

Process Ichnology and Sedimentology Study of Core From the McMurray Formation , Eymundson Creek Area (Township 98 Range 10 and 11 W4)

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For this study, the geospatial distribution and trends of semi-quantitative process ichnology and sedimentology data in a McMurray Formation study area were collected and analyzed. Process ichnology data include bioturbation index, a measure of the disruption of primary sedimentary fabrics, and size-diversity index, a proxy for the environmental stresses that infaunal vermiforms were exposed to at the time of their bioturbation activities. Genus-level trace fossil identifications were collected as well. In order to obtain a more complete picture of paleoenvironmental conditions, process ichnology data were compared with mud-sand ratios, and grain-size trends. To analyze trends, cross sections depicting grain-sizes, lithologies, mud-sand ratios, trace fossil types, bioturbation indexes, and size-diversity indexes were created. Vertical trends observed in the core include increase in mud to sand ratio, a decrease in trace fossil diversity, and a bioturbation index increase upwards. Trends from South to North include reduction in maximum burrow diameter, and a decrease in trace fossil abundance. East West trends include a reduction in trace fossil abundance, as well as a reduction in trace fossil bearing facies. The collected data represents a contribution that will be incorporated in a larger in-depth geostatistical study of process ichnology data in the McMurray Formation.