Nutrient Scientific Advisory Board Meeting Summary
March 2, 2018 @ TJCOG
9:30 am – 12:00 pm

Attendees

Members / Advisors
Michael Burchell - NCSU
Brian Burkhart - Chatham County
Sally Hoyt - UNC
Brian Jacobson - AECOM
Josh Johnson - AWCK
Eric Kulz - Cary
Haywood Phthisic - LNBA
Deanna Osmond - NCSU
Peter Raabe - American Rivers
Peter W. Schneider - Greensboro
Allison Schwarz Weakley – Chapel Hill
Forrest Westall - UNRBA
Sandra Wilbur - Durham

Facilitator – Dispute Settlement Center
Andy Sachs

Guests
Teresa Andrews - Guilford County
Anne Coan - NC Farm Bureau Federation
Keith Larick - NC Farm Bureau Federation
Alix Matos - Brown and Caldwell
Frank Park - Guilford County
Sushama Pradhan - NC DHHS
Jen Schmitz - TJCOG
Sarah Waickowski - NCSU

DWR Staff www.deq.nc.gov/nps
Patrick Beggs
Rich Gannon
John Huisman

Agenda Topics

1. Discuss comments and responses to Buffer Improvement in Developed Areas practice.

   Meeting Materials are available online: www.deq.nc.gov/nps

Meeting Summary

Andy Sachs opened the meeting with introductions and a review of the agenda.

The February 2, 2018 meeting summary was approved.

Buffer Improvement Credit Discussion

A new draft of the Buffer Restoration practice was sent out in January 2018. Comments were collected from NSAB and other interested parties. DWR staff summarized the comments into four main themes and added potential responses. Those comments and responses were shared in February. At the March 2 meeting, participants discussed the buffer restoration practice. We've captured as much of that conversation as possible below, and categorized it for ease of reading.

Groundwater

- Most of the nitrogen removal we see with buffers comes from groundwater processing. This credit practice is written so that it sounds like a stormwater (surface water) BMP, but it's unclear how

shallow ground waters are affected. The practice may be written in a way that is scientifically off-base.

- The contribution of shallow groundwater to urban stream inputs is unclear. In addition, urban stormwater nitrogen concentrations entering buffers are generally low relative to other sources.
- The buffer isn't going to work for nitrogen if the flow doesn't reach the groundwater. If those backyards/areas have continuous stream flow, then yes; if they are only active during rain events, no.

Sediment and Phosphorous

- North Carolina soils are very low in phosphorus unless it's artificially added; therefore, sediment from stream banks is not a big input of phosphorous. Therefore, urban buffers won't help much from the streambank stabilization standpoint.
- Anecdotally there's not a lot of sediment exporting off established urban areas.
- Anecdotally there can be significant sediment from established urban areas, e.g. slopes where poor plant cover on poor clay soils.
- What about sediment from construction sites, which are mostly found in urban environments.
- Buffers aren't doing anything for soluble P. And where sediment-attached, the buffer needs an herbaceous zone. Forested zones just re-concentrate flows.
- If urban runoff doesn't have much sediment, why do wet ponds work so well?
- Soluble P is not reduced. The main point is that soluble and sediment P should be evaluated separately.
- How much does home-applied fertilizer attach to lawn sediment? Answer: Research suggests most homeowners apply once in the spring and then give up fertilizing.
- Buffers don't work if there are a lot of fines.
- In Jordan, there is legacy sediment as input – infiltration would reduce this and should factor into credit. Additionally, it would help groundwater input.
- If the runoff infiltrated to groundwater, there would be denitrification but not phosphorus reduction.
- But the sediment would be removed and attached phosphorus removed.

Data and questions

- A survey of buffers on golf courses found the nutrient reduction was very minimal.
- Another buffer study looked at various lawn care methods, and found that there isn't that much nutrient loss in surface water from lawns. Nothing rivals runoff of nutrients from ag land. That's just one study that reinforces that buffers are not that effective in urban environments. Also, that which runs off lawns goes into storm drains.
- When it comes to buffers, if concentrations and flows are both low and unpredictable, buffer success is much more variable and hard to determine than other BMPs.

- We need clarity on the nitrogen reduction percentages. Are they too generous as is? Answer: Yes, agreed, they are too generous.
- When we look at riparian buffers in studies, we are looking at nitrate. Some surface flow does contain TKN, but we don't look at that because it's a tiny amount. Urban environments wouldn't take this into consideration.
- Another main takeaway is that hydrology drives these systems, and urban hydrology is all over the map. It is very difficult to measure or quantify to credit across the board.
- Do we know the magic threshold where it's too low to get any reduction? Answer: No.
- It makes sense to establish a number that is the standard for effluent from a buffer.
- One main takeaway is that the lower the amount of nutrient coming in the input, the lower relative percentage of removal can be expected.

Buffer choice, design, and alternate value

- This is a buffer improvement practice through restored buffer areas. It is important to consider the benefits to hydrology, etc. are better than just saying there's no benefit to nutrients.
- The type of buffer is important. It needs to be herbaceous vegetated, NOT forested, otherwise the flow can go right through without depositing nutrients and sometimes even form channels. The best buffers would be a strip of herbaceous vegetation, followed by a forested area.
- We need to separate what other things we like about buffers from the science about nutrient effectiveness.
- The practice currently has a lot of maintenance and upkeep requirements. People need to keep that in mind too.
- May need to revisit the idea of the 2-zone buffer to provide a meaningful credit for phosphorus reduction. That would be difficult to achieve with anything less than a 30-foot buffer, so that's being proposed. Perhaps a simple percent reduction would be the answer.
- A 30-foot buffer shouldn't be a requirement, since some urban environments only have 20 feet available. We don't want to discourage using that 20 feet because it's not 30 feet.
- Herbaceous buffer zones are easily getting blown out by stormwater; forested buffers wouldn't do this!
- Do buffers help with infiltration? Answer: Yes, if constructed correctly
- My concern with over crediting this practice is whether a municipality would choose to use a buffer in lieu of another BMP?
- The credit is extremely low, so it isn't generally considered as a nutrient practice.
- Foresee this practice being used in addition to other practices, not instead of.
- But we need to make it something implementable for municipalities. What are the benefits of 20 feet vs 30 feet?

- Trees are better than no trees, no matter what. If you only have 10 or 20 feet, it's better to create a buffer than no buffer, especially for stream health. You can get by with 20 feet as a buffer, as most 'bang for your buck' is in the first 10 feet.
- Would we be able to add in and count landscaped areas as part of buffers?
- Knowing how to plug buffers in with other, existing things like sewer easements, etc. would be very helpful.
- We need to encourage the use of buffers in conjunction with other things like sewer easements as herbaceous zones, especially if minimum width is as low as possible (10 feet) to encourage this.

Looking forward

- Buffers seem to have a lot of uncertainty, so right now there is little incentive to use or implement.
- Agreed, there is very little incentive. It would be good to see it credited. Would also like to see some equity with the nutrient banker credit (bring them to the table?).
- Multiple people mentioned concern for over-crediting because if the reduction credit is high, nobody will do any research to evaluate effectiveness and true reduction of buffers. If we set it low, research may be conducted to try to prove it should be higher, and that will be valuable information.

Restrictions

- Could we be creating an erosion problem by encouraging sloping in the riparian areas?
- There should be slope restrictions.

Credits

- We have learned the credits we give are grossly optimistic. It's very hard to lower credits, and easy to raise credits. Keep this in mind as we discuss options.
- We want a credit even if it's tiny.
- It's ok if there's no phosphorus credit.

DWR staff will continue to work with subject matter experts and interested parties to develop a new draft of this practice.

Closing comments

The NSAB will meet April 6, 2018 9:30 am at TJCOG.