

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Papers in Natural Resources

Natural Resources, School of

April 1991

SCANNING ELECTRON MICROSCOPIC STUDY OF QUARTZ SAND SURFACE FEATURES, ASH HOLLOW FORMATION, OGALLALA GROUP, WESTERN NEBRASKA

Patricia E. Helland

University of Nebraska - Omaha

Robert F. Diffendal

University of Nebraska - Lincoln, rdiffendal1@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/natrespapers>

 Part of the [Natural Resources and Conservation Commons](#)

Helland, Patricia E. and Diffendal, Robert F., "SCANNING ELECTRON MICROSCOPIC STUDY OF QUARTZ SAND SURFACE FEATURES, ASH HOLLOW FORMATION, OGALLALA GROUP, WESTERN NEBRASKA" (1991). *Papers in Natural Resources*. 89.

<https://digitalcommons.unl.edu/natrespapers/89>

This Article is brought to you for free and open access by the Natural Resources, School of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Papers in Natural Resources by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Published in *Proceedings of the Nebraska Academy of Sciences, including the GNATS & TER-QUA Divisions, and Affiliated Societies*, 101st Annual Meeting, April 26–27, 1991, pp. 57–58.

Copyright © 1991 Patricia E. Helland and Robert F. Diffendal, Jr.

SCANNING ELECTRON MICROSCOPIC STUDY OF QUARTZ SAND SURFACE FEATURES, ASH HOLLOW FORMATION, OGALLALA GROUP, WESTERN NEBRASKA

Patricia E. Helland, Department of Geography-Geology, University of Nebraska-Omaha, Omaha, Nebraska 68182-0292 and Robert F. Diffendal, Jr., Conservation and Survey Division, IANR, University of Nebraska-Lincoln, Lincoln, Nebraska 68588-0517

In field studies of the late Tertiary Ash Hollow Formation of the Ogallala Group in western Nebraska the alluvial deposits are composed of large volumes of sand and gravel up to large cobbles. Because the current understanding of the climate of the region at the time of deposition does not provide for a source for deposits of this character, a scanning electron microscopic study of the surface features on the quartz sand grains from these sediments was undertaken. Nine samples, collected from locations in Banner, Morrill and Keith Counties, were examined to see if they had one or more of 22 surface features. The results were compared with models for glacial, glacio-fluvial and fluvial sand compiled from the work of others. Preliminary results indicate that two of the samples correspond well with the glacial model, five others correspond with the glacio-fluvial model and

none corresponds well with the fluvial model. These results indicate the need to look further for corroborating evidence of a glacial source for at least part of the Ash Hollow Formation and to consider the implications for a partial glacial history of the mountain sediment source regions in the late Tertiary.