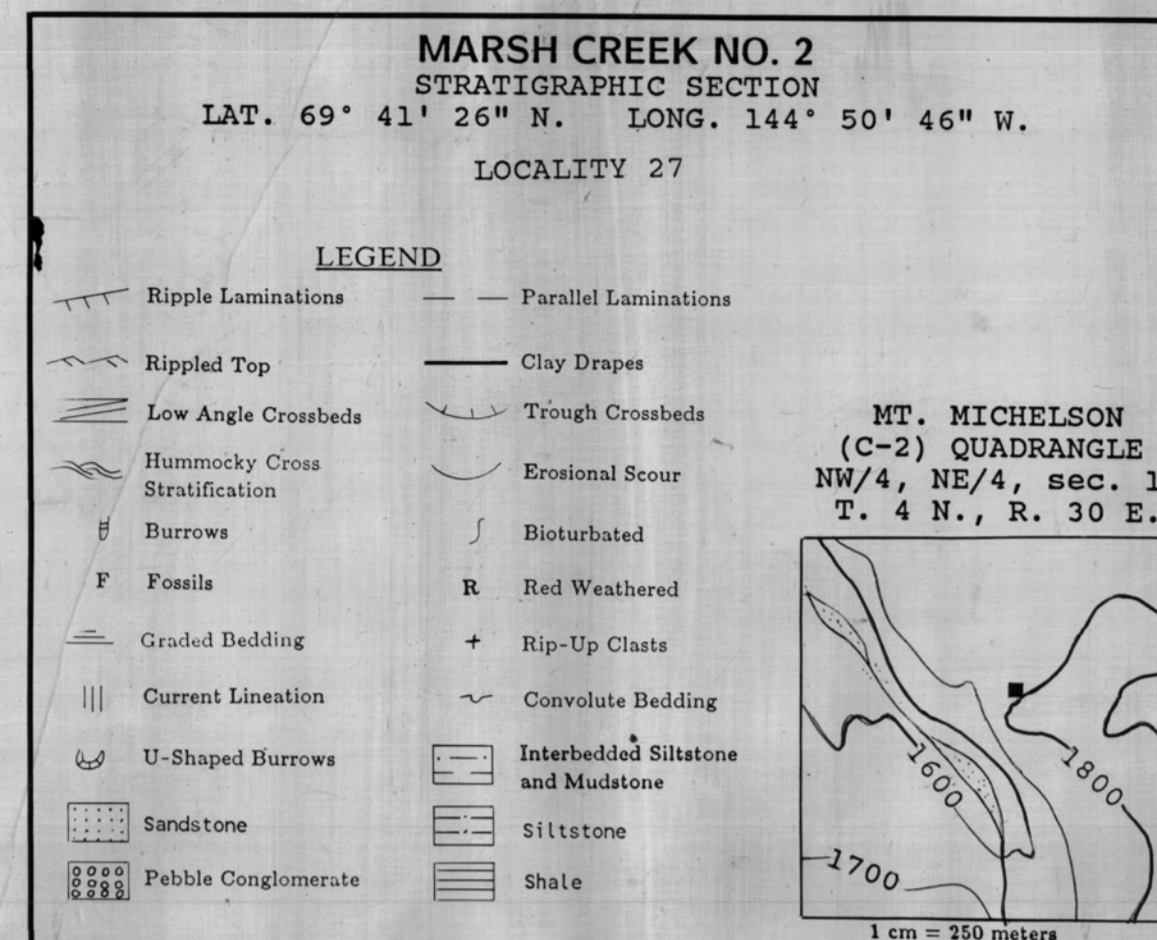


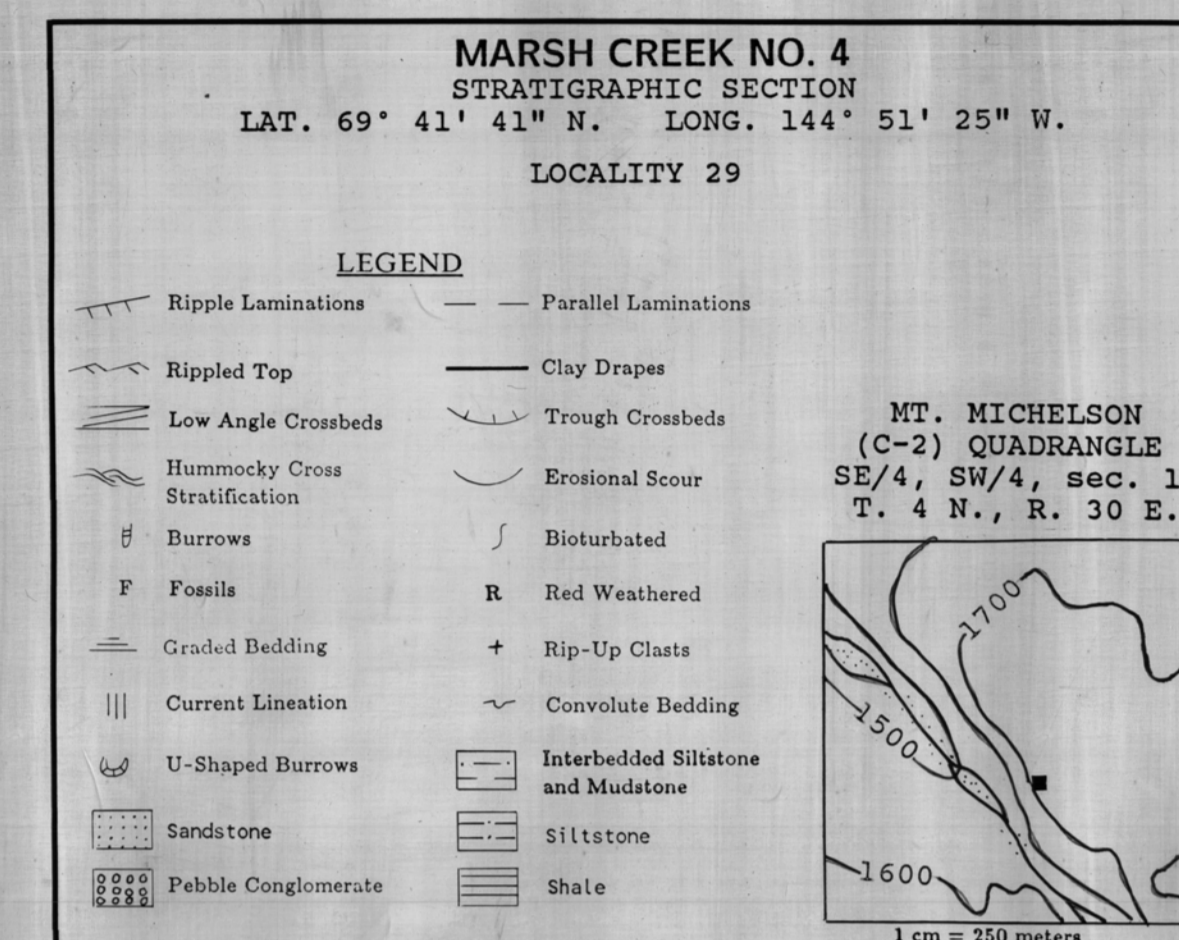
KEMIK SANDSTONE MEASURED SECTIONS  
 ARCTIC NATIONAL WILDLIFE REFUGE, NORTHEASTERN ALASKA  
 MARSH CREEK AREA

BY  
 DOUGLAS G. KNOCK



SERIES	STAGE	FORMATION	THICKNESS (m.)	GRAPHIC COLUMN	PALEOCURRENT	SAMPLE NO.	LITHOFACTIES	LITHOLOGY DESCRIPTION	INTERPRETATION
LOWER CRETACEOUS	HAUTERIVIAN	KEMIK SANDSTONE	8	[Symbol]		8	BDK20A	Bioturbated, argillaceous, light-gray, VF sandstone. Clay drapes present. Low energy deposition below fairweather wave base.	Top eroded
			6	[Symbol]		6		Moderately burrowed, medium-gray, VF sandstone. Sharp bedding contacts. Moderate energy deposition above fairweather wave base.	
			4	[Symbol]		4		Clean, light-gray, VF sandstone. Rare parallel lamination and trough cross beds (10-20 cm thick). Sharp bedding contacts. High energy deposition above fairweather wave base.	
			2	[Symbol]		2		Bioturbated, argillaceous, medium-gray, VF sandstone. Common clay drapes, rare parallel lamination. Fairweather shallow marine shelf deposition punctuated by intermittent storm wave and troughs.	
			0	[Symbol]				Covered	

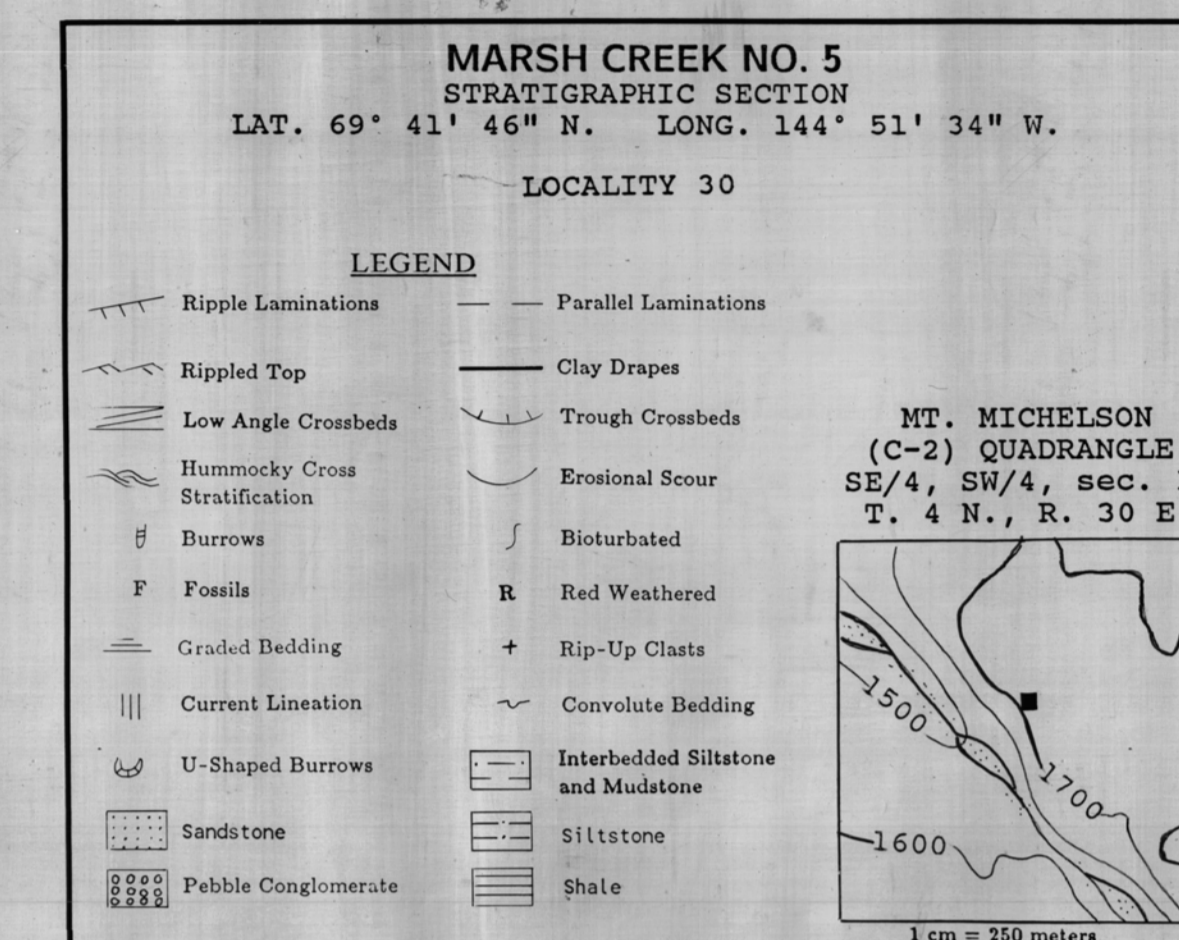
STRIKE N. 73° E. DIP 20° SE.



SERIES	STAGE	FORMATION	THICKNESS (m.)	GRAPHIC COLUMN	PALEOCURRENT	SAMPLE NO.	LITHOFACTIES	LITHOLOGY DESCRIPTION	INTERPRETATION
LOWER CRETACEOUS	HAUTERIVIAN-BARREMIAN	PEBBLE SHALE*	14	[Symbol]		14		Dark-gray, fine shale. Rare clay ironstone concretions.	
LOWER CRETACEOUS	HAUTERIVIAN	KEMIK SANDSTONE	12	[Symbol]		12		Bioturbated, dark-gray, interbedded siltstone and mudstone. Common floating chert pebbles. Vertical (Skolithos) and horizontal (Planolites) burrows. Fairweather shallow marine shelf deposition punctuated by intermittent storm wave and troughs. Low energy shallow marine shelf deposition.	
			10	[Symbol]		10	BDK11A	Bioturbated, argillaceous, medium-gray, VF sandstone. Common clay drapes. Crawling trace present. Low energy deposition below fairweather wave base.	
			8	[Symbol]		8		Moderately burrowed, medium-gray, VF sandstone. Discontinuous chert pebble congl. stringers. Moderate energy deposition above fairweather wave base.	
			6	[Symbol]		6		Clean, light-gray, VF sandstone. Common parallel lamination and trough cross beds (10-20 cm thick). Sharp bedding contacts. High energy deposition above fairweather wave base.	
			4	[Symbol]		4		Clean, light-gray, VF sandstone. Common parallel lamination and trough cross beds (10-20 cm thick). One chert pebble congl. stringer. Sharp bedding contacts. High energy deposition above fairweather wave base.	
			2	[Symbol]		2		Covered	
			0	[Symbol]				Covered	

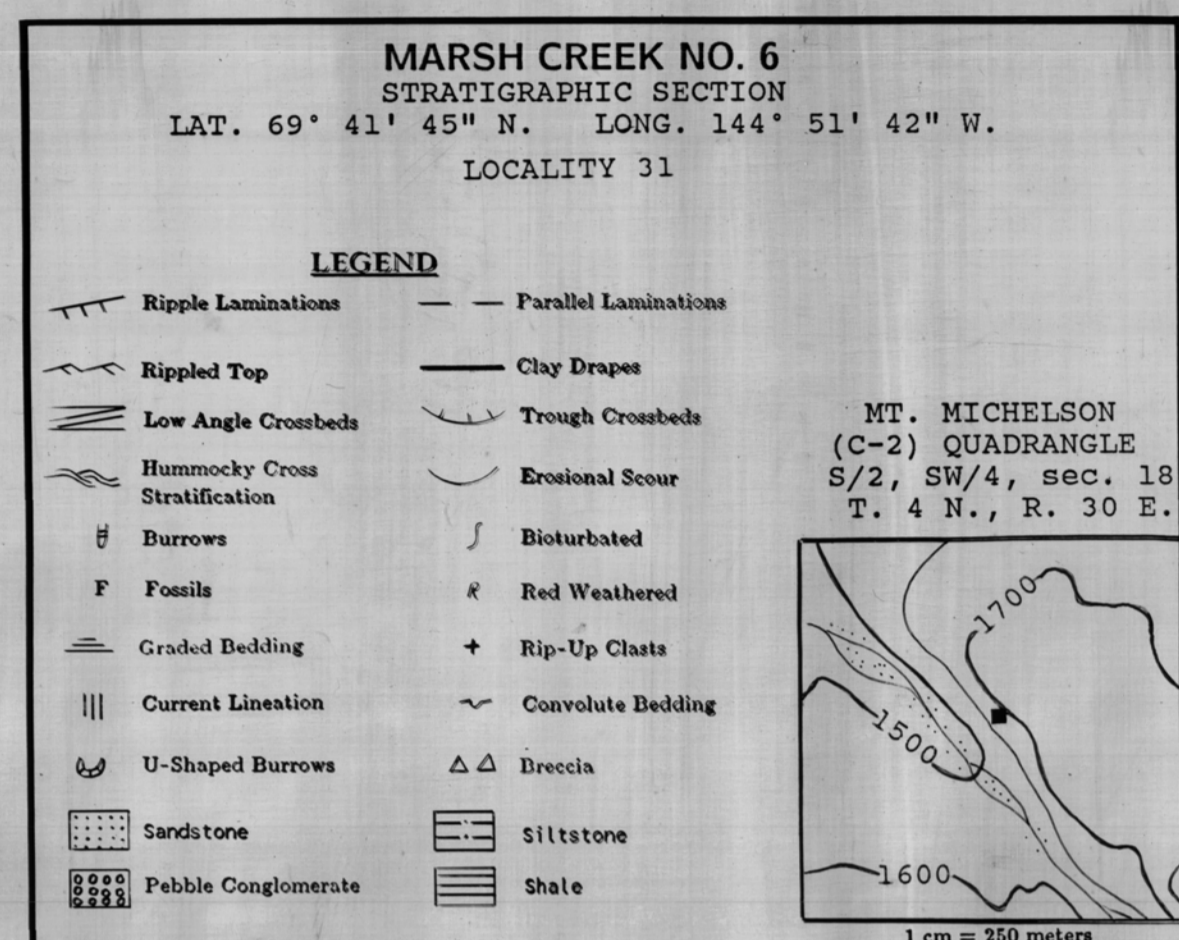
\* Informal pebble shale unit of Molenaar (1986).

STRIKE N. 55° E. DIP 16° SE.



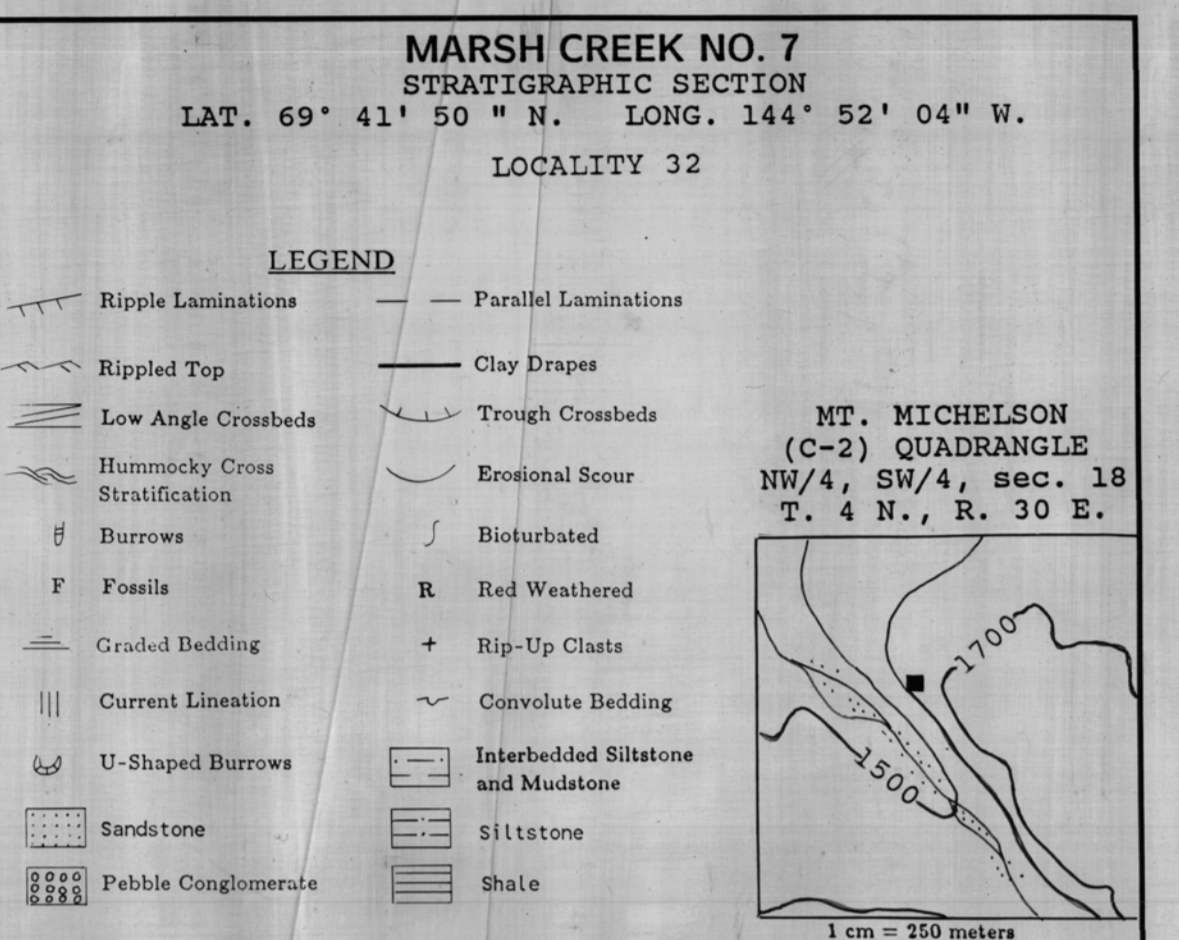
SERIES	STAGE	FORMATION	THICKNESS (m.)	GRAPHIC COLUMN	PALEOCURRENT	SAMPLE NO.	LITHOFACTIES	LITHOLOGY DESCRIPTION	INTERPRETATION
LOWER CRETACEOUS	HAUTERIVIAN	KEMIK SANDSTONE	10	[Symbol]		10		Covered	
			8	[Symbol]		8		Bioturbated, argillaceous, light-gray, VF sandstone. Common clay drapes. Low energy deposition below fairweather wave base.	
			6	[Symbol]		6		Moderately burrowed, medium-gray, VF sandstone. Vertical Skolithos. Rare parallel lamination, rare clam lenses. Moderate energy deposition above fairweather wave base.	
			4	[Symbol]		4		Clean, medium-gray, VF sandstone. Common parallel lamination, rare trough crossbeds (10 cm thick). Sharp bedding contacts. High energy deposition above fairweather wave base.	
			2	[Symbol]		2	BDK20A	Covered	
			0	[Symbol]				Covered	

STRIKE N. 25° E. DIP 14° SE.



SERIES	STAGE	FORMATION	THICKNESS (m.)	GRAPHIC COLUMN	PALEOCURRENT	SAMPLE NO.	LITHOFACTIES	LITHOLOGY DESCRIPTION	INTERPRETATION
LOWER CRETACEOUS	HAUTERIVIAN	KEMIK SANDSTONE	14	[Symbol]		14		Top eroded	
			12	[Symbol]		12		Bioturbated, argillaceous, medium-gray, VF sandstone. Common clay drapes. Rare chert pebbles and clams. Low energy deposition below fairweather wave base.	
			10	[Symbol]		10		Moderately to strongly burrowed, light-gray, VF sandstone. Common vertical Skolithos. Discontinuous chert pebble congl. stringers. Moderate energy deposition above fairweather wave base.	
			8	[Symbol]		8		Clean, medium-gray, VF sandstone. Common parallel lamination, rare trough crossbeds (10-20 cm thick). Rare vertical Skolithos. Chert pebble congl. bed (20-25 cm thick). Sharp bedding contacts. High energy deposition above fairweather wave base.	
			6	[Symbol]		6		Covered	
			4	[Symbol]		4		Clean, light-gray, VF sandstone. Rare parallel lamination and trough crossbeds (10-20 cm thick). Sharp bedding contacts. High energy deposition above fairweather wave base.	
			2	[Symbol]		2		Covered	
			0	[Symbol]				Covered	

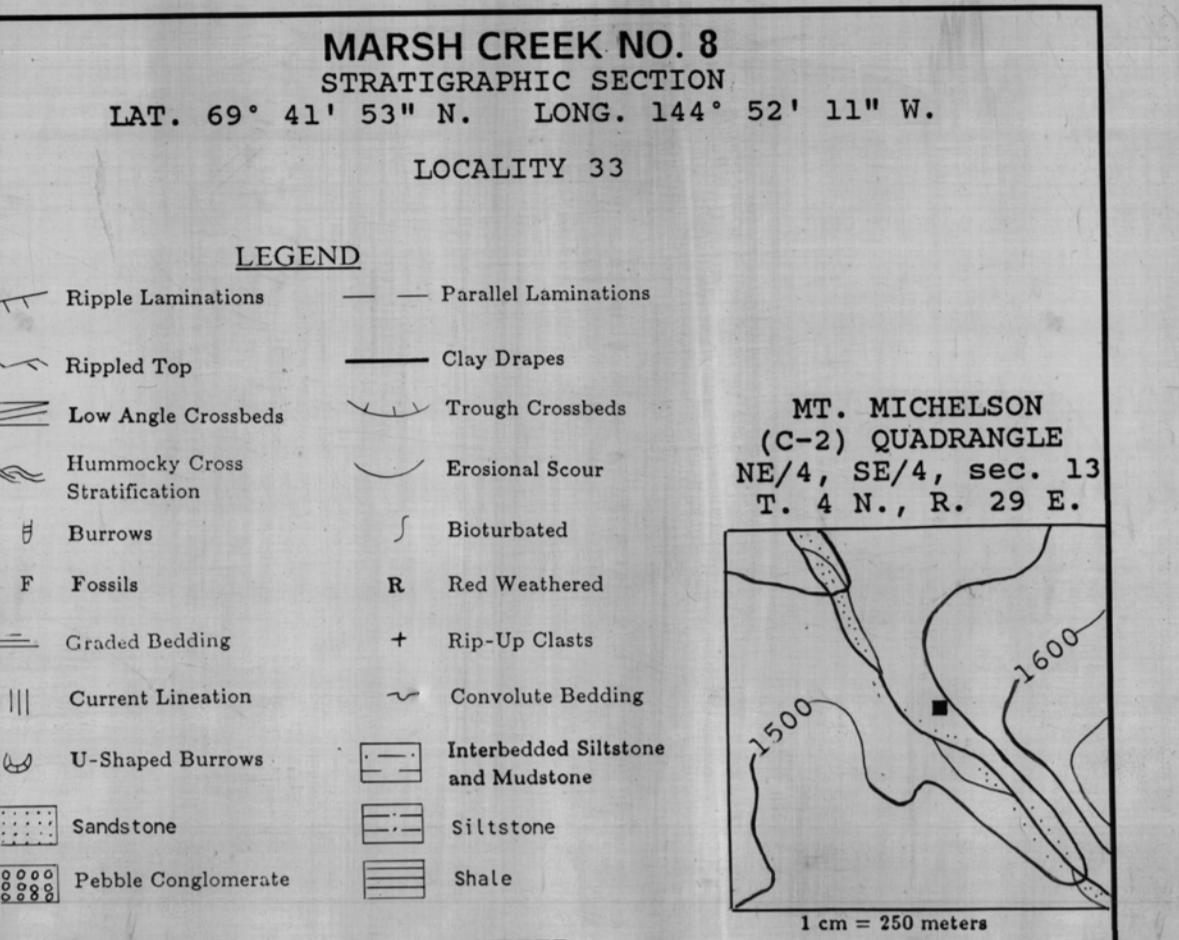
STRIKE N. 68° E. DIP 10° SE.



SERIES	STAGE	FORMATION	THICKNESS (m.)	GRAPHIC COLUMN	PALEOCURRENT	SAMPLE NO.	LITHOFACTIES	LITHOLOGY DESCRIPTION	INTERPRETATION
LOWER CRETACEOUS	HAUTERIVIAN-BARREMIAN	PEBBLE SHALE*	12	[Symbol]		12		Dark-gray, fine shale. Rare clay ironstone concretions.	
LOWER CRETACEOUS	HAUTERIVIAN	KEMIK SANDSTONE	10	[Symbol]		10		Bioturbated, dark-gray, interbedded siltstone and mudstone. Vertical (Skolithos) and horizontal (Planolites) burrows. Low energy shallow marine shelf deposition.	
			8	[Symbol]		8		Bioturbated, argillaceous, medium-gray, VF sandstone. Common clay drapes. Low energy deposition below fairweather wave base.	
			6	[Symbol]		6		Moderately burrowed, medium-gray, VF sandstone. Vertical (Skolithos) and horizontal burrows. Sharp bedding contacts. Moderate energy deposition above fairweather wave base.	
			4	[Symbol]		4		Clean, light-gray, VF sandstone. Rare parallel lamination and trough crossbeds (10-20 cm thick). One chert pebble congl. bed (10-15 cm thick). Sharp bedding contacts. High energy deposition above fairweather wave base.	
			2	[Symbol]		2		Covered	
			0	[Symbol]				Covered	

\* Informal pebble shale unit of Molenaar (1986).

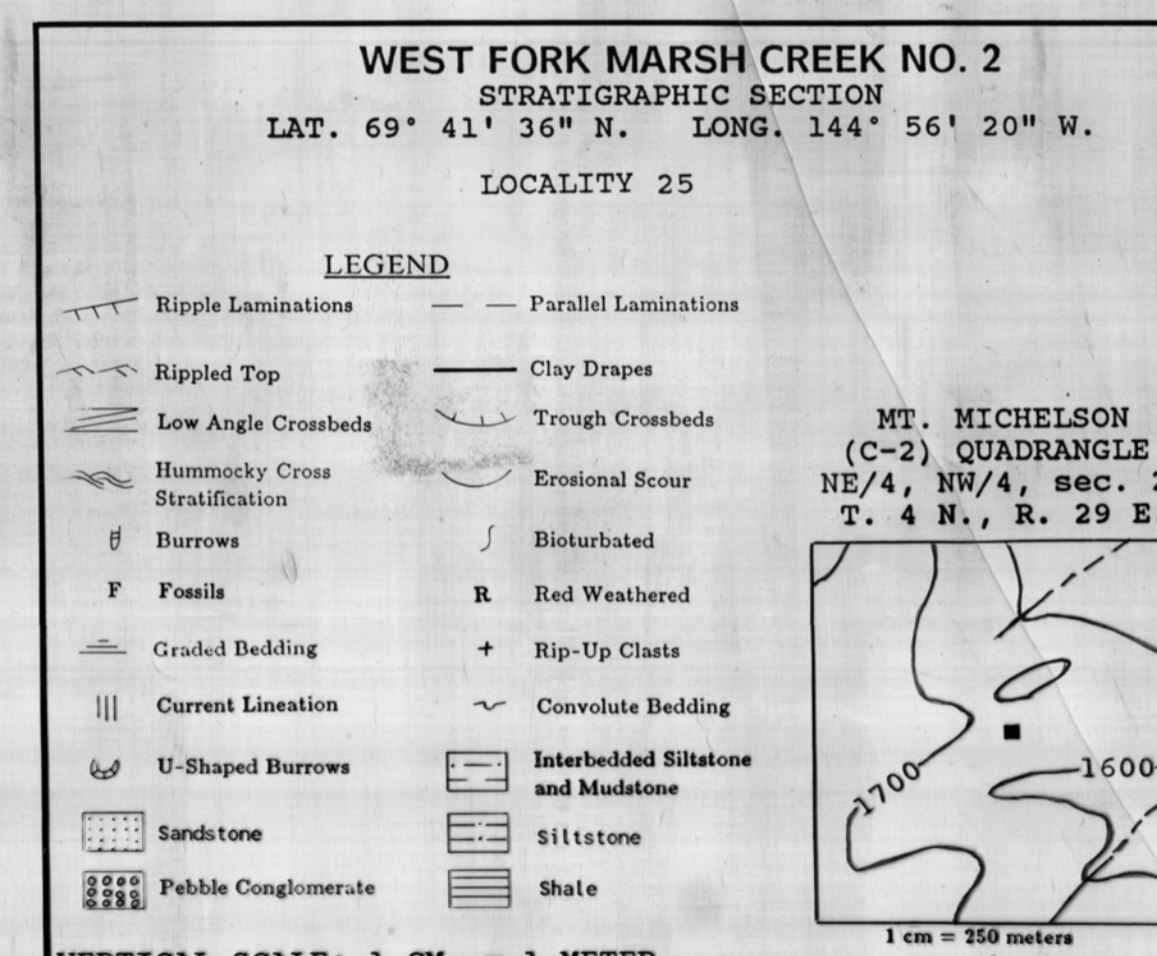
STRIKE N. 76° E. DIP 12° NW.



SERIES	STAGE	FORMATION	THICKNESS (m.)	GRAPHIC COLUMN	PALEOCURRENT	SAMPLE NO.	LITHOFACTIES	LITHOLOGY DESCRIPTION	INTERPRETATION
LOWER CRETACEOUS	HAUTERIVIAN-BARREMIAN	PEBBLE SHALE*	12	[Symbol]		12		Dark-gray, fine shale. Clay ironstone concretions.	
LOWER CRETACEOUS	HAUTERIVIAN	KEMIK SANDSTONE	10	[Symbol]		10		Bioturbated, light-gray, interbedded siltstone and mudstone. Common floating chert pebbles. Vertical (Skolithos) and horizontal (Planolites) burrows. Fairweather shallow marine shelf deposition. Low energy shallow marine shelf deposition.	
			8	[Symbol]		8		Bioturbated, argillaceous, light-gray, VF sandstone. Common clay drapes, rare horizontal burrows (Planolites, Zoophycos). Low energy deposition below fairweather wave base.	
			6	[Symbol]		6		Moderately burrowed, medium-gray, VF sandstone. Vertical Skolithos. Rare chert pebble congl. lenses. Sharp bedding contacts. Moderate energy deposition above fairweather wave base.	
			4	[Symbol]		4		Covered	
			2	[Symbol]		2		Covered	
			0	[Symbol]				Covered	

\* Informal pebble shale unit of Molenaar (1986).

STRIKE N. 40° E. DIP 52° SE.



SERIES	STAGE	FORMATION	THICKNESS (m.)	GRAPHIC COLUMN	PALEOCURRENT	SAMPLE NO.	LITHOFACTIES	LITHOLOGY DESCRIPTION	INTERPRETATION
LOWER CRETACEOUS	HAUTERIVIAN	KEMIK SANDSTONE	6	[Symbol]		6	BDK11A	Covered	
			4	[Symbol]		4		Lightly to moderately burrowed, medium-gray, VF sandstone. Vertical Skolithos. Sharp bedding contacts. Moderate energy deposition above fairweather wave base.	
			2	[Symbol]		2		Bioturbated, argillaceous, light-gray, VF sandstone. Rare parallel lamination. Some clay drapes. Fairweather shallow marine shelf deposition punctuated by intermittent storm wave and troughs.	
			1	[Symbol]		1		Matrix supported, chert pebble congl. bed (10-40 cm thick). Storm reworked transgressive lag deposit.	
			0	[Symbol]				Covered, some shale float.	

STRIKE N. 85° W. DIP 23° NE.