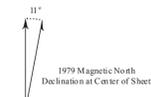




# Lignite Reserves

## Drake 100K Sheet, North Dakota

|          |                      |              |
|----------|----------------------|--------------|
| Minot    | Velva                | Leeds        |
| Garrison |                      | New Rockford |
| Hazen    | Mc Clusky/Carrington |              |



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The Drake 100K sheet encompasses most of Sheridan County. This map sheet contains only about 24 million tons of coal reserves (economically mineable coal) because it is located along the eastern erosional edge of the coal-bearing rocks of the Fort Union Formation. The Bonnes Coulee is the only mineable coal deposit in this map sheet. Mineable coal thicknesses average about 12 feet for the Coteau bed, the major coal in the Bonnes Coulee deposit (Murphy, 2006).

According to the records of the North Dakota Public Service Commission, only four coal mines are known to have operated in this map sheet. The largest, the Velva coal mine, operated in the Bonnes Coulee deposit. It began operation in 1927 under the Truax-Traer Coal Company and later under Consolidation Coal Company. The Velva mine extended into easternmost Ward County, but did not expand into McHenry County. The Velva mine ceased operation in the mid-1980s. A coal mine is present in this map sheet that is not listed by the ND Public Service Commission. The Reimche mine is located along the south shore of Coal Mine Lake. It operated in the 1930s and mined coal from a four-foot seam. The Reimche mine is unique. Not only is it likely to be the easternmost coal mine that ever operated in North Dakota, it is located in an area of glacial sediment that is otherwise devoid of coal-bearing rocks. A glacier carried or thrust this coal bed into this area and erosion exposed it along the south bank of the lake. It is possible that this coal does not extend much beyond the area that was mined.

References  
Murphy, E. C., 2006, The lignite reserves of North Dakota: North Dakota Geological Survey Report of Investigation no. 104, 141 p.

### UNIT DESCRIPTIONS

- Geology Undifferentiated**
- Area of Mined Lignite**
- Economic Coal Deposits**

Economic coal deposits are those that meet the minimum criteria established by coal companies operating surface mines in North Dakota. These economic criteria include a minimum cumulative coal thickness of ten feet-typically occurring in less than two beds, a minimum individual bed thickness of at least 2.5 feet, a ratio of overburden to coal thickness of not more than 10:1, a minimum of 25 feet of overburden, and a maximum depth to coal of approximately 150 feet.

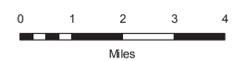
### Geologic Symbols

- Extent of Local Lignite Reserves
- Data Points  
Includes coal exploration NDGS/USGS drill holes, sub-surface mineral drill holes, oil & gas wells, and NDSWC drill holes.
- Abandoned coal mine plotted from the records of the Abandoned Mine Land Division of the North Dakota Public Service Commission.

### Other Features

- Water
- River - Perennial
- Water - Intermittent
- Stream - Intermittent
- Marsh
- County Boundary
- US Highway
- State Highway
- Paved Road
- Unpaved Road
- Section Corners

Scale 1:100,000



Mercator Projection 1927 North American Datum  
Standard parallel 47° 30' Central meridian 100° 30'  
Shaded Relief - Vertical Exaggeration 9x

The North Dakota Geological Survey has published the Blacktail Coulee 1:24,000 quadrangle map (24K - c series) which is the only quadrangle that contains mineable coal deposits in the Drake 100k sheet. This map includes information on mineable coal thicknesses.

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