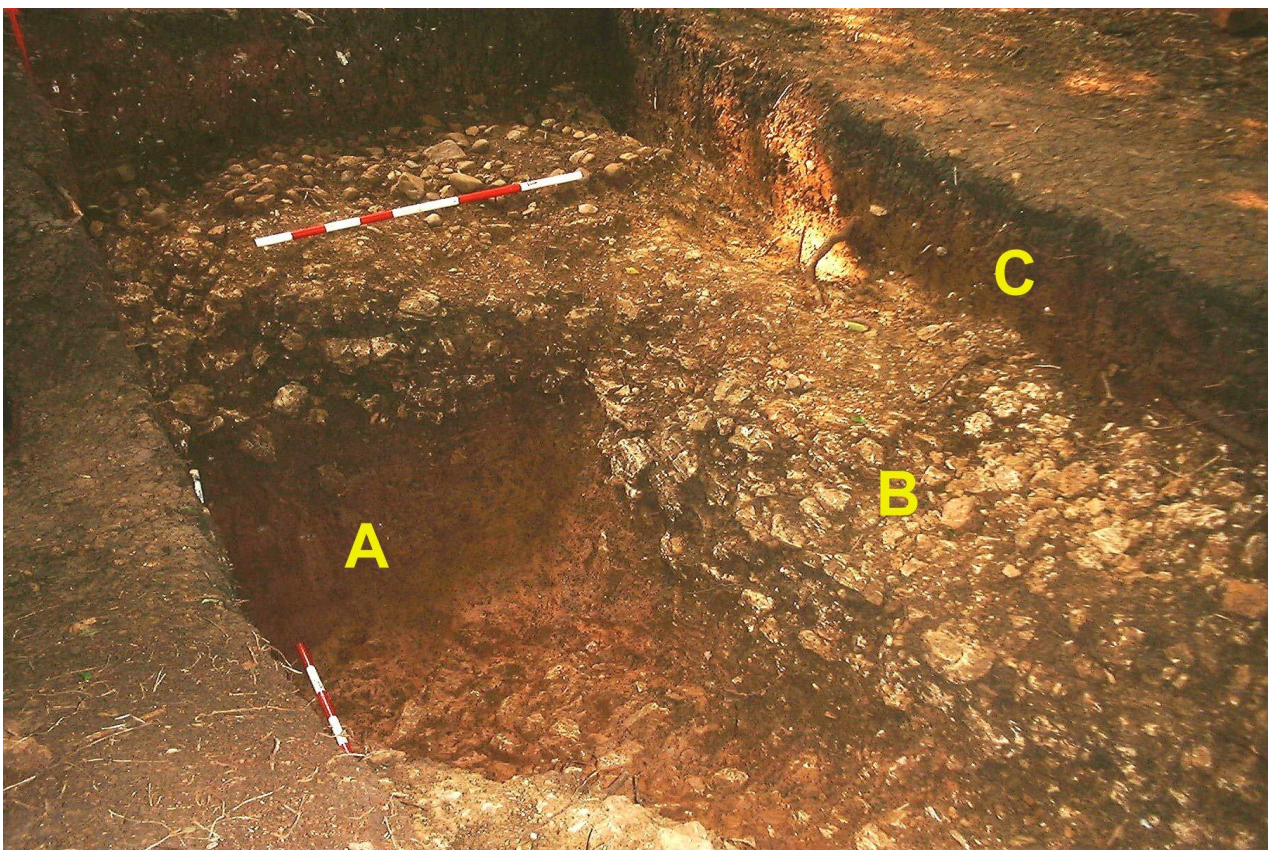


Report on the Geology of the Wray Wood Earthwork, Boston Spa, (SE 4213 4692) Excavated by Boston Spa Archaeology and Heritage Group

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The bedrock geology consists of a cyclic sequence of dolomites, shales and sandstones of the Permian period. This sequence forms a thin skin (about 30-40m thick) on top of the Millstone Grit (for example, the rocks at Brimham and Almscliffe Crag) and the Coal Measures of Leeds southwards to South Yorkshire.

The dig locality has been mapped by the British Geological Survey (Sheet 70; scale 1:50,000) as a patch (0.5km in length and 0.25km wide) of stony clay and stony sandy clay, and has been grouped as glacial till on the geological map. Trench 4 of the excavation (see below) shows three particular units, from the bottom upwards: (A) unconsolidated red homogeneous clay; (B) a raft of fragmented (brecciated) grey limestone; and (C) red clay and surface soil. The clays are certainly water laid, and may be related to the melt phase of a glacier.



Trench 4 showing the entrance ramp into the 'sheepwash' cut through the limestone

The raft of hard rock (breccia) is most likely from the Permian bedrock and so is probably a glacial erratic. This rock is composed almost entirely of fine-grained calcite (CaCO_2) and is, therefore, a limestone; it is therefore a raft of bedrock Magnesian Limestone that was caught up in modern glacial clays. Under the microscope it is clear that two types of calcite make up this limestone: (1) the more common type that is cloudy in appearance, and (2) clear perfectly-shaped rhombs that formed by the re-crystallisation of (1) above. The rock appears to be devoid of fossil fragments, but does contain small amounts of quartz, representing sand grains that were incorporated as detrital grains into the limestone when it was precipitated on the ocean floor about 250 million years ago.