



## STREAM BUFFER BASICS

# MUDDY CREEK WATERSHED

STORMWATER SMART  
PIEDMONT TRIAD REGIONAL COUNCIL



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### WHAT TO KNOW

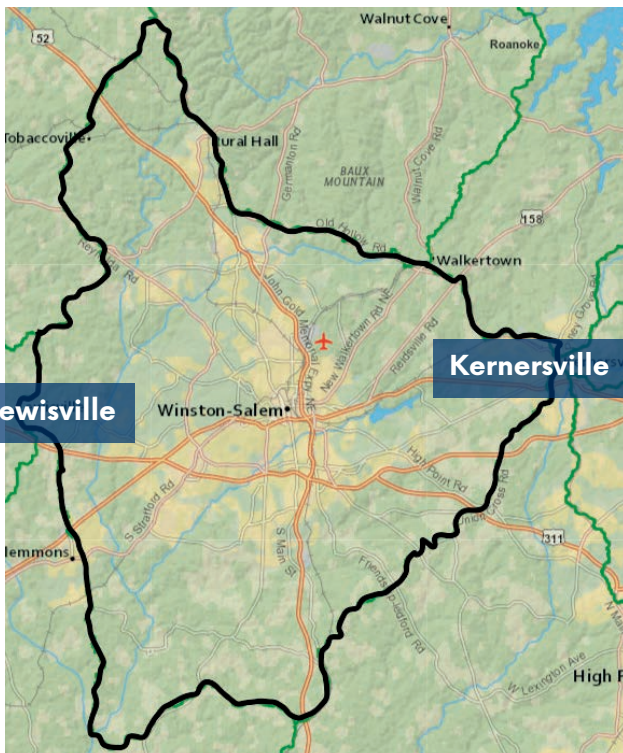
Muddy Creek is a vital water source that flows through numerous communities in the Piedmont Triad region of North Carolina. Stewards of the watershed need to know:

- How Muddy Creek connects to other waterways downstream
- Which pollutants affect its water quality
- What a healthy riparian buffer looks like, and how activities in these buffer zones are regulated and permitted

### QUICK INFO

Area (sq miles).....	256
Miles of Streams .....	376
# of Impaired Streams .....	11
Dominant Land Use.....	Dvlpd. Land
Counties:	Forsyth, Davidson, Stokes

Data pulled from the Watershed Stewardship Network, NC DEQ "Know Your HUC", and [modelmywatershed.org](http://modelmywatershed.org)

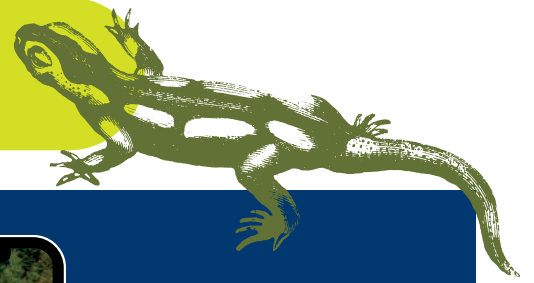


## WHERE IS IT?



Muddy Creek begins in Stokes County and stretches south, joining tributaries like Mill Creek and Salem Creek along the way. It flows south out of Winston-Salem (the fifth-largest city in our state), collecting the drainage from this large "gray" area. **Gray areas** are so-called because of the amount of pavement, roofing, & other **impervious surfaces** that cannot absorb rainwater. When rain hits these hard surfaces, it becomes **stormwater runoff**. Muddy Creek carries this runoff to the southern border of its watershed where the creek joins the Yadkin River. This map shows the **watershed's boundaries** - its highest points of elevation - in black.

# MUDDY CREEK WATER QUALITY



The water quality of Muddy Creek can be listed overall as fair, as there are multiple waterbodies listed as impaired by the NC Department of Environmental Quality. Muddy Creek itself also requires a **Total Maximum Daily Load (TMDL)** for **turbidity**. TMDL's are management plans created to limit the discharge of certain pollutants into waterbodies that already have excessive pollution. **Turbidity** is a measurement of the suspended solids in the water, such as sediment. Muddy Creek connects to several waterways with elevated levels of fecal coliform bacteria, fish tissue mercury levels, heavy metal concentrations, and stream habitat degradation. Read on to find out why it happens and how we can prevent it!

## RIPARIAN BUFFER BENEFITS

A riparian stream buffer is an area running parallel alongside both sides of a protected stream, river, pond, or lake. Stream buffers not only filter pollutants, prevent erosion, and reduce flooding; they also provide habitats for a variety of animal species, many of whom use stream buffers like highways to travel within their range in search of food, water and shelter. Healthy vegetation provides a safe, shaded place to rest and reproduce.



Healthy buffer:  
natural, mature  
vegetation on  
creek banks.

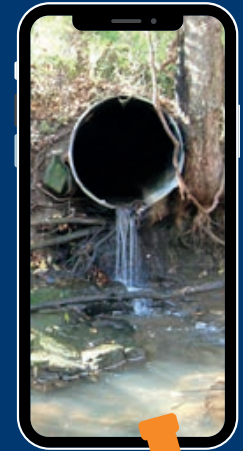


Unhealthy  
buffer: stream  
banks eroded &  
roots exposed



SOIL AND SEDIMENT  
FROM DISTURBED  
LAND ARE THE #1  
SOURCES OF  
POLLUTION IN NC  
WATERWAYS.

Storm systems carry the runoff from rain events to the nearest creek, untreated and unfiltered. Pollution that enters a storm drain ends up harming aquatic life and degrading water quality. If you see or smell noxious discharge at an outfall, or if you witness someone dumping anything into a storm drain, you can help stop the damage by calling 3-1-1 or your local stormwater department (see last page).

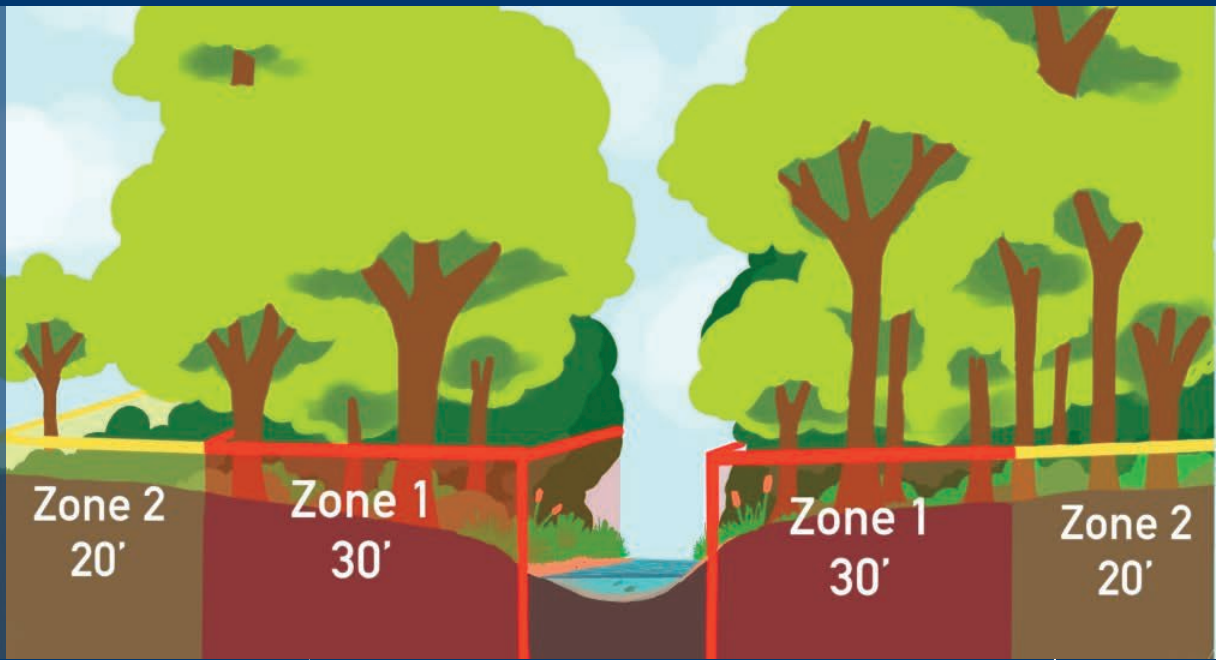


# NCDEQ STREAM BUFFER ZONES

Regulations are set by the North Carolina Department of Environmental Quality (NCDEQ). Permitting rules vary slightly depending on the watershed, but the general rule has the riparian buffer divided into Zone 1 and Zone 2; together totaling 50' of protective vegetation.



PROTECTING THE 50' BUFFER ZONE PRESERVES WATER QUALITY AND ALLOWS OUR NATURAL LANDSCAPE AND ITS WILDLIFE TO THRIVE!



## ●●●●● ZONE 1 ●●●●●

Zone 1 extends from the top of the bank landward for 30 feet on all sides of the stream. Zone 1 has the stronger protections of the two zones, and should have a variety of native grasses, shrubs, and trees.

**NO** clearing, grading or development should take place here. No mowing, tree removal, or pesticide and fertilizer use.

**NO** direct deposit of concentrated water runoff flow, such as downspouts from rooftops and paved areas.

## ●●●●● ZONE 2 ●●●●●

Zone 2 continues landward another 20 feet, creating a 50-foot buffer in total. Grading & revegetation are allowed IF:

- IF no impervious surfaces are added (i.e. paved walkways or slabs)
- IF no trees are removed.

Some stormwater runoff is allowed to enter Zone 2, but the flow must be diffused and traveling at slower speeds. A rock pile or rain garden can help!



## HOW DO I KNOW IF A WATERWAY IS REGULATED?



What may look like a dry ditch during part of the year may be a protected stream that requires a permit for any kind of development. Before doing anything within the 50' buffer that affects stream health (clearing trees and shrubs, adding walkways and structures, applying fertilizer and pesticides, redirecting water flow, etc.) check with your local government for assistance in determining if you are dealing with a protected stream, even if water rarely flows. See the next page for local contact information.

# HELPFUL VEGETATION

There are a variety of important plants that thrive in riparian buffer habitats, with deep root systems to help filter pollutants and stabilize stream banks, preventing the loss of sediment. Here are just a few to look for and prioritize in a riparian buffer near you:

Green Ash



Virginia Sweetspire

Swamp Milkweed (a favorite of Monarch butterflies)



Black Willow



Red Maple



Southern Wax Myrtle



River Birch



## Learn to Assess Stream Health with Stormwater SMART

The local governments listed at left support healthy watersheds through membership in Stormwater SMART. SMART provides free hands-on programming to schools, libraries, civic groups, businesses, and other organizations. Citizen science and stewardship programs like NC Stream Watch (from the NC Department of Environmental Quality) are a fun way to gain scientific skills, enjoy local parks, and improve the health of our waterways! **With NC Stream Watch, people of all ages and abilities can learn how to:**



- Measure nutrient and pH levels
- Observe aquatic species
- Spot signs of erosion
- Identify soil and plant types
- Track trash/litter density
- Locate storm drains, downspouts, and other conveyances

Visit NCDEQ online at [deq.nc.gov](http://deq.nc.gov). From the Divisions menu, select Water Resources.



Contact Stormwater SMART for more information about free stormwater programs in the Triad:

Email [stormwatersmart@ptrc.org](mailto:stormwatersmart@ptrc.org) · Phone (336) 904-0300  
Piedmont Triad Regional Council  
1398 Carrollton Crossing Drive Kernersville, NC 27284

### LOCAL GOVERNMENT PARTNERS

#### Lewisville Planning Dept

T: (336)-945-1020  
6510 Shallowford Rd,  
Lewisville, NC 27023

#### Kernersville Stormwater

T: (336) 996-7166  
509 Michael Street,  
Kernersville, NC 27284

For stormwater education or issues in Winston-Salem:

T: (336)-748-3070  
101 North Main Street  
Winston-Salem, NC 27101



**STORMWATER SMART**