



## Managing Forests to Enhance Water Quality: Cleaning Up West Virginia's Elk River



### BACKGROUND

It is an overcast day as the truck slowly drives across the bridge that traverses Leatherwood Creek. The threat of rain lingers again for a third day. As the road turns parallel to the Elk River, a country store appears. The camp is nestled in the fork of Leatherwood and the Elk, directly along the rippling waters of one of West Virginia's best trout streams. The hunting and fishing camp, surrounded by some of the State's most spectacular mountains, contains a convenience store, a few outhouses, multiple pop-ups, truck campers, and small, makeshift cabins.

This scene, just outside of Webster Springs, is a fisherman's and hunter's dream. For the foresters of the West Virginia Division of Forestry, these recreational villages that extensively line the shore of the Elk pose some concerns.

"Where do the sewers go," Joe Kreger, Elk River Watershed Forester, asks with great concern. "This is a serious problem that needs to be looked at." The speculation is that when it rains all the waste is leached directly into the waters of the Elk River.

The West Virginia Division of Forestry truck travels further up the river along the gravel road and another problem appears. When it rains, silt from a dark red clay 50-foot high wall runs across the road and directly into the Elk River due to a lack of ditching.

Waste and silt are major concerns. Both are causing water quality problems for the residents of Webster Springs, who draw their water supply from the Elk River.

Other problems, such as county road maintenance, the proliferation of oil and gas roads, and waste control, are the responsibility of the WV Department of Transportation (WV DOT) and the WV Department of Environmental Protection (WV DEP). Even though the authority lies in the county and state, landowner and community involvement are also essential to solving the challenges in this area.

### LOCATION

The project area covers 407,255 acres, encompasses one of the longest rivers in the State, and flows through the geographic center of the State. The watershed is 90 percent forested and supports some of the highest quality timber stands of oak, yellow-poplar, ash, and cherry existing in the State. Twenty-six percent of the watershed is public land lying in the Monongahela National Forest, and 74 percent is non-industrial private, forest industry, and private corporate ownerships. Surface and deep mining, timber harvesting, agriculture, urban and commercial uses, recreation, and public and private roads impact the area. A few of the major tributaries are Middle Fork, Mingo Fork, Tea Creek Mountain drainage, Leatherwood, and Bergoo Creeks. The Elk River also flows into Charleston, West Virginia, the capital city.

The Elk River has the highest biodiversity of fish in West Virginia with 68 species including 18 species of darters and four species of madtom. There are three federally listed endangered mussels and seven species of concern. The rate of natural regeneration in the Elk River is also high.

The Elk River project originally covered the upper watershed area between Webster Springs, located in Webster County, to Snowshoe in Pocahontas County. With additional state funding, the project has been expanded to include Braxton, Pocahontas, Randolph, and Webster Counties. This allows for expanded educational opportunities on how water quality can be improved.



Elk River Watershed

Since 1999, the Northeastern Area and the Northeastern Area Association of State Foresters have sponsored a cooperative challenge grants program to promote watershed health and restoration through the conservation, restoration, and sound stewardship of trees and forests.

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## ISSUES BEING ADDRESSED

- Siltation of logging roads
- Streambank erosion
- Education of landowners and communities

## GOALS

- Reduce sediment reaching the watercourses
- Increase awareness of water quality/forest stewardship issues
- Increase the use of Best Management Practices (BMPs) before and during timber harvesting
- Reduce soil erosion in order to maintain soil productivity
- Form new partnerships among local, state, federal, and private organizations

“We want to be able to say that forestry cleaned up the water,” Bob Whipkey, West Virginia Assistant Deputy Administrative Forester, says with confidence.

## METHODOLOGY

- Employ professional watershed forester
- Provide education/training
- Increase public participation
- Develop a water quality monitoring and implementation plan
- Intensify Forest Stewardship Planning
- Provide a forest watershed enhancement incentive program

## AREA PROBLEMS

**Logging Roads** - Webster County’s main industry is logging, with approximately 150 logging operations conducted each year. Logging employs a large number of the county’s population. Logging roads are usually constructed through red, clay soils that cause problems on rainy days. These soils, usually found on floodplains and steep slopes, are prone to severe slippage and erosion.

Bergoo Creek, a tributary to the Elk River, has been impacted by timber harvesting activities. In order to prevent poorly planned logging jobs, former Webster County forester Joe Kreger says, “Proper preparation



**Red silt high-wall along Elk River.**



**Seeded down log landing.**

prevents poor performance.” If loggers would plan roads prior to logging, many road maintenance problems could be eliminated. Tim Maxey, the new watershed forester, will assist them in doing just that.

**Streambank Erosion** - Estimated erosion rates exceed 100 tons per acre per year. Over 37,000 feet of the Upper Elk River streambanks are eroding excessively.

**Erosion** - Because the terrain is steep, erosion throughout the watershed is a normal process. However, it can be aggravated by road location or lack of maintenance. At the site in the photograph above, the road sets between a red silt high-wall and the Elk River. There is no ditching to divert or convey runoff away from the road surface. When it rains the red silt runs off the slope directly into the river causing extreme sedimentation problems. This problem is to be addressed by the WV DOT.

The 1992 Logging and Sediment Control Act (LSCA) states that loggers have to follow Best Management Practices (BMPs). BMPs prior to 1992 were voluntary practices, but are now required under West Virginia state law. An example of a BMP is a seeded down landing, which helps prevent further erosion. Water bars are also required across logging roads. This directs runoff into forest and away from the stream; otherwise, runoff would increase sediment entering the water.

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**Waste** - Many hunting and fishing camps that line the Elk River shoreline do not have proper sewage systems. Therefore, when it rains, waste from the seasonal residents leaches directly into the waters of the Elk River, posing a serious problem for the Webster Springs drinking water supply. This problem is to be addressed by the WV DEP.

## ACCOMPLISHMENTS

**Watershed Forester** - A watershed forester has been hired to provide coordination and serve as a local catalyst for action. Local involvement is critical to implementing the goals of the project.

**Watershed Associations** - Through a matching grant from the Stream Partners Program, the Horizon Line Rivers Club (Upper Elk Watershed Association) began two years ago, and has become effective for educational training and public participation. The club has focused on youth in hopes that they will take the message home to their parents. The overall message is careful forest management. The Watershed Association is helping people understand that cutting trees is not bad. It is important to the local economy, and can be done in a way that will ensure clean water. They hope to make children and their parents environmentally aware by providing a broad ecological message.

The Horizon Line River Club is very active in the watershed. The club conducts rafting trips, float trips to map areas, and a career day to discuss forestry issues.

The members of the Upper Elk Watershed Association also pick up trash along Webster Spring's waterways three to four times a year. "It's kind of like Adopt-a-Highway, but 'Adopt-a-River' instead," Kreger says proudly of the activity.

**Education** - Educating the landowners and community members is a very important component of this project. Forestry field days are an example of what is being offered. One field day directed landowners to a site in Braxton County to look at tree release, marking timber, contract uses, what BMPs are, and what purpose they play in logging and water quality. Another field day, "Resources in Our Midst," was held at Camp Caesar, WV. About 200 elementary school children attended the three-day camp and returned home with greater appreciation for the environment.

Other examples of educational activities include landowner training workshops, logger workshops, and news releases. The sessions held so far included a number of loggers, consulting foresters, landowners, and citizens of Webster Springs in attendance.

**Stewardship Plans and Grant System** - Currently, 40 Forest Stewardship plans have been completed in the

watershed, and there will be efforts to increase the number of plans. "There are points and accomplishments we want to get across," Whipkey says enthusiastically. "Good forestry and good harvesting can protect the watershed."

A problem that foresters face is landowners not being able to install the practices themselves. By educating landowners, the foresters hope they will start to take action on their own land. The WV Division of Forestry has coordinated with the Elk Soil Conservation District to create a pool of funding to assist landowners with the installation of protection practices. This money was also used to coordinate education workshops.



**Trees were planted to improve the timber stand and reforest the area. Tree shelters protect seedlings from deer and other animals. These trees may be part of a future tree harvest.**

A portion of the Elk River Project offers a Forest Watershed Enhancement Incentive Program (grant system) to help alleviate some of the landowner's costs. Sixteen landowners have enrolled 3,000 acres in the incentive program.

The grant system allows the Division of Forestry to contract directly with the landowner and reimburses the landowner 75 percent of the cost for the work done on their land. Landowners fill out an application and sign a commitment indicating they will not develop their land for 10 years. A consulting or service forester will then write a plan for the landowner. There are about 90 plans averaging 150 acres per plan in the Elk River area.

"We need more private landowners to work with," Whipkey says with concern. This concern led to the expansion of the watershed area to include Braxton, Pocahontas, Randolph, and Webster Counties. The expansion allows for more education in how proper land management plays an important part in water quality.

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## PARTNERS

The Upper Elk River Project has many partners that were pulled together by the Elk Soil Conservation District. The West Virginia Division of Forestry has provided the forester, Tim Maxey, to be the technical lead in the watershed. The USDA Forest Service (Monongahela National Forest), Office of Water Resources (Division of Environmental Protection), Greenbrier Valley Soil Conservation District, Tygart's Valley Soil Conservation District, West Virginia Soil Conservation Agency, Fernow Experimental Forest, USDA Natural Resources Conservation Service, WVU Extension Service, USDA Farm Service Agency, Sustainable Forestry Initiative, West Virginia Forestry Association, Conservation Education Council, State Tree Farm Committee and the Environmental Protection Agency (EPA) help in funding, publicity services, monitoring and research, and education programs.

## FUTURE PLANS

**Water Quality Monitoring** - The Division of Forestry will coordinate with the WVU Hardwood Center to monitor the water quality of the Elk River and its tributaries. Water quality monitoring is important because it allows foresters to measure the reduction in sediment reaching the watercourses. Also, monitoring will increase awareness of water quality and the importance of forest stewardship issues to landowners.

“We need a water quality monitoring system that is effective,” Whipkey says. “We need to be able to measure water quality protection.”

Once the equipment is received, work will be underway to determine how the water problems have affected the fish population.



**Hunting and fishing camps along the Elk River.**

**Riparian Buffers** - The Watershed Associations are planning a float trip down the Elk River to map areas for buffers. The establishment of riparian buffers will help stabilize functioning streambanks.

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