

THE SEDIMENTATION, STRATIGRAPHY, AND PETROGRAPHY OF A COAL-ASH POND IN CARROLL COUNTY, KENTUCKY

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KEYWORDS: Ash pond, vibracoring, lacustrine delta, coal-combustion byproducts

ABSTRACT

The sedimentation and stratigraphy of a coal-ash disposal pond were investigated with vibracoring and three-dimensional, computer-modeling techniques. Thirteen vibracores ranging in depth from 11 feet (3.4 m) to 37.5 feet (11.4 m) were retrieved from the 2200-MW Ghent power plant, ash-disposal pond in Carroll County, Kentucky. The disposal pond spans 120 acres (48.6 hectare) and is approximately 40 feet (12.2 m) in depth. Each vibracore was logged in the field and transported to the lab for a series of analyses for particle size, loss on ignition, petrography, x-ray diffraction, and x-ray fluorescence.

Collected data were processed using ArcviewGIS and Rockware to create three-dimensional, layered isoliths and fence diagrams, as well as stratigraphic columns and profiles. Overall, nine sedimentologic units comprise a generally coarsening-upward, distally fining stratigraphy. The origin, characteristics, distribution and spatial arrangement of the various sedimentologic units are all indicative of a lacustrine, fluvial-dominated, delta environment.