

## UNNAMED SHALE

1. Shale, dark gray (N3), includes some very light gray (N8), thin laminae of siltstone; slightly calcareous; contains widely scattered 1–2-in.-thick



Figure 8. A—Unnamed shale in the Springer Formation at the edge of the creek below the spillway for City Lake dam. Note the resistant 1–2-in.-thick ironstone layers that protrude from the bluff (shown by arrows). B—R. D. Andrews examining one of the ironstone layers (arrow) in the shale shown in 8A. Ironstones are common throughout the Springer shales.

layers of dark reddish brown (10R3/4) ironstone that have moderate yellowish brown (10YR5/4) limestone interiors; weathered surfaces of ironstone layers have polygonal healed fractures about 0.25–0.5 in. across that resemble desiccation cracks; upper part contains interstratified sandstone and siltstone with rare burrows; upper contact gradational; lower contact covered ..

~180.0

Total ~289.5

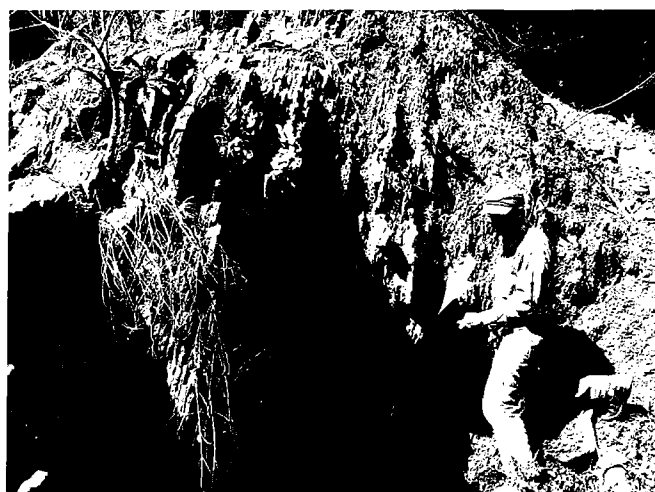


Figure 9. Contact between the lowermost unnamed shale unit of the Springer Formation and the base of the Overbrook Sandstone Member at the eroded spillway of City Lake dam (Stop 2). Pick head (at arrow) marks the contact. Geologic pick is ~2 ft long.

and the base of the Overbrook Sandstone. Note that the lithology just below the rock pick is predominantly shale, while the shale just above the contact contains interstratified layers of sandstone and siltstone that are very thin, parallel-, and ripple-bedded. Figure 10 shows the abundant trace fossils that are common throughout the Overbrook.

Sedimentary structures, together with stratigraphic and spatial relationships, indicate that the Overbrook sandstone was deposited as a submerged detached marine bar (offshore) in a relatively shallow inner- to middle-shelf environment. The specific type of bar is important because a detached bar is not associated with the more lobate delta-plain and delta-front (distributary mouth bar) deposits that are “attached” to the shoreline. Barrier-island and shoreface deposits also differ from submerged detached bars: although all are narrow, elongate features, submerged detached bars do not develop emergent facies (foreshore, backshore, etc.). Detached bars commonly are stratigraphically and spatially bounded by marine shale; thus, in the subsurface, they make excellent stratigraphic traps for hydrocarbons.