Lower Neuse Basin Association®
Neuse River Compliance Association®
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January 18, 2019

Mr. J.D. Solomon, Chairman
and EMC Commissioners
N.C. Environmental Management Commission
1611 Mail Service Center
Raleigh, N.C. 27699 - 1617

Dear Chairman Solomon and Commissioners:

I am writing this letter as chairman of the Lower Neuse Basin Association ("LNBA") and the Neuse River Compliance Association ("NRCA"). On behalf of the Associations, I respectfully submit the attached comments on the Draft 2018 North Carolina 303(d) List and Integrated Report.

Thank you for the opportunity to submit these comments. If you require additional information or have questions about our proposal please contact me or Haywood Phthisic, LNBA/NRCA Executive Director.

Sincerely,

Daniel F. McLawhorn, Chairman

cc: LNBA/NRCA Boards
Haywood Phthisic

LNBA and NRCA Comments for the 2018 303(d) List and Integrated Report

1. The Draft 2018 303(d) and Integrated Report information indicates that Chlorophyll-a is an aquatic life standard. There is no technical support for this conclusion. Aquatic life standards normally use detriments to sensitive species thresholds (plus a safety factor) to establish a water quality standard. Chlorophyll-a is an indicator of biological productivity not an aquatic life standard. Chlorophyll-a is best considered a water quality standard for the protection of designated use impairment – aesthetics and recreation. Chlorophyll-a is not toxic. Chlorophyll-a has no levels associated of endangerment of sensitive species. This is an important but minor change. It is important because EPA has established detailed procedures for aquatic life standards that do NOT include chlorophyll-a.

2. The EMC has not addressed the establishment of procedures for determining 303(d) Assessment Units (AU's). Changes to Assessment Units are not explained and result is an evaluation process that isolates individual monitoring stations rather than aggregating monitoring locations for a more complete representation of the Assessment Unit with larger data sets. Assessments Units are segments of streams, lakes, or estuaries where monitoring data from different stations provide a representative perspective of the quality of a particular waterbody. Determining the geographical extent of AU's can be the deciding factor in attainment or non-attainment of water quality standards. Example: If there are three monitoring stations within an AU and DWR determines that collectively these three stations are attaining water quality standards but individually if one of these locations is not attaining standards then the DWR can subdivide the AU in order to declare this individual sub-segment as an impaired AU. The 2018 Draft Integrated Report for Assessment Unit 27-(96)b1 provides a good example of this dilemma:

Assessment Unit 27-(96)b1 appeared to be previously represented by two station locations- J8290000, and J8570000. Assessment Unit 27-(96)b1 for the 2018 Draft was apparently subdivided into three different Assessment Units as follows:

	AU 27-(96)b1a	**AU 27-(96)b1b**	**AU 27-(96)b1c**
Chlorophyll-a	Category 1	Category 3t ND*	Category 1
Copper (3ug/L)	Category 5 ND*	Category 5 ND*	Category 5 ND*
Dissolved Oxygen	Category 3a	Category ? ND*	Category 1
Monitoring Stations	J8290000	None	J8570000 J8570000

*No Data

Based on a close examination of the Assessment Unit Fact Sheets kindly provided by DWR, it appears that no stations are representative of AU27-(96)b1b since no Physical Chemical Data Summaries 2012-2016 are included. Also note that none of the three divided AU's has any data for Copper. The segmenting of AU 27-(96)b1 into three AU's is highly confusing and without explanation. Assessment Units should be considered management units and not constantly changed based on changes in water quality data. Assessment Units should remain as stable as possible. Monitoring locations are established and remain relatively stable. Assessment Units

are evaluated for management purposes and should not be changed based on the flux of highly variable water quality parameters. Observed concentration data should be used for Category assignments not constant changes in Assessment Units.

DWR rules are very clear, Designated Uses and Standards determine the assignment of appropriate Stream Classifications. However, for water quality impairment decisions, DWR has continued to alter 303(d) Assessment Units based on the observed data for each assessment period. Altering Assessment Units based on the changing concentrations of observed data is particularly important in Reservoirs and Estuaries. Concentration data is normally variable even in pristine waterbodies. When DWR observes differences in standards attainment at particular stations within an AU, the AU is subdivided where one may be meeting standards and one not meeting standards. Once an AU has been subdivided based on a particular assessment period, the subdivision is not re-combined. This can help to maximize 303(d) listings. Simply put, if DWR continues to promote 303(d) decisions based on single monitoring stations the number of 303(d) impairments will increase. The end result is that the central tendency of a classified water body segment is not used to evaluate impairment. Impairment decisions are made based on limited sampling sites and limited data rather than an assessment of the entire classified portion of the water body. The EMC has not evaluated or approved the current DWR approach to establishing or splitting AU's.

3. The new 303(d) listing methodology no longer requires 90% statistical confidence for listing impaired waters. Waters may be impaired without 90% confidence if infractions of a numeric water quality standard are exceeded in just three or four observations in the last two years of the assessment period. This change in the assessment methodology does not provide a sufficient level of confidence to render the Assessment Unit impaired and subject to TMDL or strenuous management scenarios.

4. Small data sets are problematic for 303(d) listings. Without a sufficient number of samples to characterize an Assessment Unit over time and space the probability of an erroneous assessment for impairment greatly increases. Based on the proposed methodology, it appears that only three observations collected in a short time period (perhaps a single year) that exceed a numeric criteria could place a segment on the impaired waters list without any additional samples being collected within the last five years. Incorporating older data (more than five years old) to meet a ten sample minimum does not help the representative evaluation of current water quality conditions. The public is entitled to a confident scientific and representative evaluation. The concern is the promotion of selective sampling approaches in order to achieve a 303(d) listing rather than the use of representative samples over time and space.

5. Throughout our review of the detailed Integrated Report Fact Sheets impairments for the parameters Nitrogen and Phosphorus were frequently observed. With the exception of water supply waters (N=10mg/L), NC has no numerical water quality criteria (standards) for nitrogen or phosphorus. Any reference to exceeding criteria for either nitrogen or phosphorus should be removed.

6. A detailed review of the Draft 2018 Integrated Report Fact Sheets provided by DWR has identified a number of observations that suggest additional DWR staff review is necessary. These technical evaluations are summarized below:

Review DWR Draft 2018 IR as of December 2018

27-(96)b1a

From Bachelor Creek to a line across the river from Renny Creek to 0.5 miles north of Mills Br.
Appears to be a new 3 way AU Split from previous Segment 27-(96)b1.
No explanations for this split in AU's is provided.

Issue Notes:

- Conflict in Dissolved Oxygen listing Category 3 or Category 5 ?
- Fact Sheet @ top Data Inconclusive > 10% and >90 conf Dissolved Oxygen (5 mg/l, AL, SW) 3a
- Fact Sheet Indicates Changes from 2016 assessment - New Category 5 For Dissolved Oxygen (5 mg/l)

27-(96)b1b NEUSE RIVER Estuary

From a line across the river from Renny Creek to 0.5 miles north of Mills Branch to a line across the river from Jack Smith Creek to 0.5 miles south of Mills Branch
Appears to be a new 3 way AU Split from previous Segment 27-(96)b1.
No explanations for this split in AU's is provided.

Issue Notes:

- 2018 Draft Water Quality Assessment Chlorophyll has no assessment listed.
- However, 2018 Draft Category Changes from 2016 Assessment New IR category for chlorophyll 3t but says parameter is meeting criteria.
- No Physical Chemical Data Summaries for stations 2012-2016

27-(96)b1c NEUSE RIVER Estuary

From a line across the river from Jack Smith Creek to 0.5 miles south of Mills Branch to Trent River. Appears to be a new 3-way AU Split from previous Segment 27-(96)b1 Reason unclear.
No explanations for this split in AU's is provided.

Issue Notes:

- Fact Sheets should be checked closely as station locations are duplicated and a count of 105 suggests an unrealistic monitoring frequency. Previous station locations from NCSU CAAE and UNC IMS are not apparent – JA112, RR1, UNC IMS 30, J8290000, J8570000
- Physical Chemical Data Summaries for stations 2012-2016 are listed as follows:

Station #	Location	Count	#obs>40	%obs>40	%Confid
J8570000	Neuse R 0.5 mi ups Union Point NB	53	3	9.4%	8.9%
J8570000	Neuse R 0.5 mi ups Union Point NB	105	5	4.7%	1.6%

Dissolved Oxygen (5 mg/L) as follows

Station #	Location	Count	#obs<5	%obs <5	%Confid
J8570000	Neuse R 0.5 mi ups Union Point NB	53	5	9.4%	38%

27-(96)b2 NEUSE RIVER Estuary

From Trent River to a line across Neuse River from Johnson Point to McCotter Point (part of upper model segment) Draft 2018 Status Exceeding Criteria Chlorophyll a (40 µg/l, AL, NC) 4i

Issue Notes:

- Fact Sheets should be checked closely as station location is duplicated and a count of 104 suggests an unrealistic monitoring frequency for DWR station. Suspect Station might be UNC IMS Station 50 perhaps 105 observations. Site called Neuse R CM 15 nr Riverdale.
- No data for NCSU CAAE JA 115 or JA116

27-(104)a1 Neuse River Estuary

From a line across Neuse River from Johnson Point to McCotter Point to a line across the river from 0.6 miles north of Otter Creek and 0.7 miles south of Goose Creek
Appears to be a new AU Split from previous Segment 27-(104)a Reason unclear
No explanations for this split in AU's is provided.

Issue Notes:

- Fact Sheets indicate exceeding criteria for Phosphorus and Nitrogen – no WQS criteria
- Fact Sheets from previously combined Segment 27-(104)a included JA110, JA102, JA103, JA105 JA108, UNC 70, J8902500, J8910000. It is unclear how these locations have been distributed or deleted.
- Fact Sheets should be checked closely as station location is not correct- a count of 105 suggests an unrealistic monitoring frequency for DWR station. Suspect Station might be UNC IMS Station 70 perhaps 105 observations.

Station #	Location	Count	#obs>40	%obs>40	%Confid
J8902500	Neuse River at CM 2 at Mouth of Broad Cr	50	17	34%	99%
J8903600	This Station is unknown	105	24	23%	99%

27-(104)a2 NEUSE RIVER Estuary

From a line across the river from 0.6 miles north of Otter Creek and 0.7 miles south of Goose Creek to 0.5 miles upstream of Beard Creek. Appears to be a new AU Split from previous Segment 27-(104)a. No explanations for this split in AU's is provided.

Issue Notes:

- Fact Sheets indicate exceeding criteria for Phosphorus and Nitrogen – no WQS criteria
- Fact Sheets from previously combined Segment 27-(104)a included JA110, JA102, JA103, JA105 JA108, UNC 70, J8902500, J8910000. It is unclear how these locations have been distributed or deleted.
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Station #	Location	Count	#obs>40	%obs>40	%Confid
J8910000	NEUSE RIV AT CM 11 NR RIVERDALE	48	13	27%	99%
J8920000	This Station is unknown	1		0%	0%

27-(104)b NEUSE RIVER Estuary

From a line across Neuse River from 1.2 miles upstream of Slocum Creek to 0.5 miles upstream of Beard Creek to a line across Neuse River from Wilkinson Point to Cherry Point (bend model segment)

Issue Notes:

- Fact Sheets indicate exceeding criteria for Phosphorus and Nitrogen – no WQS criteria
- Fact Sheets do not offer any information on either:
    - 2018 DRAFT Integrated Reporting Category Changes from 2016 Water Quality Assessment or
    - Physical Chemical Data Summaries 2012-2016 by station
- Consider previous NCSU CAAE JA140, JA100,JA111,JA101,JA107

27-(118)a1 NEUSE RIVER Estuary

From a line across Neuse River from Wilkinson Point to Cherry Point to a line across the river From Adams Creek to Wiggins Point (part of lower model segment)

Issue Notes:

- 2018 No Assessment for Chlorophyll
- Fact Sheets do not offer any information on either:
    - 2018 DRAFT Integrated Reporting Category Changes from 2016 Water Quality Assessment or
    - Physical Chemical Data Summaries 2012-2016 by station
- Consider previous NCSU CAAE JA140, JA100,JA111,JA101,JA107
- Previous Assessments may have included J9530000, UNC IMS 120

27-(118)a2 NEUSE RIVER Estuary

From a line across Neuse RiverFrom Adams Creek to Wiggins Point to Pamlico Sound (mouth of Neuse River described as a line running from Mawpoint to Point of Marsh)

Issue Notes:

- Fact Sheets indicate exceeding criteria for Phosphorus and Nitrogen – no WQS criteria
- Fact Sheets for 2018 Water Quality Assessment for chlorophyll have two conflicting:
    - Exceeding Criteria Chlorophyll a (40 µg/l, AL, NC) 4i
    - Meeting Criteria Chlorophyll a (40 µg/l, AL, NC) 1
- 2018 DRAFT Integrated Reporting Category Changes from 2016 Water Quality Assessment or
    - Physical Chemical Data Summaries 2012-2016 by station
- Physical Chemical Data Summaries 2012-2016 by station do not include UNC IMS 160
- Fact Sheets should be checked closely as station location is duplicated and a count of 105 suggests an unrealistic monitoring frequency for DWR station. Suspect Station might be UNC IMS Station 160 perhaps 105 observations. Site called Neuse River at mouth near Pamlico.

Station #	Location	Count	#obs>40	%obs>40	%Confid
J9810000	Neuse R at CM 7 nr Oriental	47	5	10.6%	48.7%
J9810000	Neuse R at CM 7 nr Oriental	105	13	12.3%	75%
J9930000	Neuse R at CM NR at mouth nr Pamlico	18	0	0%	0%