

Facies Characterization of the Lower McMurray in the Northern Part of the Athabasca Oilsands, Evidence for Brackish-Water and Tidal Influence

Murray Gingras¹, Michael J. Ranger¹, and Eric R. Timmer¹

¹Department of Earth and Atmospheric Sciences, University of Alberta, Edmonton, Alberta, Canada (mgingras@ualberta.ca)

Abstract

Outcrop studies at several locations along the Athabasca River north of Township 94 focus on examples of the lower McMurray Formation. Key outcrops include sections near Shell Landing, south and north of Daphne Island and at Pierre River, the northernmost location. All of these locations display an illuviated level of pedogenically altered clayey silt that demarcates the top of the lower McMurray. Sedimentological observations and ichnological analysis indicates that southern locales are likely fluvial in their nature, but display evidence of tidal influence. The northernmost location displays tidal reversals and an ichnological assemblage characterized by *Cylindrichnus* and thereby should be regarded to be an estuary.