

# FLUVIAL SEQUENCE STRATIGRAPHY AND DIAGENETIC HISTORY OF THE CRETACEOUS BASELINE SANDSTONE, NEVADA

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## Abstract

The Albian-Cenomanian Baseline Sandstone in southern Nevada is a ~3-km-thick arkosic fluvial sandstone deposited in the wedge top depozone of the Sevier fold-and-thrust belt and contains prominent iron-oxide cementation and variable coloration (white to red to tan) that overprints and crosscuts lithofacies. The main objective of this study is to characterize the Baseline Sandstone on a variety of scales, from the basinal setting to pore scale petrophysics with the rationale that the fluvial lithofacies exhibit a marked spatial variability on meter scales. The hypothesis is that this spatial variability influences diagenetic facies and iron-oxide cementation. The hallmark of this formation is the presence of unique, very large (~1m diameter) spherical iron-oxide concretions that occur in tightly spaced clusters. Determining why these concretions grew so large and why they are so tightly spaced in addition to investigating the controls on regional iron-oxide precipitation would allow for better understanding of the diagenetic evolution and lithostratigraphic controls on fluid migration pathways. Extensive fieldwork will be carried out to develop a sequence stratigraphic framework to explain, model, and predict the lithostratigraphic architecture of the formation, which, in turn, could be used to understand the spatial variability in fluid pathways for iron-oxide cementation and diagenesis. Furthermore, laboratory studies (i.e. petrography) will be done to fully characterize iron-oxide cements and host rock lithologies. This will enhance our understanding of arkosic fluvial reservoir systems and the relationship between primary stratigraphic architecture and overprinted diagenesis.