

# **Lithofacies Analysis of the Lower Pennsylvanian Pottsville Formation in the Western Bituminous Field of Pennsylvania**

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## **ABSTRACT**

The Pennsylvanian Pottsville Formation is an Appalachian clastic wedge found from Pennsylvania to the Black Warrior Basin in Alabama. Recent works on the Black Warrior Basin suggest that the earlier mature sandstones of the basin were deposited at low sea-level and have a distal, northern Appalachian source dominated by Taconian terranes which were brought in by Pennsylvanian mega-channels. These sequences were followed by immature sandstones having proximal sources dominated by Alleghanian and Acadian sources. The Pottsville Formation consists of alternating sandstone, siltstone, claystone, shale and several coal beds with conglomerates and limestone. Sediment composition and lithofacies model will reveal the reservoir potential of these fluviodeltaic to shallow marine sediments. The geochemical analysis of the Pottsville Formation will reveal the potentiality of this formation as a source rock for petroleum.

In order to study the lithofacies several analyses will be carried out: 1) Petrographic analysis of sandstone and mudrock units, 2) microprobe analysis on selected heavy-mineral grains, 3) facies association and lithofacies models will be carried out to determine the depositional environment. Additionally, to determine the hydrocarbon prospects of the Pottsville Formation 4) total Organic Carbon and the 5) illite crystallinity will be analyzed. This is anticipated that this study will lead to development a lithofacies model in the northern Appalachians which can be correlated with well-established lithofacies in the Black Warrior basin at the Southern Appalachians. Moreover, these studies will also further our understanding about the Pottsville Formation as a potential repository for hydrocarbon.