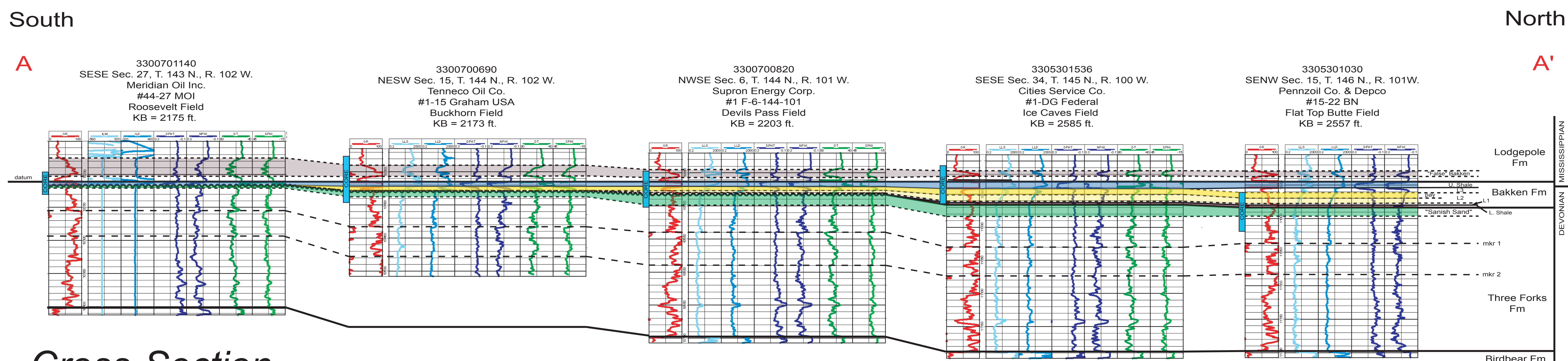
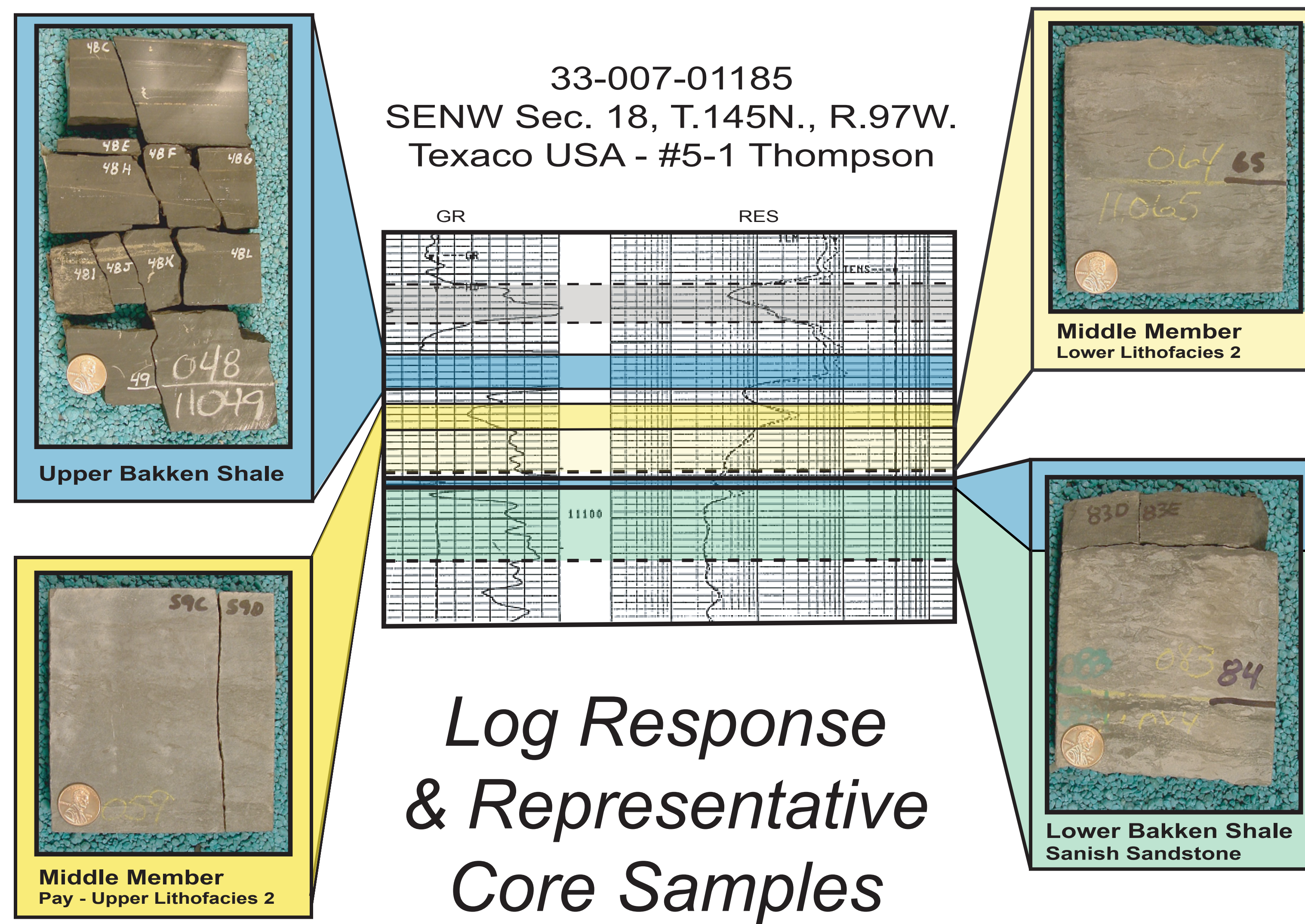
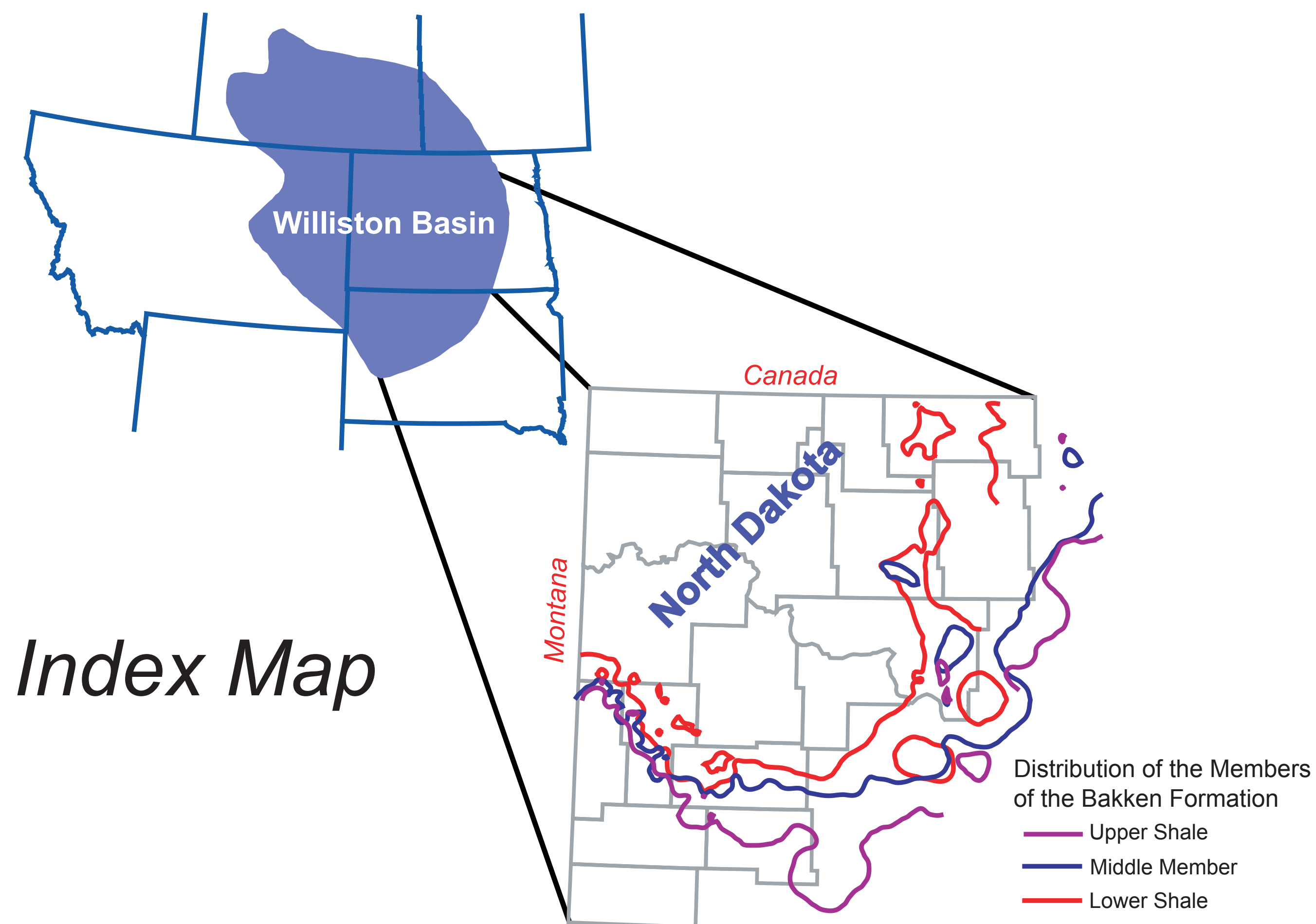


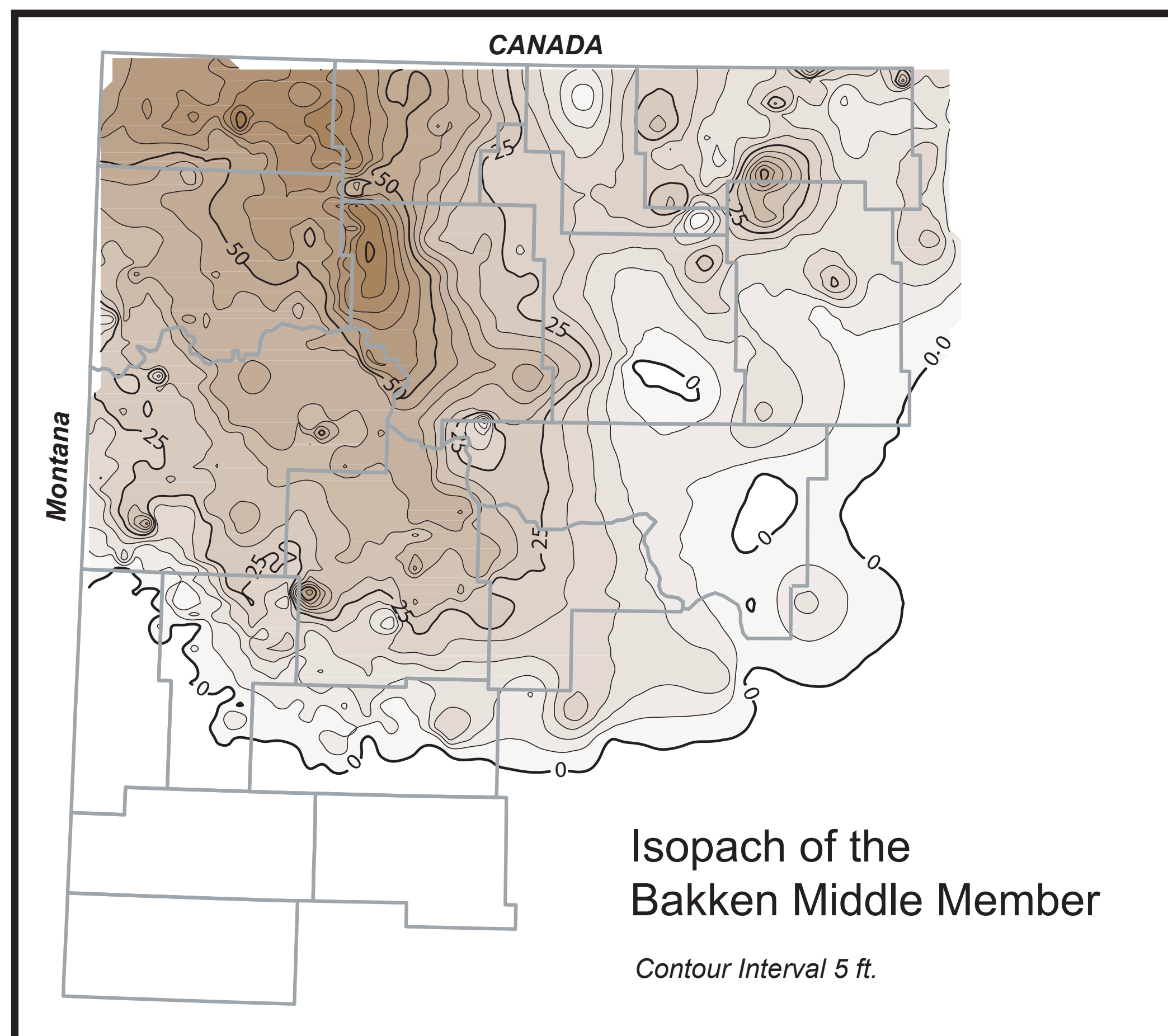
North Dakota Middle Member Bakken Horizontal Play

Julie A. LeFever, 2005

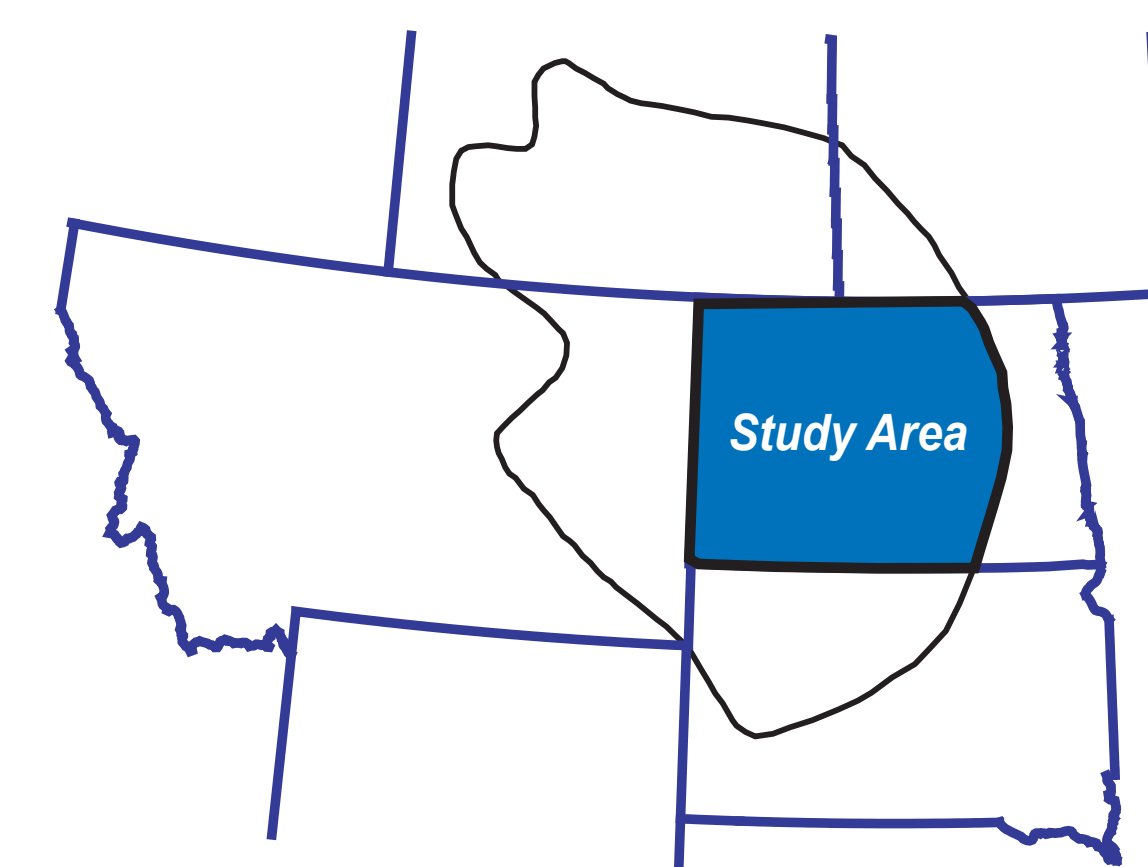


Middle Member Lithofacies Composite Core Section

Upper Bakken Shale	
L7	SILTSTONE , massive, dense, mottled, dolomitic, argillaceous, grey-green, fossiliferous, disseminated pyrite, rhythmites up to 15 cm thick in lower half of section (occasionally fossil-rich), slightly bioturbated.
L5 & L6	PARALLEL INTERBEDS OF DARK GREY SHALE AND BUFF SILTY SANDSTONE , moderately bioturbated, vertical burrows, calcareous, disseminated pyrite, overall coarsening-upward, flame and load structures at base of coarse laminae, rhythmites up to 10 cm thick, upper half may display trough cross-bedded sandstone beds, gradational lower contact with underlying units.
L4 & L3	SANDSTONE , tripartite division with upper and lower third wavy and flaser bedded silty sandstone gradational to and from the middle coarse-grained sandstone which may be massive and/or bedded (trough and tabular cross-bedding, inclined and horizontal laminae, and swash cross-stratification) with pebble and fossil-rich lags (shale clasts up to 4 cm diameter where B2 overlies the lower member, and feldspar clasts). Mainly quartzose with minor feldspar disseminated pyrite, buff to green, calcareous, slight to no bioturbation. Pay Zone
L2	PARALLEL INTERBEDS OF DARK GREY SHALE AND BUFF SILTY SANDSTONE , moderate to very strong bioturbation disrupting laminae, dolomitic becoming calcareous with depth, disseminated pyrite, fossiliferous, lower contact gradational, upper contact gradational or erosive where channeling, grey-green. Pay Zone
L1	SILTSTONE , massive, dense, mottled, very calcareous, argillaceous, grey-green, highly fossiliferous, random orientation of fossils, disseminated pyrite.
Lower Bakken Shale	

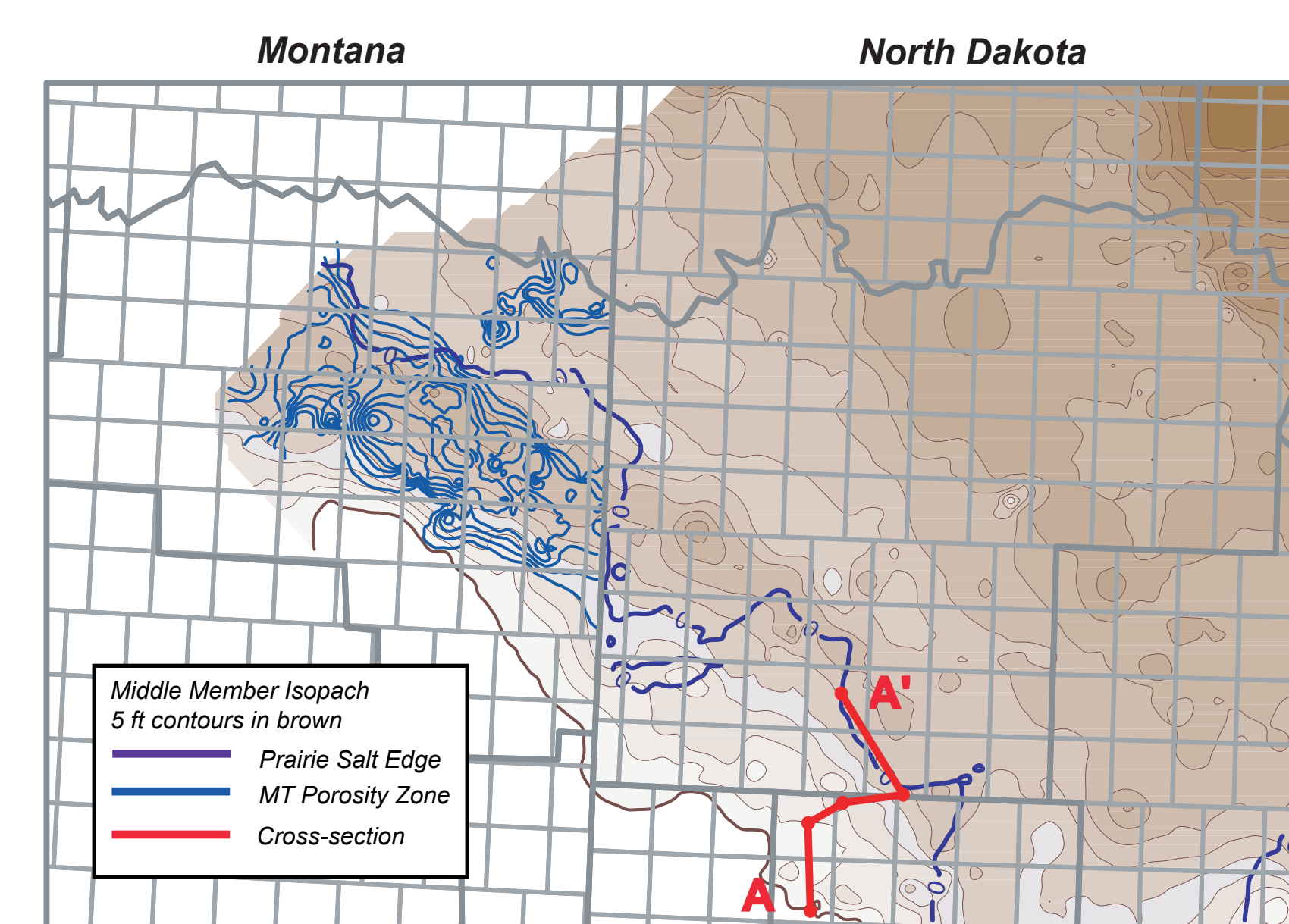


Maps



Potential Play Areas in North Dakota

ND-MT Play - Lithofacies 2



Lithofacies 3 Sandstone Play

