# BEST PRACTICES FOR MANAGING WATER RESOURCES IN APPALACHIA

## A McIntire-Stennis supported project

University of Kentucky
Forestry and Natural Resources
College of Agriculture, Food and Environment

The extraction of coal, gas, and timber has been the primary economic driver for the Appalachian region for more than a century. Although these activities provide jobs and revenue, the on-going degradation of water quality and aquatic habitat as well as compromised water supplies from resource extraction have been clearly documented. The potential consequences from global climate change along with disturbances from resource extraction result in a high degree of uncertainty for the region's water resources. Management solutions developed to protect water resources from these issues has been a focus of major research in the University of Kentucky's Department of Forestry and Natural Resources.

McIntire-Stennis supported research aims not only to develop best management practices (BMPs) for protecting watersheds from resource extraction, but research has also developed and demonstrated practices for restoring watershed health in historically impacted systems. Research in this area has informed policy development, provided professional and traditional outdoor teaching laboratories, and contributed to the protection and restoration of thousands of acres of Appalachian forests and their water resources.

### About McIntire-Stennis

The McIntire-Stennis program, a unique federal-state partnership, cultivates and delivers forestry and natural resource innovations for a better future. By advancing research and education that increases the understanding of emerging challenges and fosters the development of relevant solutions, the McIntire-Stennis program has ensured healthy resilient forests and communities and an exceptional natural resources workforce since 1962.

USDA

### COLLABORATION

Researchers at the University of Kentucky are working in partnership with the USDA Forest Service, US Geological Survey, US Department of Interior's Office of Surface Mining Reclamation and Enforcement, USDA Natural Resources Conservation Service, Appalachian Regional Commission, Kentucky Department of Fish and Wildlife Resources, Kentucky Division of Forestry, Kentucky Department of Natural Resources, National Fish and Wildlife Foundation, Arbor Day Foundation, Sierra Club, and numerous regional conservation organizations.

### IMPACT

In Kentucky, information from this research has been used to revise state mandated timber harvesting BMPs used to protect water quality. Over five PhD degrees, 26 MS degrees, hundreds of undergraduate students, and more than 20,000 volunteers have been engaged in this research.

**125 million**

trees have been planted in Appalachia to restore surface coal mining sites using new BMPs derived from this research.

**3,319 streams**

annually afforded protection using BMPs directly informed by this research.

**$4.9 billion**

of annual economic contribution is generated from the 215,000 acres of private forest land harvested using the required BMPs derived from this research.