The greatest percentage of longleaf pine forest soils is morphologically more similar to grassland soils than to forest soils. No forest floor is present, but instead there is a thrifty ground cover largely composed of perennial grasses. The $A_1$ horizon is dense, relatively impervious, and of single-grained to massive structure, depending on texture. These characteristics are caused by the absence of a vigorous soil fauna and by exposure of the surface soil to the elements when annual fires remove the ground cover.

When fires are excluded, the ground cover under closed stands becomes smothered out by a forest floor from 2 to 3 1/2 inches thick. An active soil fauna quickly becomes established, and as a result the $A_1$ horizon becomes extremely penetrable and porous. Soils of sandy loam, or of heavier texture, may exhibit a fine crumb structure, and the humus layer may assume certain mull-like characteristics.

This entire abrupt change in soil characteristics may take place within as short a period of fire protection as 10 years.

Beneath the $A_1$ horizon, soils of burned and long unburned areas are structurally similar.