

Illinois Preliminary Geologic Map
IPGM Oak Hill-SG

Surficial Geology of Oak Hill Quadrangle

Peoria County, Illinois

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Oak Hill Surficial Geology

The map depicts the geology of the surficial deposits of the Oak Hill Quadrangle. On this map, surficial deposits consist of the unconsolidated and residual, alluvial, or glacial deposits which occur at or near the surface of the earth. The map also depicts where lithified strata (bedrock) crop out or are near the surface, but it does not depict the occurrence of loess, which blankets most of the quadrangle. The only previous detailed surficial maps which include this area are by Horberg (1950), who differentiated “Illinoian” and “Wisconsin” drift, glacial outwash, alluvium, and bedrock on his 1:126,720 scale map of the Peoria County area, and Anderson and Hunter (1965), who differentiated “Illinoian” glacial till and outwash deposits, “Wisconsinan” glacial till, outwash, and valley train deposits, sand dunes, slackwater deposits, and alluvium on their 1:63,360 scale map of Peoria County.

The Oak Hill Quadrangle is located about nine miles west of the edge of the Illinois River Valley (fig. 1). Most of the quadrangle is just west of the terminal Buda Moraine (fig. 1) of the Wisconsin Episode glaciation. The physiography of the quadrangle is dominated by broad uplands separated by narrow (Jubilee Creek and Hickory and Nixon Runs) to wider stream valleys (Kickapoo and West Fork of the Kickapoo) and their associated tributaries. The upland areas are dominated by glacial till overlain by loess (eolian sediments).

Quaternary sediments were deposited on the bedrock during the last two episodes of glaciation. Pre-Illinois Episode sediments are present within Peoria County (Udden 1912, Wanless 1957, Stumpf and Weibel 2005), but have not been found within the Oak Hill Quadrangle. During the Illinois glacial episode, glaciers generally advanced westerly and retreated to the east across the area (Lineback 1979). These glaciers eroded the existing landscape and deposited the diamicton of the widespread Glasford Formation in the Oak Hill Quadrangle. Willman and Frye (1970) recognized three members of the Glasford in a roadcut exposure, now covered in the “Jubilee College Section” (SW/4, SW/4, SW/4, Sec. 7, T10N, R7E) in the northwest corner of the quadrangle. The members, in ascending order, are the Hulick Till Member, the Toulon Member, and the Radnor Till Member. The lower part of the Toulon was considered by Willman and Frye to represent outwash deposits and the upper part pro-glacial deposits, separated by an unnamed soil horizon. Additional study by Lineback (1979) indicated that the youngest till of the Glasford in Peoria County is the Radnor Till Member. The widely recognized Sangamon Geosol, which represents the interglacial (between the Illinois and Wisconsin Episodes of glaciation) Sangamon Episode (Hansel and Johnson 1996), also was exposed near the top of the Radnor Till at the Jubilee College Section. This was the only known exposure of the Sangamon Geosol within the quadrangle. During the Sangamon Episode, drainage patterns developed on the Illinois Episode deposits; these patterns are probably similar to the modern drainages.

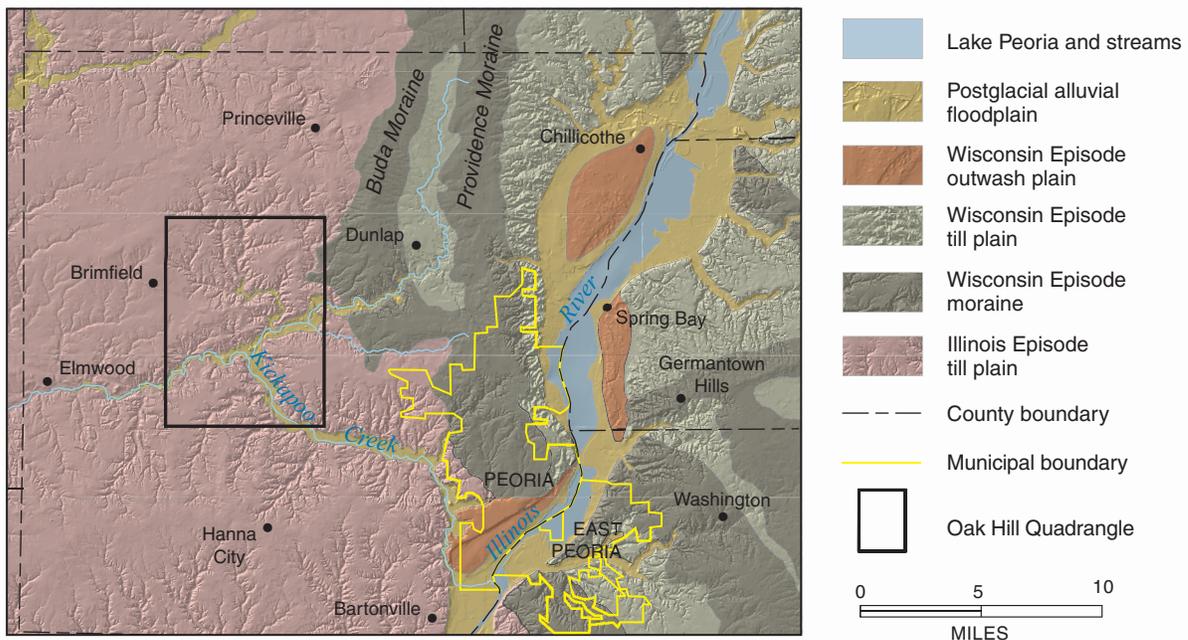


Figure 1 Shaded relief map of the Oak Hill Quadrangle area with a superimposed, generalized Quaternary Geology map. Modified from Willman and Frye (1970), Illinois State Geological Survey (2000), and Luman et al. (2003). The quadrangle is at the edge of Wisconsin Episode glacial deposits, represented by the Buda Moraine.

During the ensuing Wisconsin Episode glaciation, glaciers advanced just inside the northeastern quadrant of the quadrangle. As these glaciers stagnated and retreated, large amounts of meltwater transporting outwash and alluvium flowed down the Kickapoo Creek and Fargo Run valleys, depositing these sediments along the streams, along the valley slopes and in some places on the uplands. The combination of meltwater erosion and sediment deposition resulted in the noticeably wider stream valleys of the modern Kickapoo Creek and the West Fork of the Kickapoo and their associ-

ated tributaries. Subsequent erosion has removed some of the outwash deposits from the uplands and valley slopes.

During the retreat and stagnation of the glaciers, valley train and outwash deposits dammed the Illinois River valley just south of Peoria (Willman 1973). The large terrace on which most of the southeastern part of Peoria is built on is a large remnant of this deposit (Anderson and Hunter 1965), which also dammed the mouth of Kickapoo Creek (fig.1). During the damming of the creek extensive lacustrine deposits

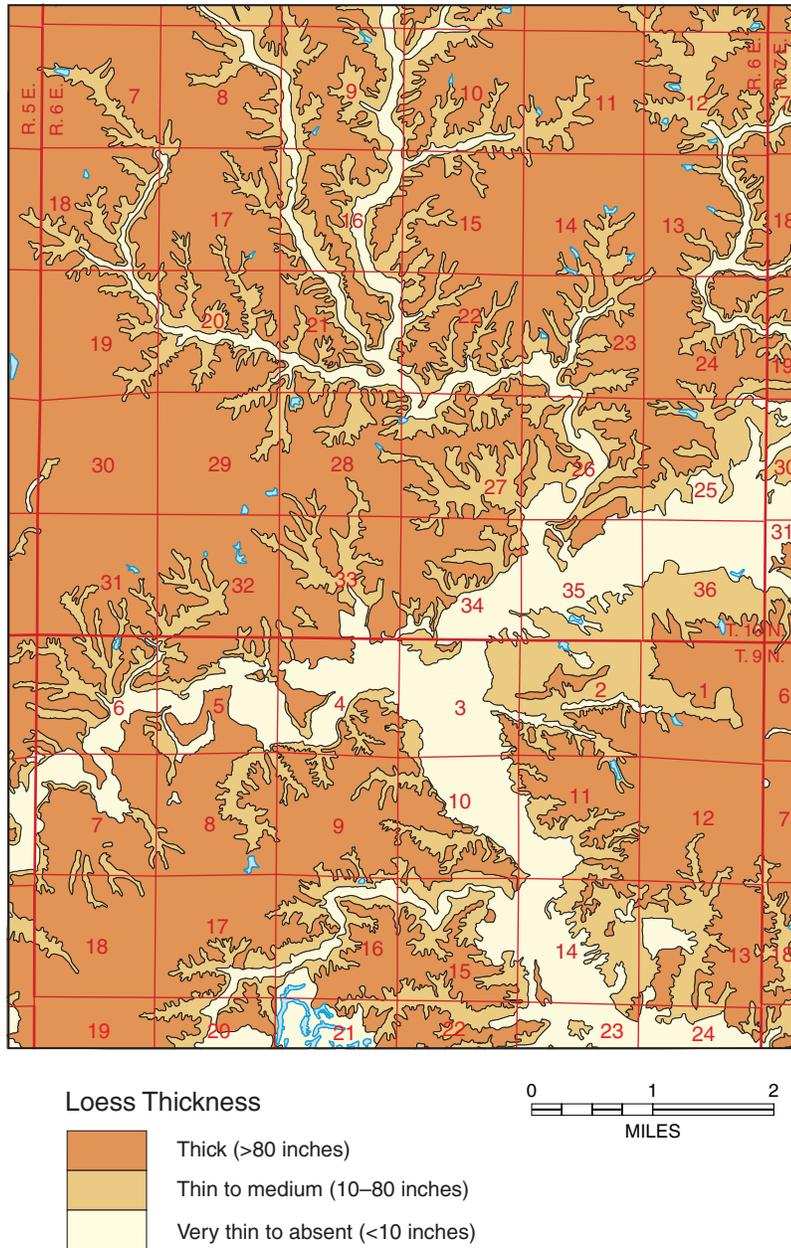


Figure 2 Generalized loess thickness map of the Oak Hill Quadrangle. For most of the quadrangle, the loess consists of the undifferentiated Peoria and Roxana Silts, except where Tiskilwa is present and the loess consists only of the Peoria Silt. The distinguishing characteristics used to differentiate the Peoria and Roxana Silts are subtle in many areas (McKay 1979), including an exposure near the southwest corner of Sec. 7, T10N, R7E (Follmer et al. 1979). In areas where loess is absent, the loess has been eroded or is incorporated into the soil. Disturbed ground areas are not shown. Modified after Walker (1992).

accumulated within the Kickapoo Creek watershed. Most lacustrine deposits occur up to an elevation of about 580 feet M.S.L., which indicates that the lake level was at a higher elevation. Eventually the dam was breached and the lake was drained. Subsequent downcutting by erosion has removed significant portions of the lacustrine sediments, which at one time probably covered the valley bottoms.

During both the Illinois and Wisconsin glacial episodes, westerly winds eroded silt from the floodplains of the Illinois and Mississippi River valleys, floodplains of other river valleys and from the numerous outwash channels and floodplains, including the outwash channel that is the modern Kickapoo Creek. These sediments, which are composed of the Roxana Silt and the overlying Peoria Silt, formed the blanket deposit of loess that occurs throughout the region (fig. 2). The Roxana was deposited during the earlier Athens Subepisode of the Wisconsin Episode, whereas the Peoria was deposited during later Michigan Subepisode (Hansel and Johnson 1996). The Roxana and the Peoria have not been differentiated in this quadrangle, although the loess that overlies Tiskilwa Formation consists only of the Peoria Silt.

From the time that the glaciers retreated from the area, stream and fluvial erosion has continued to remove the most recent glacial deposits, including the loess, and also to expose older Quaternary strata and bedrock.

Methods

The surficial geology map was constructed by interpretations of the parent materials from soils surveys (Soil Conservation Service 1992, Illinois NRCS 2005), outcrop observations, interpretations of borehole data, and maps and field notes from previous researchers. Some boundaries were modified after study of aerial photo and topographic maps. Stratigraphic nomenclature follows Willman and Frye (1970) as modified by Hansel and Johnson (1996).

Acknowledgments

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