quences, and geomorphology, four linear barrier complexes have been identified within 10 km of the present coast. Each is a transgressive, peak-sea-level barrier complex including barrier and washover sands and gravels, tidal-marsh muds, and fossiliferous lagoonal sands and muds. A regressive sequence of sand and gravel occurs between each barrier. From most landward to most seaward, the barriers were formed at sea levels of about +5.4 m, +4.3 m, +2.8 m, and −1.0 m relative to present sea level. Age estimates based on amino acid racemization for shells within lagoons behind these barriers suggest a Sangamon age for at least the three most landward barriers.

Thus the upper 15 m of the horizontally correlative Pleistocene Columbia Group consists of at least four chronologically discrete, parallel, linear barrier-lagoon complexes formed during multiple marine transgressions and regressions. This interpretation of trends and vertical sequences of nearshore marine and coastal deposits may prove useful in the understanding of other ancient coastal deposits.

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Detailed Stratigraphy and Sedimentology of Whitsett Formation in Uranium Area of Western Karnes County, Texas

The Whitsett Formation of the upper Eocene Jackson Group contains, in ascending order, the Dilworth Sandstone, Conquista Clay, Deweesville Sandstone, Dubose, Tordilla Sandstone, and Fashing Clay Members. In Atascosa to McMullen Counties, the Calliham Sandstone Member, considered to be a stratigraphic equivalent of the Tordilla, is apparently the same age as the Fashing. The Deweesville is called the Stones Switch Sandstone Member by some geologists.

The Fashing contains flood-plain, lagoon-bay, and distributary-channel facies. The Kellner and Rosenbrock uranium mines are in the distributary-channel facies of the Fashing. These mines have previously been considered to be in the Tordilla Sandstone Member. The Calliham Member apparently represents tidal-delta sandstone at its type locality.

The Tordilla is a transgressive barrier-beach unit in the areas of the Pfiel-Wright and Weddington-Butler-Galen-Sickenius uranium-ore trends. Farther east, in the Manka and Stoeltje uranium mines, the Tordilla is represented by a back-barrier island facies.

Although the predominant facies of the Dubose is paludal and bay-lagoon mudstone, the ore in the Lauw and Bieker uranium mines is in a sand-filled distributary-channel facies.

A back-beach facies of the Deweesville contained the ore of the Searcy mine, and the F. Brysh mine is in the lower of two beach units in the Deweesville.

The sandstone members of the Whitsett Formation were deposited in transgressive barrier beaches, although locally they may be represented by progradational beaches or tidal inlets and deltas. Sandstone deposited in the distributary channels is equivalent in age to the clay members. The grains of the sandstone units in the Whitsett are composed mostly of feldspar and quartz. Some facies also contain abundant volcanic shards. Montmorillonite and clinoptilolite and part of the feldspar are authigenic constituents in the sandstone. The sandstone of the distributary channels is coarser grained than that in the beach sequences.

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Mineralogic Composition and Diagenesis of Tertiary Sandstones along Texas Gulf Coast

The upper Gulf Coast Wilcox Formation is composed dominantly of quartz with feldspar, metamorphic and volcanic rock fragments, and mud clasts. The lower Gulf Coast Wilcox Formation contains more quartz and volcanic rock fragments. Lower Gulf Coast Yegua and Jackson Formations are composed of quartz, volcanic, and lesser carbonate rock fragments. Northward they become more quartz-rich and contain metamorphic rock fragments and mud clasts. Lower Gulf Coast Frio and Vicksburg Formations are similar to the Yegua and Jackson. Northward, they become more quartz-rich, but carbonate rock fragments are absent.

Despite variations in composition, Tertiary sandstones exhibit a similar diagenetic sequence idealized as follows.

Surface to shallow subsurface diagenesis (0 to 4,000 ft; 1,200 m) begins with pedogenic clay coats and with leaching and calcite replacement of feldspar. Minor kaolinite, feldspar overgrowths, and iron-rich carbonate material are also precipitated. Porosity is commonly reduced by compaction from the original 40% to less than 30%.

Moderate subsurface diagenesis (4,000 to 11,000 ft; 1,200 to 3,300 m) involves leaching of early carbonate cements and subsequent cementation by quartz overgrowths and later carbonate cement. These stages commonly reduce porosity to 10% or less, but this trend may be reversed by late leaching of feldspar, rock fragments, and carbonate cements. Restoration of porosity to more than 30% can occur, but this may be reduced by late cementation by kaolinite and iron-rich dolomite and ankerite.

Deep subsurface diagenesis (11,000 ft; 3,300 m) is a continuation of late iron-rich carbonate cements.

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Sedimentation Rates in Coastal-Plain Estuary, Rhode River, Maryland

Estuarine sedimentation rates have traditionally been determined by indirect means or by estimation. A recently developed and potentially useful, absolute dating method for modern sediments—lead-210—previously has been applied with success to lacustrine and continental-shelf sediments. The results of the present study indicate that lead-210 may be useful in the estuarine environment as well.

The Rhode River estuary is a shallow, western arm of Chesapeake Bay. Piston cores 2 m long were collected in areas of suspected high deposition rates throughout the estuary. Subsamples taken at regular intervals down