

UPPER MANNVILLE FLUVIAL CHANNELS IN EAST-CENTRAL ALBERTA

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ABSTRACT

The lower Cretaceous Mannville group in east-central Alberta consists of 70-180 metres of predominantly sandy sediments overlying a pre-Cretaceous unconformity. While important details of the depositional setting of the entire clastic sequence have only recently begun to emerge, it is generally accepted by previous investigators that following deposition of the Dina Formation as valley-fill channel deposits on the unconformity, the remaining lower and middle Mannville units were deposited as a series of regressive sequences in a nearshore marine or possibly deltaic setting. The depositional environment of the upper 40 m of the Mannville sequence, however, remains somewhat enigmatic.

The presence of coals and fresh water microfloral assemblages along with the absence of burrowing and marine (or brackish) microfossils indicate that the Upper Mannville was deposited in a continental environment. Sandy units up to 35 m thick which often exhibit a very sharp lower contact, a stacked series of 2-6 m thick fining upward cycles, shale breaks showing erosional surfaces above and below the shale, and an absence of a regular vertical sequence of bedding types, suggest episodic braided stream deposition on an alluvial plain. However, the Upper Mannville channel deposits do not form a sheet-like geometry. Previous investigators suggest that these thick channel sands separated by splays and overbank fines are characteristic of anastomosed stream deposits. Modern anastomosing streams show a dominance of interchannel peat and fines, whereas the Upper Mannville sequence is characterized by coarse clastics and little coal.