

## **Geology of the Rocky Mountains West of Calgary, Alberta, Canada, in the Kananaskis West Half Map Area (82J)**

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### **Abstract**

The Rocky Mountain Thrust and Fold Belt forms the eastern margin of the Canadian Cordillera and is one of the world's classic thin-skinned thrust and fold belts. Great exposures of the thrust and fold belt occur west of Calgary in an area that includes the Kananaskis west half map area (Fig. 1). The Kananaskis west half map area extends from the western edge of the Rocky Mountain Foothills in the northeast to the Southern Rocky Mountain Trench in the southwest (Fig. 1). Major changes in stratigraphy and structural style occur across the area. The Lower Paleozoic section thickens dramatically from both the northeast and the southwest into the White River Trough extensional basin (Cecile and Norford, 1993) by a combination of depositional thickening and increased preservation beneath the sub-Devonian unconformity (Fig. 2). A major facies change in Middle Cambrian to Middle Ordovician strata from "platformal carbonates" to a thick, shaley, basinal succession at the Kickinghorse Rim (Aitken, 1971) marks the eastern boundary of the White River Trough in the northcentral part of the Kananaskis west half area. Late Ordovician and Early Devonian ultramafic diatreme breccia pipes and dykes in the White River Trough succession indicate episodic crustal extension continued into the Devonian. Significant hydrothermal alteration occurred along the Kickinghorse Rim and produced the Brussilof magnesite mine and several Zn showings. Upper Devonian Fairholme Group strata also change facies westward into basinal strata in the eastern part of the study area. Both facies changes affected the subsequent structural style.