Stephen R. Boyes, P.G.

Florida License # PG 184

Mill Creek Sink Hearing Graphics

January 12, 2026

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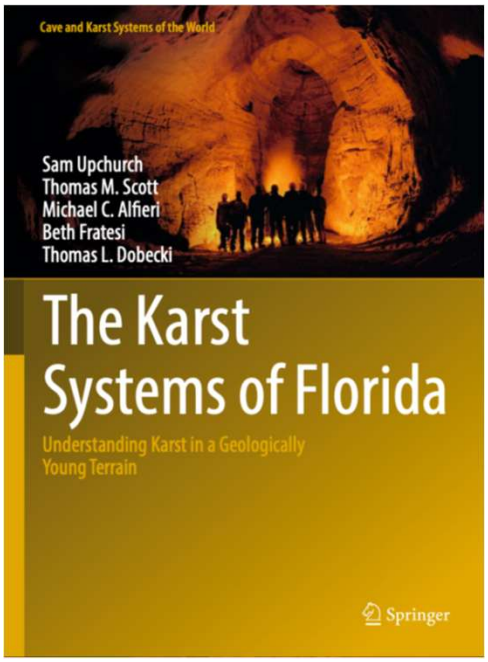

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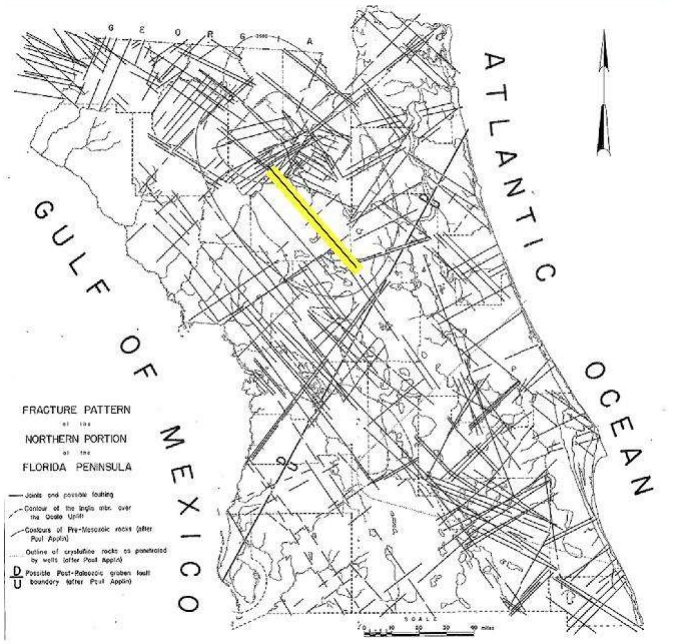

Fig. 6.31 Photolineament map of Vernon (1951)

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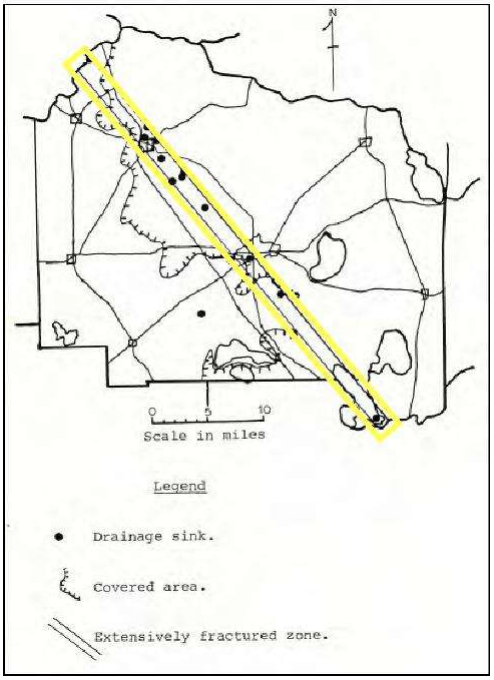
Figure 6. Cross County Fracture Zone. Williams 1977, Florida Bureau of Geology RI 85



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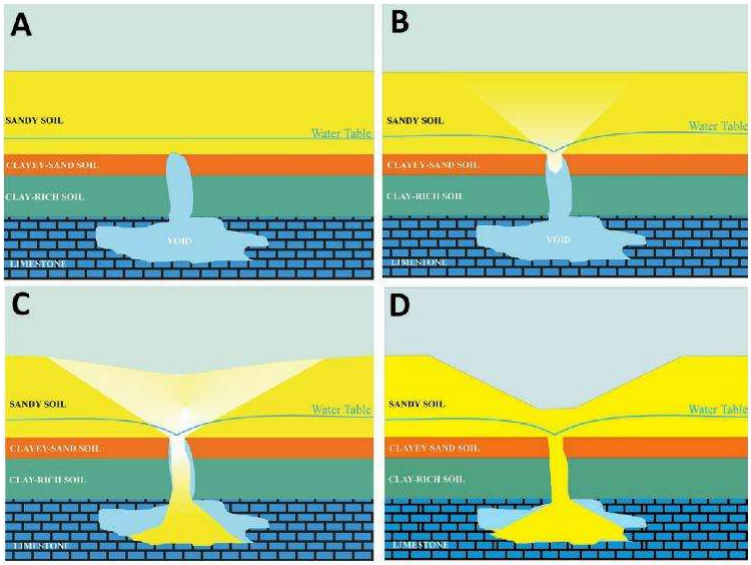

Fig. 7.64 Sequence of events in development of a cover-collapse sink hole by suffosion. (**a**) An aven, or pathway, has developed through the cohesive sediments above the limestone. (**b**) Raveling with slight dilatation of the sand is beginning. (**c**) Raveling is underway and the sand in the raveling zone is dilitated. (**d**) Suffosion is complete with the void filled, aven plugged by the cone of raveled sand, and a land surface depression

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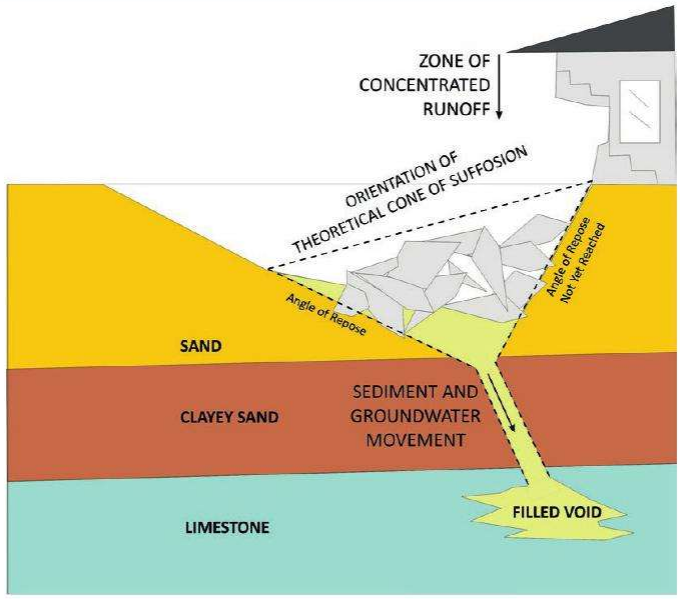

Fig. 7.68 Diagram showing how an angled cone of raveling or suffosion migrates to the foundation of a house

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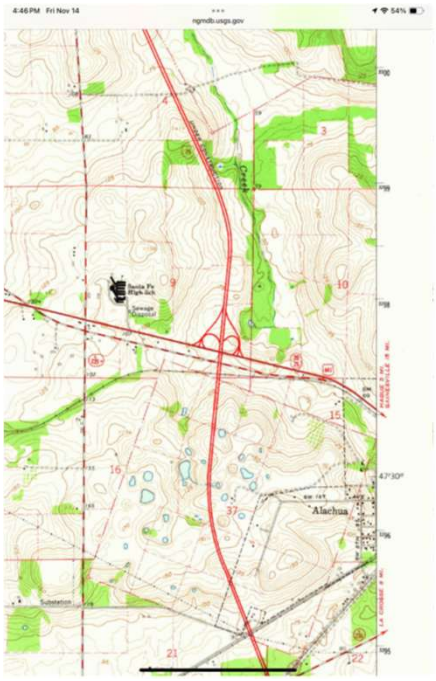
1962 USGS Topographic Map



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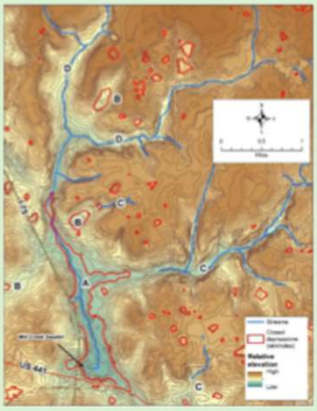
Sidebar 12-5: HOW MUCH SEDIMENT HAS ENTERED MILL CREEK SINK CAVE?

We can estimate the volume of sediment that enters a cave over time by estimating the volume of the eroded watershed that drains into it. The figure to the right is a topographic map of the famous Mill Creek Sink in Alachua County. We will visit this sink in Chapter 24. For now, let's get a sense of how much sand and clay have entered the cave system as the sinkhole and drainage basin of Mill Creek have developed.

The Mill Creek drainage basin was once much larger and more complex. Sometime during the Pliocene or Pleistocene, a sinkhole developed at the location shown on the map as the Mill Creek swallet. Once that sinkhole developed and began to capture the flow in the creek, all the sediments eroded by the stream upstream of the swallet were either dissolved and entered the sink as chemical constituents or became sand and clay sediment that entered the cave.

In a 2005 presentation to the Southeastern Geological Society, Sam Upchurch estimated the amount of this insoluble sediment that had gone underground. He assumed that the sediments and rocks upstream from the swallet were half carbonates, which dissolved, and half insoluble sand and clay. Based on measurements of the drainage basin volume, he estimated that the Mill Creek sinkhole and drainage basin once contained 12.6 million cubic yards of sediment, the insoluble part of which has entered the Mill Creek cave. Based on this estimate, approximately 634,000 20-yard dump trucks of sand and clay are currently found within the underlying cave system. Given the large number of caves with swallets and sinkholes in northern and central Florida, the amount of sand and clay trapped in caves of the upper Floridan aquifer has to be enormous.



Topographic map of the Mill Creek drainage basin and its many sinkholes. A is the closed depression (sinkhole) into which the creek drains. The other areas marked by B and outlined in red are also sinkholes. The stream segments shown by the letter C are parts of the Mill Creek drainage system that go underground before flowing to the main swallet. The stream segment marked by D is above the sinkholes that capture sediment.

SRB Source: Personal communication from Upchurch 2025.

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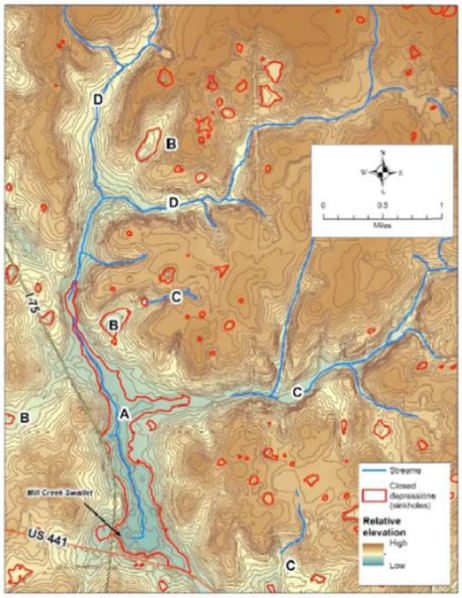
Topographic map of the Mill Creek drainage basin and its many sinkholes.



Personal comunication Sam Upchurch, Sidebar 12-5, 11/14/2025 to Stephen R Boyes, P.G. Florida License PG184.

"A is the closed depression (sinkhole) into which the creek drains. The other areas marked by **B** and outlined in red are also sinkholes. The stream segments shown by the letter **C** are parts of the Mill Creek drainage system that go underground before flowing to the main swallet. The stream segment marked by **D** is above the sinkholes that capture sediment." Sam Upchurch 2025.

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