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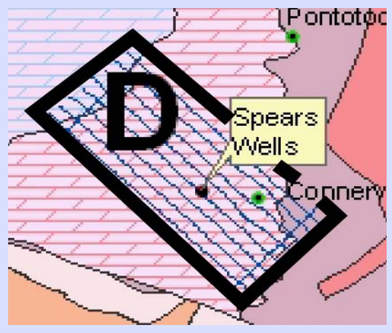
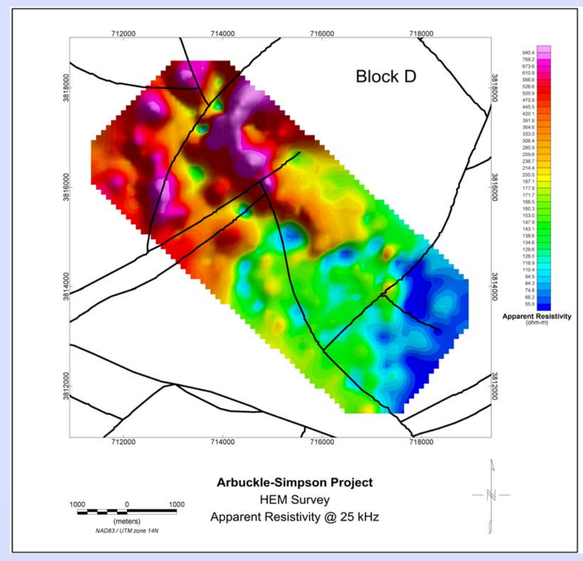
PANEL 2 Epikarst

Block D Geophysics: Core of the Hunton Anticline

Area D encompasses the Spears Ranch study area, where two deep wells were drilled in the central part of the Hunton anticline. Except for a broad trend from northwest to southeast mirroring the geology, apparent resistivity maps of this area do not reveal much lateral variation in rock electrical properties due to fault structures.





Epikarst may be defined as:
The uppermost weathered layer of carbonate (limestone or dolomite) rock of fractured karst aquifers beneath the land surface and any mantling of soil but above the phreatic zone (Klimchouk, 2004).

Epikarst is important because of:
Significant potential for ground water storage in epikarst zones (Perrin et al., 2003; Klimchouk, 2004)
Storage in epikarst zones can be more significant than in phreatic zones (Perrin et al., 2003)

Recent electrical resistivity imaging (ERI) surveys in the Spears Ranch study area (Sample, 2008) mapped the epikarst as a low resistivity surface layer above competent limestone. The dashed line in the resistivity sections indicates the depth to refusal of a Geoprobe penetrometer. The thickness of epikarst at one location is about 15 m (50 ft) and about 6 m (20 ft) at the other. Faults not visible in the apparent resistivity maps are clearly detected as discontinuities in the HEM inversions, as well as in the ERI inversions. Likewise, epikarst is evident as a relatively thin, conductive veneer overlying the more resistive bedrock.