Introduction to the Surficial Geologic Map of the Orchard 7.5' Quadrangle, Floyd and Mitchell Counties, Iowa

The Orchard 7.5' Quadrangle is located on the west central Iowa/northeast Nebraska boundary. The map includes parts of the counties of Floyd and Mitchell. It is a region of the Loess Hills of northwestern Iowa. The map area includes the cities of Grinnell, Harpers Ferry, and Decorah, and is bounded by the River Bluff Doctor's Park to the west, the Cedar River to the northeast, and the Skunk River to the southwest.

The map area is dominated by the glacial deposits of the Illinois (IS) landform region (Prior and Kohrt, 2006). It lies within Floyd and Mitchell counties. The map area is located in the Illinois erosion surface, which was created by the retreat of the Illinoian ice sheet from the region. The Illinois erosion surface is characterized by a series of drumlins and kettle holes that were formed by the melting of the ice sheet.

The glacial deposits of the IS landform region are dominated by unnamed loamy sediments (IS materials) of variable thickness overlying Wisconsin-age deposits. These deposits include the Sheldon Creek Formation, which is subdivided into the Camp Creek, Roberts Creek, and Butte Creek members. The Camp Creek member is characterized by a gravelly material that is typically less than 30 m (100 ft) thick. The Roberts Creek member is characterized by a loamy material that is typically less than 30 m (100 ft) thick. The Butte Creek member is characterized by a gravelly material that is typically less than 30 m (100 ft) thick.

The Wisconsin-age deposits associated with the Illinois erosion surface include the Tazewell till and the Illinois till. The Tazewell till is a glacial deposit that is characterized by a loamy material that is typically less than 30 m (100 ft) thick. The Illinois till is a glacial deposit that is characterized by a gravelly material that is typically less than 30 m (100 ft) thick.

The Loess Hills of northwestern Iowa are a region that is characterized by a series of drumlins and kettle holes that were formed by the melting of the ice sheet. These deposits include the Sheldon Creek Formation, which is subdivided into the Camp Creek, Roberts Creek, and Butte Creek members. The Camp Creek member is characterized by a gravelly material that is typically less than 30 m (100 ft) thick. The Roberts Creek member is characterized by a loamy material that is typically less than 30 m (100 ft) thick. The Butte Creek member is characterized by a gravelly material that is typically less than 30 m (100 ft) thick.

The Wisconsin-age deposits associated with the Illinois erosion surface include the Tazewell till and the Illinois till. The Tazewell till is a glacial deposit that is characterized by a loamy material that is typically less than 30 m (100 ft) thick. The Illinois till is a glacial deposit that is characterized by a gravelly material that is typically less than 30 m (100 ft) thick.

ACKNOWLEDGMENTS

Base map from USGS Orchard 7.5' Digital Raster Graphic (IGS GIS file IA_Orchard_USGS_topo.tif) which was downloaded from the Iowa Geological Survey digital cartographic file Orchard_SurficialGeology.mxd, version 6/30/16 (ArcGIS 10.3). The map was created with ArcGIS 10.3 and ESRI ArcMap 10.3. Special thanks to Kathy Woida, Natural Resources Conservation Service, for assistance with core description and for numerous valuable discussions regarding the geology of north-central Iowa. Thanks also to Rick Hartsock, a UI student, by producing descriptive logs of water well drilling samples. Thanks also to Rick Hartsock, a UI student, by producing descriptive logs of water well drilling samples.

Surficial Geologic Map of the Orchard (Iowa)
7.5' Quadrangle

GEOLOGIC CROSS-SECTION A - A'

CORRELATION OF MAP UNITS