

Title: Brussels Hill. Possible remnant features of an asteroid impact crater.

Location: Door County WI near the unincorporated community of Brussels. State highway 57 skirts the south part of the hill; The former state highway (now County Highway DK) traverses the hill. Brussels Hill is centered on Section 4, T26N R24E

Significance: May be an impact structure. Unlike the generally horizontal Silurian sedimentary strata of the region, Brussels Hill consists of disturbed and deformed rocks which suggest this is the remains of an extraterrestrial impact structure. Evidence includes reported "megaclasts" up to 25 feet long that dip steeply at various angles (including vertical). These may be overturned and plastically deformed. Sandstone clasts up to 10 feet long have also been reported by Kluessendorf (see reference below). Cambrian sandstone generally lies 300 to 400 feet below the Silurian dolomitic limestone strata in the area. The sandstone clasts present at Brussels Hill may be explained by an impact event. Zawacki (below) reports no shatter cones in the limestone, though shock-metamorphic planar microstructures (PMs) were reported in the quartz grains of the sandstones. Brecciation occurs at many scales and there are reports of breccia-within-breccia occurrences which are indicative of impact structures (perhaps exclusively). Breccia dikes are common. The LIDAR image shows an unusual hummocky landscape which is typical of megabrecciation at impact sites. Look for carbonitic rocks with unusual vesicles, these may represent impact melt rocks. The erosional surface of Brussels Hill differs from hills of the surrounding area. The roughly-circular shape of the hill may support the impact hypothesis. Zawacki concludes that the hill is likely the eroded remnant of a central peak of a larger impact structure.

Age: The youngest rocks on Brussels Hill have been identified as Silurian Schoolcraft Dolomite. This indicates the impact occurred in the early Silurian.

References:

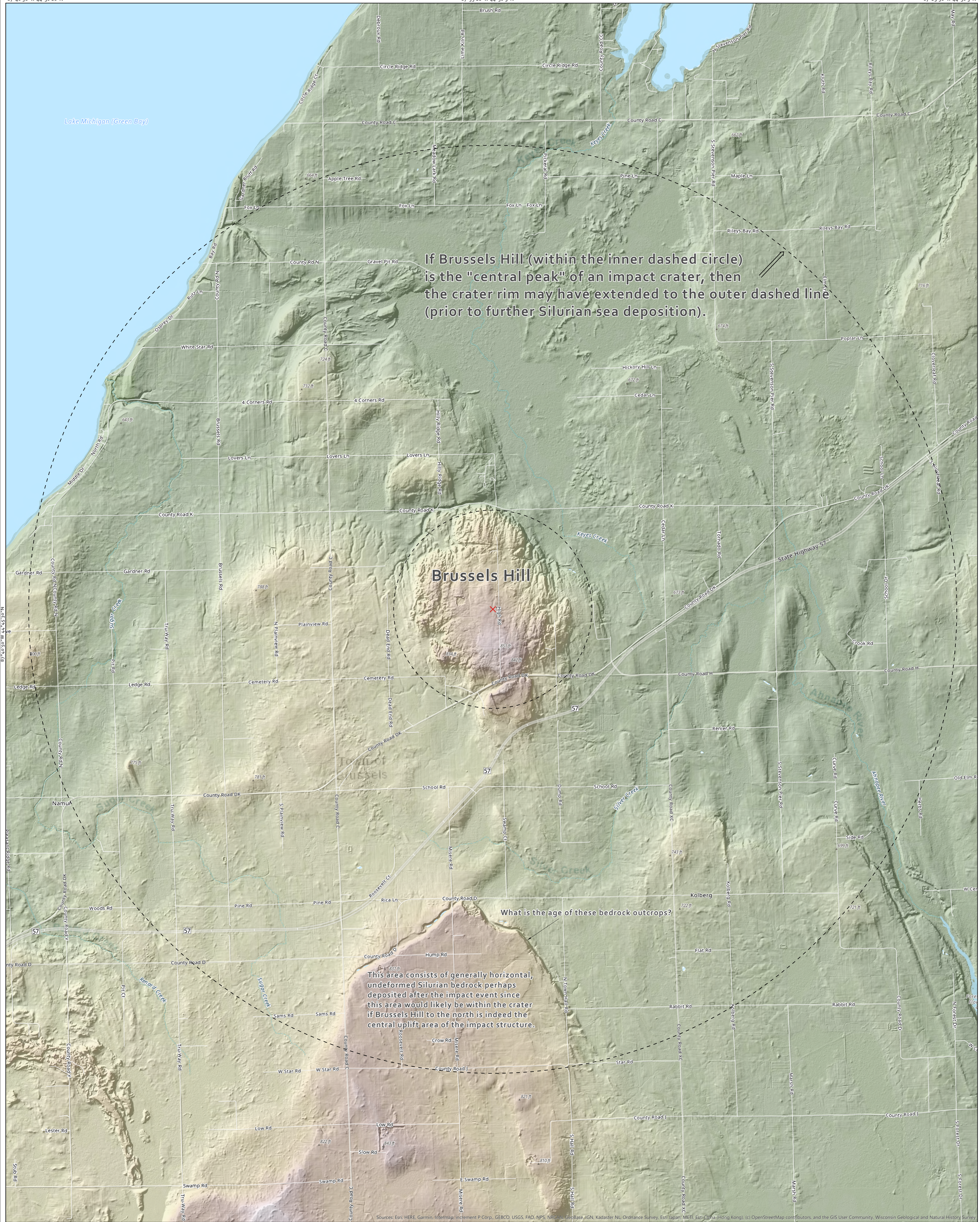
Kluessendorf, Joanne, 2011, Geological Society of America Abstracts with Programs. Vol. 43, No. 1, p.117

Zawacki, Emily & Bjørnerud, M. (2015). A PREVIOUSLY UNRECOGNIZED IMPACT STRUCTURE AT BRUSSELS HILL, DOOR COUNTY, WISCONSIN: BRECCIATION AND SHOCK-METAMORPHIC FEATURES. 10.13140/RG.2.2.22564.88966.

87°40'38"W 44°50'16"N

87°35'18"W 44°50'9"N

87°29'58"W 44°50'3"N



If Brussels Hill (within the inner dashed circle) is the "central peak" of an impact crater, then the crater rim may have extended to the outer dashed line (prior to further Silurian-sea deposition).

Brussels Hill

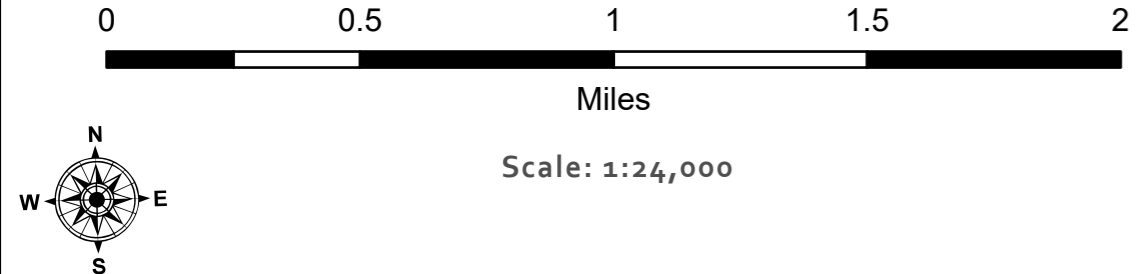
What is the age of these bedrock outcrops?

This area consists of generally horizontal, undeformed Silurian bedrock perhaps deposited after the impact event since this area would likely be within the crater if Brussels Hill to the north is indeed the central uplift area of the impact structure.

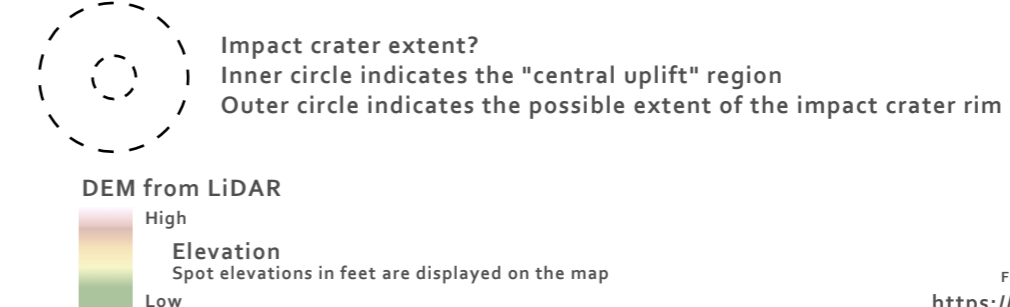
87°42'14"W 44°40'45"N

87°35'42"W 44°40'38"N

87°30'23"W 44°40'33"N



LiDAR-based topographic image DEM (Digital Elevation Model) with a "hillshade effect" applied. Also included: An overlay showing roads and other reference information.



Map produced 5/18/2019 by Wisconsin Geology. For more information and maps go to: <https://WisconsinGeology.blogspot.com/>