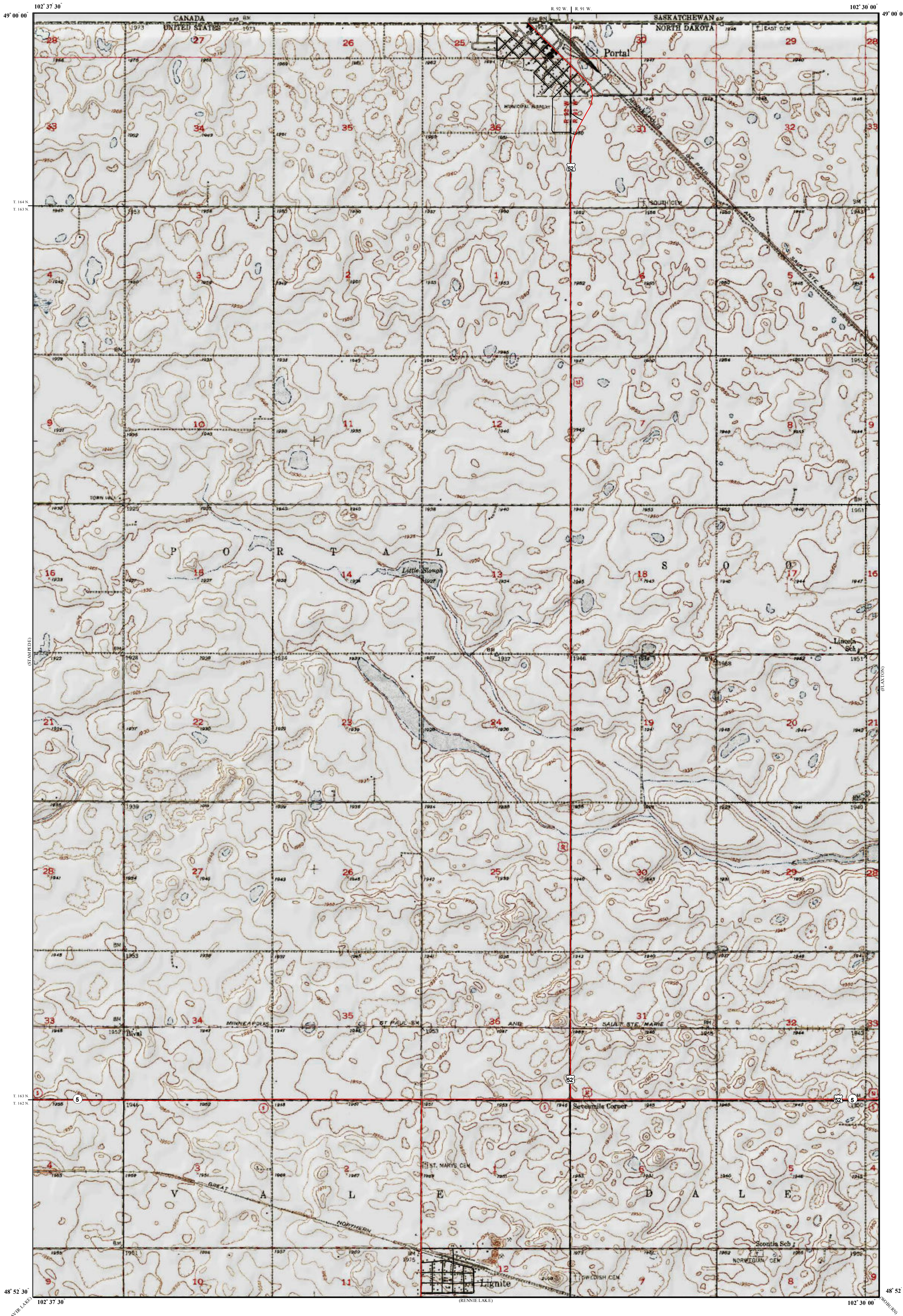


# Lignite Reserves

## Portal Quadrangle, North Dakota

Edward C. Murphy  
2008



### 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.

● Drill Hole Numbers

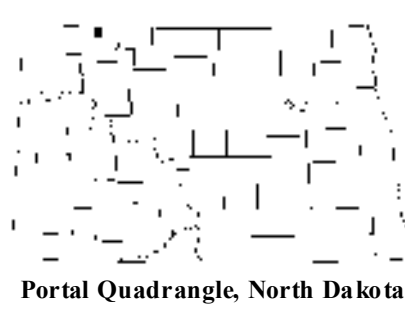
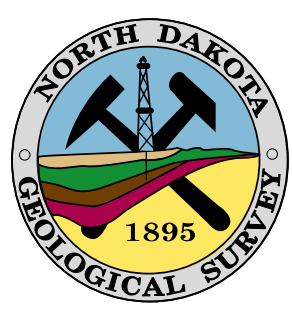
### Other Features

— US Highway

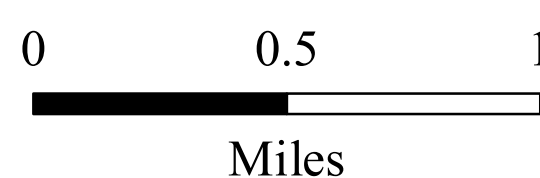
— State Highway

— Paved Road

--- Unpaved Road



Scale 1:24,000



Lambert Conformal Conic Projection Standard Parallels 48° 52' 30" and 49° 00' 00"  
1927 North American Datum NGVD 1929  
USGS 7.5 Minute Topographic Map - Contour Interval 5 Feet

15° 00'

