STREAM CAPTURE

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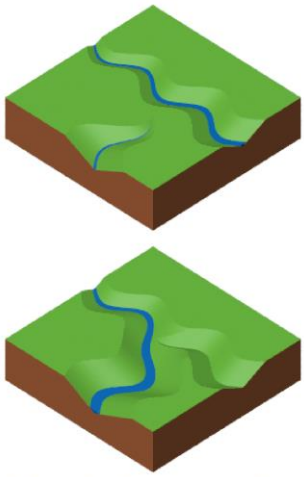

Figure 1. Stream capture by headward erosion.

Stream capture, also known as river capture, river piracy, or stream piracy, is a geomorphological phenomenon where a stream is diverted from its own bed to flow down the bed of a neighboring stream. Figure 1 from Wikipedia is an illustration of one stream capturing another by headward erosion. Once erosion cuts through the stream basin divide, the stream of the higher valley flows into the stream of the lower valley, abandoning its downstream course.

This is the potential scenario playing out along the western shore of the Ross Barnett Reservoir, where eastward eroding tributaries of the Big Black River are reaching a low narrow divide with the Pearl River Basin and where the Pearl River floodplain hugs its western basin margin. An erosional breakthrough here would capture the Upper Pearl River and add its watershed to that of the Big Black River Basin. As the Big Black River floodplain is a hundred feet lower than that of the Pearl River, it would also reverse water flow along the abandoned downstream channel. Even so, the precarious Big Black-Pearl River divide has been stable over historic time and is in no immediate danger of failing.

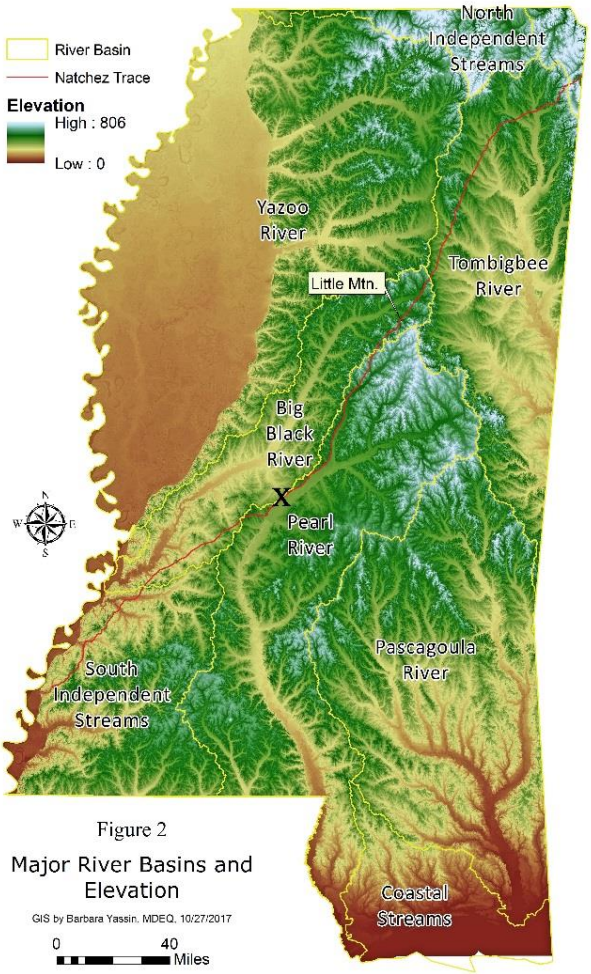

Figure 2
Major River Basins and Elevation

The X near the middle of the Major River Basin map in Figure 2 marks the narrow divide between the Big Black River and Pearl River basin along the west shore of the Ross Barnett Reservoir. West of the X the Big Black River floodplain is brown, the color code for low elevation. East of the X the Pearl River floodplain is green, the color code for intermediate elevation. Figure 3 shows tributaries of the Big Black River against the divide's western margin. The red line (Profile A-A') in figures 3 and 4 is a distance of about 1,800 feet between Reservoir's western shore at 294 feet above mean sea level and the 294-foot contour (in black) on the western side of the divide. The 294-foot contour line in Figure 4 separates the divide ridge from areas west of the divide that are lower than the Reservoir pool level. The crest of this divide as shown in

Figure 5 is only fifty feet higher than the pool level. This narrow low isthmus is all that keeps the Big Black and Pearl River Basins in place.

Stream capture has played an important role in creating the present landscape of our state. Even river basins are not permanent. One evidence of this is the river sands and gravels that now cap the highest elevations of southern Mississippi and elsewhere, a complete reversal from river bottom to river divide and high plateau.

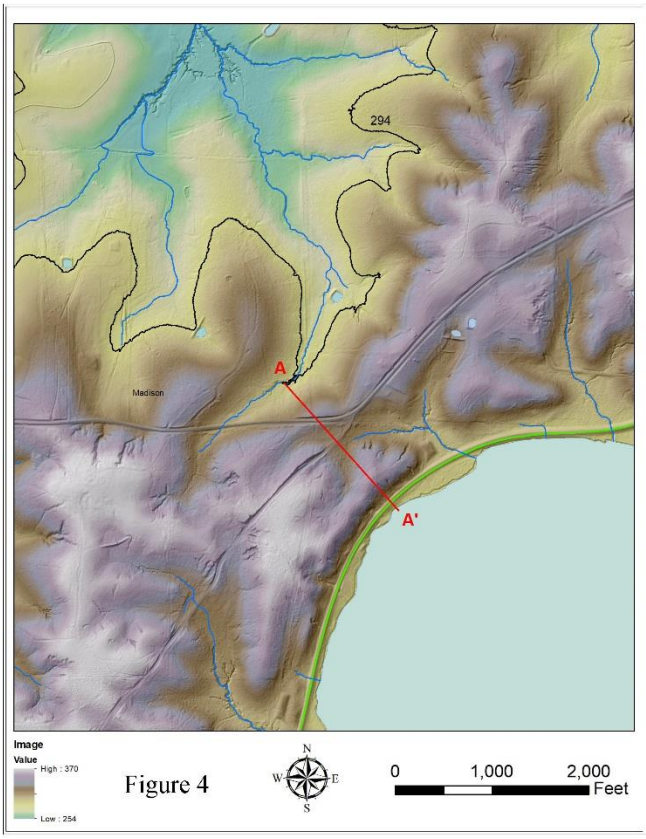

Figure 4

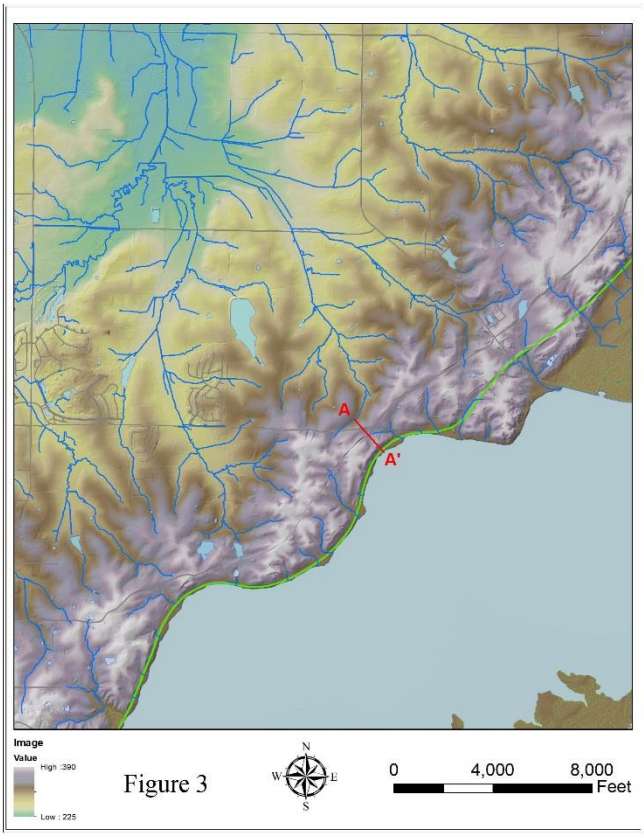

Figure 3

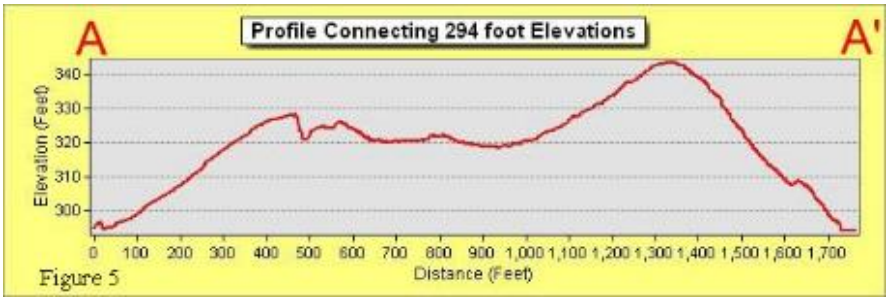

Figure 5