

Table 1. Marmaton group lithofacies with description, interpreted depositional processes, and percent distribution in cores.

Lithology	Lithofacies	Description	Depositional Process	%
Conglomerate	Orthoconglomerate (C1)	Pebble-to granule-sized, poorly sorted, rounded to sub-angular clasts mostly granitic with different colors. Clast supported	Bedload; high flow rate (channelized)	3.6
	Paraconglomerate (C2)	Pebble-sized, poorly sorted, rounded to sub-angular granitic clasts floating in fine to medium grained sandstone matrix	Debris flow (unchannelized)	4.8
Sandstone	Parallel-stratified (S1)	Grey to beige, fine-to medium-grained, well sorted, well-rounded	Upper flat-bed regime, unidirectional traction flow	4.6
	Cross-stratified (S2)	Grey to beige, fine-to coarse-grained, well to moderately sorted, low angle cross-bedded	Lower flow regime, unidirectional traction flow	4.5
	Structureless (S3)	Grey, medium-to very coarse-grained, well sorted, well-rounded	Rapid deposition from suspension; soft sediment deformation	10.4
	Granule-pebble-bearing (S4)	Grey, medium to coarse grained, well sorted, rounded to sub-rounded sand with well-oriented granule sized clasts	Sandy part: upper flat-bed regime; granular part: higher energy conditions	0.4
	Bioturbated (S5)	Light to dark grey, fine-to medium-grained, well sorted.	Lower energy conditions	11.0
Muddy Sandstone	Bioturbated (MS1)	Intercalated fine-to very fine-grained sandstone/siltstone and mudstone layers distorted with bioturbation	Mud: settling from suspension during low energy conditions; sand: higher energy conditions.	18.4
	Slumped (MS2)	Medium-to coarse-grained, moderately to poorly sorted, sub-rounded to sub-angular sandstone and black mudstone with deformed structure	Slump; soft sediment deformation	3.5
Sandy Mudstone	Bioturbated (SM1)	Intercalated very fine-grained sandstone and mudstone layers distorted with bioturbation	Mud: settling from suspension during low energy conditions; sand: higher energy conditions.	12.8
	Slumped (SM2)	Dark grey to black mudstones intercalated with grey to beige sandstones. Poorly sorted, chaotic structure	Slump; soft sediment deformation	0.8
Mudstone	Bioturbated (M1)	Dark grey, carbonate rich mudstone with various degree of bioturbation	Very low energy conditions; suspension sedimentation	12.3
	Fossiliferous (M2)	Dark grey, carbonate rich mudstone with abundant fossils, mostly crinoid and bivalves	Very low energy conditions; suspension sedimentation	7.5
	Pebbly (M3)	Light grey, pebble sized, sub-angular to sub-rounded clasts floating in black mudstone matrix	Debris flow	2.7
	Massive (MS4)	Black, massive mudstone with abundant fractures	Very low energy conditions; suspension sedimentation	2.7