

High-Resolution Holocene Stratigraphy of the Nueces River Bayhead Delta and Incised Valley of the Southwestern Texas Gulf Coast

N.F. Ferina¹, J.L. Kindinger¹, and R.A. Morton¹

¹U.S. Geological Survey, Florida Integrated Science Center, St Petersburg, Florida

The Nueces-Corpus Christi Bay complex lies within Nueces and San Patricio Counties, near the city of Corpus Christi, Texas, and is located on the western Gulf of Mexico coastal plain. The modern Nueces-Corpus Christi Bay complex is an incised valley of the Nueces River that cut across the continental shelf during the last glacial period and was flooded during the ensuing sea-level rise. The depositional history and identification of five deltas within Nueces Bay are described. Geologic features such as oyster bioherms and delta clinoform bedding were identified from seismic-reflection patterns (or characteristics) and geometries. Seismic-reflection patterns define erosional or depositional features such as fluvial incision, channel fill, and erosional truncation of valley walls with onlapping deposition. Identifying geologic features and erosional and depositional environments provides the data necessary to develop the geologic framework and history of the area. ¹⁴C dates indicate the oldest two deltas were deposited before Cal BC 4330 years and the youngest two deltas by Cal BC 1120 years. The Nueces River bay-head deltas and incised valley provide an excellent example of a preserved, transgressive, incised-valley-fill sequence. The incised-valley stratigraphy has similar analogs in the northern Gulf of Mexico (i.e., Mobile Bay), although few systems compare in degree of preservation and type of structural framework.