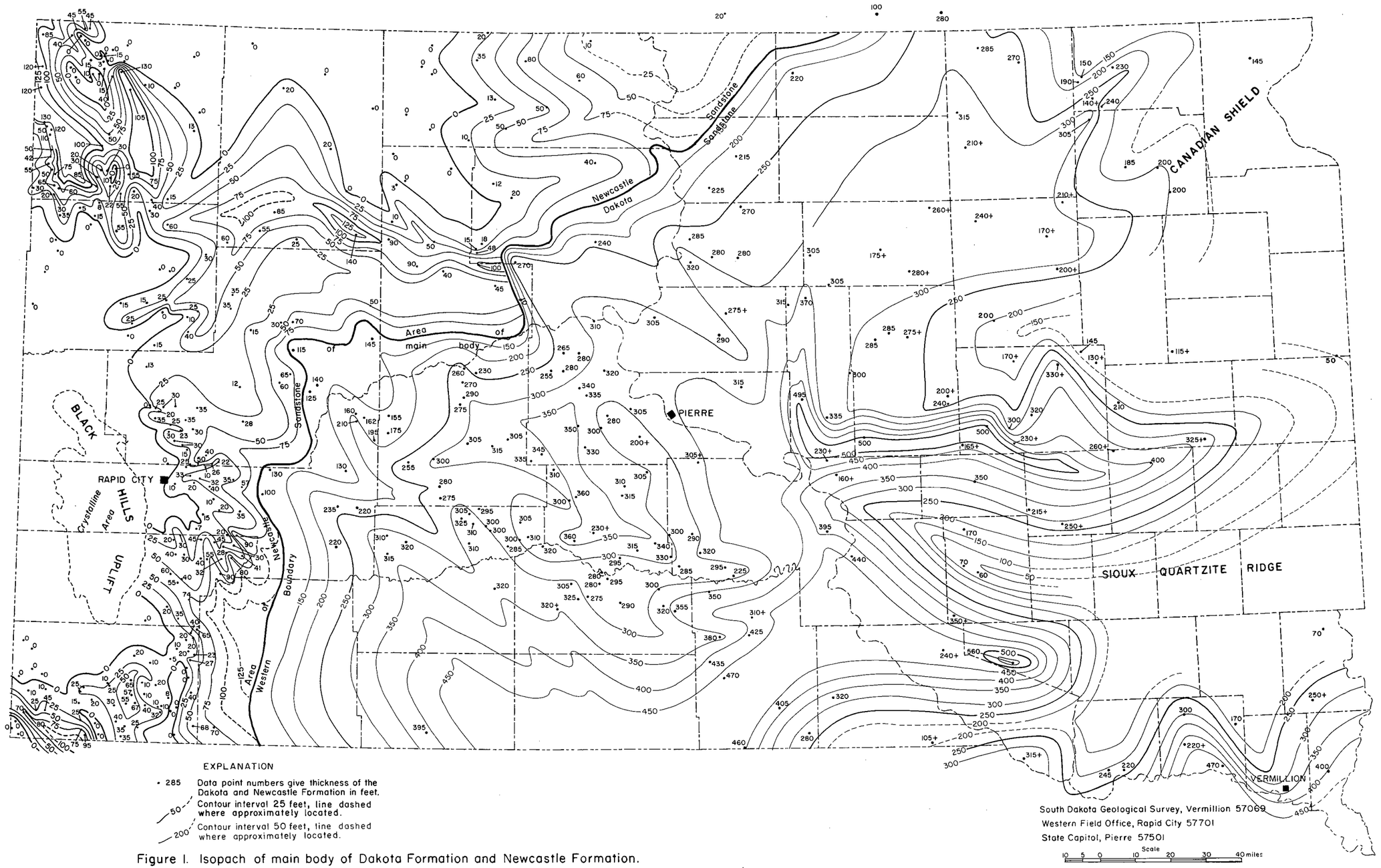
SOUTH DAKOTA



EXPLANATION

- 285 Data point numbers give thickness of the Dakota and Newcastle Formation in feet.
- 50 Contour interval 25 feet, line dashed where approximately located.
- 200 Contour interval 50 feet, line dashed where approximately located.

Figure 1. Isopach of main body of Dakota Formation and Newcastle Formation.

South Dakota Geological Survey, Vermillion 57069
Western Field Office, Rapid City 57701
State Capitol, Pierre 57501

Scale 10 5 0 10 20 30 40 miles

1971

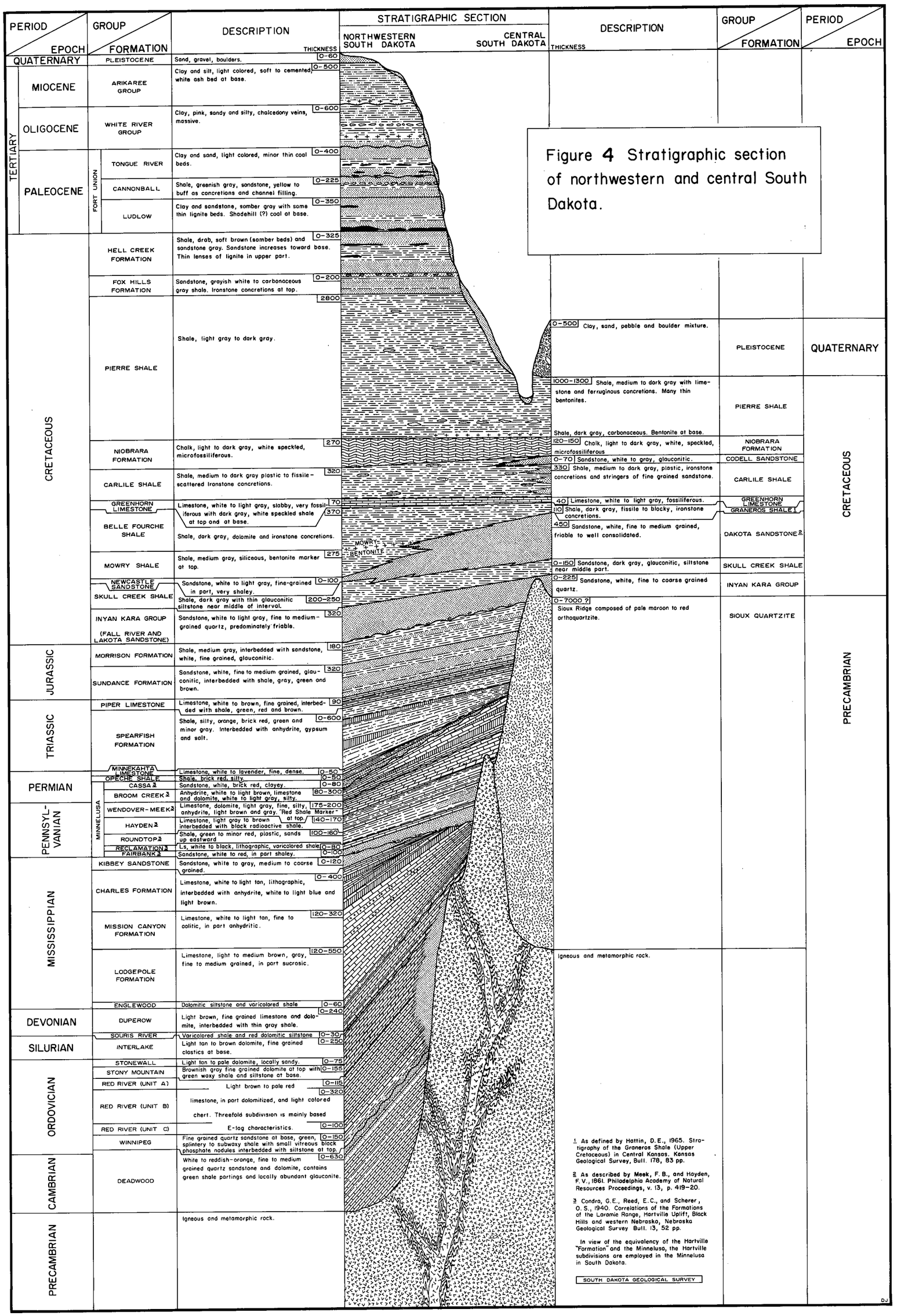


Figure 4 Stratigraphic section of northwestern and central South Dakota.

[1] As defined by Hattin, D.E., 1965. Stratigraphy of the Graneros Shale (Upper Cretaceous) in Central Kansas. Kansas Geological Survey, Bull. 178, 83 pp.

[2] As described by Meek, F. B., and Hayden, F. V., 1861. Philadelphia Academy of Natural Resources Proceedings, v. 13, p. 419-20.

[3] Condra, G.E., Reed, E.C., and Scherer, O. S., 1940. Correlations of the Formations of the Laramie Range, Hartville Uplift, Black Hills and western Nebraska, Nebraska Geological Survey Bull. 13, 52 pp.

In view of the equivalency of the Hartville "Formation" and the Minnelusa, the Hartville subdivisions are employed in the Minnelusa in South Dakota.

SOUTH DAKOTA GEOLOGICAL SURVEY

DJ

SOUTH DAKOTA

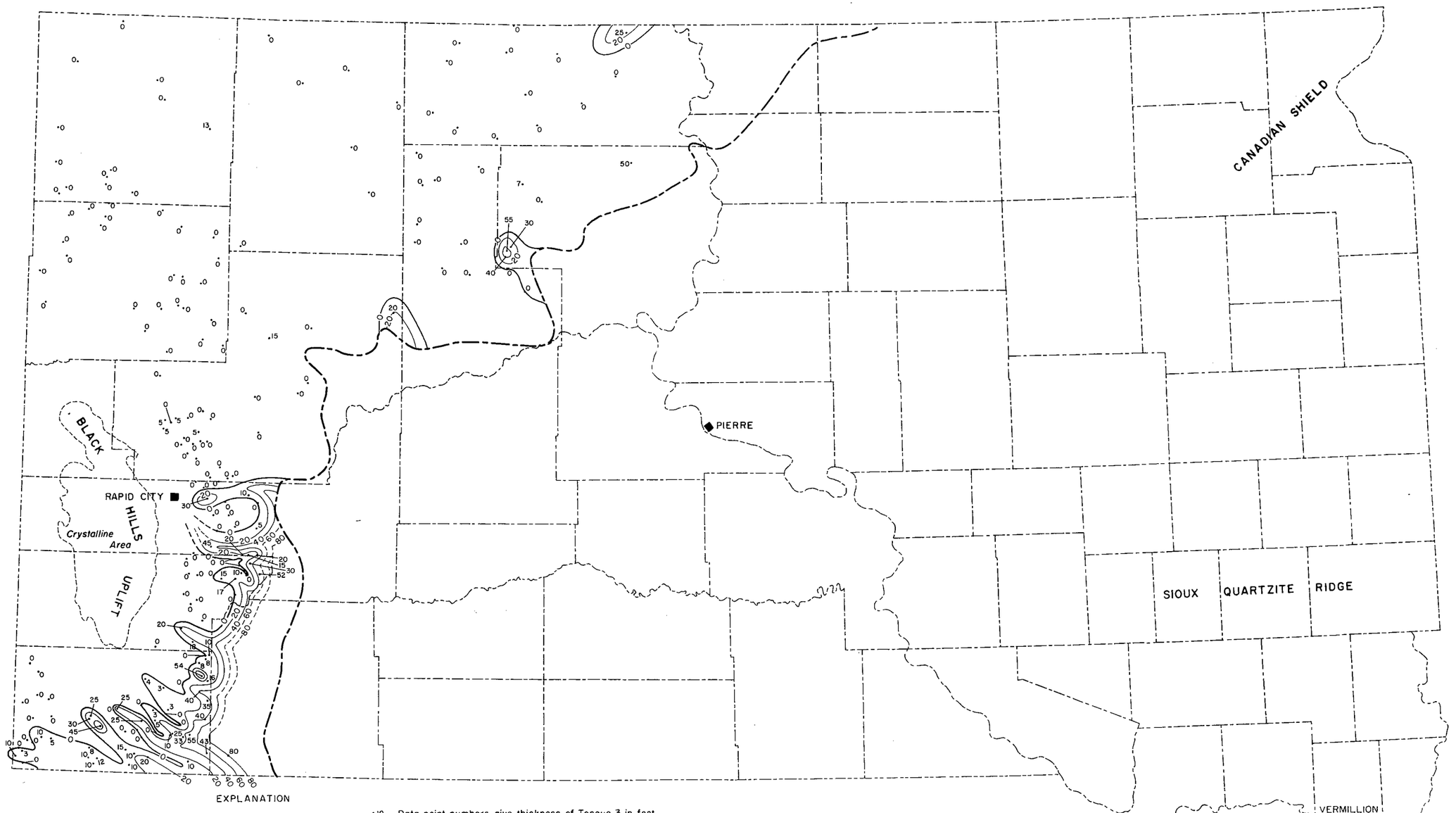
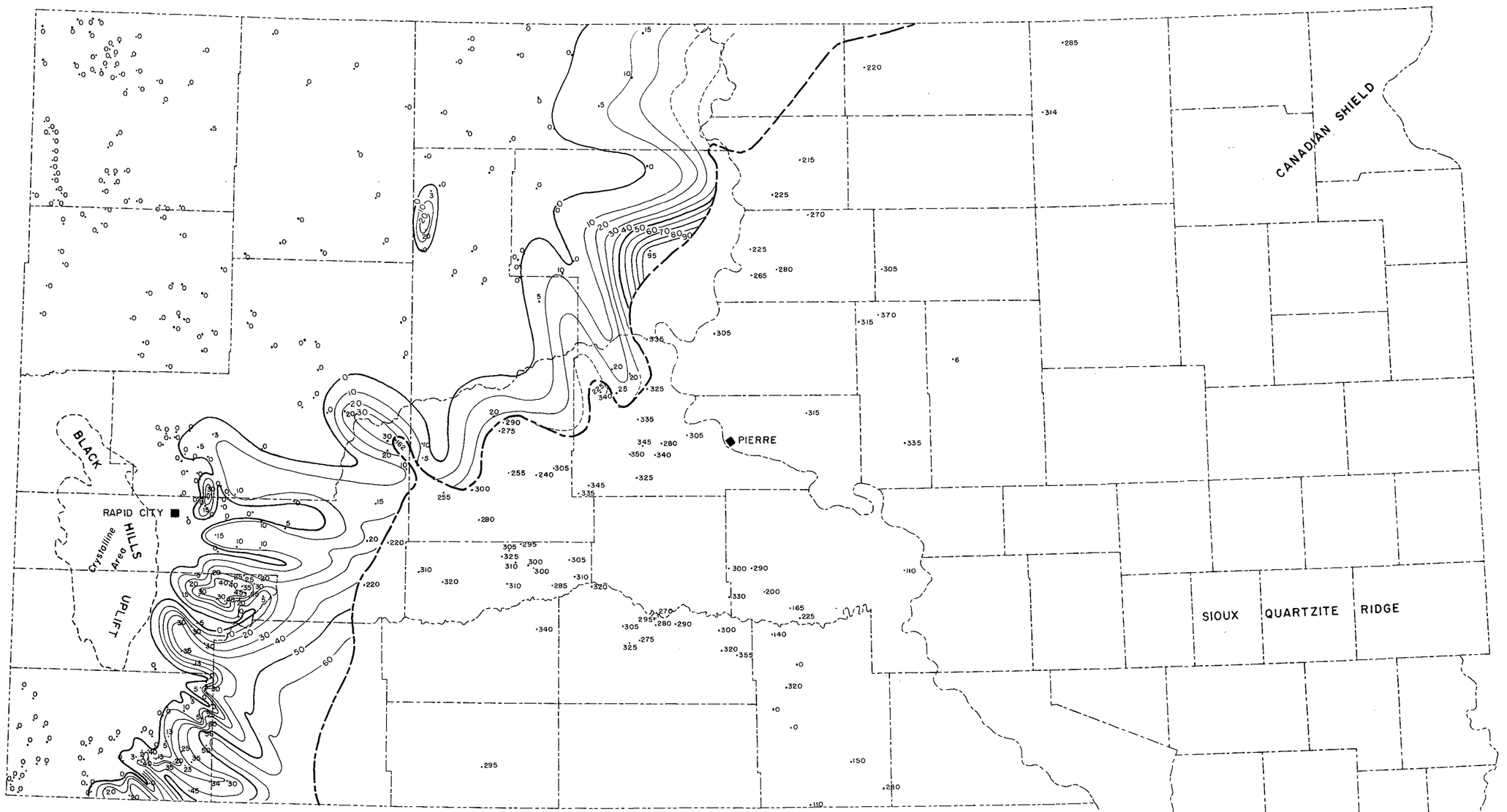


Figure 5. Isopach of Tongue 3 of the Dakota Formation.

1971

SOUTH DAKOTA



EXPLANATION

·20 Data point numbers give thickness of Tongue 2 in feet.

Approximate area of coalescing of Tongues 2 and 3

Contour interval 10 feet, line dashed where approximately located.

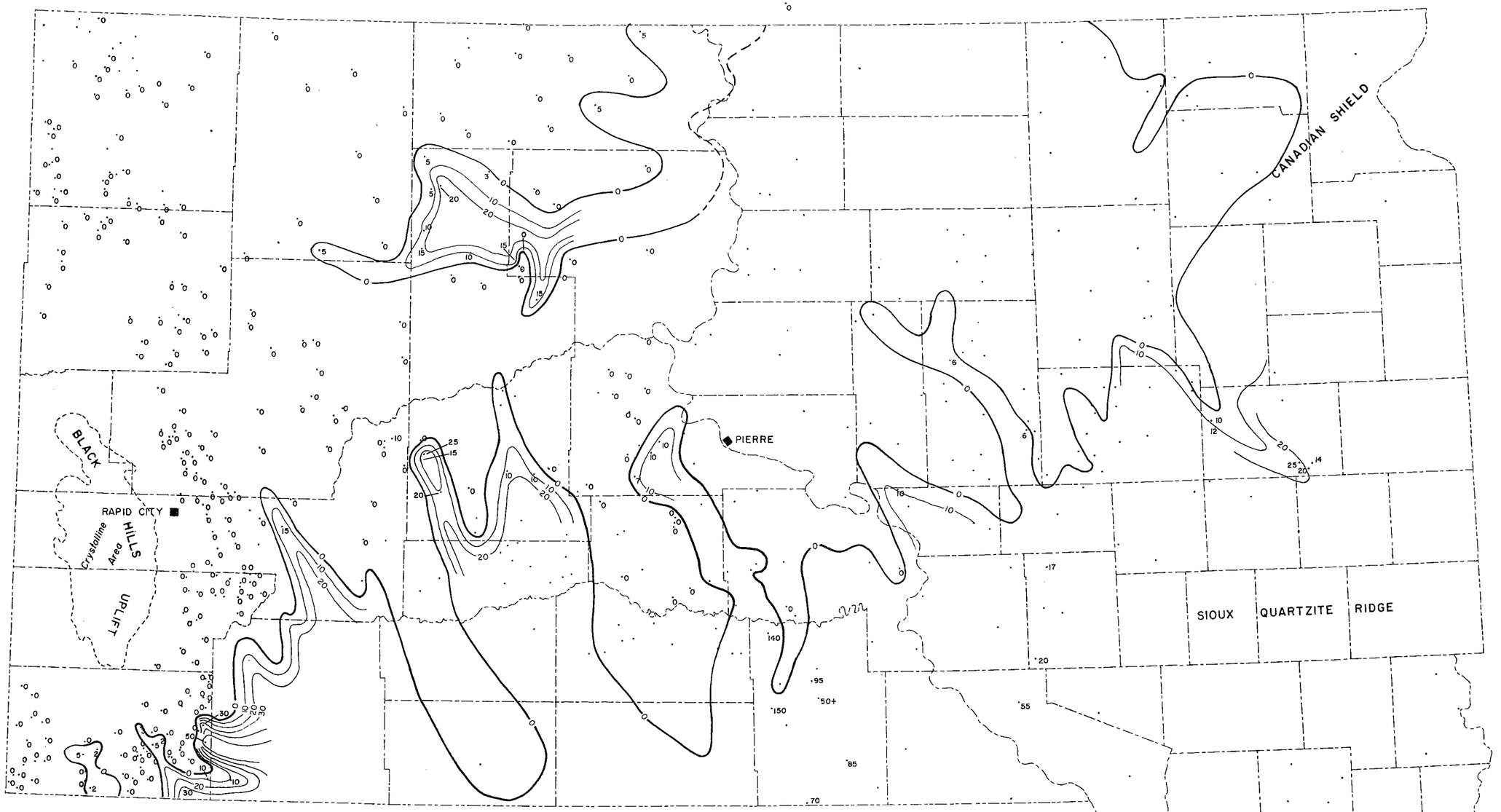
Figure 6. Isopach of Tongue 2 of the Dakota Formation.

South Dakota Geological Survey, Vermillion 57069
Western Field Office, Rapid City 57701
State Capitol, Pierre 57501

Scale
10 5 0 10 20 30 40 miles

1971

SOUTH DAKOTA



EXPLANATION

·10 Data point numbers give thickness of Tongue I in feet.

Data points without numbers indicate areas where tongues coalesce and are impossible to differentiate.

Contour interval 10 feet, line dashed where approximately located.

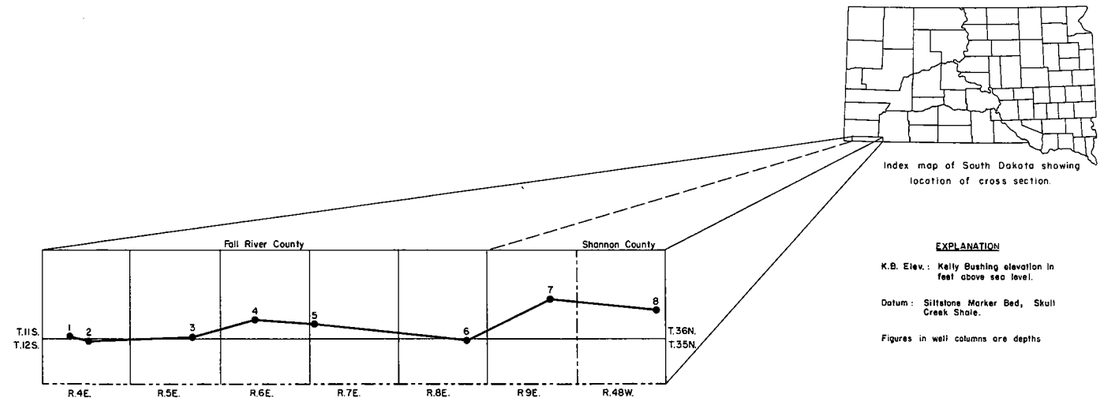
Figure 7. Isopach of Tongue I of Dakota Formation.

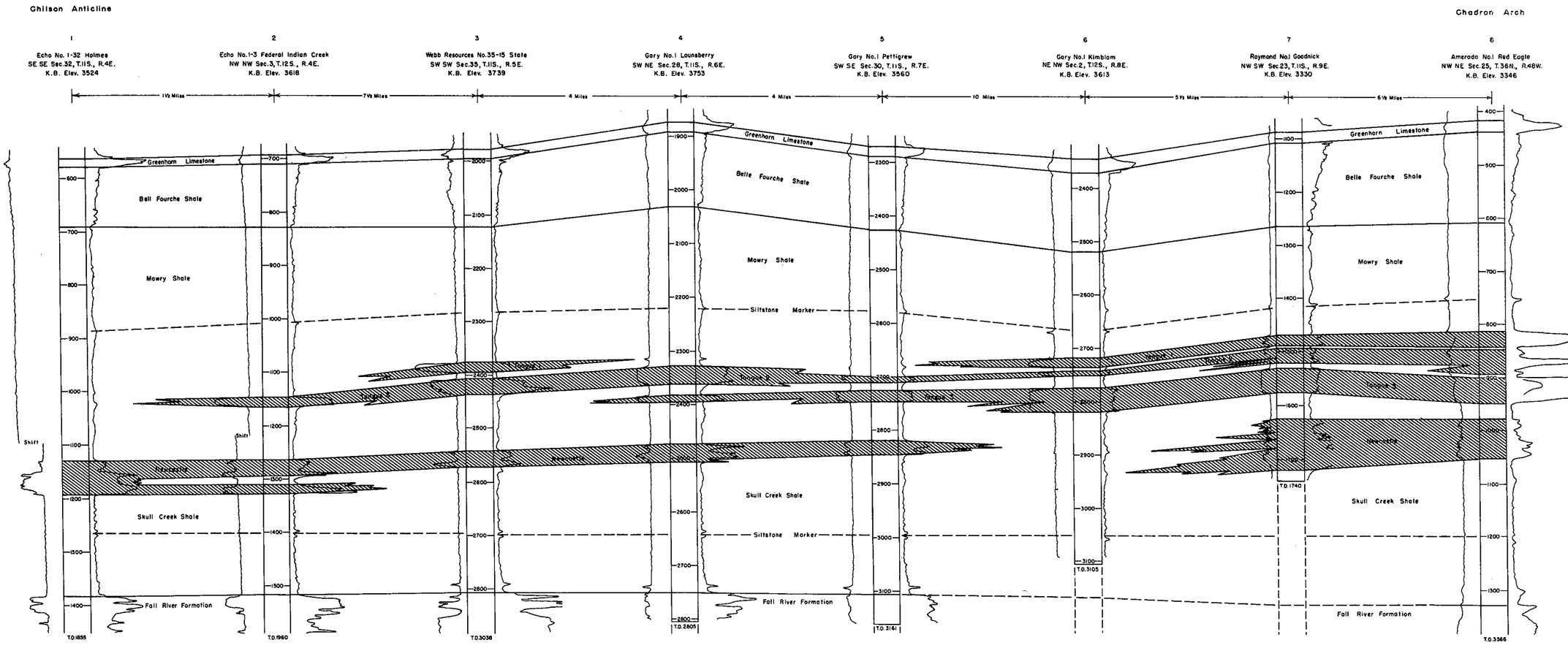
South Dakota Geological Survey, Vermillion 57069
Western Field Office, Rapid City 57701
State Capitol, Pierre 57501

Scale
10 5 0 10 20 30 40 miles

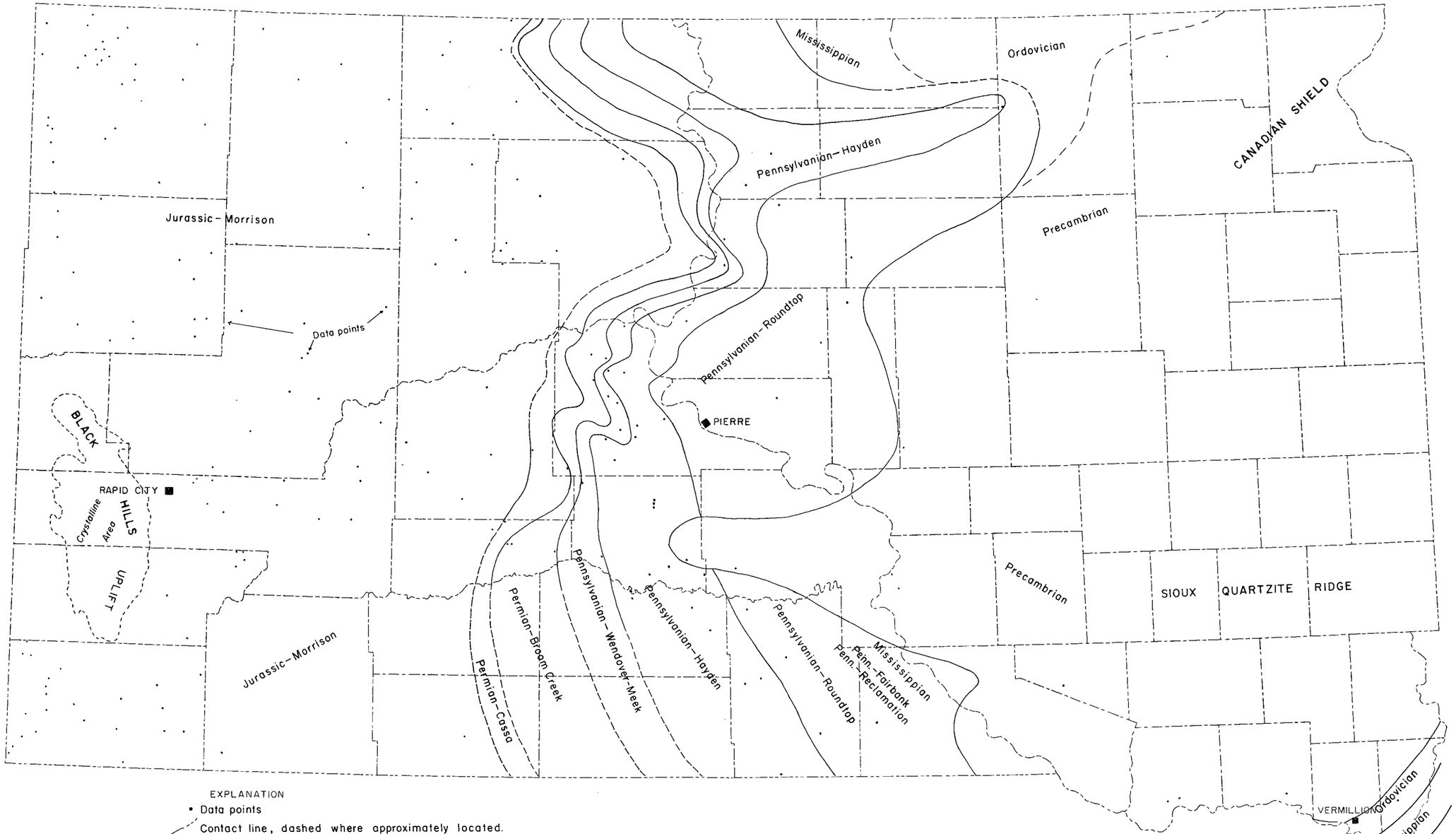
1971

Figure 8. Cross section of the Dakota Sandstone from the Chilson Anticline to the northern terminus of the Chadron Arch.





SOUTH DAKOTA



EXPLANATION

- Data points

Contact line, dashed where approximately located.

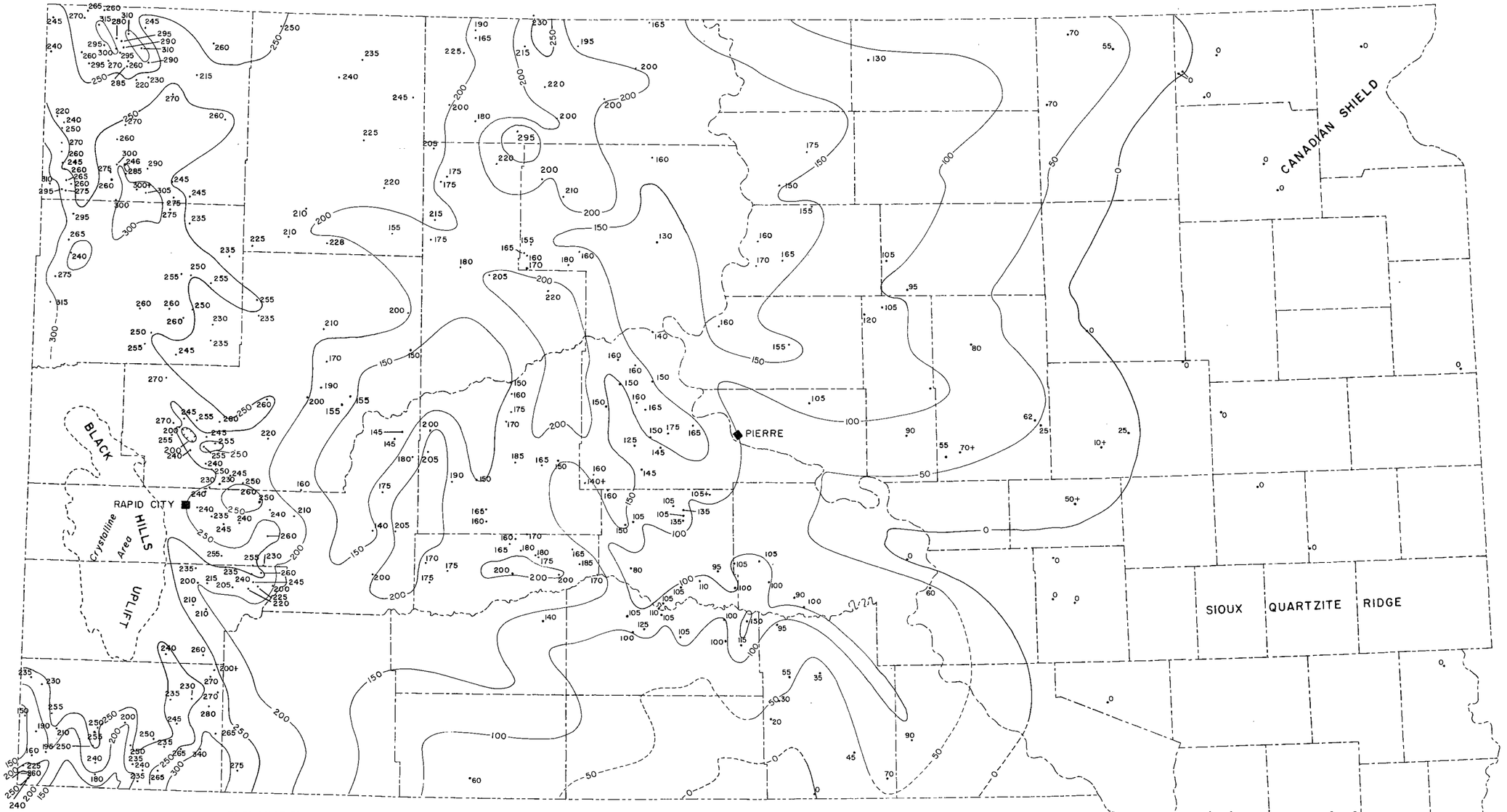
Figure 9. Map showing distribution of pre-Cretaceous subcrops.

South Dakota Geological Survey, Vermillion 57069
Western Field Office, Rapid City 57701
State Capitol, Pierre 57501

Scale 10 5 0 10 20 30 40 miles

1971

SOUTH DAKOTA



EXPLANATION

•235 Data points give thickness of Skull Creek Shale in feet.

100 Contour interval 50 feet, line dashed where approximately located.

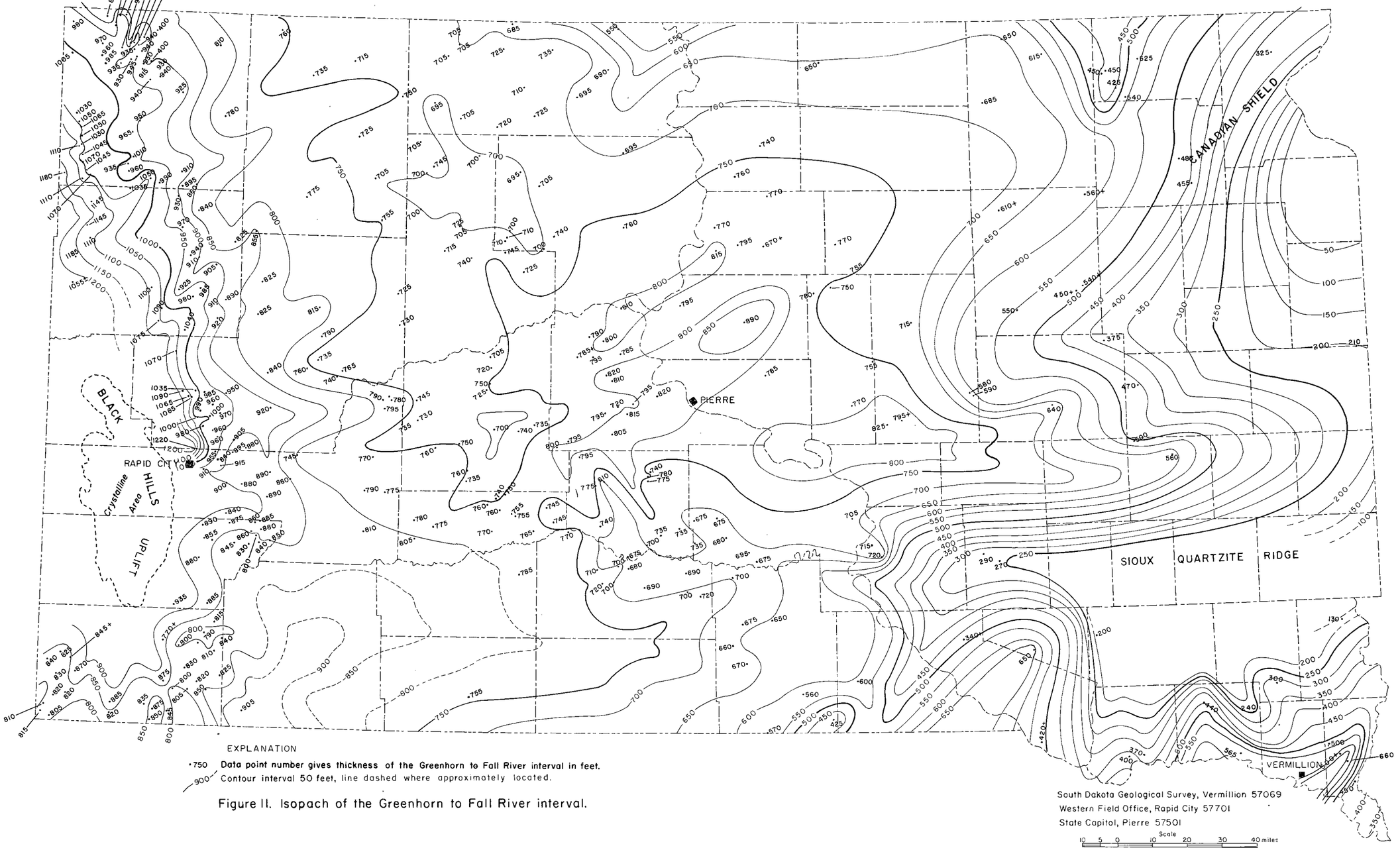
Figure 10. Isopach of the Skull Creek Shale.

South Dakota Geological Survey, Vermillion 57069
Western Field Office, Rapid City 57701
State Capitol, Pierre 57501

Scale
10 5 0 10 20 30 40 miles

1971

SOUTH DAKOTA



EXPLANATION

·750 Data point number gives thickness of the Greenhorn to Fall River interval in feet.

900 Contour interval 50 feet, line dashed where approximately located.

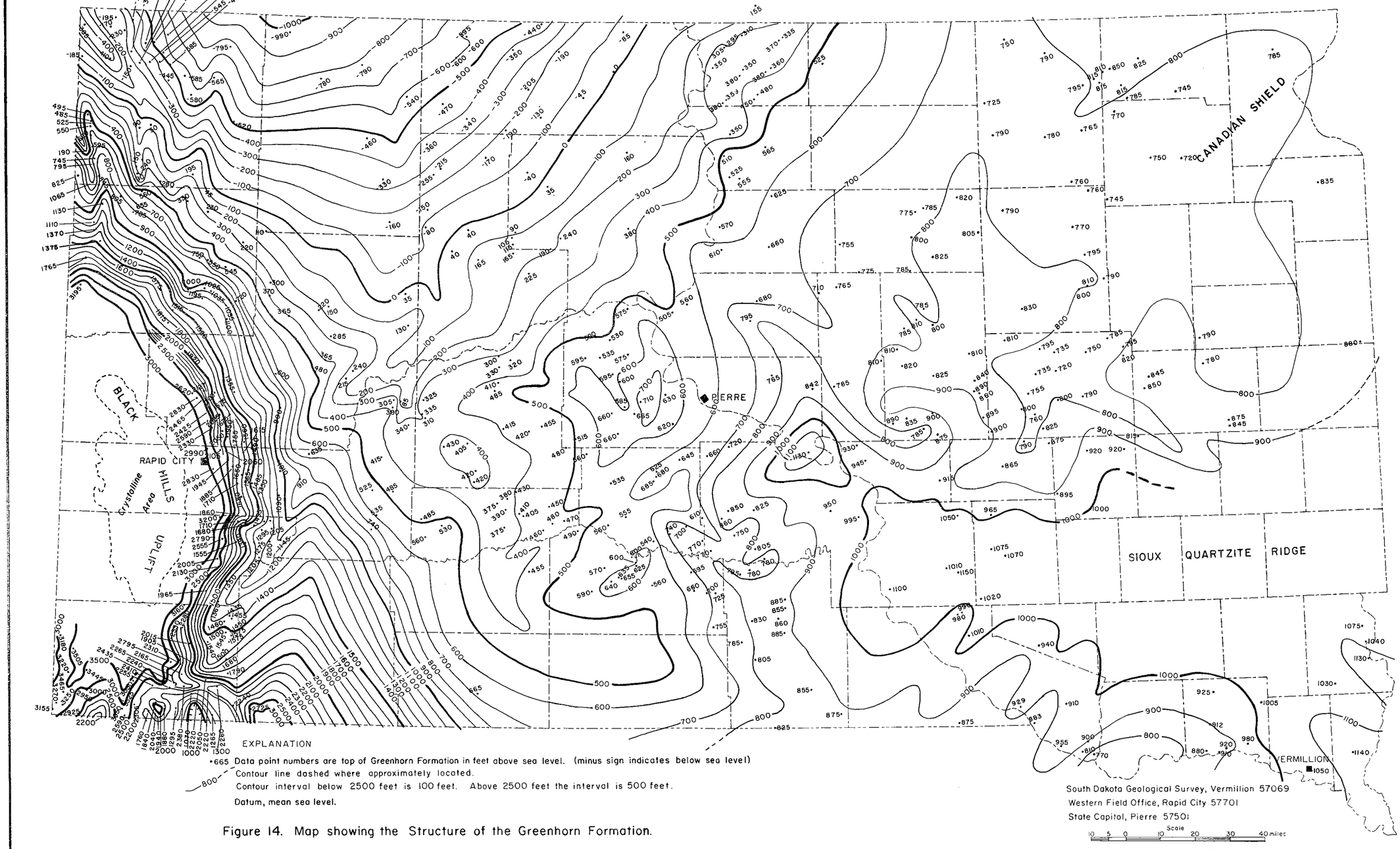
Figure 11. Isopach of the Greenhorn to Fall River interval.

South Dakota Geological Survey, Vermillion 57069
Western Field Office, Rapid City 57701
State Capitol, Pierre 57501

Scale 10 5 0 10 20 30 40 miles

1971

SOUTH DAKOTA



EXPLANATION

•665 Data point numbers are top of Greenhorn Formation in feet above sea level. (minus sign indicates below sea level)

Contour line dashed where approximately located.

Contour interval below 2500 feet is 100 feet. Above 2500 feet the interval is 500 feet.

Datum, mean sea level.

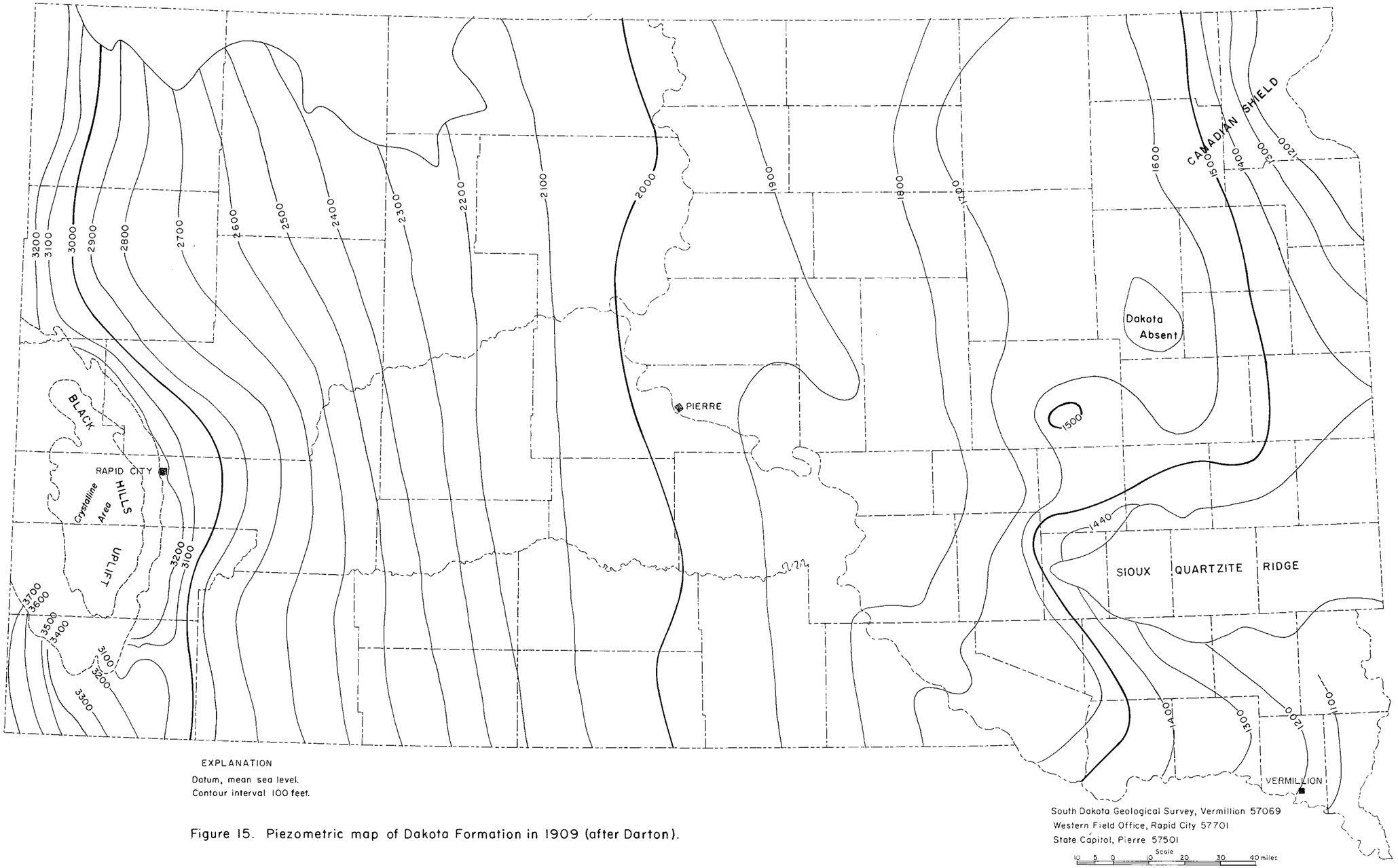
Figure 14. Map showing the Structure of the Greenhorn Formation.

South Dakota Geological Survey, Vermillion 57069
Western Field Office, Rapid City 57701
State Capitol, Pierre 57501

Scale
10 5 0 10 20 30 40 miles

1971

SOUTH DAKOTA



EXPLANATION

Datum, mean sea level.
Contour interval 100 feet.

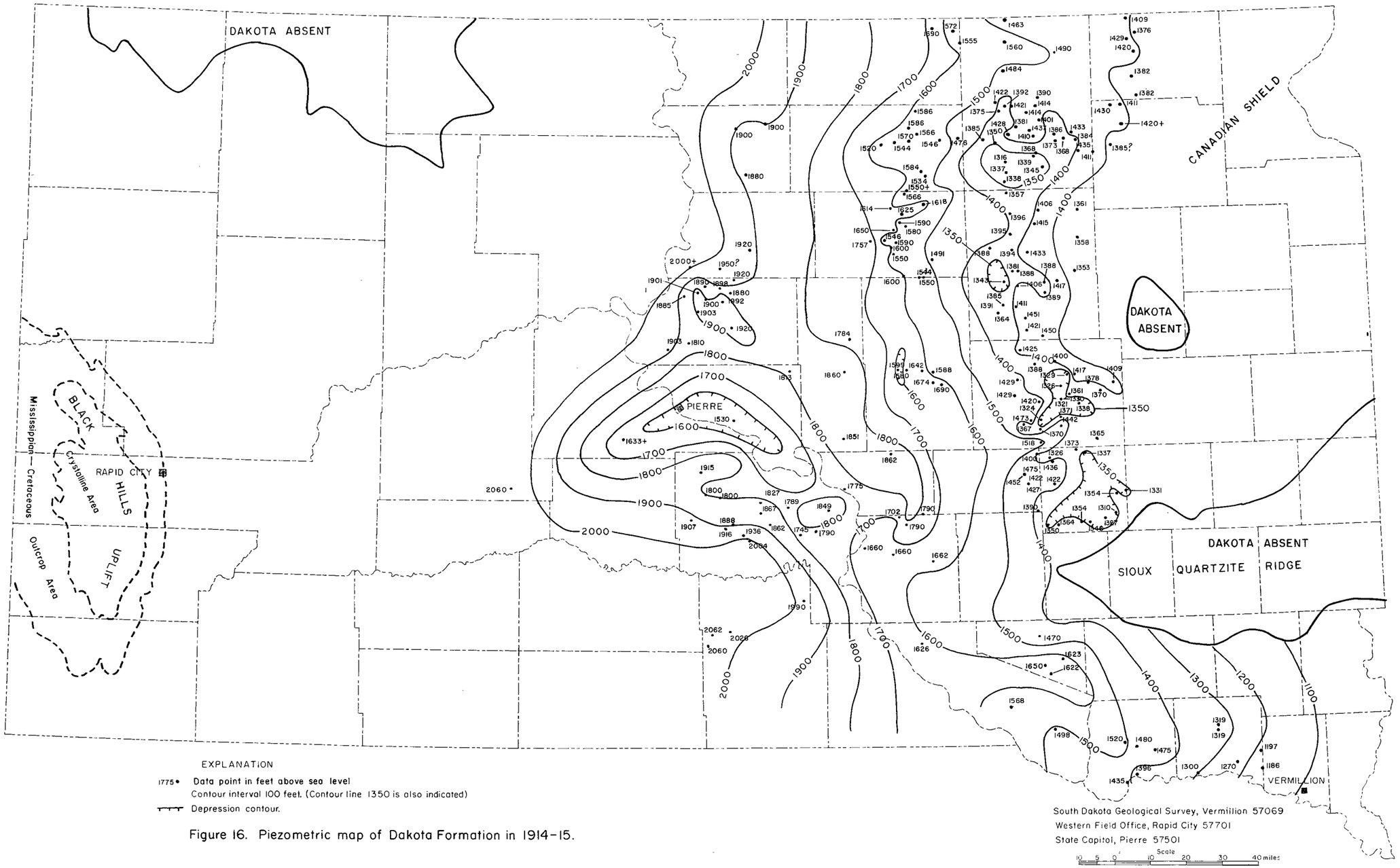
Figure 15. Piezometric map of Dakota Formation in 1909 (after Darton).

South Dakota Geological Survey, Vermillion 57069
Western Field Office, Rapid City 57701
State Capitol, Pierre 57501

Scale
10 5 0 10 20 30 40 miles

1971

SOUTH DAKOTA



EXPLANATION

1775• Data point in feet above sea level

Contour interval 100 feet. (Contour line 1350 is also indicated)

Depression contour.

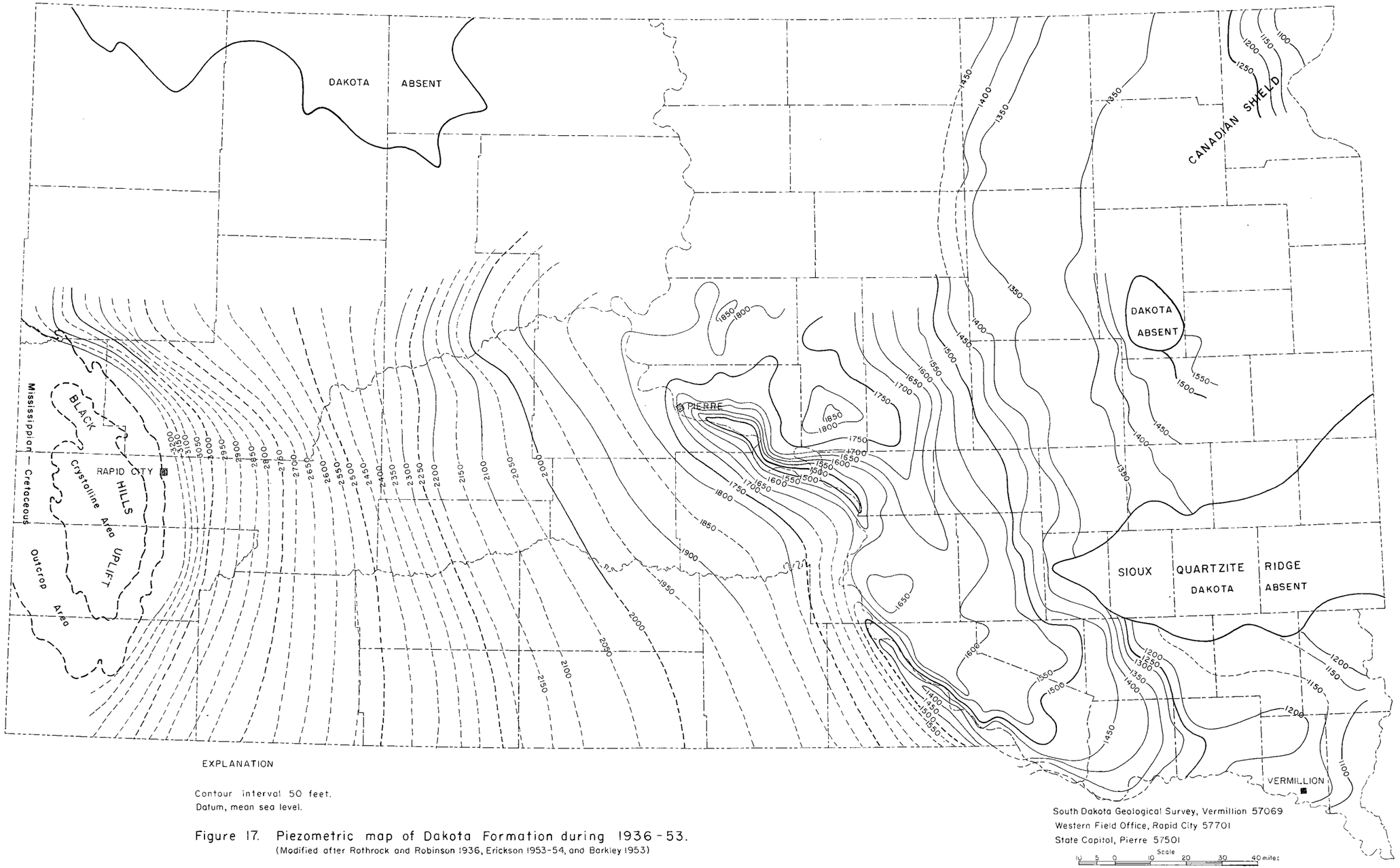
Figure 16. Piezometric map of Dakota Formation in 1914–15.

South Dakota Geological Survey, Vermillion 57069
Western Field Office, Rapid City 57701
State Capitol, Pierre 57501

Scale 10 5 0 10 20 30 40 miles

1971

SOUTH DAKOTA



EXPLANATION

Contour interval 50 feet.
Datum, mean sea level.

Figure 17. Piezometric map of Dakota Formation during 1936-53.
(Modified after Rothrock and Robinson 1936, Erickson 1953-54, and Barkley 1953)

South Dakota Geological Survey, Vermillion 57069
Western Field Office, Rapid City 57701
State Capitol, Pierre 57501

Scale 10 5 0 10 20 30 40 miles

1971

SOUTH DAKOTA

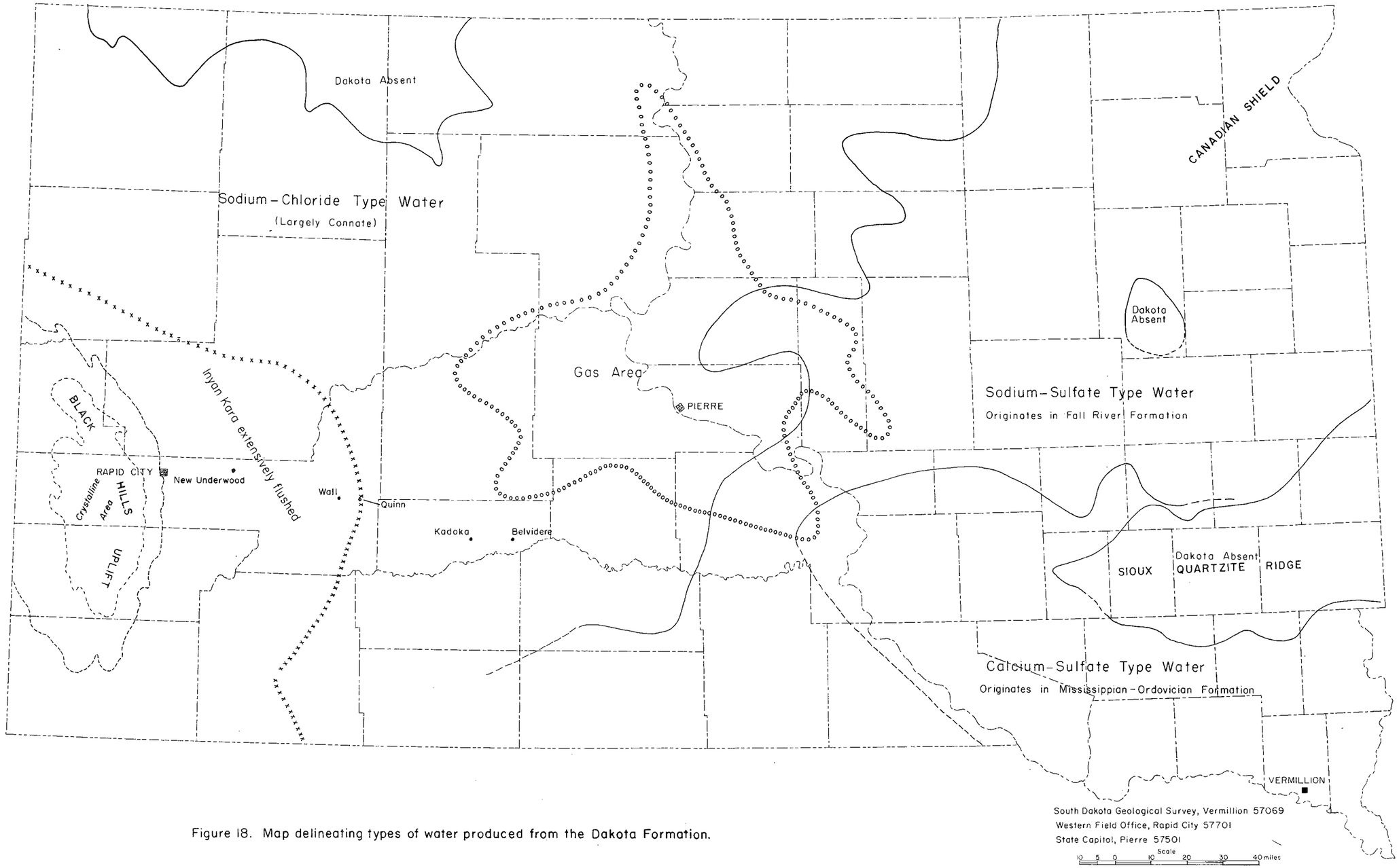


Figure 18. Map delineating types of water produced from the Dakota Formation.

1971