

UNDERSTANDING THE INFLUENCE OF TIDE AND WAVE ENERGY ON A RIVER-DOMINATED DELTA: THE EXPRESSION OF ICHNOLOGY, SEDIMENTARY STRUCTURES, AND SAND BODY GEOMETRIES IN THE LATE CRETACEOUS LOYD FORMATION, COLORADO

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Outcrops of deltaic strata in the transitional zone between the marine and continental realm record the dynamic interaction of fluvial and marine processes, which creates a complex array of depositional environments. The Loyd Formation (Loyd) of the Buck Tongue of the Mancos shale was deposited in the Cretaceous Western Interior Seaway as a deltaic unit which outcrops near Rangely, Colorado. The Loyd in this region can be tied, via subsurface well-log correlation to the type section of the Loyd in Hamilton, Colorado. Near Rangely the Loyd is an understudied interval of the stratigraphy and is often incorrectly associated with other formations deposited under different conditions. I suggest that the Loyd near Rangely is characteristic of a fluvial dominated delta with a significant component of both tide and wave influence. My objective is to identify the depositional environments and subenvironments contained in the Loyd near Rangely, Colorado area to create a paleogeographic reconstruction of the delta during the Late Cretaceous and identify how the wave and tidal influence on this delta manifests in the architectures, sedimentary structures, and ichnology observed in the outcrop. To accomplish these tasks I will log representative stratigraphic sections and utilize high-resolution photomosaics collected using GigaPan robotic photopanorama technology. These measured sections will be combined into fence diagrams, which will allow me to view the vertical and lateral variability in depositional environment within the Loyd while the photomosaics will capture the details of the Loyd outcrop at the macroscale and preserve the data for future use.

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