FOREWORD

Geoscience Reports is the annual publication of the Geoscience and Natural Gas Branch (formerly Resource Development and Geoscience Branch) of the Oil and Gas Division, BC Ministry of Energy and Mines (BCMEM). This publication highlights petroleum related geosciences activities carried out in British Columbia by ministry staff and affiliated partners. All of the studies in the 2011 volume were conducted as part of a collaborative Provincial-Federal partnership between the Geological Survey of Canada (GSC) and BCMEM. The studies are a component of the Yukon and Liard Basins Project under the GSC's Geo-mapping for Energy and Minerals (GEMs) initiative. This initiative is in cooperation with the Provinces and Territories and designed to provide geoscience knowledge necessary to sustain investment through socially and environmentally responsible energy resource development.

The 2011 volume includes five articles. The first four papers relate to recent field activities in the Horn River and Liard basins. Two contributions are thematic shale gas outcrop studies from the Liard Plateau. Another two papers relate to the application of surficial geology with implications for gas infrastructure development, surface engineering and completion operations. The final paper focuses on laboratory experiments involving hydraulic fracture proppant from a northeast BC sand source.

The first two papers in this volume by Ferri et al. highlight results of recent fieldwork in the Selwyn Mountains. These rocks are the equivalent to those currently being explored for shale gas in the subsurface. The first paper focuses on the Devono-Mississipian Besa River and Exshaw formations that contain intervals equivalent to the Horn River Group, the target for shale gas development in the Liard and Horn River basins. Cretaceous Garbutt Formation is the subject of the second paper, as these rocks may have natural gas potential. Both of these studies describe and discuss lithostratigraphy, geochemistry, and gamma-ray spectrometer response from the outcrop. The papers examine the relationship between organic preservation and redox conditions at the time of deposition.

The papers by Huntley and Hickin and Huntley et al. focus on surficial geology and glacial history. These papers provide geoscience information on surficial earth materials, geohazards and resource potential for granular aggregate, frac sand and groundwater that is critical for infrastructure development, surface engineering and completion operations. The first paper presents the provisional distribution of surficial deposits and landforms, and describes the sedimentology, surface morphology and facies associations. The second paper describes remote predictive digital terrain mapping and field-based reconnaissance studies in the Horn River and Liard basins. It provides new insight into limits of glaciation, the range of subglacial processes, the patterns of ice flow and the history of ice retreat and glacial lake formation during the late Quaternary and Holocene.

The final paper in the volume is by Hickin and Huntley and examines beneficiation of potential hydraulic fracture sand from northeast BC. Several experiments are presented that focus on washing, sizing and attrition to improve the quality of a promising aeolian sand deposit. This work is part of an initiative to promote the development of a local frac sand industry in BC thereby reducing completion costs and making BC a more competitive jurisdiction.

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