2.5	25	100	13	**140**
2.5-5	100	260	95	**450**
5-10	100	160	74	**330**
10-20		40	120	**160**
20-40		<1	<1	**1**
Total	**230**	**560**	**300**	**1,100**

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	>500	Total
Green coal zone, Sabine uplift, Texas					
1.5-2.5	390	230	580	72	**1,300**
2.5-5	1,500	1,500	4,900	1,300	**9,200**
5-10	770	1,600	5,100	250	**7,800**
10-20	20	42	16		**78**
Total	**2,700**	**3,400**	**11,000**	**1,600**	**18,000**
Red coal zone, Sabine uplift, Texas					
1.5-2.5	100	120	340	52	**620**
2.5-5	1,200	1,400	4,300	1,400	**8,400**
5-10	1,900	2,900	10,000	4,500	**7,800**
>10	220	150	2,000	630	**3,000**
Total	**3,400**	**4,600**	**17,000**	**6,700**	**32,000**
Orange coal zone, Sabine uplift, Texas					
1.5-2.5	330	290	1,000	960	**2,600**
2.5-5	1,000	1,200	4,800	4,000	**11,000**
5-10	400	520	3,200	2,200	**6,300**
>10	33	1.6	57	11	**100**
Total	**1,800**	**2,000**	**9,100**	**7,200**	**20,000**
Black Lake Bayou coal zone, Sabine uplift, Texas					
1.5-2.5	260	200	600	1,800	**2,900**
2.5-5	660	480	2,900	8,700	**13,000**
5-10	230	320	1,900	5,700	**8,200**
>10		8.3	17	2.2	**28**
Total	**1,200**	**1,000**	**5,400**	**16,000**	**24,000**

GULF COAST REGION

Coal bed thickness category (ft)	Overburden category (ft) 0-100	100-200	200-500	>500	Total
Naborton coal zone, Sabine uplift, Texas					
1.5-2.5	4.0	88	87	3.60	**530**
2.5-5	63	390	870	3,200	**4,600**
5-10	460	1,000	2,000	19,000	**22,000**
10-20	130	910	17	2.2	**27,000**
>20		20	41	1,100	**27,000**
Total	**670**	**2,500**	**7,200**	**45,000**	**55,000**

APPALACHIAN BASIN

Reliability category	Overburden category (ft) 0-200	200-500	500-1,000	1,000-2,000	2,000-3,000	3,000-6,000	Total
Pittsburgh coal bed							
Measured	470	500	640	100	n	n	**1,700**
Indicated	870	1,300	2,200	790	n	n	**5,200**
Inferred	800	1,700	3,900	1,700	n	n	**8,000**
Hypothetical	260	280	200	110	n	n	**850**
Total	**2,500**	**3,700**	**6,900**	**2,600**	**n**	**n**	**16,000**
Upper Freeport coal bed							
Identified	7,300	6,000	5,000	850	n	n	**19,000**
Hypothetical	2,800	3,600	3,600	1,600	0.37	n	**12,000**
Total	**10,000**	**9,700**	**8,600**	**2,500**	**0.37**	**n**	**31,000**
Fire Clay coal zone							
Identified	1,600	2,200	1,180	37	n	n	**5,000**
Hypothetical	9.3	21	54	0.4	n	n	**84**
Total	**1,600**	**2,200**	**1,200**	**38**	**n**	**n**	**5,100**
Pond Creek coal zone							
Identified	1,300	2,200	3,500	1,100	74	n	**8,300**
Hypothetical	44	140	210	5.3	0	n	**400**
Total	**1,400**	**2,400**	**3,700**	**1,100**	**74**	**n**	**8,700**
Pocahontas No. 3 coal bed							
Measured	11	46	99	190	96	0.027	**440**
Indicated	39	140	390	720	470	0.45	**1,800**
Inferred	93	290	680	1,000	430	2.5	**2,500**
Hypothetical	20	29	72	240	6.2	0.17	**360**
Total	**160**	**510**	**1,200**	**2,200**	**1,000**	**3.1**	**5,100**

ILLINOIS BASIN

Reliability category	Overburden category (ft) 0-150	>150	Total
Springfield coal bed			
I-A (IL/IN)	14 / 1,300	5,900 / 5,500	**13,000**
I-B (IL/IN)	3,300 / 740	16,000 / 4,100	**24,000**
II-A (IL/IN)	710 / 39	35,000 / 440	**37,000**
Measured (KY)	170	890	**1,100**
Indicated (KY)	310	1,900	**2,200**
Inferred (KY)	510	3,200	**3,700**
Hypothetical (KY)	44	480	**520**
Total	**6,400**	**74,000**	**81,000**
Herrin coal bed			
I-A (IL)	330	19,000	**19,000**
I-B (IL)	6,000	28,000	**34,000**
II-A (IL)	1,200	24,000	**25,000**
Measured (KY)	110	360	**470**
Indicated (KY)	160	680	**840**
Inferred (KY)	280	1,000	**1,300**
Hypothetical (KY)	460	1,700	**2,100**
Total	**8,500**	**75,000**	**82,000**
Danville coal bed			
I-A (IL/IN)	530 / 870	3,200 / 2,400	**7,100**
I-B (IL/IN)	770 / 600	7,100 / 2,100	**11,000**
II-A (IL/IN)	1,100 / 96	5,000 / 140	**6,300**
Total	**2,400 / 1,600**	**15,000 / 4,700**	**24,000**
Baker coal bed			
Measured (KY)	150	480	**630**
Indicated (KY)	290	820	**1,100**
Inferred (KY)	490	1,100	**1,600**
Hypothetical (KY)	91	190	**280**
Total	**1,000**	**2,600**	**3,600**

COLORADO PLATEAU

Reliability category	Overburden category (ft) 0-1,000	1,000-2,000	2,000-3,000	3,000-6,000	>6,000	Total
Calico and A-sequences, Kaiparowits Plateau						
Identified	16,000	16,000	11,000	4,500	76	**48,000**
Hypothetical	360	510	5,000	7,900	1,700	**15,000**
Total	**16,000**	**17,000**	**15,000**	**12,000**	**1,700**	**62,000**

COLORADO PLATEAU

Reliability category	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
A coal zone, Yampa coal field						
Identified	3,400	3,200	9,400	4,500	1,020	**22,000**
Hypothetical	370	330	2,300	4,100	13,900	**21,000**
Total	**3,800**	**3,500**	**12,000**	**8,500**	**15,000**	**42,000**
B coal zone, Yampa coal field						
Identified	500	1,030	2,000	1,500	5,000	**10,000**
Hypothetical	0	18	410	1,500	7,700	**10,000**
Total	**510**	**1,000**	**2,400**	**3,000**	**13,000**	**20,000**
C coal zone, Yampa coal field						
Identified	560	680	530	120	0	**1,900**
Hypothetical	0.87	36	260	670	880	**1,900**
Total	**570**	**710**	**800**	**780**	**880**	**3,700**
D coal zone, Yampa coal field						
Identified	2,400	2,200	1,800	400	3,400	**10,000**
Hypothetical	130	740	2,200	4,100	150	**7,300**
Total	**2,500**	**3,000**	**4,000**	**4,500**	**3,500**	**17,000**
Zone A, Fairfield coal group, Danforth Hills coal field						
Identified	540	550	690	140	68	**2,000**
Hypothetical	43	56	50	25	190	**360**
Total	**590**	**600**	**740**	**170**	**250**	**2,400**

COLORADO PLATEAU

Reliability category	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
Zone B, Fairfield coal group, Danforth Hills coal field						
Identified	1,200	1,200	1,300	320	170	**4,200**
Hypothetical	39	42	47	39	320	**480**
Total	**1,200**	**1,200**	**1,400**	**370**	**490**	**4,700**
Zone C, Fairfield coal group, Danforth Hills coal field						
Identified	1,100	980	660	170	92	**3,000**
Hypothetical	64	67	37	35	180	**380**
Total	**1,200**	**1,100**	**690**	**200**	**270**	**3,400**
Zone D, Fairfield coal group, Danforth Hills coal field						
Identified	640	580	410	120	55	**1,800**
Hypothetical	8.2	10	14	16	85	**130**
Total	**650**	**590**	**430**	**130**	**140**	**1,900**
Zone E, Fairfield coal group, Danforth Hills coal field						
Identified	1,800	1,600	690	270	295	**4,700**
Hypothetical	28	29	47	63	410	**570**
Total	**1,800**	**1,600**	**740**	**330**	**700**	**5,200**
Zone F, Fairfield coal group, Danforth Hills coal field						
Identified	990	470	350	110	170	**2,100**
Hypothetical	45	34	62	68	310	**520**
Total	**1,000**	**500**	**410**	**180**	**490**	**2,600**
Zone G, Fairfield coal group, Danforth Hills coal field						
Identified	380	93	110	8.2	14	**610**
Hypothetical	8.7	6.3	9.9	11	35	**71**
Total	**390**	**99**	**120**	**19**	**49**	**680**

COLORADO PLATEAU

Reliability category	Overburden category (ft) 0-500	500-1,000	>1,000	Total
B coal zone, Deserado coal area, Lower White River coal field				
Identified	130	45	42	**220**
D coal zone, Deserado coal area, Lower White River coal field				
Identified	85	31	33	**150**

COLORADO PLATEAU

Reliability category	Overburden category (ft) 0-200	200-500	500-1,000	1,000-2,000	2,000-3,000	3,000-6,000	>10,000	Total
Cameo-Wheeler coal zone, southern Piceance Basin								
Identified	3,800	4,400	12,000	14,000	49,000	55,000	2,000	**140,000**
Hypothetical	280	220	440	920	9,000	12,000	8,000	**31,000**
Total	**4,000**	**4,700**	**13,000**	**15,000**	**58,000**	**67,000**	**10,000**	**170,000**
South Canyon coal zone, southern Piceance Basin								
Identified	581	786	1,497	2,013	7,510	11,700	684	**25,000**
Hypothetical	9.6	12.4	50.26	102	697	1,395	2,422	**4,700**
Total	**590**	**800**	**1,600**	**2,100**	**8,200**	**13,000**	**3,100**	**29,000**
Coal Ridge coal zone, southern Piceance Basin								
Identified	550	590	1,400	1,700	4,000	5,700	240	**14,000**
Hypothetical	32	31	68	110	610	970	710	**2,500**
Total	**580**	**620**	**1,500**	**1,800**	**4,600**	**6,600**	**950**	**16,600**

COLORADO PLATEAU

Reliability category	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	>3,000	Total
Fruitland Formation, San Juan Basin						
Identified	13,000	12,000	38,000	65,000	86,000	**210,000**
Hypothetical	6,100	3,400	1,400	860	2,200	**14,000**
Total	**19,000**	**16,000**	**40,000**	**66,000**	**88,000**	**230,000**

COLORADO PLATEAU

Reliability category	Overburden category (ft) 0-500	500-1,000	1,000-2,000	2,000-3,000	3,000-6,000	6,000-10,000	>10,000	Total
Lower Blackhawk coal zone, southern Wasatch Plateau								
Identified	340	930	2,100	730	73	n	n	**4,200**
Hypothetical	0	16	290	1,100	1,172	n	n	**2,600**
Total	**340**	**950**	**2,400**	**1,900**	**1,200**	**n**	**n**	**6,800**

COLORADO PLATEAU

Reliability category	Overburden category (ft) 0-100	100-1,000	1,000-2,000	Total
Muley Canyon coal zone, Henry Mountains coal field				
Demonstrated	360	540	43	**950**
Inferred	33	540	11	**580**
Total	**390**	**1,100**	**54**	**1,500**
Ferron coal zone, Henry Mountains coal field				
Demonstrated	68	110	13	**190**
Inferred	7.3	270	180	**460**
Hypothetical	0	13	26	**39**
Total	**75**	**390**	**220**	**680**

Reliability category	Overburden category (ft) 0-100	100-200	200-500	>500	Total
Wyodak-Anderson coal zone, Powder River Basin					
Measured	4,400	5,500	13,000	21,000	**44,000**
Indicated	12,000	15,000	45,000	95,000	**170,000**
Inferred	12,000	9,100	35,000	250,000	**300,000**
Hypothetical	2,000	700	2,700	30,000	**36,000**
Total	**30,000**	**30,000**	**96,000**	**400,000**	**550,000**
Rosebud-Robinson coal zone, Colstrip coal field, Powder River Basin					
Measured	57	160	500	110	**830**
Indicated	350	560	2,200	870	**4,000**
Inferred	240	300	2,600	3,800	**6,900**
Hypothetical	1	49	360	410	**830**
Total	**650**	**1,100**	**5,700**	**5,200**	**13,000**
Knobloch coal bed, Ashland coal field, Powder River Basin					
Measured	260	470	240	3.8	**980**
Indicated	770	1,000	880	48	**2,700**
Inferred	470	470	970	380	**2,300**
Hypothetical	0	2.9	1.7	4.2	**8.8**
Total	**1,500**	**2,000**	**2,100**	**440**	**6,000**
Harmon coal zone, Bowman-Dickinson coal field, Williston Basin					
Measured	260	280	260	45	**850**
Indicated	1,500	1,500	1,300	300	**4,600**
Inferred	5,700	3,200	8,900	2,500	**20,000**
Hypothetical	2,500	2,200	7,000	7,000	**19,000**
Total	**10,000**	**7,200**	**17,000**	**10,000**	**45,000**
Hansen coal zone, Bowman-Dickinson coal field, Williston Basin					
Measured	60	38	250	11	**380**
Indicated	400	200	1,100	48	**1,800**
Inferred	2,700	740	5,400	460	**9,700**
Hypothetical	2,500	420	4,500	2,100	**9,700**
Total	**5,600**	**1,400**	**11,000**	**2,700**	**22,000**
Beulah-Zap coal zone, Beulah coal field, Williston Basin					
Measured	700	420	47	n	**1,200**
Indicated	740	670	150	n	**1,600**
Inferred	660	690	180	n	**1,500**
Hypothetical	380	150	24	n	**550**
Total	**2,500**	**1,900**	**410**	**n**	**4,800**

NORTHERN ROCKY MOUNTAINS AND GREAT PLAINS

Reliability category	Overburden category (ft) 0-100	100-200	200-500	>500	Total
Hagel coal zone, Center-Falkirk coal field, Williston Basin					
Measured	950	530	96	n	**1,600**
Indicated	650	750	340	n	**1,700**
Inferred	130	420	510	n	**1,000**
Hypothetical	0.29	1.8	9.7	n	**12**
Total	**1,700**	**1,700**	**960**	**n**	**4,400**
Deadman coal zone, Point of Rocks Black Butte coal field, Green River Basin					
Measured	17	28	46	1.8	**93**
Indicated	16	30	260	19	**320**
Inferred	72	58	870	1,200	**2,300**
Total	**100**	**120**	**1,200**	**1,300**	**2,700**
Ferris 23 coal zone, Ferris coal field, Hanna Basin					
Measured	12	1.7	6.3	2.2	**22**
Indicated	22	2.2	4.8	8.6	**38**
Inferred	42	2.4	15	49	**110**
Hypothetical	3	0.73	6.3	54	**64**
Total	**80**	**7.1**	**32**	**110**	**230**
Ferris 25 coal zone, Ferris coal field, Hanna Basin					
Measured	2.8	2.8	34	6.1	**46**
Indicated	2.1	1.9	42	24	**70**
Inferred	1.6	2	73	67	**143**
Hypothetical	10	19	81	170	**280**
Total	**17**	**26**	**230**	**267**	**540**
Ferris 31 coal zone, Ferris coal field, Hanna Basin					
Measured	0.49	0.33	1.3	0	**2.1**
Indicated	0.63	0.67	3.4	3.1	**7.8**
Inferred	9.1	0.68	7.4	360	**52**
Hypothetical	12	9.3	71	110	**210**
Total	**22**	**11**	**83**	**150**	**270**
Ferris 50 coal zone, Ferris coal field, Hanna Basin					
Measured	3	2	2.8	5.8	**14**
Indicated	15	5.2	14	40	**74**
Inferred	30	8.1	23	280	**340**
Hypothetical	20	4.1	3.4	53	**80**
Total	**67**	**19**	**43**	**370**	**510**

Reliability category	Overburden category (ft) 0-100	100-200	200-500	>500	Total
Ferris 65 coal zone, Ferris coal field, Hanna Basin					
Measured	5.2	1.7	6.9	5.9	**20**
Indicated	17	11	16	9.6	**54**
Inferred	2.7	4.2	65	52	**120**
Hypothetical	0	0	0.98	0	**0.98**
Total	**25**	**17**	**88**	**68**	**200**
Hanna 77 coal zone, Hanna coal field, Hanna Basin					
Measured	1.1	3.2	11.43	25.2	**40.93**
Indicated	3.2	7.7	30	180	**230**
Inferred	21	29	90	1,000	**1,200**
Hypothetical	22	32	71	39	**160**
Total	**47**	**72**	**200**	**1,300**	**1,600**
Hanna 78 coal zone, Hanna coal field, Hanna Basin					
Measured	15	22	43	50	**130**
Indicated	10	6.6	23	200	**249**
Inferred	13	21	61	600	**690**
Hypothetical	6.6	11	22	38	**79**
Total	**45**	**60**	**150**	**890**	**1,100**
Hanna 79 coal zone, Hanna coal field, Hanna Basin					
Measured	19	19	18	16	**72**
Indicated	6	2.9	31	140	**180**
Inferred	5.3	14	46	540	**610**
Hypothetical	1.4	3.8	9.3	19	**34**
Total	**32**	**40**	**100**	**720**	**900**
Hanna 81 coal zone, Hanna coal field, Hanna Basin					
Measured	17	7.5	11	12	**47**
Indicated	12	18	29	98	**160**
Inferred	36	22	47	330	**440**
Hypothetical	3.2	3.9	7.4	3.3	**18**
Total	**68**	**51**	**94**	**440**	**660**
Johnson-107 coal zone, South Carbon coal field					
Measured	4.8	5.8	74	57	**140**
Indicated	110	64	340	180	**700**
Inferred	130	49	120	0.66	**300**
Total	**250**	**120**	**540**	**240**	**1,100**

Reliability category	Overburden category (ft) 0-100	100-200	200-500	500-1,000	>1,000	Total
Zone 1, Northeast Texas						
Measured	95	6	2	n	n	**100**
Indicated	240	18	2	n	n	**260**
Inferred	510	48	5	n	n	**560**
Hypothetical	330	68	23	n	n	**420**
Total	**1,200**	**140**	**31**	**n**	**n**	**1,300**
Zone 2, Northeast Texas						
Measured	200	15	1	n	n	**220**
Indicated	560	47	4	n	n	**610**
Inferred	1,200	72	17	n	n	**1,200**
Hypothetical	330	79	25	n	n	**430**
Total	**2,300**	**210**	**46**	**n**	**n**	**2,500**
Zone 3, Northeast Texas						
Measured	170	30		n	n	**200**
Indicated	570	120		n	n	**690**
Inferred	1,200	260		n	n	**1,500**
Hypothetical	330	170		8	n	**510**
Total	**2,300**	**590**		**9**	**n**	**2,900**
Zone 4, Northeast Texas						
Measured	190	110	5	n	n	**300**
Indicated	560	4,600	15	n	n	**5,000**
Inferred	790	1,000	48	n	n	**1,900**
Hypothetical	58	491	46	n	n	**600**
Total	**1,600**	**2,100**	**120**	**n**	**n**	**3,800**
Zone 5, Northeast Texas						
Measured	92	140	9	n	n	**240**
Indicated	220	410	40	n	n	**660**
Inferred	280	910	210	n	n	**1,400**
Hypothetical	11	370	150	n	n	**530**
Total	**600**	**1,800**	**410**	**n**	**n**	**2,800**
Zone 6, Northeast Texas						
Measured	21	31	5	n	n	**57**
Indicated	93	160	42	n	n	**300**
Inferred	160	530	660	n	n	**1,300**
Hypothetical	4	135	840	n	n	**980**
Total	**280**	**840**	**1,500**	**n**	**n**	**2,700**

Reliability category	Overburden category (ft) 0-100	100-200	200-500	500-1,000	>1,000	Total
North Zone 5, Central Texas						
Measured	19	14	1	n	n	**34**
Indicated	96	62	2	n	n	**160**
Inferred	370	100	4	n	n	**480**
Hypothetical	420	3	n	n	n	**430**
Total	**910**	**180**	**7**	**n**	**n**	**1,100**
North Zone 6, Central Texas						
Measured	210	41	6	n	n	**260**
Indicated	510	160	35	n	n	**710**
Inferred	410	320	65	n	n	**790**
Hypothetical	77	50	5	n	n	**130**
Total	**1,200**	**570**	**110**	**n**	**n**	**1,900**
North Zone 8, Central Texas						
Measured	73	42	8	n	n	**120**
Indicated	220	170	37	n	n	**420**
Inferred	330	320	190	n	n	**840**
Hypothetical	28	28	22	n	n	**77**
Total	**650**	**560**	**260**	**n**	**n**	**1,400**
North Zone 9, Central Texas						
Measured	12	35	10	n	n	**57**
Indicated	62	140	55	n	n	**260**
Inferred	180	320	210	n	n	**710**
Hypothetical	16	43	28	n	n	**87**
Total	**270**	**530**	**310**	**n**	**n**	**1,100**
Central Zone 4, Central Texas						
Measured	10	16	<1	n	n	**26**
Indicated	18	37	4	n	n	**59**
Inferred	1	12	20	n	n	**33**
Total	**29**	**66**	**23**	**n**	**n**	**120**
Central Zone 5, Central Texas						
Measured	38	60	19	n	n	**120**
Indicated	62	88	68	n	n	**220**
Inferred	12	13	49	n	n	**74**
Total	**110**	**160**	**140**	**n**	**n**	**410**

Reliability category	Overburden category (ft) 0-100	100-200	200-500	500-1,000	>1,000	Total
South Zone 4, Central Texas						
Measured	21	43	19	n	n	**83**
Indicated	45	77	36	n	n	**160**
Inferred	60	90	19	n	n	**170**
Hypothetical	<1	3	4	n	n	**8**
Total	**120**	**210**	**79**	**n**	**n**	**420**
South Zone 6, Central Texas						
Measured	55	71	51	n	n	**180**
Indicated	110	100	120	n	n	**340**
Inferred	38	59	110	n	n	**210**
Total	**200**	**240**	**290**	**n**	**n**	**730**
South Zone 8, Central Texas						
Measured	17	49	36	n	n	**100**
Indicated	29	120	95	n	n	**240**
Inferred	21	90	86	n	n	**200**
Hypothetical	n	n	3	n	n	**3**
Total	**67**	**250**	**220**	**n**	**n**	**540**
Green coal zone, Sabine uplift, Texas						
Measured	240	120	23	<1	n	**380**
Indicated	580	430	190	1.3	n	**1,200**
Inferred	1,100	1,600	2,400	50	n	**5,100**
Hypothetical	780	1,300	8,000	1,600	n	**12,000**
Total	**2,700**	**3,400**	**11,000**	**1,600**	**n**	**18,000**
Red coal zone, Sabine uplift, Texas						
Measured	330	300	63	3.6	n	**700**
Indicated	810	840	440	19	n	**2,100**
Inferred	1,600	2,100	4,200	350	n	**8,200**
Hypothetical	730	1,400	12,000	6,300	n	**21,000**
Total	**3,400**	**4,600**	**17,000**	**6,700**	**n**	**32,000**
Orange coal zone, Sabine uplift, Texas						
Measured	110	110	29	5.9	n	**260**
Indicated	460	370	200	46	n	**1,100**
Inferred	990	1,100	2,000	680	n	**4,700**
Hypothetical	230	450	6800	6400	5.8	**14,000**
Total	**1,800**	**2,000**	**9,100**	**7,200**	**5.8**	**20,000**

Reliability category	Overburden category (ft) 0-100	100-200	200-500	500-1,000	>1,000	Total
Black Lake Bayou coal zone, Sabine uplift, Texas						
Measured	55	50	29	16	n	**150**
Indicated	300	300	200	130	<1	**930**
Inferred	670	470	1,100	1,600	52	**3,800**
Hypothetical	120	200	4,000	12,000	2,800	**19,000**
Total	**1,200**	**1,000**	**5,400**	**13,000**	**2,900**	**24,000**
Naborton coal zone, Sabine uplift, Texas						
Measured	38	66	140	30	16	**290**
Indicated	220	370	770	240	120	**1,700**
Inferred	300	1,100	3,200	2,600	1,800	**9,100**
Hypothetical	110	910	3,100	16,000	24,000	**44,000**
Total	**670**	**2,500**	**7,200**	**19,000**	**26,000**	**55,000**
Naborton No. 2 coal bed, NW Louisiana						
Measured	23	90	80	n	n	**190**
Indicated	80	240	140	n	n	**460**
Inferred	130	230	80	n	n	**450**
Total	**230**	**560**	**300**	**n**	**n**	**1,100**

Regional Overview

The National Coal Resource Assessment (NCRA) was a multiyear effort by the U.S. Geological Survey to identify, characterize, and assess the major coal resources that will supply the Nation's energy needs during the next several decades. Current coal production in the United States is concentrated in five regions, and therefore these were the areas studied in the assessment program: the Northern Rocky Mountains and Great Plains, Colorado Plateau, Appalachian Basin, Illinois Basin, and the Gulf Coast.

The National Coal Resource Assessment and the five regional studies were designed to assess the major coal beds and zones of the United States and to determine and understand the amount of remaining coal, its quality, and its distribution. This project was also designed to create publicly available databases and GIS coverages to answer a variety of questions and address a variety of concerns for government, industry or public decisionmakers, and provide interpretive information in a digital format on the geology and geochemistry of the most important coal resources of the Nation.

More than a coal resource assessment, this was a geologic assessment which used the USGS' background and expertise in coal geology and coal research. Coal geology and utilization of geologic tools such as stratigraphic correlations and sequence stratigraphy is the strength upon which this assessment is based. A description of the resource methodology may be found in chapter D of this volume and in each of the regional CDs.

Products from the National Coal Resource Assessment include USGS Professional Paper CD–ROMs that contain geologic maps, cross sections, graphs, the stratigraphic and geochemical databases of all nonproprietary information used in the assessments, and estimates of the original and remaining resources. The data libraries from each region excluding the Gulf Coast are contained on the CD–ROMs and can be downloaded by the user.

Four of the five priority regions are contained on a separate series of CD–ROMs:

N. Rocky Mountains and Great Plains Region:

Fort Union Coal Assessment Team, 1999, 1999 Resource Assessment of Selected Tertiary Coal Beds and Zones in the Northern Rocky Mountains and Great Plains Region: U.S. Geological Survey Professional Paper 1625–A, CD–ROM.

Colorado Plateau:

Kirschbaum, M.A., Roberts, L.N.R., and Biewick, L.R.H., eds., 2000, Geologic Assessment of Coal in the Colorado Plateau—Arizona, Colorado, New Mexico, and Utah: U.S. Geological Survey Professional Paper 1625–B, CD–ROM.

Appalachian Basin:

Northern and Central Appalachian Basin Coal Regions Assessment Team, 2001, 2000 Resource assessment of selected coal beds and zones in the northern and central Appalachian basin coal regions: U.S. Geological Survey Professional Paper 1625–C, CD–ROM.

Illinois Basin:

Hatch, J.R., and Affolter, R.H., eds., 2002, Resource Assessment of the Springfield, Herrin, Danville, and Baker Coals in the Illinois Basin: U.S. Geological Survey Professional Paper 1625–D, CD–ROM.

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The geologic information and interpretations and digital data provide comprehensive information on the location, distribution, amount, and quality of these resources to the public, land-use planners, industry, and local, regional, and Federal governments. In addition, the results of this project have a variety of uses including identifying coal deposits that have potential for future coal and coalbed gas development, as well as providing the basic information should technological changes or unforeseen energy events occur or environmental concerns or market trends require a shift of emphasis from one coal region to another.

The five priority regions were chosen because they produce the largest amount of coal in the United States and are likely to continue to be major producers for the next several decades. Within each region, coal beds and zones were prioritized on the basis of potential future production. However, there are other coal-bearing regions in the United States, including Alaska, the Black Warrior Basin in the Southern Appalachian Basin, Washington State, parts of the midcontinent (for example Kansas), and the Pennsylvania anthracite field, which contain large resources. These regions have not yet been assessed.

Chapter Description

This chapter is an interactive overview designed to illustrate part of the wealth of information contained in each of the regional Professional Papers. This chapter is meant only as an introduction to the information found in those chapters, and readers are encouraged to obtain copies of each regional CD for a comprehensive look at the geology, resources, and coal quality of those regions.

From the first view of the national map, which outlines the five priority regions, the reader may go to the regional map and(or) stratigraphic section of each of the assessed areas. The regional maps and the stratigraphic sections identify each of the assessed units in the region, and links to coal isopach maps—maps showing coal thickness and distribution—for each assessed unit of the NCRA are provided. These maps form the basis for a coal assessment. Other maps necessary for a resource assessment, such as structure contour, overburden maps, and outcrop maps, are not reproduced here but may be found in each of the regional Professional Papers.

In addition to the coal isopach maps, there are compilation tables of the coal resource tonnages and coal quality parameters found in this chapter. These may be accessed from the national overview map or each of the regional maps or stratigraphic sections, as indicated by the specific icons.

References Cited

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Explanation of icons

MOVE CURSOR OVER ICONS FOR BRIEF EXPLANATIONS

(Buttons are not active -- for explanation only.)

national map

coal tonnage

regional map

coal quality

strat column

view tonnage

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View of western part of Colorado Plateau in central Utah. Shale slopes in the distance are capped by the Star Point Sandstone and coal-bearing Blackhawk Formation.

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Edna mine in the Yampa coal field of Colorado being reclaimed during 1995.

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Colowyo coal mine in the northern part of the Danforth Hills coal . eld. The mine produces coal from FGF and FGG zones (as many as nine beds) in the Fairfield coal group by dragline and truck-and-shovel methods.

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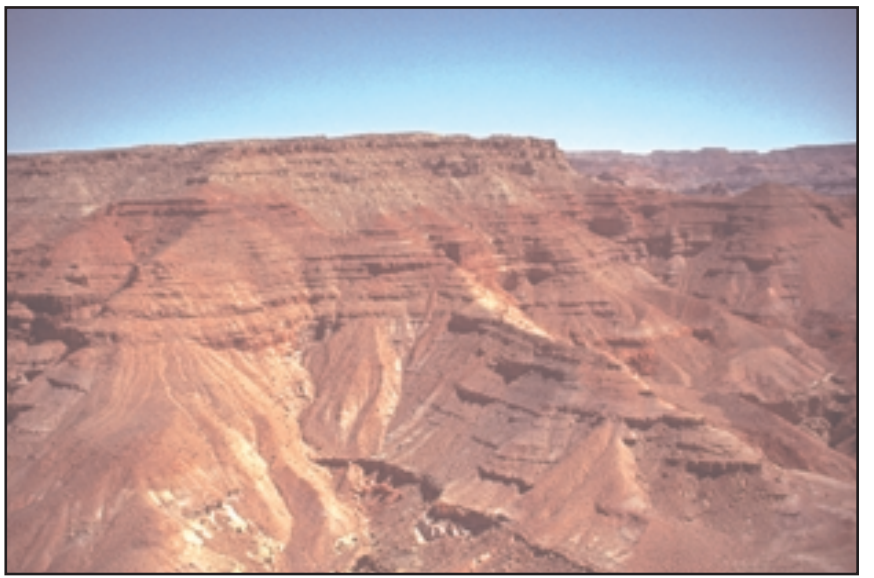
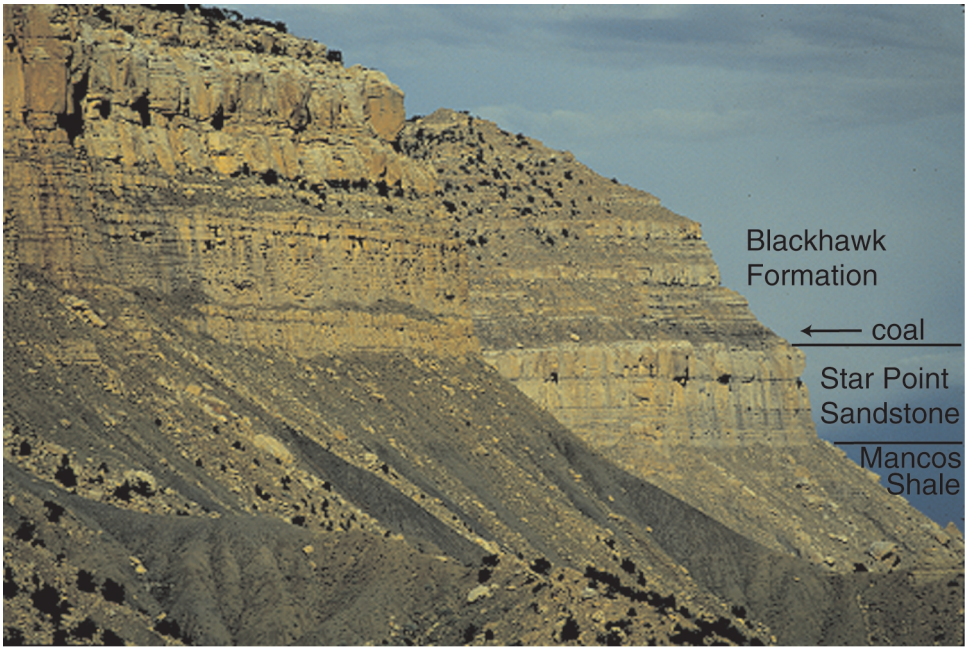
Fiftymile Mountain on southeastern margin of Kaiparowits Plateau, as viewed from Lake Powell. Photograph by Peter McCabe.



Red strata produced by burned coal beds in the southern part of the Kaiparowits Plateau. Photograph by Peter McCabe.

return



Outcrops in Convulsion Canyon showing occurrence of coal at the base of the Blackhawk Formation.

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Photograph of the Ferron Sandstone Member of the Mancos Shale showing thick sandstones and the Sub-A coal zone at the Interstate-70 roadcut south of Emery, Utah.

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Photograph looking northeast across Henry Mountains coal field showing steeply dipping Jurassic strata along the Waterpocket fold in the foreground, relatively flat-lying mesas of Upper Cretaceous strata in the basin center, and intrusive-cored Henry Mountains on the east side of the coal field along the southern horizon. Photograph by Mark A. Kirschbaum, U.S. Geological Survey.

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Outcrop of the Johnson coal in the south Carbon coal field. Photograph by R.M. Flores.

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Beulah-Zap coal zone.

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Normal faults showing displacement of Ferris coal beds in the highwall of the Medicine Bow coal mines. Photograph by R.M. Flores.

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Deadman coal zone.

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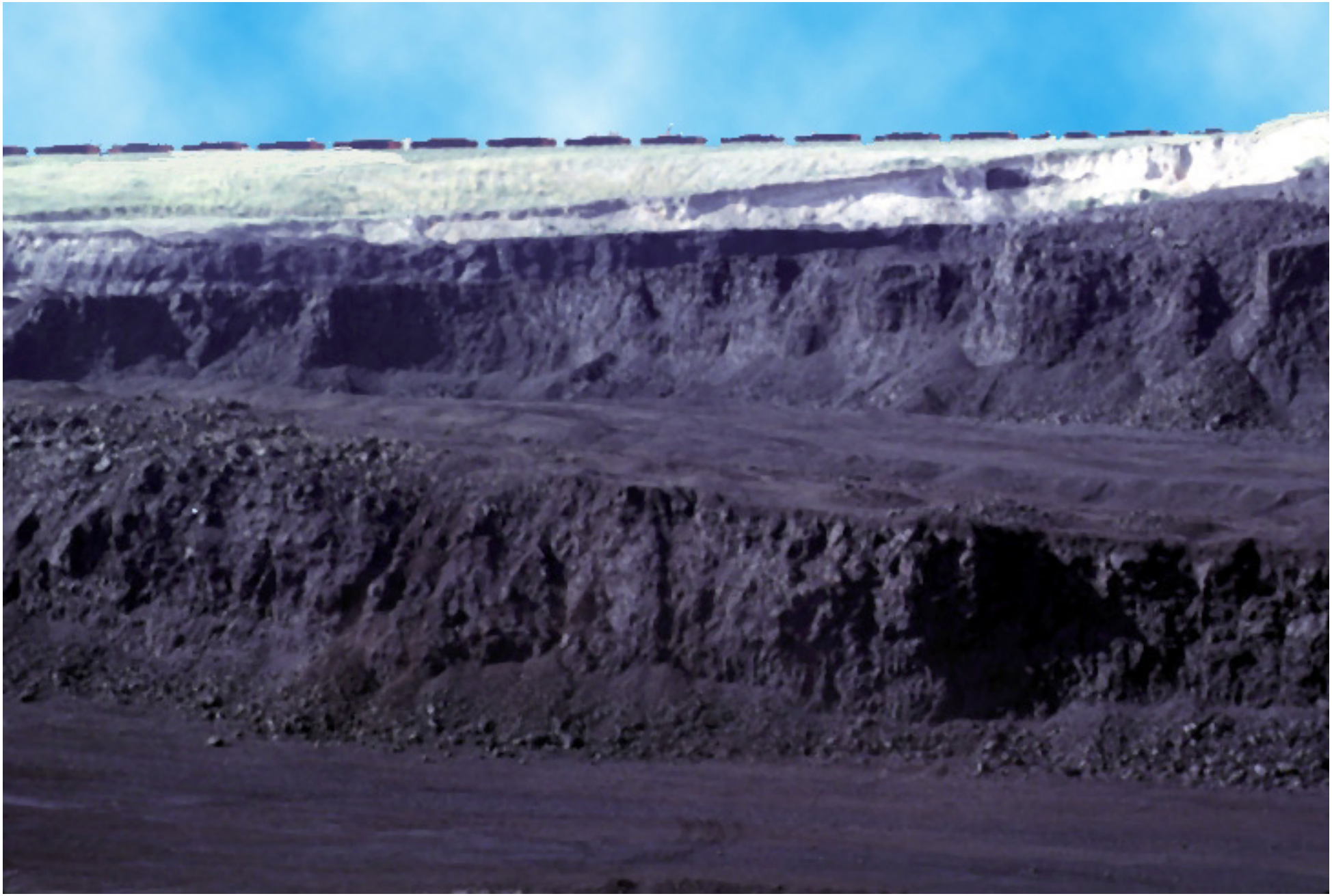

Wyodak–Anderson coal, which is more than 100 feet thick, in the Eagle Butte coal mine in the Gillette coal field in Wyoming. Coal train is on horizon in background. Photograph by R.M. Flores.

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The Harmon (upper bed) and Hansen (lower bed) coal separated by flood-plain mudstone and siltstone.
Photograph by R.M. Flores.

return Harmon return Hansen

Blocky nature of Gulf Coast Wilcox Group coal.

View of a mine pit in the Gulf Coast coal region. The top of the coal bed being mined is exposed at the far end of the pit.

A dragline being used to remove overburden in Gulf Coast mines.

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