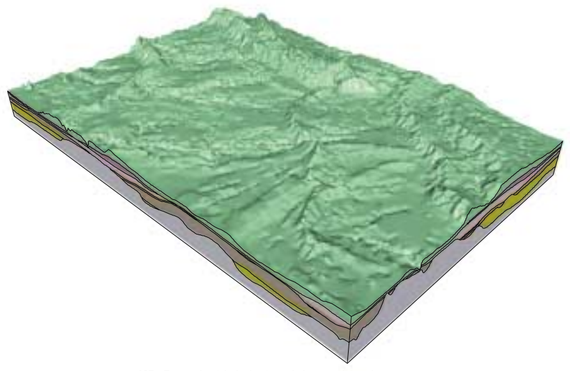
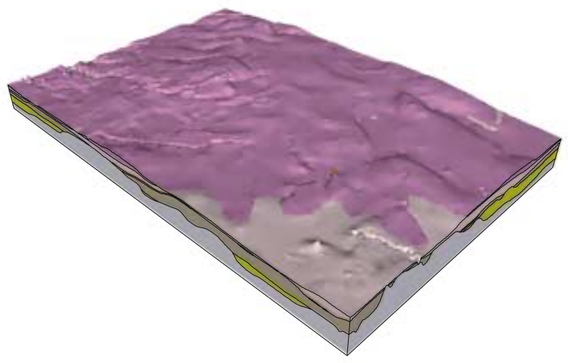
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
ILLINOIS STATE GEOLOGICAL SURVEY

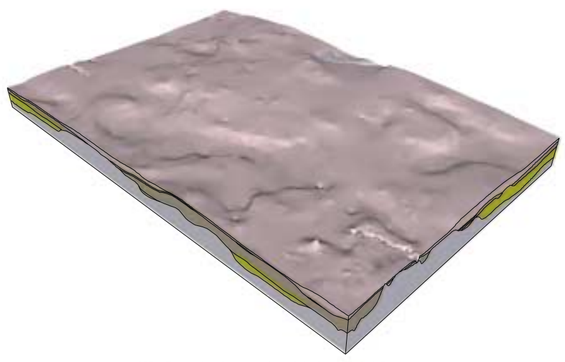
GEOLOGIC INVESTIGATIONS SERIES
MAP I-2669 (SHEET 2 OF 3)



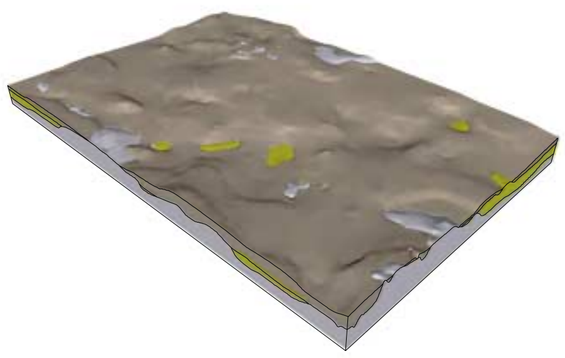
13F.—Topography of the land surface, which is equivalent to the upper surface of the Wedron and Mason Groups except where they are covered by thin, discontinuous Cahokia Formation. In the southwestern part of the map area, beyond the limit of ice that deposited the Wedron Group diamictons, thin Cahokia Formation and Peoria Silt directly overlie the upper Glasford Formation.



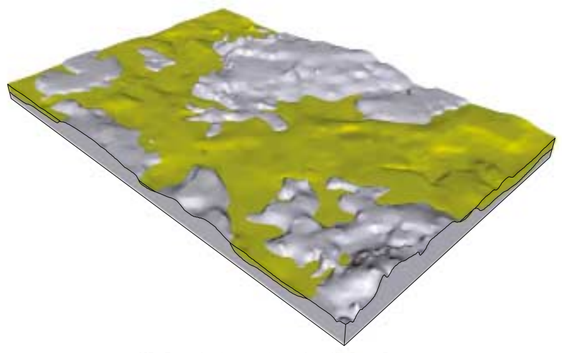
13E.—Topography of upper surface of the upper Glasford Formation. Southeast corner of the map area shows upper surface of the lower Glasford Formation. Sinuous, high-relief areas in the west and southeast are the result of incision by modern streams (for example, from west to east in the southern half of the map area, the valleys of Salt Creek, the Sangamon River, and Salt Fork). A small topographic high near the southeast corner of the map area is attributed to a key stratigraphic control point where lower Glasford Formation deposits were found at a noticeably higher elevation than in adjacent points. Although this data point does not agree with the regional map trend, it was retained (see discussion on sheet 1 under "An internally consistent geologic model and set of maps," first paragraph).



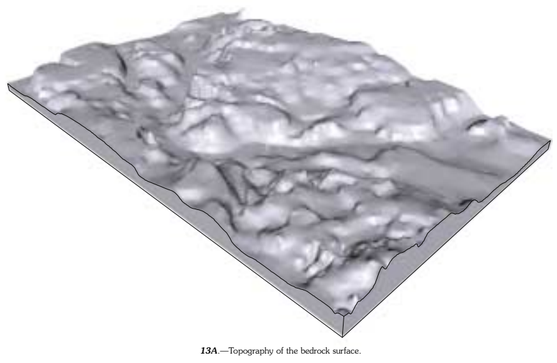
13D.—Topography of upper surface of the lower Glasford Formation. Sinuous, high-relief areas in the southwest and southeast are the result of incision by modern streams (the valleys of Salt Creek and Salt Fork, respectively). A small topographic high near the southeast corner of the map area is attributed to a key stratigraphic control point where lower Glasford Formation deposits were found at a noticeably higher elevation than in adjacent points. Although this data point does not agree with the regional map trend, it was retained (see discussion on sheet 1 under "An internally consistent geologic model and set of maps," first paragraph).



13C.—Topography of upper surface of the upper Banner Formation.



13B.—Topography of upper surface of the middle Banner Formation deposits lying in the Mahomet Bedrock Valley. Includes lower Banner Formation deposits where in the valley (see discussion on sheet 1 under "Quaternary stratigraphy," fifth paragraph).



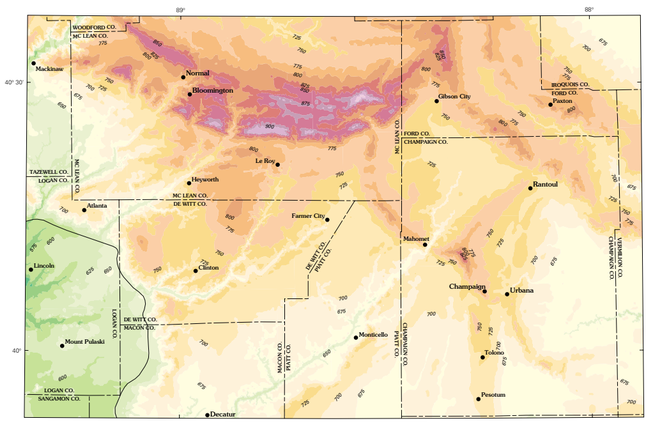
13A.—Topography of the bedrock surface.

EXPLANATION OF STRATIGRAPHIC UNITS

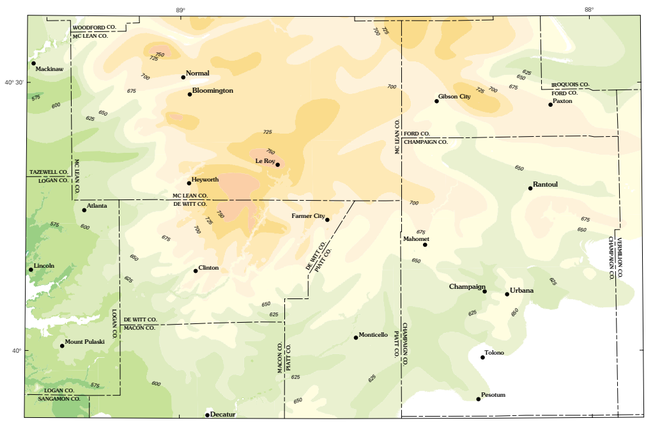
Figures 13*A*–*F* and 16*C* and *F*

- Wedron and Mason Groups, including Cahokia Formation (Wisconsin and Hudson Episodes). Unit is assigned a minimum thickness of 15 ft
- Upper Glasford Formation (Illinois Episode)
- Upper Glasford basal sand
- Lower Glasford Formation (Illinois Episode)
- Lower Glasford basal sand
- Upper Banner Formation (pre-Illinois Episode)
- Middle Banner Formation—mostly Mahomet Sand Member (pre-Illinois Episode)
- Bedrock (undifferentiated)

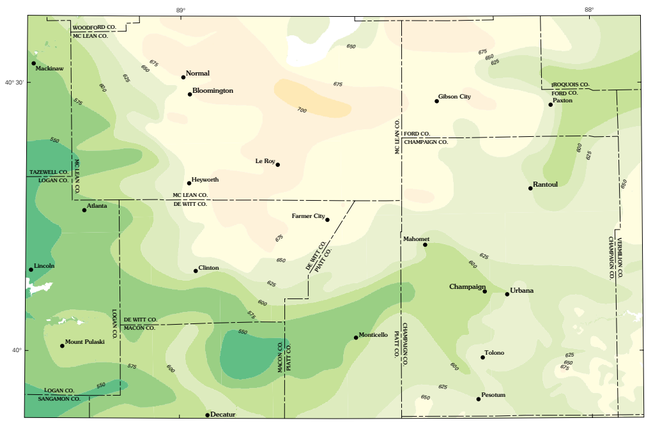
Figure 13A–F.—Block diagrams of the map area showing surface topography of bedrock and of five Quaternary stratigraphic units. Vertical faces show variability in thickness of the Quaternary units. Viewpoint is from the southeast. To show topographic features, the images are vertically exaggerated approximately 30x.



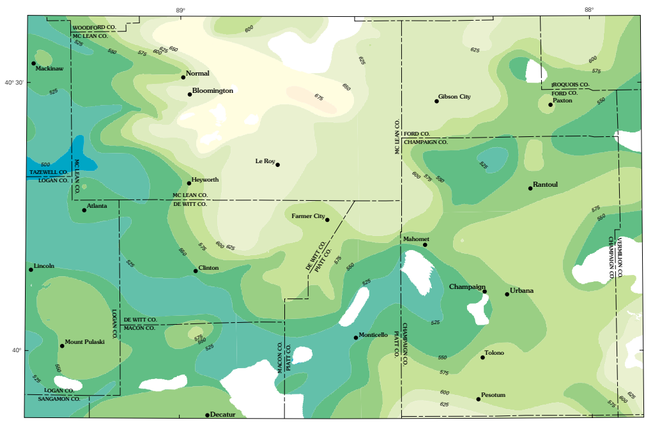
14F.—Elevation of the land surface, which is equivalent to the top of the Wedron and Mason Groups except where they are covered by thin, discontinuous Cahokia Formation. In the southwestern part of the map area (beyond the limit of ice that deposited the Wedron Group diamictons, shown by black line), thin Cahokia Formation and Peoria Silt directly overlie the upper Glasford Formation.



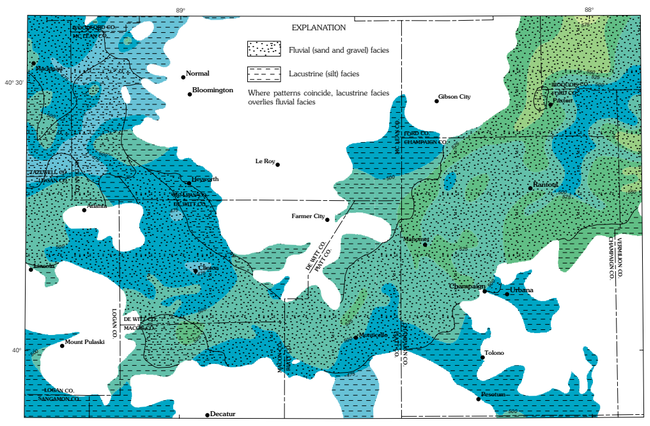
14E.—Elevation of the top of the upper Glasford Formation.



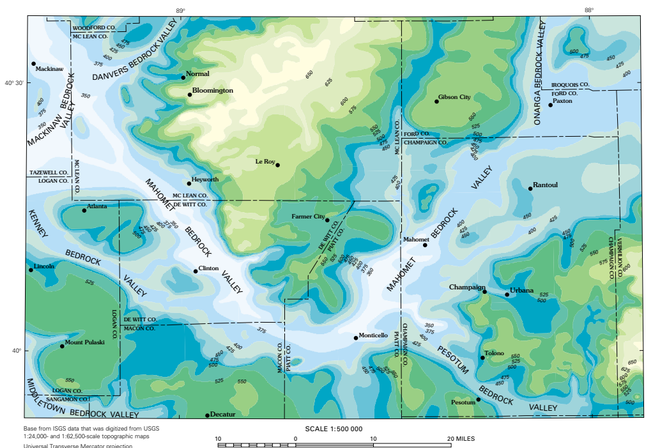
14D.—Elevation of the top of the lower Glasford Formation.



14C.—Elevation of the top of the upper Banner Formation.



14B.—Elevation of the top of the middle Banner Formation. Approximate distribution of fluvial (sand and gravel) and lacustrine (silt) facies of the Mahomet Sand Member is shown by patterns. Sand and gravel commonly occur in the Mahomet Bedrock Valley's main channel. Silt and clay occur in tributaries because ice or sediment dams in the main channel blocked the tributaries, causing water to pond and fine sediment to be deposited.

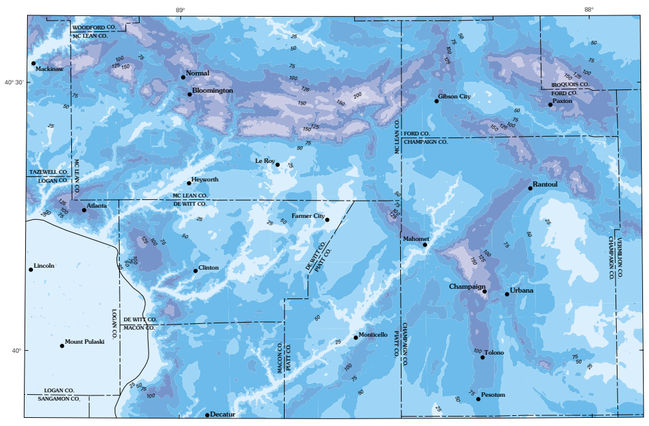


Base from ISGS data that was digitized from USGS 1:24,000- and 1:62,500-scale topographic maps
Universal Transverse Mercator projection

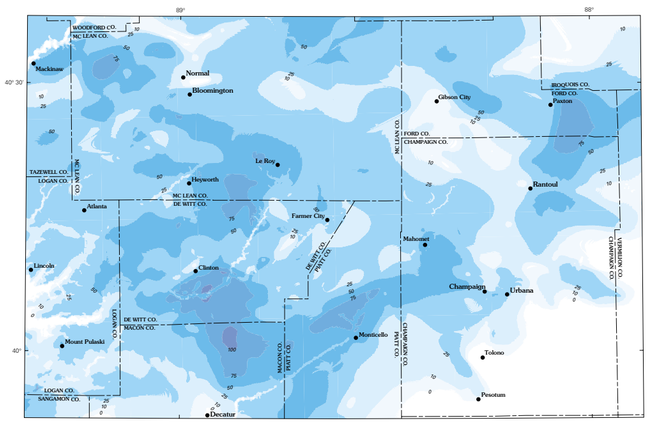
SCALE 1:500 000
10 0 10 20 MILES
10 0 10 20 KILOMETERS

14A.—Elevation of the bedrock surface. Bedrock units are undifferentiated. Selected bedrock valleys are identified.

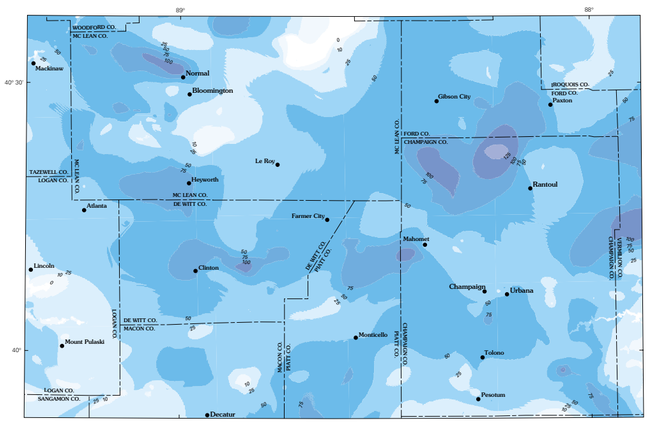
Figure 14A–F.—Elevation, in feet above sea level, of the top or uppermost surface of bedrock and of five Quaternary stratigraphic units. Refer to discussion on sheet 1 under "Converting to raster format" for explanation of characteristic jagged boundaries of units on these raster maps.



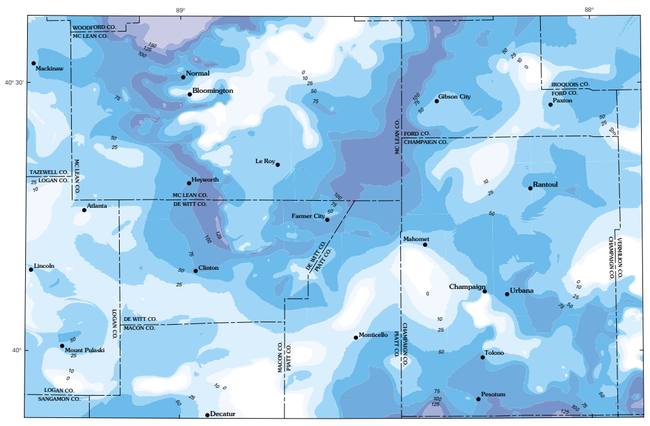
15E.—Thickness of the Wedron and Mason Groups. Includes thin, discontinuous Cahokia Formation. The southwestern part of the map area lies beyond the limit of Wedron Group deposits, shown by black line. There, only thin, discontinuous Cahokia Formation and Mason Group deposits occur, mostly as alluvium, outwash, and loess; to permit them and the underlying units to be mapped efficiently by computer, a uniform thickness of 15 ft was assumed (see discussion on sheet 1 under "An internally consistent geologic model and set of maps," fourth paragraph). Narrow, sinuous areas of thin sediment are the result of incision by modern streams.



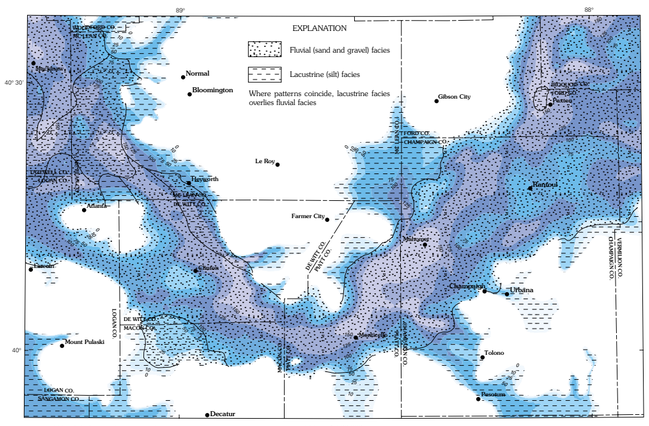
15D.—Thickness of the upper Glasford Formation. Narrow, sinuous areas of thin sediment or no sediment, most notable in the western half of the map area, are the result of incision by modern streams, such as the Mackinaw River, Salt Creek, and the Sangamon River.



15C.—Thickness of the lower Glasford Formation. Narrow, sinuous areas of thin sediment or no sediment, especially in the southwestern and southeastern parts of the map area, are the result of incision by modern streams (for example, Salt Creek and Salt Fork).



15B.—Thickness of the upper Banner Formation. In upland areas around the Mahomet Bedrock Valley, this unit includes lower Banner Formation sediments, as they are patchy in distribution and not mappable separately (see discussion on sheet 1 under "Quaternary stratigraphy," fourth paragraph). Sand and gravel within the upper Banner Formation is locally important as an aquifer, but is too patchy to be mapped at this scale.

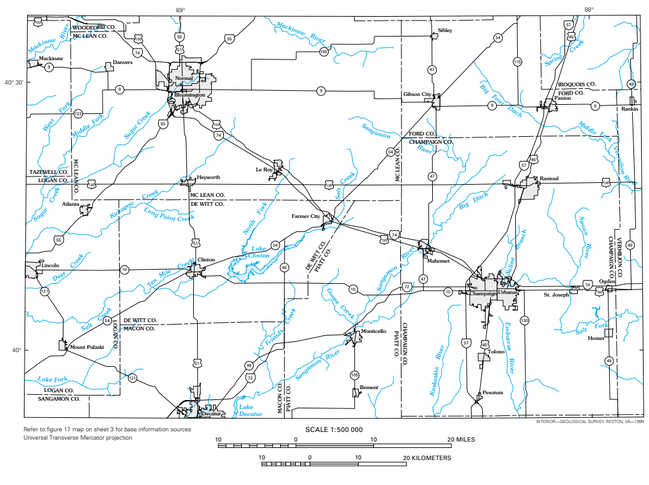


Base from ISGS data that was digitized from USGS 1:24,000- and 1:62,500-scale topographic maps
Universal Transverse Mercator projection

SCALE 1:500 000
10 0 10 20 MILES
10 0 10 20 KILOMETERS

15A.—Thickness of the middle Banner Formation. In the Mahomet and Mackinaw Bedrock Valleys the middle Banner includes lower Banner Formation sediments, as they are patchy in distribution and not mappable separately (see discussion on sheet 1 under "Quaternary stratigraphy," fifth paragraph). Approximate distribution of fluvial (sand and gravel) and lacustrine (silt) facies of the Mahomet Sand Member is shown by patterns. Sand and gravel are the principal constituents in the Mahomet Bedrock Valley's main channel. Silt and clay occur in tributaries because ice or sediment dams in the main channel blocked the tributaries, causing water to pond and fine sediment to be deposited.

Figure 15A–E.—Thickness, in feet, of five stratigraphic units. Thickness was computed as the difference in elevation between the top of a unit and the top of the underlying unit. Refer to discussion on sheet 1 under "Converting to raster format" for explanation of characteristic jagged boundaries of units on these raster maps.



Refer to figure 17 map on sheet 3 for base information sources
Universal Transverse Mercator projection

SCALE 1:500 000
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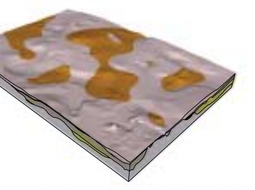
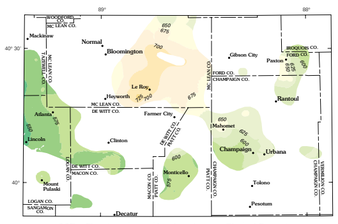
INTERIOR—GEOLOGICAL SURVEY, RESTON, VA—1999

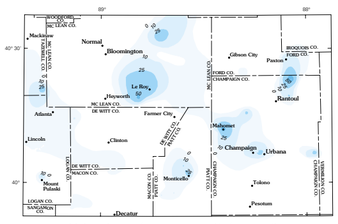
Selected natural and cultural features in the map area.



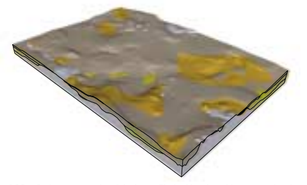
16F.—Surface topography of the upper Glasford basal sand (orange unit) and older deposits.



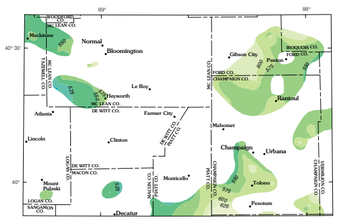
16E.—Elevation of top of basal sand, upper Glasford Formation.



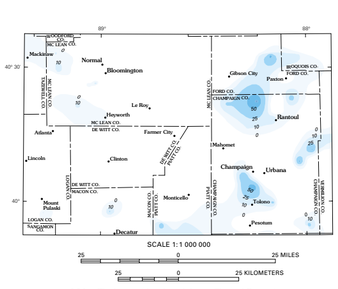
16D.—Thickness of basal sand, upper Glasford Formation.



16C.—Surface topography of the lower Glasford basal sand (orange unit) and older deposits.



16B.—Elevation of top of basal sand, lower Glasford Formation.



16A.—Thickness of basal sand, lower Glasford Formation.

Figure 16A–F.—Maps and block diagrams showing sand layers at the base of the lower and upper Glasford Formation. These layers, although thin and discontinuous, also are used as aquifers. Other sands within the Glasford exist but are not as readily correlated between data points; therefore, they are not shown. Thickness and elevations are in feet above sea level. Viewpoint in block diagrams is from the southeast. To show topographic detail, the images are vertically exaggerated approximately 30x.

ELEVATION (feet)
For figures 14*A–F* and 16*B* and *E*

925, 900, 875, 850, 825, 800, 775, 750, 725, 700, 675, 650, 625, 600, 575, 550, 525, 500, 475, 450, 425, 400, 375, 350, 325, Unit not present

THICKNESS (feet)
For figures 15*A–E* and 16*A* and *D*

200, 150, 125, 100, 75, 50, 25, 10, 0

Original measurements of stratigraphic-unit elevations and thicknesses were made in feet, so standard units are retained here. To convert to meters, multiply by 0.3048.

Location of the map area, east-central Illinois.

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Email: berg@geosery.isgs.uiuc.edu

THREE-DIMENSIONAL GEOLOGIC MAPS OF QUATERNARY SEDIMENTS IN EAST-CENTRAL ILLINOIS

By

David R. Soller,[1] Susan D. Price,[1] John P. Kempton,[2] and Richard C. Berg[3]

1999

USGS science for a changing world