

Depositional Environments of the Upper Cretaceous Prince Creek Formation, Kikak-Tegoseak Dinosaur Site, North Slope, Alaska

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The Prince Creek Formation is the most dinosaur-rich high latitude formation in the world but there remains relatively little detailed work that integrates the well known paleontological sites with the local sedimentology. A preliminary facies analysis of the Upper Cretaceous Prince Creek Formation near the Kikak-Tegoseak dinosaur site, North Slope, Alaska, indicates that, overall, the depositional environment was a swampy wetland delta plain. Palynological data suggest the dinosaur site is near the Campanian-Maastrichtian boundary. Typical facies include sandy trough cross-laminated and rippled channel deposits, unconsolidated silt deposits, and organic-rich siltstones and shales. Small, shallow, ribbon-like channels with sharp margins are surrounded by overbank mudstones. Channelized facies at the Kikak-Tegoseak site are dominated by small, non-migrating (probably anastomosed) predominantly fine-grained sandstone channel fills, although larger, coarser-grained sandstone channel fills with well-developed lateral accretion surfaces (meandering channels) have been observed elsewhere within the Prince Creek Formation. Non-channelized facies represent lake, lake margin, levee and crevasse splay environments and primarily poorly drained and weakly developed paleosols. Organic-rich siltstones and coaly shales indicate abundant plant material and hydromorphic environments. Root traces, organic debris and siderite are ubiquitous elements of overbank facies. Bentonites are locally present. The Kikak-Tegoseak bonebed is dominated by the associated skeletal remains of the horned dinosaur, *Pachyrhinosaurus*. The quarry also contains the cranial and post-cranial remains of several taxa of both large and small theropods, and hadrosaurs. No other bone material has been collected from fine-grained sediments present in the area, and preserved evidence of dinoturbation is extremely rare.