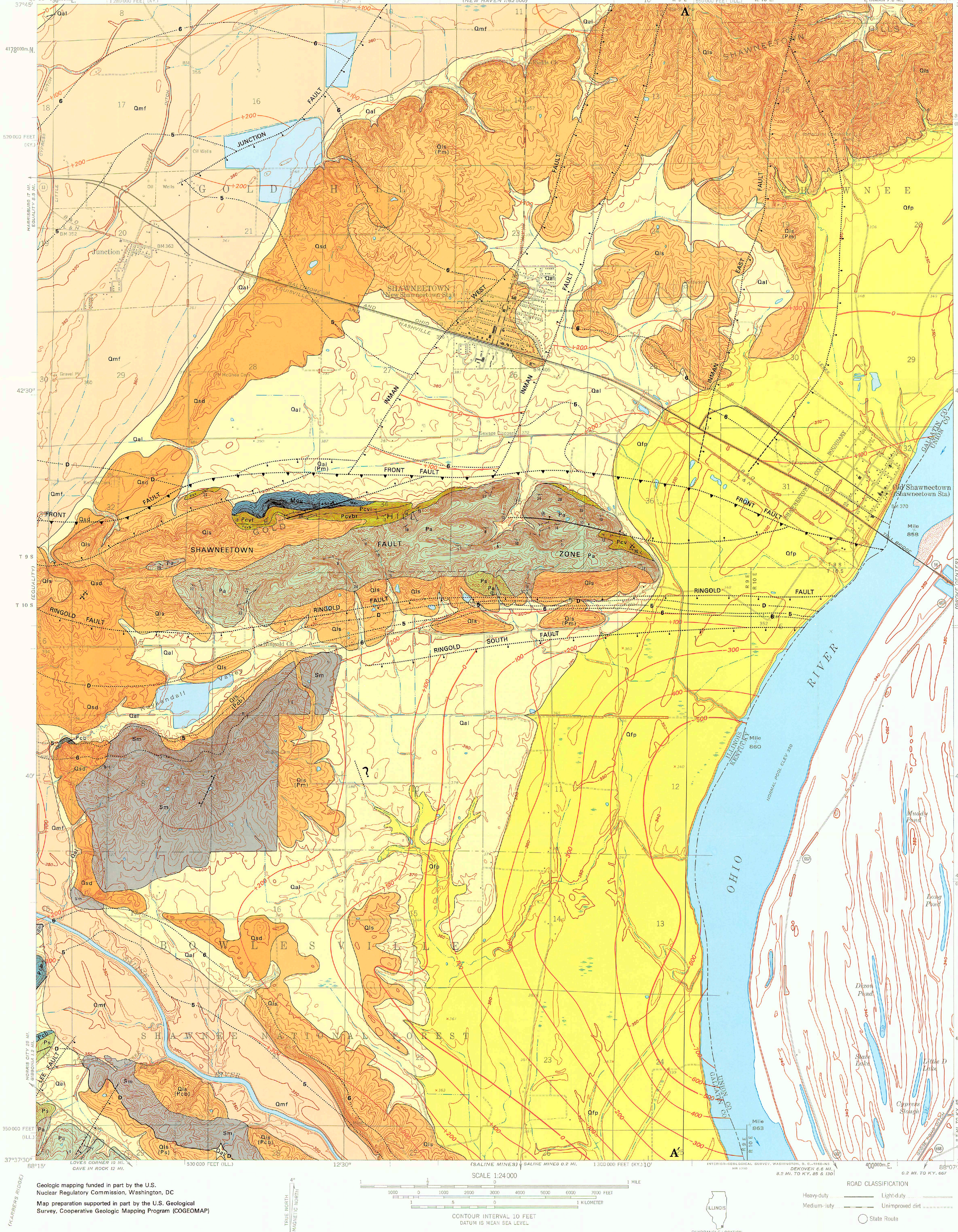


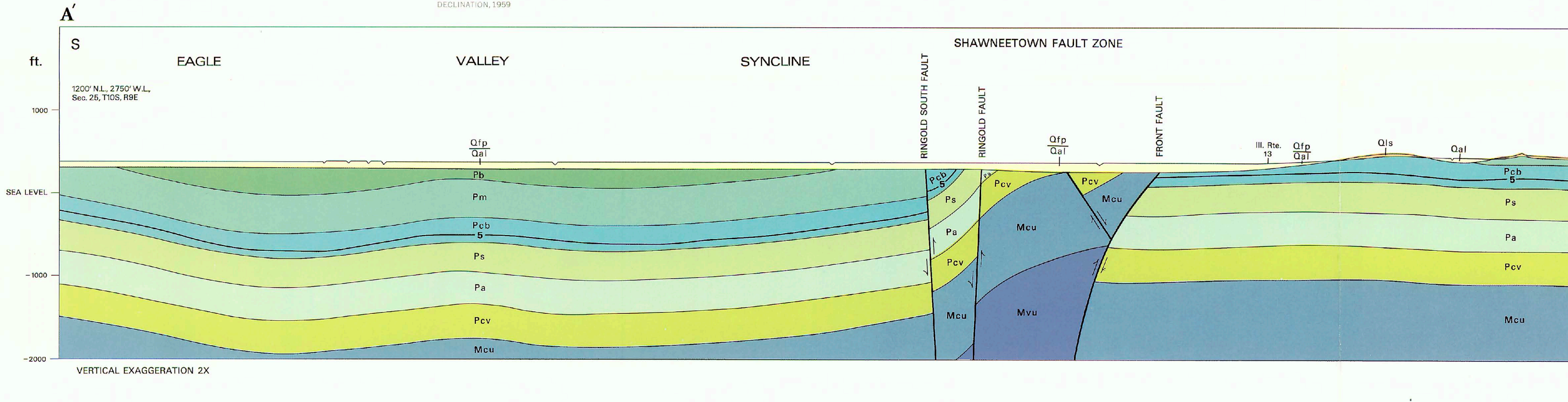
SYSTEM	SERIES	FORMATION AND MEMBER	LITHOLOGY	THICKNESS OF COAL MEMBERS	THICKNESS IN FEET	DESCRIPTION
QUATERNARY	Pleistocene	Cahokia Alluvium and Equality Formation			0-180	Cahokia Alluvium: up to 150 ft. of clay silt, sand, and gravel on modern flood plain of Ohio River and in abandoned channel between Gold Hill and Shawneetown Hills; clay silt, sand, and rock debris in stream valleys and rivers; thin veneer of silt and clay covering terrace deposits. Equality Formation: coarse mud, clay silt, and fine sand, massive to well laminated, Illinois and Wisconsinan.
		Parkland Sand			0-50	Parkland Sand: white to light gray very fine to fine grained, well sorted, crossbedded; contains small gastropod shells, wood-burn sand, forms stabilized dunes on east side of Shawneetown Channel; grades eastward to all loess.
		Loess			0-30+	Silt: slightly clayey, compact, nodular; contains calcareous tubules; strata in nearly vertical banks; buff-tan to yellow loess (Missourian) can be distinguished from an older red-brown Illinois loess in some exposures.
PENNSYLVANIAN	Maumee	Maumee Flood deposits			0-150	Clay, silt, and thick water-bearing sand and gravel, especially at base.
		Reel Ls. Mbr.			0-6	
		Carthage Ls. Mbr.			0-8	
		New Haven Coal Mbr.			1-18	
		Mascoupin Ls. Mbr.			0-18	
		Womac Coal Mbr.			0-18	
		Chapel (No. 8) Coal Mbr.			4-30	
		West			0-12	
		Franklin Ls. Mbr.			4-32	
		Darville (No. 7) Coal Mbr.			12-92	
MISSOURIAN	Carbondale	St. David Ls. Mbr.			350-375	
		Turner Mine Sh. Mbr.			40-70	
		Springfield (No. 3) Coal Mbr.			40-70	
		Houshain Creek (No. 4) Coal Mbr.			6-28	
		Mecca Quarry Sh. Mbr.			6-30	
		Colchester (No. 2) Coal Mbr.			8-18	
		Palto St. Mbr.			16-50	
		Dekoven Coal Mbr.			40-65	
		Davis Coal Mbr.			40-65	
		Stonaford Ls. Mbr.			4-12	
CANTONIAN	Spoon	Wise Ridge Coal Mbr.			300-380	
		Mt. Moran Coal Mbr.			3-30	
		Carlew Ls. Mbr.			0-18	
		Reel Island (No. 7) Coal Mbr.			0-12	
		Murray Bluff St. Mbr.			20-50	
		Finnie St. Mbr.			0-100	
		Willis Coal Mbr.			0-18	
		Grindstaff St. Mbr.			50-100	
		Reynoldsburg Coal Mbr.			0-18	
		Pounds St. Mbr.			0-100	
ALBIONIAN	Casper	Battery Rock St. Mbr.			250-450	
		Lusk Sh. Mbr.			0-150	
		Goreville Ls. Mbr.			25-35	
		Cave Hill Ls. Mbr.			60-80	
		Negri Creek Ls. Mbr.			25-35	
		Degonia St.			25-35	
		Ford Station Ls. Mbr.			40-60	
		Tygett St. Mbr.			40-60	
		Core Ls. Mbr.			40-60	
		Palatine St.			40-65	



**EXPLANATION**

- Qtp Flood plain deposits
- Qal Cahokia Alluvium and Equality Formation
- Qsd Parkland Sand
- Qls Loess deposits; underlying bedrock indicated by ( )
- Qmf Maumee Flood deposits
- Pb Bond Formation (in cross section only)
- Pm Modesto Formation
- Pcb Carbondale Formation  
6 = Herin (No. 6) Coal Member  
5 = Springfield (No. 3) Coal Member
- Ps Spoon Formation  
D = Davis Coal Member
- Pa Abbott Formation
- Pcv Caseyville Formation  
Pcvh = Hairy Rock Sandstone Member  
Pcvl = Lusk Shale Member
- Mcu Chesterian Series, undifferentiated
- Mvu Valmeyer Series, undifferentiated (in cross section only)

--- Contact  
 - - - - - Dashed where inferred  
 --- Coal seam  
 - - - - - Dashed where inferred, dotted where concealed by Quaternary deposits  
 --- Reverse fault  
 - - - - - Dashed where inferred, dotted where concealed by Quaternary deposits  
 --- Vertical normal fault  
 --- Bar and ball on downthrown side. Dashed where inferred, dotted where concealed by Quaternary deposits  
 --- Structure contours  
 --- Drawn on top of Springfield (No. 3) Coal Member of Carbondale Formation. Figure gives elevation of top of Springfield Coal with respect to mean sea level. Contour interval 100 ft. Not shown where datum is above land surface. Long dashed lines indicate anticlinal or synclinal axes; arrow indicates dip direction  
 --- Strike and dip of bedding (representative sample)  
 --- Number indicates degree of dip  
 --- Horizontal bedding  
 --- Joints or systematic fractures (strike indicated, dip inclined or near vertical)  
 --- Mine shaft or prospect  
 --- Mine slope or drift  
 --- Strip-mined area  
 --- Coal seams shown prior to mining



**Structural Geology**  
 The Shawneetown Fault Zone bisects the quadrangle east to west. The zone consists of several subparallel high-angle faults and ranges from about 3,000 to 7,500 ft. wide. The largest fault, designated the front fault, lies at the northern edge of the zone. The front fault is concealed by vertical deposits, but is well defined by subsurface data, which show that the south side is upthrown by 900 to more than 2,000 ft. Drilling in adjacent quadrangles indicates that this is a steeply dipping reverse fault. Other faults in the Shawneetown Fault Zone, mapped or inferred from outcrop and drill-hole data, have vertical displacements of several tens to several hundreds of feet. They are believed to be steep normal faults, which may die out laterally and upward into sharp flexures.

The Eagle Valley Syncline lies south of and trends subparallel to the Shawneetown Fault Zone. The syncline plunges abruptly eastward into the Moorman Syncline of Kentucky. Dips on the limbs of the Eagle Valley Syncline are commonly in the range of 3° to 8°. A small east-trending anticline, the Kuykendall Anticline, is mapped in the SW 1/4 sec. 4 and the N 1/2 sec. 8 and 9, T10S, R9E. Several small north-trending faults have been defined from subsurface data in the Eagle Valley Syncline; these represent the northeastern extent of the Fluorapra Area Fault Complex.

North of the Shawneetown Fault Zone the sedimentary layers dip generally northward at 3° or less and are cut by north- to northeast-trending faults of the Wabash Valley Fault System. The faults are steeply dipping normal faults that form horsts and grabens. Maximum displacement is 275 to 300 ft. on the Inman Fault. The Wabash Valley Fault System apparently terminates at the northern edge of the Shawneetown Fault Zone.

**Economic Geology**  
 Coal has been mined from five coal seams in the quadrangle. All the coals have been mined in the Eagle Valley Syncline. The Springfield (No. 3) Coal (formerly Hartshorn, No. 5) is the only seam that has been mined north of the Shawneetown Fault Zone. One mine is presently operating in the quadrangle; the Peabody Coal Company Eagle No. 2 Mine, a slope mine in the Springfield Coal in sec. 16, T9S, R9E.

The Davis Coal is the oldest seam mined in the quadrangle. The Davis Coal, which averages about 4 ft. thick, was strip-mined in tandem with the Dekoven Coal. The Dekoven Coal averages about 3 1/2 ft. thick and lies about 22 ft. above the Davis Coal. These coals were strip-mined in the hills south of the Saline River in the extreme southwestern part of the quadrangle.

In contrast, extensive deep-minable coal resources occur both north and south of the Shawneetown Fault Zone. The Davis and Springfield Coals are 3 1/2 ft. or thicker almost everywhere and are consistently overlain by competent roof strata of black, fissile shale topped by gray silty shale or siltstone. The Dekoven and Herin Coals, less uniform in thickness, nevertheless contain widespread deep-minable resources. The roof of the Dekoven Coal is generally siltstone; the roof of the Herin Coal is black shale and/or limestone, locally replaced by sandstone in erosional channels north of the Shawneetown Fault Zone. Oil test holes and faults of the Wabash Valley System will moderately hinder mining. In the Eagle Valley Syncline the coal seams dip at 5° to 10° and reach depths greater than 1,000 ft. near the Ohio River.

Very fine grained, unconsolidated aeolian sand has been extracted from pits located in the south of the Kuykendall Valley, and was reportedly mined underground in the old Bowlesville Mine. The Herin Coal, 3 to 5 ft. thick when it has been mined, occurs about 120 ft. above the Springfield Coal.

Most of the readily stripable coal in the Shawneetown Quadrangle has been exhausted. All five mineable seams outcrop on the south side of Gold Hill, but steep dips and/or faulting will limit development of these resources. Stripable Springfield, Briar Hill, and Herin Coals occur on the northeast side of the Saline River in the southern part of the quadrangle. Although the Springfield and Herin Coals also lie at stripable depth in places north of the Shawneetown Fault Zone, the overburden there is likely to include thick, water-bearing sand and gravel.

The Shawneetown Field, discovered in 1945, has a cumulative production of more than 17,000 barrels from 6 wells finished in the Palatine Sandstone, Waterberg Formation, Hartshorn Sandstone, Cypress Sandstone, Bethel Sandstone, and Anax Vases Sandstone.

To date only one well in the quadrangle drilled below Mississippian strata is the Texaco J. M. Walters No. 1, in the SW NE SW sec. 29, T9S, R9E, which reached a total depth of 7,688 ft. in Everton Dolomite without obtaining production.

Contributions to mapping of the Quaternary System: Paul V. Heinrich, 1982, Geomorphology and Sedimentology of Pleistocene Lake Saline, Southern Illinois, Master's thesis, University of Illinois, Urbana-Champaign.