Water Background

Water has been a key factor in National Forest Management since the creation of the National Forests. Proper management of water requires managing healthy forests throughout the watershed and taking appropriate management precautions in all activities. One of the main aspects of protecting water quality is managing the streams and the lands immediately adjacent to the streams.

On the Nantahala and Pisgah, streams and rivers are abundant, although there are few natural lakes. Thousands of acres of manmade reservoirs used for flood control and hydroelectric power generation. The lakes, streams and rivers are a focus of water-based recreation such as fishing, canoeing, kayaking and motorized boating for hundreds of thousands of visitors each year. (See recreation).

From the Nantahala and Pisgah NFs, drinking water is provided to seven cities or towns by either a reservoir or water diversion, four towns by a spring or well, as well as well and homeowner's associations and small farms. Additionally, spring and small reservoirs on the water to individual homes, churches, camps, and a fire house.

Desired Conditions

- Watersheds are resilient and stable, supporting the quality, quantity, and timing of water necessary to protect ecological functions and support beneficial water uses including clean domestic and municipal water use, wildlife and fish habitat, water-based recreation, and fire management activities.
- Water quality is sustained at a level that retains the biological, physical, and chemical integrity of the aquatic systems and benefits survival, growth, reproduction, and migration of native and desired nonnative aquatic and riparian species.
- Water quality meets state and Federal water quality standards and supports designated beneficial uses and native and desired nonnative aquatic species. Short-term exceedance of water quality standards (i.e., temporary period of declining water quality) due to management activity occurs only in the anticipation of long-term improvement of watershed condition and water quality.
- Abundant clean water is produced on the Forest and is available to the increasing downstream public, including meeting community needs.
- The quantity and timing of waterflows in streams, seeps, springs, and wetlands is sustained at a level that retains or enhances essential ecological functions.
- Instream flows provide for recreational uses and wildlife habitat, including fish. They also provide for channel, flood plain, and riparian maintenance, and recharge of groundwater aquifers. Streamflows provide natural movement among native fish populations.
- Stream channels and floodplains are dynamic and resilient to disturbances. The water and sediment balance between streams and their watersheds allow a natural frequency of low

and high flows. Occasional flooding does not disrupt normal stream characteristics (e.g., water and sediment transport, woody material) or considerably alter stream dimensions (e.g., bankfull width, depth, slope, and sinuosity).

- Stream channels are connected to their floodplains and streamside zones so that high streamflow events are processed through the ecosystem without excessive scour or deposition.
- Stream channels degraded by historic activities are exhibiting improved trends in biological and hydrological function.
- Stream channels provide high quality and diverse habitat for aquatic and terrestrial species.
- Large woody debris is frequent in occurrence and is incorporated into channel morphology as single pieces and larger woody debris jams that promote channel form diversity and floodplain <u>inundation</u>.
- Groundwater is maintained in quality and quantity to provide for sustainable Groundwater Dependent Ecosystems and flow to stream channels, thereby sustaining healthy wetland, riparian, and aquatic ecosystems such as seeps, springs.

Standards

- Emphasize the protection of all developed stream channels. Protect the integrity of perennial, intermittent, and ephemeral stream channels, including their banks and beds.
- Minimize the number of stream crossings in the design of roads and trails. Manage activities to meet water resource objectives and attain the goals of the Clean Water Act.
- Prevent visible sediment from reaching perennial and intermittent stream channel and perennial water bodies in accordance with NC Forest Practice Guidelines Related to Water Quality (NC FPGs) (15 NCAC 11 .0101- 0209). Minimize the visible sediment reaching ephemeral stream channels (NC FPGs).
- Restoration of stream channels shall be guided by natural channel design concepts, including <u>reference reach concepts</u> to meet the need of the stream ecosystem.
- Incorporate <u>large woody debris</u> into the design as often as practical.
- Allow changes in the streamflow regime, from roads, timber harvest, etc., when changed conditions would not adversely impact stream function.

Management Approaches

- As part of watershed analyses, conduct surveys of identified sources of impairment from national forest lands and develop appropriate treatments in Watershed Condition Framework Action Plans.
- Incorporate new information from activities into Watershed Action Plans when applicable.
- Participate with state and federal agencies in promoting high quality water resources.