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North Carolina 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

This issue's cover photo is from the Linville River Restoration Project at Gill State Forest in Crossnore, NC. Taken May 15, 2020, this picture shows early vegetation establishment alongside a riparian area where a white oak tree is planted in a well drained portion of the floodplain. Other tree and shrub species planted included: persimmon, buttonbush, sweetgum, wild pear, pin oak, and green ash. This perennial stream was restored by removing a low-water bridge, reestablishing the floodplain, reconstructing the stream channel, and enhancing wetland features. Approximately 2,400 feet of stream was restored, resulting in improved habitat for aquatic insects, amphibians and fish.

NCFS Water Resources Branch has engaged in stream restoration projects since 2003. NCFS has completed multiple and different stream restoration projects across state-owned forests of North Carolina.

Lean more about the different Stream Restoration Projects here: https://www.ncforestservice.gov/water_quality/wq_streamrestoration.htm

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Streams on Silvicultural Tracts

Streams can be tricky to classify due to their dynamic nature but classifying them helps ensure appropriate protections. On silvicultural tracts in North Carolina, streamside management zones (SMZs) are required by 02 NCAC 60C .0201 on intermittent and perennial streams. This standard requires that the SMZ confine visible sediment resulting from accelerated erosion.

Streams are always changing, and the underlying geology significantly influences stream dynamics. Classification biases can be affected by drought, heavy rainfall, recent harvests and historical land use. In this newsletter edition, we highlight some important identification characteristics of three stream types.

Read/review SMZ BMPs in
Chapter 4 Part 3 of the N.C. Forest Service BMP Manual

Types of Streams

Ephemeral: a stream that flows only during and for short periods following precipitation and flows in low areas that may or may not have a well-defined channel.

Intermittent: a stream that flows only during wet periods of the year (30-90% of the time) and that flows in a continuous well-defined channel.

Perennial: a stream that flows throughout most of the year (greater than 90% of the time) and that flows in a well-defined channel.

Learn more about the parts of a stream and water resources.

Some Stream Features for Classification

Streams are classified for different reasons and can have varying levels of protection. Streams on silvicultural tracts are among the most well protected. Below are some different stream features foresters use to inform decisions about SMZs.

Ephemeral Stream

⇒ Clumps of leaves in the channel

⇒ Located higher up on slopes

⇒ Generally straight with few curves or bends

⇒ Water flows have not scoured deeply into mineral soil

Intermittent Stream

⇒ Centerline of stream bed mostly free of rooted vegetation

⇒ Channel begins to have more curves (sinuosity)

⇒ Water may or may not be seen depending on time of year

⇒ Stream channel is partially or fully cut into mineral soil for all or most of its length

Perennial Stream

⇒ Stream channel cut down into the earth for entire length of stream

⇒ Water present almost year-round

⇒ Stream channel is curvy, with dips, depressions and sandbars

⇒ Aquatic life present and readily found

Stream Identification Tips for Foresters

1. ***Recent Weather:*** What has the weather been like recently? Can you visit the site multiple times under different recent weather conditions? This may help reduce visual bias due to water in a stream that may not have baseflow or observing during a drought.
2. ***Bed and Bank***: Is the stream clearly defined by a discernable bank and streambed? The bank physically confines baseflow and is typically a vertical or sloping area that rises from the edge of the streambed. This indicator typically diminishes as you move upstream.
3. ***Vegetation***: Are plants present in the channel bottom? This is a common attribute of *ephemeral* streams. As water flow frequency increases, the environment becomes too harsh for plants to establish in the channel. Riparian plant species located along stream margins (rushes, sedges, riparian woody species) can indicate the frequency of wet soils.
4. ***Soil***: Are hydric soils present? A soil auger helps you see how soil changes with depth. Dig into the soil near the toe of the channel. Is the soil brown/red/yellow or gray/green/blue or is there sand covered in organic matter? Brown/red/yellow soil colors generally indicate aeration (lower frequency of saturated conditions). Grey/green/blue colors tend to indicate frequent saturation (hydric conditions).

Top Left: Bed and Bank

Bottom Left: Wetland plants (rushes) established on bank

Top Right: Gray hydric soil (gleying)

Bottom Right: Red oxidized upland soil

Contact the appropriate District Office or Water Quality Forester (page 4) to request a buffer rule stream determination ***before*** harvesting timber.

Upcoming Events:

Western Region Events

Piedmont Region Events

Eastern Region Events

All events are assumed to be canceled or rescheduled due to COVID-19 precautions.

Did you know…

No two streams are the same. Although water flows down hill, the path of least resistance is different across our landscape. Because of this, forest researchers have examined water quality effects of management in several places. Results have helped formulate fundamental principles for protecting water quality on silvicultural lands. While the exact effects on every site are not known, little (if any) data show long-term negative effects of forest management when BMPs are correctly implemented. Contact your Water Quality Forester to learn more (see contacts below).

North Carolina Forest Service
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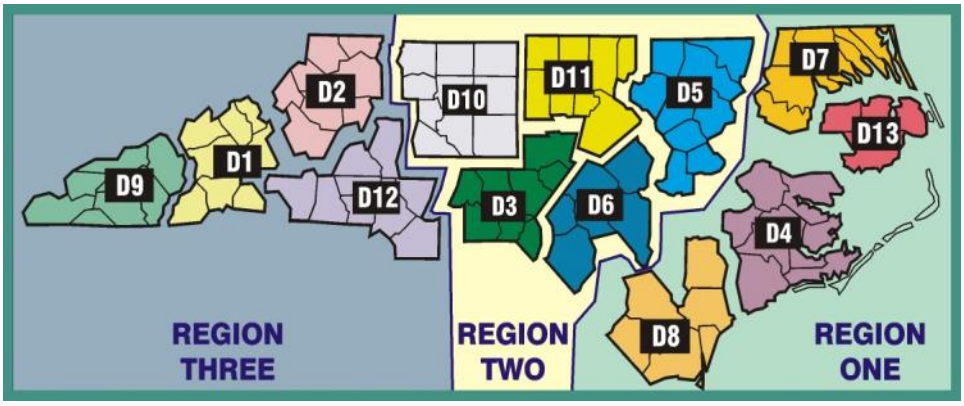

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Western Region

Western Mountains
(D9, D1)
Joe Moore: 828-774-8362

Foothills
(D2, D12)
Richard Cockerham: 704-616-0747

Piedmont Region

Northern Piedmont
(D5, D10, D11 [North of I-40])
Nancy Blackwood: 336-500-3661

Southern Piedmont
(D3, D6, D10 [South of I-40])
Matt Vincett: 910-334-0025

Eastern Region

Northern Coastal Plain
(North of the Neuse River)
[VACANT]: 252-520-2402 *R1 Office*

Southern Coastal Plain
(South of the Neuse River):
[VACANT]: 252-520-2402 *R1 Office*