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Facies and Depositional Environments of the Boquillas Formation

The sharp contact between the Boquillas Formation and the underlying Buda Formation in the vicinity of Del Rio, Texas marks a significant sequence boundary in the Upper Cretaceous. The subjacent Buda Formation consists of a benthonic-dominated fauna in a bioturbated lime wackestone. The lower Boquillas consists of hummocky cross-stratified, lime grainstone, packstone and dolostone with allochems of planktonic foraminifera, ammonites, calcispheres, and *Inoceramus* fragments. These deposits alternate with thin laminated black shales. The presence of hummocky cross-stratification and disrupted bedding in the lower Boquillas suggests deposition near storm-wave base. The lack of benthonic fauna and bioturbation and the presence of scattered pyrite in the lower Boquillas suggest that sediments were deposited under reducing conditions. Higher in the section, the lithology consists of thicker laminated black shales alternating with thinner laminated lime wackestones and packstones but with a similar suite of allochems. This suggests deepening on the shelf. Further up section, burrowing increases in the laminated lime wackestones and eventually develops into extensively bioturbated, nodular lime packstones with echinoid fragments. This implies increasing oxygenation probably associated with shallowing on the shelf.

In a sequence stratigraphic framework, the base of the Boquillas Formation of southwest Texas is a third order sequence boundary and the lower part of the unit is within a transgressive systems tract. The thickest black shales constitute a maximum flooding surface. The upper part of the formation represents early highstand.