EDMAP-SUPPORTED GEOLOGIC MAPPING OF THE JANE QUADRANGLE, MCDONALD COUNTY, MISSOURI

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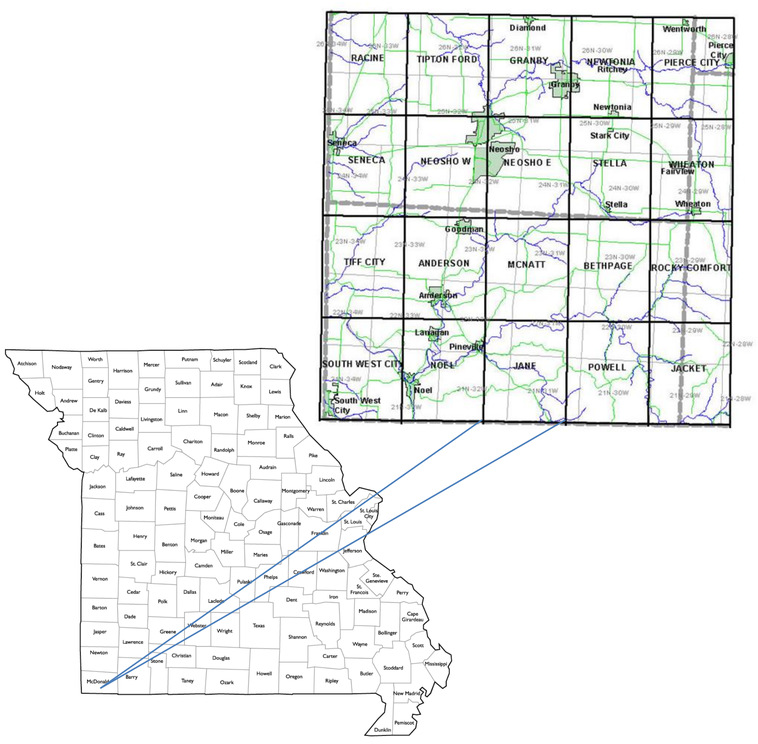
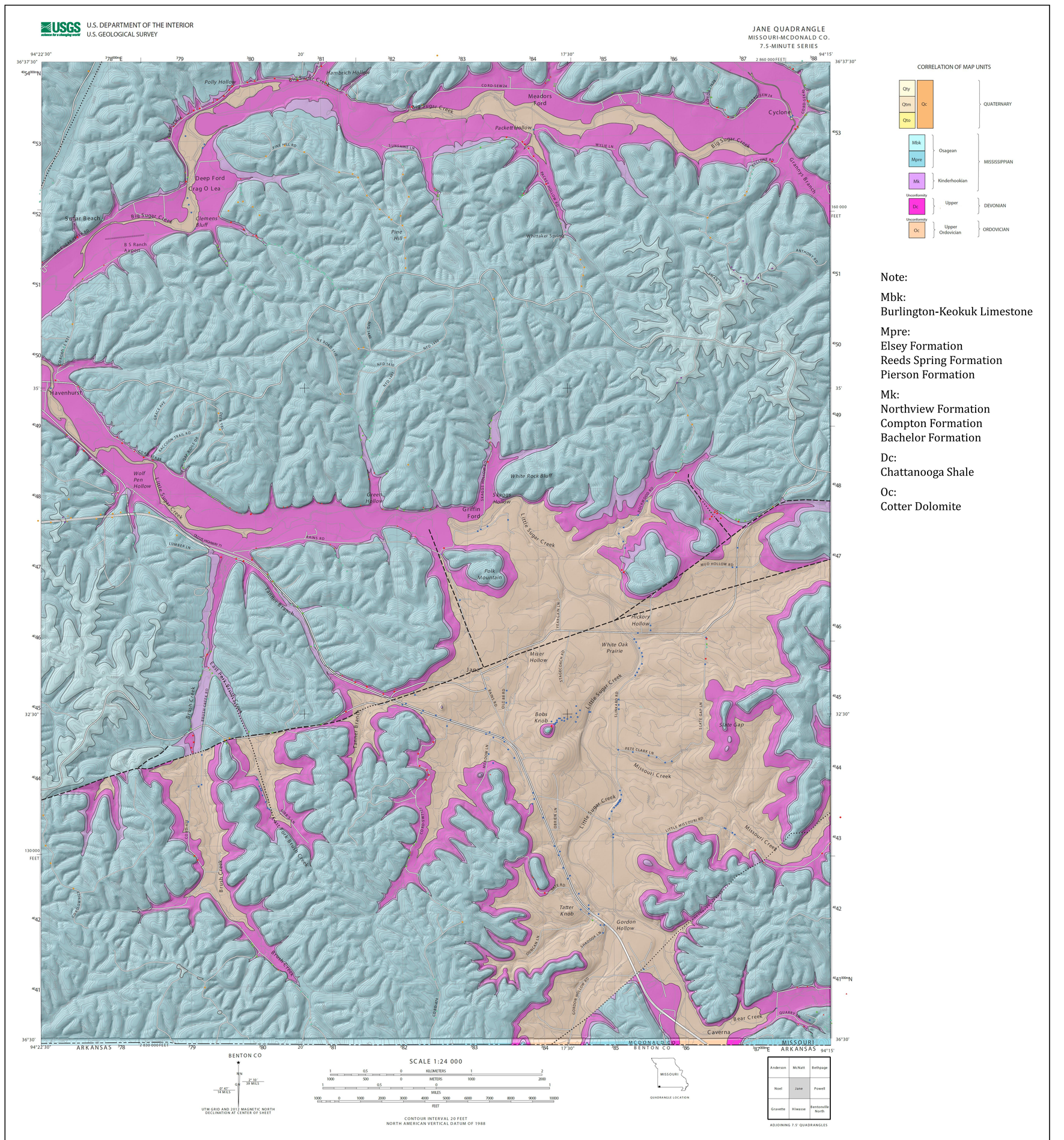


Abstract:

The Jane quadrangle is located in south-central McDonald Co., Missouri, in the southwest corner of the Springfield Plateau. This project updates an earlier, incomplete geologic map published in 1959. Our map is based on more than 800 data points collected using a handheld GPS aided with the use of a stratigraphic column measured along US Hwy 71. The resulting geologic map provides new insights to the structure and stratigraphy of the area.

The Lower Ordovician Cotter Dolomite is the lowest unit exposed in the area; only the uppermost 20m is exposed in the Jane quadrangle. A disconformity separates the Cotter from the overlying Upper Devonian Chattanooga shale which is approximately 15m thick. A disconformity separates the Chattanooga from the overlying Mississippian complex which forms the caprock for much of the Springfield Plateau. The first succession within the Mississippian is the Kinderhookian shelf sequence consisting of 12 cm of the Bachelor Formation, 2.5-7.5m of the Compton Formation, and 1-3m of the Northview Formation. The upper succession is the Osagean shelf sequence which is gradational and consists of 4-14m of the Pierson Formation, 22m of the Reeds Spring Formation, 50m of the Elsey Formation, and 3-10m of the Burlington-Keokuk limestone.

Several faults were mapped in the area including two major faults: the Brush Creek Fault trends east-west across the quadrangle with the up-thrown side to the south displacing approximately 10-15m of strata, and the Pineville Fault trends southwest-northeast in the northwest corner of the quadrangle with the up-thrown side to the southeast displacing approximately 15-20m of strata. Soft sediment deformations, including slump mounds, are present in the Compton with major bed truncations in the Compton and Pierson. These structures reflect tectonism occurring on the passive margin of Southern Laurentia during the early to mid-Mississippian.



Note:

Mbk:
Burlington-Keokuk Limestone

Mpre:
Elsey Formation
Reeds Spring Formation
Pierson Formation

Mk:
Northview Formation
Compton Formation
Bachelor Formation

Dc:
Chattanooga Shale

Oc:
Cotter Dolomite

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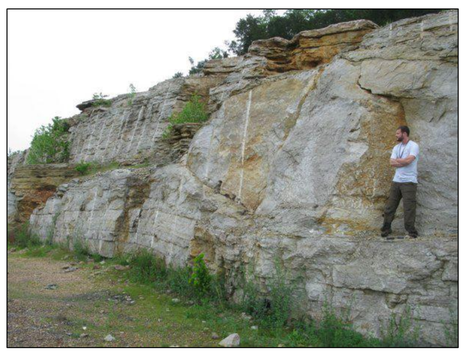
By

Joshua Elson, Matthew Cauthon, Kevin R. Evans

2013

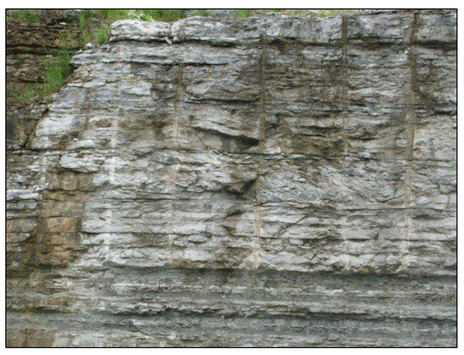
Note:
This map is a preliminary product that only contains contacts, formations, faults, and inferred faults. Also includes a DEM overlay.

Excellent exposure along all of US 71 crossing the Brush Creek Fault revealing thicknesses of all formations in the quad.



Outcrops along US 71 have very large slump mounds present in the Pierson Formation and Compton Formation.

Folded bedding found in a slump mound present in the Pierson Formation.



Truncation found within bedding planes in the Pierson Formation.

Viewpoint of Clemons Bluff from Big Sugar Creek, great exposure of Cotter Dolomite through the Elsey Formation.

Exposure of the Chattanooga Shale (black) through the Elsey Formation at the Bella Vista Quarry in the Southeast corner of the quad.

Slump mounds and bed truncations present in the Reed Spring Formation and the Pierson Formation in the Bella Vista Quarry.

Appearance of the Wolfpen Gap shale is a discontinuous member found within the top 10' of the Pierson Formation, this sighting is at the Bella Vista Quarry.

A large landslide occurred during a storm in the spring of 2011, according to a local resident. QLS in this region consists of Mississippian limestones frequently found in valleys due to erosion of underlying shales.

Acknowledgements:

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