

# NC Nutrient Scientific Advisory Board Meeting Summary

January 3, 2020 @ TJCOG

9:30 Am – 12:00 Pm

## Attendees

### Members / Advisors

Drew Blake – Chatham County  
Michael Burchell – NCSU BAE  
Sally Hoyt – UNC  
Bill Hunt - NCSU  
Josh Johnson – AWCK  
Eric Kulz - Cary  
J.V. Loperfido – Durham  
Andy McDaniel - NCDOT  
Haywood Phthisic - LNBA  
Allison Schwarz Weakley - Chapel Hill  
Sarah Waickowski – NCSU  
Forrest Westall - UNRBA  
Sandra Wilbur - Durham

### Guests

Anne Coan – NC Farm Bureau Federation  
Jacob Dorman – Contech Engineering Solutions  
Tom Hill – NC DSWC  
Alix Matos – Brown and Caldwell  
Dan McLawhorn - Raleigh  
Ian Peterson – Durham  
Wesley Poole – Orange County  
Sushama Pradhan – NC DHHS  
Rick Savage – Carolina Wetlands Association

### DWR Staff [www.deq.nc.gov/nps](http://www.deq.nc.gov/nps)

Rishi Bastakoti  
Patrick Beggs  
Trish D'Arconte  
Amin Davis  
Jim Hawhee  
Kelsey Rowland

## Agenda Topics

- Approve meeting summary from November 1, 2019.
- Learn about NCSU Dept. of Biological & Agricultural Engineering stormwater management

**Meeting Materials and NSAB Charter are available online:** [www.deq.nc.gov/nps](http://www.deq.nc.gov/nps)

**The NSAB will plan to meet February 7, 2020, 9:30 am at TJCOG.**

## Meeting Summary

Patrick Beggs (DWR) opened the meeting with introductions and a review of the agenda.

**The November 1, 2020 meeting summary was approved.**

## Regenerative Stormwater Conveyance (RSC) and Sand Filters

Dr Bill Hunt - NCSU Biological and Agricultural Engineering – presented some of the latest work on these two stormwater control measures. His slides are available at the Meeting Documents section of the [NSAB website](#)

### Discussion of regenerative stormwater conveyance:

- The projects studied were not designed for a ¼ inch storm, the results are cumulative, not specific to a storm size.
- The Alamance County RSC was designed for the 100-year storm.
- The Brunswick County RSC was not damaged by Hurricane Florence.
- Total surface outflow mimics pre-development conditions consisting of no impervious surfaces.
- In the Durham RSC, the individual pools did not dewater. The upslope of point of intermittency was extended. In lower pools, everything got saturated and water overtopped. It is Triassic soils and the water table is high.
- If RSC is approved as a stormwater treatment measure, it could convert a jurisdictional stream to a nonregulated waterbody. We need to distinguish between what's used in regulatory vs nonregulatory setting.
- The UNC RSC was expected to drain between storms but it doesn't. It may have restored baseflow conditions. There was previously a piped stream there, a perennial point one.
- We need to distinguish the differences RSCs are generally used for: stormwater control practice, flow regulation, water quality benefits, ecological benefits.
- Raising the point of intermittency lets us consider using riprap versus media or using less media or media that encourages wetland plant growth, if there is good sun exposure.
- Media does not seem to increase denitrification where Triassic soils are present.
- If there is instream erosion, other practices can be used in jurisdictional streams.
- From a stream permitting perspective, is this considered mitigation or an impact, etc?
- The DOT RSCs weren't even intermittent streams so this was not an issue.
- The UNC RSC is considered a restoration because the perennial stream had been piped. The project did not receive mitigation credit.
- Permitting for stream restoration is a nationwide permit and not difficult to obtain.
- RSCs may be about safely conveying water and preventing erosion.
- DOT has developed a design variant for even larger watersheds.
- Morrisville project lesson: undersized RSCs provide negligible water quality improvement.
- Experimental RSC on NCSU campus draining a parking lot, and seeping through media measured a 50% TN removal.
- Some important points:
  - It seems if a gully is big enough and the RSC can treat enough of it, there will be water quality improvement.
  - It is necessary to identify the point of intermittency.
  - Cell #1 acts as a forebay so treat and design it accordingly
  - Encourage vegetation
- A properly sized RSC will take erosion pressure off a channel. It is a good practice to use if you're trying to get water quality improvement in addition to alleviating erosion.
- We need to put more thought into the value of preventing erosion.
- NCSU is working with DOT to determine how far downslope a pipe outfalls erosion is present. Looking at some design standards to minimize erosion by 2021.

- DOT is working to come up with a predictive tool for these outfalls to determine what, if any, kind of practice to install.
- RSCs are the only regional SCM that doesn't include a lot of ponded water.
- RSCs preventing “zero order” streams (gullies.)

#### **Discussion of sand filter research**

- In urban areas, we don't have room for above ground filters so we need to use underground filters but the research all seems to be on above-ground filters.

### **Subsurface Gravel Wetlands**

Sarah Waickowski - NCSU Biological and Agricultural Engineering – presented some of the latest work on this stormwater control measures. Her slides are available at the Meeting Documents section of the [NSAB website](#)

- Gravel wetlands are not yet an approved practice. They're kind of like a mix of a sand filter and a bioretention cell. They are a structural option for wastewater or stormwater treatment, provided by using horizontal flow through saturated gravel bed.
- The premise is to have a permanently saturated gravel layer (includes internal water storage pipe.)
- Gravel wetlands are more like bioretention than like stormwater wetlands; they have a basin without constant ponded water. This eliminates concerns about safety associated with stormwater wetlands.
- There's very limited data about how well gravel wetlands treat stormwater. They are an approved SCM in MD, NH NJ, and TN. Use NH specifications.
- Not looking for infiltration into in situ soil; but instead want an impermeable layer below, therefore this practice may work well in Triassic soils.
- Pretreatment is necessary

#### **Discussion of subsurface gravel wetlands**

- These wetlands eliminate typical wetland safety issues (drowning, mosquitoes) and are good for compacted or Triassic soils. Bioretention is better for N and P removal, though.
- There is some research into biota that develops in the system? Phragmites works best in these.
- These can be smaller than stormwater wetlands by a little bit.
- These are not used downstream of package plants that we know of.

## Discussion of Upcoming Agenda Items

- Members asked for presentations by the Collaboratory modelers. [This has been arranged for Feb 7, 2020.]
- Are people more interested in talking to the modelers, or the people who wrote recommendations? ANSWER: Both.
- NSAB likes the continuity of frequent meetings. Has decided in the fall of 2019 to not go more than one month without meeting.

## Updates and Comments

DWR staff: JLOW is kicking off workgroups outlined in its workplan; if you signed up for one, you'll get an email from the leader of that workgroup.

DWR staff: JLOW is how DWR is moving forward with Jordan Rule Readoption outreach and stakeholder involvement process. In addition to stakeholders involved in JLOW, DWR is seeking out those that are not involved and will be educating interest groups about the best way to be involved. DWR is financially supporting some of the JLOW administration because it expects it to be a more inclusive and expansive public participation program than otherwise possible.

Member comment with agreement among a few others: JLOW might be perceived as softer than the normal rules readoption regulatory framework. The first Jordan rule adoption process was contentious. We need to better understand the JLOW structure. I'm concerned DWR is pushing responsibility off to another entity instead of being the face of it.

Guest comment: Some stakeholder groups such as homebuilders aren't looking at JLOW as rulemaking, and might come to the table if they knew it was informing the bulk of rulemaking.

DWR staff: DWR is planning to be fully integrated in the JLOW process, providing feedback throughout. We will need to explain how integrated watershed management recommendations can turn into regulatory language and structure. DWR still has to go through the full rules readoption but believes in the collaborative process of involving stakeholders in the most interactive way it can. JLOW provides a collaborative, improved process with the goal of achieving rules that get implemented versus delayed. DWR is learning from the past and improving its rule development process. DWR and JLOW both need and plan to do more outreach.

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