

RELATIONSHIPS OF THE NEWBERRY MORaine AND NIAGARA
ESCARPMENT IN MICHIGAN'S UPPER PENINSULA

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ABSTRACT

This study assesses the relationship between a portion of the Newberry "moraine" and the configuration of the underlying bedrock in the east-central portion of Michigan's northern peninsula. Numerous well logs indicate that drift thickness in the northern part of the study tract is substantial (averaging >60 m) and thus the previously-held conception of a "thin" cover is incorrect. Field evidence, sediment analysis, and topographic maps indicate that the 350 km² tract formerly mapped as "moraine" in the study area does not exhibit active-ice characteristics inherent to such a landform. The buried Niagara cuesta is primarily responsible for the present drift configuration. Where the cuesta has a steep scarp slope, ice was forced to stagnate, resulting in a suite of landforms associated with unmoving ice. These features are more appropriately identified as the Newberry ice-marginal position. Elsewhere a very gentle cuesta scarp, partially attributed to glacial erosion, promoted a more vigorous flow of ice resulting in a previously-unidentified drumlin field with 100 streamlined forms covering 150 km². Orientation of the features indicates a strong influence of the cuesta of final glacial flow in the area.