Early diagenetic siderite was precipitated within both the channel, and the floodplain facies of the Shinarump Member of the Chinle Formation, commonly developing in less than a few meters of burial. Septarian concretions, reportedly found in less than a few meters of burial, are composed of siderite, pyrite, Mn/Fe carbonates, and other iron oxide minerals. Pyrite abundance increases in these concretions, and siderite abundance decreases with increasing Mn/Fe carbonates. Sandstone composition within these concretions appears to be similar to those of modern river bars. Sandstone composition within these concretions appears to be similar to those of modern river bars. These concretions, along with other iron oxide concretions found in the formation, indicate that the region was a major source of iron oxide minerals. Significant iron oxide concretions have been identified in modern river-bar deposits, indicating that this region was a major source of iron oxide minerals. Significant iron oxide concretions have been identified in modern river-bar deposits, indicating that this region was a major source of iron oxide minerals.

Mississippi River are precipitated in distinct spherical masses (figure C) (Ludvigson 1998). The figure shows localities Little Creek Mountain and Little Mountain (lower asterisk), and others (rattle stones and dispersed cements were oxidized after burial in Oxygen-rich conditions). A map of the state of Utah is provided, with the study area outlined in black, and the lower left hand corner labeled "Topographic Mud Line." The legend is to the right giving the thin section. Petrographic Evidence: 3D spherical shapes are found in the outcrop of the iron oxide concretion. 3D spherical shapes are formed when the outward growth of siderite pushes out silicon and other silicate quartz grains during outward growth.

Conclusions:
1. Early diagenetic siderite was precipitated within both the channel, and the floodplain facies of the Shinarump Member of the Chinle Formation. This indicates continuous water-saturated and reducing groundwater conditions consistent with previous conclusions made by (Dubiel 1993) of paleoclimate during Shinarump deposition.
2. Some siderite concretions from intraformational conglomerates could have been oxidized within the flood plain facies during the Triassic and more likely during Basin and Range deformation (Ludvigson 2005). Rattle stones are intraformational clasts that contain iron-oxide, mudstone centers surrounded by iron-oxide cemented rinds. Iron-oxide pediments, and others are found in intraformational conglomerates. In this section, these pediments resemble iron-oxidized pediments and commonly have sharp edges, suggesting they reached their present oxidation state during early oxidized concretions. Septarian concretions display varying fracture networks, iron oxide cement, and calcite fracture fills. Boulder stones, iron ore pediments, and septarian concretions have been precipitated exclusively above bank deposits and floodplain hydrology. All pediments comprised of early diagenetic siderite. Some were oxidized at shallow depth, during the Triassic (iron-oxide pediments and septarian concretions), and others (rattle stones and dispersed cements were oxidized after burial in Oxygen-rich conditions).

References:
Dubiel R. F., Hasiotis. S. T, 2011, Depositional systems, paleosols, and climatic variability in a continental system: The upper Triassic Shinarump Member of the Chinle Formation, Colorado Plateau, U.S.A.: In, Davidson, S., and North, C. eds., From River to Rock Record: Petrographic Evidence: 3D spherical shapes are found in the outcrop of the iron oxide concretion. 3D spherical shapes are formed when the outward growth of siderite pushes out silicon and other silicate quartz grains during outward growth.