

FY12 STATEMAP Project
Geologic Symbols, Units, and Lithologic Descriptions
Atchison County-Effingham Quad

Units and Descriptions from Ward (1973) and field notes

Quaternary

Qal Alluvium and Terrace deposits

Holocene

Alluvium—Brown to bluish-gray sandy pebbly clay deposits. Thin beds of gravel composed of limestone, chert, and glacial material may be interspersed throughout deposits or rest directly on bedrock.

Thickness: 0-105 feet (~ 0-32 m)

Pleistocene and Illinoian and Wisconsin Glaciation

Terrace deposits—Discontinuous deposits of brown sandy clay on stream-valley walls. Deposits may contain reddish-brown silt resembling loess.

Thickness: 0-70 feet (~ 0-21 m)

Ql Loess and Nortonville Clay

Pleistocene and Illinoian and Wisconsin Glaciation

Loess—Aeolian deposits of brown to reddish-brown non-calcareous slightly sandy silt generally found in upland positions. Locally, loess may be older than Wisconsin age.

Thickness: 0-40 feet (~ 0-12 m)

Pleistocene

Nortonville Clay—Light-gray compact clay that may be slightly sandy and contain sparse pebbles.

Reddish-brown weathered streaks may be present throughout the clay.

Thickness: 0-45 feet (~ 0-14 m)

Qg Glacial Till and Glaciofluvial deposits

Pleistocene

Cedar Bluffs Till—Mixture of clay, silt, and gravel with colors of brown to reddish-brown, yellowish-brown, or light gray. Contains erratics and lenses of gravel.

Thickness: 0-100 feet (~ 0-30 m)

Pleistocene and Kansan Glaciation

Glaciofluvial deposits—Outwash of fine to coarse quartz sand, silt, gravel, and boulders occurring between the Cedar Bluffs and Nickerson Till.

Thickness: 0-70 feet (~ 0-21 m)

Pleistocene and Kansan Glaciation

Nickerson Till—Mixture of clay, silt, sand, and gravel with color of dark gray to bluish-gray with some reddish-brown streaks. Contains lenses of gravel and less erratics than Cedar Bluffs Till.

Thickness: 0-90 feet (~ 0-27 m)

Pennsylvanian—Virgil Series—Wabaunsee Group

IPzpsr Root Shale, Stotler Limestone, Pillsbury Shale, and Zeandale Limestone

Root Shale (Friedrich Shale Member)—Gray to yellowish-brown calcareous micaceous sandy shale.

Thickness: 5-10 feet (~ 1.5-3 m)

Stotler Limestone (Grandhaven Limestone, Dry Shale, and Dover Limestone Members)—Tannish-gray fossiliferous hard massive limestone and gray calcareous sandy shale.

Thickness: 5-10 feet (~ 1.5-3 m)

Pillsbury Shale—Light-brown to bluish-gray noncalcareous sandy shale and locally contains soft brown sandstone.

Thickness: 15-30 feet (~ 4.5-9 m)

Zeandale Limestone (Maple Hill Limestone, Wamego Shale, and Tarkio Limestone Members)—The upper Maple Hill Limestone is tannish-gray, impure, medium hard, and fossiliferous. The Wamego Shale is brown, non-calcareous, silty, and sandy and contains a thin coal bed near the top. The lower Tarkio Limestone is one bed of grayish-brown fossiliferous hard massive limestone.

Thickness: 15-20 feet (~ 4.5-6 m)

IPwn Willard Shale, Emporia Limestone, Auburn Shale, and Bern Limestone

Willard Shale—Gray to brownish-gray non-calcareous micaceous sandy shale and locally contains an impure sandstone in upper part.

Thickness: 30-40 feet (~ 9-12 m)

Emporia Limestone (Elmont Limestone, Harveyville Shale, and Reading Limestone Members)—The upper Elmont Limestone is bluish-gray to brown, hard, and fossiliferous and the intervening Harveyville Shale is gray to greenish-gray, calcareous, and blocky. The lower Reading Limestone is two or three beds of bluish-gray to brown slightly fossiliferous hard, dense limestone.

Thickness: 20-30 feet (~ 6-9 m)

Auburn Shale—Gray to light-gray shale, limy in lower part, silty and sandy in middle part, and very limy in upper part. A thin black platy shale is present near the middle part.

Thickness: 30-40 feet (~ 9-12 m)

Bern Limestone (Wakarusa Limestone, Soldier Creek Shale, and Burlingame Limestone Members)—The upper Wakarusa Limestone is a bluish-gray to brown fossiliferous hard dense limestone. The Soldier Creek Shale is a gray to greenish-gray shale and the lower Burlingame Limestone is a gray to brown fossiliferous medium-hard limestone.

Thickness: 20-30 feet (~ 6-9 m)

IPws Scranton Shale, Howard Limestone, and Severy Shale

Scranton Shale (Silver Lake Shale, Rulo Limestone, Cedar Vale Shale, Happy Hollow Limestone, and White Cloud Shale Members)—Tan to bluish-gray silty sandy shale Members. The limestones are 1 to 3 feet (~ 0.3-1 m) thick, gray, fossiliferous, and silty. A thin coal bed is present just below the Rulo Limestone Member.

Thickness: 50-80 feet (~ 15-24 m)

Howard Limestone (Utopia Limestone, Winzeler Shale, Church Limestone, and Aarde Shale Members)—Alternating beds of bluish-gray to brown, fossiliferous, hard, dense limestone and dark-gray to tannish-gray calcareous silty shale. The Nodaway coal bed is present in the Aarde Shale Member.

Thickness: 10-20 feet (~ 3-6 m)

Severy Shale—Gray to tan sandy shale. This shale is clayey and non-calcareous in upper part and silty and calcareous in lower part.

Thickness: 30-45 feet (~ 9-14 m)
