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Karst of the Driftless Area of Jo Daviess County, Illinois

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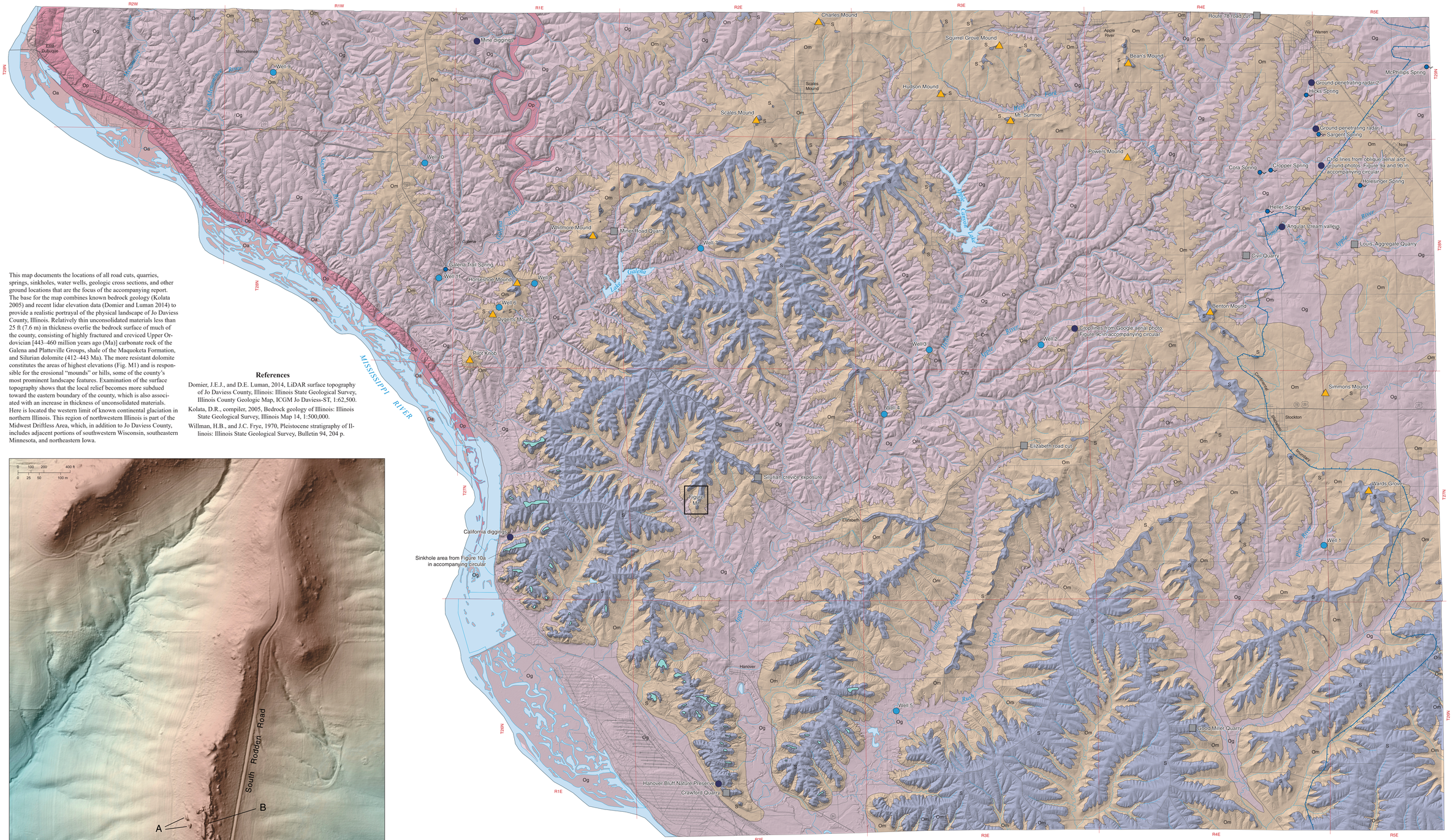
2017



This map documents the locations of all road cuts, quarries, springs, sinkholes, water wells, geologic cross sections, and other ground locations that are the focus of the accompanying report. The base for the map combines known bedrock geology (Kolata 2005) and recent lidar elevation data (Domier and Luman 2014) to provide a realistic portrayal of the physical landscape of Jo Daviess County, Illinois. Relatively thin unconsolidated materials less than 25 ft (7.6 m) in thickness overlie the bedrock surface of much of the county, consisting of highly fractured and creviced Upper Ordovician [443–460 million years ago (Ma)] carbonate rock of the Galena and Platteville Groups, shale of the Maquoketa Formation, and Silurian dolomite (412–443 Ma). The more resistant dolomite constitutes the areas of highest elevations (Fig. M1) and is responsible for the erosional "mounds" or hills, some of the county's most prominent landscape features. Examination of the surface topography shows that the local relief becomes more subdued toward the eastern boundary of the county, which is also associated with an increase in thickness of unconsolidated materials. Here is located the western limit of known continental glaciation in northern Illinois. This region of northwestern Illinois is part of the Midwest Driftless Area, which, in addition to Jo Daviess County, includes adjacent portions of southwestern Wisconsin, southeastern Minnesota, and northeastern Iowa.

References

Domier, J.E.J., and D.E. Luman, 2014, LiDAR surface topography of Jo Daviess County, Illinois: Illinois State Geological Survey, Illinois County Geologic Map, ICGM Jo Daviess-ST, 1:62,500.

Kolata, D.R., compiler, 2005, Bedrock geology of Illinois: Illinois State Geological Survey, Illinois Map 14, 1:500,000.

Willman, H.B., and J.C. Frye, 1970, Pleistocene stratigraphy of Illinois: Illinois State Geological Survey, Bulletin 94, 204 p.

Figure M1 The prominent ridge in this lidar digital elevation model, locally referred to as Spirit Rock, illustrates the final stages in erosion of resistant Silurian dolomite caprock overlying the Ordivician Maquoketa Shale Group. In this location, massive blocks of cliff-forming dolomite, 20 to 26 ft (6 to 8 m) in height and weighing more than 1,102 short tons (1,000 metric tons), have detached and are slowly moving down the underlying shale slope. Two of these dolomite blocks are located on the image at (A), one of which has rotated on end with bedding planes in a vertical orientation (Fig. M2). These dolomite blocks become separated from the bedrock ridge as a result of ever-widening crevices; for example, a conspicuous north–south-trending crevice on the image at (B) forms a narrow, steep-walled ravine that measures 20 ft (6 m) in depth.

Figure M2 Photograph of the two blocks of Silurian dolomite in Figure M1 showing that the block in the foreground (left) has been rotated to a near vertical position. This block shows a separation of a bedding plane of about 6 in. (15 cm). The other block is still horizontal, and both blocks are perched on the edge of a relatively steep slope. Photograph by Elizabeth L. Baranski. Used with permission.

Geologic Features

- Spring
- Water well
- Quarry, road cut, or exposure
- Mound (hilltop)
- Other feature
- Sinkhole area
- Continental glaciation boundary (Willman and Frye 1970)

Bedrock Geology

Silurian
- S — Silurian System

Ordivician
- Om — Maquoketa Shale Group
- Og — Galena Group
- Op — Platteville Group
- Oa — Ancell Group

Road Classification

- U.S. highway
- State route

SCALE 1:62,500
1 0 1 2 3 4 5 MILES
1 0 1 2 3 4 5 6 7 KILOMETERS

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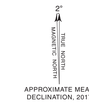
ADJACENT COUNTIES
1 Stephenson
2 Carroll



APPROXIMATE MEAN DECLINATION, 2017

Bedrock geology from Kolata, D.R., compiler, 2005, Bedrock geology of Illinois: Illinois State Geological Survey, Illinois Map 14, 1:500,000.

March 2009 lidar data for Jo Daviess County, Illinois, made available through the Illinois Department of Transportation and the Illinois Height Modernization Program. Universal Transverse Mercator, zone 15. North American Datum of 1983 (NSRS2007). North American Vertical Datum of 1988. Vector base data from 2013 TIGER/Line Shapefiles provided by the United States Census Bureau.

Cartography and graphics by Jane E. Johnshoy Domier, Donald E. Luman, Jennifer E. Carrell, and Deette Lund, Illinois State Geological Survey.

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