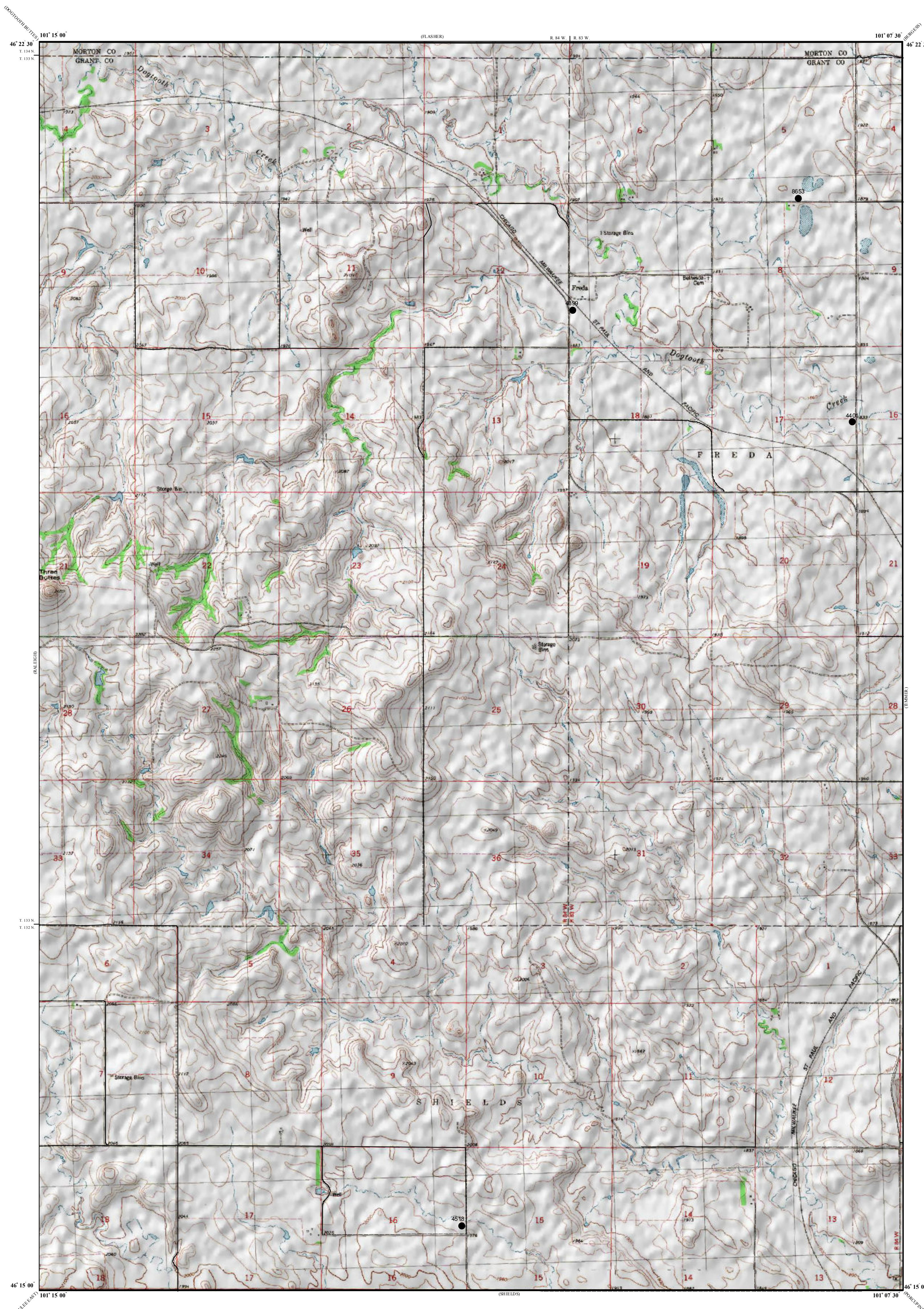


Lignite Reserves

Freda Quadrangle, North Dakota

Edward C. Murphy
2018



UNIT DESCRIPTIONS

GU Geology Undifferentiated

I 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

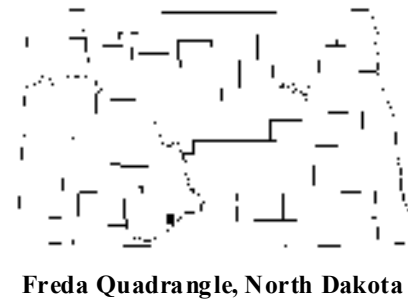
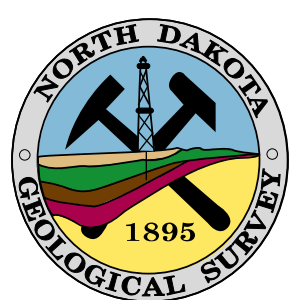
● Data Points
Includes coal exploration NDGS/USGS drill holes, sub-surface mineral drill holes, oil & gas wells, and NDSWC drill holes.

● 4399 Drill Hole Numbers

Other Features

— Paved Road

--- Unpaved Road



Freda Quadrangle, North Dakota

Scale 1:24,000
0 0.5 1
Miles
Lambert Conformal Conic Projection Standard Parallels 46° 15' 00" and 46° 22' 30"
1927 North American Datum NGVD 1929
USGS 7.5 Minute Topographic Map - Contour Interval 20 Feet

10° 30'
MN
1980 Magnetic North
Declination at Center of Sheet