High Rock Lake Nutrient Rules Engagement Process
Stormwater Technical Advisory Group (TAG)
Meeting #6

November 6, 2023 / 1 – 3 pm / Virtual via Zoom

Meeting Goal

For TAG members to share feedback on proposed refinements to tiered post-construction stormwater requirements.

Participants

TAG members: Andy Allen, Brent Cockrum, Jesse Day, Justin Gray, Danica Heflin, Kelway Howard, Keith Huff, Melinda King, Scott Leonard, Andy McDaniel, Zack MacKenzie, Edgar Miller

NC Division of Water Resources Team: Trish D'Arconte, Rich Gannon, Joey Hester & Ellie Rauh

DSC Facilitation Team: Maggie Chotas & Paura Heo

Observers: Judy Stalder of the Steering Committee

Meeting Summary

Agenda Overview

- Welcome / Introduction & purpose of the meeting
- Stormwater Status Update
- Presentation of Revised (2.2) New Development Post-Construction Tiered Requirements
- Discussion
- Next Steps
- Closing

What's Next

DATE	ACTION ITEM
November 6, 2023 – November 17, 2023	Joey Hester will begin drafting language for a tiered structure of Post-Construction SCMs based on the tiered structure shared in the table of his PowerPoint presentation at this 11/6/23 meeting. - TAG members should email Joey Hester with any comments, recommendations, and/or questions. - Rule language recommendations encouraged.
November 28, 2023 **Virtual Meeting** **10am – 12 pm**	Next meeting: *(virtual)* - Call to question: Post-Construction SCMs - This proposal forms the basis for the initial recommendation.
December 2023	Final report to Steering Committee - Includes consensus decisions, split decisions, non-regulatory recommendations. - Steering Committee is expected to approve with their comments/analysis
January 2024	Steering Committee final report expected

Key Links *(for Quick Access)*

- Citrix ShareFile Folder
- DEMLR Technical Memo - Allow SCS Method, March 7, 2014

Detailed Meeting Summary

Introduction & Purpose of the Meeting

A new attendee, Melinda King, joined the meeting. She introduced herself as the Assistant Director of Public Services for the City of High Point. Maggie Chotas welcomed her and the rest of the group. Then, reviewed the agenda and Working Agreements.

Joey Hester shared that the purpose of this meeting was to discuss and gather feedback around a concept revised from June's meeting for new development post-construction stormwater requirements.

Stormwater Status

Joey Hester provided a current status report of the stormwater TAG.

Stormwater TAG Consensus Decisions Made:

- New Development ("New D") Stormwater Rule will include all local jurisdictions.
- Support for a funding-based compliance mandate for Existing Development Stormwater Rule.

HRL Rulemaking Considerations:

- New D rule will move forward as planned.
    - New D rule will not wait on the results of, but may be informed by, SWMM modeling results.
- Rule re-adoption expected to take place at 10 years after implementation date.
- Alternative stormwater objective:
    - Proposed neutralization of nutrient load increases and hydrologic protection
    - This is different from older rules calling for loading rate targets.

Presentation of Revised New Development Post-Construction Tiered Requirements

Joey Hester revised a concept initially presented at the June meeting. This version 2.2 is a tiered proposal for new development post-construction stormwater requirements.

These requirements will be an essential part of the stormwater rules because the addition of impervious cover resulting from new development in the watershed leads to significant increases in sediment/phosphorus delivery, which destabilizes receiving waters to the point of converting them into nutrient sources.

From other watershed nutrient management strategies, DWR has learned that existing low- and high-density thresholds for stormwater treatment have not been sufficient. Further stream stabilization is required to manage levels of phosphorus loading.

2.2 Post-Construction Tiered Requirements

		No curb & gutter within proposed development, including new proposed roads	Curb & gutter included in proposed development
BUA < 6%		• Vegetated conveyances only • Disconnect impervious cover from conveyances • Disperse IC-concentrated flows	Not applicable
6% ≤ BUA < 12%		• Vegetated conveyances only • Disconnect impervious cover from conveyances • Disperse IC-concentrated flows • Treat transportation impervious cover w/ primary SCM or runoff-reducing secondary SCM	• Treat site runoff from 1" w/ primary SCM, including volume reduction requirement (see below), calculated w/ curve number method OR • Treat site runoff from 90th percentile storm w/ primary SCM
12% ≤ BUA	Stream Protection Criteria	*Potential Options for Initial Discussion* • Control the 2yr/24hr post-development peak flow rate to 50% of the 2yr/24hr pre-development level OR • Control the 2yr/24hr post-development peak flow rate to the 1yr/24hr predevelopment level OR • Detain the volume difference between the post-development 24-hour storm and the pre-development 24-hour storm, releasing the volume over 24 hours	
	Water Quality Treatment Criteria	• Treat site runoff from 1" w/ primary SCM, including volume reduction requirement (see below), calculated w/ curve number method OR • Treat site runoff from 90th percentile storm w/ primary SCM	

Basic Components

- Basic conveyance requirements but no stormwater treatment requirements for the lowest density projects (<6% BUA) that do not drain into a curb & gutter system.
- Stormwater treatment requirements for all projects above 6% BUA.
- Water quality treatment options that allow for flexibility when site constraints limit infiltration, including a sizing incentive for practices that reduce volume via evapotranspiration, infiltration, or slow filtration.
- Additional hydrologic stream protection criteria for all projects above 12% BUA
- Required treatment of the 90th percentile storm size for primary SCM's that do not include volume reduction (e.g. wet ponds)

Definitions/Requirements

Transportation Impervious Cover: Uncovered, paved or hardened surfaces used by vehicles, including parking areas, driveways, and roads.

Primary SCMs:

- Bioretention
- Infiltration
- SW Wetland
- Permeable Pavement
- Wet Pond, Sand Filter
- Rainwater Harvesting
- Storm Filter
- Silva Cell
- others specified in North Carolina Stormwater Design Manual

Runoff-reducing Secondary SCMs: DIS; LS-FS; Treatment Swale

Volume Reduction Requirement (SCS method)

- Portion of 1" of runoff that is required to be achieved via evapotranspiration, infiltration, or slow filtered discharge.

Hydrologic Soil Group	Volume Reduction Requirement
A	0.38
B	0.26
C	0.13
D	0.07

Stream Protection Criteria Exemptions

- The entire channel protection volume is recharged to groundwater
- Sites less than or equal to one acre of impervious cover
- Compliance with the stream protection criteria above can be demonstrated to result in no benefit to current and future downstream development

In advance of this meeting, Joey Hester shared a DEMLR technical memo which shows the different rainfall volumes associated with the 90th percentile storm at different locations across the state of North Carolina. This document is intended to help practitioners understand the implications of a 90th percentile storm treatment requirement in cities within the High Rock Lake watershed.

Key Questions for the TAG

- Are you comfortable with the BUA thresholds of 6% and 12%?
- Are you comfortable requiring some kind of stormwater treatment beginning at 6% BUA in systems that drain to curb & gutter systems?
- Are you comfortable with requiring stream protection criteria in addition to water quality treatment for projects at or above 12% BUA?
- And for those more familiar with local peak flow ordinances, how do you feel about the viability of the three stream protection criteria options?

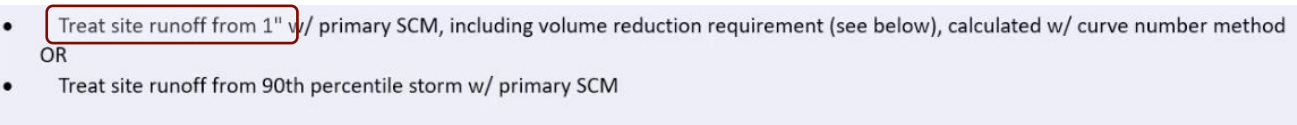
Discussion

Joey Hester shared that these important points regarding the proposal:

- DWR's intention is to provide flexibility for new development approaches with tiers based on **BUA**, built upon area (which is not equivalent to impervious coverage of development).
    - Thresholds: low (6%); medium (6-12%); high (>12%).
- High density threshold reduced to >12%.

- High density threshold for water supply/watershed rules = 24%.
    - Not holding and recharging water.
- **Stream protection** is necessary to prevent blow-out and further degradation
    - blow-out: when receiving waters surpass erosive flow.
        - Too much volume of water, moving for too long, so streams become nutrient and sediment courses.
- **WQ Treatment Criteria**
  From MD/CT programs
    - Treat site runoff from 1" (storm) with primary SCM, including volume reduction calculated with curve number requirement.
        - 1" is evapotranspiration or recharged.

      OR
    - Treat site runoff from 90 percentile storm with the primary SCM.
        - Scaling to the 90th percentile storm (beyond the 1" storm).
- **Volume Reduction Requirements (SCS method)**
    - In HRL, soils are mostly **B, C.**
    - Maybe some **D**?
    - Definitely not A, which are sandy soils found in near the coast.
- Rich Gannon added that communities in HRL watershed receive anywhere from 1.3" – 1.4" of rain in the 90th percentile storm.
- Andy McDaniel noted that "Treating 1" off site runoff versus treating runoff from a 1" storm" are two very different things.
    - Joey Hester to correct the text outlined to read, *Treat runoff from a 1" storm.*



    - Andy McDaniel appreciated the correction, stating that treating 1" of site runoff would most certainly deter low-impact density development.
- Edgar Miller asked for clarification in the differences between the two WQ treatment criteria options.
    - Joey Hester stated that the 90th percentile storm is a larger storm, so the options for medium density with a curb/gutter would be:
        - to treat for the larger storm or
        - to treat for the 1" storm with a volume reduction requirement.
- Trish D'Arconte asked if the curved number method to calculate volume reduction is the one used and recommended by Dr. Bill Hunt.
    - Joey Hester confirmed that it is.
    - Ms. D'Arconte emphasized that this curved calculation method includes a slow filtration measure, not just exfiltration.

- Mr. Hester added that the 90th percentile storm is a reference storm size, which can scale with future conditions (i.e. climate changes)
- Rich Gannon posed this question to the group:
    - Does this 90th percentile storm treatment offer a useful alternative in some situations? We have not run the numbers for a comparison, but we wanted to offer this up as an option.
- Joey Hester commented: Ideally, we simplify this down to 1 criterion. To Keith Huff: "How does this fit in with what your flood mitigation looks like?"

Mr. Hester reviewed the exemptions then opened the floor for discussion.

- Kelway Howard asked a series of questions about the table and its related definitions.
    - Does this table apply to all new development? Residential and commercial?
    - Joey Hester: Yes.
    - What happens for less than 6% BUA for curb and gutter? What was your intention with "Not Applicable" ?
    - Rich Gannon: We will have to discuss that further and include a treatment requirement(/s).

- Kelway Howard asked if there was a release rate.
  "For the third bullet point in Stream Protection Criteria, 'releasing the volume over 24 hours…' Is there a release rate attached to that ?Thinking about how I would document that to a reviewer? Am I just proving that the water is running out at as close to 24 hours as possible?"
    - Trish D'Arconte (to DWR): Is this language from Bill Hunt?
    - Joey Hester: It is, but it is from the City of Raleigh Ordinance, per Sally Hoyt.
    - Rich Gannon: And it should say "1-yr, 24-hour storm…"
    - Kelway Howard: There is a volume and a time requirement but there is not rate specification. Not sure if on a large development would there be a chance that the rate that the under 24hr.
    - Kelway Howard, re: Volume Requirement "slow filtration discharge" is a new term. Is there a more specific definition?
    - Trish D'Arconte: We wanted to get a definition from Bill Hunt. Yes, we will provide a clearer definition.

- Kelway Howard: re, Exemptions: No benefit to downstream development. There are developments that discharge directly into a floodplain. A definition or a few examples that would qualify could really bolster this point, here.

    - Joey Hester responded that he would include a clearer definition and more examples.

- Andy McDaniel took issue with the Curb and Gutter classification. He asked, "What if the street leading the development has a curb and gutter, but the development does not?"
    - Trish D'Arconte: If the area proposed to be developed includes underwater storm infrastructure, then requirements should be in place as if it were "curb and gutter."
- Kelway Howard brought up this scenario: Public Roadway improvements in a public right of way that require curb and gutter, but the development does not have curb and gutter.
    - Trish D'Arconte: We will need to provide further exemptions when adding to public right of way considering the new House bill.
- Andy McDaniel: What happens when some site is partly curb and gutter and some of it is not?
    - Trish D'Arconte: Then, there would be distinct independent treatments of each site. That would be unusual.
- Kelway Howard: In some jurisdictions, a development may not have curb and gutter, but the public street may be required by the municipality to have curb and gutter.
- Jesse Day: I am thinking of Trinity or Archdale, which I believe is in this watershed. There is curb and gutter conveying to surface runoff. So that may be another layer of this.
- Maggie Chotas reminded Andy McDaniel and others that if there was a concern about a term or classification, suggestions in rule language were welcome and encouraged.

Keith Huff returned the conversation back to the <u>stream protection criteria for BUA >/= 12% release the volume over 24 hours.</u>

- "Kelway touched on this, but there should be a release rate. Winston-Salem requires a 2-5 day draw-down time. This is because the exit hydrograph for a pond or SCN in question is front-loaded. You could have it release over 24 hours with 99.9% of it released within the first hour. We see the graphs front-loaded.
    - Joey Hester: Ok, I appreciate you sharing that. That's helpful. In those situations, are the quickest measures chosen?
    - Keith Huff: Yes.
    - Joey Hester: Would you recommend a minimum of 2 days there?

  - Keith Huff: Yes. With your current language, you could get the opposite of what you're intending. Typically, there is a range of days for draw-down.

- Mr. Huff went on to corroborate Andy McDaniel's point. "We are capping low density development with these requirements.
  - Rich Gannon: What is it about these controls? And how often are you seeing LID?
  - Kelway Howard: Not often, but when the site presents itself.
  - Keith Huff: It doesn't exist to meld LID with these controls."
  - Rich Gannon and Trish D'Arconte countered that LID would phase itself out even without these requirements.
  - Keith Huff, emphatically: And they might, but this would be ending it.

Comprehensive discussion continued around BUA, soil permeability, stormwater credits, and LID, with Danica Heflin, Jesse Day, Kelway Howard, Brent Cockrum, and Keith Huff along with DWR contributing to the discussion.

- Danica Heflin asked this question via chat: Permeable pavement would change the BUA% and possibly generate credits, correct?

- Keith Huff shared an example of a school in Guilford County tilling the entire plot post-construction. The school made news in the stormwater community because they have never had any runoff issues.

- Trish D'Arconte and Joey Hester would like to operationalize post-construction soil rehabilitation as a creditable practice.

- Joey Hester specifically requested that the engineers consider scenarios and share language where LID would be recommended, especially for BUA 12% > 24%,

- Scott Leonard wanted to confirm that there would be an exemption for single family lot, for non-common developments.
  - Joey Hester noted there would be that exemption.

- Mr. Leonard asked if multi-permitting would be addressed? i.e., When developers are permitted for the entire commons and then individual builders permit for construction of individual residences.
  - Trish D'Arconte: This idea was not contemplated when stormwater rules went into effect.
  - Rich Gannon: We would want the stormwater controls addressed all at once, but we'll need to hash that out.

- Andy McDaniel brought up issues specific to DOT and Trish D'Arconte mentioned that there would be language to address specific local, linear transportation issues.
- Brent Cockrum: In watershed/water supply rule, they define low density as two dwelling units per acre. Does this rule define a dwelling unit?
    - Trish D'Arconte: No, we have not used or defined that term. We speak to BUA.

Joey Hester pointed the group back to these key questions, as the meeting drew to a close:

- Are you comfortable with the BUA thresholds of 6% and 12%?
- Are you comfortable requiring some kind of stormwater treatment beginning at 6% BUA in systems that drain to curb & gutter systems?
- Are you comfortable with requiring stream protection criteria in addition to water quality treatment for projects at or above 12% BUA?
- And for those more familiar with local peak flow ordinances, how do you feel about the viability of the three stream protection criteria options?
- What are scenarios that would encourage LID?

Joey Hester thanked everyone for their contributions. He noted that they would continue discuss New D and move towards a consensus at the next and final stormwater TAG meeting on November 28, 2023, 10a – 12p.