



Today's Challenges and Opportunities Abundant Clean Water

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Briefing Paper

"The connection between forests and rivers is like that between father and son. No forest, no rivers."

—**Gifford Pinchot, first Forest Service Chief**

"Climate change has been linked to declining snowpacks, retreating glaciers, and changing patterns of precipitation and runoff. The evidence shows that we are entering a period of water scarcity not seen in our history. The national forests were created in part for 'securing favorable conditions of water flows,' the importance of which has grown as populations have grown. We can make a difference by managing national forests and grasslands to restore ecological processes and functions that support clean and healthy streams, lakes, and aquifers."

—**Forest Service Chief Gail Kimbell**

Healthy forests are vital to clean and abundant supplies of water.

- Extensive soil erosion and floods in the United States during the late 1800s caused devastating loss of life and destruction of property. These events prompted the passage of several laws to protect natural resources including one that established forest reserves to preserve natural forest cover in an effort to secure favorable conditions of water flow.
- Approximately two-thirds of the Nation's freshwater resources originate on forested lands, both public and private. Some 180 million people in over 68,000 communities rely on these forested lands to capture and filter their drinking water.
- National Forest System (NFS) lands are located in source areas for many important rivers as well as local and regional aquifer systems. They are the largest source of municipal water supply in the Nation, serving over 66 million people in 3,400 communities in 33 States.
- Major U.S. cities that may seem distant from forests actually rely on water from NFS lands. For example, Los Angeles, Portland, Denver, and Atlanta receive a significant portion of their water supply from the national forests.

Water is an important commodity produced on National Forests System lands.

- The value of water flowing from NFS lands has been estimated to be \$7.2 billion annually.
- Water on NFS lands provides, maintains, and supports other related ecological and societal services such as biological diversity; threatened and endangered species and habitats; spawning and rearing habitat for sport and commercial fish species; and agricultural irrigation, navigation, and flood control.
- National forests and grasslands supply some of the highest quality surface waters in the country, yielding some of the best drinking water and industrial process water sources.



- Close to 75 percent of our Nation's outdoor recreation takes place within 1/2 mile of streams or other water bodies. The 44 million sportfishing anglers purchase goods and services totaling \$41.5 billion annually.
- The national forests and grasslands support over 46 million fishing visits annually, generating over \$2 billion in revenues, supporting about 51,000 jobs, and generating over \$264 million in Federal taxes.
- Reservoirs located on NFS lands provide recreational opportunities, flood control, energy generation for over 18 million homes, and water storage capacity.
- National Forest System watersheds support refugia for rare, endemic species and will play an ever increasing role as climate changes and wildlands are converted to other uses.

The Forest Service manages NFS lands to sustain the Nation's clean water supplies.

- The Forest Service manages more than 400,000 miles of stream and about 3 million acres of lakes that occur on over 193 million acres of NFS lands.
- The Clean Water Act, Safe Drinking Water Act, and Endangered Species Act all seek to protect water and aquatic resources. The Forest Service works with the Environmental Protection Agency, State wildlife and water management agencies, and partner groups to protect, sustain, and restore water resources.
- Threats to water resources and the watersheds that produce them are both human-caused and natural. Degraded water and watershed conditions are due in part to past management practices, large-scale insect infestations, drought, floods, hurricanes, and climate change.
- Catastrophic fires cause serious, short-term impacts to the production and quality of water produced on NFS lands. Over the last 5 years, large wildfires have cost municipal water users over \$300 million due to filtration costs, sediments filling reservoirs, and replacement of water filtration basins clogged with fine sediments.
- Rapid climate change will dramatically challenge Forest Service water management. Shifts in precipitation patterns across the West are changing water availability and flood flows. Warming temperatures and more frequent and larger wildfires are increasing stream temperatures and sedimentation, threatening aquatic ecosystems functions.

The Forest Service provides sound research on water quality and quantity.

- Long-term research studies conducted by the Forest Service have provided much of the current understanding of watershed processes in forests and grasslands both here in the United States and around the world. Such studies will need to be continued to assess the effects of forest and rangeland management on water availability and quality at landscape scales and over longer periods of time.
- Forest Service research and development provides scientific data to distinguish healthy from degraded watersheds and the technical tools for restoring these watersheds.
- Recent Forest Service research is helping the agency understand the dynamics of natural disturbance, which is helping restore and maintain aquatic habitats and the fish that rely on those habitats.
- Collaborative research with other agencies is increasing our ability to measure and model snowpack distributions in the forests, which leads to improved forecasting of water supply. Improved forecasting makes it possible to more carefully operate dams to optimize tradeoffs between flood risks and water availability during dry seasons.

For additional information, see *Water and the Forest Service*, FS-600, January 2000, <http://www.fs.fed.us/publications/policy-analysis/water.pdf>

Forest Service Mission
Sustain the health, diversity, and productivity
of the Nation's forests and grasslands
to met the needs of present and future generations.

