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BEDROCK TOPOGRAPHY OF FRENCH VILLAGE QUADRANGLE

ST. CLAIR COUNTY, ILLINOIS

David A. Grimley and F. Brett Denny
2004

Illinois Geologic Quadrangle Map
IGQ French Village-BT

Bedrock Topography

The map shows the configuration of the bedrock surface as indicated by elevations above sea level. This surface marks the boundary between the unconsolidated glacial deposits (e.g., river sand and silt, glacial till, or lake sediment) and the underlying bedrock (typically shale, limestone, sandstone, or coal). The hills and valleys on the ancient bedrock surface were formed in part by river erosional processes during preglacial and interglacial times and in part by scouring from glacial ice. The glacial deposits that bury the bedrock surface in the French Village Quadrangle (up to 175 feet thick) have been mapped and described in detail by Grimley and McKay (2004).

The total relief of the bedrock surface in the French Village Quadrangle is about 280 feet; elevations range from about 290 to 570 feet above sea level. High bedrock elevations mapped in this study area generally agree with previously reported data (Jacobs 1971, Herzog et al. 1994). Bedrock elevations above 500 feet are common in the eastern and southern portions of the quadrangle. On the bedrock high in Sec. 31 and Sec. 32 (T2N, R8W), a few shale mines once operated. A buried bedrock valley extends east-west across the southern portion of the map. This unnamed valley approximately follows the course of Prairie du Pont Creek but is about 0.5 to 1 mile to the north of the main branch. Similar bedrock valleys generally coincide with the modern valleys of Little Canteen Creek, Schoenberger Creek, and Powdermill Creek. Although data are limited, bedrock elevations of about 295 to 325 feet in the American Bottoms (Mississippi River valley) are similar to those noted by Bergstrom and Walker (1956). Bedrock rises steeply into the bluffs along the Mississippi Valley where bedrock is locally exposed. Exposures of bedrock (limestone and shale) also occur in the extreme southwestern areas (shown by data points).

Methodology

This bedrock topography map was produced from 192 data points (bedrock elevations at these points are labeled on the map). Of these data points, 75 are outcrops (where the maximum bedrock elevation could be directly measured), 68 are water wells, 26 are engineering borings, 12 are coal borings, 6 are stratigraphic borings, and 5 are oil wells. All of the data except the outcrop descriptions are on file at the ISGS Geological Records Unit. The highest-quality data, with respect to descriptive and location accuracy, are the stratigraphic borings, engineering borings, and outcrops. The lowest-quality data generally came from the water wells. Some water well records available at the ISGS were not used because either their location was questionable or the bedrock elevation was anomalous, probably due to the difficulty in differentiating between shale and clayey till (that contains numerous shale fragments) in water well cuttings.

Bedrock elevations were initially contoured using Arcview 3.2 software (ESRI 1992–1999), using the spline method and tension option. Subsequently, the contours were significantly modified in many areas, particularly along the larger creek valleys and the bluffs of the Mississippi Valley, to portray the data more realistically as a buried landscape for the bedrock topography map. Many bedrock surface contours were modified with respect to the USGS topographic map, such as along the bluffs of the Mississippi River valley and along Schoenberger and Powdermill Creeks, where the bedrock and surface topography are thought to be closely related.

Acknowledgments

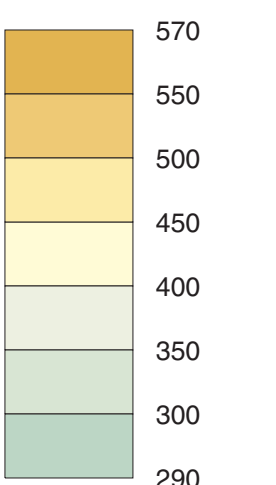
Discussions with Andrew Phillips aided considerably with this mapping project. Thanks to all of the landowners who allowed us access to their property and to the consulting companies that provided important data for this project (particularly URL-Woodward-Clyde and Shively Geotech).

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References

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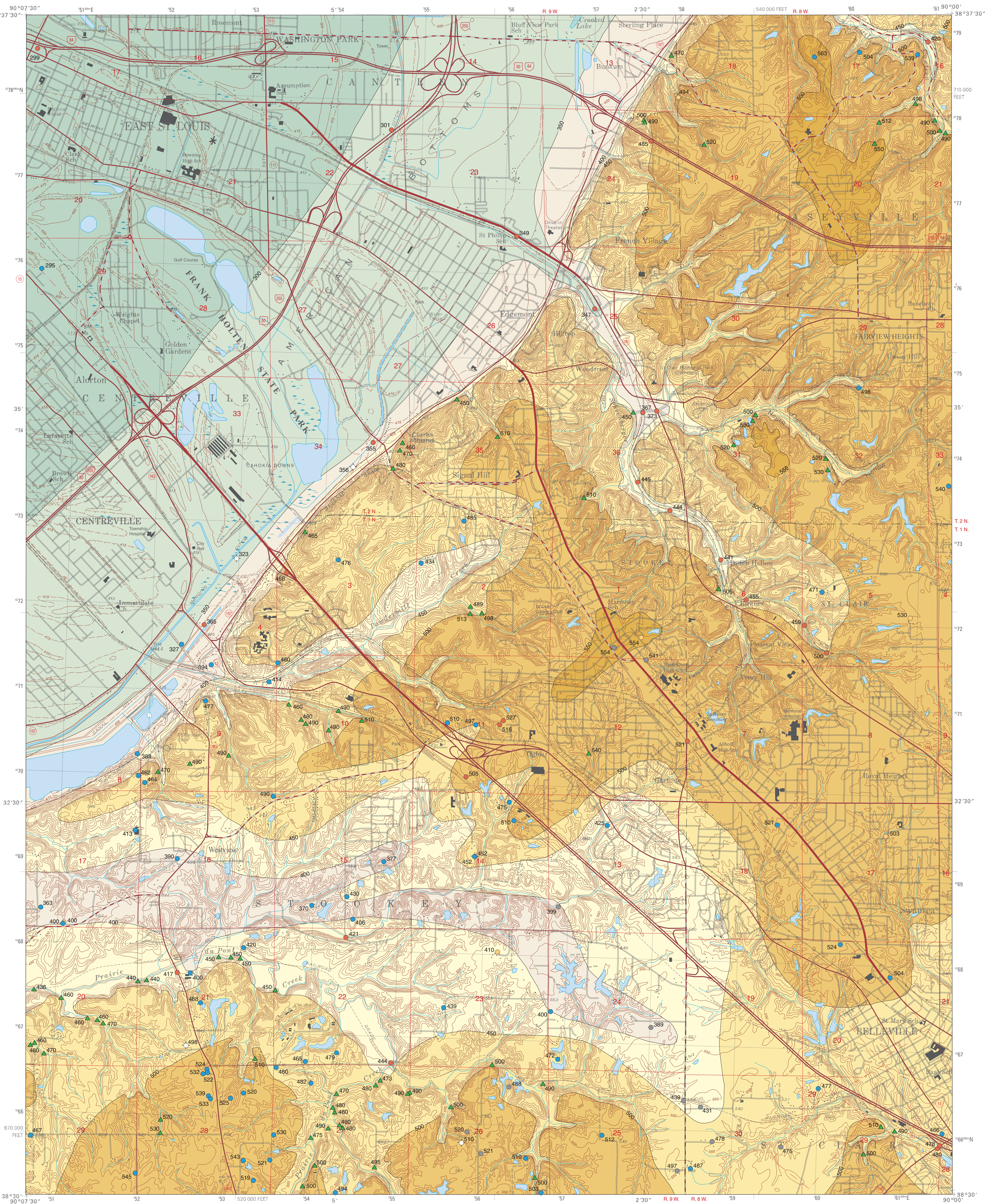
Bedrock Elevation



Data Type

- ▲ Natural outcrops and man-made exposures (described by ISGS)
- Stratigraphic test hole (drilled by ISGS)
- Engineering boring
- Coal boring
- Water well boring
- ◇ Oil and gas boring

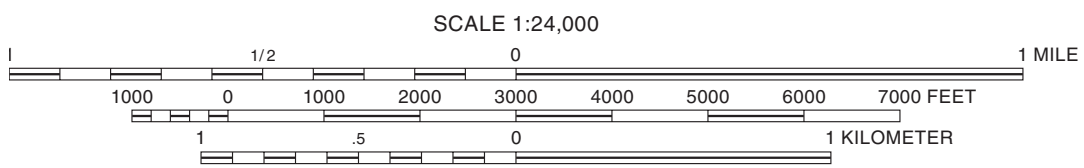
Note: Symbol labels indicate elevation in feet above sea level.



Base map compiled by Illinois State Geological Survey from digital data provided by the United States Geological Survey. Topography compiled 1954. Revised 1993 from imagery taken 1988.

North American Datum of 1983 (NAD 83)
Projection: Transverse Mercator
10,000-foot ticks: Illinois State Plane coordinate system, west zone (Transverse Mercator)
1,000-meter ticks: Universal Transverse Mercator grid system, zone 15

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BASE MAP CONTOUR INTERVAL 10 FEET
SUPPLEMENTARY CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Released by the authority of the State of Illinois: 2004

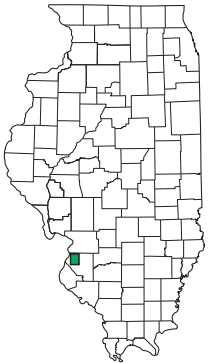
Geology based on field work (1998–1999) and data compilation by D.A. Grimley and F.B. Denny.

Digital cartography and layout by M. Barrett, J. Domier, and P. Carrillo, Illinois State Geological Survey.

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ADJOINING QUADRANGLES
1 Granite City
2 Monks Mound
3 Collinsville
4 Cahokia
5 O'Fallon
6 Columbia
7 Millstadt
8 Freeburg

0°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 2004

ROAD CLASSIFICATION

Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road

Interstate Route
U.S. Route
State Route