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Watauga Dam is a 330-foot tall, rockfill embankment with a compacted clay core. Completed by the Tennessee Valley Authority in 1948, the dam is located in a steeply sided, mountain valley in eastern Tennessee. The vulnerability of the clay core to internal soil erosion was recently evaluated as part of TVA's ongoing dam safety assurance program. No seepage has been observed, but possible seepage exits are buried beneath the massive rockfill shell of the dam embankment. Potential internal erosion mechanisms were systematically cataloged and preliminarily evaluated using historical design and construction records, numerical seepage models, and data from a network of installed piezometers. The compiled data will be used to support future, quantitative risk assessments. This project provides a good case study for the assessment of an embankment dam for safety issues related to seepage and internal soil erosion.