North Dakota Geological Survey
100K Series: Wlst - c

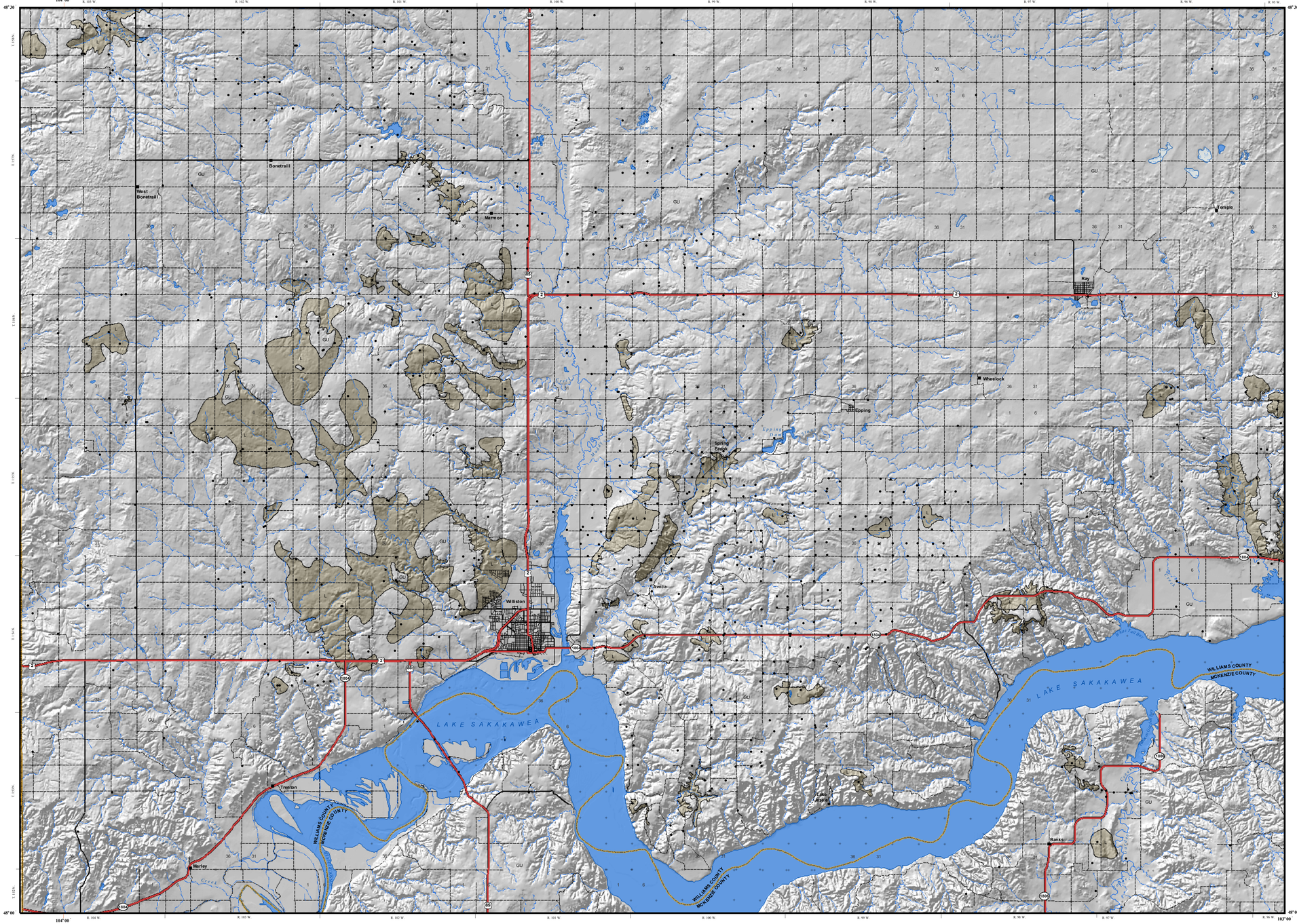
Lignite Reserves
Williston 100K Sheet, North Dakota

Plentywood	Crosby	Kenmare
Culbertson		Stanley
Sidney	Watford City	Parshall

Adjoining 100K Maps

13° 30'
1983 Magnetic North Declination at Center of Sheet

Edward C. Murphy, State Geologist
Lynn D. Helms, Director Dept. of Mineral Resources



Edward C. Murphy
2006

The Williston 100K sheet contains approximately 1.4 billion tons of mineable lignite. Most of this reserve is northwest or northeast of Williston. More than half of this tonnage is present in the Sand Creek (402 million), Cow Creek (110 million), Camp Creek (269 million), and Blacktail (102 million) deposits northwest of Williston, in T154-156N, and R101-103W (Murphy, 2006). The Stony Creek deposit in T154-156N, R99 & 100W (200 million) and the Beaver Creek deposit in T155 & 156N, R96W (100 million) are the only other deposits that exceed 100 million tons of economically mineable coal within this map sheet. Two other deposits exceed 100 million tons but extend into adjacent sheets. The Beaver Creek deposit extends into the Stanley sheet and has a total tonnage of 150 million tons. The Willow Creek deposit (T158N, R103W) extends into the Crosby 100K sheet and contains approximately 167 million tons of lignite (Murphy, 2006). Most of the mineable coals in this area are less than ten feet thick, but the combined mineable thickness of two beds in several of the deposits is 16 to 18 feet.

Glacial sediments (primarily till) cover the surface of most of this map sheet. The Sentinel Butte and Bullion Creek Formations (Paleocene) are present at the surface along drainages or underlie the glacial cover.

According to the records of the North Dakota Public Service Commission, About 40 coal mines operated at one time or another in this area. Not surprisingly, most of these were located within a ten-mile radius of Williston. The majority of coal mines in this map sheet were underground mines that opened in the early 1900s and 1910s and closed in the 1930s or 1940s. The last underground mine to operate in North Dakota, the Black Diamond mine in southeastern Williams County (T153N, R100W, section 4), closed in 1966.

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

UNIT DESCRIPTIONS

GU **Geology Undifferentiated**

L **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 occuring 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 ofapproximately 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.

Other Features

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

Note: This map was expanded beyond the normal Williston 100k Sheet to include an additional width of two miles to the Montana border.

The North Dakota Geological Surveycan publish on demand 1:24,000 scale quadrangles (24k-e series) of the mineable coal deposits in the Williston 100k sheet. These mapswould include information on mineable coal thicknesses.

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Scale 1:100,000

0 1 2 3 4

Miles

Mercator Projection 1927 North American Datum
Standard parallel 48° 00' Central meridian 103° 30'
Shaded Relief - Vertical Exaggeration 9x

Cartographic Compilation: Elroy L. Kadrmas