

# Surficial Geology of the Bremer (Iowa) 7.5' Quadrangle

## LEGEND

### Cenozoic Quaternary System

#### HUDSON EPISODE

- Qal** **Qal - Alluvium (DeForest Formation-Undifferentiated)** Generally one to four meters (3 to 13 feet) of massive to weakly stratified, grayish brown to brown loam, silt loam, clay loam, or loamy sand overlying less than three meters of poorly to moderately well sorted, massive to moderately well stratified, coarse to fine feldspathic quartz sand, pebbly sand, and gravel and more than three meters (10 feet) of pre-Wisconsin or Wisconsin Noah Creek Formation sand and gravel. Unit also includes colluvial deposits derived from adjacent map units. Seasonally high water tables occur in this map unit.
- Qal2** **Qal2 - Stream Valley Thick Alluvium (DeForest Formation-Undifferentiated)** Generally two to five meters (6 to 16 feet) of massive to moderately well stratified, coarse to fine feldspathic pebbly sand and gravel of the Noah Creek Formation. This unit locally serves as an aquifer in the map and adjacent areas. Seasonally high water tables occur in this map unit.

#### HUDSON and WISCONSIN EPISODE

- Qe** **Qe - Sand Dunes and Sand Sheets (Peoria Formation-sand facies)** Generally less than three meters (10 feet) of yellowish brown, massive, calcareous loamy sand to fine sand. It may overlie yellowish-brown sand and gravel with few intervening layers of silty clay. A thin mantle of loess, reworked loess or fine-grained alluvium (Qal) may be present. This unit includes silty colluvial deposits derived from the adjacent map units. In places this unit is mantled with one to three meters of fine to medium, well sorted medium to fine sand derived from wind reworking of the alluvium. This unit encompasses deposits that accumulated in low-relief stream valleys during the Wisconsin Episode and Hudson Episode. Seasonal high water table and some potential for flooding.
- Qnw2** **Qnw2 - Sand and Gravel (Noah Creek Formation)** Generally two to eighteen meters (6 to 59 feet) of yellowish brown to gray, poorly to well sorted, massive to well stratified, coarse to fine feldspathic quartz sand, pebbly sand and gravel with few intervening layers of silty clay. A thin mantle of loess, reworked loess or fine-grained alluvium (Qal) may be present. This unit includes silty colluvial deposits derived from the adjacent map units. In places this unit is mantled with one to three meters of fine to medium, well sorted medium to fine sand derived from wind reworking of the alluvium. This unit encompasses deposits that accumulated in low-relief stream valleys during the Wisconsin Episode and Hudson Episode. Seasonal high water table and some potential for flooding.

#### WISCONSIN EPISODE

- Qnw** **Qnw - Sand and Gravel (Noah Creek Formation)** More than three meters (10 feet) of yellowish brown to gray, poorly to well sorted, massive to well stratified, coarse to fine feldspathic quartz sand, pebbly sand and gravel. In places mantled with one to three meters of fine to medium, well sorted sand derived from wind reworking of the alluvium. This unit encompasses deposits that accumulated in stream valleys during the Wisconsin Episode.
- Qps1** **Qps1 - Loess and Interrelated Eolian Sand (Peoria Formation-silt facies)** Generally two to ten meters (6 to 32 feet) of yellowish brown to gray, massive, fractured, noncalcareous grading downward to calcareous silt loam and intercalated fine to medium, well sorted, sand. Sand is most abundant in lower part of the eolian package. Overlies massive, fractured, loamy glacial till of the Wolf Creek or Alburt Formation with or without intervening clayey Farmdale/Sangamon Geosol.
- Qwa1** **Qwa1 - Sand and Gravel Shallow to Till (Unnamed erosion surface sediment)** Generally one to three meters (3 to 10 feet) of yellowish brown to pale brown, massive to weakly stratified, noncalcareous, medium to coarse, poorly sorted pebbly to cobbly sand with intercalated gravel and loam. Overlies massive, fractured, firm, loamy glacial till of the Wolf Creek or Alburt Formation. Deposits in this mapping unit are derived primarily from erosion of glacial till in the adjacent drainage basin. Seasonally high water table may occur in this map unit. Moderate flood potential.
- Qwa2** **Qwa2 - Loamy and Sandy Sediment Shallow to Glacial Till (Unnamed erosion surface sediment)** Generally one to six meters (3 to 19 feet) of yellowish brown to gray, massive to weakly stratified, well to poorly sorted loamy, sandy and silty erosion surface sediment. Map unit includes some areas mantled with less than two meters of Peoria Silt (loess). Overlies massive, fractured, firm glacial till of the Wolf Creek and Alburt Formations. Seasonally high water table may occur in this map unit.

#### PRE-ILLINOIS EPISODE

- Qwa3** **Qwa3 - Till (Wolf Creek or Alburt Formations)** Generally three to ninety-one meters (10 to 300 feet) of very dense, massive, fractured, loamy glacial till of the Wolf Creek or Alburt Formations with or without a thin loess mantle (Peoria Formation-less than 2 meters) or thin loamy sediment mantle (named erosion surface sediment) may overlie intervening clayey Farmdale/Sangamon Geosol. This mapping unit can be buried by unnamed erosion surface sediments, loess or alluvium and is shown only in the cross-section.

#### Paleozoic

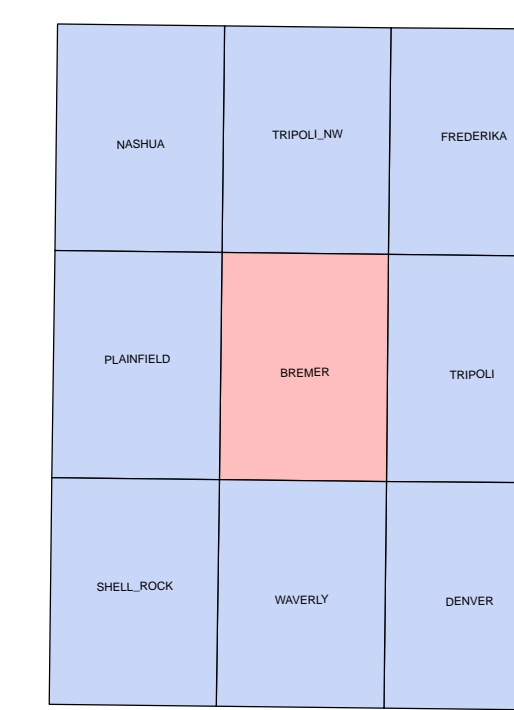
##### Devonian, Silurian, and Ordovician Systems

- Dc** **Dc - Bedrock Exposures (Devonian Cedar Valley Group)** Primary lithologies - limestone and dolostone, fossiliferous to unfossiliferous, cherty in part, argillaceous in part; secondary lithology - gray shale. Maximum thickness of 45 meters (147 feet).
- Dw** **Dw - Bedrock (Devonian Wapsipinicon Group)** Primary lithologies - dolostone, limestone and shale. This unit is shown only in the cross-section.
- Su** **Su - Bedrock (Silurian Hopkinton and Blanding formations)** Primary lithology - dolostone, cherty in part. This unit is shown only in the cross-section.
- Om** **Om - Bedrock (Ordovician Maquoketa Formation)** Primary lithologies - shale, dolostone, limestone and chert. This unit is shown only in the cross-section.

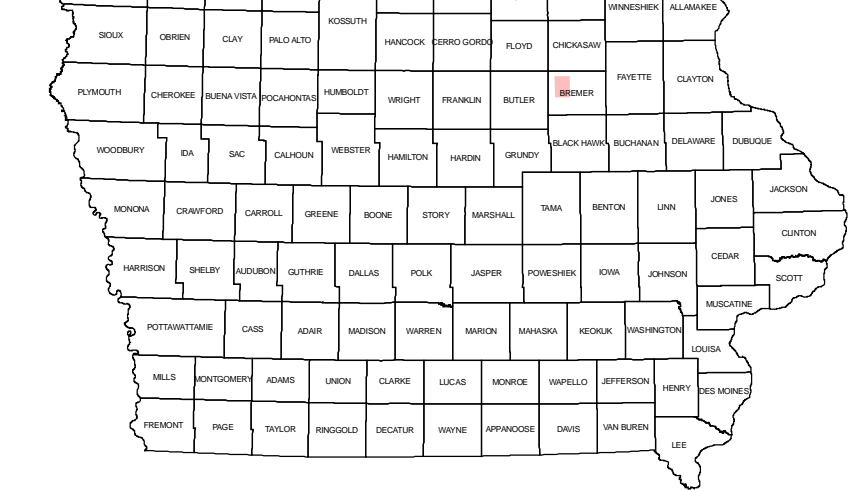
**Water Features** Rivers, lakes and small ponds formed by blockage of drainage ways and river channels.

**Drill Holes**

Adjacent 7.5' Quadrangles



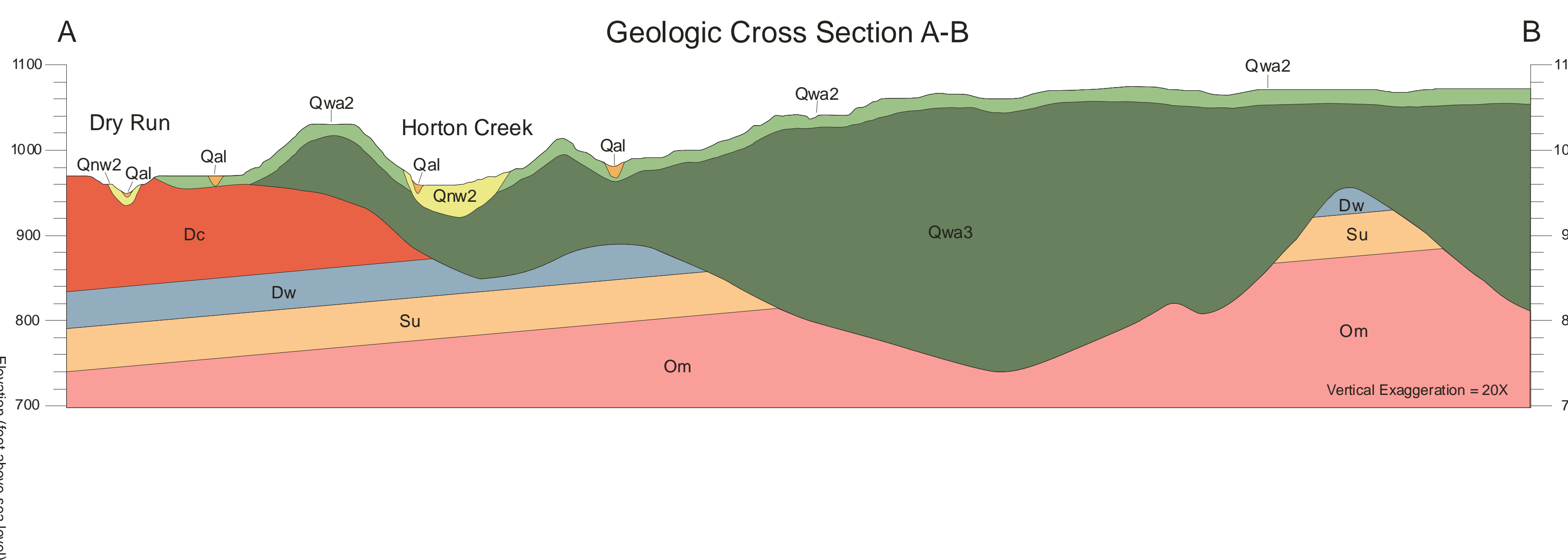
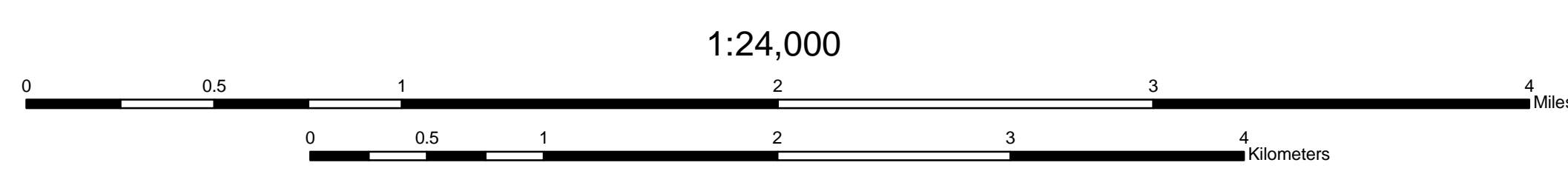
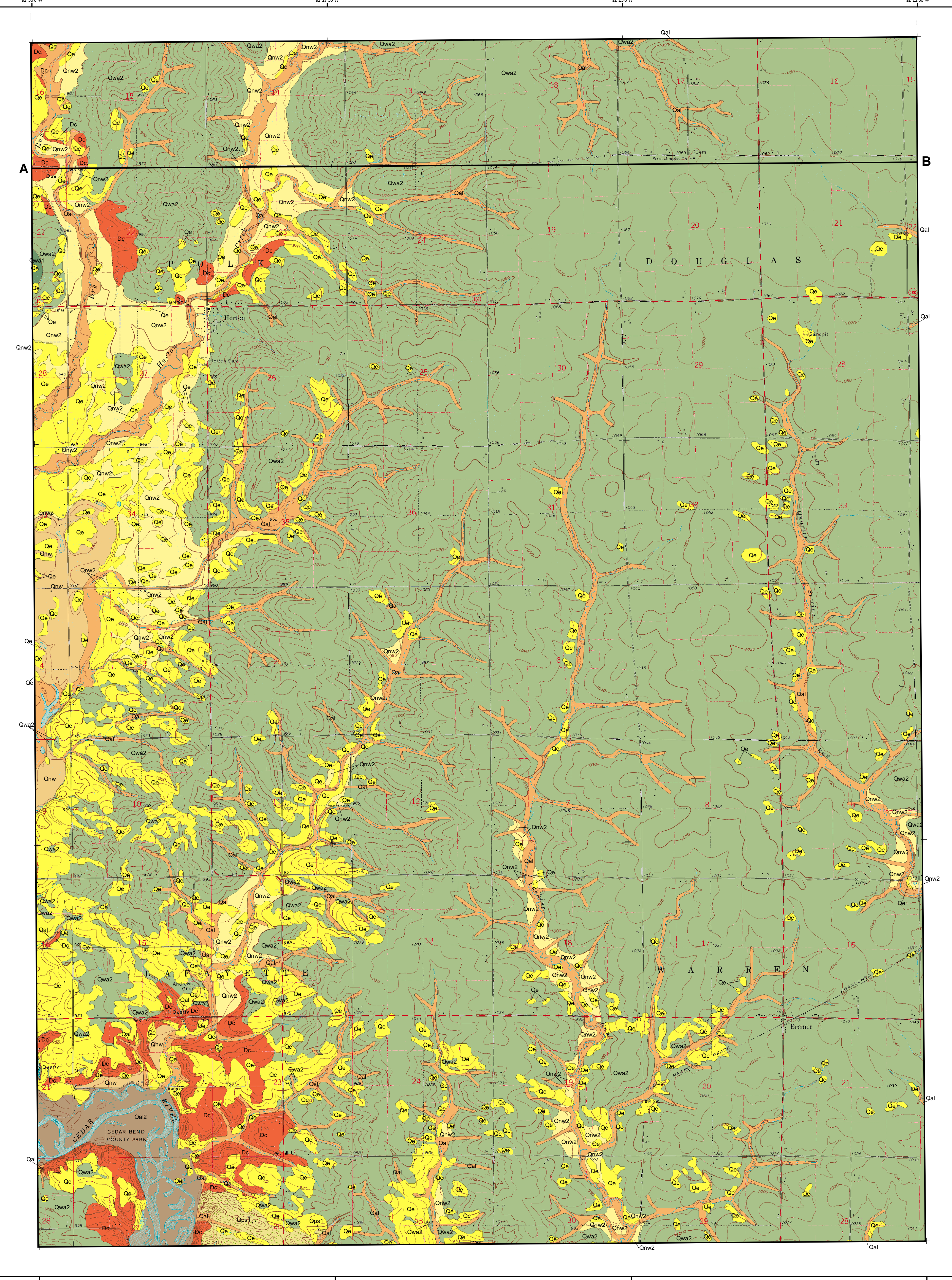
Quadrangle Location



Base map from USGS Bremer 7.5' Digital Raster Graphic (IGS GIS file DRGG35C.TIF) which was scanned from the Bremer 7.5' Topographic Quadrangle map, published by US Geological Survey in 1965. Topographic contours and land features based on 1963 aerial photography, field checked in 1965. Land elevation contours (10' interval) based on NGVD 1929.

Iowa Geological Survey digital cartographic file BremerQuad07.mxd, version 7/30/07 (ArcGIS 9.1). Map projection and coordinate system based on Universal Transverse Mercator (UTM) Zone 15, datum NAD83.

The map and cross section are based on interpretations of the best available information at the time of mapping. Map interpretations are not a substitute for detailed site specific studies.



## COOPERATIVE MAPPING WITH THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) SURFICIAL GEOLOGIC MAP OF THE BREMER 1:24,000 QUADRANGLE Phase 1

Iowa Geological Survey  
Open File Map 2007-5  
July 2007

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