










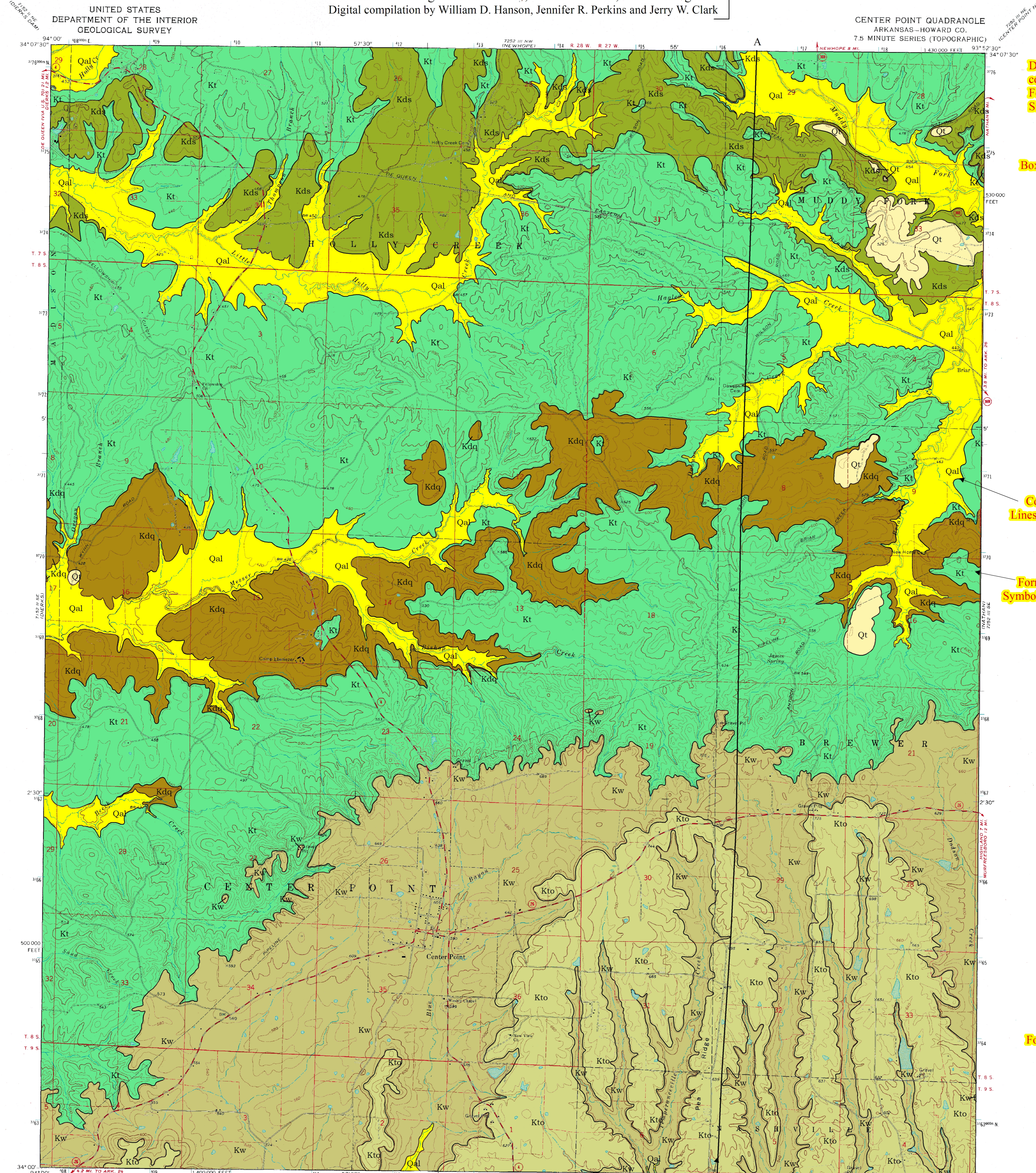


# GEOLOGIC MAP OF THE CENTER POINT QUADRANGLE, HOWARD COUNTY, ARKANSAS

## Other Symbols

-  Mines Quarries  
Size 30
-  Pit  
Size 30
-  Strike and Dips  
Size 60  
Number Size 8
-  Overturned Strike and Dips  
Size 30  
Number Size 8
-  Tear Fault Movement Direction  
Size 48
-  Thrust Faults  
Line Size 2.0  
Daggers Size 10  
Dagger Distance 1.0 - 2.0
-  Normal Faults  
Line Size 2.0
-  Tear Faults  
Line Size 1.0
-  Syncline  
Line Size 2.0  
Symbol Size 30
-  Anticline  
Line Size 2.0  
Symbol Size 30
-  Monocline  
Line Size 2.0  
Symbol Size 30

Geology By William D. Hanson and Benjamin F. Clardy  
 Edited by William D. Hanson  
 1997  
 Arkansas Geological Commission, William V. Bush, State Geologist  
 Digital compilation by William D. Hanson, Jennifer R. Perkins and Jerry W. Clark



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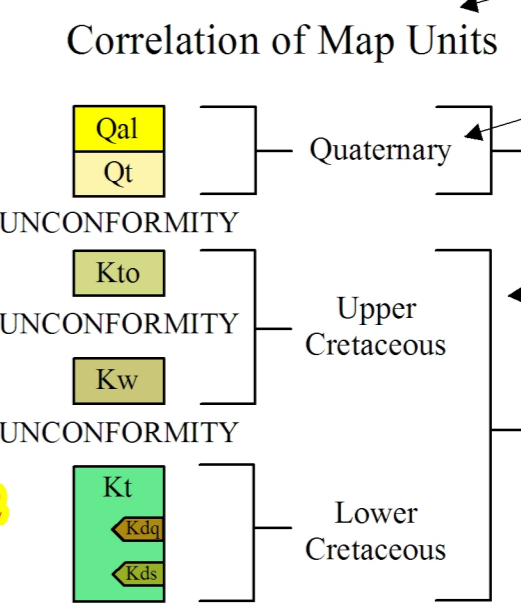
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Do the Legends in MS Word Then copy and paste into Layout View. Font is New Time Romans Size 12.

Boxes .5 x .25 with Symbols @ Size 12

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## Description of Map Units

**Qal** Alluvium (Quaternary) - Variably sized gravel overlain by unconsolidated sand, silt, and clay comprises the unit. This unit occurs in the floodplains of streams and rivers. The sediments form a rich loam and are excellent for agriculture. Gravels, primarily novaculite, originated in the Ouachita Mountain region and from local Cretaceous formations. Thickness varies from 0 to 25 feet. Areas of alluvium are presently receiving sediment deposition.

**Qt** Terrace Deposit (Quaternary) - Terrace deposits generally grade from basal gravel to silt and clay at the top. Gravels, primarily novaculite, originated in the Ouachita Mountain region and from local Cretaceous formations. Thicknesses are generally less than 50 feet. Terraces are topographic features which are former floodplains of nearby streams and/or rivers. The sediments form a rich loamy soil. The basal gravel is sometimes utilized for water-well production and gravel-mining operations.

**Kto** Tokio Formation (Upper Cretaceous) - The Tokio Formation consists of cross-bedded sand, gravel, gray clay, and volcanic ash. Basal cross-bedded gravels are approximately 30 feet thick. Minor sand and clay lenses occur within the gravel, while sand commonly fills the interstitial spaces around the gravel. Thinner beds (less than 1 foot in thickness) and lenses of gravel occur within the formation's sand intervals. The gravels range from pea-size to 6 inches in diameter and are composed of quartz, novaculite, sandstone, and quartzite. Iron-oxide-cemented conglomerates may be present locally. The cross-bedded sands are medium-to-fine-grained quartz with minor amounts of heavy minerals, glauconite, iron-oxide concretions, and rip-up clasts of gray clay. Sands weather yellow to orange-red in color. Gray clays are lignitic, pyritic, fossiliferous, and may contain leaf imprints. The volcanic ash is light gray to white and has altered to kaolinitic clay. The source area for much of the formation's sediment was the Ouachita Mountain region. The formation outcrop belt extends from near Arkadelphia, southwest to the Arkansas-Oklahoma state line, and dips to the south at approximately 80 feet per mile. The approximate thickness in the quadrangle is 80 feet. The unit was deposited in a nearshore marine environment on an unconformable surface which separates it from the underlying Woodbine Formation (Upper Cretaceous).

**Kw** Woodbine Formation (Upper Cretaceous) - The Woodbine Formation consists of water-laid, cross-bedded tuffs, tuffaceous sands, gravel, and red and gray clay. Basal cross-bedded gravels are approximately 20 feet thick and form a cuesta in the area. Thinner beds and lenses of gravel occur with the water-laid tuffs at the base of the unit. Gravels are 1/4 to 6 inches in diameter, well-rounded, and are composed of novaculite, quartz, sandstone, and quartzite. Iron-cemented conglomerates may be present locally. Igneous rock pebbles and cobbles are interbedded within the tuffs. Unweathered tuffs range from green to blue in color while weathered tuffs form a red waxy clay. The source for the volcanic sediments was probably centered in the area between Murfreesboro and Locksburg, Arkansas. The source area for the formations' remaining sediments was primarily the Ouachita Mountain region. The outcrop belt extends from the Little Missouri River southwest to the Arkansas-Oklahoma state line, and dips to the south at approximately 80 feet per mile. The approximate thickness in the quadrangle is 150 feet. The unit was deposited in a near-shore marine environment and unconformably overlies the Trinity Group (Lower Cretaceous).

**Kt** Trinity Group (Lower Cretaceous) - The Trinity Group consists of gravel, sand, clay, gypsum, Celestine, and barite. The group is exposed in an east-west trending belt and dips to southward approximately 100 feet per mile. Sediments comprising this unit originated to the north in the Ouachita Mountain region and were deposited following a major unconformity an upturned and eroded Paleozoic surface in a near-shore marine environment. Members of the Trinity Group are the Paluxy Sand, DeQueen Limestone Member, Holly Creek Member, Dierks Limestone Lentil, and Delight Sand Member. The Paluxy Sand Member is composed of cross-bedded medium- to fine-grained quartz sand, minor gravel, and bedded gray, light-gray, and brown clay. Sands weather from yellow to orange-red in color. The thickness of the unit on the quadrangle is approximately 250 feet. Near the base of the Paluxy Sand Member, sandstones with barite cement form topographic highs.



**Kdq** The DeQueen Limestone Member is composed of interbedded gray fossiliferous limestone, gray and green calcareous clay, very fine quartz sand, and silt. The thickness of the limestone beds vary, but rarely exceed 36 inches. Ripple marks, mud cracks, and worm trails are common on the upper surface of the limestone slabs. Clays weather yellow-brown and are sticky. The thickness of the member is approximately 100 feet in the mapped area. Fossils present are primarily brackish-water molluscan fauna, the most common being the *Ostrea franklini*. This member corresponds in part to the Ferry Lake anhydrite in the subsurface of southern Arkansas.

The Holly Creek Member is composed of cross-bedded gray, fine- to very fine-grained quartz sand, gravel and clay. Sands commonly weather yellow to red in color. Clays are typically gray to brown in color. The Ultima Thule gravel lens is a part of this member. The Ultima Thule consists of bedded pea-sized gravel composed of novaculite, sandstone, and quartz. Minor sand and clay lenses occur within the gravel unit. The thickness of the Ultima Thule in the mapped area is 10 to 20 feet. The thickness for the entire member on the quadrangle is approximately 220 feet.

The Dierks Limestone Lentil is composed of interbedded limestone and dark-gray to black clay. The thickness of this lentil is 60 feet. The abundance of *Ostrea franklini* indicates a brackish-water environment. The Delight Sand Member is composed of crossbedded, fine sand interbedded with gray clays. Sands weather yellowish-orange, and are locally impregnated with asphalt.

Border Lines Size 2.5

## Symbols

-  Contacts
-  Gravel Pit

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## References

- Bush, W. V., and Clardy, B. F., 1971. Geologic Map of the Ashdown East Quadrangle, Little River and Hempsstead Counties, Arkansas: Arkansas Geological Commission Open-File Report, scale 1:24,000.
- Dane, C. H., 1929. Upper Cretaceous formation of southwestern Arkansas. Arkansas Geol. Survey Bull. 1, 215p.
- Miser, H. D., and Purdue, A. H., 1929. Geology of the DeQueen and Caddo Gap Quadrangles, Arkansas: U.S. Geological Survey, Bulletin 808, scale 1:125,000.

## DISCLAIMER

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Size 2" x 2"



Basal Gravel in the Tokio Formation



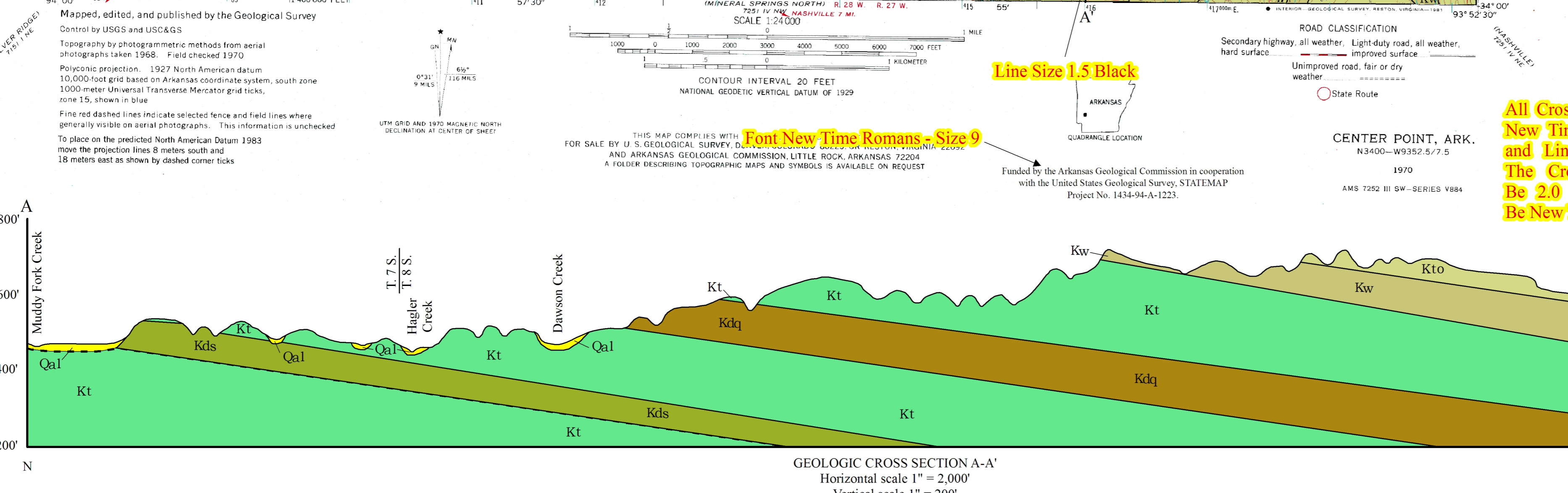
Basal Gravel in the Woodbine Formation



Gastropods from the DeQueen Limestone



Ostrea franklini from the Dierks Limestone



Line Size 1.5 Black

All Cross Section Text To Be New Time Romans - Size 12 and Line Work To Be 1.0. The Cross Section Box To Be 2.0 Line Wait, A-A' To Be New Time Romans - Size 16

Font New Time Romans - Size 9

GEOLOGIC CROSS SECTION A-A'  
 Horizontal scale 1" = 2,000'  
 Vertical scale 1" = 200'

