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N.C. Forest Service
A Division of the N.C. Department of Agriculture and Consumer Services
Steve Troxler, Commissioner

BMP Newsletter

Best Management Practices for Water Quality & Soil Conservation

The photos above are of a frog and perennial stream. The frog was one of many seen along the perennial stream. This photo was taken during a BMP Implementation Survey in Caswell County. The site was located in the Roanoke River Basin and had an average streamside management zone (SMZ) width of 37 feet.

Inside this issue:

Stream temperature

Due to sunlight, excessive removal of vegetation along streams can lead to an increase in stream temperature. An increase or change in stream temperature can affect the survival and ecology of the aquatic life of the streams (Semlitsch et al., 2009).

The magnitude of temperature increase from sunlight is strongly dependent upon bankside vegetation. The average daily stream temperature increase due to sunlight is generally found to be highest in open grassland and lowest in commercial conifer plantations (Dugdale et al. 2018).

Streamside management zones (SMZs) can help control the sunlight intensity and temperature of the water that reaches the stream. Leaving vegetation along streams suitable to shade the channel can reduce sunlight intensity and maintain similar stream water temperatures before forestry operations.

The effect of SMZs moderating changes to riparian and above stream microclimate is another example of how the implementation of best management practices (BMPs) protect the biological and physical integrity of water. *Citations on Page 4.*

BMPs for wetland roads

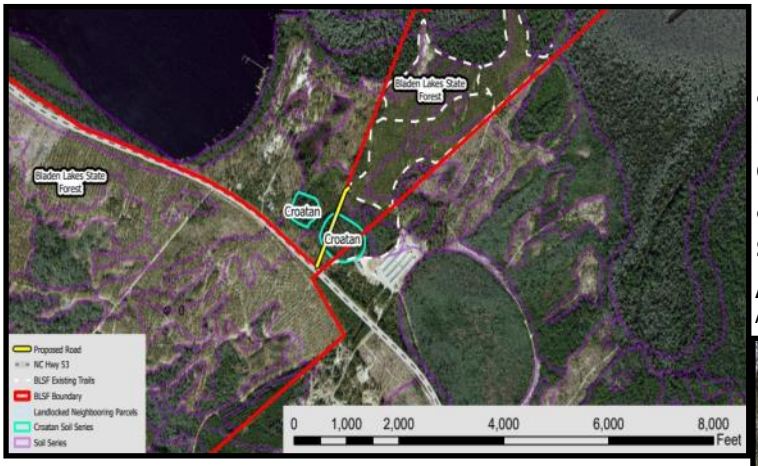
If you need to build a forest road for silvicultural purposes in a wetland or low-lying and flood prone area, pay attention to what the rules say, use all appropriate BMPs and:

1) Only cross a stream, creek or ditch if necessary.
2) Identify and implement a strategy that does not block the natural flow of water across the landscape.
3) When feasible, keep roads at least 50 feet from any creek or natural open water.

Wetland tree species on Bladen Lakes State Forest.

Additional supplemental BMPs may be applicable such as maintaining a daylight corridor along the roadway to allow sunlight exposure to dry out the road and keep it trafficable. For more information, check out Chapter 8, Part 6 of the NCFS BMP Manual.

Bladen Lakes State Forest (BLSF) wetland road



Due to a change in a neighboring property, BLSF lost easement access several years ago and a parcel of BLSF land was landlocked with no road access. A new road was needed to gain access to more than 100 acres of forest and the shortest road included a 563-foot segment through a wetland.

Left: GIS map created to identify wetland soils and assist with wetland road planning on BLSF. Below: BLSF wetland road construction.

Planning ahead and collaborating with stakeholders has been key to a successful project minimizing the wetland impact and length of a wetland road. The photo above shows the proposed road map identifying BLSF boundaries, soil series and roads. Geotextiles will be used to create a firm road bed in mucky soil. The photo to the right is first construction of the wetland road in March, 2024.

Local spotlight: Anson County

The Brown Creek Soil Conservation District in Anson County was established Aug. 4, 1937, making it the first soil conservation district in America!

During the Great Depression, a combination of weather, drought and poor land management practices resulted in severe soil depletion. The Brown Creek Soil Conservation District was created due to local farmers and landowners expressing "that there is a need, in the interest of the public health, safety and welfare, for a soil conservation district to function…". The district consisted of 120,000 acres.

Soil layers from Anson County, NC

The soil conservation district was a success largely due to the participation and cooperation of the local farmers and landowners. The Brown Creek District became the standard for other districts in the future. Additionally, Hugh H. Bennet, later credited as the "father of soil conservation", was born in Anson County within the Brown Creek District (NCDNCR, 2024). Bennet later became the director of the Soil Conservation Service from 1937 to 1952, dedicating his work to bringing soil conservation to a national focus.

The practice of forestry is a major component in the Brown Creek Soil & Water Conservation District with roughly 38% of agricultural land in Anson County being timberland. Today, nearly 90 years later, the Brown Creek Soil & Water Conservation district continues to preserve Anson County's natural resources, agricultural production and beauty.

Biennial Water Quality Meeting

Staff photo from the 2024 NCFS Biennial Water Quality Meeting.

All N.C. Forest Service (NCFS) employees play an integral role in promoting activities that protect and maintain water quality throughout the state. In February 2024, NCFS specialists from across the state met to share lessons learned, review and discuss areas for project improvement in their work areas.

This year, topics included tools for verifying "subject" streams, 4808 forms/updates, suppression repair using Field Map, ranger training updates and more! Additionally, we invited and learned from Janet White, a recipient of the Moreland Gueth Water Quality Award as well as Sue Homewood, senior branch coordinator for 401 and Buffer Permitting.

A big thank you to all attendees for their time and sharing of information.

Did you know?

North Carolina contains several plant and animal species that are listed either threatened or endangered under the federal Endangered Species Act. Many of these organisms live in or near streams.

The North Carolina Wildlife Resource Commission (NCWRC) and U.S. Fish and Wildlife Service (USFWS) have listings of endangered, threatened and protected species as well as their known locations within North Carolina. The list of threatened and endangered species in North Carolina is available on the USFWS website: www.fws.gov/raleigh/es_tes.html

If you suspect that one of these species may be present where you are planning silvicultural activity, consult both agencies for verification and management considerations.

Dugdale, S. J. et al. (2018). Stream Temperature under contrasting riparian forest cover: Understanding thermal dynamics and heat exchange processes. *Science of the Total Environmental, 610(611), 1375-1389.*

NC Department of Natural and Cultural Resources (2024). The Brown Creek Soil Conservation District—First in America (KK-1). https://www.dncr.nc.gov/blog/2024/01/11/brown-creek-soil-conservation-district-first-america-kk-1

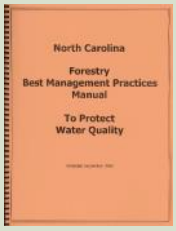
Semlitsch, R. D. et al. (2009). Effects of Timber Harvest on Amphibian Populations: Understanding Mechanisms from Forest Experiments. *BioScience, 59(10), 853—862.*

For recorded and live webinars related to forestry and/or erosion control, check out:

The Forestry & Natural Resources Webinar Portal

How the River Flows Podcast

N.C. Forest Service BMP Videos



Contact your local N.C. Forest Service county office for a copy of the 2021 updated BMP manual!

N.C. Forest Service - Water Quality
www.ncforestservice.gov/water_quality/water_quality.htm

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N.C. Forest Service

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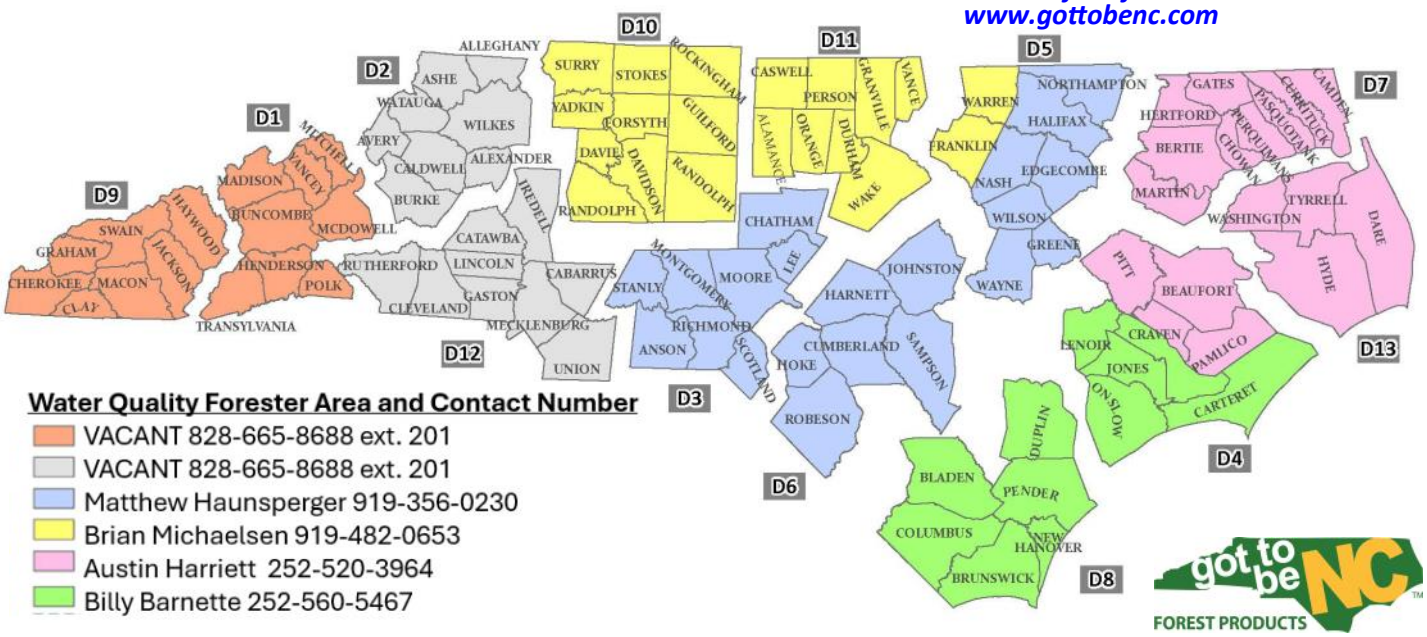

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