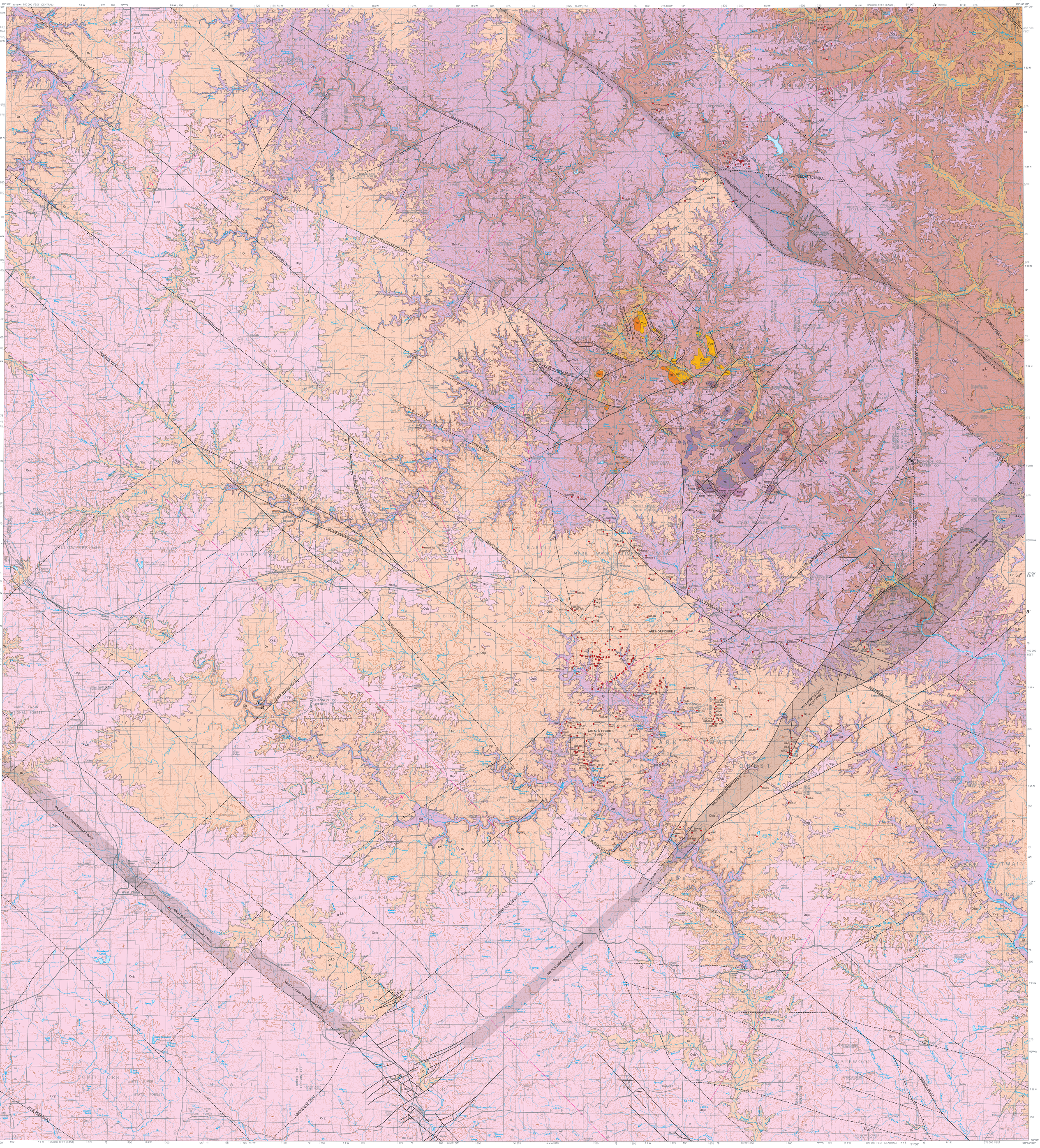


Base from U.S. Geological Survey
Piedmont, 1998; Poplar Bluff, 1983; Spring Valley, 1986; West Plains, 1984

Projection and 10,000-meter grid, zone 15, Universal Transverse Mercator
1927 North American Datum

25,000-foot grid ticks based on Missouri coordinate system, east zone and central zone

Base map has been reprojected to Universal Transverse Mercator, zone 15, using the 1983 North American Datum

APPROXIMATE MEAN DECLINATION, 2014

SCALE 1:100 000

CONTOUR INTERVAL 20 METERS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

MISSOURI
MAP LOCATION

Geology mapped 1996–2011

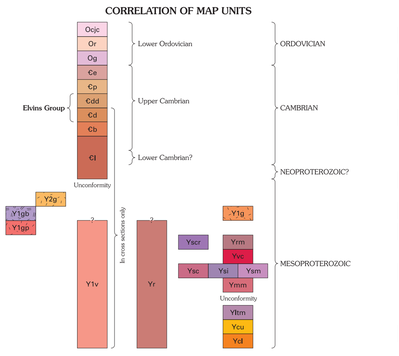
Figure 1.—Map showing location of the geomorphic subdivisions of Missouri and the study area therein. The St. Francois Mountains region is underlain mostly by Cambrian and Mesoproterozoic rocks, the Salem Plateau by Cambrian and Ordovician rocks, the Springfield Plateau by Mississippian rocks, the Central Lowland by Ordovician to Pennsylvanian rocks and Quaternary glacial and periglacial sediments, and the Mississippi embayment by Cretaceous to Quaternary sediments (adapted from Imes and Emmett, 1994). Approximate location of the Viburnum Trend mining district also is indicated.

Figure 2.—Maps of the study area showing 7.5-minute quadrangle grid (in brown) and rivers. Map *A* additionally shows park and forest entities, drainage basins and major springs, names of 7.5-minute quadrangles, and other features. Quadrangles that have been geologically mapped in detail are indicated by name of author and year of publication; see table 1 in accompanying pamphlet. Small black ellipse located several kilometers north of Greer Spring marks the location of an area of audio-magnetotelluric (AMT) soundings; see figure 6. The Sweetwater Mine is labeled Adair Creek Mine on the geologic map. Map *B* additionally shows highways, towns, and county names and boundaries.

EXPLANATION

- Ozark National Scenic Riverways (National Park Service)
- Mark Twain National Forest
- Eleven Point National Scenic River
- Proposed prospecting-permit-application area within Mark Twain National Forest
- State parks, forests, and wildlife management areas
- Approximate location of Viburnum Trend (southern part)
- Drainage basin divide

CORRELATION OF MAP UNITS



LIST OF MAP UNITS

[See accompanying pamphlet for map unit descriptions]

PALEOZOIC SEDIMENTARY ROCKS

- Ocjc — **Cotter Dolomite and Jefferson City Dolomite, undivided (Lower Ordovician)**
- Or — **Roubidoux Formation (Lower Ordovician)**
- Og — **Gasconade Dolomite (Lower Ordovician)**
- Ce — **Eminence Dolomite (Upper Cambrian)**
- Cp — **Potosi Dolomite (Upper Cambrian)**

Elvins Group (Upper Cambrian)—Consists of the Derby-Doerun Dolomite (usage of Missouri Geological Survey, 1979) and the Davis Formation

- Cdd — **Derby-Doerun Dolomite (usage of Missouri Geological Survey, 1979) (Upper Cambrian)**
- Cd — **Davis Formation (Upper Cambrian)**—Shown in cross sections only
- Cb — **Bonneterre Formation (Upper Cambrian)**—Shown in cross sections only
- Cl — **Lamotte Sandstone (Upper Cambrian, Lower Cambrian?, and Neoproterozoic?)**—Shown in cross sections only

MESOPROTEROZOIC INTRUSIVE ROCKS

- Y2g — **Granite of Y2mg province of Sims (1990) and Graniteville-type granite of Kisvarsanyi (1981)**—Shown in cross sections only
- Y1gb — **Gabbro of Sims (1990)**—Shown in cross section *B–B'* only
- Y1g — **Granite of Sims' (1990) Y1g province and Kisvarsanyi's (1981) Silvermine-Slabtown-type granite (Granite of Weary and McDowell (2006), known informally as Big Spring granite)**
- Y1gp — **Granite porphyry of Kisvarsanyi and Kisvarsanyi (1990)**—Shown in cross section *A–A'* only

MESOPROTEROZOIC VOLCANIC ROCKS

- Y1v — **Volcanic rocks, undifferentiated**—Shown in cross sections only

Upper Sequence of Mesoproterozoic Volcanic Rocks

- Yr — **Rhyolite, undifferentiated**
- Ysrc — **Rhyolite of Storys Creek**
- Yrm — **Rhyolite of Russell Mountain**
- Ycc — **Volcaniclastic conglomerate, breccia, and sandstone**
- Ysc — **Rhyolite of Sutton Creek**
- Ysi — **Rhyolite of Shut-In Mountain**
- Ysm — **Rhyolite of Stegall Mountain**
- Ymm — **Tuff of Mule Mountain**

Lower Sequence of Mesoproterozoic Volcanic Rocks

- Ylm — **Tuff of Little Thorny Mountain**
- Ycu — **Upper Coot Mountain unit**
- Ycd — **Lower Coot Mountain unit**

EXPLANATION OF MAP SYMBOLS

Contact—Approximately located

Fault—Solid where mapped previously or during this study; long-dashed where approximately located; short-dashed where inferred from drill-hole data or from drill-hole and interpreted aeromagnetic data; long-dashed and dotted where inferred from interpreted magnetic lineations. Bar and ball on downthrown side; paired arrows indicate strike-slip displacement. On cross sections, paired arrows indicate relative direction of vertical movement; strike-slip movement is indicated by **A**, away from observer; **T**, toward observer. Most faults are strike-slip faults; however, most strike-slip movements are not shown because they cannot be documented in surface exposures

Fault zone—Area interpreted to contain multiple fault strands that are not explicitly mapped

Anticline—Identity and existence certain; location approximate

Syncline—Identity and existence certain; location approximate

Linear magnetic anomaly in basement rocks

Approximate surface trace on map

Approximate trace on cross sections—Actual width unknown

HA-35 **Drill hole**—Label corresponds with identifier in summary of stratigraphic data compiled from Kisvarsanyi (1975) and U.S. Bureau of Land Management paper files; see appendix 1 in accompanying pamphlet

26466 **Drill hole**—Number corresponds with identification in records from Missouri Department of Natural Resources well database (*http://www.dnr.mo.gov/env/wrc/logmain/index.html*)

4.0 **Location of historical earthquake epicenter for the period 1964–2003**—Number indicates magnitude on the Richter scale. Query shown where magnitude is not known

BEDROCK GEOLOGIC MAP OF THE SPRING VALLEY, WEST PLAINS, AND PARTS OF THE PIEDMONT AND POPLAR BLUFF 30′ × 60′ QUADRANGLES, MISSOURI, INCLUDING THE UPPER CURRENT RIVER AND ELEVEN POINT RIVER DRAINAGE BASINS

By
David J. Weary, Richard W. Harrison, Randall C. Orndorff, Robert E. Weems, J. Stephen Schindler, John E. Repetski, and Herbert A. Pierce

2014

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