

# Urban Forests & Clean Water

**Trees provide multiple benefits to nurture and protect small streams to large lakes**



Photo: Brian Leon © 2007



## Water Assets

North Carolina has thousands of miles and acres of clean water, providing habitat for wildlife, including fish and game. They deliver hundreds of thousands of dollars in recreational revenues every year and are critical to the regional economy.

## Water Quality

North Carolina has many miles of impaired waters, including many lakes. The main pollutants impacting the region's waters are high levels of sediment and nutrients. Riparian buffers and urban trees can reduce these pollution levels.

## Water and the Future

Water will be critical to North Carolina's growth. It is needed for energy production, advanced industry, and a key asset of the regional real estate market. Many of the trees that protect these waters have been lost, especially in our towns and neighborhoods. New practices are necessary to ensure a successful future.



North Carolina is wealthy in water, including trout waters, shellfish estuaries, many freshwater lakes, and rivers that have fueled recreation and the economy for decades. They have defined the state's past and will be a fundamental part of its future. North Carolina's forests protect these waters from pollution, ensuring their reliability for the state's economy, environment, and families, future and present.

# Water Will Define the State's Future

**Central to the North Carolina's economy and way of life, forests and urban trees protect the state's abundant but sensitive water supplies.**

North Carolina's streams, rivers, lakes, and reservoirs are valuable resources, providing water for drinking, irrigation, fishing and industrial processing. North Carolina is blessed with thousands of miles of water bodies deemed "Good" or "Excellent" by the NC Division of Water Resources measurements of biology and chemistry. These designations generally apply to ecological conditions, but are also used to proactively protect drinking water supplies. North Carolina is fortunate to have ample water supplies to support both residential and economic growth if properly managed.

The State also has thousands of miles of impaired waters which fail to meet water quality standards for biological and chemical parameters. The sources of impairment vary, though impacts from sediment and stormwater runoff are North Carolina's two largest water quality concerns. Sedimentation is a result of erosion that clouds waters, suffocates fish and other organisms, and raises the costs of treating water to drink. Nutrient pollution is due to natural causes, manure from farms, overfertilization of lawns and

farmland, failing septic systems, and failures in larger municipal wastewater systems. The impacts of nutrient pollution can be seen in the dead zones of Chesapeake Bay, where high nutrient levels cause algae blooms and consume all of the oxygen in these waters when they die. Watershed stabilization through proactive and creative development ordinances and buffering stream and river corridors are effective strategies for reducing sediment pollution. All of these practices rely upon greater tree cover in watersheds to intercept pollution.

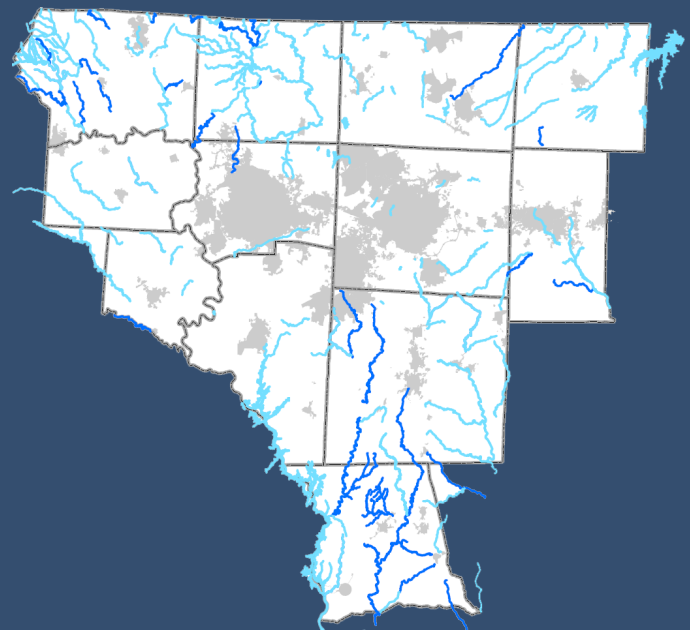
Water demand is anticipated to rise by 25% due to a growing agricultural sector, population growth, and increasing energy demands. While North Carolina has ample storage for freshwater supplies that may be recharged during wet winters, hotter temperatures and more persistent droughts may decrease available stored supplies in the summers (American Rivers 2009). Investments in grey and green infrastructure and greater canopy coverage is central to better ensuring a reliable and sustainable future for the region's waters.

**THE TRIAD'S 596 MILES OF "IMPAIRED" WATERS, NC DENR 2012**



**Assessed Waters (NCDWQ)**  
— Impaired Waters

**THE TRIAD'S 1,602 MILES OF "EXCELLENT" AND "GOOD" RATED WATERS. 2012 NC DENR 2012**



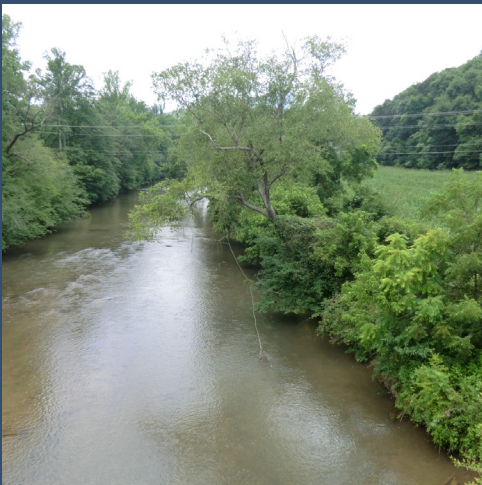
**Good Waters (NCDWQ)**

High Quality Waters  
Outstanding Resource Waters  
Excellent Bioclassification

Trout Waters  
Recreation  
Good Bioclassification



Using the NC Wildlife Resources Commission's Green Growth Toolbox and the NC Forest Service's Urban & Community Forests programs can minimize sprawl and reduce development costs over 30%.

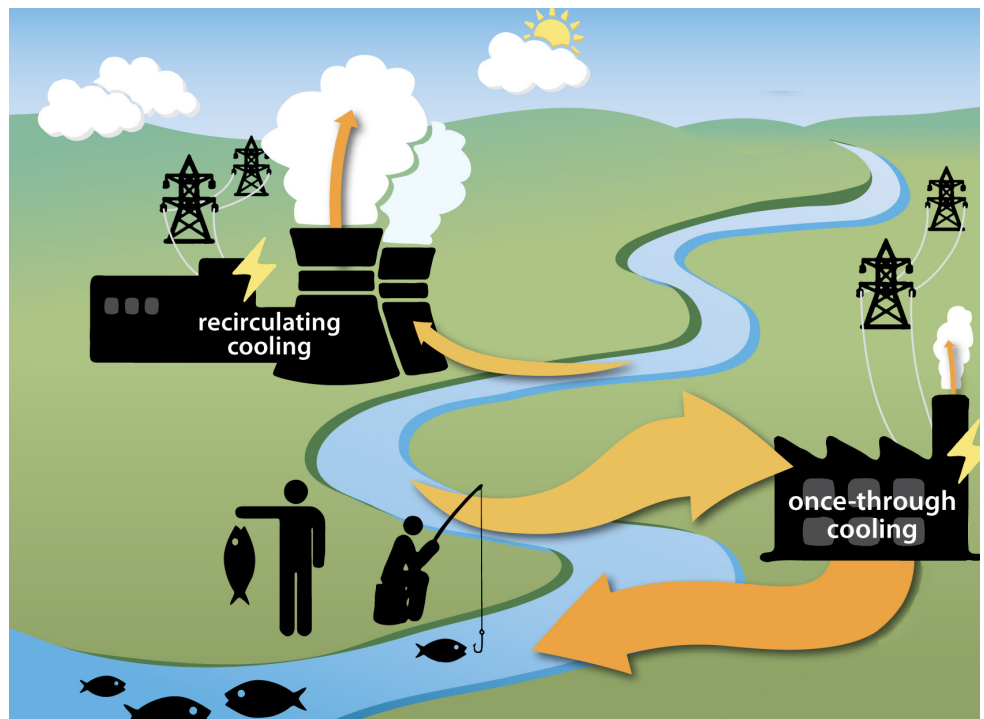


Forested buffers of all sizes provide enormous value for streams and rivers.



Urban trees reduce air and water pollution, as well as cool cities and increase property values. Charlotte's most valuable urban trees return \$150 in services for every \$1 spent.

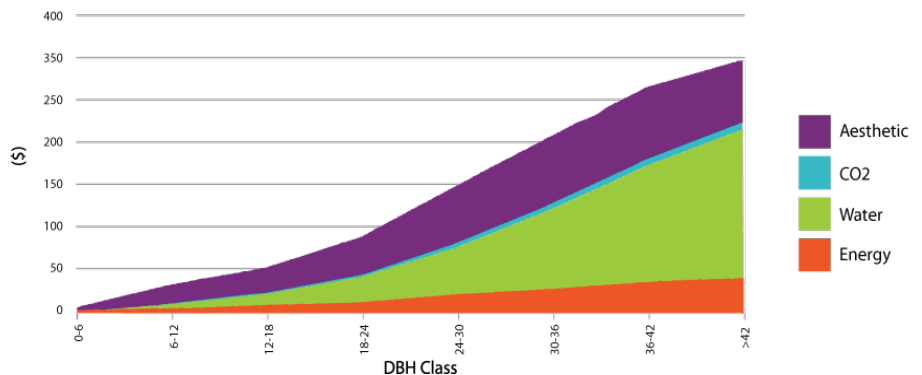
## The Energy-Water Nexus



THE ENERGY-WATER NEXUS, EWWWI, 2011.

Projected to grow from 9.5 million to 12.4 million people by 2030, North Carolina's demand for water and energy will increase significantly. Power plant cooling is by far the largest off stream use of water in North Carolina (Eldridge, M. et al. 2013, 47). During summer months when air conditioning is used more often and water is used by agriculture and residents, there is an increased risk for brownouts.

## Annual Benefits of Trees



AVERAGE ANNUAL BENEFITS RELATIVE TO TREE SIZE IN CHARLOTTE, NC, USDA, 2012

Healthy urban trees with sufficient growing space for their roots and branches actually appreciate in value, and in the value of the benefits they provide. Planning for trees and managing trees properly are wise investments for communities that want to attract and retain businesses and residents.



## PIEDMONT together

Community Choices. Regional Solutions.

In 2011, the Piedmont Triad Regional Council and the Piedmont Authority for Regional Transportation received a \$1.6 million grant from the US Department of Housing and Urban Development. With key support from agencies such as the NCFS, they produced Piedmont Together, a sustainable communities plan for the twelve-county Triad region. It features all of the information in this booklet and more. Please visit us at: [www.piedmonttogether.org](http://www.piedmonttogether.org).

## Using Trees to Protect Tomorrow's Waters

We have many tools to address North Carolina's current and future challenges. This state is one of the fastest-growing states in the country, losing over 100,000 acres of open space every year to urban sprawl. North Carolina is wealthy in water, but we must protect and manage it so there is plenty for business, residents, and the environment tomorrow. Forests can protect drinking watersheds more efficiently and effectively than any engineering solution; stream buffers are the most cost-effective pollutant management system; and trees only increase in value to absorb stormwater and protect fragile urban streams. Trees are necessary

for our waters' future, but we need to include them in our plans, policies, and communities.

### Top Recommendations:

- Enhance all urban canopies so they cover 40% or more of the city's area. This is the turning point where urban trees make a big difference.
- Every community needs a forestry management plan. If you have lots of trees, you don't want to lose them! If you need more, this plan will help you figure out where to put them.



PIEDMONT TRIAD  
REGIONAL COUNCIL

Funding for this project was provided in part through the Urban & Community Forestry Program of the North Carolina Forest Service, Department of Agriculture and Consumer Services, in cooperation with the USDA Forest Service, Southern Region.

*The North Carolina Forest Service is an equal opportunity employer. Its programs, activities and employment practices are available to all people regardless of race, color, religion, sex, age, national origin, disabilities, or political affiliation.*