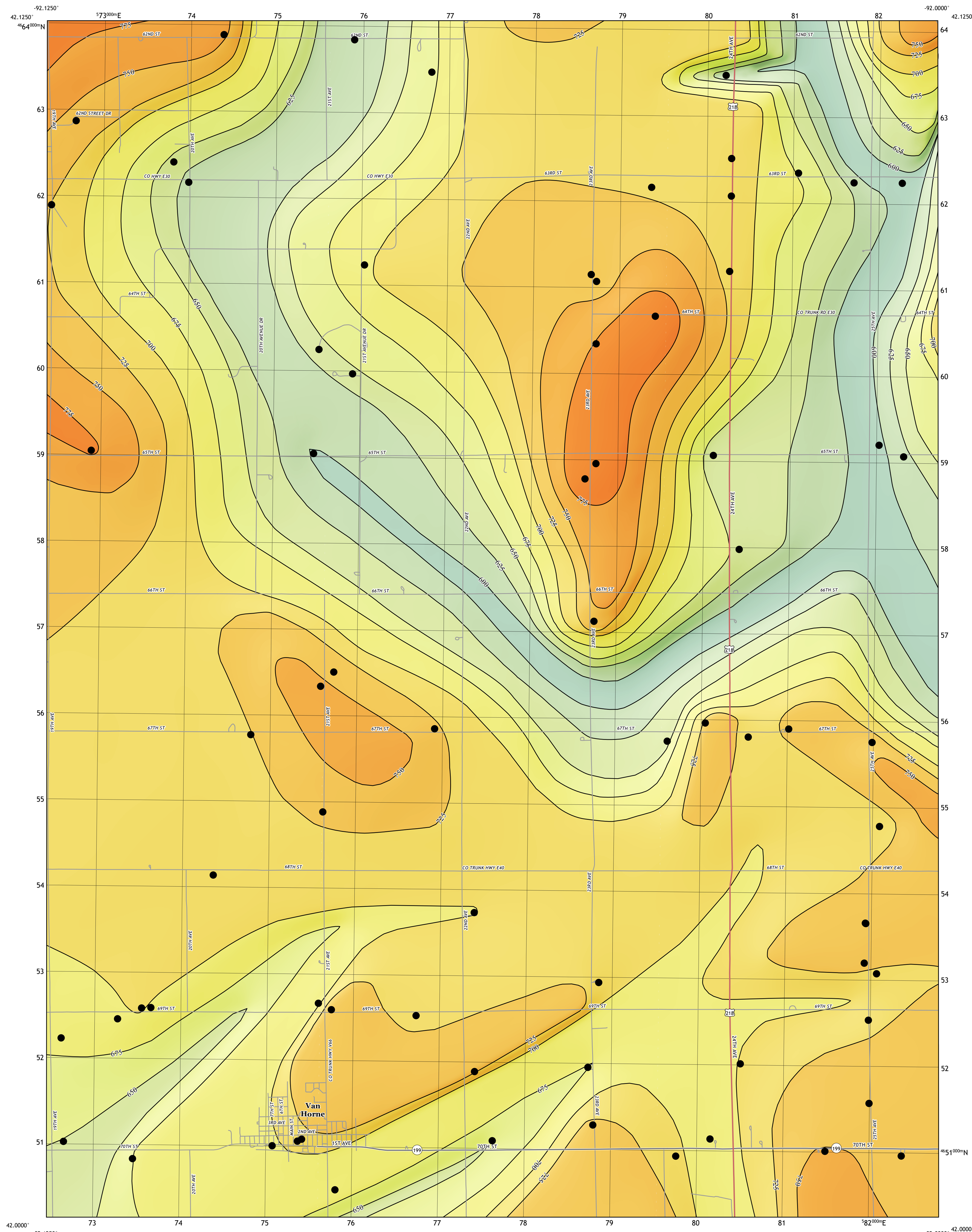


Bedrock Elevation and Quaternary Thickness Maps of the Van Horne 7.5' Quadrangle, Benton County, Iowa

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Open File Map: OFM-20-8

Bedrock Elevation



INTRODUCTION

The Bedrock Elevation and Quaternary Thickness Maps of the Van Horne 7.5' Quadrangle were produced in conjunction with the surficial geologic map. The bedrock surface within the quadrangle, like much of Iowa, is concealed by glacial deposits. The boundary between Paleozoic bedrock and unconsolidated Quaternary materials is likely just as irregular as the land surface itself. Therefore, the thickness of Quaternary deposits varies widely across the quadrangle, ranging from 30 to 115 m (100-375 ft).

Bedrock topographic lines were drawn based on borehole data used for the construction of the Surficial Geologic Map of the Van Horne 7.5' Quadrangle (OFM-20-7). Due to the depth of bedrock in this area, bedrock topographic detail is muted. The thickness of Quaternary materials was generated by subtracting the elevation of the bedrock surface from the land surface elevation. The Surficial Geologic Map of the Van Horne 7.5' Quadrangle (OFM-20-7) provides further information regarding the nature and extent of Quaternary deposits within the mapping area.

METHODOLOGY

The Bedrock Elevation and Quaternary Thickness Maps of the Van Horne 7.5' Quadrangle were constructed using the same dataset as the surficial geologic map. Geologic information utilized included drilling records housed in the Iowa Geological Survey (IGS) GeoSam database, existing maps and technical reports, Iowa Department of Transportation data, and reports from engineering companies and quarry operators.

More than 70 boring records from the IGS GeoSam database, including both driller's logs and lithologic descriptions of well cutting samples (strip logs), were evaluated for the Van Horne Quadrangle. Each record was checked for locational accuracy using information from the driller's logs, historic plat books, county assessor information, and direct communication with landowners. The depth to the surficial-bedrock contact was determined for each well and assigned an elevation value by subtracting it from the surface digital elevation model (DEM). These data points provided the framework for the Bedrock Elevation Map.

Bedrock elevation contours were digitized using ArcGIS software at a 25-foot contour interval. The bedrock elevation raster was generated using interpolations of the bedrock surface created with the 'Topo to Raster' and 'Empirical Bayesian Kriging' tools in ArcMap 10.6. The Quaternary Thickness Map was created by subtracting the bedrock elevation raster values from the surficial DEM raster. The resulting surface was rounded to the nearest integer and contours were generated from this result then later smoothed.

BEDROCK ELEVATION

≥775
≥750
≥725
≥700
≥675
≥650
≥625
≥600
≥575

MAP SYMBOLS

- GeoSam point
- topographic line
- water body
- river/stream

ROAD CLASSIFICATION

- U.S. Route
- State Route
- Local road

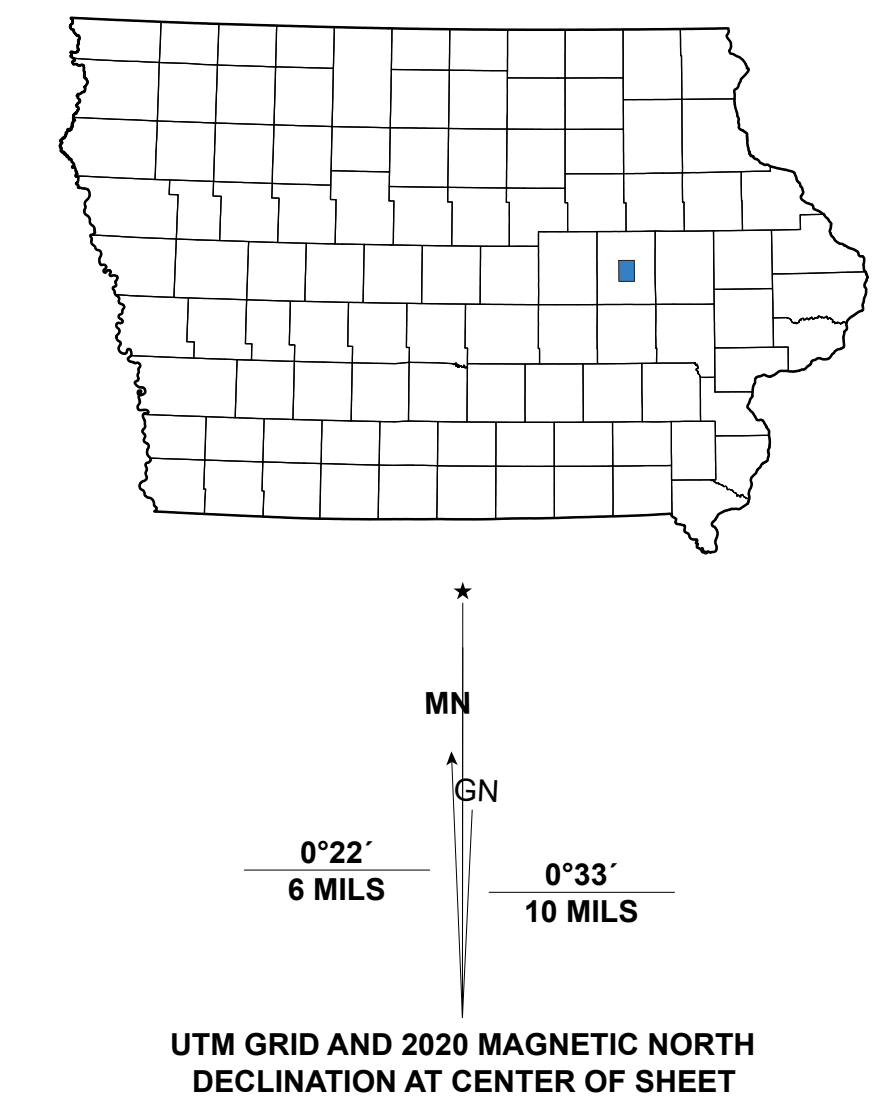
QUATERNARY THICKNESS

≤100
≤125
≤150
≤175
≤200
≤225
≤250
≤275
≤300
≤325
≤350
≤375

ADJOINING QUADRANGLES

1	2	3
4	5	6
7	8	

- Garrison, IA
- Vinton, IA
- Center Point NW, IA
- Keystone North, IA
- Center Point SW, IA
- Keystone South, IA
- Blairtown, IA
- Newhall, IA



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Base map from the USGS Van Horne 7.5' Quadrangle map, published by the US Geological Survey in 2018. Map projection and coordinate system based on Universal Transverse Mercator (UTM) Zone 15N, datum NAD83.

The maps are based on interpretations of the best available information at the time of mapping. Map interpretations are not a substitute for detailed site-specific studies. The data and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.

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Quaternary Thickness

