

# High Rock Lake Nutrient Rules Engagement Process *Riparian Buffer Meeting 2 Notes*

April 27, 2023 / 3 :00 – 5:00 pm / Virtual via Zoom

## Meeting Goals

1. Identify and discuss buffer protection research
2. Reach consensus on buffer protection rule watershed coverage
3. Reach consensus on buffer protection width and zones
4. Approach consensus on forest harvest allowances

## Participants

**TAG Members:** Rabih Abou-Rizk, Rob Baldwin, Richard Cockerham, Chuck George, Keith Larick, Edgar Miller (early departure), George Morris, Siham Muntasser

**DWR Team:** Rich Gannon, Joey Hester & Ellie Rauh

**NC Forest Service:** AJ (Last Name?). Maria Polizzi from Raleigh's Central Office, Water Resources Branch

**DSC Facilitation Team:** Will Dudenhausen & Laura Swartz

**Observer:** Judy Stalder, Steering Committee

## Meeting Summary

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### Agenda Overview

- ❖ Welcome & Introductions
- ❖ Overview of agenda & review of ground rules and consensus
- ❖ Review of Regulatory Charge
- ❖ Review of buffer protection research

- State support, analysis, defense of buffers
  - Buffer protection width and zone
  - Forest harvest allowances
- ❖ Review & identify rule concept recommendations
  - ❖ What else could the buffer rule be designed to accomplish?
  - ❖ Next Steps
  - ❖ Closing

### **Actions from this meeting**

*At future meetings, the Buffer TAG will continue to discuss and move toward consensus on the following:*

- Forestry harvests, especially inside the inner 10ft zone.
- Increased protections for and explore precedents around steep slopes, floodplains, and other sensitive areas, including those areas of higher nutrient loading.
- The issue of buffer zone width and preliminary proposal of Buffer rule, overall.

### **Other next steps**

- Joey Hester will follow up with Edgar Miller regarding DOT documents.
- **All Stakeholders Meeting** (*in-person*):  
 Wednesday, May 31, 2023; 2 - 5pm  
 Salisbury Civic Center  
 315 S. Martin Luther King Jr. Ave.  
 Salisbury, NC 28144
- **Next Buffer TAG Meeting** (*virtual*): Wednesday, June 21, 2023; 1 – 3pm

### **Key Links**

- [Updated Charge Document](#)
- [NJ Steep Slope Model Ordinance Template](#)

## Detailed Summary of Meeting

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### Introduction, Purpose, and Review of Agenda

- The Buffer Technical Advisory Group (TAG) had a later start than some of the other groups. Since this is only their second time gathering, there was a round of brief introductions.
- This meeting included attendance from:
  - Regular TAG members
  - Judy Stalder, a Steering Committee member interested in observing
  - Representatives from the Water Resources Department of the Central Office of NC Forestry

### Review of Regulatory Charge

#### Key Points

- High Rock Lake in is violation of NC's chlorophyll-A water quality (WQ) standard
- Nutrient Management Strategy rules are designed to address the issue (reduce nutrient loading).
- Modeling indicates that 40-50% reduction in nitrogen and phosphorus loading are necessary.
- Riparian buffer protection improves nutrient cycling and stabilizes streambanks.
- Buffers have co-benefits, but the rule cannot be designed to address them.
- National Fish & Wildlife Service/Wildlife Resources Commission are in charge of endangered species management.

#### Key Considerations

- The objective of this Buffer TAG is to make recommendations for buffer protection for the High Rock Lake watershed. Buffers provide a defense against an active deterioration of stream banks which exacerbates nutrient loading.
- The intention is not to revegetate buffer zones—that is beyond our regulatory charge.
- When there is a change of use indicated by a permit, then we want to trigger a restoration of that buffer area and a revegetation of the zone that is protective of water and stream quality.

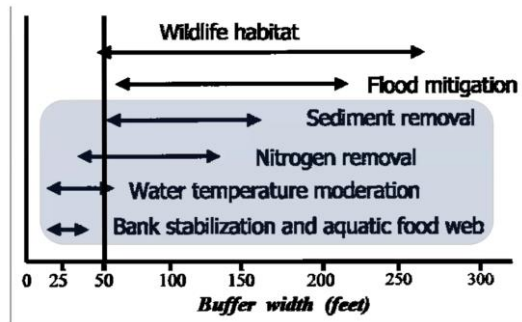
## Review of Buffer Protection Research & Discussion

Joey Hester shared extensive research around buffer protection while Rich Gannon provided important political and legal context around the fifty-foot buffer width figure.

### Key Points

- There has been extensive research demonstrating the efficacy of riparian buffers considering flooding, nutrient loading, wildlife management and conservation.
- Environmental Review Commission, 2016: “The buffer rules were adopted specifically to address nutrient, sediment and pollutant loading as part of the larger management strategies that also require reductions from municipal and industrial dischargers and agriculture (as required in G.S. 143-215.8B). Scientific literature demonstrates that 50-foot riparian buffers on intermittent and perennial streams perform many functions that protect water quality, including nutrient, sediment and pollutant removal, stream bank stabilization, and temperature control.”
- DEQ Literature Review, 2012:
  - o If buffer protections were removed from existing residential development in the Neuse and Tar-Pamlico River Basins, nitrogen load would increase by ~20% and 25% respectively, compared to nitrogen load to streams from both points and nonpoint sources in each basin.
  - o If buffer protections were removed from all developed and agricultural lands in the Neuse and Tar-Pamlico River Basins, nitrogen load would increase by 130% or more than double, compared to nitrogen load to streams from both points and nonpoint sources in each basin.
- Meta-Analysis from Mayer, et.al., 2007 examined the results of 89 buffers from 45 published studies and concluded that riparian buffers were very effective in removing nitrogen from water flowing through the riparian zone. Specifically, they found that a 50-foot-wide riparian buffer removed about 70% of the total nitrogen entering the buffer through stormwater.
- Research for the fifty-foot buffer has been vetted by various Nutrient Management Strategies (NMS) including the Neuse and Tar-Pamlico strategies.
- The fifty-foot buffer is a reasonable buffer width that sees meaningful treatment and streambed protection, without disrupting or discouraging development prospects for local government.

## Minimum Buffer Widths for Specific Objectives



- Additional citations demonstrating riparian buffers as effective protection:
  - o NC Conservation Network, 2016.
  - o Burchell 2016 report to Environmental Management Commission.
  - o Dillaha, et. al. 1988 found that even a fairly narrow buffer of 15 ft removed 76-87% of sediment while wider buffers of 30 ft. were more effective and removed 88-95% of sediment.
  - o Wenger 1999 reviewed four published studies and round that a 30ft wide riparian buffer removed 46-79% of the total phosphorus.

## Key Questions

Rabih (Rob) Abou-Rizk and Edgar Miller shared concerns regarding existing development without buffer protection that would be grandfathered into this nutrient rule management strategy. Mr. Abou-Rizk had the following questions:

*Regarding development in the HRL watershed*

- What percentage of the HRL watershed is undeveloped?
  - o Joey Hester used the most detailed State survey and performed a GIS analysis. It showed tree canopy coverage along 70% of the streambanks in the watershed.
  - o He shared that additionally, agriculture land is already buffered. If you were to examine the watershed in aggregate and not just in areas where people tend to travel, there are significant areas of intact riparian zones.
  - o Rich Gannon also shared that Dr. Deanna Osmond's survey of agriculture land presented a small percentage of stream adjacent land that was unbuffered.

Mr. Abou-Rizk requested further clarification of the role of buffers in other nutrient management strategies.

- How much actual nutrient loading will buffers help to achieve? What benefits are being achieved by newly established buffers in other watersheds? Are other nutrient management strategies achieving their desired effects?
  - o The DWR team clarified that buffers themselves do not achieve a meaningful reduction. Rather, buffers hold the line. Rich Gannon shared what was seen after the implementation of a nutrient management strategy in the Neuse River Basin.

There were significant reductions in overall nitrogen loading to the estuary in the first years of the rule. Unfortunately, there was an uptick in organic nitrogen inputs in the estuary. Research has shown increases in tropical storms resulting from climate change has contributed to this organic nitrogen loading.

Edgar Miller shared the following concerns and appeals, emphasizing he would like to see an increased width of buffers (an appeal shared by Mr. Abou-Rizk).

Joey Hester noted the importance of balancing competing interests. He reminded the group that the State has had a long history of dealings to reach the 50-ft width. He stated that they need to consider realistically what is legal, enforceable, and cost-effective. 50-ft was the optimal width that demonstrated efficacy across many specific operations including:

- o Stream bank stabilization
- o Water temperature moderation
- o Nutrient removal (from surface level waters)
- o Sediment removal
- o (some) Wildlife Management
  - There is no immediate need for wildlife management in High Rock Lake.
- o Fish are not affected by current nutrient loads.

Joey Hester posed this question to the group: *Should we expand buffers in areas with high nutrient loading?* Edgar Miller and Rabhi Abou-Rizk noted they would like to see Special Buffer Protections in Sensitive Areas.

- Joey Hester shared that the State has not dealt with steep slopes nor floodplain management as a part of nutrient rule management strategy. But Joey Hester shared that they are open to recommendations.
- Judy Stalder noted that building within the floodplain is permitted with special conditions (i.e., to build the structure elevated above the floodplain).
- Joey Hester noted that these rules will be carried out at the local level with local ordinances which makes the One Water approach particularly attractive.

### Homeowner/Developer Education for Fertilization & Illicit Discharge

- Edgar Miller shared a personal anecdote where a relative overfertilized his land. He wants to see education for homeowners and developers around the issues of fertilization.
- Mr. Hester noted that there are limitations with what education can accomplish regarding fertilization and illicit dischargers. He added that the topic may be more appropriate for the Agriculture TAG.
- Rich Gannon shared that Jordan and Falls Lake rules have existing fertilizer and illicit discharge education components.

### Incentives for Further Protection

- Edgar Miller asked if nutrient trading for credit is currently active.
  - o Joey Hester responded that the marketplace for credits is created by NMS and that nutrient trading is not occurring at this time.
- Mr. Miller highlighted the work of CREP (Conservation Reserve Enhancement Program). He would like to see stream restoration projects and incentives initiated by the rule.

## Review & identify rule recommendations

Joey Hester shared the buffer rule used in other Nutrient Management Strategies.

### Key Points

- A 50ft vegetated riparian area, protected
  - Zone 1: inner 30ft
  - Zone 2: outer 20ft
- Applies equally to all surface waters in the entire watershed
  - Perennial
  - Intermittent
  - Hydrologically connect ponds
  - Lakes and reservoirs
- Existing and ongoing uses in the 50 ft area protected, but a change of use invokes buffer protections.
- Forest harvest allowable in zone 2 w ground cover reestablishment, select harvest allowable in zone 1.
- SCM conveyances allowed.

## Key Questions

### Forest Harvesting

- Siham Mutasser asked for an elaboration of the ground cover re-establishment rule.
  - o Rob Baldwin and Maria Pillozzi shared that slash is mostly used to as groundcover, and grass is sometimes recommended. Replanted trees are permanent ground cover.
  - o Joey Hester mentioned that the re-establishment rule is the congruent in agriculture.
  - o AJ Lang stated the capability of forest soil to infiltrate and to hold is far greater than that of topsoil or soils that have been tilled (in agriculturally developed lands). He noted, “oftentimes we do not see grass replanted, and we do not see it as necessary. Forest returns to forest.”
- Siham Mutasser: How exactly does forest return to forest. Is the tree replaced?
  - o Joey Hester: The landowner or timber forester would (eventually) plant another tree.

The DWR team asked for feedback from the Buffer TAG around application of the rule. Joey Hester mentioned that DWR wants feedback from members of the Buffer TAG on the issue since this group has relevant experience that could provide further insights to share with the Steering Committee. Mr. Hester noted that the area upstream from Kerr Scott Dam is largely undeveloped. Should this strategy apply to the entire watershed? Or stop at the Kerr Scott Dam?

- Keith Larick said he would want to see specific information on how effective the strategy would be when applied only to a portion of the watershed. Likewise, he would like to see information on what would be expected regarding inclusion of all vs only those local governments experiencing growth.
- Grace Messinger asked for clarification around the process, noting that the Steering Committee is also working towards making a decision around whether or not the NMS would apply to the entire watershed. She added that Andy McDaniel let her know that as of 2022 there is an impairment at Kerr Scott Dam. As such, given the current undeveloped setting of the areas, it would be imperative to have buffer protections.
- Joey Hester confirmed there is an impairment and DWR has discussed this with NC Forestry. At this time, the source of the impairment is unknown. There has not been growth nor change of land use.
- If the impairment proves to be an ongoing problem, then it does speak to the need to have buffer protection all the way through.



- Siham Mutasser asked in which County the dam is located and if this TAG includes representatives from that County?
  - o Joey Hester: the dam is at the top of Wilkes County, and most of the drainage occurring in Alexander County. He noted Rob Baldwin is from Wilkes County Soil and Water. (There are no local government officials from Wilkes County in this TAG).
- Maria Polizzi made a case for the most uniform application and the most consistent rules. She shared that in her experience, the more there are differences in different areas, the more confusing the rules can be to follow. If the rule is confusing to understand and follow, then enforcing it will be much more difficult.

### **Key Considerations**

- Discussions have been very productive and are moving towards a consensus.
- More conversation is needed. TAG members wanted to continue the discussion around the buffer width and special protections in sensitive areas, like steep slopes and floodplains.
- George Morris recommended no forest harvesting in the innermost zone of the buffer. This is to be discussed further at the next meeting on June 21, 2023.