

THE STRATIGRAPHIC INTERPRETATION OF A POSSIBLE PALEO-STREAM CHANNEL OF THE ANCIENT NUECES RIVER, SOUTH TEXAS

Gerald J. Daub^{1,2} and Jon C. Boothroyd¹

GEOLOGICAL NOTE

The Nueces River in South Texas flows in a southeasterly direction from the Edwards Plateau through LaSalle County where, in southeastern LaSalle County, the river makes an abrupt 90 degree turn and flows northeasterly for 56 miles, at which point it joins with the Frio and Atascosa Rivers to flow to Corpus Christi Bay. Bailey (1926) and Sayre (1937) have speculated that a paleo-Nueces River flowed directly across Duval County, debouching in Baffin Bay. However, an aerial photograph and ground investigation revealed no positive surface expression of the paleo-system. But, both Parilla Creek and particularly Las Animas Creek, which are proposed courses for the paleo-Nueces, are underfit streams contained at present within very broad valleys.

The Bordas escarpment (Recent?), striking in a northeast-southwesterly direction, controls stream drainage patterns, including the present course of the Nueces River. Those rivers west of the Bordas escarpment flow west-northwesterly to the Nueces River, whereas those to the east, including Parilla and Las Animas Creek, flow south-southeasterly to the Gulf of Mexico. The Nueces River could have occupied one of the broad valleys before the Bordas escarpment became active.

Termination of most electric well logs near the surface resulted in a lack of data on Recent or Quaternary deposits to determine if a fluvial system did exist in the uppermost portion of the stratigraphic section. As a result, a lower stratigraphic sequence, upward from the Catahoula (Miocene) through the Goliad (Pliocene) Formations, was studied with emphasis on the Oakville Formation. If stacked bar and channel sequences beneath the proposed former course of the Nueces River exist in these older rocks, they will lend credence to the theory that the course of the paleo-Nueces River crossed Duval County.

A series of photographs of the faces of an open-pit uranium mine, where the Catahoula and Oakville are both exposed, were also used to determine the facies relationship of the stratigraphic sequences. This pit was along depositional strike from the well-log information used in the study. These fluvial sequences are represented by a number of alternating channel and overbank sediment bodies which indicate that the depositional environment of the Oakville Formation of the South Texas Gulf Coast may be a sandy-braided or coarse-grained meandering fluvial system. If uranium-enriched water migrated through these fluvial systems, uranium deposition and concentration are likely to have occurred. These fluvial systems thus become potentially-productive exploration targets.

REFERENCES CITED

- Bailey, T. L., 1926, The Gueydan, a new Middle Tertiary formation from the southwestern coastal plain of Texas: Texas University Bulletin, 2645.
- Sayre, A. N., 1937, Geology and ground water resources of Duval County, Texas: U. S. Geological Survey Water Supply Paper, 776.

¹Department of Geology, University of Rhode Island, Kingston, Rhode Island 02881.

²The writer wishes to thank the Anaconda Company for permission to publish this study, as well as funding the field work.