

# Testing Deep-Water Depositional Models for the Trimmers Rock Formation

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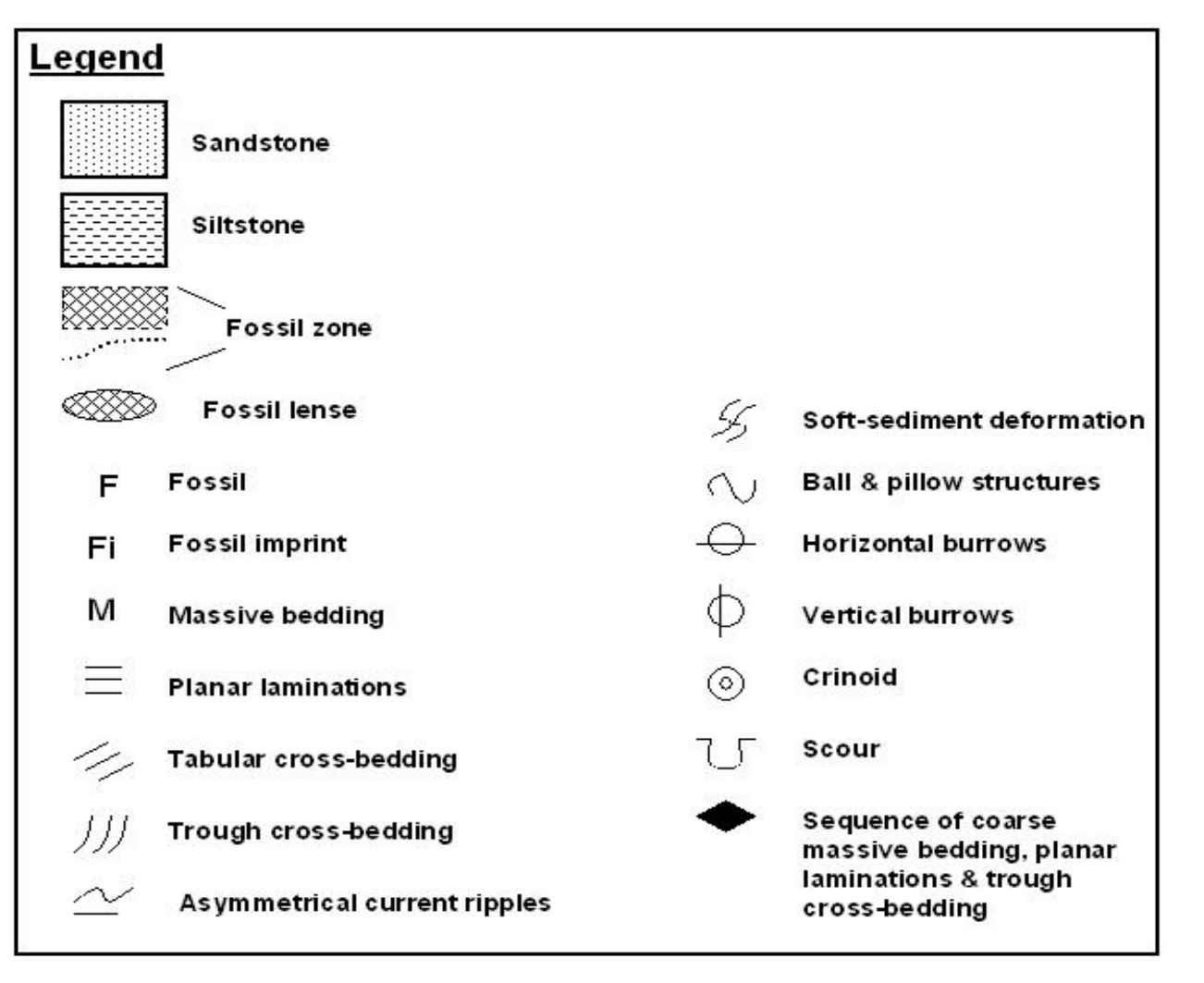
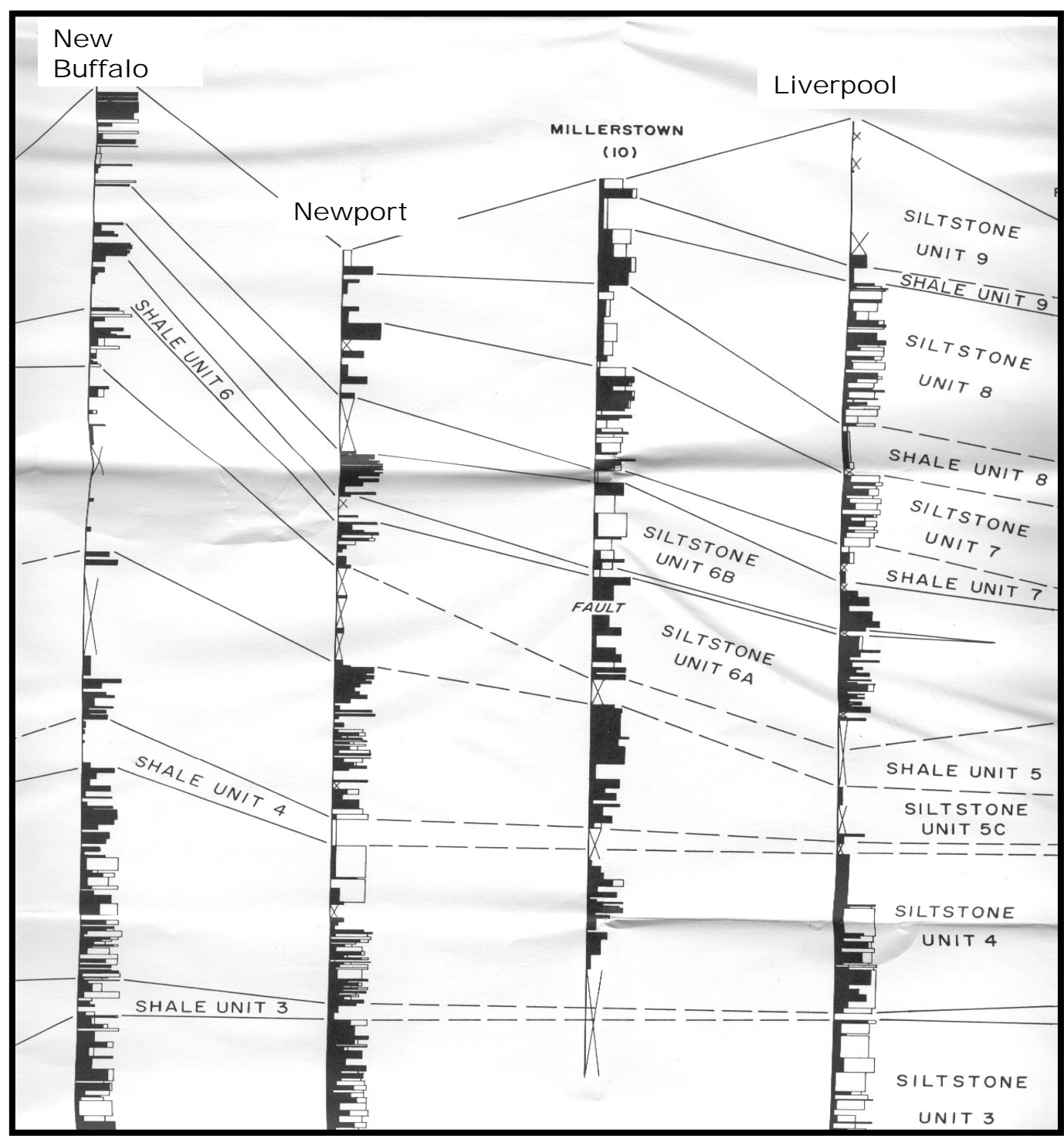
## Abstract

The deep-water depositional model for the upper Devonian Trimmers Rock Formation in central Pennsylvania should be reexamined to include aspects of more recent models. With the advent of new technology and further analysis, it is possible to further evaluate the Trimmers Rock Formation. Specifically, three deep-water depositional models are examined, to assess how the formation may fit into a part of one of these models. The presence or absence of partial turbidites provides clues into the deposition location of sediments. The field area consists of three locations northwest of Harrisburg, Pennsylvania. Three measured sections are compiled, correlated and interpreted. The Trimmers Rock Formation corresponds to the sheet-like sand complexes located in the outer part of a submarine fan. It could most closely be incorporated into the Steel et al. (2000) model.

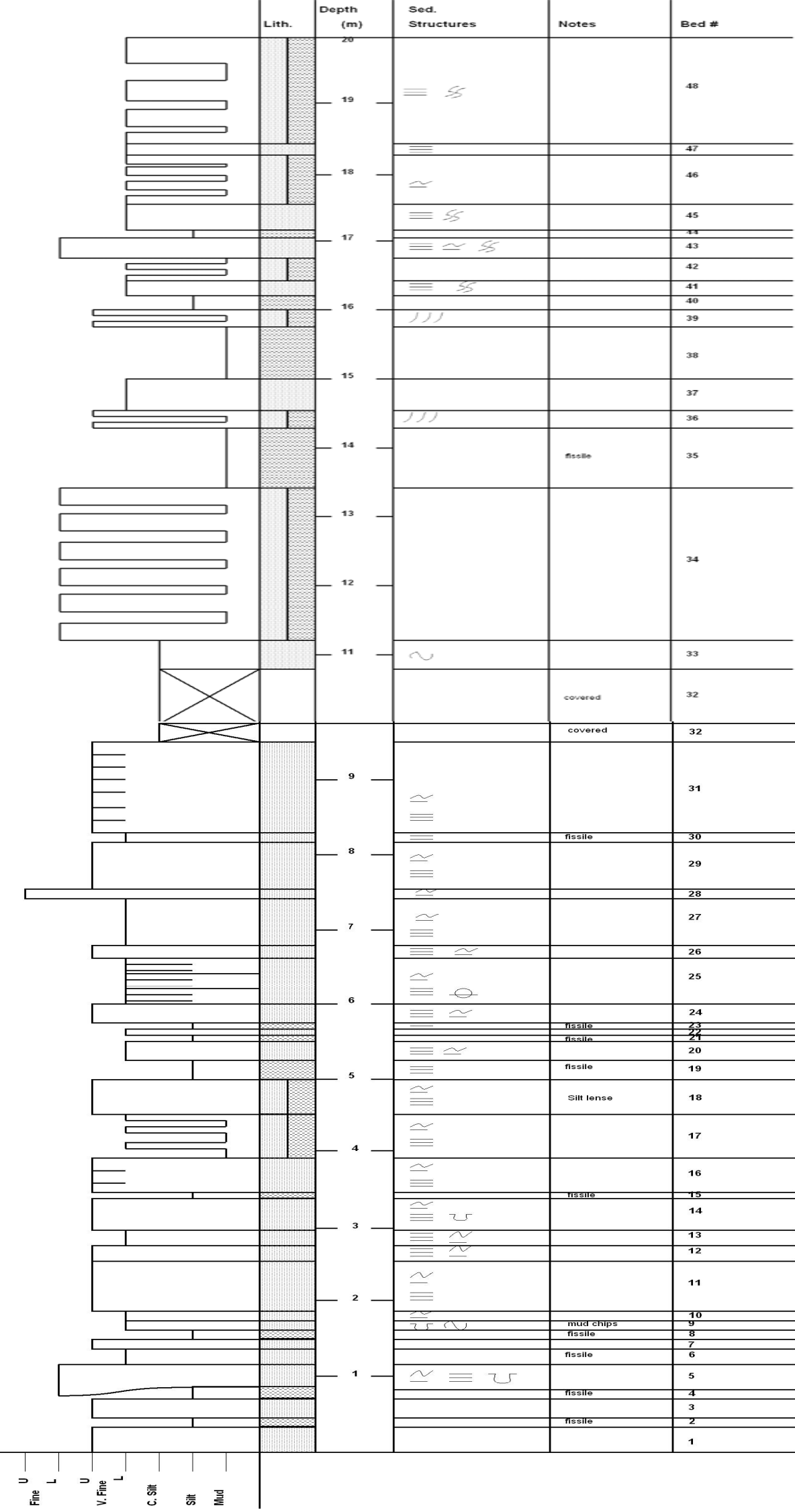
## Field Locations



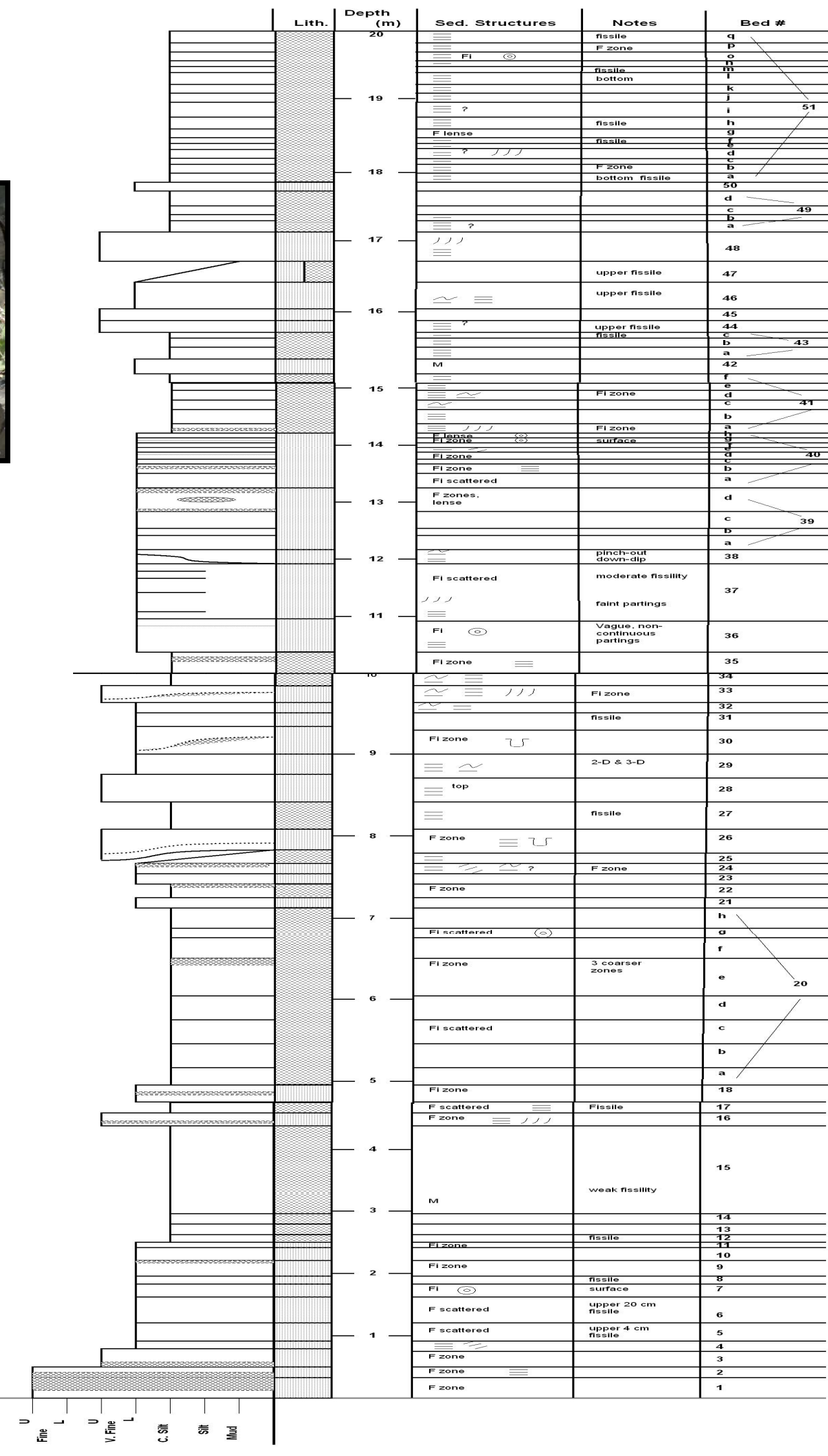
## Correlation



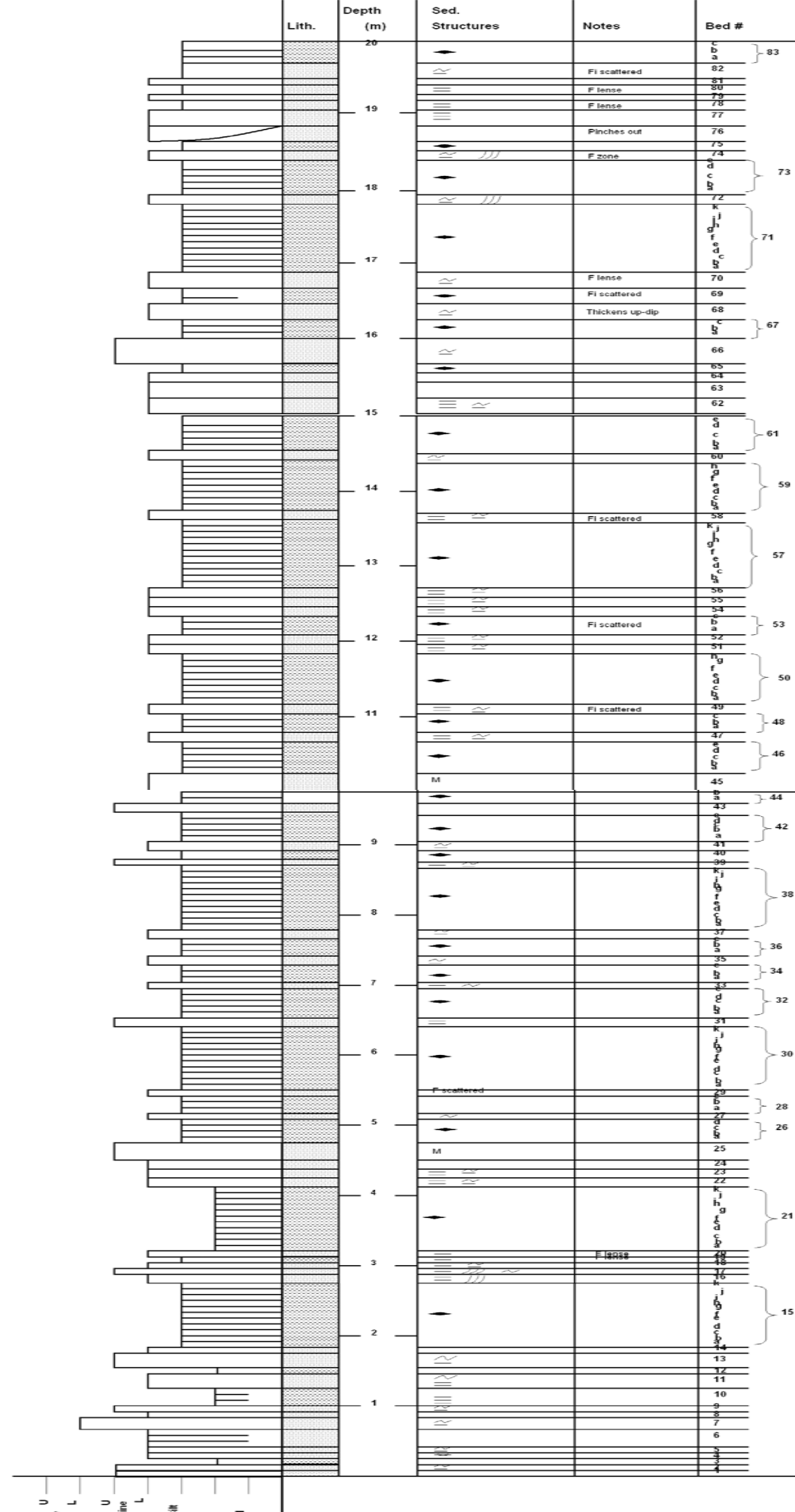
## Newport



## New Buffalo



## Liverpool



## Hypotheses

Field observations could support one of the following current deep-water depositional models:

Model	Grain size	Channel or Fan Complex	Associated Features
Steel et al., 2000	coarse silt – medium sand	fan & channel complex	levees, chutes, chute-mouth lobes, lower-slope channels, sheet-like turbidites
Campion et al., 2000	pebble conglomerate	channel complex	channel-axis facies, channel-margin facies
Beaubouef & Friedmann, 2000	mud – medium sand	basins & channels	mass transport complexes, distributary channel-lobe complexes, levee-channel complexes, hemipelagic drape complexes

## Results

The Trimmers Rock Formation was deposited as sheet-like turbidites in the outer part of a submarine fan. Each field location corresponds to a position within a single sheet-like turbidite. It therefore incorporates aspects of the Steel et al. (2000) model.

■ Newport → axial or proximal

New Buffalo → between axial & marginal or proximal & distal

Liverpool → marginal or distal

■ If the area were “unfolded”, it would correspond to approximately a thirty percent extension in the northwest – southeast direction. This would not change the relationship very much of the three locations to one another.

■ Sheet-like sand complexes in the outer part of a submarine fan with very fine-grained sands interbedded with very thin bedded shales

■ Combining all of the above data into one deep-water depositional model would most closely follow the Steel et al. (2000) model. The basin-floor fan system is made up of rippled to parallel-laminated thin beds (< 50 cm) interbedded with structureless and/or parallel-laminated, thick bedded units (>50 cm).

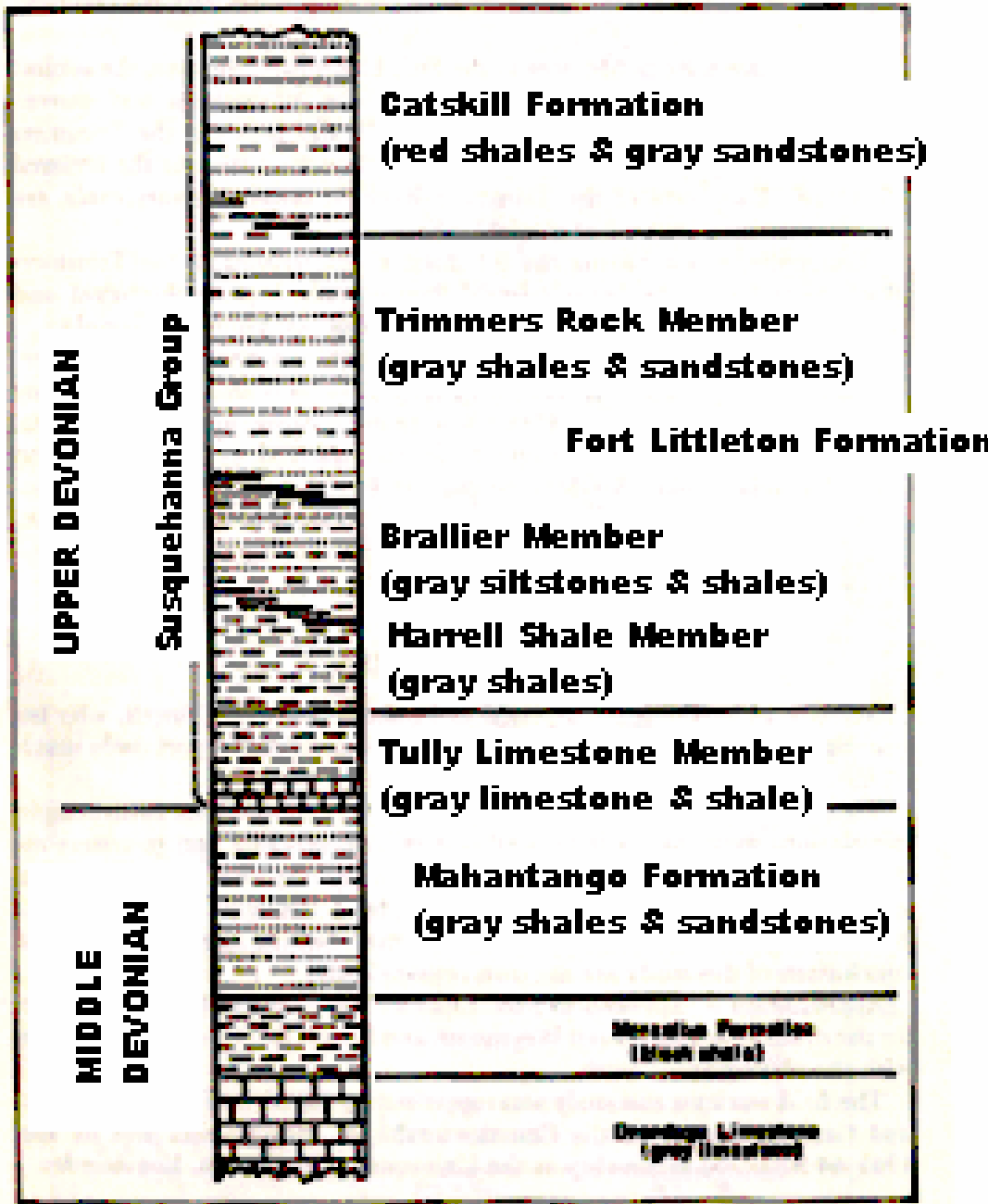
## Acknowledgements

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## References

- [1] Steel, R.J. et al. “Deltas vs. Rivers on the Shelf Edge: Their Relative Contribution to the Shelf-Margins and Basin-Floor Fans.” GCSSEPM Foundation 20<sup>th</sup> Annual Research Conference: Deep-Water Reservoirs of the World. Dec 3 – 6, 2000.
- [2] Frakes, L.A. *Stratigraphy of the Devonian Trimmers Rock in Eastern Pennsylvania*. Harrisburg: Pennsylvania Geological Survey, 1967.
- [3] Drake, A.A. and P.T. Lytle. “The Accotink Schist, Lake Barcroft Metasandstone, and Popes Head Formation – Keys to an Understanding of the Tectonic Evolution of the Northern Virginia Piedmont.” Geological Survey Professional Paper 1205. United States Government Printing Office, Washington D.C. 1981.
- [4] Heller, P. “Lecture 8- Depositional Systems: Continental Slope to Deep Basin.” <http://faculty.gg.uwo.edu/heller>.

Trimmers Rock in a geologic column



## Turbidites

**Bouma Sequence:**

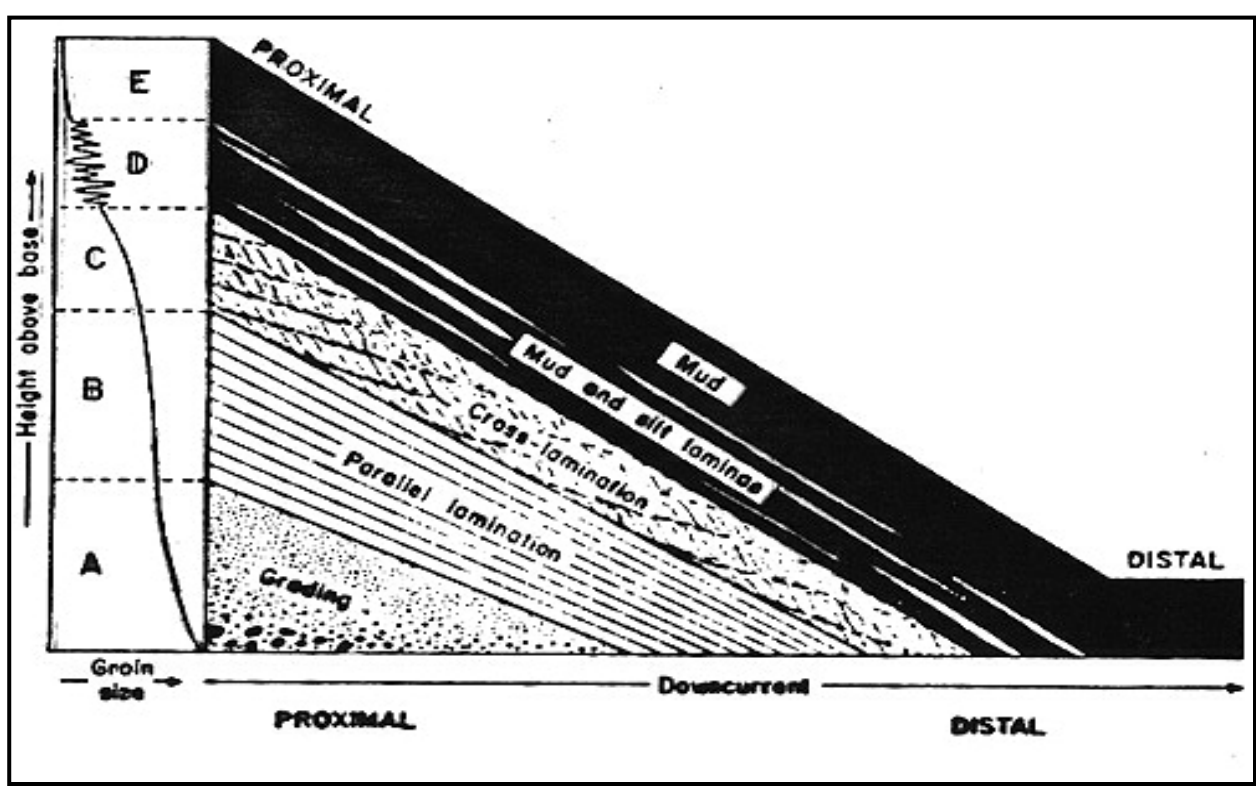
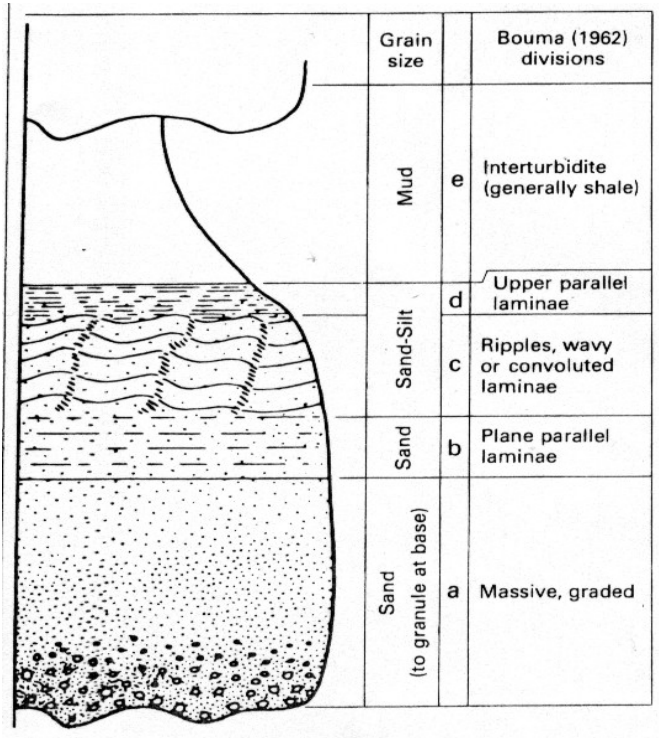
T<sub>a</sub> – massive

T<sub>b</sub> – planar bedding

T<sub>c</sub> – current ripples

T<sub>d</sub> – planar laminations

T<sub>e</sub> – suspension fallout



**Steel et al. (2000) Model**

